AV-8 TACTICAL MANUAL

NWP 3-22.5-AV8B

VOLUME II

A1-AV8BB-TAC-050

THIS PUBLICATION IS INCOMPLETE WITHOUT NWP 3-22.5-AV8B VOLUME I (A1-AV8BB-TAC-000), AND NWP 3-22.5-AV8B VOLUME III (A1-AV8BB-TAC-100/(S))

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS

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NATEC ELECTRONIC MANUAL

A1-AV8BB-TAC-050

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D.C. 20350

April 1996

LETTER OF PROMULGATION

1. NWP 3-22.5-AV8B, Vol. II (NAVAIR A1-AV8BB-TAC-050), the AV-8B TACTICAL MANUAL, is an Unclassified publication which is effective upon receipt. It supersedes NWP 55-3-AV8B, Vol. II (Rev. C) (NAVAIR A1-AV8BB-TAC-050), the AV-8B TACTICAL MANUAL of September 1994, which shall be destroyed without report.

2. Aircraft tactical manuals provide the latest and most accurate tactical information to aircrews and tactical commands. These manuals are designed to promote the development of efficient and sound tactical doctrine and to eliminate the need for promulgation of doctrine by individual squadrons. The tactics published herein are to be considered as a guide to better operations, not as the only way and final authority in tactical evolutions. It is both desirable and necessary that new ideas and new techniques be expeditiously evaluated and incorporated if proven to be sound. To this end, Operational Commanders should encourage innovative thought and the use of effective tactics not reflected herein. These manuals are compiled using Fleet inputs and are kept current to achieve maximum combat readiness. To provide the latest data, Navy and Marine Corps Fleet/Type/Air Wing Squadron Commanders are directed to review these procedures on a continuing basis and submit recommended modifications as outlined under "Change Recommendation."

Brent M Bennitt

BRENT M. BENNITT
Rear Admiral, U.S. Navy
Director, Air Warfare Division

May 1998

PUBLICATION NOTICE **ROUTING**

1. NWP 3-22.5-AV8B, Vol. II, AV-8B Tactical Manual, is available in the Naval Warfare Publications Library

2. Summary. Major changes to this publication include:

a. Incorporated UIC-16, M904E4 Nose Fuze Code change. _____
b. Incorporated UIC-17, Clarification of aircraft loading and delivery profiles. _____
c. Incorporated Omnibus 7.1 software. _____
d. Incorporated Omnibus C1 software. _____

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RECORD OF CHANGES

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INTERIM CHANGE SUMMARY

The following Interim Changes have been canceled or previously incorporated in this manual:

INTERIM CHANGE NUMBER	REMARKS/PURPOSE
1 thru 14	Previously incorporated.

The following Interim Changes have been incorporated in this Change/Revision:

INTERIM CHANGE NUMBER	REMARKS/PURPOSE
16	M904E4 Nose Fuze Code change.
17	Clarification of aircraft loading and delivery profiles.

Interim Changes outstanding - To be maintained by the custodian of this manual:

INTERIM CHANGE NUMBER	ORIGINATOR/DATE (OR DATE/TIME GROUP)	PAGE AFFECTED	REMARKS/PURPOSE

SUMMARY OF APPLICABLE TECHNICAL DIRECTIVES

Information relating to the following historical record of applicable technical directives has been incorporated in this manual

CHANGE NUMBER	DESCRIPTION	DATE INC. IN MANUAL	VISUAL IDENTIFICATION
AFC219	Throttle redesigned to switch position of TDC and speedbrake switches.	July 1984	Position of TDC speedbrake switches reversed on throttle.
AFC241	Installs HUD video recording system to provide near real time playback of HUD and DDI displays for post-flight debrief.	March 1985	HUD video camera is located next to CDC and video recorder is mounted in right console.
AFC263	Increase Aileron and Rudder SAS Authority (Departure resistance).	August 1986	Departure resistance caution.
AFC269	Adds ships inertial navigation system (SINS) sea alignment mode.	August 1986	SINS legend appeears on DDI when sea alignment selected.
ASC-032	Armament control panel P/N 7108542-010 software configuration.	August 1987	P/N 7108542-010
ASC-030	Stores management computer (SMC) P/N 7108579-012.	August 1987	P/N 7108579-012
ASC-026	Display computer (DC) P/N D980045	August 1986	P/N 980045
ASC-031	Avionics software changes.	August 1987	MC OFP IDENT/ MOFE000
ASC-043	Incorporate Omnibus VII Mission Computer OFP	September 1994	MC OFP IDENT/90-D
ASC-045	Incorporate Omnibus VII Stores Management Computer (SMC) software change	September 1994	Program Identification Number D70514.
ECP-143-C1/C2	Stores Management System Enhancement	September 1994	Upward Firing Loadout Panel switches on SMC.
ECP-200R1	Production Incorporation of AN/APG-65 radar and Wiring Provisions for Smart Weapons	September 1994	Radar switch on Miscellaneous Switch Panel. Program Idendification Number 94-ROFE120.
TDL0007 (DO-27)	Incorporation of Omnibus 6+C Software	September 1994	Program Identification Number 94-NOFE070F.

CHANGE NUMBER	DESCRIPTION	DATE INC. IN MANUAL	VISUAL IDENTIFICATION
DO-26	Incorporation of Omnibus 6+B Software	September 1994	Two page BIT.
ASC-76	Incorporation of Omnibus 7.1 Software	May 1998	MC OFP 96-DOFE060C
ASC-78	Incorporation of Omnibus C1 Software	May 1998	MC OFP 96-COFE060L

Information relating to the following historical record of applicable technical directives will be incorporated in a future change.

CHANGE NUMBER	DESCRIPTION	VISUAL IDENTIFICATION

GLOSSARY

A/S. Airspeed.

ACD. Attack Cone Distance.

ACP. Armament Control Panel.

ADSID. Air Delivered Seismic Intrusion Detector.

AGL. Above Ground Level.

AGM. Air-To-Groung Missile. An air launched, guided missile for attacking surface targets.

AIS. Airborne Instrumentation Subsystem.

AISI. Airborne Instrumentation Subsystem Internal.

ALT. Altitude; MSL unless specified AGL.

ALTF. Altitude In Feet (Option selectable from ODU).

ALT_{rel}. Release Altitude.

ALT_{tpa}. Target Placement Angle Altitude (Checkpoint Altitude).

ALT_{trk}. Roll-In Altitude.

AMPS AV-8B Mission Planning System.

AOA. Angle Of Attack. The angle between the FRL and flightpath.

AOD. Aim Off Distance.

AP. Antipersonnel.

APERS. Antipersonnel.

APF. Aircraft Parachute Flare.

API. Armor Piercing Incendiary.

AT. Anti-tank.

ATO. Air Tasking Order

AUR. All-Up-Round.

AWC. Airborne Weapons Change.

BASA. Breakaway Suspension Band.

BD. Base Detonating.

BDU. Bomb Dummy Unit.

BF. Ballistic File.

BFD. Battery Firing Device.

BLU. Bomb, Live Unit.

BRU. Bomb Release Unit.

BSU. Bomb Stabilizing Unit.

CAC. Climb to Attack Cone (distance from beginning of climb to apex).

CAS. Center Aft Section.

CAS. Close Air Support. An action against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces. (JCS Pub 1).

CATM. Captive Air Training Missile.

CBU. Cluster Bomb Unit.

CCIP. Continuously Computed Impact Point.

CCS. Control and Computation Subsystem.

cg. Center of Gravity.

CG. Center of Gravity.

CONFIN. Conical Fin.

CONUS. Continental United States

CTO. Conventional Takeoff.

D1. Delay 1.

D2. Delay 2.

DA. Density Altitude.

DB. Depth Bomb.

DDI. Digital Display Indicator.

DDS. Display and Debriefing Subsystem.

DECM. Defensive Electronic Countermeasures.

deg. Degree.

DEG. Degree.

DIR. Direct.

DLY. Delay.

DPF. Dispenser Proximity Fuze.

DRT. Down Range Travel.

DSL. Depressed Sight Line.

DST. Destructor.

eb. Early Burst.

EBC. External Baggage Container.

ECM. Electronic Countermeasures.

ECU. Electronic Control Unit.

ET. Exercise Training.

EW. Electronic Warfare.

FDSU. Fuze Delay Select Unit.

FFAR. Folding Fin Aircraft Rocket.

FMU. Fuze, Munition Unit.

FOV. Field of View.

FPA. Flight Path Angle.

fps. Feet Per Second.

FRAG. Fragment, Fragmenting, Fragmentation.

FRL. Fuselage Reference Line.

FSDU. Fuze Delay Select Unit.

ft. Feet.

GBU. Guided Bomb Unit.

GCS. Guidance Control Section.

GP. General Purpose.

GPI. Gimbal Position Indicator.

GW. Gross Weight.

H. Height.

HAS. Hydraulic Actuation System.

HD. High Drag.

HE. High Explosive.

HE-FRAG. High Explosive Fragmentaion.

HEI-SD. High Explosive Incendiary Self Destruct.

HERO. Hazard Of Electromagnetic Radiation To Ordnance.

HOF. Height of Function.

hp. Horse Power.

HUD. Headup Display.

IEA. Interface Electronic Assembly.

IMAV. IR Maverick.

IMN. Indicated Mach Number.

IN. Instantaneous.

INST. Instantaneous.

INT. Interval. For bombs the interval represents the time between weapon release from the aircraft, in milliseconds, in the manual mode and the ground impact spacing in feet, between weapons in the computed delivery modes. For rockets the interval is preset.

IR. Infrared.

IRU. Internal Reference Unit.

ITER. Improved Triple Ejector Rack.

JMEN. Joint Munitions Effectiveness Manual.

KCAS. Knots Calibrated Airspeed.

KIAS. Knots Indicated Airspeed.

KMU. Kit Modification Unit.

KTAS. Knots True Airspeed.

LAU. Launcher Unit.

LD. Low Drag.

LEA. Launcher Electronics Assembly, Laser Electronics Assembly.

LMAV. Laser Maverick.

LOP. Loadout Panel.

LOS. Line Of Sight. The line from the eye to the aiming point, through the optical sight.

LPH. Amphibious Assult Ship.

LSA. Laser Seeker Assembly.

LST. Laser Spot Tracker.

LUU. Illumination Unit.

M. Meters.

MAP. Minimum Attack Parameter.

MAU. Miscellaneous Armament Unit.

MAV. Maverick.

MDR. Missile Restraining Device.

MEA. Mean Effective Area.

mil. Milliradian. A unit of angular measurement which subtends 1 foot at 1,000 feet.

Min Rel. Minimum Release.

Mk. Mark (Navy weapon designation).

MLM. Marine Location Marker.

MOD. Navy designation for modification.

MPCD. Multipurpose Color Display.

mR. Milliradian. Also mil.

MRD. Missile Restraint Device.

MRI. Minimum Release Interval.

ms. Millisecond (0.001 second equals one millisecond.) Also msec.

msec. Millisecond. Also ms.

MSL. Mean Sea Level.

mtr. Motor.

MULTI. Multiple. Refers to the number of bombs released, or rockets launched, simultaneously form the aircraft weapon stations.

mux. Multiplex.

N. Nose.

N/T. Nose/Tail.

NATOPS. Naval Air Training And Operating Procedures Standardization.

ND1. Nose Delay 1.

ND2. Nose Delay 2.

NIN. Nose Instantaneous.

nm. Nautical Mile.

NM. Nautical Mile.

NP. No Probability.

NT. Nose and Tail.

NAMPS. Night Attack AV-8B Mission Planning System.

NTD1. Nose and Tail Delay 1.

NTD2. Nose and Tail Delay 2.

NTIN. Nose and Tail Instantaneous.

NTP. No Thermal Protection

OAS. Offensive Air Support.

ODU. Option Display Unit.

OP. Option.

OTC. Officer-In-Tactical Command.

PAC. Pop-To-Attack Cone (distance from beginning of pop to apex).

PD. Pull-Down Altitude.

PD. Point Detonating.

Peb. Probability of early burst.

PG. Pocket Guide.

PGU.

Ph. Probability of Hit.

$P_{h/eb}$. Probability of fragment hit in the event of an early burst.

P_k. Probability of Kill.

PO. Push Over Altitude (equivalent to apex and pull-down in a pop-up).

POS. Position.

PR. Primary.

PRF. Pulse Repetition Frequency.

PWP. Plasticized White Phosphorous.

RA. Ramp Angle.

RAC. Horizontal distance from the ramp point (point at which ramp-down commences) to the ACD.

RDY. Ready.

REL. Release.

Rel Accel. Release Acceleration.

REL ALT. Release Altitude.

Rel Alt. Release Altitude.

RF. Radio Frequency.

RHA. Rolled Homogenous Armor

RP. Red Phosphorous.

RSEL. Release.

R_{tpa}. Range of target placement angle. Defined as the horizontal distance from the checkpoint to the target.

RWR. Radar Warning Receiver.

S&A. Safe and Arm.

S/A. Safe and Arm.

SA. Sight Angle.

SAD. Safety Arming Device.

SAM. Surface-To-Air Missile.

SAPHEI-T. Semi Armor Piercing High Explosive Incendiary - Tracer.

SAWS. Spring Arming Wire System.

SD. Self Destruct.

SIM. Simulated

SMC. Stores Management Computer.

SMS. Stores Management System.

SPU. Signal Processing Unit.

SR. Slant Range.

STBY. Standby.

STO. Short Takeoff.

STORE. Any item intended for external carriage and/or release by the AV-8B with a specific Stores Code listed in the Store, Fuze and Load-out Codes Figure in Chapter 1. Suspension/ carriage equipment and miscellaneous equipment which are not assigned a Stores Code are not external stores. For the purpose of aircraft loading, stores are only considered dissimilar if they possess different Stores Codes.

SUU. Suspension Unit Universal. A device for carrying and ejecting a large number of bomblets from a high speed aircraft.

t. Time.

T. Tail.

T/O. Takeoff.

TACTS. Tactical Airborne Combat Training System.

TAS. True Airspeed.

TCF. Terrain Clearance Factor.

TD. Trajectory Drop.

TD1. Tail Delay 1.

TD2. Tail Delay 2.

TDD. Target Detecting Device.

TER. Triple Ejector Rack.

TGM. Training Guided Missile.

TGT. Target.

TIN. Tail Instantaneous.

TKTIME. Tracking Time.

TOF. Time of Fall.

TOGW. Takeoff Gross Weight.

TP. Thermal Protection.

TP. Target Practice.

TPA. Target Placement Angle.

TPF-T. Target Practice Frangible - Tracer.

TRKTIME. Tracking Time.

$TRKTIME_{curv}$. Curvilinear Tracking Time.

$TRKTIME_{sp}$. Straight Path Tracking Time.

TRSS. Tactical Remote Sensor System.

TSL. Total Stick Length.

TV. Tail Variable.

TV1. Tail Variable Delay 1.

TV2. Tail Variable Delay 2.

UA. Unauthorized.

UFC. Upfront Control.

V. Variable.

V1. Variable Delay 1.

V2. Variable Delay 2.

VEL. Velocity.

VT. Variable Time.

VTR. Video Tape Recorder.

VTRA. Video Tape Recorder Assembly.

W. Width.

WAFFAR. Wraparound Folding Fin Aircraft Rocket.

WEAPON. Item intended for external carriage by the AV-8B which is normally separated from the aircraft in-flight, such as missiles, rockets, bombs, mines, pyrotechnics, and ammunition.

WEPS. Weapons.

WP. White Phosphorous.

ZRF. Zero Retention Force.

ZSL. Zero Sight Line.

PREFACE

SCOPE

The AV-8B Tactical Manual, prepared under the direction of Commander Operational Test and Evaluation Force with AIRTEVRON FIVE designated as Model Manager and approved by the Chief of Naval Operations, contains the latest information regarding the tactical employment of the T/AV-8B aircraft. Information contained in this manual has been derived from many sources to provide one main source for procedures, techniques, and suggested data to enable the pilot to most effectively employ the aircraft and its weapons system most effectively in combat. The NATOPS Flight Manual standardizes ground and flight training procedures and contains the information to thoroughly acquaint the pilot with the aircraft. Information in this manual is primarily oriented to tactical employment of the aircraft which presupposes a thorough knowledge of the NATOPS Flight Manual. A description of the Aircraft Tactical Manual program is contained in NWP Ø.

For expanded threat data, also refer to NWP 12-7-2, Recognition Guide to Aircraft (U); and MCM 3-1, Vol II, Threat reference Guide and Countertactic (U).

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POCKET GUIDE

The AV-8B Tactical Manual Pocket Guide, NWP 3-22.5-AV8B PG is not distributed automatically with this manual and, therefore, must be ordered as a separate publication using the previously described procedures for Tactical Manuals. The Pocket Guide is printed on cardboard stock and is designed to be fastened to the Pilot's knee pad. The Pocket Guide contains the essential data required to provide in-flight flexibility.

CHANGE RECOMMENDATIONS

Recommended changes to this manual may be submitted by anyone in accordance with NWP 0. Submit Routine change recommendations to the Model Manager on OPNAV Form 3710/6 (See the following sample form). Address Routine changes to:

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Submit recommendations of an Urgent nature directly to your Type Commander by Priority message (see the following sample message form).

INTERIM CHANGE SUMMARY

The Interim Change Summary is provided for the purpose of maintaining a complete record of all Interim Changes issued to the manual. Each time the manual is changed or revised, the Interim Change Summary will be formally updated to indicate disposition and/or incorporation of previously issued Interim Changes. When a regular change or revision is received, the Interim Change Summary should be checked to ascertain that all outstanding Interim Changes have been formally incorporated or cancelled. Those changes that were not incorporated should be noted as applicable. The Tactical Publications Status Report published monthly by the Navy Technical Support Activity contains a summary of latest changes to all tactical manuals.

WARNINGS, CAUTIONS AND NOTES

The following definitions apply to "WARNINGs", "CAUTIONs", and "NOTEs", found throughout the manual.

WARNING

An operating procedure, practice, or condition, etc., which may result in injury or death if not carefully observed or followed.

CAUTION

An operating procedure, practice, or condition, etc., which may result in damage to equipment if not carefully observed or followed.

NOTE

An operating procedure, practice, or condition, etc., which is essential to emphasize.

WORDING

The concept of word usage and intended meaning which has been adhered to in preparing this Manual is as follows:

"Shall" has been used only when application of a procedure is mandatory.

"Should" has been used only when application of a procedure is recommended.

"May" and "need not" have been used only when application of a procedure is optional.

"Will" has been used only to indicate futurity, never to indicate any degree of requirement for application of a procedure.

CHANGE SYMBOLS

Revised text is indicated by a black vertical line in either margin of the page, like the one printed next to this paragraph. The change symbol shows where there has been a change. The change may be material added or information restated. A change symbol in the margin by the chapter number and title indicates a new or completely revised chapter.

AIRCRAFT

Any reference to AV-8 aircraft in this publication implies the AV-8B day/night/radar aircraft.

DDI vs MPCD

The term DDI is used throughout this manual when reference is made to either the digital display indicator (DDI) or either of the multipurpose color display (MPCD) indicators. This is because of their commonality in function and operation.

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PART I

CONVENTIONAL AIR-TO-GROUND WARFARE

CHAPTER 1

Weaponeering

1.1 INTRODUCTION

Volume II of this TACMAN series contains all the information required to complete pre-flight weaponeering requirements. The addition of the weaponeering worksheets (Figure 1-16 thru 1-18) provides a valuable tool for a more streamlined planning process.

Chapter 1 provides the weapons planning documents needed to complete weapons planning problems. The OAS weapons planning checklist provides a logical flow for weaponeering (Figure 1-15). Next are the descriptions and charts for determining sight angle corrections and jettison velocities, followed by dive recovery and altitude loss charts (with descriptions). A description of a frag envelope, sight angle, release error sensitivities, dive, and loft delivery charts is also provided. The weaponeering worksheets (Figure 1-16 and 1-17) take you through the steps required in order to ensure that all limitations have been met. They also provide single and multiple weapons sight settings and probability of hit results (if required).

The attack profile worksheets cover dive deliveries, level entry/ramp-down, cruise climbs, pop-ups, pull-push, and long range dive tosses (Figure 1-18). Working through these worksheets is simply a matter of plugging in the information and crunching the numbers. The remainder of the tables and charts provide the information necessary to complete the various worksheets (Figures 1-19 through 1-25). The information not included in this chapter will be accessible where it would normally be expected; i.e. the general and specific notes, external stores limitations, fuze limitations, max/min stick lengths, etc.

The goal of this chapter is simply to make proper weaponeering less cumbersome. The product should be a weaponeering plan that is complete, accurate, safe, and optimized for the best effect on target. With this said let's take a look at the weaponeering process via a sample problem (Figures 1-1 through 1-3).

Reference the OAS weapons planning checklist (Figure 1-15). Assume that steps 1 and 2 have been completed, and we know what ordnance we have available. In this case it is 6 Mk-82's with M-904 (6-second)/FMU-139 fuzes and BSU-33 fins on parent stations 1, 2, 3, 5, 6, and 7. At step 3 of the OAS weapons checklist, go to the weaponeering worksheets to determine the limitations of the selected ordnance, fuzes, and fins. Completion of step 1A through 1H (Figure 1-1) is a simple matter of filling in the blocks with the appropriate information. Use the external stores limitations charts and the appropriate sections of the TACMAN (Vol. II) to complete steps 2, 3 and 4 of the weaponeering limitations worksheet. The results of step 1 through 4 would appear as shown in Figure 1-1.

Step 4 of the OAS weapons planning checklist would involve selection of the dive delivery parameters required in order to optimize weapon effect on target. The purpose is to define the weapon release ″basket″ that will allow us to achieve the best results and minimize exposure to the threat. For this example we have chosen a 45É, 550 knot, 12,000 foot MSL/10,000 AGL release using Q6/M2 with a 60 foot interval for best effect on target. This provides a 5,000 AGL buffer around the target for threat avoidance. Step 5 of the OAS weapons planning checklist computes single/multiple weapon sight settings.

The multiple weapons release portion of the worksheet incorporates references to specific charts (and page numbers that provide instruction on their use). Most are self explanatory but there are three points worth mentioning.

First, the maximum authorized stick length is for the most restrictive fuze being employed. In this example the M904 imposes a 600 ms and the

FMU-139 a 400 ms max stick length for a 45É, 550 knot release. The FMU-139 has the most restrictive limit, hence the use of 400 ms in the worksheet.

Second, the determination of the trajectory drop to the center of stick bomb comes from the ″Down Range Travel to Center of Stick″ chart (Figure 1-24). Figure 1-4 provides an example showing how to use this chart. Using the number obtained from the ″DRT to center of stick″ (worksheet line number 36), we enter this chart on the left side and move right across to our release altitude. From this point we move straight down to read the number for ″Trajectory Drop″ which in our example is 148 mils. This is the trajectory drop for the middle bomb in the stick. By adding the AOA, and then algebraically adding the AOA corrections to this number we are able to derive the sight setting for the middle bomb of the stick (164.8 mils). This makes sense given our single weapon sight setting of 162 for the first bomb released. In order to place those first bombs just short of the target we would expect to pickle a little earlier, hence the subtraction of one mil to the original sight setting. Obviously this difference will become more profound as dive angle shallows or our stick length increases.

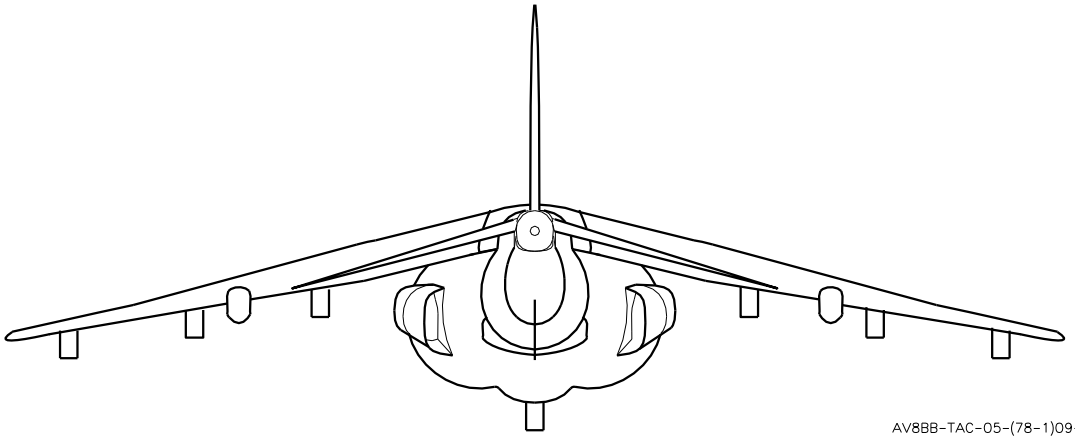
Third, the Target Placement Angle Chart is used to determine the Target Placement Angle (TPA). See the example in Figure 1-5. For this example a checkpoint altitude of 14,000 feet MSL (12,000 feet AGL) is used. Enter the ″Target Placement Angle Charts″ (Figure 1-25) from the bottom with the trajectory drop just derived from the previous problem (148 mils) and move vertically upward to the release altitude of 10,000 feet AGL. Next move directly left to the checkpoint altitude of 12,000 feet AGL. Finally, move vertically downward to read ″Trajectory Drop″ which in this example is 119 mils. At checkpoint altitude of 12,000 feet AGL, we want to place the velocity vector 119 mils or 6.8É above the target. Assuming all other release parameters are met, this results in a dive angle of 45É with the target at approximately 53É. The last portion of the weaponeering worksheets is the probability of hit worksheet and only needs to be completed if we find ourselves in violation of the authorized stick lengths.

Steps 6 through 8 of the OAS weapons planning checklist would then be completed. In step 9 consideration is given to development of flex weaponeering plans. Finally in step 10, the completed weaponeering documents are produced for the flight brief.

With completion of the weaponeering checklist and the worksheets referenced therein, all required steps to assure an effective release have been conducted. The need to produce FLEX weapons plans cannot be over emphasized! Rarely will you be able to execute your deliveries exactly as planned. It is imperative to have a firm grasp on how to ″flex″ deliveries in order to employ ordnance safely with the desired results.

LIMITATIONS

	Weapon 1	Weapon 2
STEP 1. Loadout Selection		
A. Selected weapon(s)	Mk-82	
B. Number of weapons	6	
C. Fin Type	BSU-33	
D. Fuzing (Nose/Tail)	904 (6 sec) / 139	/
E. Desired spacing (feet)	30	
F. Other factors (GBU, etc.)	NA	
G. SMS codes (weapon, fuze (N/T)	78 / 1 / 1	/ /
H. Selected loadout:		



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STA	1	2	3	4	5	6	7
WEAPON	Mk-82	Mk-82	Mk-82		Mk-82	Mk-82	Mk-82

STEP 2. Is this load authorized by TACMAN Chapter 5? YES
STEP 3. Is this load inside NATOPS limits for T/O assym, CG stability? YES
STEP 4. Compile Limitations

A. Weapon Limits		
1. Carriage (A/S, Mach, -G, +G)	550/ 1.0/ -3/ +7	
2. Release (A/S, Mach, G, FPA)	550/ .93/ .5/ 3.5/ 60É	
3. Jettison (A/S, Mach, -G, +G, FPA)	550/ .93/ 1.0/ 0É	
4. Min Interval (Singles, Pairs)		
AUTO/CCIP/DSL (Chap 5)	30 / 60	
DIR (Pg 5-73, General Notes)	30 / 60	
5. Fragmentation Pattern (H, W, t)	2600 / 2800 / 27	

Figure 1-1. Weaponeering Limitations Worksheet (Sheet 1 of 2)

LIMITATIONS (continued)

6. Degrade Mode Limits		
a. DSL (Chap 5)	None Imposed	
b. DIR (Pg 5-73)	By Mk 82 GP	
c. DSL(1) (Chap 5)	Bomb	
7. Notes:		
a. Remarks	NONE	
b. General (Pg 5-71/73)	Review	
c. Specific (Pg 5-73/76)	7, 8, 10	
B. Fuze Limits		
	M904	FMU-139
1. If dual fuzing, is this authorized? (Fig 3-1)	YES	
2. Maximum carriage A/S (Pg 5-75/76)	600 KTAS	None
3. Maximum release A/S (Pg 5-75/76)	600 KTAS	None
4. Minimum release A/S (Pg 5-75/76)	175 KTAS	None
5. Minimum interval TDD (Pg 5-76, Note 11)	NA	NA
6. Arm time (Fig 3-14)	5.4 - 6.6	5.2 - 5.8
tolerances	—	—
7. Degrade Mode Limits		
a. DSL	None	None
b. DIR	None	Lost
c. DSL(1)	None	Lost
8. Notes:	NA	
C. Fin Limits (Pg 5-74/75)		
1. Maximum carriage A/S	None	
2. Maximum release A/S	None	
3. Minimum release A/S	None	
4. Notes	NA	
D. Other Limits		
1. Gun (A/S,G,Alt)(Pg 5-65)	NA	
2. GBU (Pg 5-50)	NA	
a. Max carriage	NA	
b. Max release	NA	
c. Min release	NA	
d. Jettison	NA	
3. External Stores (Pg 5-64/67, 5-70)		
a. Max carriage	NA	
b. G	NA	
c. Jettison	NA	

Figure 1-1. Weaponeering Limitations Worksheet (Sheet 2 of 2)

SINGLE WEAPON RELEASE

	Weapon 1	Weapon 2
DELIVERY PARAMETERS		
(1) FPA (ref Step 4.A.2)	45 É	
(2) TAS (ref Step 4.A.2, B.3 & 4 C.2 & 3, and D.2.b & c)	550	
(3) MIN REL (fuze/terrain from Fig 3-13)	4952 (F)	
(4) MIN REL (frag,ref Step 4.A.5 if req)	NA	
(5) MIN REL THREAT (envel+alt lost)	9000 AGL	
(6) PLANNED RELEASE(>#3, #4, and #5, plus 10 percent)	10000 AGL	
(7) Rel Accel (ref Steps 4.A.2 and 4.D.3.b)	.5 - 3.5	
BASELINE BALLISTICS		
(8) TOF (sec)	12.30	
(9) DRT (feet)	7478	
(10) SR (feet)	12487	
(11) SA (mR)	161	
(12) TD (mR)	148	
(13) AOA (mR)	15.8	
SIGHT CORRECTIONS		
(14) AOA correction (release GW)	0	
(15) AOA correction (tgt DA)	1	
(16) TD correction (tgt DA, HD weps only)	NA	
(17) Single weapon Sight Setting = (#11 + #14 + #15 + #16)	162	
ERROR SENSITIVITIES ft/mil	16	
(18) deg = KTS = ft = 7.5 mR	2 / 15 / 750	/ /
(19) 10 KTS WIND =		
mR Range/mR Cross	13.4 / 16.7	/

Figure 1-2. Weaponeering Single Weapon Release Worksheet

MULTIPLE WEAPON RELEASE

	Weapon 1	Weapon 2
DESIRED WEAPON PROGRAM		
(20) Quantity	6	
(21) Multiple	2	
(22) Release Pulses (#20÷#21)	3	
DIR PROGRAM		
(23) Quantity	6	
(24) Multiple	1	
(25) Interval	30 ms	
(26) Station	1, 2, 3, 5, 6, 7	
DSL 1 PROGRAM		
(27) Station (maximum of 2)	1 and 7	
INTERVALOMETER & STICK LENGTH		
(28) Desired Bomb Spacing (ft, Step 1.E)	60 ft	
(29) Bomb Interval (msec) from the Impact Spacing Factor Chart (Figure 1-21 and 1-22) *must fall within constraints of Steps 4.A.4 and 4.B.5*	200	
(30) Stick Length (msec) (#22-1) ý#29	400	
(#22+1) ý#29 for ITER and asymmetric carriage releases		
(31) Max Auth Stick Length (msec, Figure 3-16) *#30 must be less than or equal to #31. If not, adjust recovery, quantity multiple, or interval. OTC may authorize use of the Ph worksheet, but this is not recommended unless only mechanical fuzing is being used.*	400 (FMU-139)	
ALTITUDE LOSS & FIRST BOMB SIGHT ANGLE		
(32) Alt Loss per interval (Figure 1-12/1-13)	130	
(33) Alt Loss for stick (#22-1)ý#32	260	
(34) Last Bomb Rel Alt (#6-#33)	9740	
If less than #3, 4, or 5, planned release altitude will need to be raised.		
(35) Pattern Length (#22-1)ý#28)	120	
(36) DRT to Center of Stick (#35÷2+#9)	7538	
(37) Center of Stick Trajectory Drop *from "DRT to Center of Stick" Chart*	144	
(38) ( ) Multiple Weapon Sight Setting (#37 + #13 +#14 +#15 +#16)	160.8	
(39) Multi-Weapon TPA	116 mils / 6.8É @ 12000 checkpoint	

Figure 1-3. Weaponeering Multiple Weapon Release Worksheet

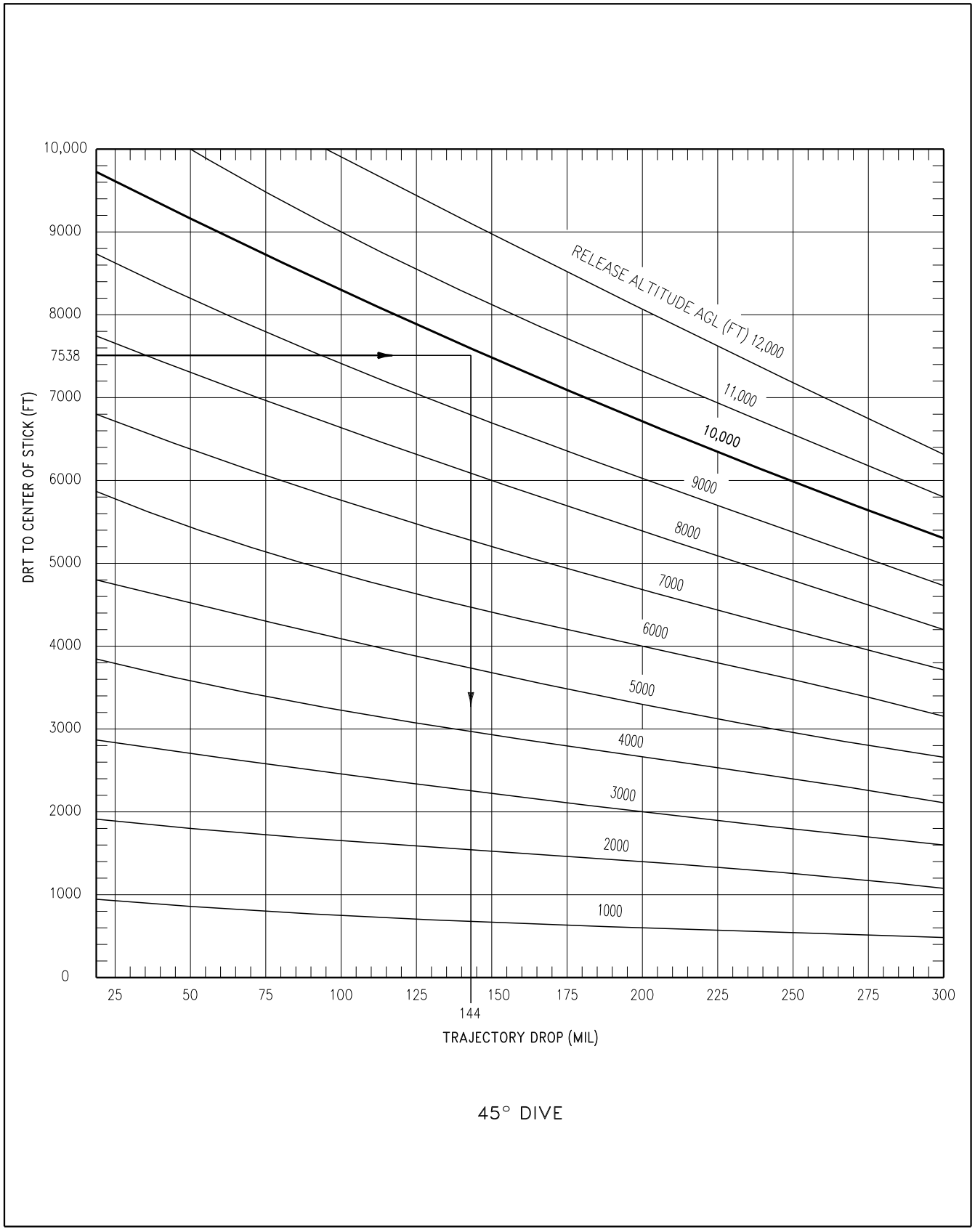

Figure 1-4. Sample - Down Range Travel to Center of Stick Chart

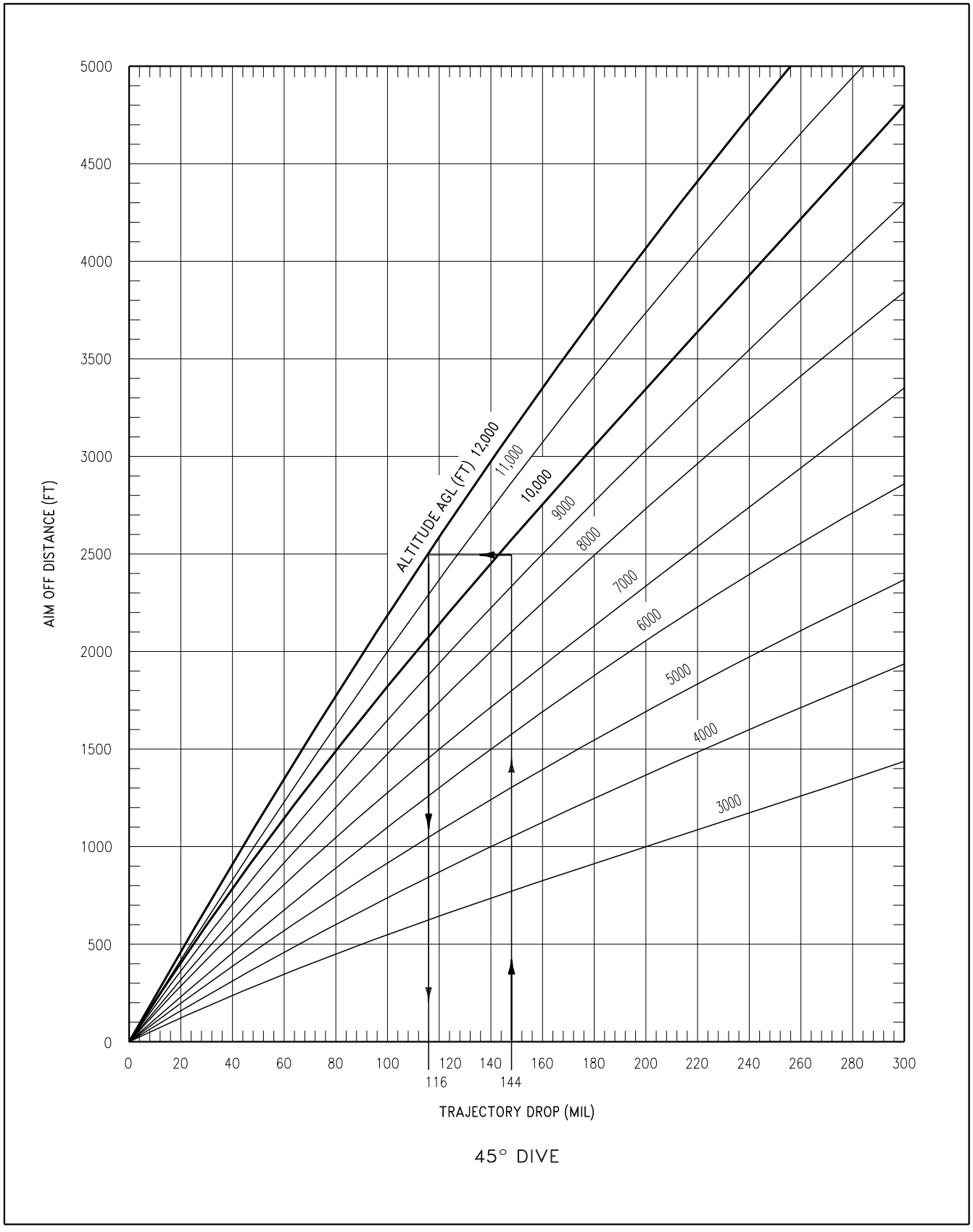

Figure 1-5. Sample - Target Placement Angle Chart

1.2 REFERENCE LINES

The aircraft reference lines used in this manual are illustrated in Figure 1-6. The Zero Sight Line (ZSL) is the reticle aim dot sight line when the sight is set on zero mils. The ZSL is parallel to the Fuselage Reference Line (FRL). The GAU-12/U 25 mm Gun is boresighted parallel to the Rocket Launcher Line which is 2É (34.9 mils) below the FRL. The sight angle charts and tabulated ballistic data include parallax correction and angle of attack. The dimensions used for parallax correction are measured from the center of the HUD combining glass to the center of the average bomb load position.

1.3 CHART DESCRIPTION

1.3.1 Airspeed Conversion Chart. The airspeed conversion chart (see Figure 1-9) is used to find calibrated airspeed, true Mach number, and true airspeed. Examples are provided on the chart.

1.3.2 Fuselage Angle of Attack Chart. Figure 1-7 presents the angle of attack (AOA) of the fuselage reference line (FRL) of a 24,000 pound AV-8B aircraft for various flight path angles (FPA), airspeeds, and altitudes for a standard day as given in U.S. Standard Atmosphere, 1962. The table was prepared assuming the FPA is constant prior to and during bomb release.

1.3.2.1 Pitch Attitude. The Angle of Attack table can be used to determine the resultant pitch attitude when attempting to achieve the FPA provided in the Sight Angle charts and Delivery Data tables. The angle of attack from the table is added to the FPA to determine the pitch on the attitude gyro. The angle of attack is given in the table in mils. One degree is approximately 17.5 mils; so to determine the angle in degrees, divide the values in the table by 17.5.

SAMPLE PROBLEM:

Release Altitude	2000 feet
Release Airspeed	450 KTAS
Release FPA	-20É
1. Angle of Attack (from table)	36 mils
2. Convert to degrees	2.1É(36 mils/17.5)
3. Release FPA	-20É
+ Angle of Attack	2.1É
= Pitch Attitude	-17.9É

1.3.3 Sight Angle Corrections

1.3.3.1 Target Elevation. The Angle of Attack table can also be used to correct the sight angle setting obtained from the Sight Angle chart or Delivery Data table when the target is above sea level. This is accomplished by subtracting the angle of attack for the release altitude above the target (ft-AGL) from the angle of attack for the release altitude above sea level (ft-MSL) and adding the result to the sight angle obtained from the Sight Angle chart or Delivery Data table.

SAMPLE PROBLEM:

Weapon	MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY
Release Altitude	2000 feet
Release Airspeed	450 KTAS
Release FPA	-20É
Target Altitude	5000 ft-MSL
Aircraft Gross Weight 24,000 pounds	
1. Sight Angle for Sea Level Target (from Sight Angle chart)	162 mils
2. Release Altitude + Target Altitude = Release Altitude	2000 ft-AGL 5000 ft-MSL 7000 ft-MSL
3. Angle of Attack at 7,000 ft-MSL	41 mils

4. Angle of Attack at 2,000 ft-MSL	36 mils
5. Difference between 3 and 4	5 mils
6. Results from step 1	162 mils
+ Results from step 5	5 mils
= Adjusted Sight Angle	167 mils

1.3.3.2 Gross Weight Correction. The pilot must correct the depressed sight line digit displayed on the HUD for expected aircraft gross weight at the time of weapon release. Sight angle correction for parallax (See Figure 1-8) has been accomplished in all data presented in this manual and in the Pocket Guide. The last column of the Angle of Attack Table (Figure 1-7) presents a gross weight correction in mils per 1,000 pounds change in gross weight from the standard gross weight of 24,000 pounds. The sight angle obtained from the Sight Angle Chart or the Delivery Data Table can be adjusted by adding the gross weight correction to the sight angle for each 1,000 pounds over 24,000 pounds or subtracting the gross weight correction from the sight angle for each 1,000 pounds under 24,000 pounds.

SAMPLE PROBLEM:

Weapon	MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY
Release Altitude	2000 feet
Release Airspeed	450 KTAS
Release FPA	-20É
Aircraft Gross Weight 27,000 pounds	
1. Sight Angle (from Sight Angle chart)	162 mils
2. AOA Correction for 1000 pounds	1.5 mils
3. (1.5 mils/1000 lbs) ý (3000 lbs)	4.5 mils
4. Total of 1+3 = Adjusted Sight Angle	166.5 mils

1.3.4 Ejection Velocity Correction. The ejection velocity table (see Figure 1-10) provides ejection velocities for each weapon released from parent stations. ITER ejection velocities are provided for reference.

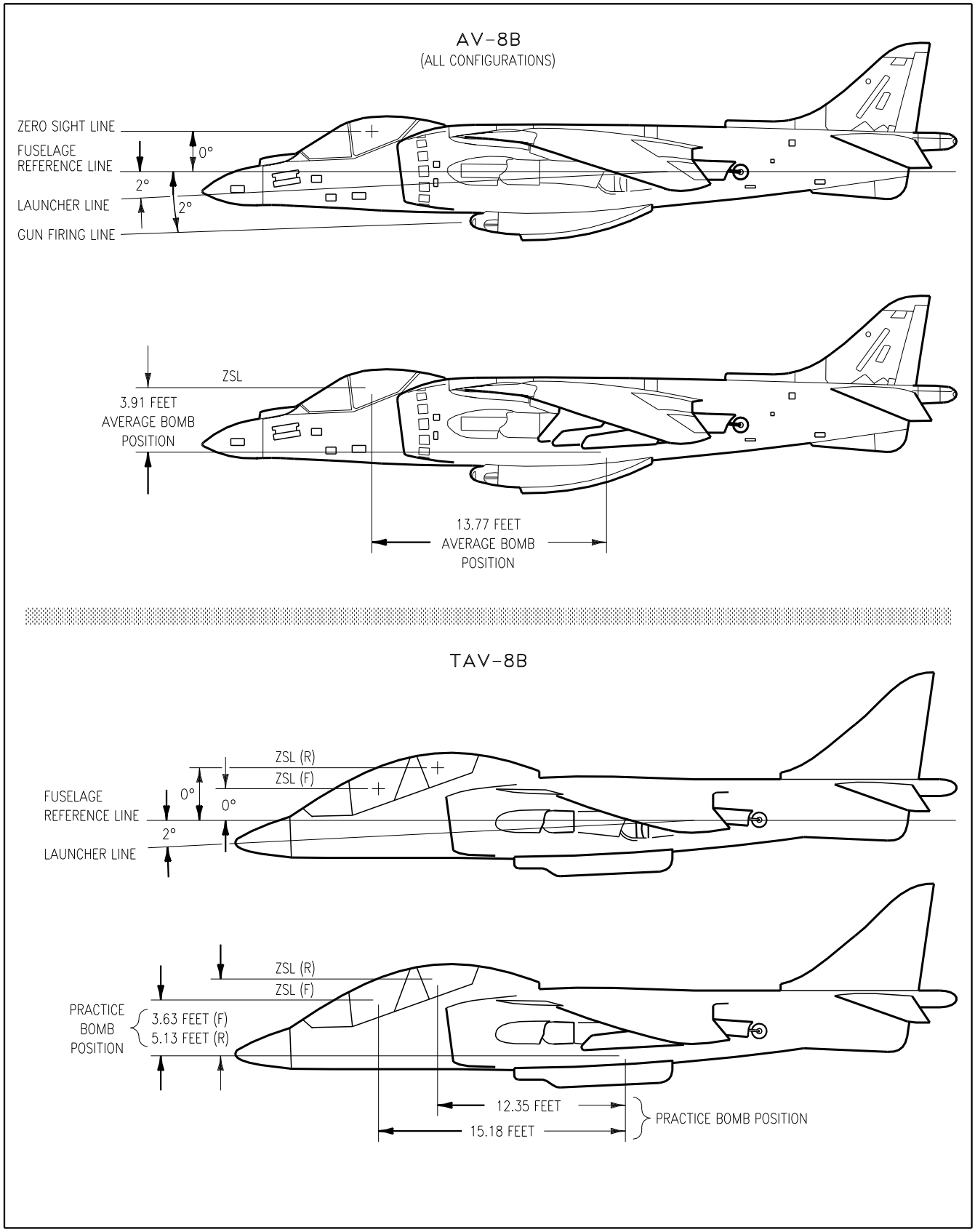

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Figure 1-6. Reference Lines

AV-8B ANGLE OF ATTACK TABLE (MILS)

RLSE FLT PATH (DEG)	AIRSPEED (KTAS)	DENSITY ALTITUDE IN 1000 FEET																AOA CORRECTION DUE TO GROSS WEIGHT CHANGE (MILS/1000 LBS.)
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	450	36	37	38	39	40	41	42	43	44	45	46	48	49	50	52	53	1.6
	500	29	29	30	31	32	32	33	34	35	36	37	38	39	40	42	42	1.3
	550	21	21	22	22	22	23	23	24	24	25	25	26	27	27	28	29	1.1
-10	450	36	37	38	38	39	40	41	42	43	45	46	47	48	50	51	52	1.6
	500	28	29	30	30	31	32	33	34	34	35	36	37	38	39	40	41	1.3
	550	21	21	21	22	22	22	23	23	24	24	25	26	26	27	28	28	1.0
-20	450	35	35	36	37	38	39	40	41	42	43	44	45	46	48	49	50	1.5
	500	27	28	29	29	30	31	31	32	33	34	35	36	37	38	39	40	1.2
	550	20	20	20	21	21	21	22	22	23	23	24	24	25	25	26	27	1.0
-30	450	32	33	34	34	35	36	37	38	39	40	41	42	43	44	45	47	1.4
	500	25	26	27	27	28	29	29	30	31	31	32	33	34	35	36	37	1.1
	550	18	18	19	19	19	20	20	20	21	21	22	22	23	23	24	24	0.9
-45	450	27	28	29	29	30	31	31	32	33	33	34	35	36	37	38	39	1.1
	500	22	22	23	23	24	24	25	25	26	26	27	28	28	29	30	31	0.9
	550	15	15	15	16	16	16	16	17	17	17	17	18	18	19	19	19	0.7
-60	450	21	21	22	22	23	23	24	24	25	25	26	26	27	28	28	29	0.8
	500	17	17	17	17	18	18	19	19	19	20	20	21	21	22	22	23	0.6
	550	11	11	11	11	11	11	11	11	12	12	12	12	12	12	13	13	0.5

RLSE FLT PATH (DEG)	AIRSPEED (KTAS)	DENSITY ALTITUDE IN 1000 FEET											AOA CORRECTION DUE TO GROSS WEIGHT CHANGE (MILS/1000 LBS)
		16	17	18	19	20	21	22	23	24	25	26	
0	450	55	56	58	60	61	63	65	67	69	72	74	2.5
	500	43	44	45	46	48	49	50	52	53	55	57	2.0
	550	29	30	31	32	33	34	35	37	38	40	41	1.6
-10	450	54	55	57	59	61	62	64	66	68	71	73	2.4
	500	43	44	45	46	47	48	50	51	53	54	56	1.9
	550	29	30	31	32	32	33	35	36	38	39	41	1.6
-20	450	52	53	55	56	58	60	62	64	66	68	70	2.3
	500	41	42	43	44	45	46	47	49	50	52	53	1.9
	550	26	26	29	30	31	32	33	34	36	37	39	1.5
-30	450	48	49	51	52	54	55	57	59	61	63	65	2.1
	500	38	39	40	41	42	43	44	45	46	48	49	1.7
	550	25	26	26	27	28	29	30	31	32	34	35	1.4
-45	450	40	41	42	44	45	46	47	49	50	52	54	1.7
	500	31	32	33	34	34	35	36	37	38	39	40	1.4
	550	20	20	21	21	22	23	23	24	25	27	26	1.2
-60	450	30	31	31	32	33	34	35	36	37	38	39	1.2
	500	23	24	24	25	25	26	26	27	27	28	29	1.0
	550	13	13	14	14	14	14	15	16	17	17	18	0.8

AIRCRAFT GROSS WEIGHT = 24,000 LBS.

Figure 1-7. Angle of Attack Table

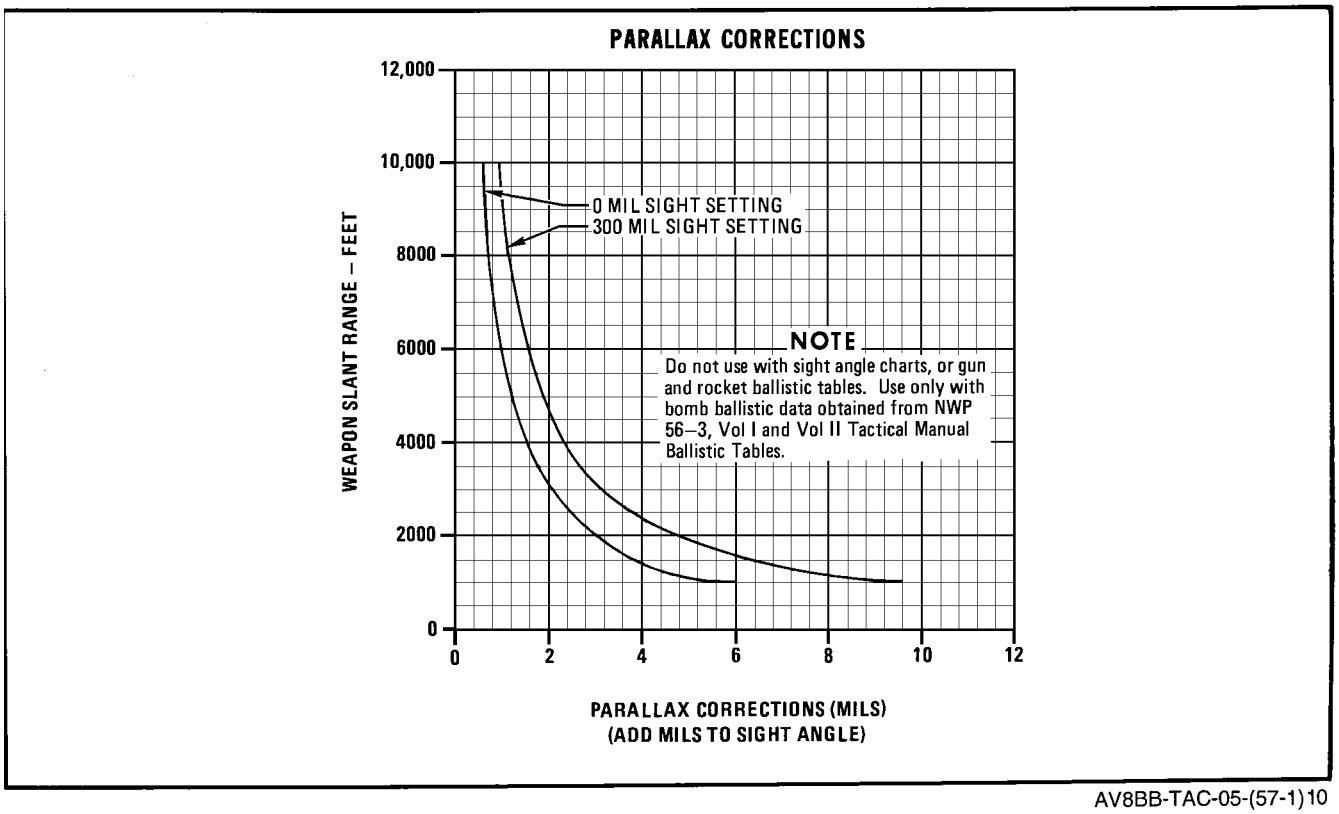

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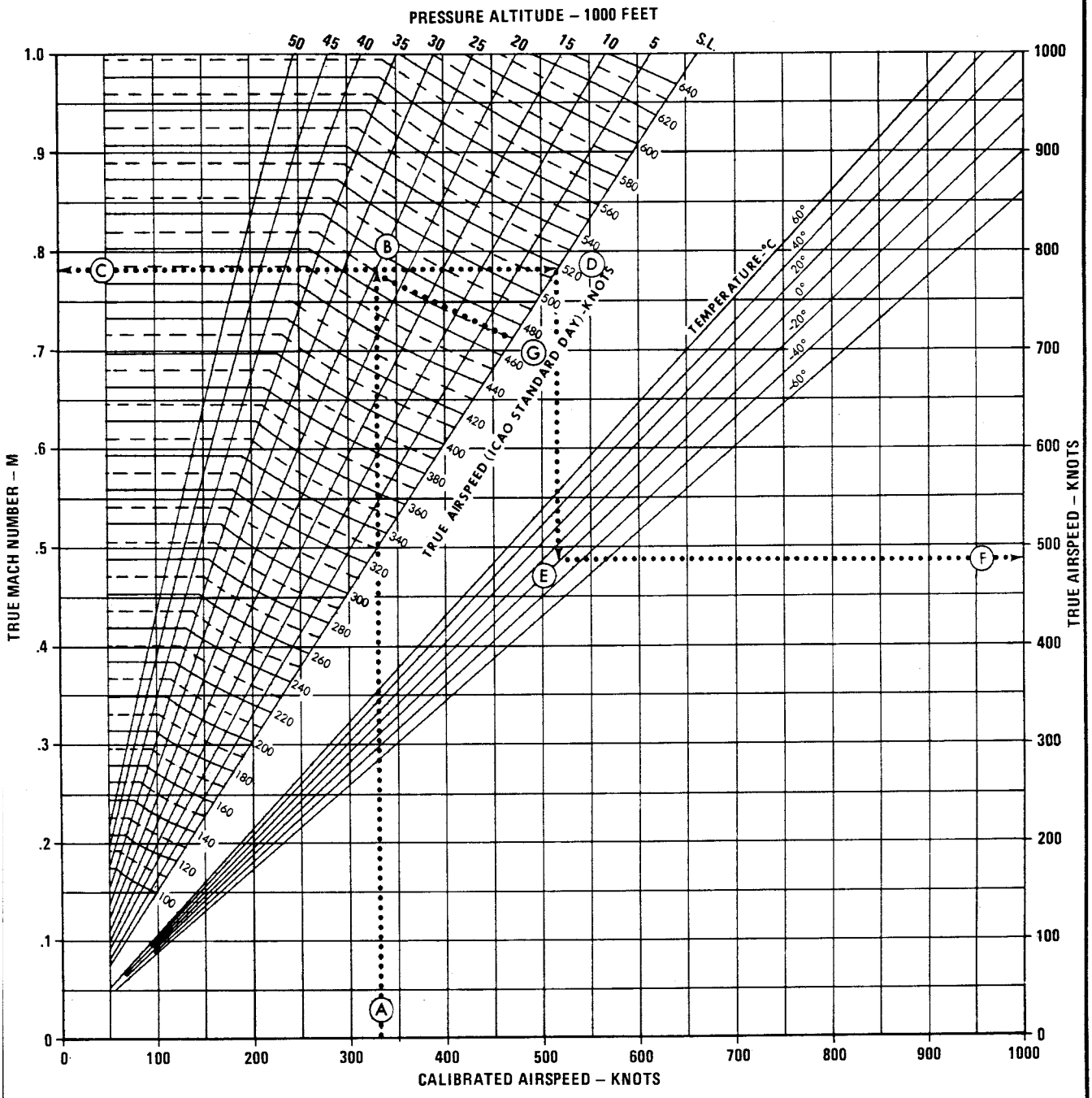
Figure 1-8. Parallax Correction Chart

AIRSPEED CONVERSION



EXAMPLE

A = CAS = 330 KNOTS
B = ALTITUDE = 25,000 FEET
C = MACH = .782
D = SEA LEVEL LINE
E = TEMPERATURE = –20°C
F = TAS = 486 KNOTS
G = TAS (STANDARD DAY) = 472 KNOTS

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Figure 1-9. Airspeed Conversion Chart

AV-8B EJECTION VELOCITY TABLE

WEAPON	EJECTION VELOCITY (FT/SEC)*	
	PARENT RACK	ITER **
MK-81 CONICAL FIN	18.5	7.4
MK-81 MK-14 FIN (LOW DRAG)	18.5	NC
MK-81 MK-14 FIN (HIGH DRAG)	18.5	7.4
MK-82 BSU-33 CONICAL FIN	12.7	4.5
MK-82 MK-15 FIN (LOW DRAG)	12.7	4.5
MK-82 MK-15 FIN (HIGH DRAG)	12.7	4.5
MK-82 BSU-86/B FIN (LOW DRAG)	12.7	4.5
MK-82 BSU-86/B FIN (HIGH DRAG)	12.7	4.5
MK-83 CONICAL FIN	8.4	2.6
MK-83 BSU-85/B AIR (LOW DRAG)	8.4	2.6
MK-83 BSU-85/B AIR (HIGH DRAG)	8.4	2.6
MK-77 FIRE BOMB	12.7	NC
MK-20 ROCKEYE II	13.1	8.0
CBU-78/B GATOR	13.2	8.0
GBU-12/B	11.3	NC
GBU-16/B	7.8	NC
MK-76 MOD 5 PRACTICE BOMB	NC	0.0
BDU-33D/B PRACTICE BOMB	NC	0.0
MK-106 MOD 5 PRACTICE BOMB	NC	0.0
BDU-48/B PRACTICE BOMB	NC	0.0
MK 58 MARINE MARKER	NC	0.0

NOTES : * AVERAGE VALUES FROM SMS
** WEIGHTED AVERAGE BETWEEN SHOULDER AND CENTER STATION
NC NOT CLEARED

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Figure 1-10. Ejection Velocity Table

1.3.5 Altimeter Lag and HUD Lag. Data are presently unavailable to determine heads down altimeter lag. HUD altitude lag is insignificant and no corrections are required.

1.3.6 Dive Recovery Charts. Altitude loss during dive recovery is defined as the altitude lost from beginning of pilot/aircraft response delay to the minimum altitude point (flight path angle becomes non-negative) during pullup. The dive recovery charts (Figure 1-11) are based on the following:

1. An aircraft weight of 24,000 pounds.

2. Constant release/recovery throttle setting.

3. 1.00-second pilot/aircraft response delay.

4. Linear g-buildup times are as follows:

G's	Buildup Time (sec.)
4	1.25
5	1.50
6	1.75
7	2.00

5. The charts are based on the indicated normal acceleration until the maximum lift coefficient is obtained. In this event, the acceleration is relaxed such that the aircraft flies at the point of maximum lift.

6. Zero degree nozzle angle (i.e., AFT position).

7. Auto Flap Configuration.

8. Standard day as given in U.S. Standard Atmosphere, 1962.

WARNING

The altitude loss at higher altitudes may be greater than the altitude loss presented in the charts. Terrain clearance factors must be added to values obtained from dive recovery charts for use in terrain avoidance calculations.

1.3.7 Aircraft Downrange Travel and Altitude Loss Charts. Aircraft downrange travel altitude loss charts are presented in Figure 1-12. A chart is included for each of the following airspeeds: 450, 500, 550 and 600 KTAS. Each chart can be used to determine the horizontal and vertical distance the aircraft travels for intervalometer settings up to 500 milliseconds. To determine the total distance traveled or total altitude loss during a multiple release, multiply the value obtained from the chart by one less than the total number of release weapons (N-1).

WARNING

Ensure multiple release deliveries of general purpose bombs do not exceed the maximum total stick length as presented in Figure 3-18.

1.3.8 Strafing Downrange Travel and Altitude Loss Charts. The strafing downrange travel and altitude loss charts (see Figure 1-13) are used to determine the distance traveled during strafing bursts of various durations, and at 400, 450, 500, 550 and 600 KTAS.

1.3.9 Safe Escape Tables. The Safe Escape tables provide the minimum release altitude, sight angle, and recovery height for delivery airspeeds of 450, 500, and 550 KTAS. When the weapon is non-frag producing, the Safe Escape table identifies the terrain avoidance parameters. The Safe Escape tables were computed based on the following:

1. Aircraft gross weight of 24,000 pounds.

2. A minimum release altitude resulting in no penetration of fragment envelope.

3. No probability of fragment hit on the delivery aircraft, considering the weapon impact angle and ±10É deviations.

4. 1.00-second pilot/aircraft response delay after weapon release, during which the aircraft maintains a straight flight path.

5. For level release with a straight and level recovery, constant release/recovery throttle setting.

6. For level breakaway recovery, 1.50-second linear g buildup to 5g and 1.75-second buildup to 6g.

7. Recovery maneuver for dive release is based on wings level pullup to a +15 É FPA for runout.

8. Standard day as given in U.S. Standard Atmosphere, 1962.

WARNING

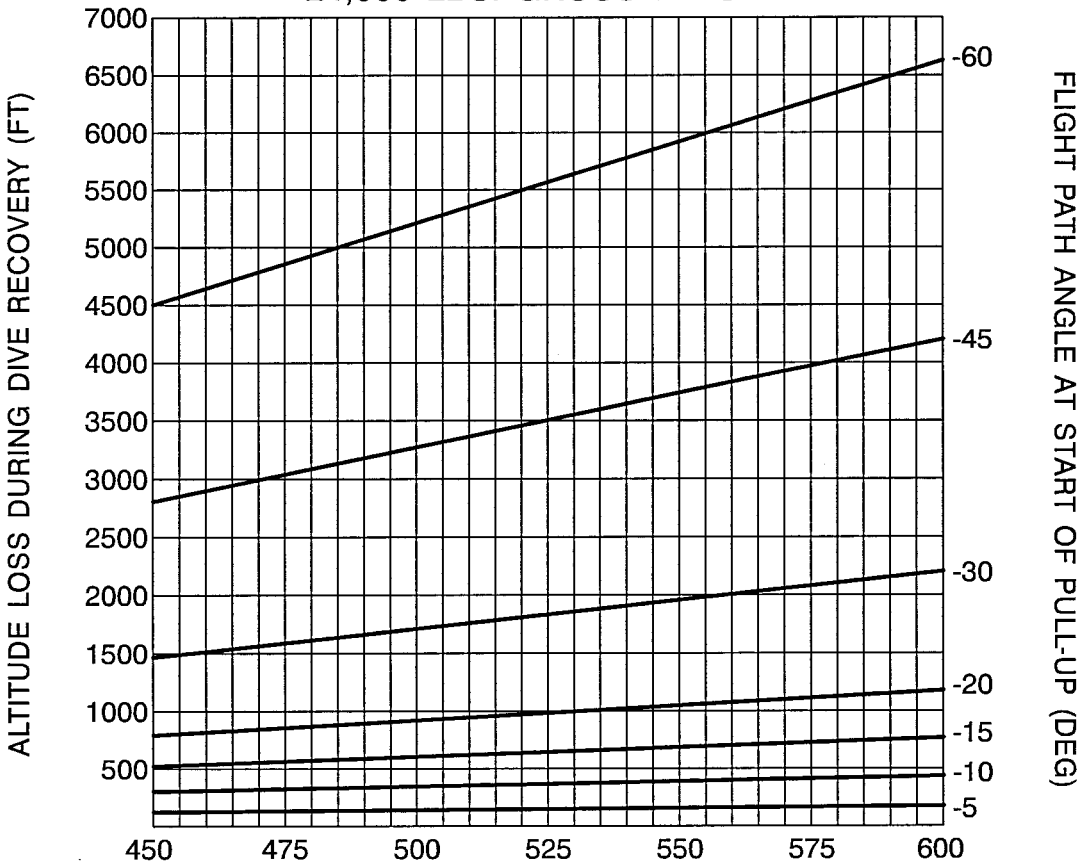
When the same minimum release is stated for a different type release or recovery maneuver, the reason is due to one of the following:

1. Terrain avoidance precludes aircraft penetration of the fragment envelope.

2. The fragment hit probability level for no penetration of the fragment envelope is determined in 100 foot increments.

AV-8B DIVE RECOVERY CHART

4.0 g SEA-LEVEL TARGET ALTITUDE
24,000 LBS. GROSS WEIGHT



WARNING: WHEN USING THIS DATA FOR TERRAIN AVOIDANCE, YOU MUST INCLUDE THE APPROPRIATE TERRAIN CLEARANCE FACTORS (TCF) GIVEN BELOW:

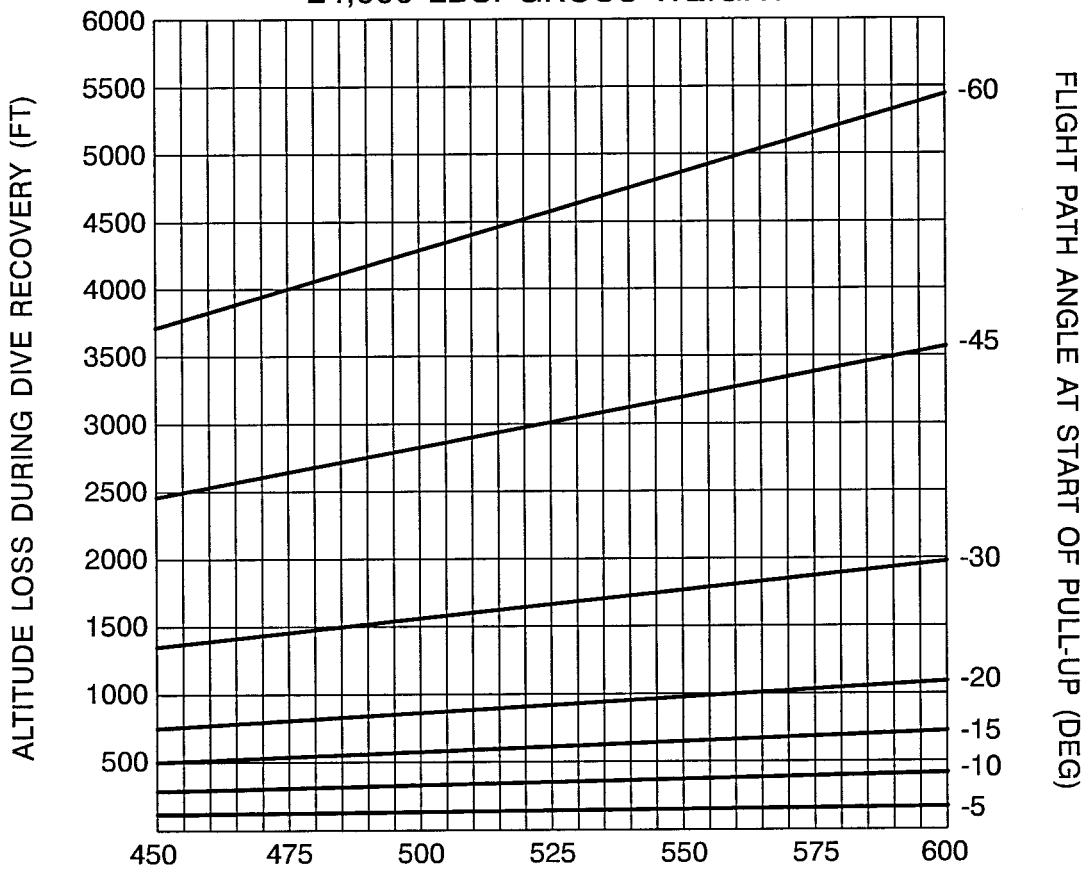
RELEASE FPA (DEG)	TCF (FT)
-5	150
-10	200
-15	250
-20	300
-30	500
-45	700
-60	1000

AV8BB-TAC-05-(84-1)10

Figure 1-11. Dive Recovery Charts (Sheet 1 of 4)

AV-8B DIVE RECOVERY CHART

5.0 g SEA-LEVEL TARGET ALTITUDE
24,000 LBS. GROSS WEIGHT



WARNING: WHEN USING THIS DATA FOR TERRAIN AVOIDANCE, YOU MUST INCLUDE THE APPROPRIATE TERRAIN CLEARANCE FACTORS (TCF) GIVEN BELOW:

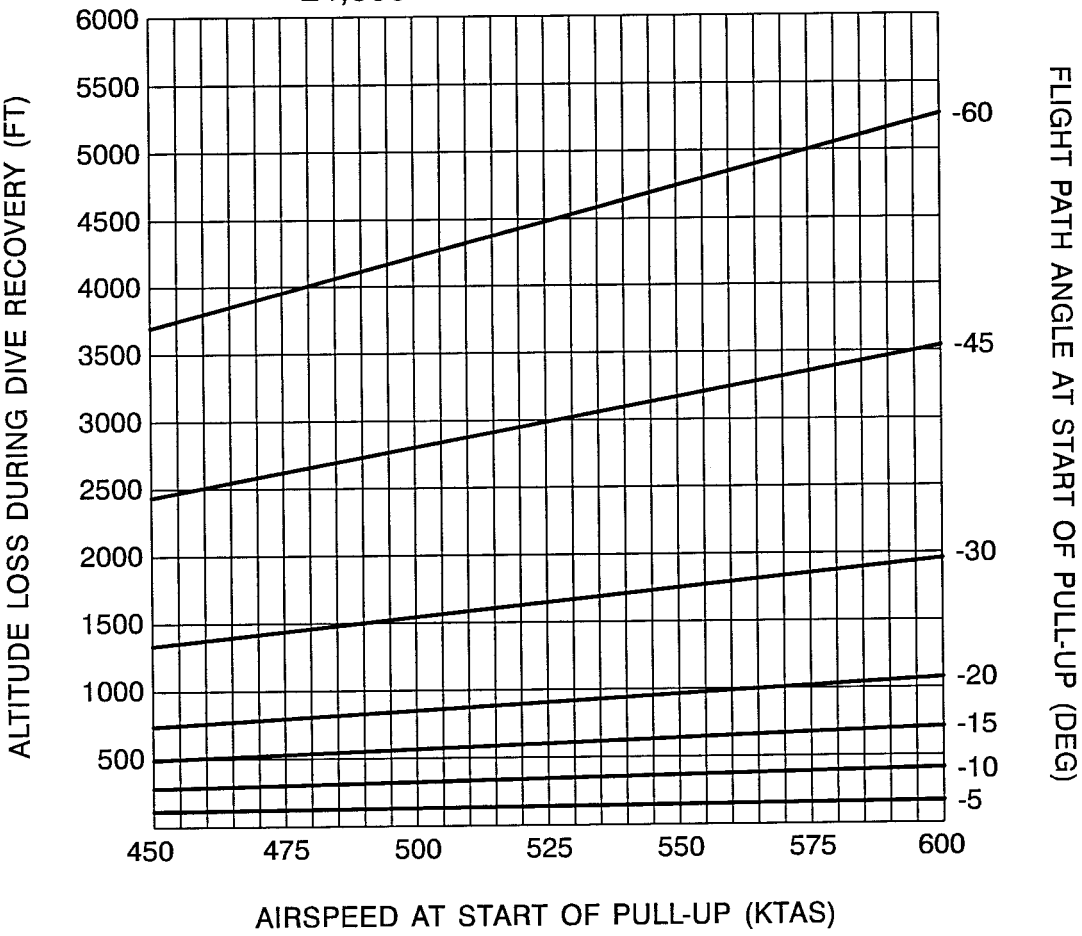
RELEASE FPA (DEG)	TCF (FT)
-5	150
-10	200
-15	250
-20	300
-30	500
-45	700
-60	1000

AV8BB-TAC-05-(84-2)10

Figure 1-11. Dive Recovery Charts (Sheet 2 of 4)

AV-8B DIVE RECOVERY CHART

6.0 g SEA-LEVEL TARGET ALTITUDE
24,000 LBS. GROSS WEIGHT

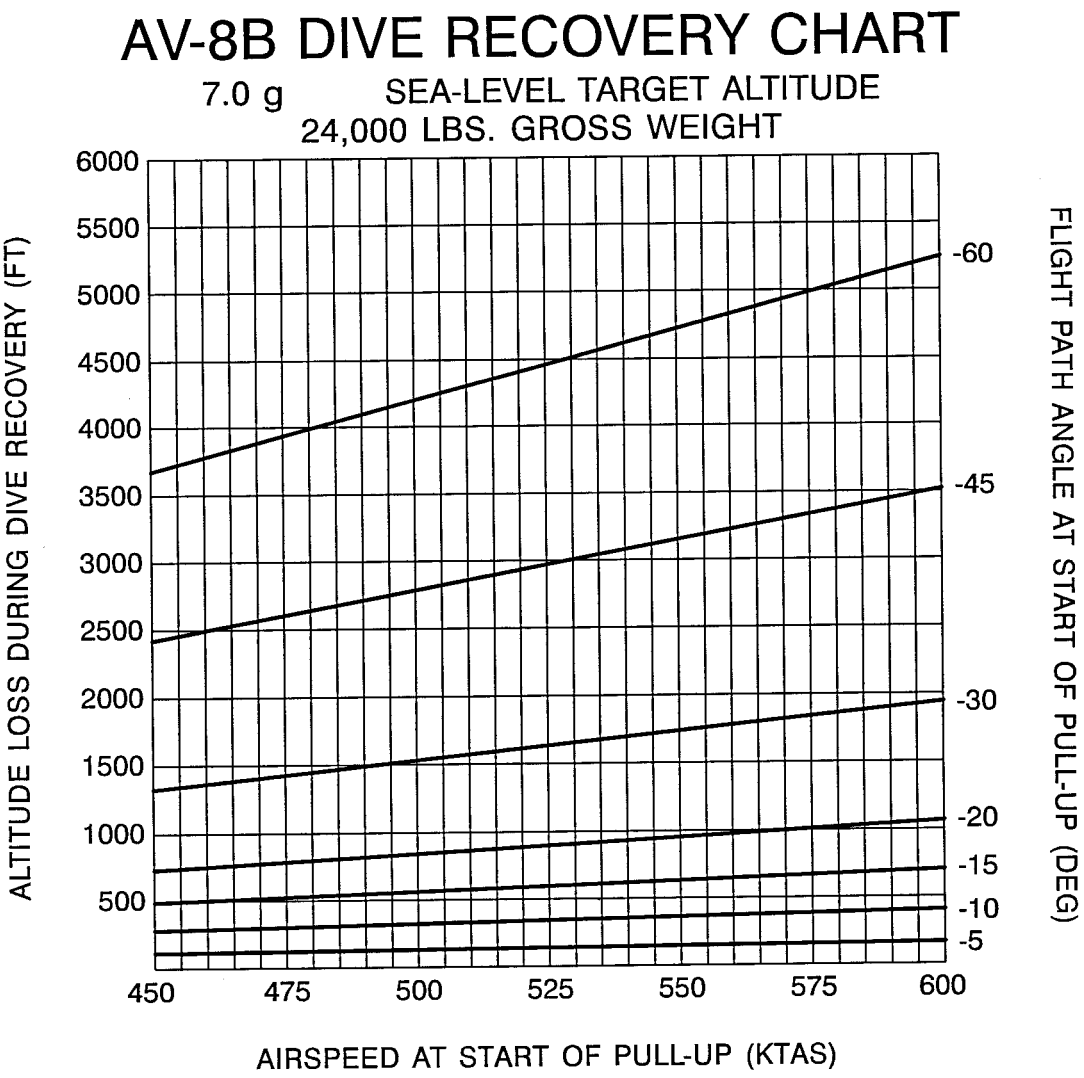


WARNING: WHEN USING THIS DATA FOR TERRAIN AVOIDANCE, YOU MUST INCLUDE THE APPROPRIATE TERRAIN CLEARANCE FACTORS (TCF) GIVEN BELOW:

RELEASE FPA (DEG)	TCF (FT)
-5	150
-10	200
-15	250
-20	300
-30	500
-45	700
-60	1000

AV8BB-TAC-05-(84-3)10

Figure 1-11. Dive Recovery Charts (Sheet 3 of 4)

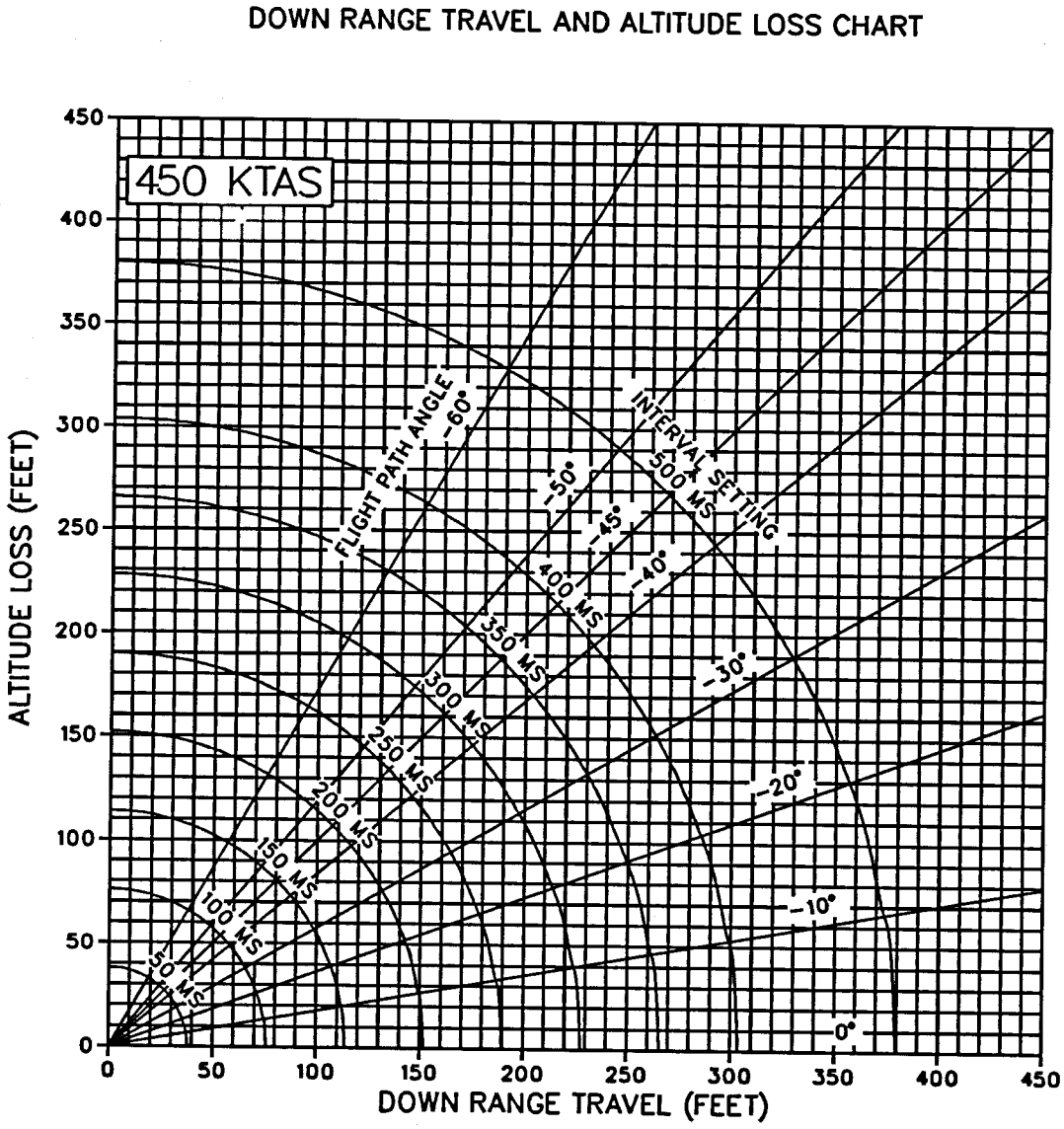


WARNING: WHEN USING THIS DATA FOR TERRAIN AVOIDANCE, YOU MUST INCLUDE THE APPROPRIATE TERRAIN CLEARANCE FACTORS (TCF) GIVEN BELOW:

RELEASE FPA (DEG)	TCF (FT)
-5	150
-10	200
-15	250
-20	300
-30	500
-45	700
-60	1000

AV8BB-TAC-05-(84-4)10

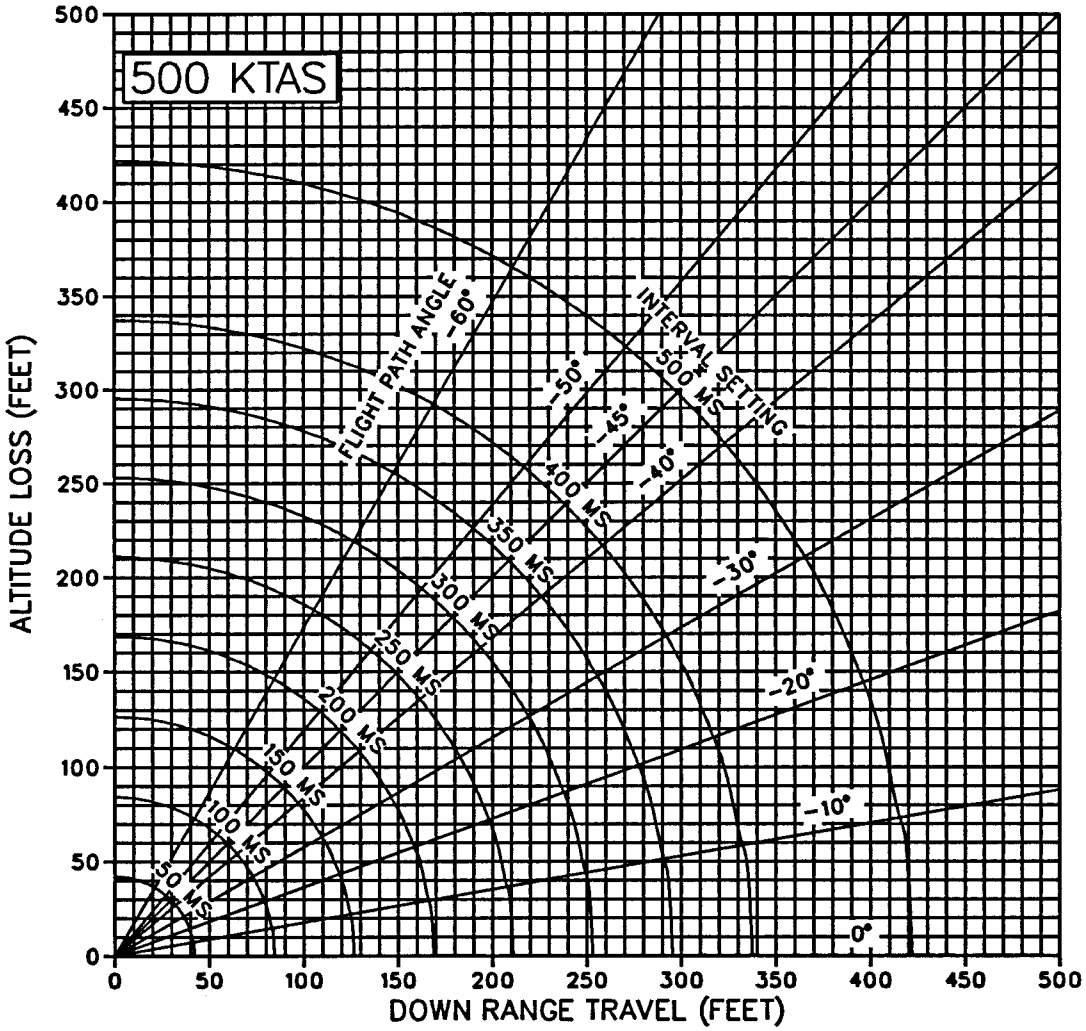
Figure 1-11. Dive Recovery Charts (Sheet 4 of 4)



AV8BB-TAC-05-(62-1)10

Figure 1-12. Aircraft Downrange Travel and Altitude Loss (Sheet 1 of 4)

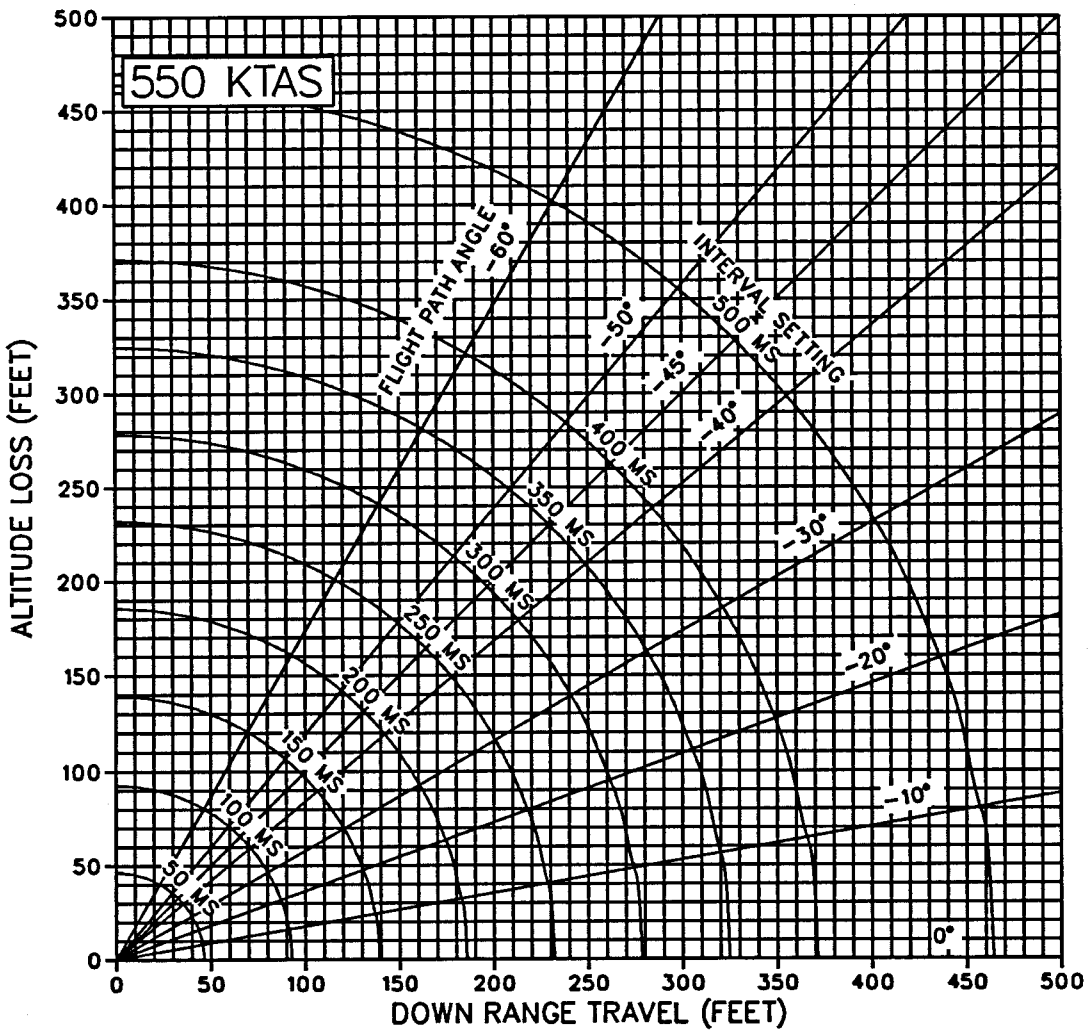
DOWN RANGE TRAVEL AND ALTITUDE LOSS CHART



AV8BB-TAC-05-(62-2)10

Figure 1-12. Aircraft Downrange Travel and Altitude Loss (Sheet 2 of 4)

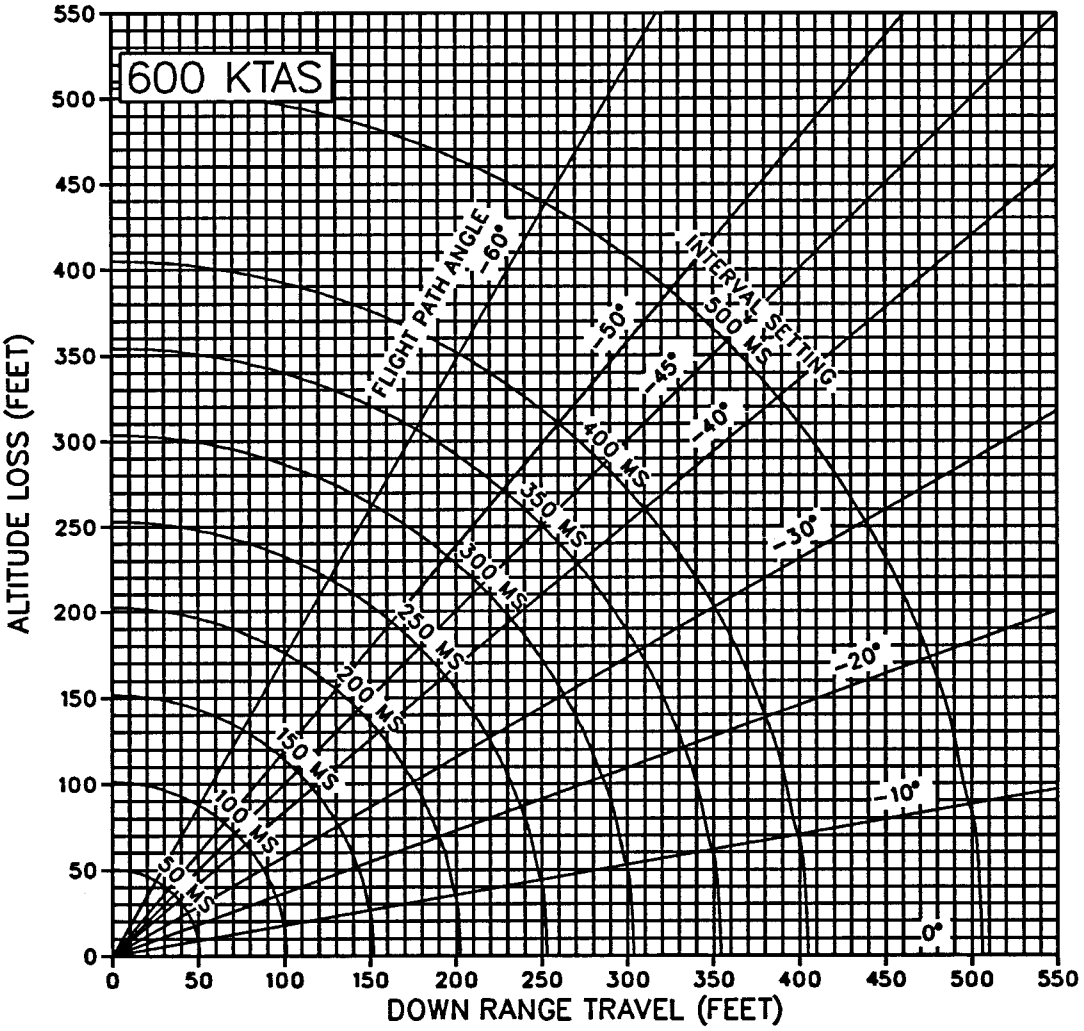
DOWN RANGE TRAVEL AND ALTITUDE LOSS CHART



AV8BB-TAC-05-(62-3)10

Figure 1-12. Aircraft Downrange Travel and Altitude Loss (Sheet 3 of 4)

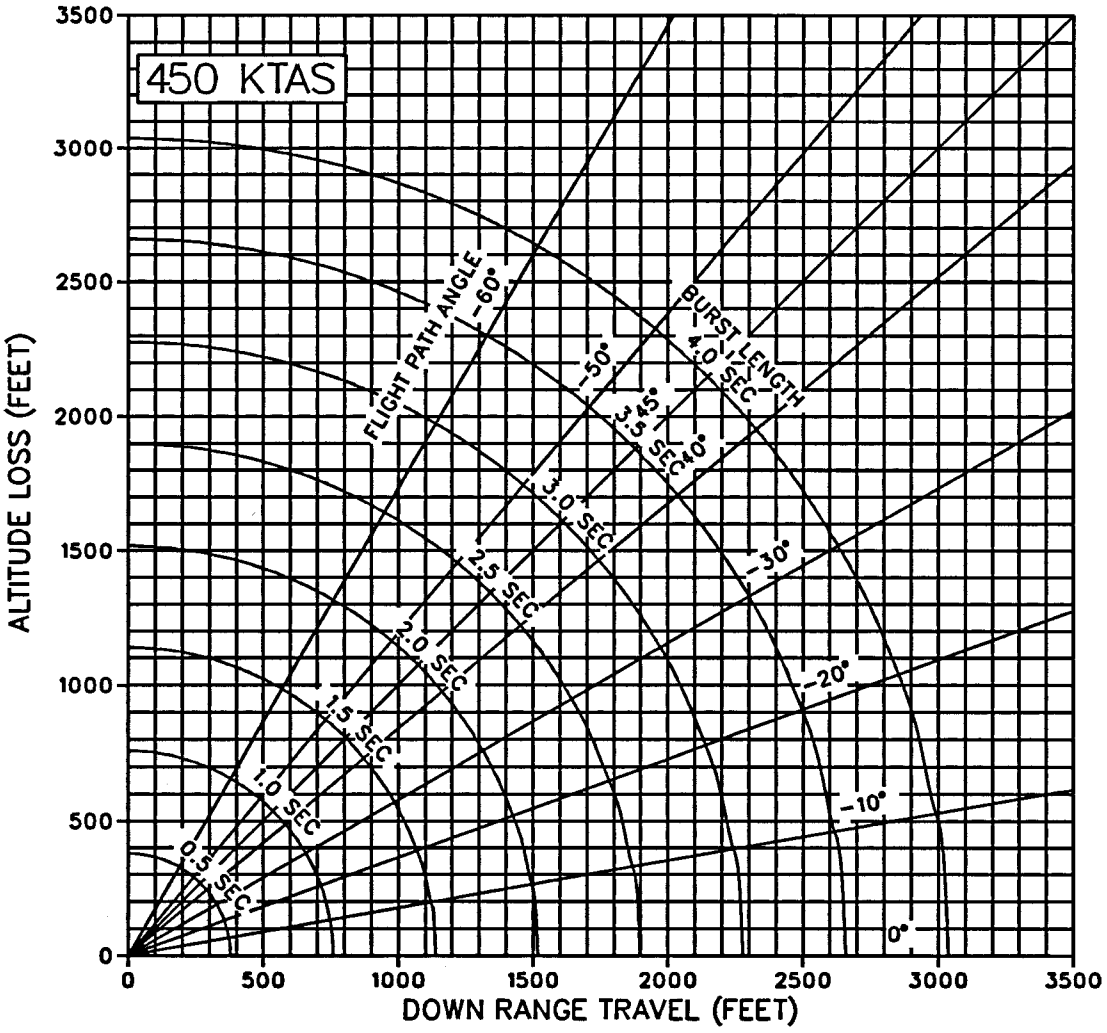
DOWN RANGE TRAVEL AND ALTITUDE LOSS CHART



AV8BB-TAC-05-(62-4)10

Figure 1-12. Aircraft Downrange Travel and Altitude Loss (Sheet 4 of 4)

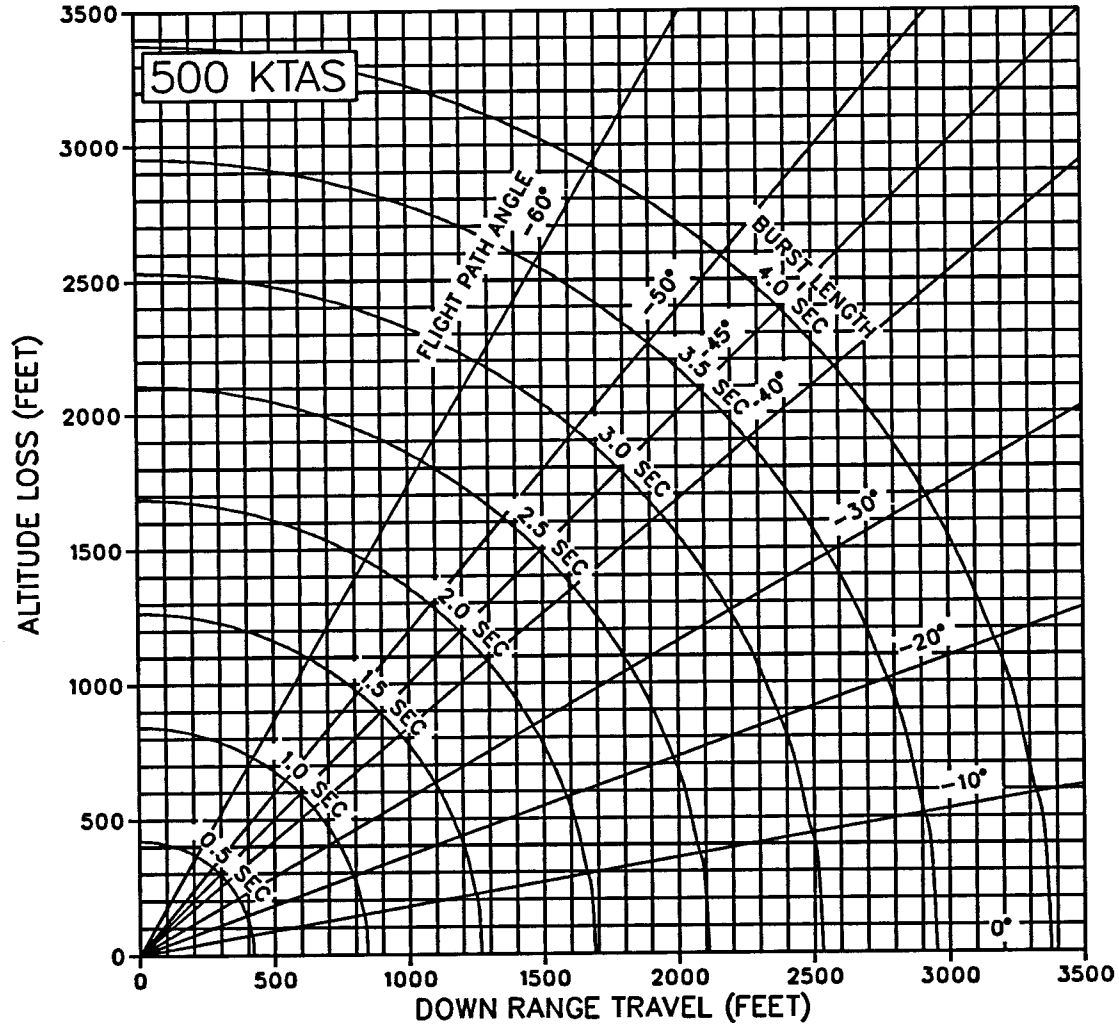
STRAFING DOWN RANGE TRAVEL AND ALTITUDE LOSS CHART



AV8BB-TAC-05-(63-1)10

Figure 1-13. Strafing Downrange Travel and Altitude Loss (Sheet 1 of 4)

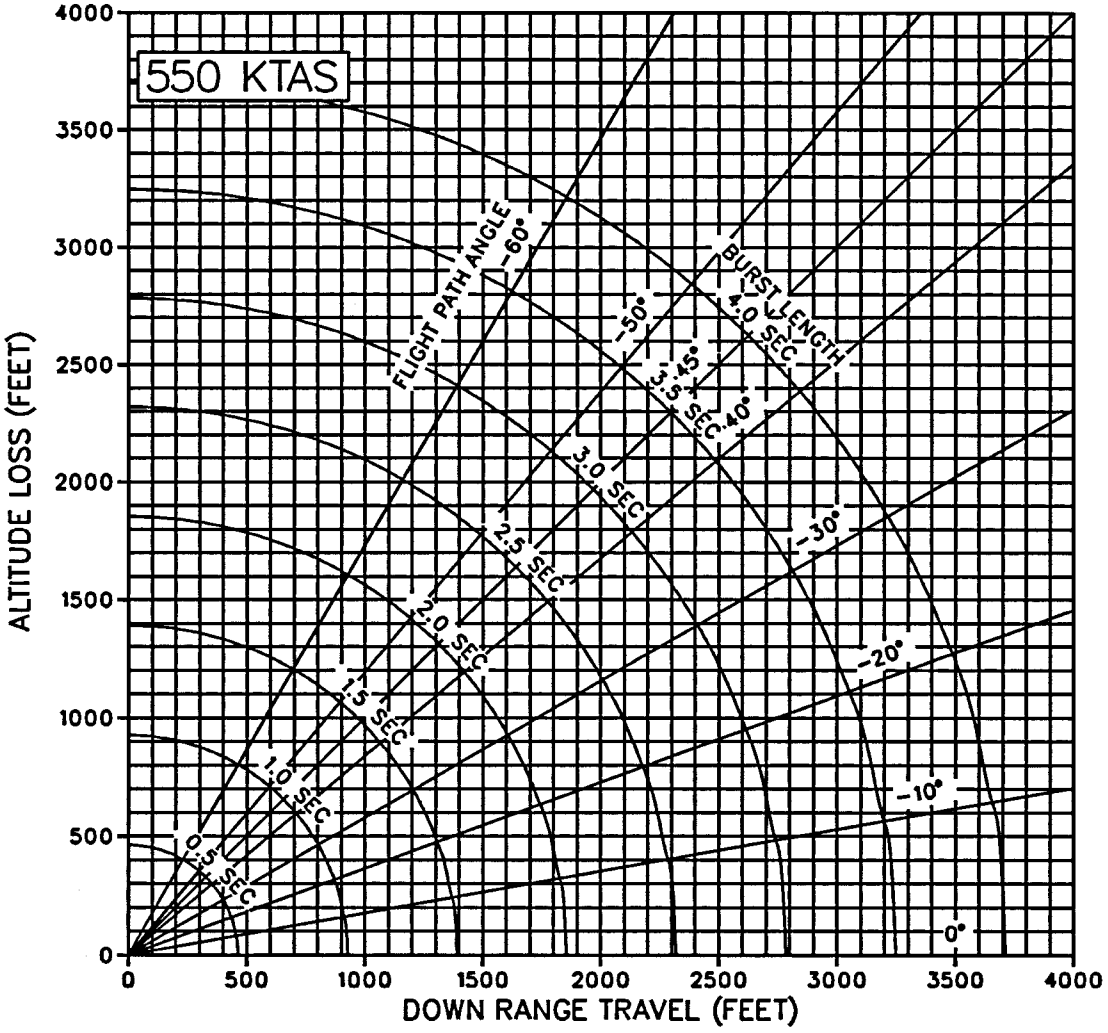
STRAFING DOWN RANGE TRAVEL AND ALTITUDE LOSS CHART



AV8BB-TAC-05-(63-2)10

Figure 1-13. Strafing Downrange Travel and Altitude Loss (Sheet 2 of 4)

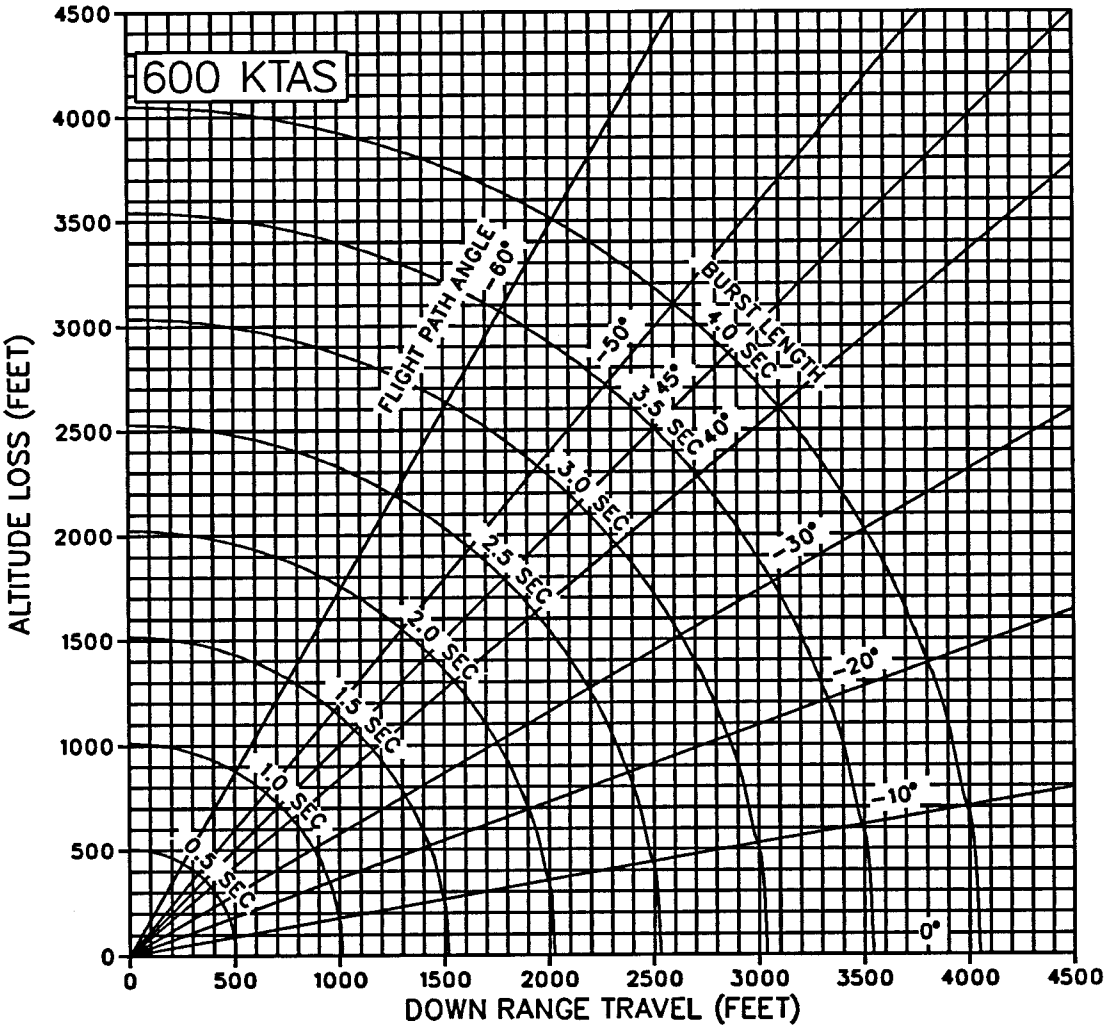
STRAFING DOWN RANGE TRAVEL AND ALTITUDE LOSS CHART



AV8BB-TAC-05-(63-3)10

Figure 1-13. Strafing Downrange Travel and Altitude Loss (Sheet 3 of 4)

STRAFING DOWN RANGE TRAVEL AND ALTITUDE LOSS CHART



AV8BB-TAC-05-(63-4)10

Figure 1-13. Strafing Downrange Travel and Altitude Loss (Sheet 4 of 4)

1.3.10 Fragment Envelope Chart

1.3.10.1 Dynamic Fragment Envelope Charts. The Dynamic Fragment Envelope charts include an explosion weapon impact angle and velocity with the most hazardous fragment (the heaviest fragment with the maximum velocity) being projected from the burst point regardless of the weapon delivery conditions. It also presents the aircraft position as a function of time in seconds relative to the release point and then relative to the impact/detonation point. Release altitude is the minimum release altitude for level delivery with a straight and level recovery. For rockets the release altitude is the minimum release altitude for a 5g level breakaway recovery as described for the Safe Escape tables.

WARNING

All detonations are represented at sea level. At higher target elevations, maximum fragment altitude and range will increase.

For bombs, only warhead fragments are represented. Lug, strongback, fin assembly, base plate, fuze, and nose plug fragmentation data are not available. Fragment ricochet is not considered.

For rockets, only warhead fragments are represented. Motor, fin, and case fragmentation data are not available. Live warhead fragment patterns must be used when firing rockets with inert warheads.

1.3.11 Sight Angle Charts. The Sight Angle Charts provide sight angles in mils as a function of release FPA and release altitude for various release airspeeds. The sight angle is computed to place one bomb or one rocket on target.

NOTE

In the case of the Mk 77 fire bomb, the sight angle is computed to place the beginning of the splash pattern on target. To place the center of the pattern on target, the pilot must determine the pattern size given the release conditions and adjust his delivery accordingly.

The following assumptions were made in computing the Sight Angle Charts:

1. Aircraft gross weight of 24,000 pounds.

2. Single weapon release.

3. Sea level target.

4. Standard day as given in U.S. Standard Atmosphere, 1962.

The recovery maneuvers used in determining the minimum safe release altitudes are based on a 1.00-second pilot/aircraft response delay after weapon release, during which the aircraft maintains a straight path flight. At the end of the response delay, the pilot executes a wings level linear g-buildup to 5g's in 1.50 seconds, which is maintained to achieve a +15É FPA for run-out. For a 0É (level) release, a 5g level breakaway to a 90É heading change is executed. Figure 1-14 is an example of a Sight Angle Chart. The numbered items indicate the following:

1. The FPA curves are used in conjunction with release altitude to obtain the sight angle. The curves are terminated at the minimum safe release altitude.

2. The time of fall curves define the release altitude required for the fuze to function at a given time. See Figure 3-13 to determine the minimum required release altitude for various fuze arming times.

3. The terrain avoidance curve is a solid bold line and defines the minimum release altitude for terrain clearance as a function of the FPA. Requirements for aircraft recovery above the

terrain are given for FPA as follows:

Flight Path Angle (degrees)	Terrain Clearance Altitude (feet)
0	100
–5	150
–10	200
–15	250
–20	300
–30	500
–40, –45	700
–50, –60	1000

4. The dashed line presents the minimum safe release altitude for fragment avoidance as a function of FPA. These altitudes are based on: no penetration of the fragment envelope by the delivery aircraft.

NOTE

The fragment and terrain avoidance curves were computed based on constant release/recovery throttle setting during recovery. Minimum altitudes for both fragment and terrain avoidance are computed with the most restrictive altitude being presented in the chart and with the same assumptions as specified in paragraph 2.

5. The unsafe release area defines the release parameters which will result in serious damage to the delivery aircraft.

6. The airspeed limitation line defines the altitude at which the velocity in knots true airspeed equals the maximum release velocity given in knots calibrated airspeed in the External Stores Limitation table, in chapter 5. Below the indicated altitude, on a standard day, and at the given true airspeed, the maximum authorized release airspeed will be exceeded. In some cases, the maximum authorized release airspeed was exceeded before any data on the chart could be used. These charts were not put into the tactical manual.

7. The ejection velocity value defines the velocity used in computation of the applicable chart. The weapon stores code is used to program the SMS.

8. BF number identifies the ballistic file used for chart preparation.

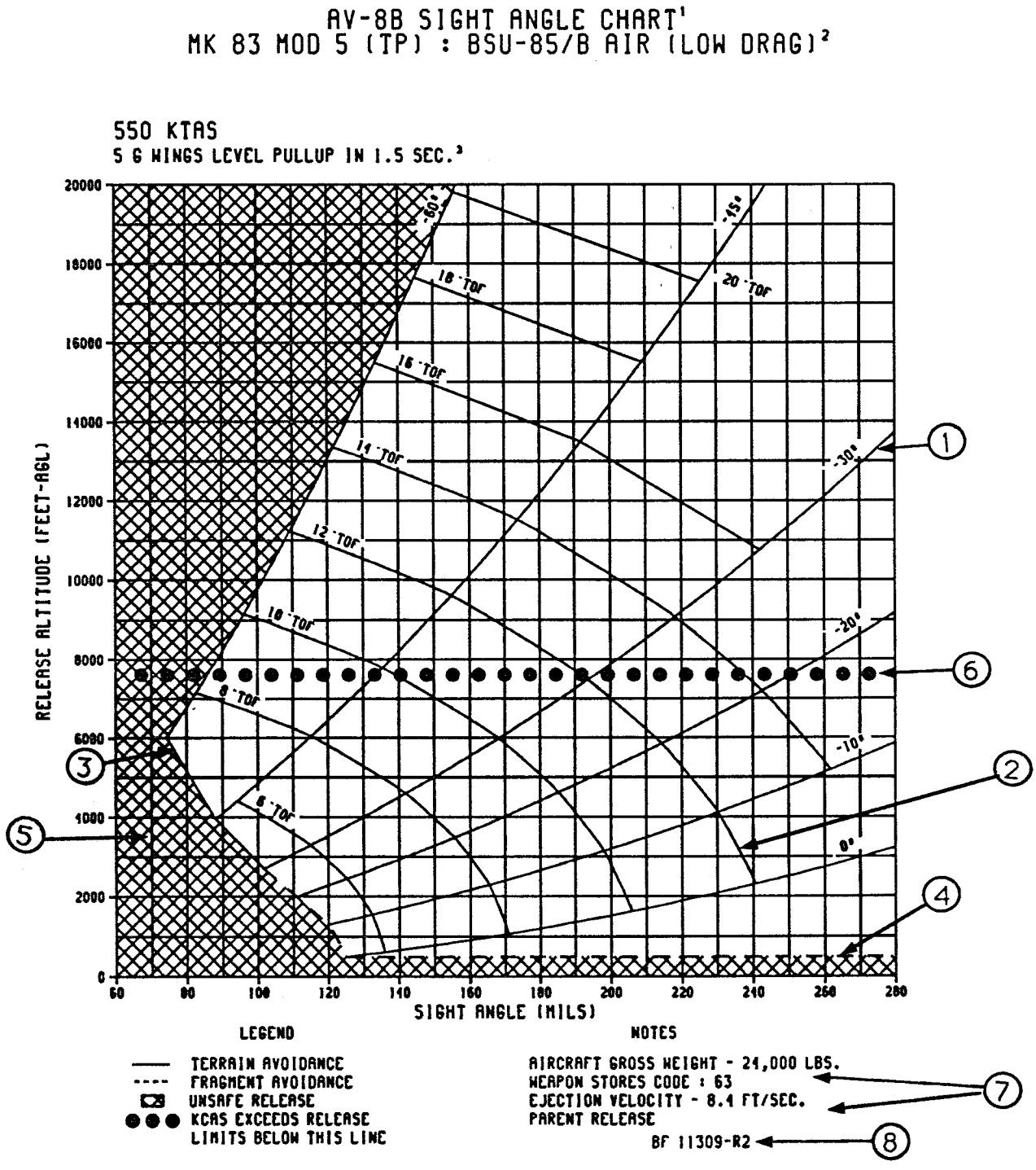


Figure 1-14. Sample Sight Angle Chart

1.3.12 Delivery Data Tables. Bomb and rocket delivery data tables (chapter 2) provide time of fall, down range travel, slant range, sight angle, trajectory drop, AOA and parallax for various dive angles, release altitudes (ft-MSL) and release airspeeds (KTAS) for single weapon delivery. Gun delivery data tables provide time of fall, down range travel, sight angle, trajectory drop, spacing on the ground, open fire and cease fire. Sight angles given for guns are for a 1.0 second burst to place the middle round on target. The GP and practice bomb, rocket, and gun delivery data tables are terminated at the minimum safe release altitudes to assure specified terrain clearances and avoidance of all predictable fragments (zero hit probability) projected from the weapon at detonation, the same assumptions as apply to the Sight Angle charts. Cluster weapon delivery data tables are terminated at an altitude to provide terrain avoidance and allow proper fuze functioning and pattern development.

1.3.13 Release Error Sensitivities Table. Bomb and rocket release error sensitivities tables (chapter 2) provide the impact error that can be expected when the planned release conditions vary from the actual release conditions. These impact errors are given in feet, (+) long or (–) short, from the target. Sensitivities to the following are presented:

1. Release airspeed (±10 knots).
2. Release altitude (±100 feet).
3. Flight path angle (±1É).
4. Sight angle setting (±5 mils).
5. Sight angle deflection (1 mil left or right).

Also presented in the Release Error Sensitivities table are range and crosswind errors for each 10 knots of relative wind. Wind correction is presented in feet and mils and assumes an aircraft fully drifting (i.e., not crabbed, pipper to bull) with the wind.

1.3.14 Loft Delivery Data Tables. Loft delivery data tables are provided for GBU-16 bomb, cluster bombs, and MK 76 practice bomb, and 5.00 - inch FFAR rockets.

Applying the GBU-16 data to other bomb/fin types (such as BSU-86, CONFIN, GBU-12, etc.) may result in errors of up to 12 percent.

A loft delivery with a wing-over escape maneuver was used. A 3g load factor (or the maximum attainable within the angle of attack limits) is maintained at the weapon's release. Immediately after release, the aircraft is rolled 135É in 2.00 seconds and recovery is initiated. Various flight path angles, release velocities and target elevations are provided.

NOTE

For cluster weapons there must be at least 1.0 second time of fall from apogee to fuze arming time or fuze functioning altitude. Also, a minimum bomblet time of fall of 3.0 seconds is necessary to ensure effective bomblet deployment.

1.4 PLANNING DOCUMENTS

The following section of the chapter provides the planning documents necessary in order to begin weapons planning. Their use has been explained earlier in this chapter.

OAS WEAPONS PLANNING CHECKLIST

1. Unless specifically assigned a loadout by the ATO, check on weapon availability.

2. Consult TACMAN/JMEMs for ordnance/fuze suitability, P_k and spacing.

3. Select the optimum/best available weapon(s), then complete the Weaponeering Worksheet (Limitations).

4. Coordinate with Target Planner for final ordnance selection and obtain delivery type, FPA and desired recovery altitude.

5. Use Weaponeering Worksheet (Single/Multiple) to calculate delivery parameters and ensure adherence to all limitations.

6. Pass 1st Bomb release altitude and DRT to Target Planner.

7. Optimize dispenser loadout and countermeasures programming based on threat analysis (chaff, flare, jam, DECM).

8. Consult TACMAN for expected RWR indications.

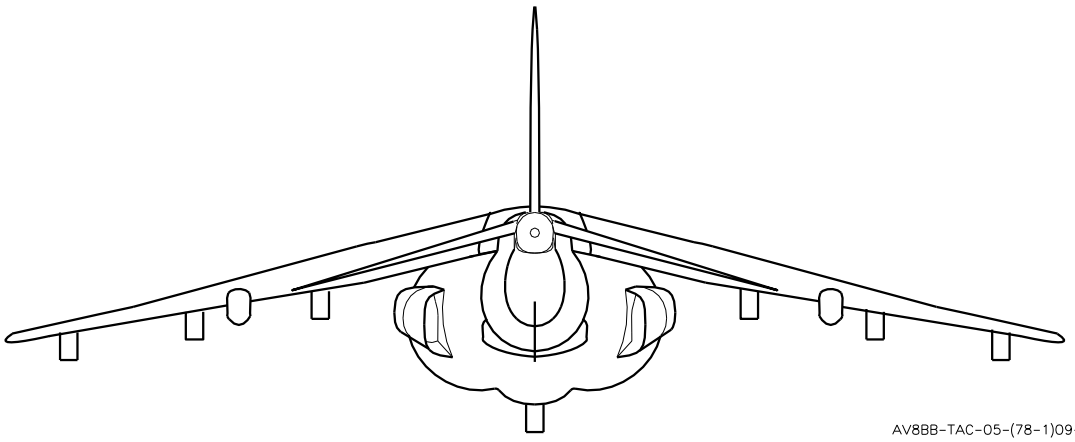
9. Produce secondary or ″Flex″ delivery programs as required.

10. Produce Weapons Data Cards for the flight.

Figure 1-15. OAS Weapons Planning Checklist

LIMITATIONS

	Weapon 1	Weapon 2
STEP 1. Loadout Selection		
A. Selected weapon(s)		
B. Number of weapons		
C. Fin type		
D. Fuzing (Nose/Tail)	/	/
E. Desired spacing (feet)		
F. Other factors (GBU, etc.)		
G. SMS codes (weapon, fuze (N/T)	/ /	/ /
H. Ejector Rack? (BRU-36 Parent Station or BRU-42 ITER)		
I. In-flight selectable options? YES/NO		
J. Selected loadout:		



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STA	1	2	3	4	5	6	7
WEAPON							

STEP 2. Is this load authorized by TACMAN Chapter 5?
STEP 3. Is this load inside NATOPS limits for T/O asymmetry, CG stability?
STEP 4. Compile Limitations

A. Weapon Limits		
1. Carriage (A/S, Mach, ±G)		
2. Release (A/S, Mach, G, FPA)		
3. Jettison (A/S, Mach, ±G, FPA)		
4. Min Interval (Singles, Pairs)		
AUTO/CCIP/DSL (Chap 5)		
DIR (Pg 5-73, General Notes)		
5. Fragmentation Pattern (H, W, t)		

Figure 1-16. Weaponeering Worksheet (Sheet 1 of 4)

LIMITATIONS (continued)

6. Degrade Mode Limits
   a. DSL (Chap 5)
   b. DIR (Pg 5-73)
   c. DSL(1) (Chap 5)

7. Notes:
   a. Remarks
   b. General (Pg 5-72/74)
   c. Specific (Pg 5-74/77)

B. Fuze Limits
1. If dual fuzing, is this authorized? (Fig 3-1)
2. Maximum carriage A/S (Pg 5-754/76)
3. Maximum release A/S (Pg 5-75/76)
4. Minimum release A/S (Pg 5-75/76)
5. Minimum interval TDD (Pg 5-76, Note 11)
6. Arm time (Fig 3-14)
   tolerances
7. Degrade Mode Limits
   a. DSL
   b. DIR
   c. DSL(1)
8. Fuze options available
9. Notes:

C. Fin Limits (Pg 5-74/75)
1. Maximum carriage A/S
2. Maximum release A/S
3. Minimum release A/S
4. Notes

D. Other Limits
1. Gun (A/S,G,Alt)(Pg 5-65)
2. GBU (Pg 5-50)
   a. Max carriage
   b. Max release
   c. Min release
   d. Jettison
3. External Stores (Pg 5-64/67, 5-70)
   a. Max carriage
   b. G
   c. Jettison

Figure 1-16. Weaponeering Worksheet (Sheet 2 of 4)

SINGLE WEAPON RELEASE

	Weapon 1	Weapon 2
DELIVERY PARAMETERS		
(1) FPA (ref Step 4.A.2)		
(2) TAS (ref Step 4.A.2, B.3 & 4 C.2 & 3, and D.2.b & c)		
(3) MIN REL (fuze/terrain from Fig 3-13)		
(4) MIN REL (frag,ref Step 4.A.5 if req)		
(5) MIN REL THREAT (envel+alt lost)		
(6) PLANNED RELEASE(>#3, #4, and #5, plus 10 percent)		
(7) Rel Accel (ref Steps 4.A.2 and 4.D.3.b)		
BASELINE BALLISTICS		
(8) TOF (sec)		
(9) DRT (feet)		
(10) SR (feet)		
(11) SA (mR)		
(12) TD (mR)		
(13) AOA (mR)		
SIGHT CORRECTIONS		
(14) AOA correction (release GW)		
(15) AOA correction (tgt DA)		
(16) TD correction (tgt DA, HD weps only)		
(17) Single weapon Sight Setting = (#11 + #14 + #15 + #16)		
ERROR SENSITIVITIES ft/mil		
(18) deg = KTS = ft = 7.5 mR	/ /	/ /
(19) 10 KTS WIND =		
mR Range/mR Cross	/	/

Figure 1-16. Weaponeering Worksheet (Sheet 3 of 4)

MULTIPLE WEAPON RELEASE

	Weapon 1	Weapon 2
DESIRED WEAPON PROGRAM		
(20) Quantity		
(21) Multiple		
(22) Release Pulses (#20÷#21)		
DIR PROGRAM		
(23) Quantity		
(24) Multiple		
(25) Interval		
(26) Station		
DSL 1 PROGRAM		
(27) Station (maximum of 2)		
INTERVALOMETER & STICK LENGTH		
(28) Desired Bomb Spacing (ft, Step 1.E)		
(29) Bomb Interval (msec) from the Impact Spacing Factor Chart (Figure 1-21 and 1-22) *must fall within constraints of Steps 4.A.4 and 4.B.5*		
(30) Stick Length (msec) (#22-1) ý#29		
(#22+1) ý#29 for ITER and asymmetric carriage releases		
(31) Max Auth Stick Length (msec, fig 3-16)		
#30 must be less than or equal to #31. If not, adjust recovery, quantity multiple, or interval. OTC may authorize use of the Ph worksheet, but this is not recommended unless only mechanical fuzing is being used.		
ALTITUDE LOSS & FIRST BOMB SIGHT ANGLE		
(32) Alt Loss per interval (fig 1-12 / 1-13)		
(33) Alt Loss for stick (#22-1)ý#32		
(34) Last Bomb Rel Alt (#6-#33)		
If less than #3, 4, or 5, planned release altitude will need to be raised.		
(35) Pattern Length (#22-1)ý#28)		
(36) DRT to Center of Stick (#35÷2+#9)		
(37) Center of Stick Trajectory Drop *from "DRT to Center of Stick" Chart*		
(38) Multiple Weapon Sight Setting (#37 + #13 +#14 +#15 +#16)		
(39) Multi-Weapon TPA		

Figure 1-16. Weaponeering Worksheet (Sheet 4 of 4)

FUZING CHARACTERISTICS

NOTE

Use of this worksheet to "approve" release is only permitted when specifically authorized by the Operational Tactical Commander and only up to the limit imposed by the TACMAN: i.e., ***P_h must be less than or equal to 1:10,000 (.0001)***

(1) Probability of Early Burst (P_{eb}) from Figure 3-14	_____	_____
(2) Prob. of Hit given an Early Burst ($P_{h/eb}$)from Figure 3-19	_____	_____
(3) Overall Probability of Hit ($P_h = P_{eb}$ ýP $_{h/eb}$)	_____	_____

Figure 1-17. Probability of Hit Worksheet

DIVE

Release Parameters

(1) FPA _____ deg

(2) TAS _____ KTAS

(3) 1st Bomb RELALT _____ ft AGL

(4) 1st Bomb TD _____ mR

(5) 1st Bomb DRT _____ ft

Altitudes

(6) ALT_{rel} = RELALT + TGT ELEV (_____ ft)

= _____ ft MSL (_____ ft AGL)

(7) ALT_{tpa} = ALT_{rel} + ($TRKTIME_{sp}$ ý1.69 ýTAS ýsin (FPA))

= _____ ft MSL (_____ ft AGL)

(8) TPA = _____ mR/ _____ deg

(9) AOD = _____ ft

(10) ALT_{trk} = ALT_{tpa} = ($TRKTIME_{curv}$ ý1.69 ýTAS ýsin (FPA))

= _____ ft MSL (_____ ft AGL)

Distances

(11) R_{tpa} = DRT + ($TRKTIME_{sp}$ ý1.69 ýTAS ýcos (FPA))

= _____ ft

(12) MAP = R_{tpa} + ($TRKTIME_{curv}$ ý1.69 ýTAS ýcos (FPA))

= _____ ft

Figure 1-18. Attack Profile Worksheet (Sheet 1 of 6)

LEVEL ENTRY/RAMP-DOWN

(1) APEX = ALT_{trk} + (500 ft for 10 deg dive)
(1000 ft for 20 deg dive)
(2000 ft for 30 deg dive)
(3000 ft for 45 deg dive)
(4000 ft for 60 deg dive)

= _____ ft MSL (_____ ft AGL)

(2) ACD = MAP + (2100 ft for 10 deg dive)
(2800 ft for 20 deg dive)
(3300 ft for 30 deg dive)
(3800 ft for 45 deg dive)
(4100 ft for 60 deg dive)

= _____ ft (_____ nm)

Ramp-Down Calculations

(3) INGRESS ALT = _____ ft MSL

(4) RAMP ANGLE (RA) = _____ deg

(5) RAC = (INGRESS ALT - APEX) ý cot (RA)

= _____ ft (_____ nm)

Terms:

RA - FPA from ingress altitude to the roll-in point

RAC - horiz distance from ramp point to ACD

Figure 1-18. Attack Profile Worksheet (Sheet 2 of 6)

CRUISE CLIMB

(1) INGRESS ALT = _____ ft MSL

(2) CLIMB AIRSPEED = _____ KTAS

(3) APEX = ALT_{trk} + (500 ft for 10 deg dive)
(1000 ft for 20 deg dive)
(2000 ft for 30 deg dive)
(3000 ft for 45 deg dive)
(4000 ft for 60 deg dive)
= _____ ft MSL

(4) ACD = MAP + (2100 ft for 10 deg dive)
(2800 ft for 20 deg dive)
(3300 ft for 30 deg dive)
(3800 ft for 45 deg dive)
(4100 ft for 60 deg dive)
= _____ ft (_____ nm)

(5) ALT to GO = APEX - INGRESS
= _____ ft

(6) CAC consult DISTANCE REQUIRED TO CLIMB in NATOPS
= _____ ft (_____ nm)

Terms:

CAC - climb to attack cone, distance from beginning of climb to apex

Figure 1-18. Attack Profile Worksheet (Sheet 3 of 6)

POP-UP

(1) INGRESS ALT = _____ ft MSL

(2) CLIMB ANGLE = _____ deg

(3) APEX = ALT_{trk} + (500 ft for 10 deg dive)
(1000 ft for 20 deg dive)
(2000 ft for 30 deg dive)
(3000 ft for 45 deg dive)
(4000 ft for 60 deg dive)
= _____ ft MSL

(4) PD = APEX - (600 ft for 15 deg climb)
(1100 ft for 25 deg climb)
(1400 ft for 30 deg climb)

(5) ACD = MAP + (2100 ft for 10 deg dive)
(2800 ft for 20 deg dive)
(3300 ft for 30 deg dive)
(3800 ft for 45 deg dive)
(4100 ft for 60 deg dive)
= _____ ft (_____ nm)

(6) PAC = $\frac{\text{(APEX-INGRESS)}}{\text{CA}} \times 60$ = _____ ft (_____ nm)

Figure 1-18. Attack Profile Worksheet (Sheet 4 of 6)

PULL-PUSH

(1) INGRESS ALT = _____ ft MSL

(2) CLIMB ANGLE = _____ deg

(3) PO = ALTtrk

= _____ ft MSL

(5) ACD = MAP + (FPA ý180)

= _____ ft (_____ nm)

(6) PAC = $\frac{\text{(PO-INGRESS)}}{\text{CA}}$ ý60 = _____ ft (_____ nm)

Terms:

PO - push over altitude

Figure 1-18. Attack Profile Worksheet (Sheet 5 of 6)

LONG RANGE DIVE TOSS

Release Parameters

(1) Delivery Airspeed = _____ KTAS

(2) Horizontal Frag Distance = _____ ft

(3) Minimum Attack Distance (#2 + turn radius) = _____ ft

The breakaway recovery must be initiated prior to this point.

Distances

(4) Tracking Distance = $TRKTIME_{sp}$ ý1.69 ýTAS ýcos (FPA)

= _____ ft

(5) Pad = Tracking Distance ý0.10

= _____ ft

(6) Designation Range = Tracking Distance + Horiz Frag Dist + Pad

= _____ ft

This value must be greater than or equal to the MAD (#3).

Altitudes

(7) ALT_{trk} = MAP ýtan (FPA)

= _____ ft MSL (_____ ft AGL)

Figure 1-18. Attack Profile Worksheet (Sheet 6 of 6)

TEMP		RELATIVE HUMIDITY									
		10	20	30	40	50	60	70	80	90	100
ÉF	ÉC	ABSOLUTE HUMIDITY (g/m3)									
-13	-25	.06	.11	.17	.22	.28	.34	.39	.45	.50	.56
-4	-20	.09	.18	.27	.36	.45	.53	.62	.71	.80	.89
5	-15	.14	.28	.42	.56	.70	.84	.98	1.1	1.3	1.4
14	-20	.22	.43	.65	.86	1.1	1.3	1.5	1.7	1.9	2.1
23	-5	.32	.65	.97	1.3	1.6	1.9	2.3	2.6	2.9	3.2
32	0	.48	.97	1.4	1.9	2.4	2.9	3.4	3.9	4.4	4.8
41	5	.68	1.3	2.0	2.7	3.4	4.1	4.7	5.4	6.1	6.8
50	10	.93	1.9	2.8	3.7	4.7	5.6	6.5	7.5	8.4	9.3
59	15	1.3	2.5	3.8	5.1	6.4	7.6	8.9	10	11	13
68	20	1.7	3.4	5.2	6.9	8.6	10	12	14	16	17
77	25	2.3	4.6	6.8	9.1	11	14	16	18	21	23
86	30	3.0	6.0	9.0	12	15	18	21	24	27	30
95	35	4.0	8.0	12	16	20	24	27	31	35	39
104	40	4.8	9.6	14	19	24	29	34	38	43	48

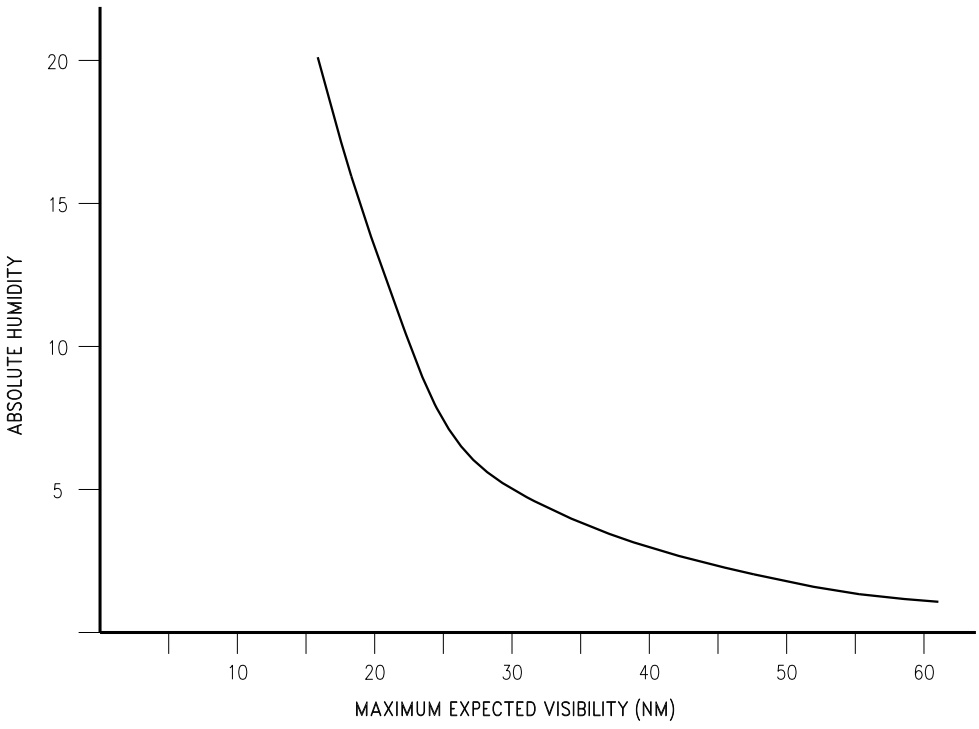

Figure 1-19. Humidity and Visibility Chart

TRIGONOMETRIC FUNCTION

ANGLE ➡ ⬇	sin	cos	tan	cot	
0	0.0000	1.0000	0.0000	xxxxxx	90
1	0.0175	0.9998	0.0175	57.2906	89
2	0.0349	0.9994	0.0349	28.6366	88
3	0.0523	0.9986	0.0524	19.0813	87
4	0.0698	0.9976	0.0699	14.3008	86
5	0.0872	0.9962	0.0875	11.4302	85
6	0.1045	0.9945	0.1051	9.5145	84
7	0.1219	0.9925	0.1228	8.1444	83
8	0.1392	0.9903	0.1405	7.1154	82
9	0.1564	0.9877	0.1584	6.3138	81
10	0.1736	0.9848	0.1763	5.6713	80
11	0.1908	0.9816	0.1944	5.1446	79
12	0.2079	0.9781	0.2126	4.7047	78
13	0.2249	0.9744	0.2309	4.3315	77
14	0.2419	0.9703	0.2493	4.0108	76
15	0.2588	0.9659	0.2679	3.7321	75
16	0.2756	0.9613	0.2867	3.4875	74
17	0.2924	0.9563	0.3057	3.2709	73
18	0.3090	0.9511	0.3249	3.0777	72
19	0.3256	0.9455	0.3443	2.9042	71
20	0.3420	0.9397	0.3640	2.7475	70
21	0.3584	0.9336	0.3839	2.6051	69
22	0.3746	0.9272	0.4040	2.4751	68
23	0.3907	0.9205	0.4245	2.3559	67
24	0.4067	0.9135	0.4452	2.2461	66
25	0.4226	0.9063	0.4663	2.1445	65
26	0.4384	0.8988	0.4877	2.0503	64
27	0.4540	0.8910	0.5095	1.9626	63
28	0.4695	0.8829	0.5317	1.8807	62
29	0.4848	0.8746	0.5543	1.8041	61
30	0.5000	0.8660	0.5773	1.7321	60
31	0.5150	0.8572	0.6009	1.6643	59
32	0.5299	0.8481	0.6249	1.6004	58
33	0.5446	0.8387	0.6494	1.5399	57
34	0.5592	0.8290	0.6745	1.4826	56
35	0.5736	0.8192	0.7002	1.4282	55
36	0.5878	0.8090	0.7265	1.3764	54
37	0.6018	0.7986	0.7535	1.3271	53
38	0.6157	0.7880	0.7813	1.2800	52
39	0.6293	0.7772	0.8098	1.2349	51
40	0.6428	0.7660	0.8391	1.1918	50
41	0.6561	0.7547	0.8693	1.1504	49
42	0.6691	0.7431	0.9004	1.1106	48
43	0.6820	0.7314	0.9325	1.0724	47
44	0.6947	0.7193	0.9657	1.0355	46
45	0.7071	0.7071	1.0000	1.0000	45
	cos	sin	cot	tan	⬆ ⬅ ANGLE

Figure 1-20. Trigonometric Functions Chart

1.5 Multiple Weapon Release

1.5.1 Multiple Weapon Impact Spacing and Stick Length Data. The Interbomb Impact Spacing Factors tables (Figures 1-21 and 1-22) provide the horizontal distance between impact points for two weapons released at a given time interval for a given set of release conditions. To obtain an estimate of the total stick length, multiply the interbomb spacing found from the table by one less than the number of weapons released. This will be greater than the actual stick length for a straight path dive angle delivery. To obtain the interbomb spacing or interval setting, first find the interbomb impact spacing factor for the desired release conditions from the tables. The interval setting in milliseconds required to get the desired interbomb impact spacing in feet is given by:

$$\text{Interval Setting (ms)} = \frac{\text{Desired Interbomb Spacing (ft)}}{\text{Impact Spacing Factor}} \times 100$$

and the interbomb impact spacing can be found from a given interval setting by:

$$\text{Interbomb Spacing (ft)} = \frac{\text{Interval Setting (ms)} \times \text{Impact Spacing Factor}}{100}$$

WARNING

The release altitude found in the tables are the altitudes of the first weapon release. The lowest release altitude in the stick must be above the minimum safe release altitude. The lowest altitude can be determined using the Aircraft Down Range Travel and Altitude Loss charts and the minimum safe release altitudes can be found in the Safe Escape Tables. The aircraft may be damaged if the minimum safe release altitude is violated. For the Mk 80 series weapons, release altitude of the last bomb must be greater than or equal to the minimum altitude required for the fuze to arm which can be obtained from Figure 3-16.

1.5.2 Multiple Weapon Impact Spacing Release Sample Problem. A sample problem using the Interbomb Impact Spacing Factors table follows:

Release Conditions:

1. Weapon: Mk 81 Mod 1: Conical Fin Assembly
2. Ejection Velocity: 18.5 feet/second
3. Flight Path Angle: -30É
4. Airspeed: 500 KTAS
5. Altitude: 4000 ft-MSL
6. Interval Setting: 80 ms
7. Four bomb stick

Find

a) Interbomb impact spacing of weapon
b) Interval setting for a 75 foot interbomb impact spacing

Solution:

Check for violation of minimum safe release altitude by finding the release altitude of the last weapon off and comparing it to the minimum safe release altitude.

1. Find the total time required to release the

stick. Release Time = (4 weapon releases - 1) ý intervals ý80 ms per release = 240 ms = 0.24 seconds.

2. Find the altitude loss from the appropriate Aircraft Down Range Travel and Altitude Loss chart. Altitude loss = 101 feet.

3. Find the release altitude of the last weapon off. Lowest Release Altitude = 4000 feet - 101 feet = 3899 feet.

4. Find the minimum safe release altitude from the Safe Escape Tables and compare with release altitude of last weapon off.

5. Safe Escape Altitude is 2400 feet which is less than 3899 feet, therefore the release condition is safe.

6. Find the interbomb impact spacing factor for release conditions from the appropriate table. Impact Spacing Factor = 28.

7. Find the interbomb spacing.

$$\text{Interbomb Spacing} = \frac{80 \text{ ý} 28}{100} = 22 \text{ feet}$$

8. Find the interval setting for a 75 foot interbomb impact spacing.

$$\text{Interval Setting} = \frac{75}{28} \text{ ý} 100 = 268 \text{ ms}$$

AV-8B INTERBOMB IMPACT SPACING FACTORS
LOW DRAG GENERAL PURPOSE BOMBS

RELEASE CONDITIONS :

ALTITUDE (FT-MSL)	VELOCITY (KTAS)	FLIGHT PATH ANGLE (DEG) 0	-10	-20	-30	-45	-60
500	450	76	****	****	****	****	****
	500	84	****	****	****	****	****
	550	93	****	****	****	****	****
800	450	76	****	****	****	****	****
	500	84	****	****	****	****	****
	550	93	****	****	****	****	****
1000	450	76	****	****	****	****	****
	500	84	****	****	****	****	****
	550	93	****	****	****	****	****
1500	450	76	47	****	****	****	****
	500	84	49	****	****	****	****
	550	93	51	****	****	****	****
2000	450	76	51	31	****	****	****
	500	84	54	31	****	****	****
	550	93	56	31	****	****	****
2500	450	76	53	34	22	****	****
	500	84	57	35	22	****	****
	550	93	60	35	****	****	****
3000	450	76	55	37	24	****	****
	500	84	59	38	24	****	****
	550	93	62	39	24	****	****
3500	450	76	56	39	26	15	****
	500	84	61	40	26	14	****
	550	93	65	41	26	****	****
4000	450	76	58	41	28	16	****
	500	84	62	43	28	16	****
	550	93	66	44	28	15	****

$$\text{Interval Setting (ms)} = \left[\frac{\text{Desired Interbomb Spacing (ft)}}{\text{Impact Spacing Factor}} \right] \times 100$$

$$\text{Interbomb Spacing (ft)} = \frac{\text{Interval Setting (ms)} \times \text{Impact Spacing Factor}}{100}$$

1. Multiple weapon delivery at sea level target.
2. Release altitudes are the altitudes of first weapon released. To ensure that the maximum safe release altitudes are not violated, refer to the Aircraft Down Range Travel and Altitude Loss charts and the minimum altitudes from the Safe Escape Tables.
3. **** indicates unsafe release condition.

BF 11217-R1-B8-1

Figure 1-21. Interbomb Impact Spacing Factors Low Drag General Purpose Bombs (Sheet 1 of 2)

AV-8B INTERBOMB IMPACT SPACING FACTORS
LOW DRAG GENERAL PURPOSE BOMBS

RELEASE CONDITIONS :

ALTITUDE (FT-MSL)	VELOCITY (KTAS)	FLIGHT PATH ANGLE (DEG) 0	-10	-20	-30	-45	-60
5000	450	76	60	44	31	18	11
	500	84	64	46	32	18	****
	550	93	69	48	32	18	****
6000	450	76	61	46	34	20	12
	500	84	66	49	35	20	12
	550	93	71	51	35	20	****
7000	450	76	62	48	36	22	13
	500	84	68	51	37	22	13
	550	93	73	53	38	22	12
8000	450	76	63	49	38	24	14
	500	84	69	53	39	24	14
	550	93	74	56	40	24	14
9000	450	76	64	51	39	25	15
	500	84	69	54	41	25	15
	550	93	75	57	42	26	15
10000	450	76	64	52	40	26	16
	500	84	70	55	42	27	16
	550	93	76	59	44	27	16
15000	450	76	66	55	45	30	19
	500	84	73	60	47	32	19
	550	93	79	64	50	33	20
20000	450	76	67	57	47	33	21
	500	84	74	62	51	35	22
	550	93	80	67	54	36	22

$$\text{Interval Setting (ms)} = \left[\frac{\text{Desired Interbomb Spacing (ft)}}{\text{Impact Spacing Factor}} \right] \times 100$$

$$\text{Interbomb Spacing (ft)} = \frac{\text{Interval Setting (ms)} \times \text{Impact Spacing Factor}}{100}$$

1. Multiple weapon delivery at sea level target.
2. Release altitudes are the altitudes of first weapon released. To ensure that the maximum safe release altitudes are not violated, refer to the Aircraft Down Range Travel and Altitude Loss charts and the minimum altitudes from the Safe Escape Tables.
3. **** indicates unsafe release condition.

BF 11217-R1-B8-2

Figure 1-21. Interbomb Impact Spacing Factors Low Drag General Purpose Bombs (Sheet 2 of 2)

AV-8B INTERBOMB IMPACT SPACING FACTORS
HIGH DRAG GENERAL PURPOSE BOMBS

RELEASE CONDITIONS : ALTITUDE (FT-MSL)	VELOCITY (KTAS)	FLIGHT PATH ANGLE (DEG) 0	-10	-20	-30
100	450	76	****	****	****
	500	85	****	****	****
	550	93	****	****	****
200	450	76	****	****	****
	500	85	****	****	****
	550	93	****	****	****
300	450	76	****	****	****
	500	85	****	****	****
	550	93	****	****	****
400	450	76	****	****	****
	500	85	****	****	****
	550	93	****	****	****
500	450	76	47	****	****
	500	85	****	****	****
	550	93	****	****	****
1000	450	76	61	****	****
	500	85	67	****	****
	550	93	74	****	****
1500	450	76	66	51	****
	500	85	73	56	****
	550	93	81	61	****
2000	450	76	69	57	43
	500	85	76	63	****
	550	93	84	69	****
3000	450	76	71	63	52
	500	85	79	70	58
	550	93	87	77	64
4000	450	76	72	66	57
	500	85	81	73	64
	550	93	89	81	70
5000	450	76	73	68	60
	500	85	81	75	67
	550	93	89	83	73

$$\text{Interval Setting (ms)} = \left[\frac{\text{Desired Interbomb Spacing (ft)}}{\text{Impact Spacing Factor}} \right] \times 100$$

$$\text{Interbomb Spacing (ft)} = \frac{\text{Interval Setting (ms)} \times \text{Impact Spacing Factor}}{100}$$

1. Multiple weapon delivery at sea level target.
2. Release altitudes are the altitudes of first weapon released. To ensure that the maximum safe release altitudes are not violated, refer to the Aircraft Down Range Travel and Altitude Loss charts and the minimum altitudes from the Safe Escape Tables.
3. **** indicates unsafe release condition.

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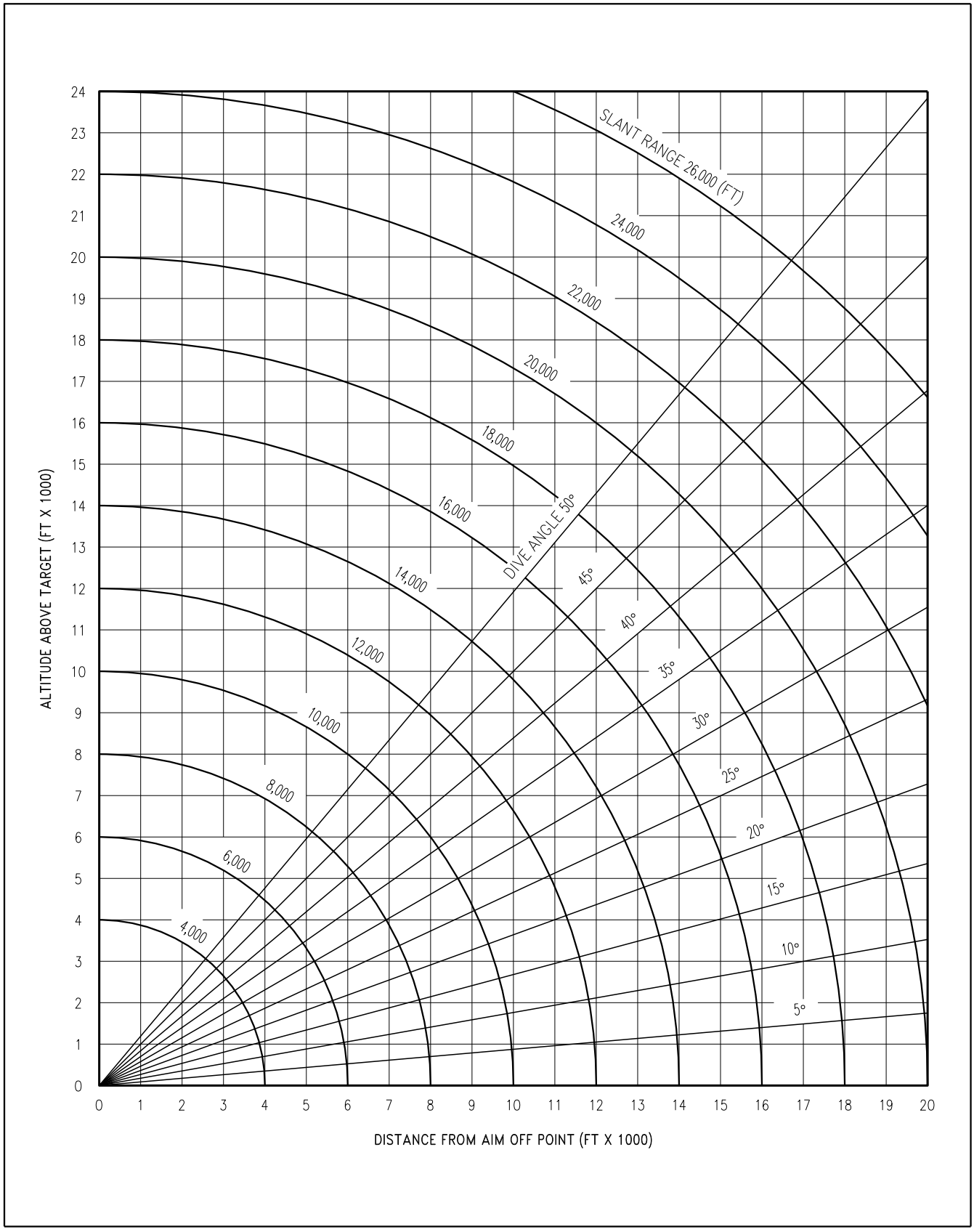
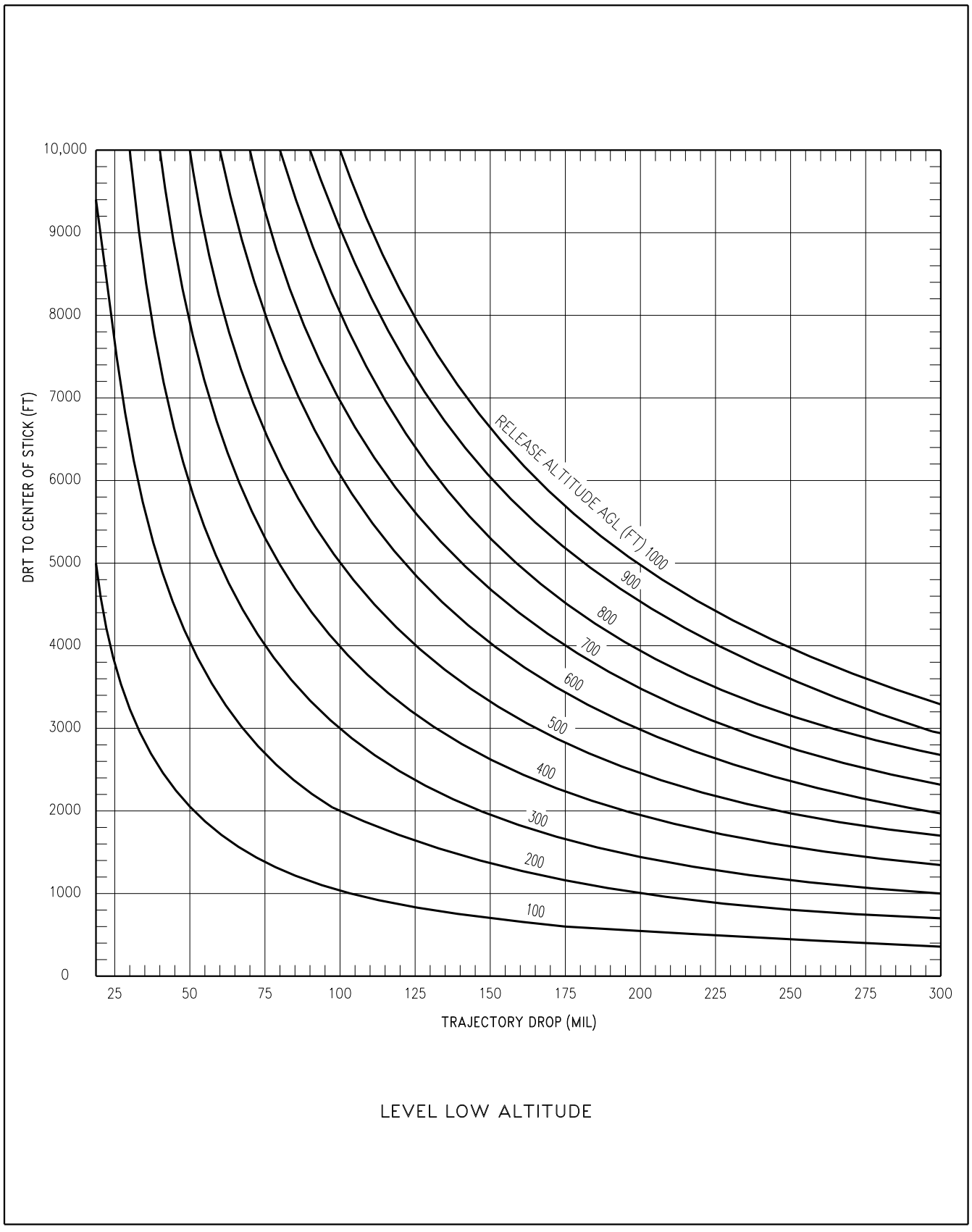
Figure 1-22. Interbomb Impact Spacing Factors, High Drag, General Purpose Bombs



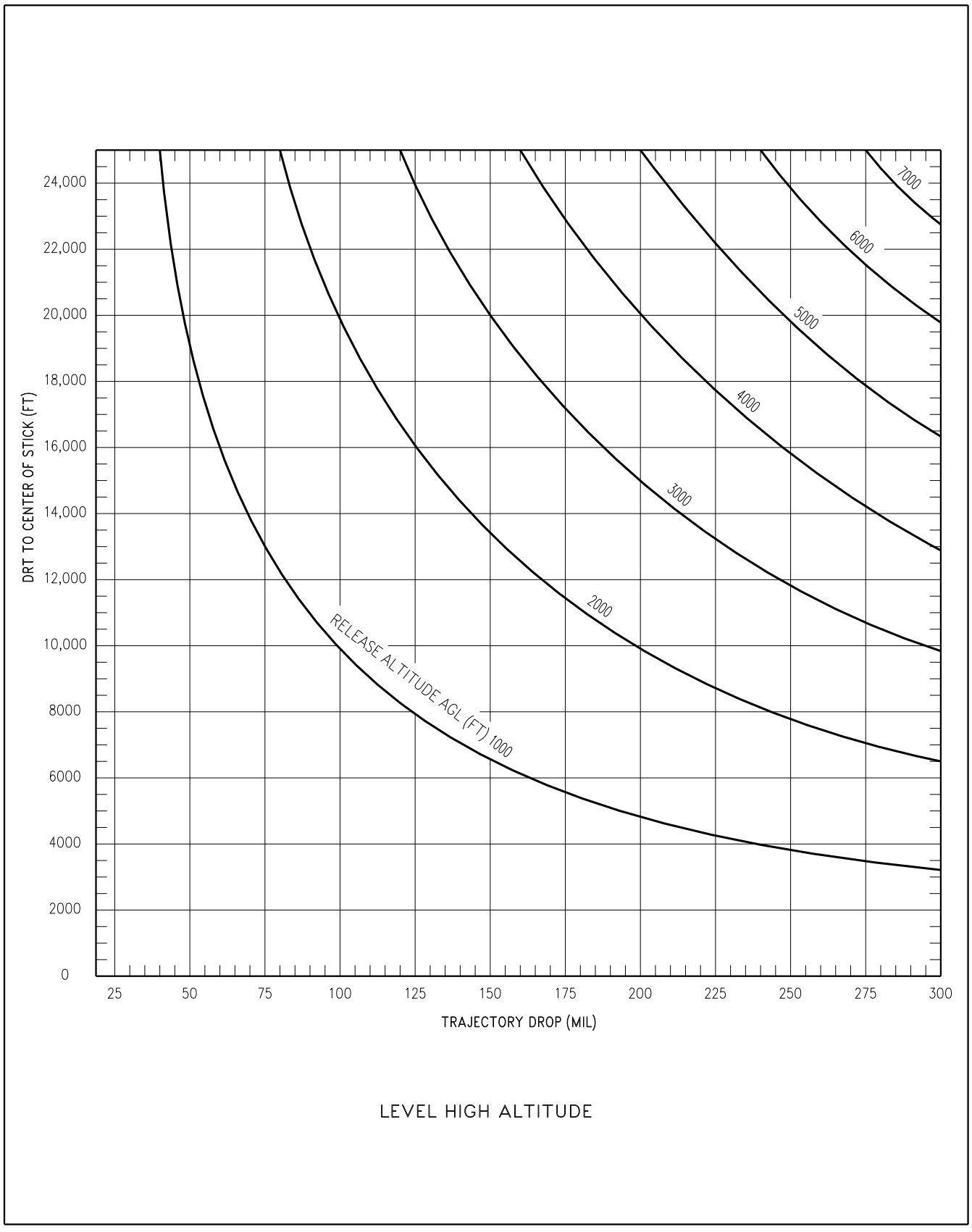
AV8BB-TAC-05-(4-1)09-CATI

Figure 1-23. Dive Angle Versus Distance Chart



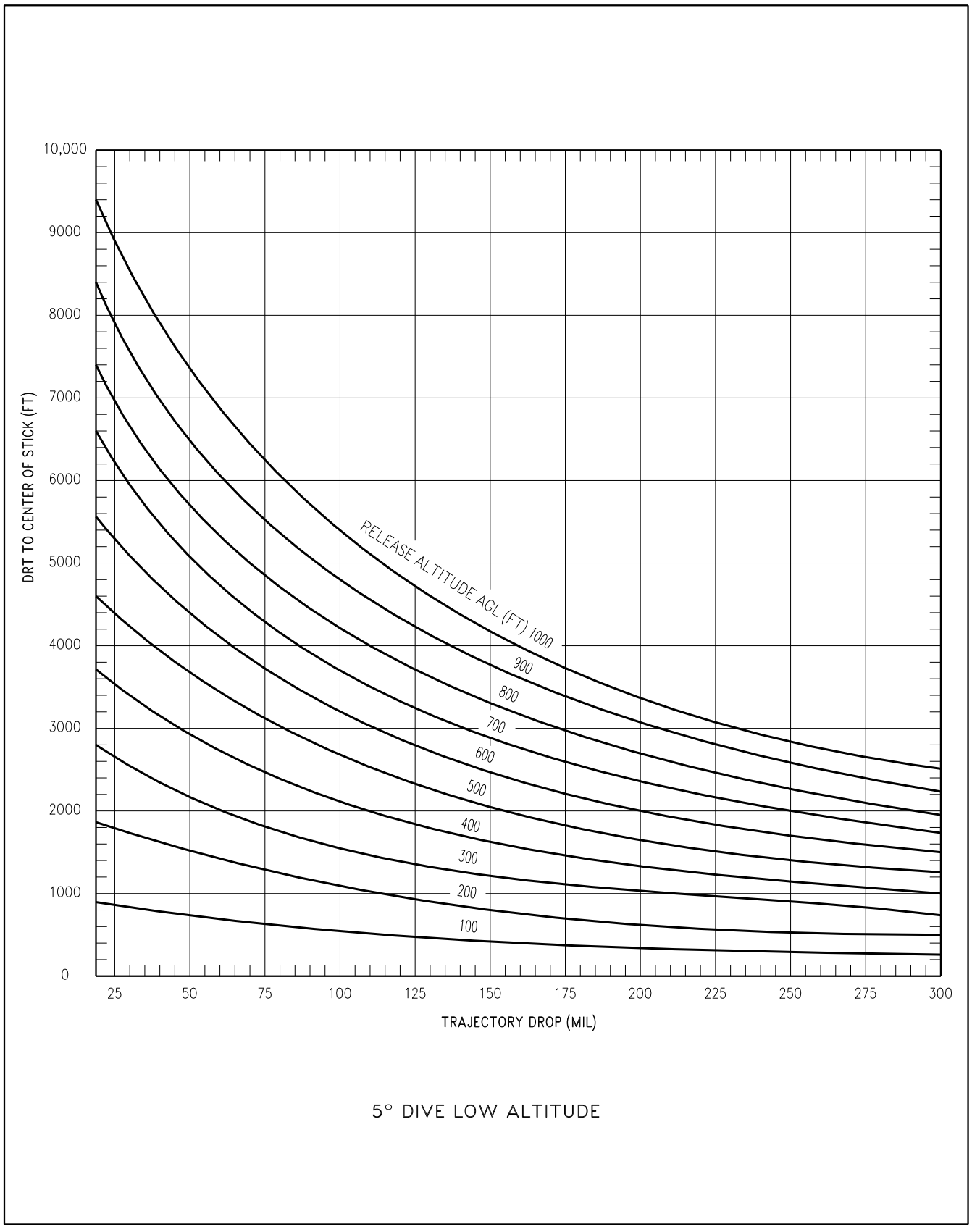
AV8BB-TAC-05-(6-1)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 1 of 14)



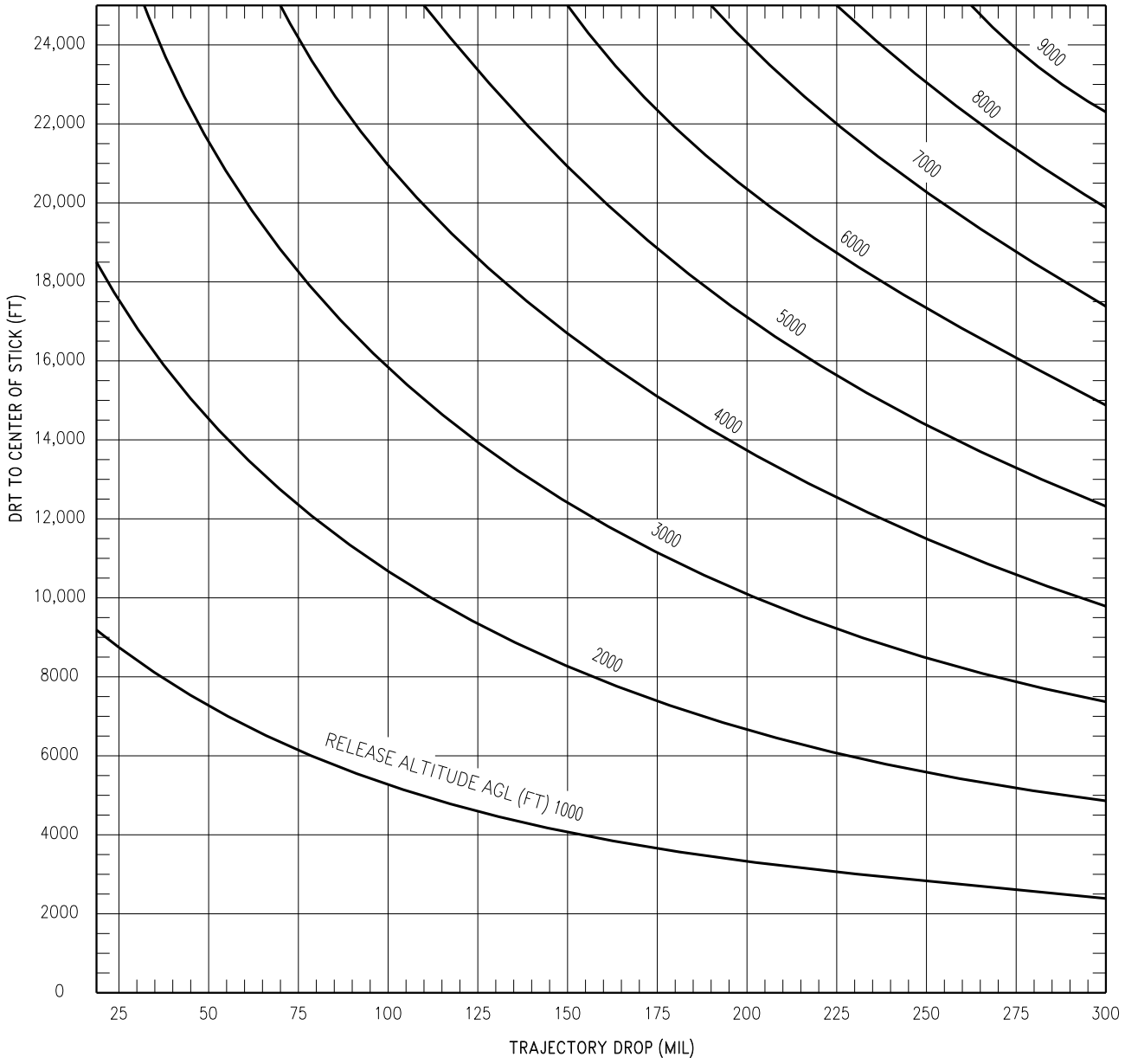
AV8BB-TAC-05-(6-2)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 2 of 14)



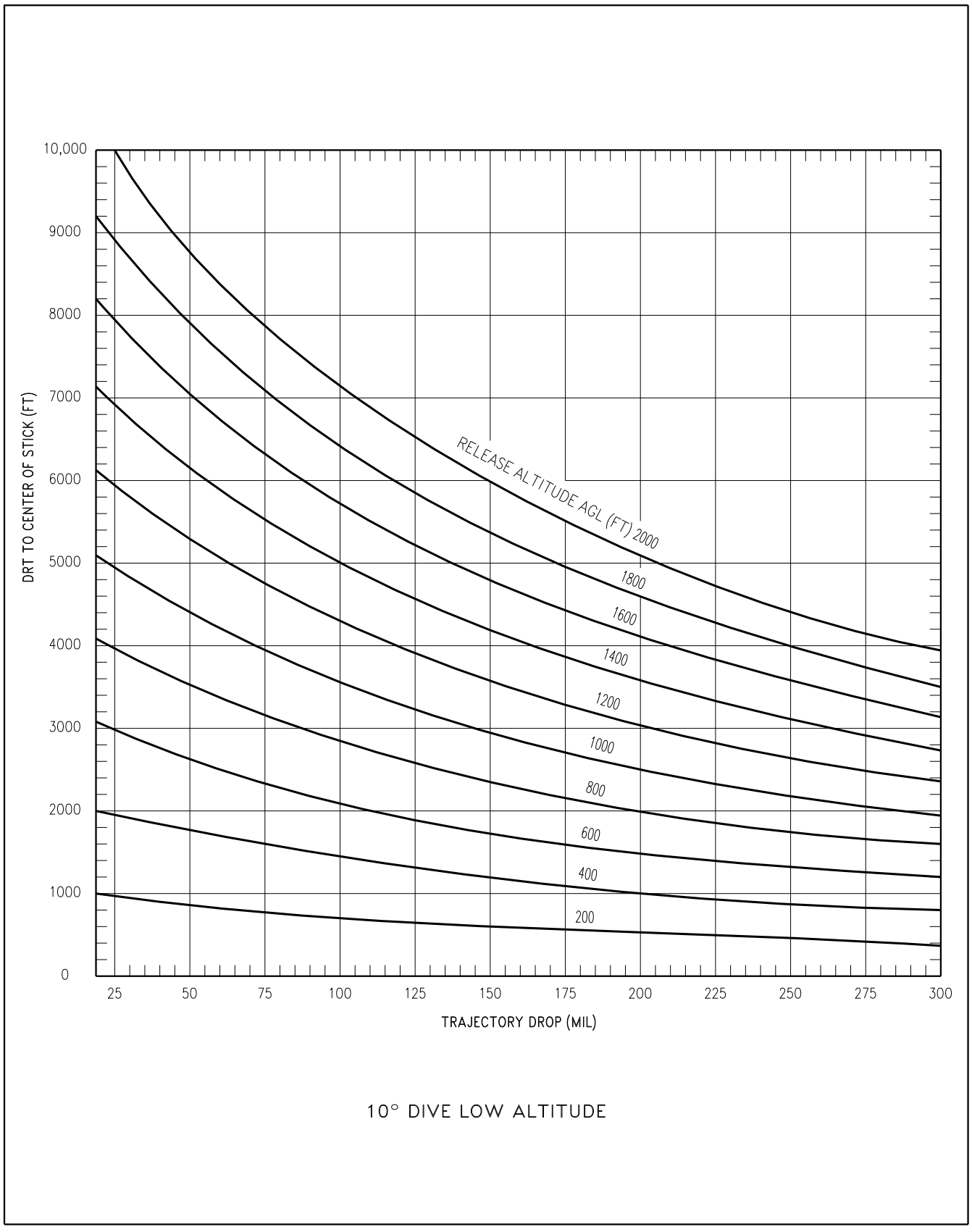
AV8BB-TAC-05-(6-3)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 3 of 14)



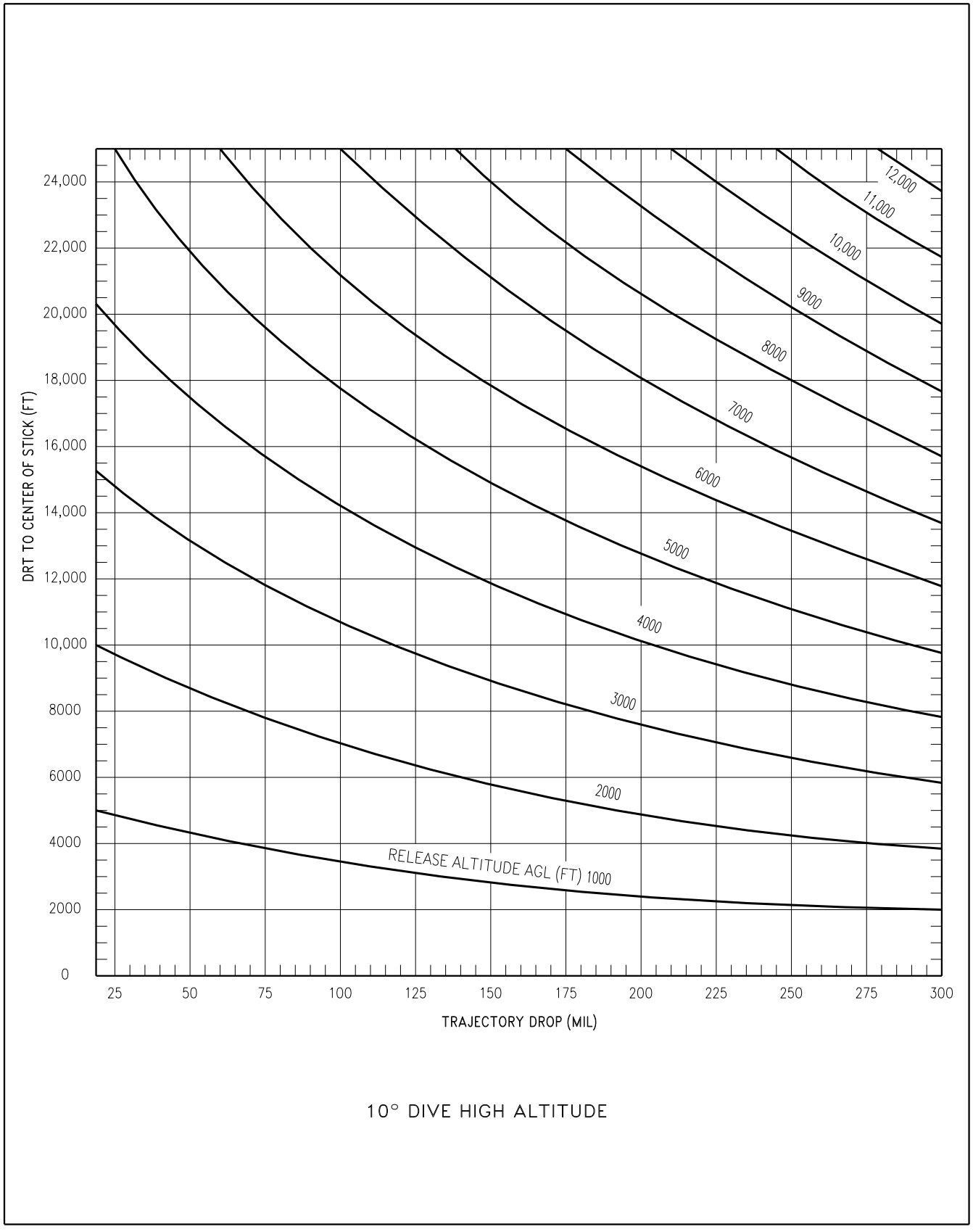
AV8BB-TAC-05-(6-4)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 4 of 14)



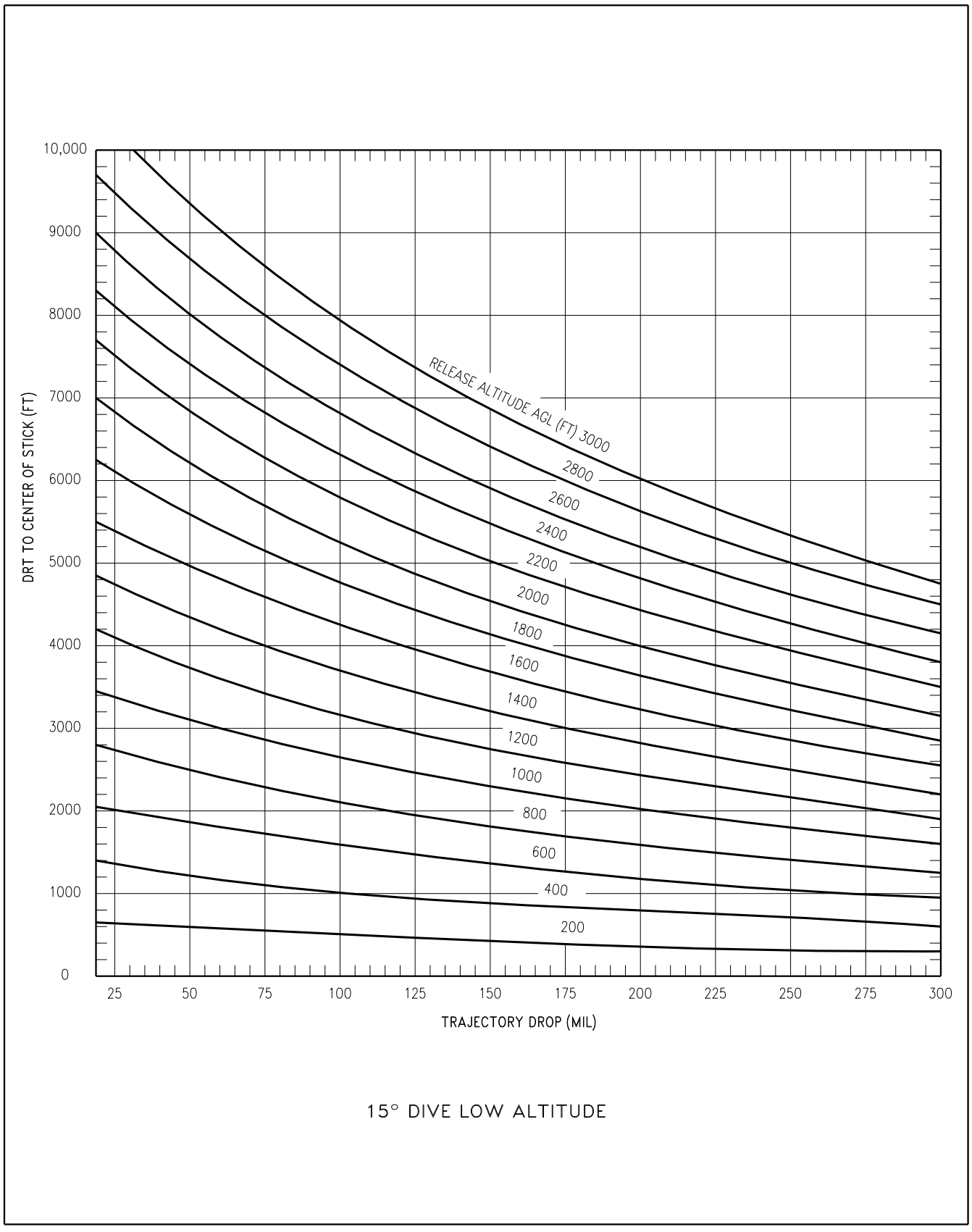
AV8BB-TAC-05-(6-5)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 5 of 14)



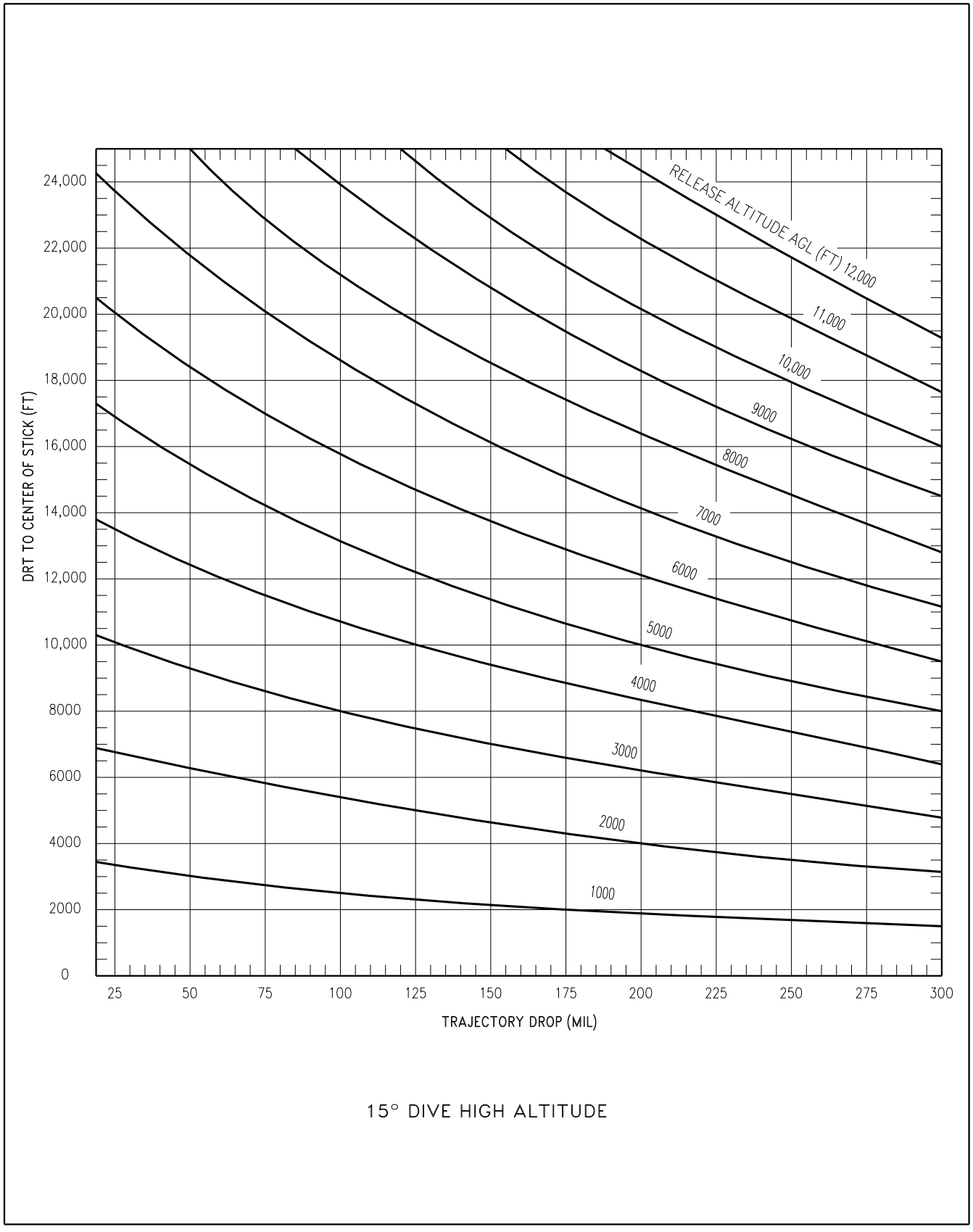
AV8BB-TAC-05-(6-6)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 6 of 14)



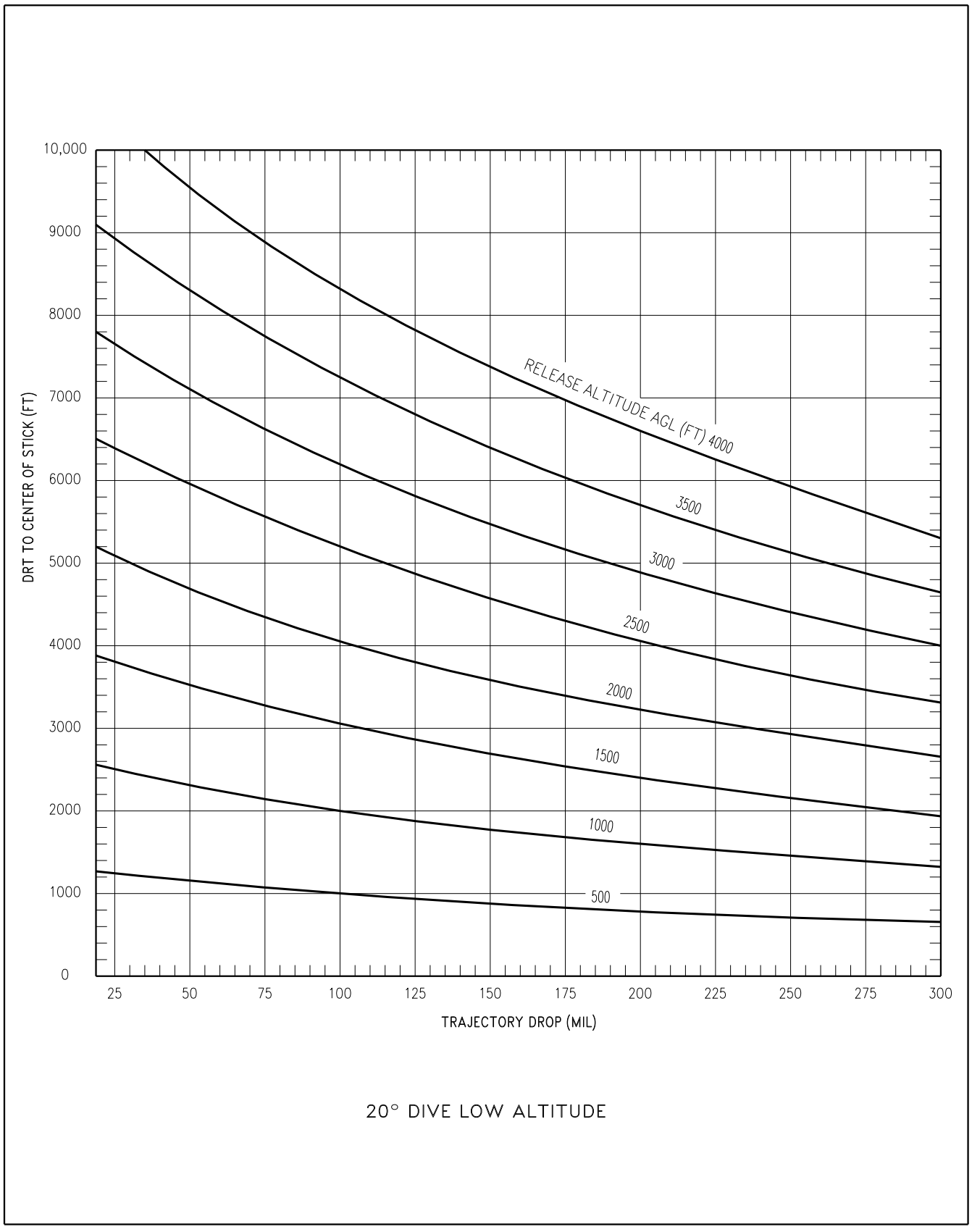
AV8BB-TAC-05-(6-14)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 7 of 14)



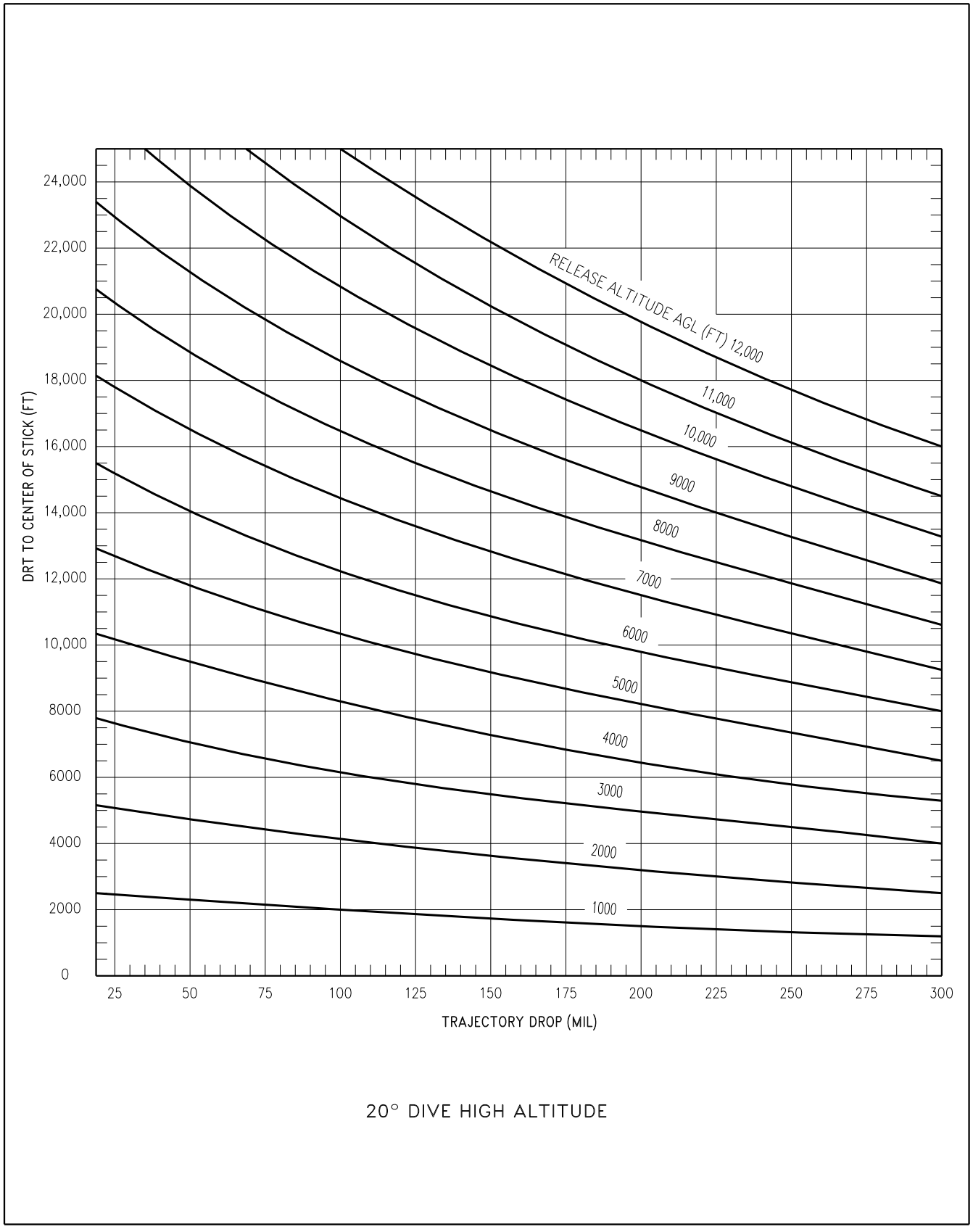
AV8BB-TAC-05-(6-7)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 8 of 14)



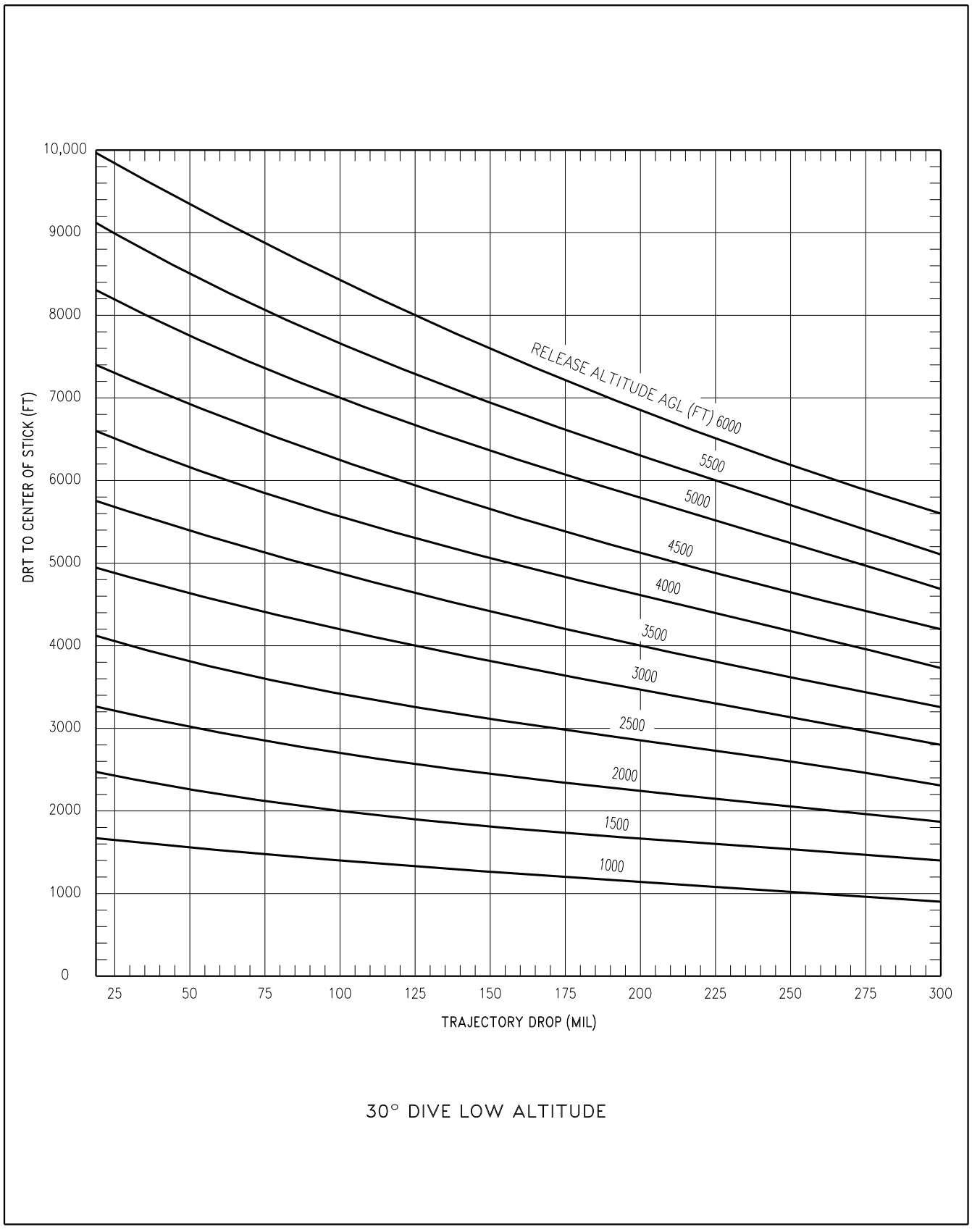
AV8BB-TAC-05-(6-8)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 9 of 14)



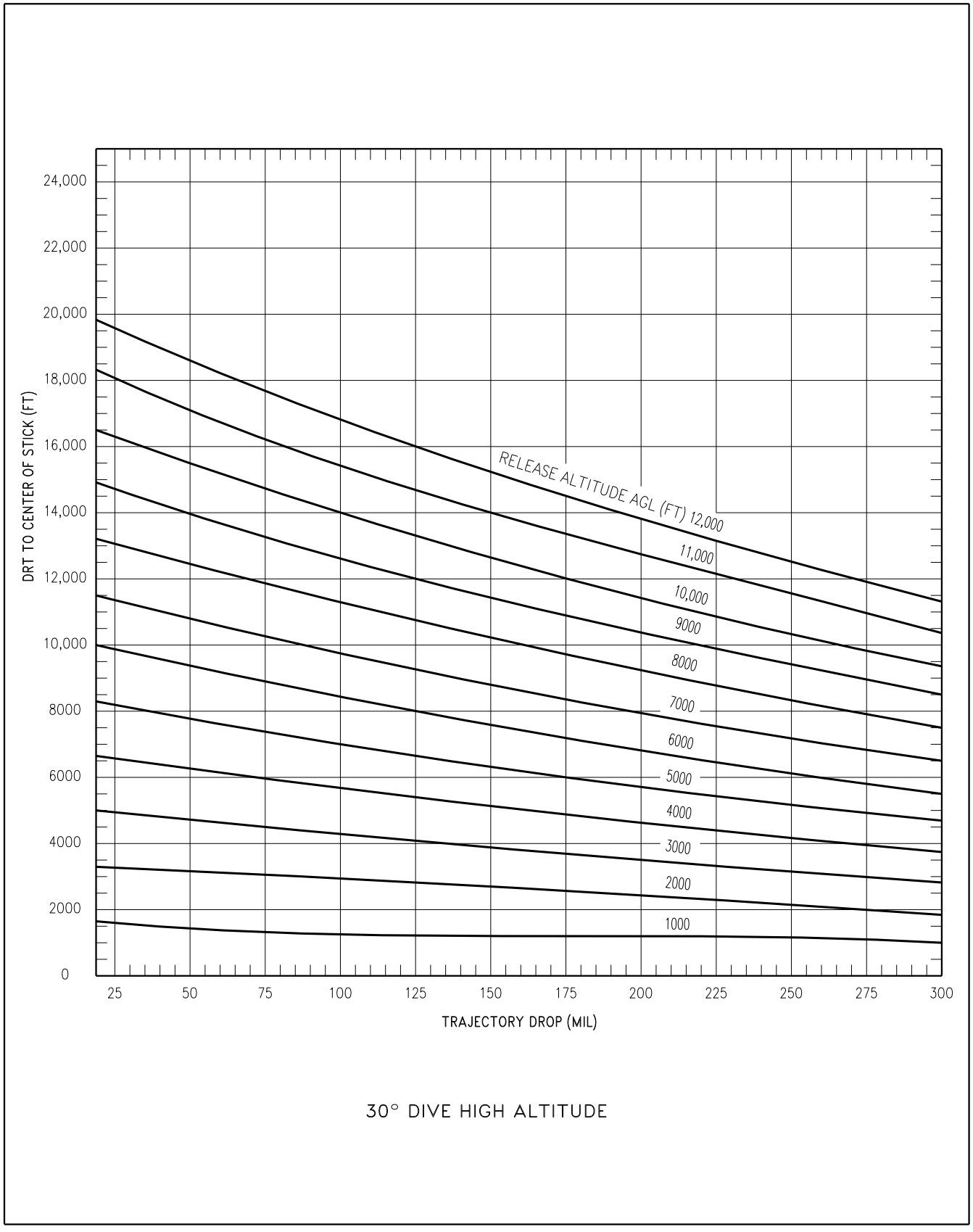
AV8BB-TAC-05-(6-9)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 10 of 14)



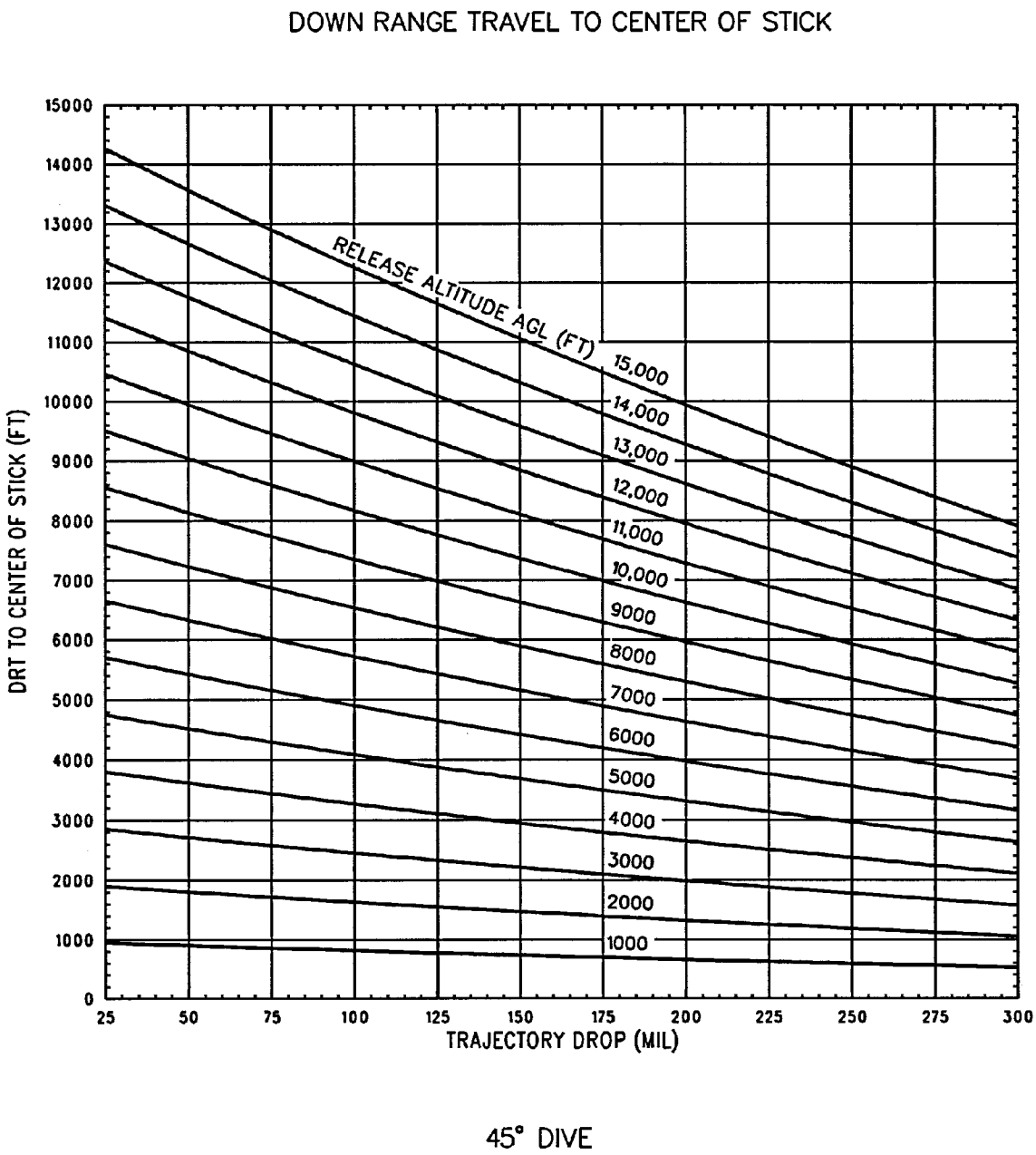
AV8BB-TAC-05-(6-10)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 11 of 14)



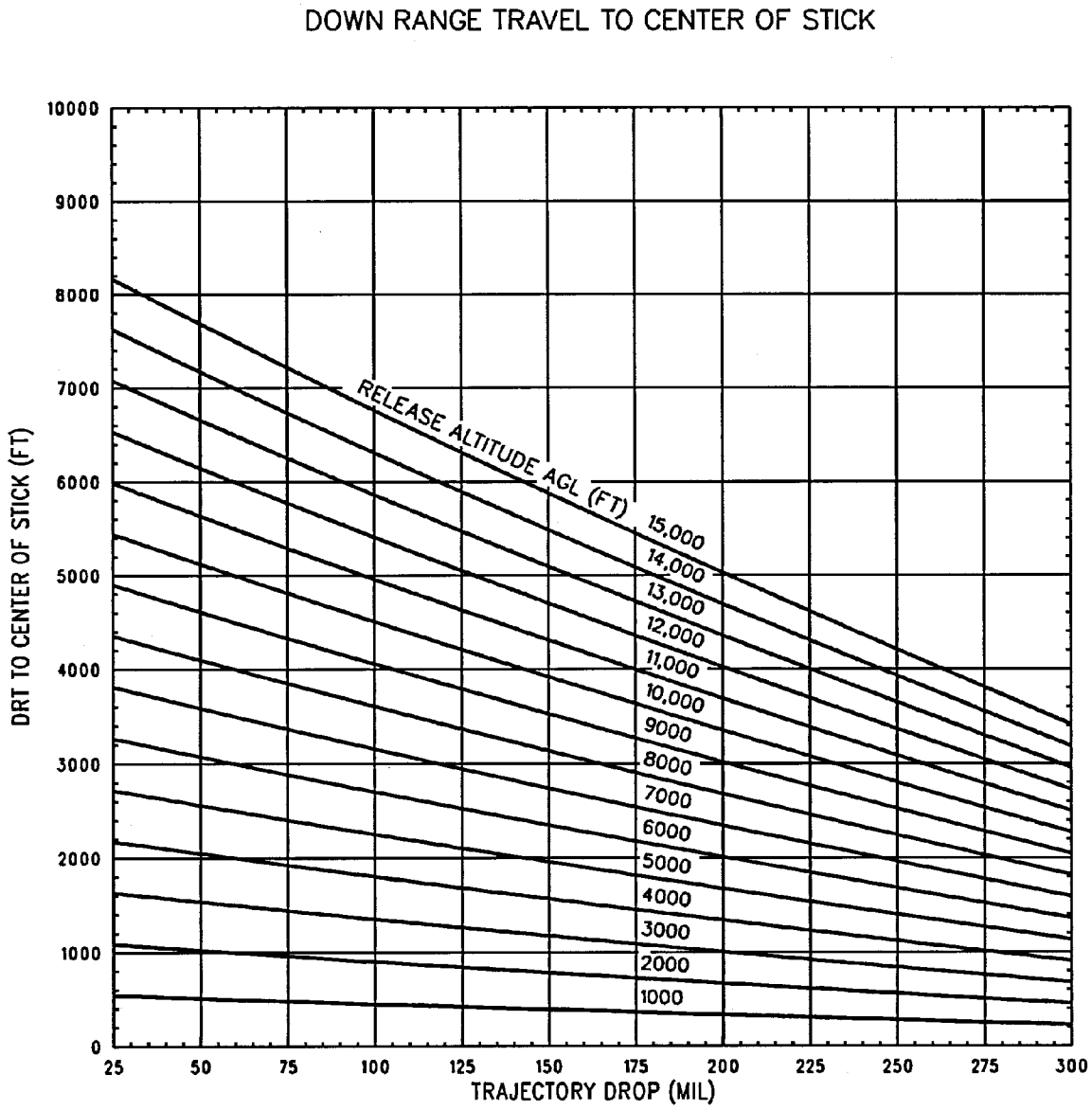
AV8BB-TAC-05-(6-11)09-CATI

Figure 1-24. Down Range Travel to Center of Stick (Sheet 12 of 14)



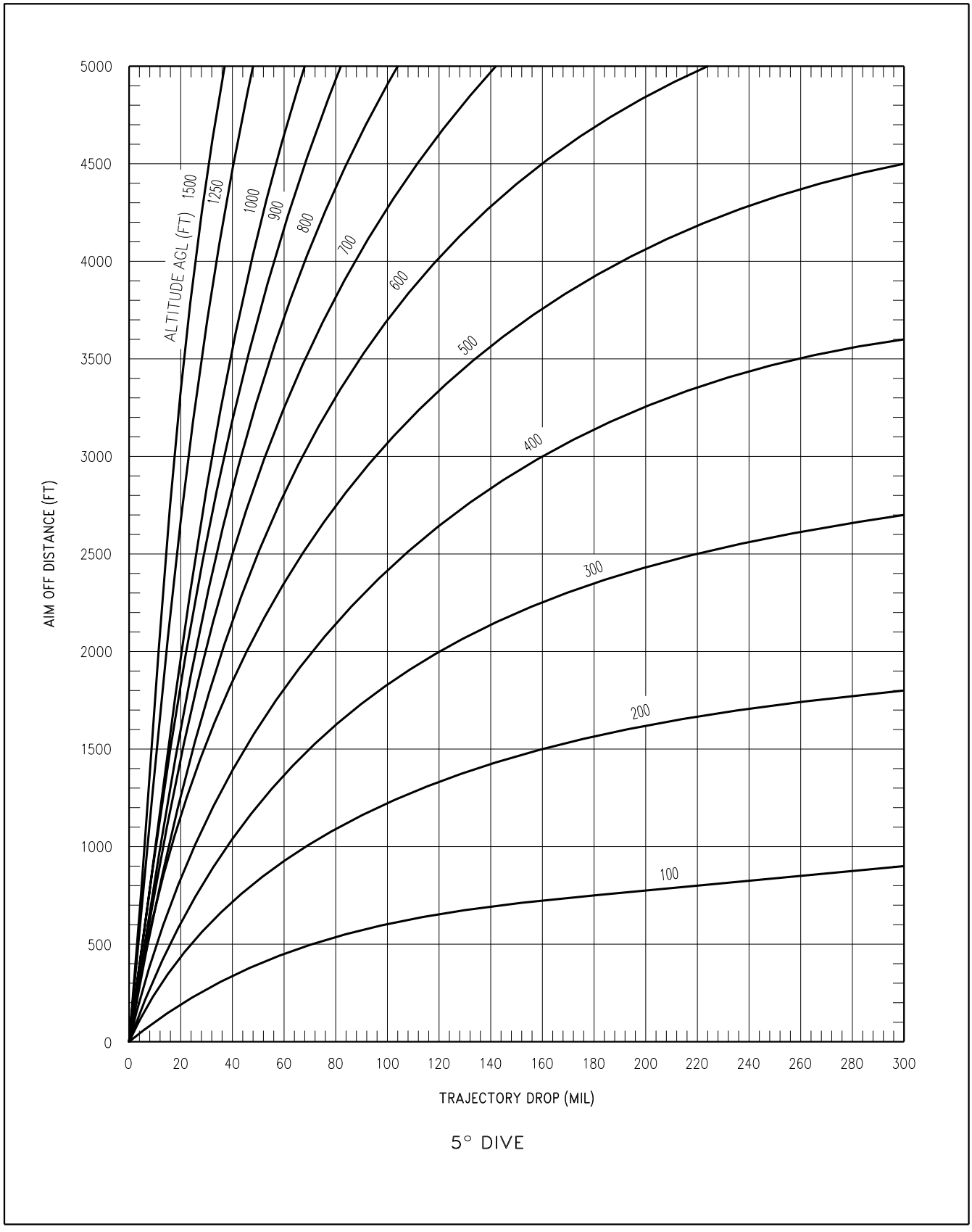
AV8BB-TAC-05-(6-12)10

Figure 1-24. Down Range Travel to Center of Stick (Sheet 13 of 14)



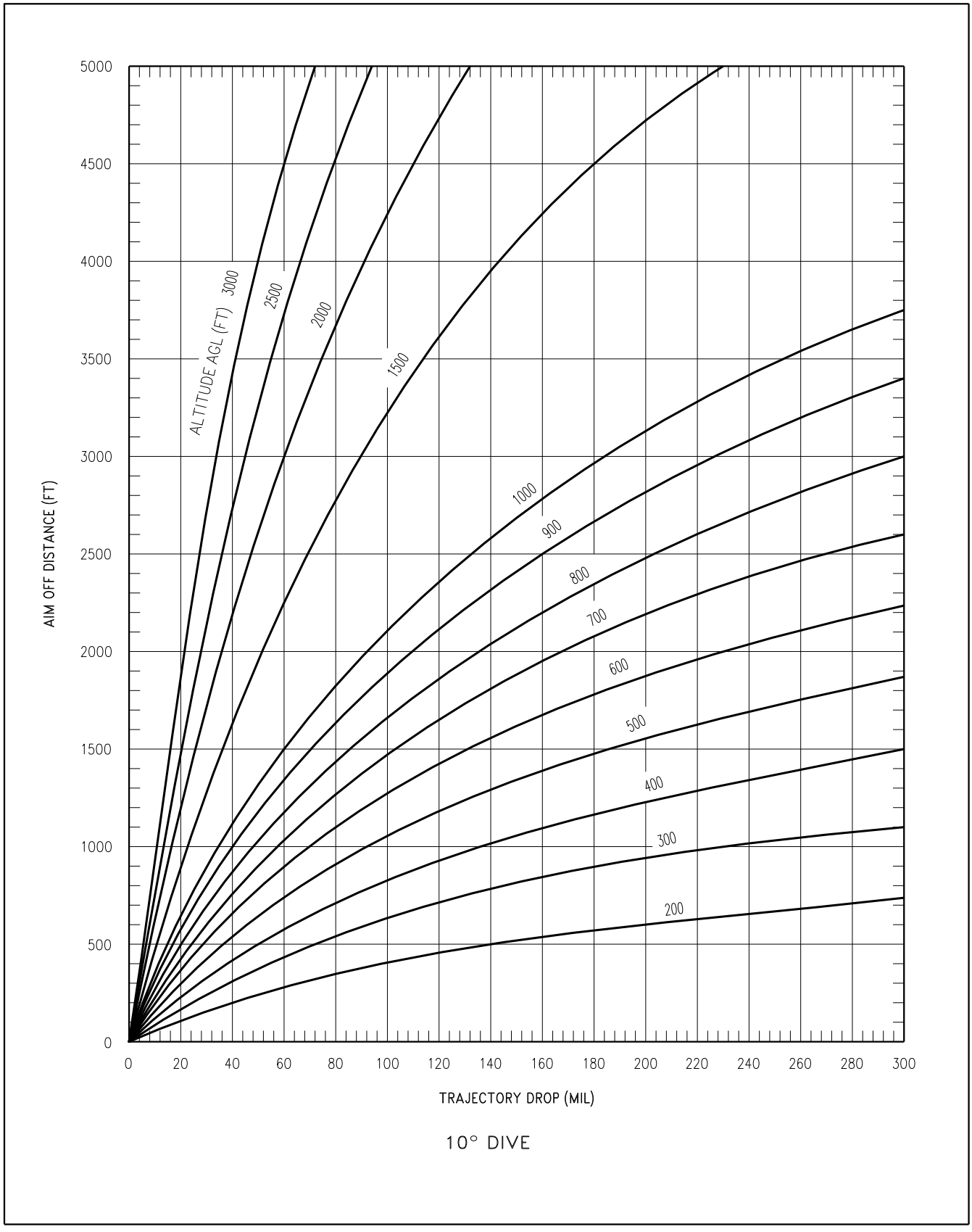
AV8BB-TAC-05-(6-13)10

Figure 1-24. Down Range Travel to Center of Stick (Sheet 14 of 14)



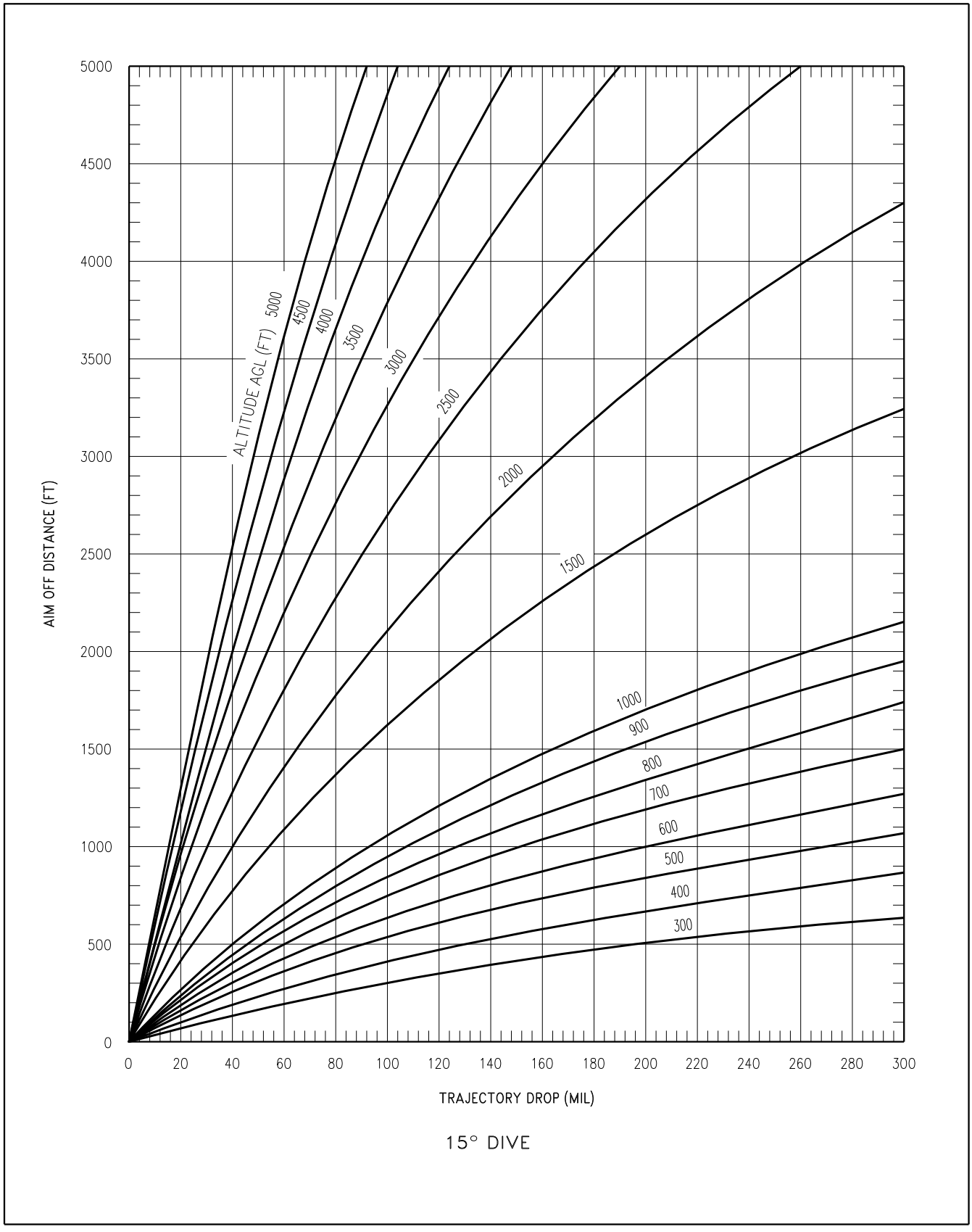
AV8BB-TAC-05-(5-1)09-CATI

Figure 1-25. Target Placement Angle Charts (Sheet 1 of 7)



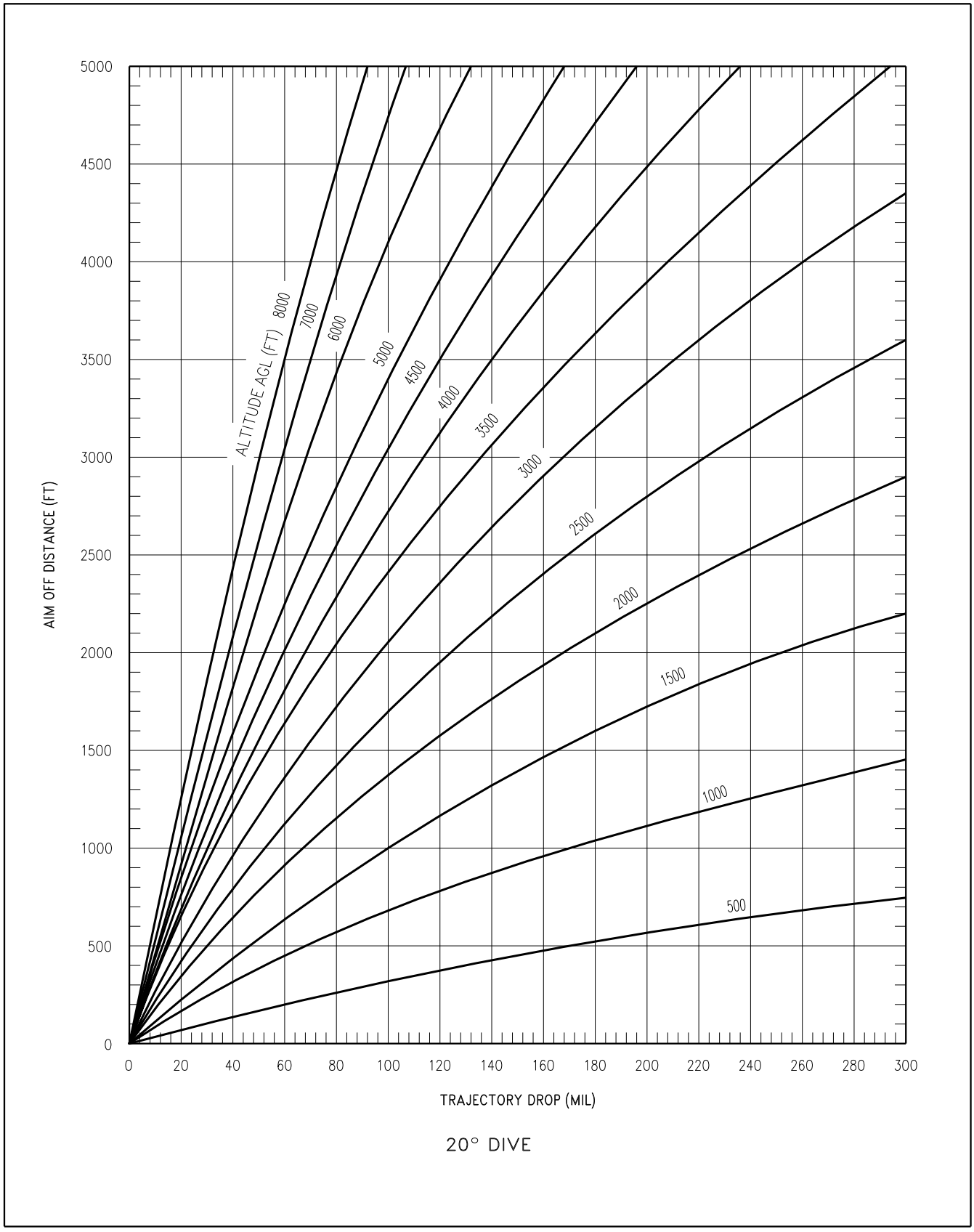
AV8BB-TAC-05-(5-2)09-CATI

Figure 1-25. Target Placement Angle Charts (Sheet 2 of 7)



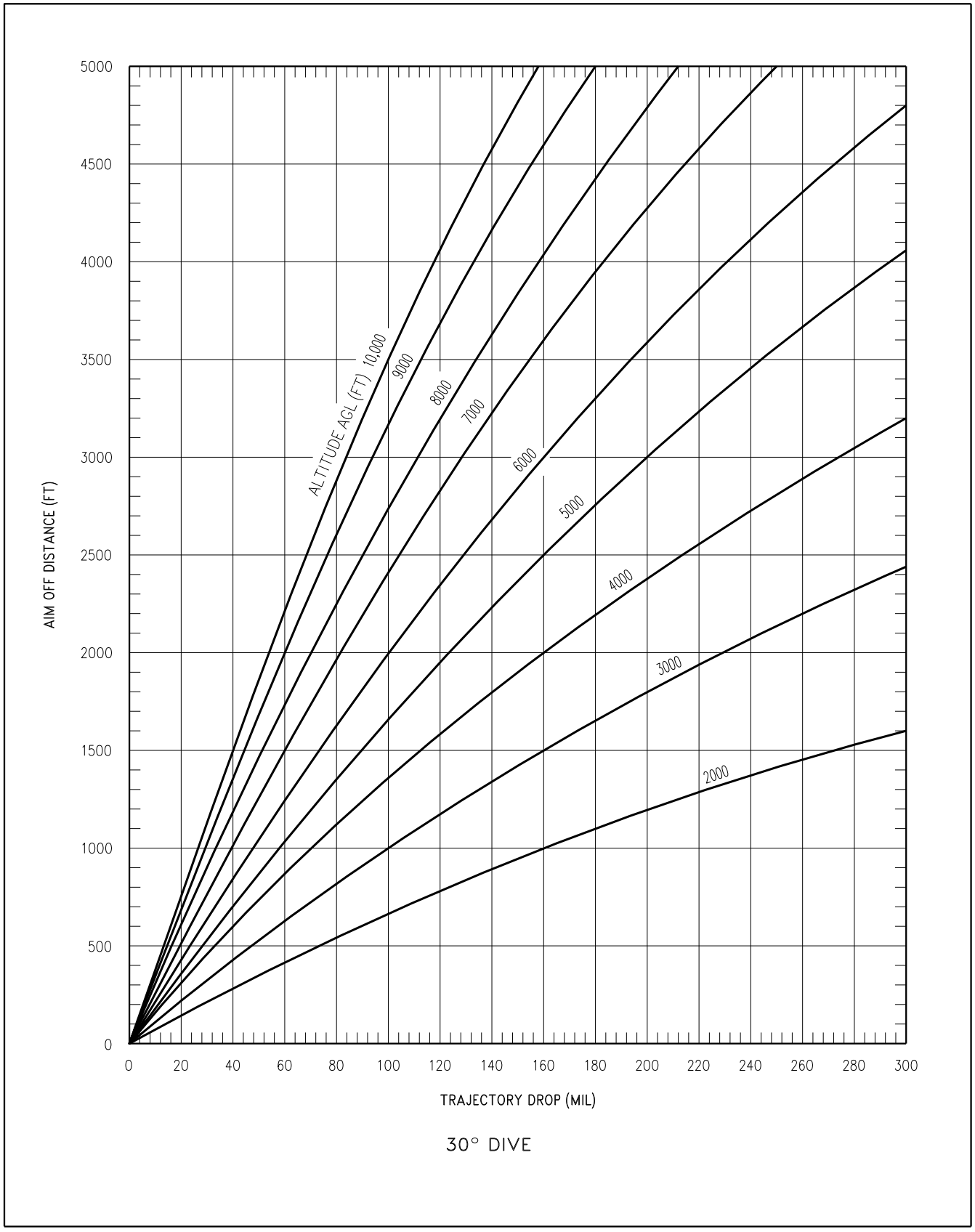
AV8BB-TAC-05-(5-3)09-CATI

Figure 1-25. Target Placement Angle Charts (Sheet 3 of 7)



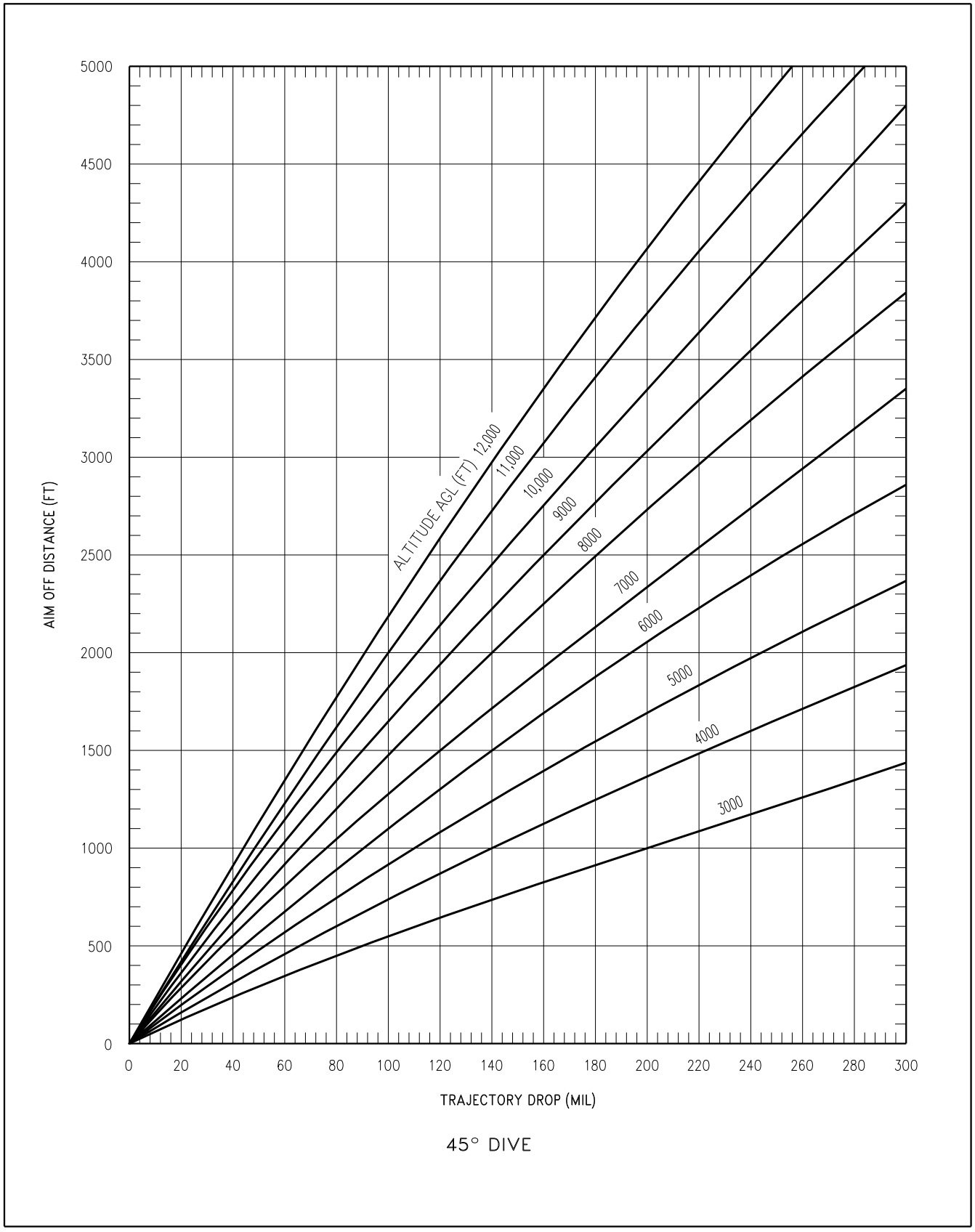
AV8BB-TAC-05-(5-4)09-CATI

Figure 1-25. Target Placement Angle Charts (Sheet 4 of 7)



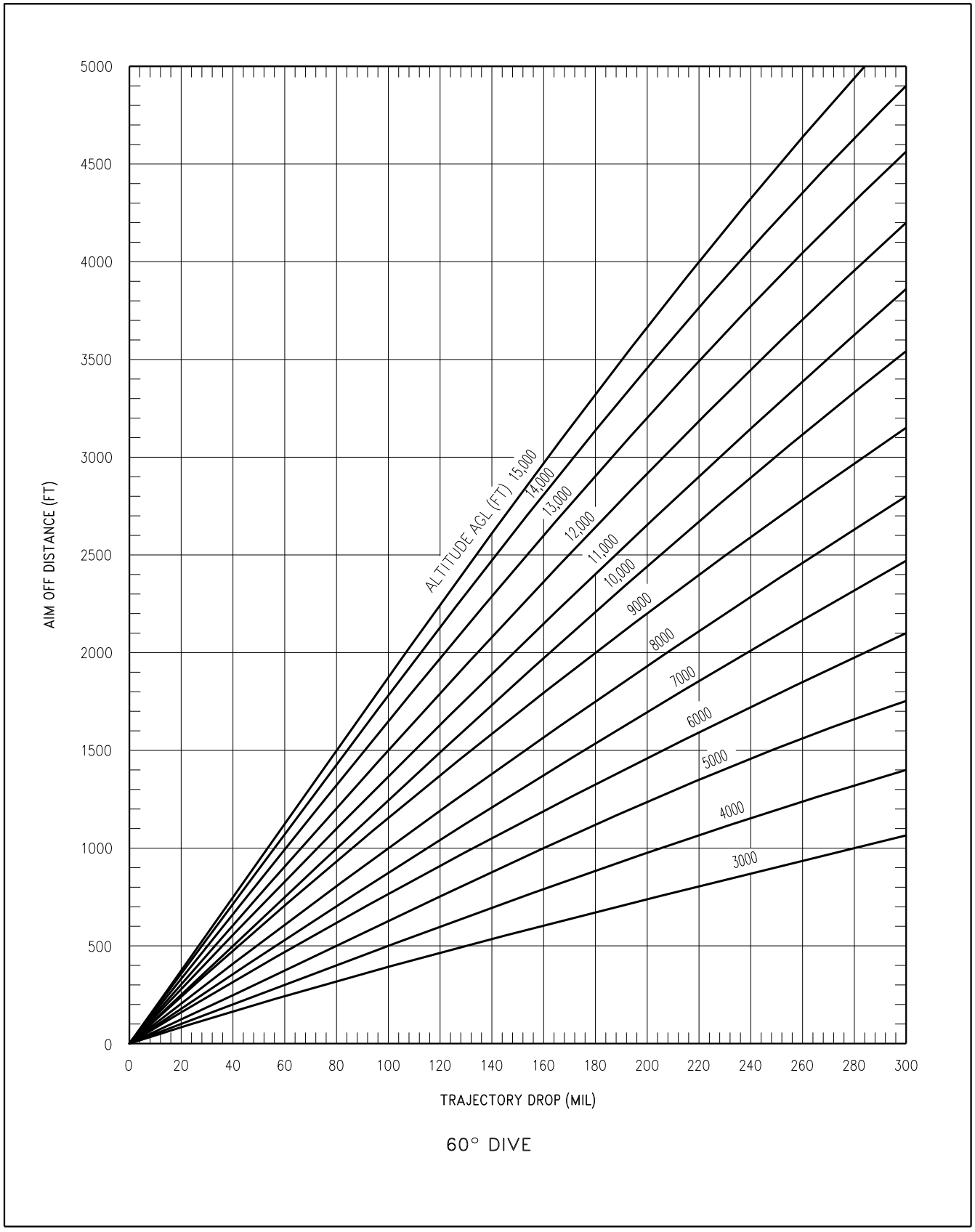
AV8BB-TAC-05-(5-5)09-CATI

Figure 1-25. Target Placement Angle Charts (Sheet 5 of 7)



AV8BB-TAC-05-(5-6)09-CATI

Figure 1-25. Target Placement Angle Charts (Sheet 6 of 7)



AV8BB-TAC-05-(5-7)09-CATI

Figure 1-25. Target Placement Angle Charts (Sheet 7 of 7)

1.6 STORES MANAGEMENT COMPUTER (SMC)

The SMC is a programmable digital computer. The SMC has a weapon loadout panel that is used to identify the weapon/store loaded on a station, identify the bomb fuzing for both nose and tail fuzed bombs, identify the FMU-140 height of function (HOF), identify the quantity loaded for non-fuzed stores (rockets, illumination, flares, etc.), identify the LUU-2 flare differential altitude, identify the ALE-39 dispenser load configuration, and indicate the rounds loaded in the fuselage gun.

Seven sets of rotary switches provide input for the type of weapon/store loaded on a station. On Day Attack aircraft, each set has two ten position switches that provide 100 combinations of two-character codes (STORE CODES) to identify the weapon/store. On Night Attack and Radar aircraft, each set has two fifteen position switches that provide 256 combinations of weapon/store codes. One set of switches is provided for each station.

Another seven sets of rotary switches provide input for bomb fuze codes. Each set has two switches for each station, one for nose fuze codes and one for tail fuze codes. The nose fuze codes are also used to identify the differential altitude for the LUU-2 flare. The tail fuze codes also indicate the quantity loaded for rocket and illumination flares, and the FMU-140 HOF.

For illumination flares, tail codes 1 through 15 are used to indicate the number of flares in each dispenser. Since SUU-25 dispensers are not authorized for ITER carriage, codes 0 through 8 will normally be the only tail codes used for SUU-25 dispensers with LUU-2 flares. The LUU-2 flare must be set for a differential altitude and each LUU-2 nose code must be the same. Any differences will produce an unresolvable load fault preventing selection and release of the flare.

For FMU-140 fuzed CBU's a nose fuze code of 7 is entered. Tail codes 1 to 10 are used to indicate the HOF of the FMU-140 fuze. This HOF, as dialed into the tail fuze code, is used by the mission computer to determine the proper CCIP or AUTO symbology to display for the weapon ballistics.

On Day Attack aircraft, the last group of switches provides two switches to identify the ALE-39 dispenser load configuration, five switches to identify the TER load configuration on stations 2 through 6, two switches to indicate rounds loaded in the fuselage gun, and two switches are spares. The switches used to identify the TER load configuration are no longer used and should be set to zero. The ITER automatically provides load configuration information to the SMC. A special cable must be installed in order for the ITER to provide this information.

On Night Attack and Radar aircraft, the last group of switches provides two switches to code each of the lower, left upper and right upper ALE-39 dispenser load configurations, two switches to indicate the rounds loaded in the fuselage gun, one set of switches to set the weapon code on each of the outrigger, pylons, and the last set is a spare.

Figure 1-26 provides the store code, DDI legend, weight and drag index for weapon/stores; also provided are tables showing the nose and tail fuze codes, FMU-140/B nose fuze coding, ALE-39 loadout codes, and LUU-2 differential altitude codes.

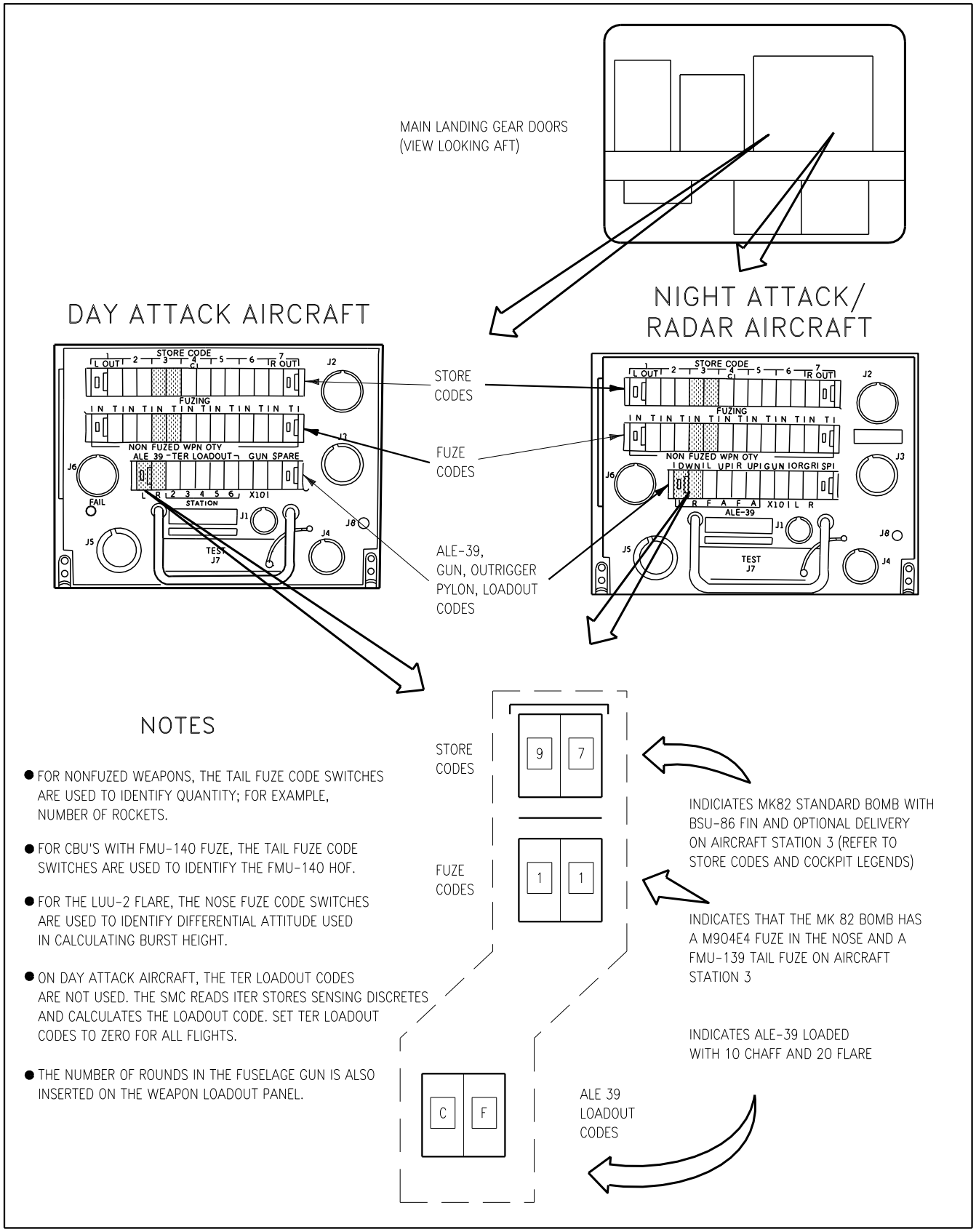
Figure 1-27 provides a legend of the fuze data displayed when the loadout panel (LOP) option is selected on the stores display.

Figure 1-28 provides a quick reference for weapon/fuze compatibility. Refer to Chapter 3, weapon fuzing, for additional fuzing details.

Figure 1-29 provides the fuze options displayed on the option display unit (ODU) and armament control panel (ACP) based upon weapon configuration (i.e., weapon body, fin, fuze installed). The fuzing options listed for that configuration can be scrolled for viewing and selection on the ODU when FUZE is selected. N or T, depicted by itself or in any combination,

stipulates the requirement of a bomb rack mechanical arming solenoid (nose or tail) to be energized for fuze or fin arming.

Figure 1-30 provides the sequences used by the SMC to select weapons for release. If no ITERs are being used for the selected weapon, the pilot can override the release sequence via the station step option pushbutton on the DDI stores display.



AV8BB-TAC-05-(59-1)10-CATI

Figure 1-26. Store, Fuze and Loadout Codes (Sheet 1 of 8)

TAIL FUZE CODES	
0	None
1	FMU-139
2	Not authorized
3	Mk 42
4	Mk 344 Mods
5	Mk 13 Mod 0
6	Not assigned
7	Mk 346 Mod 0
8	Mk 376 Mod 0
9	Not authorized
10	Not assigned
11	Not assigned
12	Not assigned
13	Not assigned
14	Not assigned
15	Mechanical

FMU-140/B —NOSE FUZE			
TAIL CODE	HOF	TAIL CODE	HOF
1	300	6	1500
2	500	7	1800
3	700	8	2200
4	900	9	2600
5	1200	10	3000

NOTE:
Codes 0 and 11-15 are fuze faults. Loadout (LOP) will display *** on DDI.

ALE-39 LOADOUT CODES	
Switch Position L or R	Number and Type of Payloads
—	None
CC	30 Chaff
CF	10 Chaff and 20 Flare
CJ	10 Chaff and 20 Jammer
FC	10 Flare and 20 Chaff
FF	30 Flare
FJ	10 Flare and 20 Jammer
JC	10 Jammer and 20 Chaff
JF	10 Jammer and 20 Flare
JJ	30 Jammer

Not authorized - Functional software is assigned to this code, not authorized for use.
Not assigned - No software (blank) gives fuze fault.

NOSE FUZE CODES	
0	None
1	Not authorized
2	Not authorized
3	M904E4 [1]
4	Mk 339 Mods
5	Mk 13 Mod 0
6	Not assigned
7	FMU-140/B
8	Mk 43 Mod 0 (electrical)
9	Mk 43 Mod 0 (mechanical)
10	Mk 32
11	Not assigned
12	Not assigned
13	Not assigned
14	Not assigned
15	Mechanical

NOTE:
[1] With nose fuze code 3 dialed into the SMC, the LOP will display ″904-10″ regardless of the actual fuze arming time set on the M904E4 fuze. The fuze will arm at the time set in the fuze.

LUU-2 DIFFERENTIAL ALTITUDE CODES		LUU-2 QUANTITIES	
NOSE CODE	ALTITUDE	TAIL CODE	QTY [1]
0	Not assigned	0	0
1	250	1	1
2	500	2	2
3	1000	3	3
4	1500	4	4
5	2000	5	5
6	3000	6	6
7	4000	7	7
8	5000	8	8
9	6000	9	9
10	7000	10	10
11	8000	11	11
12	9000	12	12
13	10000	13	13
14	11000	14	14
15	Not assigned	15	16

NOTE:
[1] Quantity of 15 cannot be specified.

Figure 1-26. Store, Fuze and Loadout Codes (Sheet 2 of 8)

BOMBS

STORE CODE	DDI LEGEND	WEAPON CONFIGURATION [1]	WEIGHT (POUNDS) [2]	DRAG INDEX [2]
00	NONE	No store (empty station)	N/A	N/A
01	76	Mk-76 on PMBR	26	0.75
25	76	Mk-76 on ITER	26	0.75
02	106	Mk-106 on PMBR	6	1.50
26	106	[3] Mk-106 Mod 5 on ITER	6	1.50
27	BD33	BDU-33 on ITER	25	0.75
28	BD48	BDU-48 on ITER	10	1.50
03	81	STD Mk-81 CONFIN/MAU-94/B, blunt nose	260	1.00
04	81	STD Mk-81 CONFIN/MAU-94/B, pointed nose	260	1.00
05	81H	STD Mk-81, Mk-14 HD	296	2.00
06	81L	STD Mk-81, Mk-14 LD	296	2.00
07	81HL/ 81L/81H	STD MK-81, Mk-14 IFS HD/LD	296	2.00
08	82	STD Mk-82 CONFIN/MAU-93/B, blunt nose	504	1.35
09	82	TP Mk-82 CONFIN/MAU-93/B, blunt nose	514	1.35
10	82	STD Mk-82 CONFIN/MAU-93/B, pointed nose	504	1.35
11	82	TP Mk-82 CONFIN/MAU-93/B, pointed nose	514	1.35
12	82H	STD Mk-82, MK-15 HD, all nose configurations	550	2.75
13	82H	TP Mk-82, Mk-15 HD, all nose configurations	561	2.75
14	82L	STD Mk-82, Mk-15 LD, all nose configurations	550	2.75
15	82L	TP Mk-82, Mk-15 LD, all nose configurations	561	2.75
16	82HL/ 82L/82H	STD Mk-82, Mk-15 IFS HD/LD, all nose configurations	550	2.75
17	82HL/ 82L/82H	TP Mk-82, Mk-15 IFS HD/LD, all nose configurations	561	2.75
77	82L	STD Mk-82, BSU-33, blunt nose	505	1.50
78	82L	TP Mk-82, BSU-33, blunt nose	515	1.50
79	82L	STD Mk-82, BSU-33, pointed nose	506	1.50
80	82L	TP Mk-82, BSU-33, pointed nose	516	1.50
93	82L	STD Mk-82, BSU-86 LD, all nose configurations	549	1.50
94	82L	TP Mk-82, BSU-86 LD, all nose configurations	559	1.50
95	82H	STD Mk-82, BSU-86 HD, all nose configurations	549	1.50
96	82H	TP Mk-82, BSU-86 HD, all nose configurations	559	1.50
97	82HL/ 82L/82H	STD Mk-82, BSU-86 IFS HD/LD, all nose configurations	549	1.50
98	82HL/ 82L/82H	TP Mk-82, BSU-86 IFS HD/LD, all nose configurations	559	1.50
20	83	STD Mk-83, CONFIN, blunt nose	975	2.25
21	83	TP Mk-83, CONFIN, blunt nose	989	2.25
22	83	STD Mk-83, CONFIN, pointed nose	978	2.25
23	83	TP Mk-83, CONFIN, pointed nose	992	2.25
62	83L	STD Mk-83, BSU-85 LD, all nose configurations	1012	2.25
63	83L	TP Mk-83, BSU-85 LD, all nose configurations	1026	2.25
64	83H	STD Mk-83, BSU-85 HD, all nose configurations	1012	2.25

Figure 1-26. Store, Fuze and Loadout Codes (Sheet 3 of 8)

BOMBS (cont)

STORE CODE	DDI LEGEND	WEAPON CONFIGURATION [1]	WEIGHT (POUNDS) [2]	DRAG INDEX [2]
65	83H	TP Mk-83, BSU-85 HD, all nose configurations	1026	2.25
66	83HL/ 83L/83H	STD Mk-83, BSU-85 IFS HD/LD, all nose configurations	1012	2.25
67	83HL/ 83L/83H	TP Mk-83, BSU-85 IFS HD/LD, all nose configurations	1026	2.25

CBUs/FIREBOMBS/LGBs/ILLUMINATION FLARES

STORE CODE	DDI LEGEND	WEAPON CONFIGURATION [1]	WEIGHT (POUNDS) [2]	DRAG INDEX [2]
33	CB78	CBU-78/B GATOR (day/night attack)	490	4.50
37	20	STD Mk-20 Mod 8, 10, 12 ROCKEYE/CBU-100/B, A/B (day/night attack)	490	4.50
38	20	TP Mk-20 Mod 7, 9, 11 ROCKEYE/CBU-99/B, A/B (day/night attack)	505	4.50
38	20	STD and TP Mk-20 Mod 7, 8, 11, 12 ROCKEYE, CBU-100/B, and CBU-99/B (radar)	505	4.50
40	77M4	Mk-77 Mod 4/5 fire bomb	545	4.00
18	GB12	GBU-12 500 lb laser guided bomb	609	3.25
30	GB16	GBU-16 1000 lb laser guided bomb	1096	5.50
47	SUF	Mk-24/Mk-45 flares in SUU-44/A dispenser (software only)	28/352	2.8/4.5
72	SU25	LUU-2 flares in SUU-25F/A dispenser	28/486	2.8/4.5
73	LU2	LUU-2 flare on ITER	28	2.80

AIR-TO-AIR AND AIR-TO-GROUND MISSILES, SPECIAL USE PODS

STORE CODE	DDI LEGEND	WEAPON CONFIGURATION [1]	WEIGHT (POUNDS) [2]	DRAG INDEX [2]
51	9M	AIM-9M sidewinder missile	189	2.25
53	9L	AIM-9L sidewinder missile	189	2.25
54	MAV	AGM-65E/CATM-65E laser maverick missile (day attack)	640	3.25
54	LMAV	AGM-65E/CATM-65E laser maverick missile (night attack)	640	3.25
55	IMAV	AGM-65F/CATM-65F infrared maverick missile (night attack and radar)	669	3.20
59	SA	AGM-122 sidearm missile (day and night attack)	203	2.25
76	TACT	Special use pods (TACTS, ACMI, AIS, etc.)	122	2.00

Figure 1-26. Store, Fuze and Loadout Codes (Sheet 4 of 8)

ROCKETS

STORE CODE	DDI LEGEND	[1] WEAPON CONFIGURATION	[2] WEIGHT (POUNDS)	[2] DRAG INDEX
41	10S	[4] LAU-10 series rocket launcher, 4 x 5.00″ ZUNI, single selected	138/688	.75/8.5
42	10R	[4] LAU-10 series rocket launcher, 4 x 5.00″ ZUNI, ripple selected	138/688	.75/8.5
43	61S	[5] LAU-61 series rocket launcher, 19 x 2.75″, single selected	21/554	.25/15.0
44	61R	[5] LAU-61 series rocket launcher, 19 x 2.75″, ripple selected	21/554	.25/15.0
45	68S	[5] LAU-68 series rocket launcher, 7 x 2.75″, single selected	21/232	.25/5.0
46	68R	[5] LAU-68 series rocket launcher, 7 x 2.75″, ripple selected	21/232	.25/5.0
81	10S	[6] LAU-10 series rocket launcher, 4 x 5.00″ ZUNI, single selected	128/678	.75/8.5
82	10R	[6] LAU-10 series rocket launcher, 4 x 5.00″ ZUNI, ripple selected	128/678	.75/8.5
83	61S	[7] LAU-61 series rocket launcher, 19 x 2.75″, single selected	18/551	.25/15.0
84	61R	[7] LAU-61 series rocket launcher, 19 x 2.75″, ripple selected	18/551	.25/15.0
85	68S	[7] LAU-68 series rocket launcher, 7 x 2.75″, single selected	18/229	.25/5.0
86	68R	[7] LAU-68 series rocket launcher, 7 x 2.75″, ripple selected	18/229	.25/5.0
87	61S	[8] LAU-61 series rocket launcher, 19 x 2.75″, single selected	23/556	.25/15.0
88	61R	[8] LAU-61 series rocket launcher, 19 x 2.75″, ripple selected	23/556	.25/15.0
89	68S	[8] LAU-68 series rocket launcher, 7 x 2.75″, single selected	23/234	.25/5.0
90	68R	[8] LAU-68 series rocket launcher, 7 x 2.75″, ripple selected	23/234	.25/5.0

DESTRUCTORS

STORE CODE	DDI LEGEND	[1] WEAPON CONFIGURATION	[2] WEIGHT (POUNDS)	[2] DRAG INDEX
60	MINE	STD Mk-36 DST, Mk-15 HD, day attack (also STD Mk-62 QUICKSTRIKE mine, Mk-15 HD for day attack, software only)	553	2.70
60	36H	STD Mk-36 DST, Mk-15 HD, night attack	553	2.70
61	MINE	TP Mk-36 DST, Mk-15 HD, day attack (also TP Mk-62 QUICKSTRIKE mine, Mk-15 HD for day attack, software only)	563	2.70

Figure 1-26. Store, Fuze and Loadout Codes (Sheet 5 of 8)

DESTRUCTORS (cont)

STORE CODE	DDI LEGEND	WEAPON CONFIGURATION [1]	WEIGHT (POUNDS) [2]	DRAG INDEX [2]
61	36H	TP Mk-36 DST, Mk-15 HD, night attack	563	2.70
68	40H	STD Mk-40 DST, MAU-91 HD (software only)	1041	4.50
69	40H	TP Mk-40 DST, MAU-91 HD (software only)	1055	4.50
74	MINE	STD Mk-36 DST, BSU-86 HD, day attack (also STD Mk-62 QUICKSTRIKE mine, BSU-86 HD for day attack, software only)	551	2.70
74	36H	STD Mk-36 DST, BSU-86 HD night attack	551	2.70
75	MINE	TP Mk-36 DST, BSU-86 HD, day attack (also TP Mk-62 QUICKSTRIKE mine, BSU-86 HD for day attack, software only)	561	2.70
75	36H	TP Mk-36 DST, BSU-86 HD, night attack	561	2.70

MISCELLANEOUS (BLIVET, TANKS, DECM. ETC.)

STORE CODE	DDI LEGEND	WEAPON CONFIGURATION [1]	WEIGHT (POUNDS) [2]	DRAG INDEX [2]
19	-	Spare		
24	TEST	Test set		
29	-	Spare		
31	-	Spare		
32	-	Spare		
34	-	Spare		
35	-	Spare		
36	-	Spare		
39	SID	ADSID III (day attack, software only)	3.7	1.20
39	SID	ADSID V (night attack, software only)	5.7	2.00
48	SU23	SSQ-23/A sonobuoy, SUU-44/A dispenser	18/236	4.5
49	SU50	SSQ-50/A sonobuoy, SUU-44/A dispenser	40/368	4.5
50	EBC	MXU-648 external baggage container	[9] 396	5.50
52	-	Spare		
55	-	Spare (day attack aircraft)		
56	FUEL	300 gallon fuel tank	[10] 198	7.75
57	DECM	AN/ALQ-164 DECM pod	415	9.00
58	-	AN/ALQ-165 ASPJ DECM pod (night attack and radar, spare on day attack)	505	9.20
59	-	Spare (radar)		
70	-	Spare		
71	-	Spare		
91	-	Spare		
92	-	Spare		
99	-	No stores control unit installed		

Figure 1-26. Store, Fuze and Loadout Codes (Sheet 6 of 8)

CARRIAGE AND MISCELLANEOUS EQUIPMENT

EQUIPMENT	WEIGHT (POUNDS)	[11] DRAG INDEX
A/A37B-3 PMBR	96	3.75
ADU-299A/A	24	[12]
BRU-42/A ITER	129	4.10
GAU-12/U, 25 MM gun system (empty)	1014	6.70
25 MM unexpended round	1	N/A
25 MM empty case	0.5	N/A
LAU-7/A-5 (AIM-9/AGM-122 launcher)	90	1.40
LAU-10D/A (4 x 5.00″ ZUNI pod)	136	5.50
LAU-61C/A (19 x 2.75″ FFAR pod)	155	10.25
LAU-68D/A (7 x 2.75″ FFAR pod)	85	3.25
LAU-117A (MAV launcher)	135	1.10
SUU-25F/A LUU-2 dispenser (empty)	262	4.25
SUU-44/A	128	4.25
IFR probe	107	2.30
Strakes	96	1.00
NAVFLIR	211	1.40
Outboard pylon W/BRU-36	96	1.40
Outboard pylon W/O BRU-36	67	1.40
Intermediate pylon	131	2.55
Inboard pylon	143	1.80
Centerline pylon	86	1.50

NOTES:

[1] The weapon configuration listed is that upon which the ballistics are based for that store code and should not be interpreted to mean that only that exact configuration is authorized with a specific stores code. Refer to chapter 5, External Stores Limitations, for authorized loads.

[2] Weight and drag index is provided for single stores carried on parent station or ITERs. For items carried in rocket pods or flare/sonobuoy dispensers, the weight or drag index of the individual store is given followed by the weight or drag index of the fully loaded pod or dispenser. Store code 27 (weight 28/486, drag index 2.8/4.25) shows that the weight of a LUU-2 is 28 lbs., and a SUU-25 with a full load of 8 LUU-2's weighs 486 lbs. Drag index is 2.8 for the flare, 4.25 for the full dispenser.

[3] Stores code 26 provides the best ballistic match for the Mk-58 MLM when carried as a single on ITER station 1. See chapter 2 for additional details and delivery data.

[4] Ballistics assume Mk-71 motor.

[5] Ballistics assume Mk-4 motor.

[6] Ballistics assume Mk-71 Mod 1 motor.

[7] Ballistics assume Mk-4 motor.

Figure 1-26. Store, Fuze and Loadout Codes (Sheet 7 of 8)

NOTES (cont):

[8] Ballistics assume Mk-66 motor.

[9] Weight of full MXU-648 EBC (used by VREST).

[10] Weight of empty 300 gallon fuel tank.

[11] Interference Drag: Intermediate ITER with one to three stores next to inboard ITER with one to three stores has interference drag index of 1.75 per ITER. Inboard/intermediate ITER with one to three stores next to anything but an ITER with one to three stores has no interference drag.

[12] The drag of the adapter is included in the LAU-7A-5 launcher drag index.

GENERAL NOTES:

Blunt nose = M904 fuze, MXU-735 solid steel round nose plug, or open cavity (inert only).

Pointed nose = Mk-43 TDD or steel nose plug.

Use Mk-82 stores codes for BDU-45s. Use Mk-83 stores codes for inert Mk-83s.

LD - low drag

HD - high drag

IFS - in flight selectable

STD - standard (non-thermally protected)

TP - thermally protected

DST - destructor

Figure 1-26. Store, Fuze and Loadout Codes (Sheet 8 of 8)

LOP OPTION SELECTED ON STORES DISPLAY					
NOSE FUZE CODE ON SMS	FUZE LEGEND ON WING FORM	FUZE DESCRIPTION	TAIL FUZE CODE ON SMS	FUZE LEGEND ON WING FORM	FUZE DESCRIPTION
0	Not applicable	None	0	Not applicable	None
[1] 1	904 2	Not Authorized	1	11701	FMU-139/U series
[1] 2	904 6	Not Authorized	2		Not Authorized
[2] 3	904 10	M904E4	3	42	Mk 42
4	339	Mk 339 Mods	4	344	Mk 344 Mods
5	13	Mk 13 Mod 0	5	13	Mk 13 Mod 0
6	***	Not assigned	6	***	Not assigned
[3] 7	140	FMU-140	7	346	Mk 346 Mod 0
8	43E	Mk 43 Mod 0 (Electric)	8	376	Mk 376 Mod 0
9	43M	Mk 43 Mod 0 (Mechanical)	9		Not Authorized
10	32	Mk32	10	***	Not assigned
11	***	Not assigned	11	***	Not assigned
12	***	Not assigned	12	***	Not assigned
13	***	Not assigned	13	***	Not assigned
14	***	Not assigned	14	***	Not assigned
15	MECH	Mechanical	15	MECH	Mechanical

LEGEND:

[1] Although the LOP will show a legend of ″904 2″ or ″904 6″, these nose fuze codes are not authorized.

[2] The LOP legend will show ″904 10″ regardless of the actual fuze arm time set on the M904E4 fuze.

[3] Tail fuse codes used in conjunction with nose fuse code 7 designates altitude (HOF).

Figure 1-27. LOP Option Fuse Legends

Fuze	Mk 81 Mk 82 Mk 83 Bombs	GBU-12 GBU-16 Laser Guided Bombs	Mk 77 Mod 4/5 Fire Bomb	Mk 36 Mods Mk 40 Mods Destructor	Mk 20 Mods CBU-99/100 Cluster Bomb
TAIL Mk 344 Mod 0/1 Electrical	X	X			
Mk 376 Mod 0 Electrical	X	X			
FMU- 139 Electrical	X 3	X			
Undefined Mechanical	X				
NOSE M904E4 Mechanical	X				
Mk 43 Mod 0 2	X 1				
FMU-140 A/B Mechanical 4					X
Undefined Mechanical	X				
NOSE and TAIL Mk 13 Mod 0 Mechanical			X		
TAIL Mk 42 Firing Mecha- nism Mechanical	X			X	
NOSE Mk 32 Arming Device Mechanical	X 3			X	
Mk 339 Mod 0/1 Mechanical (Timing)					X

Figure 1-28. Conventional Weapon/Fuze Compatibility (Sheet 1 of 2)

Fuze	Mk 81 Mk 82 Mk 83 Bombs	GBU-12 GBU-16 Laser Guided Bombs	Mk 77 Mod 4/5 Fire Bomb	Mk 36 Mods Mk 40 Mods Destructor	Mk 20 Mods CBU-99/100 Cluster Bomb
NOTES: [1] Requires an electrical tail fuze (Mk 344, Mk 376 or FMU-139). [2] +300 vdc activates Mk 43 and tail fuze. –300 vdc or ±195 vdc activates tail fuze only. Mechanically initiated Mk 43 and –195 vdc or –300 vdc provides V1 and V2. [3] Mk 82/83 only. [4] Day and Night Attack aircraft.					

Figure 1-28. Conventional Weapon/Fuze Compatibility (Sheet 2)

FUZES			
FMU-139 SAFE IN D1	MK 376 SAFE IN D1 D2	FMU-140 SAFE PR OP	MK 339 SAFE PR OP
M904 SAFE N	MK 13 SAFE NT	MK 43 MECH 376 139 SAFE SAFE V V V1 V1 V2	MK 43 ELEC 376 139 SAFE SAFE V V
FINS			
LOW DRAG þ		HIGH DRAG T	
WEAPON			
GP LOW DRAG NOSE FUZE SAFE N	GP HIGH DRAG NOSE FUZE SAFE NT	GP LOW DRAG [1] TAIL FUZE SAFE IN D1 D2	GP HIGH DRAG [1] TAIL FUZE SAFE TIN TD1 TD2
GP LOW DRAG NOSE FUZE [1] TAIL FUZE SAFE NIN ND1 ND2 N IN D1 D2		GP HIGH DRAG NOSE FUZE [1] TAIL FUZE SAFE NTIN NTD1 NTD2 NT TIN TD1 TD2	
GP LOW DRAG VT (MECH ARM) [1] TAIL FUZE SAFE V V1 V2 IN D1 D2	GP HIGH DRAG VT (MECH ARM) [1] TAIL FUZE SAFE TV TV1 TV2 TIN TD1 TD2	GP LOW DRAG VT (ELEC ARM) [1] TAIL FUZE SAFE V IN D1 D2	GP HIGH DRAG VT (ELEC ARM) [1] TAIL FUZE SAFE TV TIN TD1 TD2

Figure 1-29. Fuzing/Fin Options (Sheet 1 of 2)

WEAPON (cont)		
MAV SAFE IN D1 D2	DESTRUCTORS SAFE NT	CBU NOSE FUZE SAFE PR OP

Fuzing Options:

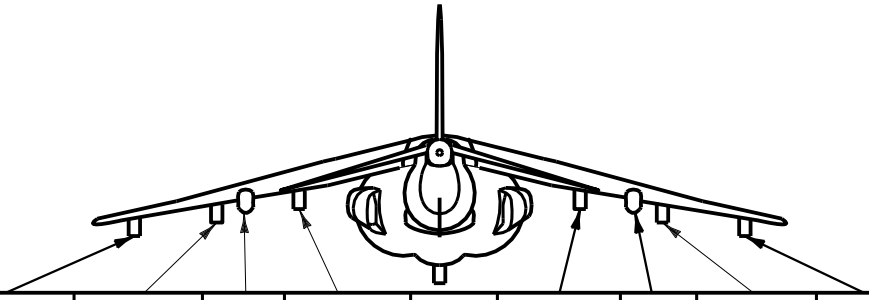
ALTF	—	Altitude option (selectable from ODU only)
D1	—	Delay 1 electrical fuzing
D2	—	Delay 2 electrical fuzing
IN	—	Instantaneous electrical fuzing
N	—	Nose arming solenoid
ND1	—	Nose arming solenoid **and** delay 1 electrical fuzing
ND2	—	Nose arming solenoid **and** delay 2 electrical fuzing
NIN	—	Nose arming solenoid **and** instantaneous electrical fuzing
NT	—	Nose and tail arming solenoid
NTD1	—	Nose and tail arming solenoids **and** delay 1 electrical fuzing
NTD2	—	Nose and tail arming solenoids **and** delay 2 electrical fuzing
NTIN	—	Nose and tail arming solenoids **and** instantaneous electrical fuzing
OP	—	Option
PR	—	Primary
T	—	Tail arming solenoid
TD1	—	Tail arming solenoid **and** delay 1 electrical fuzing
TD2	—	Tail arming solenoid **and** delay 2 electrical fuzing
TIN	—	Tail arming solenoid **and** instantaneous electrical fuzing
TV	—	Tail arming solenoid **and** variable electrical fuzing
TV1	—	Tail arming solenoid **and** variable delay 1 electrical fuzing
TV2	—	Tail arming solenoid **and** variable delay 2 electrical fuzing
V	—	Variable electrical fuzing
V1	—	Variable delay 1 electrical fuzing
V2	—	Variable delay 2 electrical fuzing
SAFE	—	SAFE option can be used with all fuze codes.

NOTES:

[1] Options shown are for the Mk 376 combination. When the FMU-139 is used in place of the Mk 376, the V2, D2, TV2, TD2, options will not be displayed.

Figure 1-29. Fuzing/Fin Options (Sheet 2 of 2)

ARMAMENT STATIONS – AV-8B



WEAPON	NO. ITERS ABOARD	(1)	(2)	(1A)	(3)	(4)	(5)	(7A)	(6)	(7)
Mk76/ITER Mk81/STD Mk81/MAU-94 Mk81/Mk14 LD Mk82/STD Mk82/MAU-93 Mk82/BSU-33 Mk82/Mk15 LD Mk82/BSU-86 LD BDU-33/ITER GBU-12	NONE	1	3	–	5	–	6	–	4	2
	2	1	3	–	7 9 5	–	8 10 6	–	4	2
	2	1	7 9 3	–	5	–	6	–	8 10 4	2
WEAPON/STORE CODES 03 14 78 04 15 79 06 16LD 80 07LD 17LD 93 08 18 94 09 25 97LD 10 27 98LD 11 77	4	1	9 13 5	–	7 11 3	–	10 14 4	–	8 12 6	2
Mk20 Mk77 MOD4, MOD5	NONE	1	5	–	3	–	4	–	6	2
	2	1	5	–	7 9 3	–	8 10 4	–	6	2
WEAPON/STORE CODES 37 38 40	2	1	6 8	–	3	–	4	–	5 7	2
	4	1	4 11	–	7 9 6	–	5 12 3	–	8 10	2
Mk83/STD Mk83/BSU-85 LD GBU-16	NONE	–	1	–	3	–	4	–	2	–
WEAPON/STORE CODES 20 23 63 66 21 30 64 67 22 62 65	2	–	1	–	5 7 3	–	6 8 4	–	2	–

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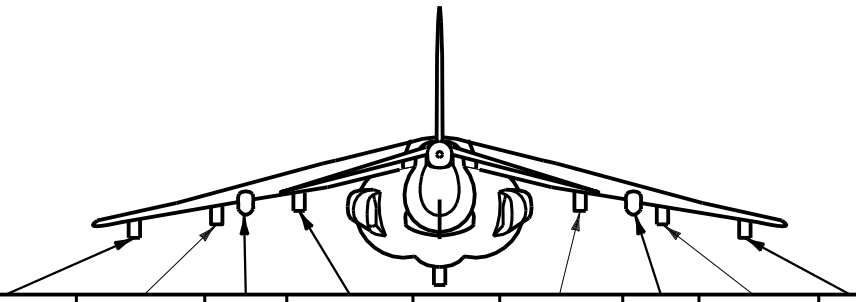
Figure 1-30. Release Sequence (Sheet 1 of 3)

ARMAMENT STATIONS – AV-8B

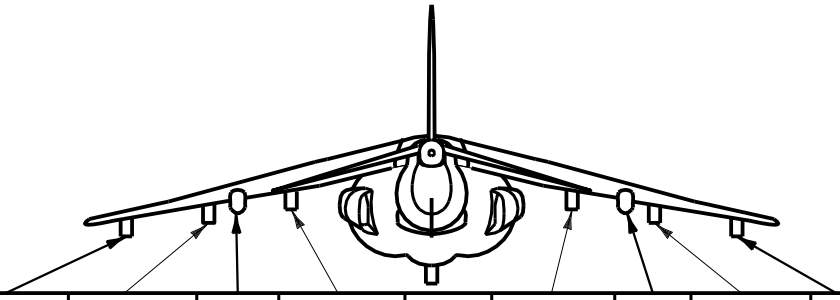


WEAPON	NO. ITERS ABOARD	(1)	(2)	(1A)	(3)	(4)	(5)	(7A)	(6)	(7)
MAVERICK WEAPON/STORE CODES 54 55	NONE	–	1	–	3	–	4	–	2	–
ROCKETS WEAPON/STORE CODES 41 81 86 42 82 87 43 83 88 44 84 89 45 85 90 46	NONE	–	1	–	3	–	4	–	2	–
	2	–	1	–	5 7 3	–	6 8 4	–	2	–
	2	–	3 5	–	1	–	2	–	4 6	–
	4	–	3 7	–	5 9 1	–	6 10 2	–	4 8	–
DISPENSERS WEAPON/STORE CODES 72	NONE	1	3	–	–	–	–	–	4	2
	2	1	3 5	–	–	–	–	–	4 6	2
Mk40/MAU-91 HD WEAPON/STORE CODES 68 69	4	–	3	–	1	–	4	–	2	–
CBU-78 Mk36/Mk15 HD Mk36/BSU-86 HD Mk81/Mk14 HD Mk82/Mk15 HD Mk82/BSU-86 HD Mk106/ITER BDU-48/ITER WEAPON/STORE CODES 05 17HD 74 07HD 26 75 12 28 95 13 33 96 16HD 60 97HD 61 98HD	NONE	1	5	–	3	–	4	–	6	2
	2	1	5	–	7 3	–	8 4	–	6	2
	2	1	8 10 5	–	3	–	4	–	7 9 6	2
	4	3	7 11 5	–	9 1	–	8 6	–	10 12 2	4

AV8BB-TAC-05-(79-2)10-CATI

Figure 1-30. Release Sequence (Sheet 2 of 3)

ARMAMENT STATIONS – AV-8B



WEAPON	NO. ITERS ABOARD	(1)	(2)	(1A)	(3)	(4)	(5)	(7A)	(6)	(7)
SIDEWINDER SIDEARM WEAPON/STORE CODES 51 59 53	–	1	3	–	–	–	–	–	4	2

NOTES

1. WEAPONS ARE RELEASED IN THE SEQUENCE BENEATH THE LIST OF ARMAMENT STATIONS. THE NEXT WEAPON LOCATION IN THE SEQUENCE IS SKIPPED IF THERE IS NO SELECTED WEAPON ON THAT STATION.

2. WEAPONS/STORES ABOARD STATIONS 1 AND 7 INHIBIT RELEASE OF WEAPONS/STORES FROM THE OUTBOARD ITER SHOULDER ON STATIONS 2 AND 6.

3. FOR DISPENSERS WHEN MULTIPLE SELECTED IS 2 OR LESS, STATIONS 1 AND 7 WILL BE EMPTIED BEFORE SEQUENCING TO STATIONS 2 AND 6.

4. FOR ROCKETS WHEN THE MULTIPLE SELECTED IS 2 OR LESS, STATIONS 2 AND 6 WILL BE EMPTIED BEFORE SEQUENCING TO STATIONS 3 AND 5.

5. RELEASE PULSES ARE INHIBITED FROM STATION 4 IN AUTO, CCIP, AND DSL RELEASE MODES. ANY STORE OTHER THAN AN/ALQ-164 DEFENSIVE ELECTRONIC COUNTERMEASURES POD WILL CAUSE AN UNRESOLVEABLE LOAD FAULT TO BE DISPLAYED ON THE STORES PLAN FORM.

AV8BB-TAC-05-(79-3)09-CATI

Figure 1-30. Release Sequence (Sheet 3 of 3)

CHAPTER 2

Weapon Description and Delivery Data

2.1 MK 80 - SERIES GENERAL PURPOSE BOMBS

2.1.1 Description. General purpose (GP) bombs, Mk 80-series (see Figure 2-1), are used extensively against a variety of targets. Their cases are relatively light, and approximately 45 to 50 percent of the complete weight is explosive. Although not intended for penetration of armor, the casing is sufficiently strong to provide good weapon penetration on soft to medium hard targets when using other than an instantaneous fuze functioning delay. When fuzed for instantaneous or VT functioning, they provide good fragmentation for use against personnel and light equipment. For effective penetration of hard targets a hardened nose plug is installed in the nose fuze cavity and requires the use of an electrical or mechanical tail fuze.

GP bombs are designed for both electrical and mechanical fuzing. Nose and tail fuze cavities are interconnected by an electrical cable with a fuze charging receptacle located between the two suspension lugs. Mechanical fuzes may be installed either in the nose or tail cavity with the addition of an adapter booster. Electrical fuzes are installed in the tail cavity only and do not require an adapter booster. VT elements are non-explosive and installed in the nose cavity. Tail fuzing only (non-VT) requires the installation of a hardened nose plug to prevent weapon breakup at impact.

GP bombs can also be configured as mines (Mk 36/40 DSTs and Mk 62/63 underwater mines) for area denial or as a Depth Bomb (DB) against surfaced/shallow running submarines.

NOTE

A GP bomb configured as a Depth Bomb (DB) is ONLY AUTHORIZED to use the M904E3/E4 mechanical nose fuze.

With the exception of the Mk 81, recent production GP bombs have a thermal protective (TP) coating. Provided thermally protected fuzes and adapter boosters are installed, this coating provides several minutes additional time before the bombs detonate or deflagrate (go low-order) during a fire. GP bombs without thermal protection are still available for use. Shipboard use specifically requires thermally protected bombs, fuzes, and adapter boosters.

The BLU-110A/B GP bomb (improved Mk 83) and the BLU-111A/B GP bomb (improved Mk 82) are thermally coated and further enhance weapon cookoff safety time due to the PBXN-109 explosive fill. PBXN-109 explosive is an insensitive munition which resists detonation due to heat or impact shock. Mk 80 series GP bombs contain an H-6 explosive fill. BLU-110A/B and BLU-111A/B bombs are identical in appearance to Mk 83 and Mk 82 bombs, respectively, except that BLU-110A/B and BLU-111A/B bombs have three yellow nose stripes as opposed to only two for the Mk83 and Mk82 bombs.

NOTE

BLU-110A/B and BLU-111A/B bombs are direct Form / Fit / Function replacements for Mk 83 and Mk 82 bombs respectively, and are cleared to the same respective carriage / release limits.

2.1.2 Conical Fins. Conical fins are used with all Mk 80 series bombs for low-drag deliveries. The fin assembly is installed in a X configuration

in relation to the bomb suspension lugs. The fin has an access cover for inspection of the tail fuze and provisions for installation of an electrical fuze arming wire.

The BSU-33A/B conical fin assembly is the replacement for the Mk 82 MAU-93 conical fin. It is similar in appearance to the MAU-93 fin; however, several modifications have been made to increase weapon roll control and stability which enhances target impact accuracy at high and low speed deliveries. The increased fin size and offset angle to the fore and aft axis of the fin assembly in addition to wedge plates attached to the outboard trailing edge of each fin, provide the enhanced flight characteristics. Also, a singular quick-attach device, which replaces the multiple allen set screws used for bomb body attachment, reduces weapon assembly time and effort.

2.1.3 Retarding Fins. Mk 81 and 82 bombs can be configured with retarding high drag fins which enable them to be delivered in the high drag or low drag mode. With the high drag fins, the impact angle is increased which provides greater weapon effectiveness in low-level deliveries. The increased bomb to aircraft separation afforded by the high drag fins permit the use of short fuze arming times.

Mk 14 fins are used with the Mk 81 and Mk 15 fins are used with Mk 82 bombs. When carried on parent stations and if high drag is desired, the fins are actuated by the withdrawal of a fin release wire which is positive rigged to ALWAYS withdraw at weapon release which DOES NOT allow a pilot option delivery mode.

NOTE

In-flight pilot option delivery mode (retard/non-retard) NOT AUTHORIZED with Mk 14 and Mk 15 fins. Delivery mode MUST BE preflight selected.

Some fuzing applications require the use of an interlocking arming wire which is connected between the fin and nose fuze to ensure that the nose fuze will not arm unless the fins have been deployed.

WARNING

Refer to External Stores Limitations, chapter 5, Specific Notes for current Mk 14/15 fin restrictions.

The BSU-86/B fin is similar to the Mk 15 fin and capable of higher release speeds (high/low drag). The fin blades are shorter and wider and have wedges/slots to induce a stabilizing roll during low drag deliveries. A permanently mounted Spring Arming Wire System, i.e., SAWS precludes the need for an arming wire for high-drag releases.

NOTE

Current bomb parent rack (BRU-36) arming solenoid's design does not allow a pilot option delivery mode except when utilizing ITER (BRU-42 ZRF) bomb racks. Delivery mode (low/high drag) for the BSU-86 on other than ITER racks must be preflight selected.

The BSU-85/B ram air inflatable high-drag assembly provides a high-speed low-/high-drag delivery capability for the Mk 83 GP bomb. The fixed fin stabilizer housing contains the inflatable nylon high-drag device (ballute). Activation of the lanyard assembly at weapon release frees the ballute into the airstream. Each stabilizer fin has a trailing edge wedge to provide a stabilizing spin.

NOTE

Current bomb parent rack (BRU-36) arming solenoid's design does not allow a pilot option delivery mode except when utilizing ITER (BRU-42 ZRF) bomb racks. Delivery mode (low/high drag) for the BSU-85 on other than ITER racks must be preflight selected.

2.1.4 Limitations. Additional information on use and application of GP bombs is found in Weapon Fuzing, chapter 3, and JMEM's.

WARNING

Although a GP bomb can be released safe and will theoretically dud at impact, a high-order detonation is possible. Therefore, all normal release restrictions (minimum release altitudes, safe separation, etc.) must be observed when jettisoning.

2.1.5 Preflight Checks. Refer to NWP 3-22.5-AV8B PG, Pocket Guide, for current Preflight checks.

2.1.6 Delivery Data. Safe escape tables, fragmentation envelope charts, sight angle charts, delivery data tables, release error sensitivities tables, interbomb spacing tables, and loft delivery data tables are provided for the Mk 80 series bombs (Figures 2-2 through 2-35 and 2-38 through 2-53). The data presented were computed using ballistic parameters for thermally protected bomb bodies but do not differ significantly from standard bomb bodies, thus may be used for either.

2.1.7 Guided Bomb Units (GBUs). The GBU-12s (500-pound class) and GBU-16s (1,000-pound class) are cleared for carriage and release. Refer to NWP 3-22.5-AV8B, Vol. III, paragraph 1.4 for configuration description and employment information. Refer to chapter 5 of this volume for specific carriage and release limitations. Refer to Figure 1-26 of this volume for store, fuze and loadout codes. Refer to the list that follows for the location of applicable delivery information that is presented in this volume.

GBU-12:

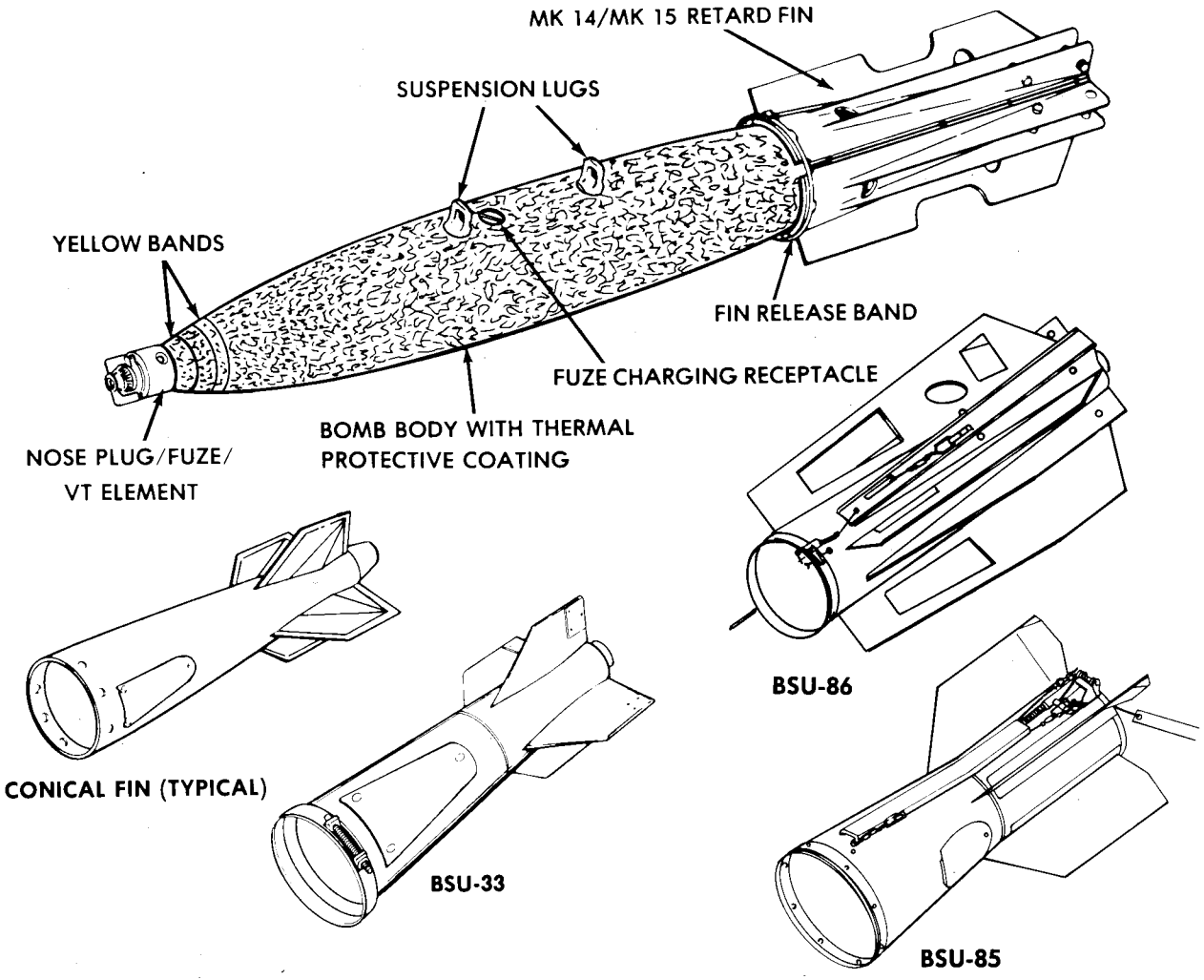
Information	Figure
Safe Escape Table	Figure 2-16
Dynamic Frag Envelope	Figure 2-17
Sight Angle Charts	Figure 2-18
Tabulated Delivery Data	Figure 2-19
Release Error Sensitivities	Figure 2-20
Loft Delivery Data	Figure 2-53

GBU-16:

Information	Figure
Safe Escape Table	Figure 2-38
Dynamic Frag Envelope	Figure 2-39
Sight Angle Charts	Figure 2-40
Tabulated Delivery Data	Figure 2-41
Release Error Sensitivities	Figure 2-42
Loft Delivery Data	Figure 2-53

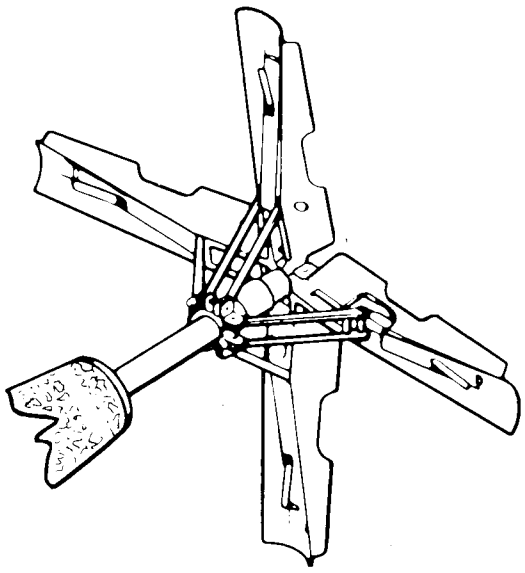
Refer to paragraphs 1.3.9 through 1.3.14 in this volume for descriptive information regarding safe escape tables, dynamic fragment envelopes, sight angle charts, tabulated delivery data, release error sensitivities and loft delivery data, respectively. Finally, refer to paragraphs 3.12 through 3.15 in this volume for information defining minimum release altitudes required for fuze to arm, early burst maneuvers, fuze arming times, and probability of fragment hit in the event of early burst, respectively.

Characteristics	Mk 81	MK 82	MK 82/ BSU-86	MK 83	MK 83/ BSU-85
Length (Inches)					
Conical	76.0	90.0	86.0	119.0	116.0
Retard	76.0	90.0	86.0	N A	116.0
Explosive Weight (Pounds)	100.0	192.0	192.0	445.0	445.0
Diameter (Inches)	9.0	11.0	11.0	14.0	14.0
Suspension (Inches)	14.0	14.0	14.0	14.0	14.0
Total Weight (Pounds)					
Conical	260.0	531.0	N A	985.0	1015.0
Conical (TP)	N A	544.0	N A	1001.0	1024.0
Retard	305.0	565.0	565.0	1052.5	1015.0
Retard (TP)	N A	578.0	575.0	1061.0	1024.0

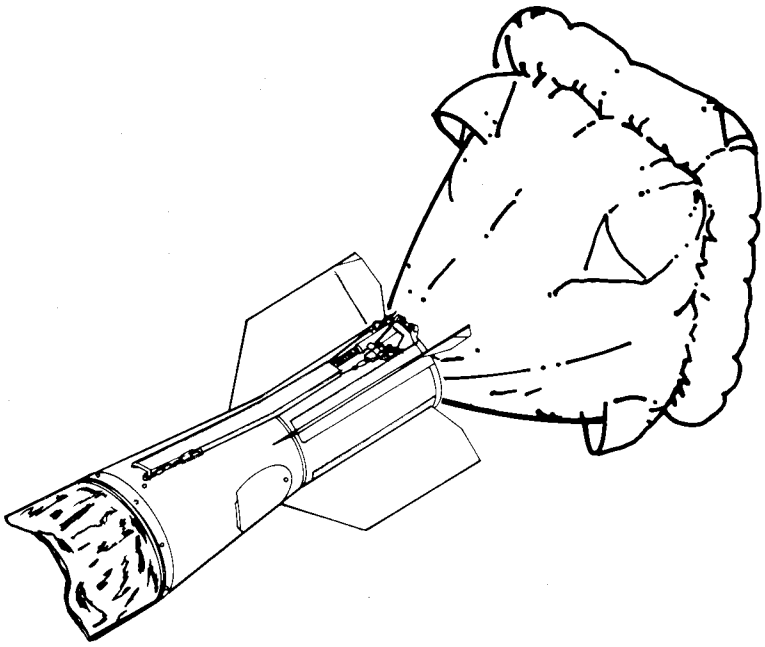


AV8BB-TAC-05-(19-1)09

Figure 2-1. Mk 80 Series GP Bomb (Sheet 1 of 2)



MK14/15/BSU-86 RETARDED



MK 83/BSU-85 RETARDED

AV8BB-TAC-05-(19-2)09

Figure 2-1. Mk 80 Series GP Bomb (Sheet 2 of 2)

AV-8B SAFE ESCAPE TABLE
MK 81 MOD 1 : CONICAL FIN ASSEMBLY

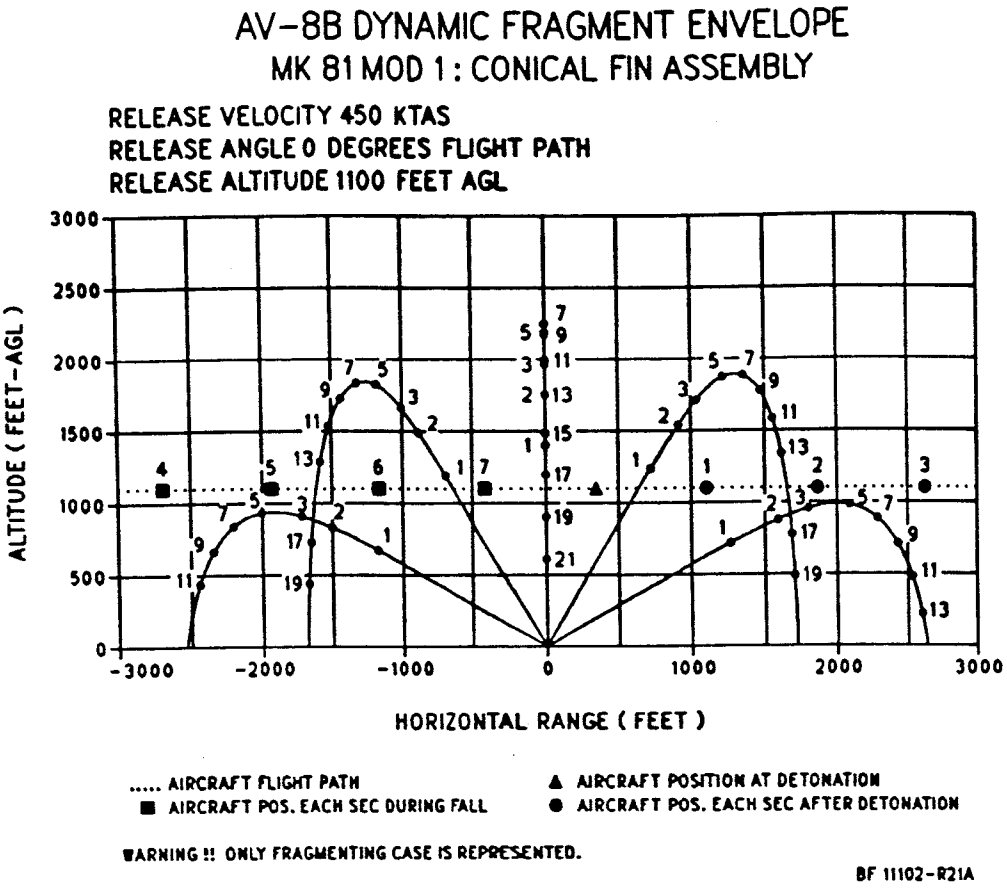
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	1100	228	1100	1100	202	1100	1000	172	1000
	5 G LEVEL BREAKAWAY	500	170	500	500	150	500	400	121	400
	6 G LEVEL BREAKAWAY	500	170	500	500	150	500	400	121	400
-10	5 G	1200	170	911	1200	145	870	1200	123	826
	6 G	1200	170	916	1200	145	876	1100	118	732
-20	5 G	1800	159	1065	1800	135	961	1800	113	836
	6 G	1800	159	1076	1800	135	983	1800	113	854
-30	5 G	2400	148	1096	2400	125	1096	2500	107	752
	6 G	2400	148	1112	2400	125	857	2500	107	793
-45	5 G	3027*	122	700	3468*	110	700	3950*	98	700
	6 G	3001*	122	700	3279*	107	700	3811*	96	700
-60	5 G	4556*	104	1000	5291*	95	1000	6024*	84	1000
	6 G	4416*	103	1000	4864*	91	1000	5615*	81	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

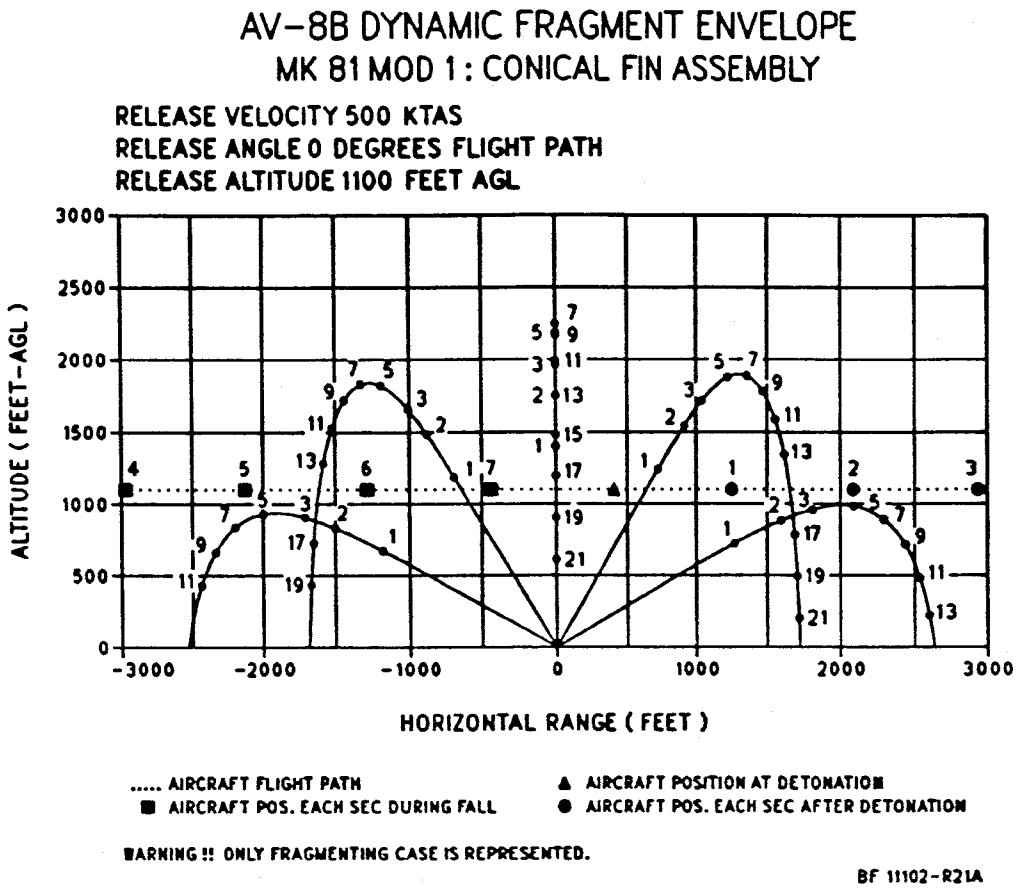
BF 11102-R21A-B20-1

Figure 2-2. Safe Escape Table, Mk 81 Mod 1, Conical Fin Assembly



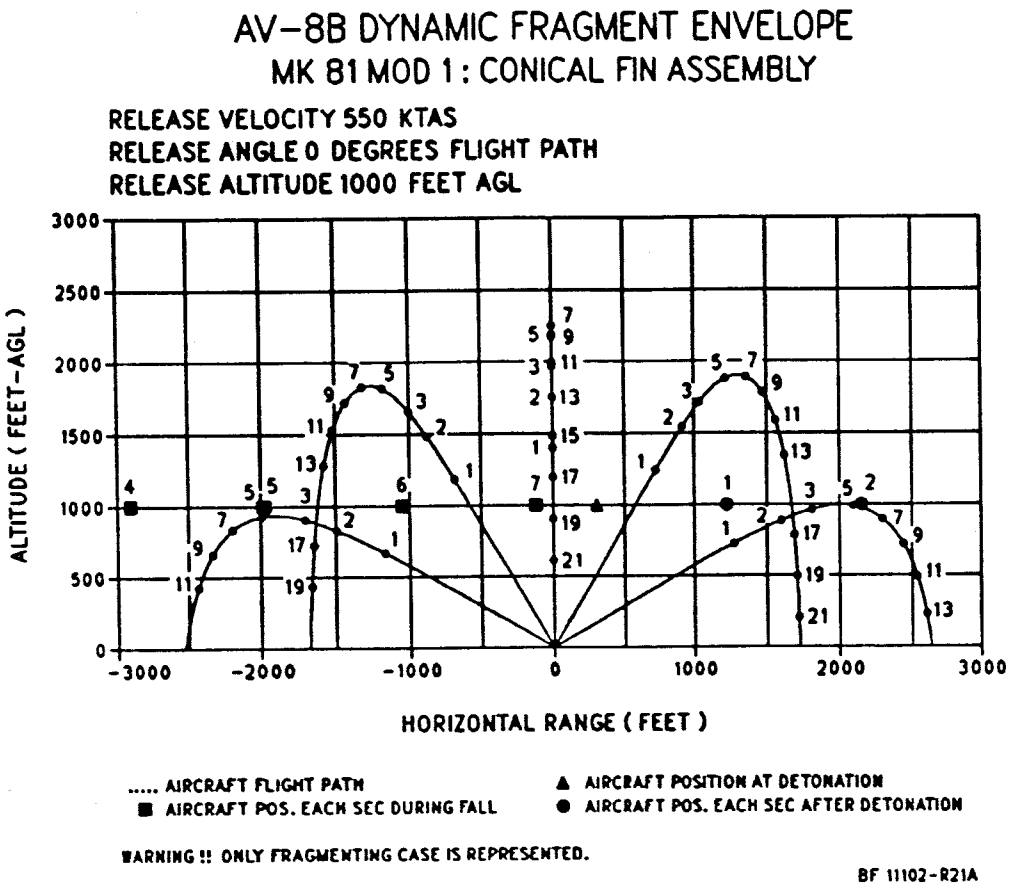
BF 11102-R21A-B21-1

Figure 2-3. Dynamic Fragment Envelope, Mk 81 Mod 1, Conical Fin Assembly (Sheet 1 of 3)



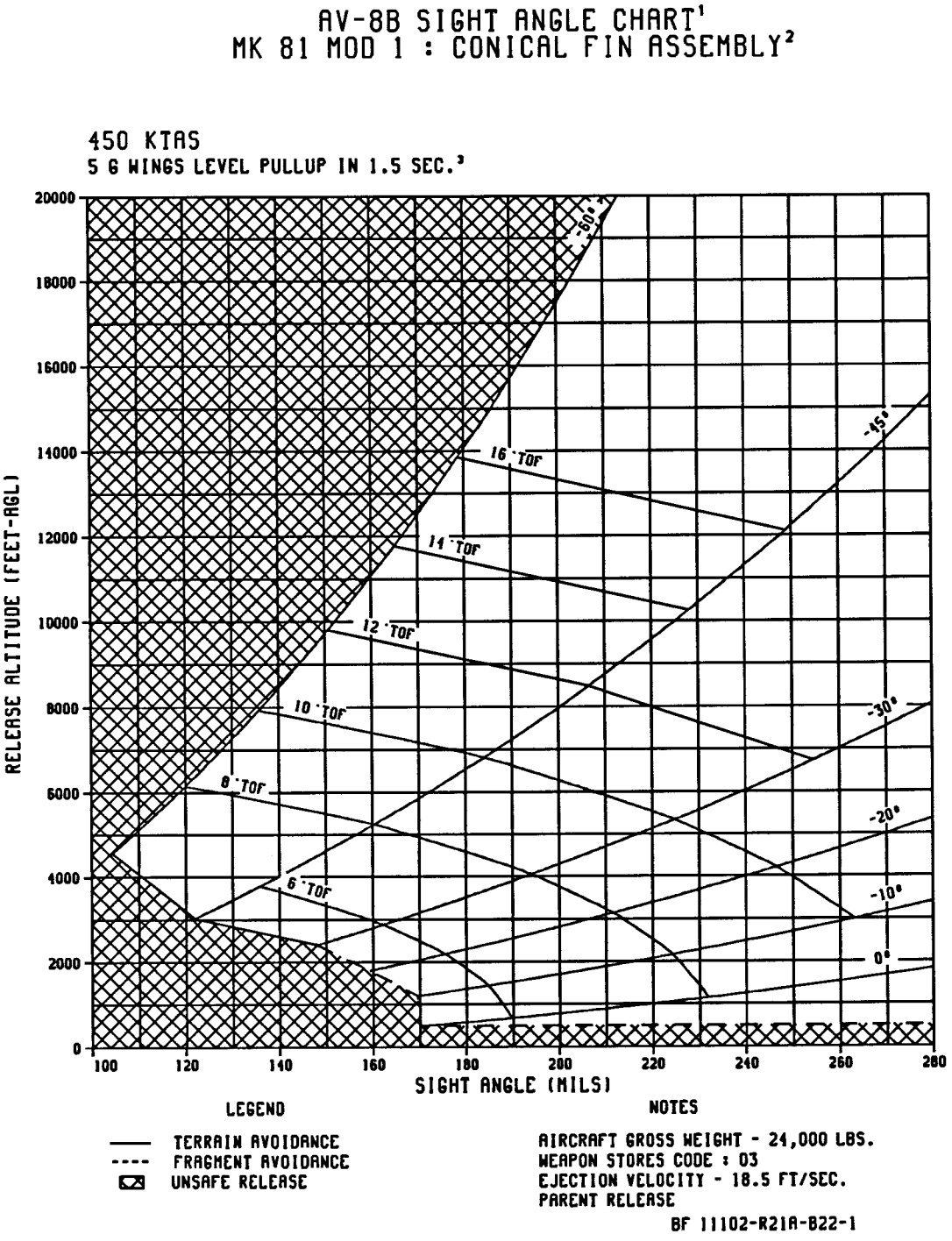
BF 11102-R21A-B21-2

Figure 2-3. Dynamic Fragment Envelope, Mk 81 Mod 1, Conical Fin Assembly (Sheet 2 of 3)



BF 11102-R21A-B21-3

Figure 2-3. Dynamic Fragment Envelope, Mk 81 Mod 1, Conical Fin Assembly (Sheet 3 of 3)

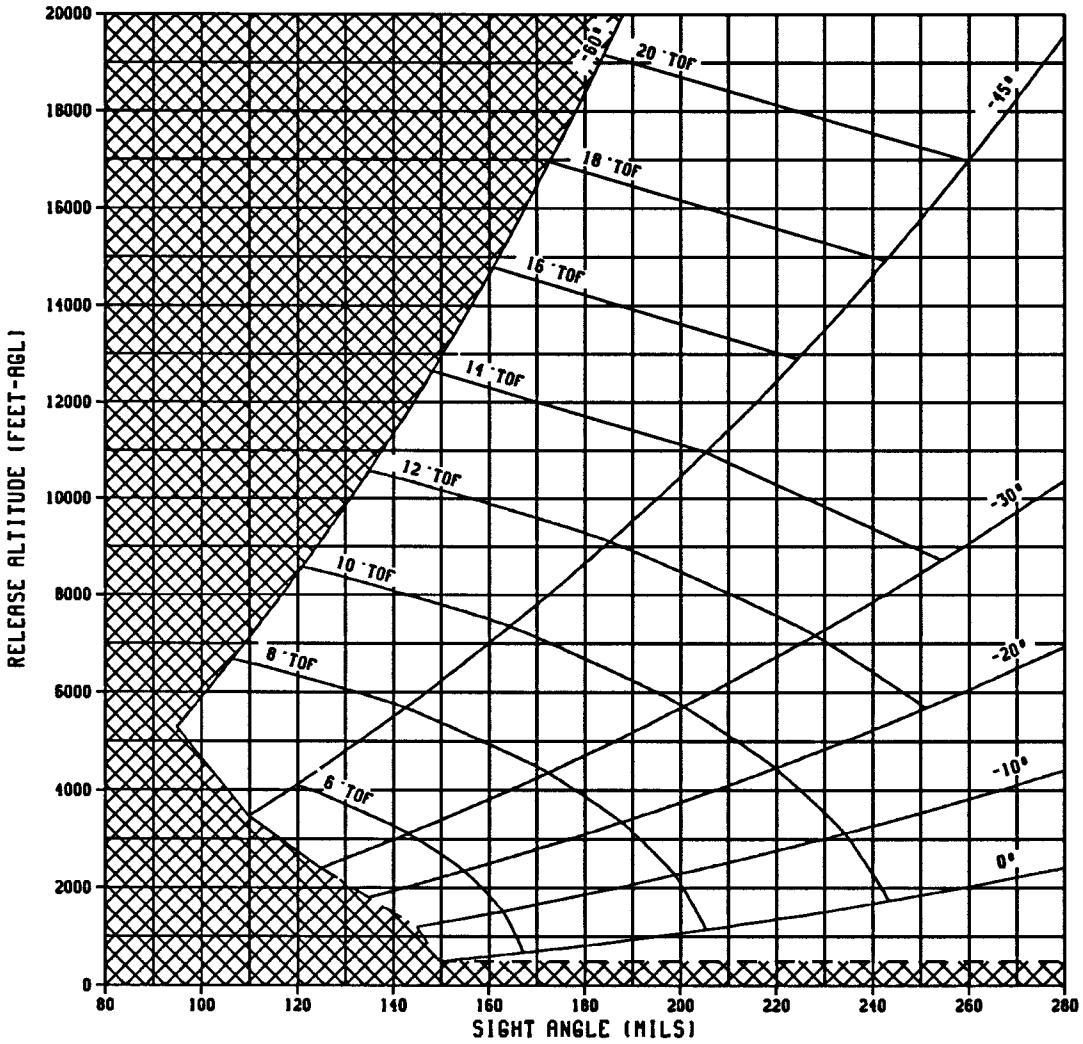


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-4. Sight Angle Chart, Mk 81 Mod 1, Conical Fin Assembly (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 81 MOD 1 : CONICAL FIN ASSEMBLY[2]

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 03
EJECTION VELOCITY - 18.5 FT/SEC.
PARENT RELEASE

BF 11102-R21A-822-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-4. Sight Angle Chart, Mk 81 Mod 1, Conical Fin Assembly (Sheet 2 of 3)

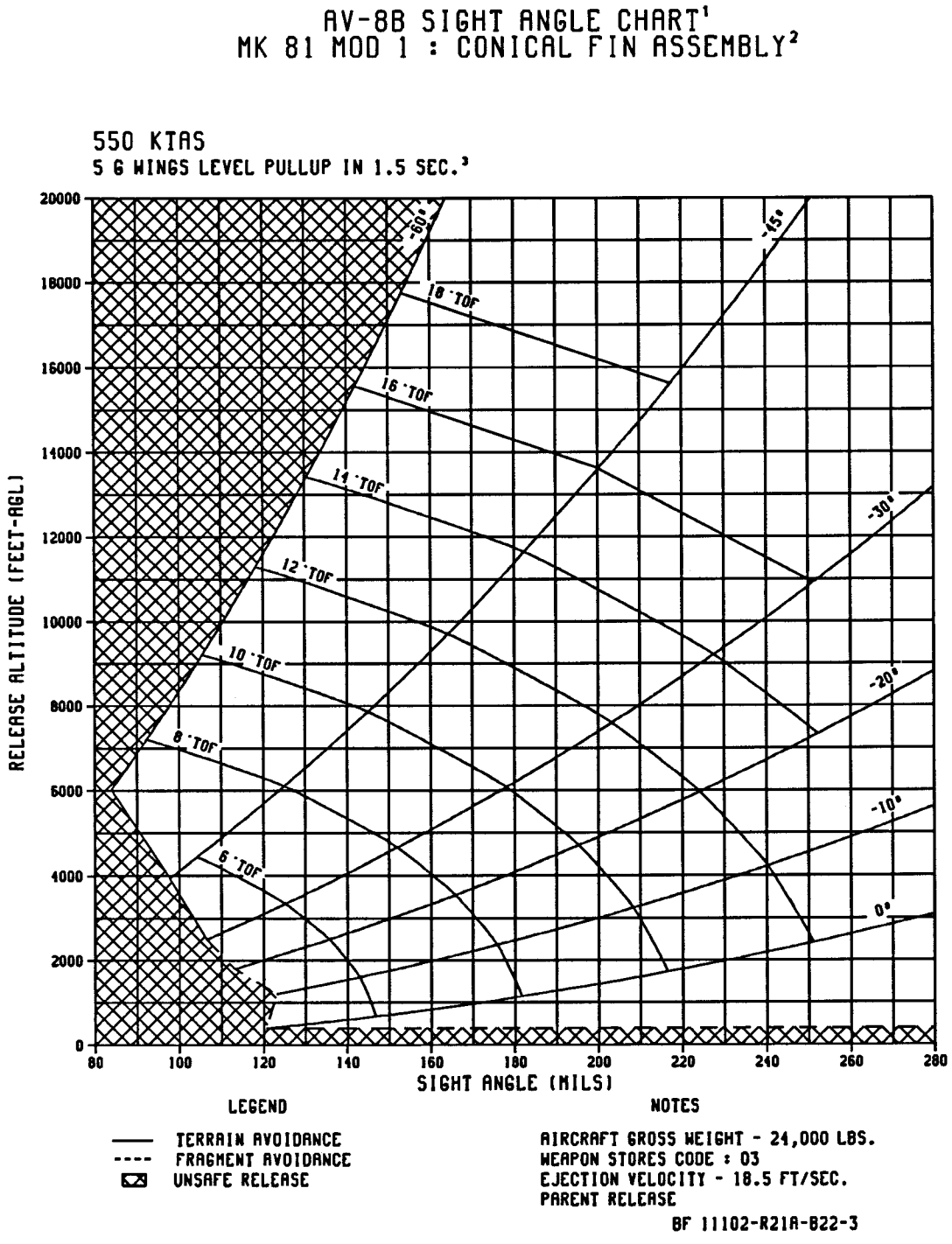


Figure 2-4. Sight Angle Chart, Mk 81 Mod 1, Conical Fin Assembly (Sheet 3 of 3)

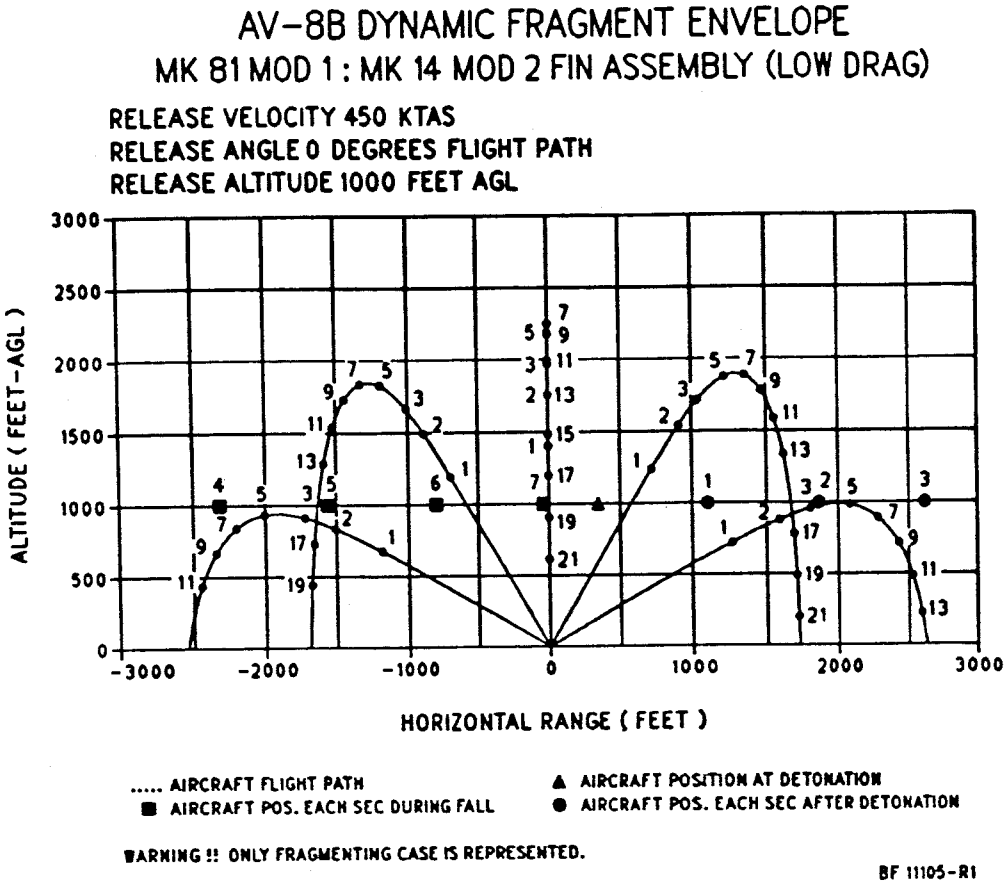
AV-8B SAFE ESCAPE TABLE
MK 81 MOD 1 : MK 14 MOD 2 FIN ASSEMBLY (LOW DRAG)

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	1000	223	1000	900	190	900	800	160	800
	5 G LEVEL BREAKAWAY	500	172	500	500	151	500	400	122	400
	6 G LEVEL BREAKAWAY	500	172	500	400	140	400	400	122	400
-10	5 G	1100	165	811	1100	141	770	1100	119	726
	6 G	1100	165	816	1100	141	776	1100	119	732
-20	5 G	1700	157	965	1700	133	861	1800	115	836
	6 G	1700	157	976	1700	133	883	1800	115	854
-30	5 G	2300	147	996	2300	124	796	2400*	106	652
	6 G	2200	144	912	2300	124	857	2400*	106	693
-45	5 G	3027*	123	700	3468*	111	700	3950*	99	700
	6 G	3001*	123	700	3279*	108	700	3811*	97	700
-60	5 G	4556*	106	1000	5291*	96	1000	6024*	85	1000
	6 G	4416*	104	1000	4864*	92	1000	5615*	82	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.
* Terrain avoidance

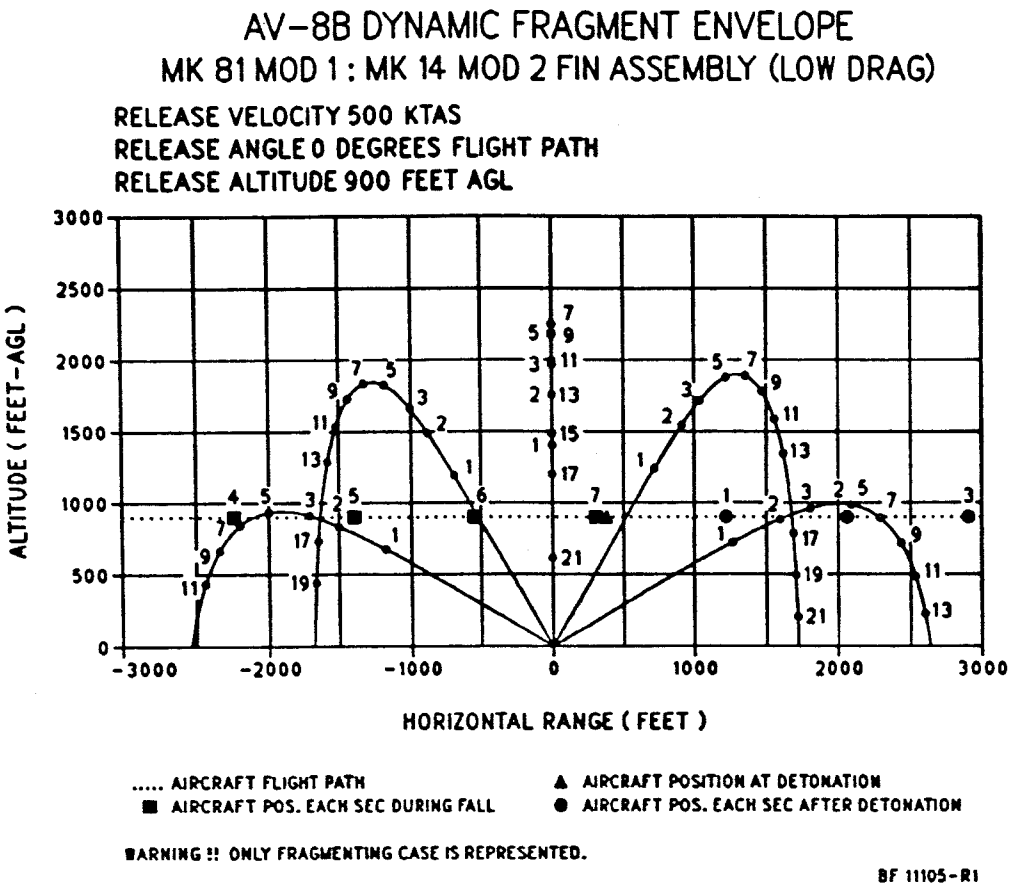
BF 11105-R1-B15-1

Figure 2-5. Safe Escape Table, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, Low Drag



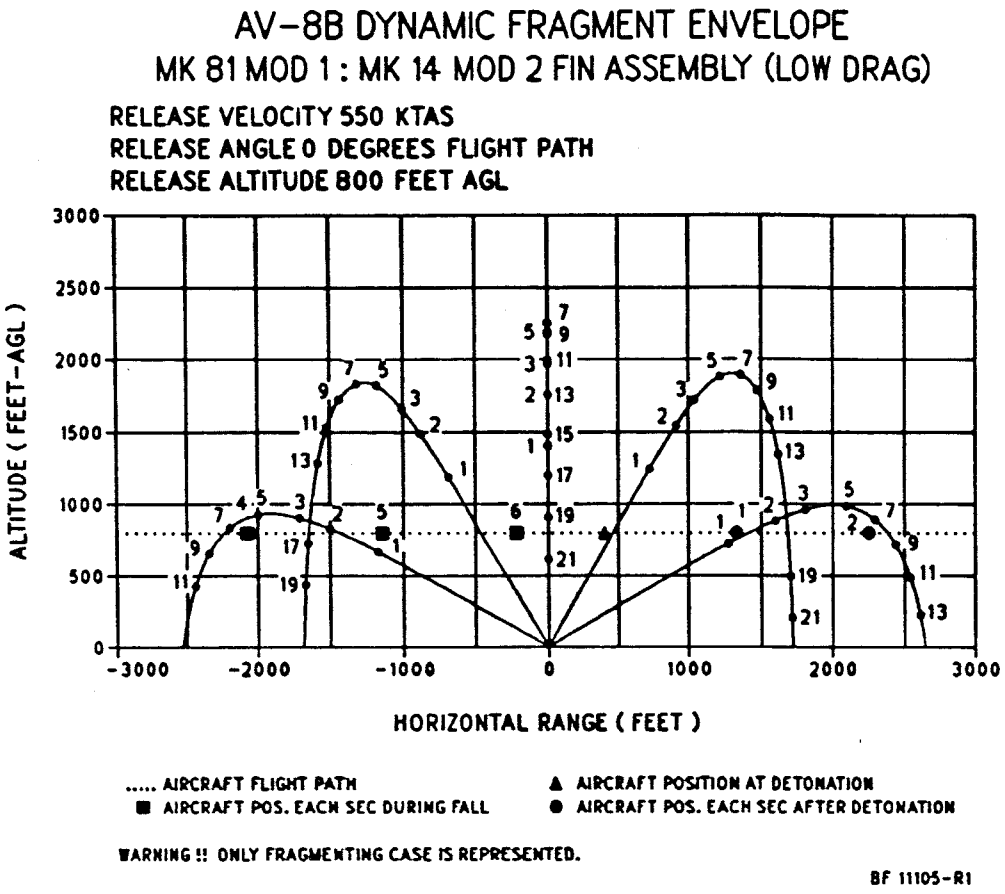
BF 11105-R1-B16-1

Figure 2-6. Dynamic Fragment Envelope, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, Low Drag (Sheet 1 of 3)



BF 11105-R1-B16-2

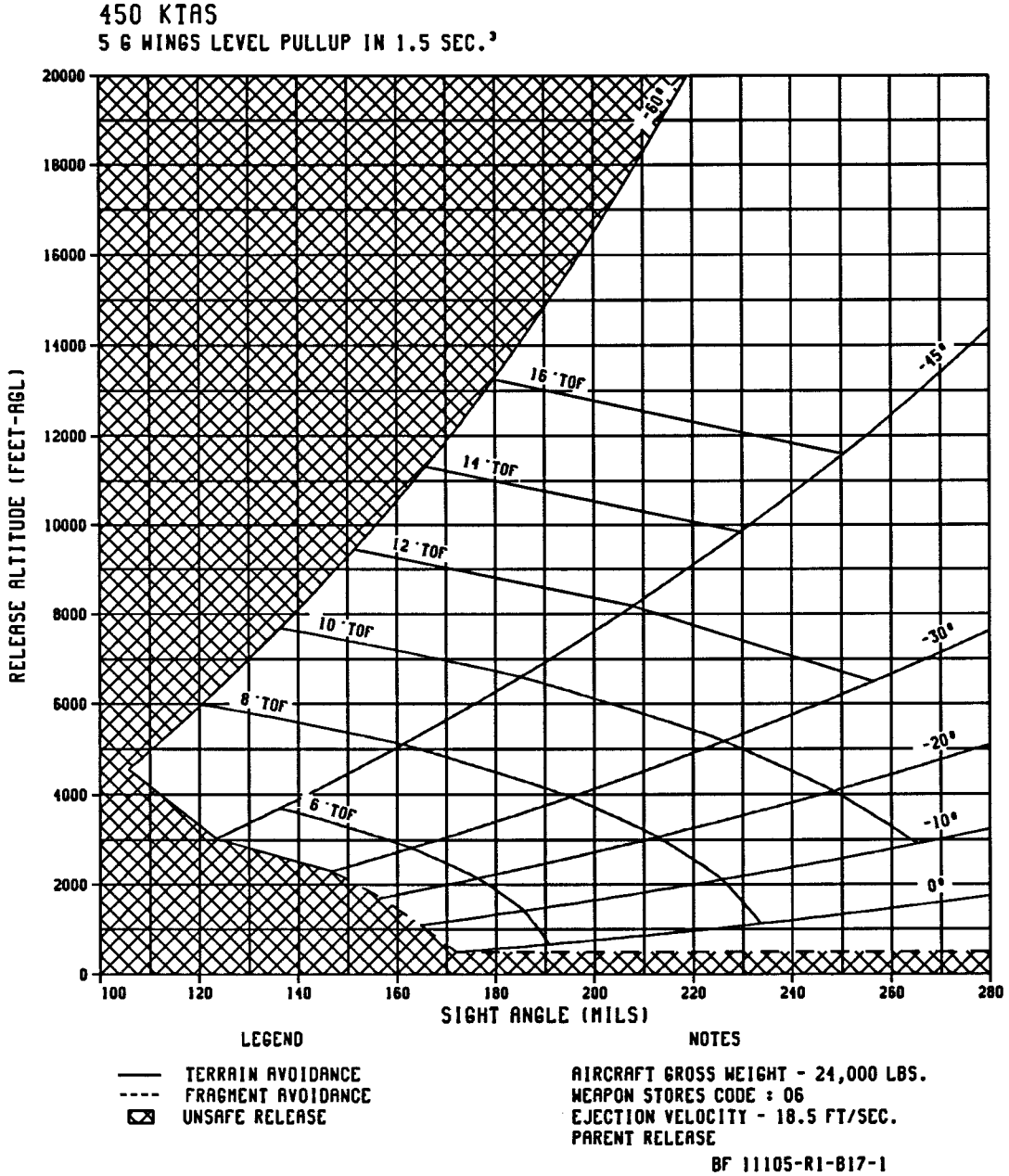
Figure 2-6. Dynamic Fragment Envelope, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, Low Drag (Sheet 2 of 3)



BF 11105-R1-B16-3

Figure 2-6. Dynamic Fragment Envelope, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, Low Drag (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 81 MOD 1 : MK 14 MOD 2 FIN ASSEMBLY (LOW DRAG)[2]

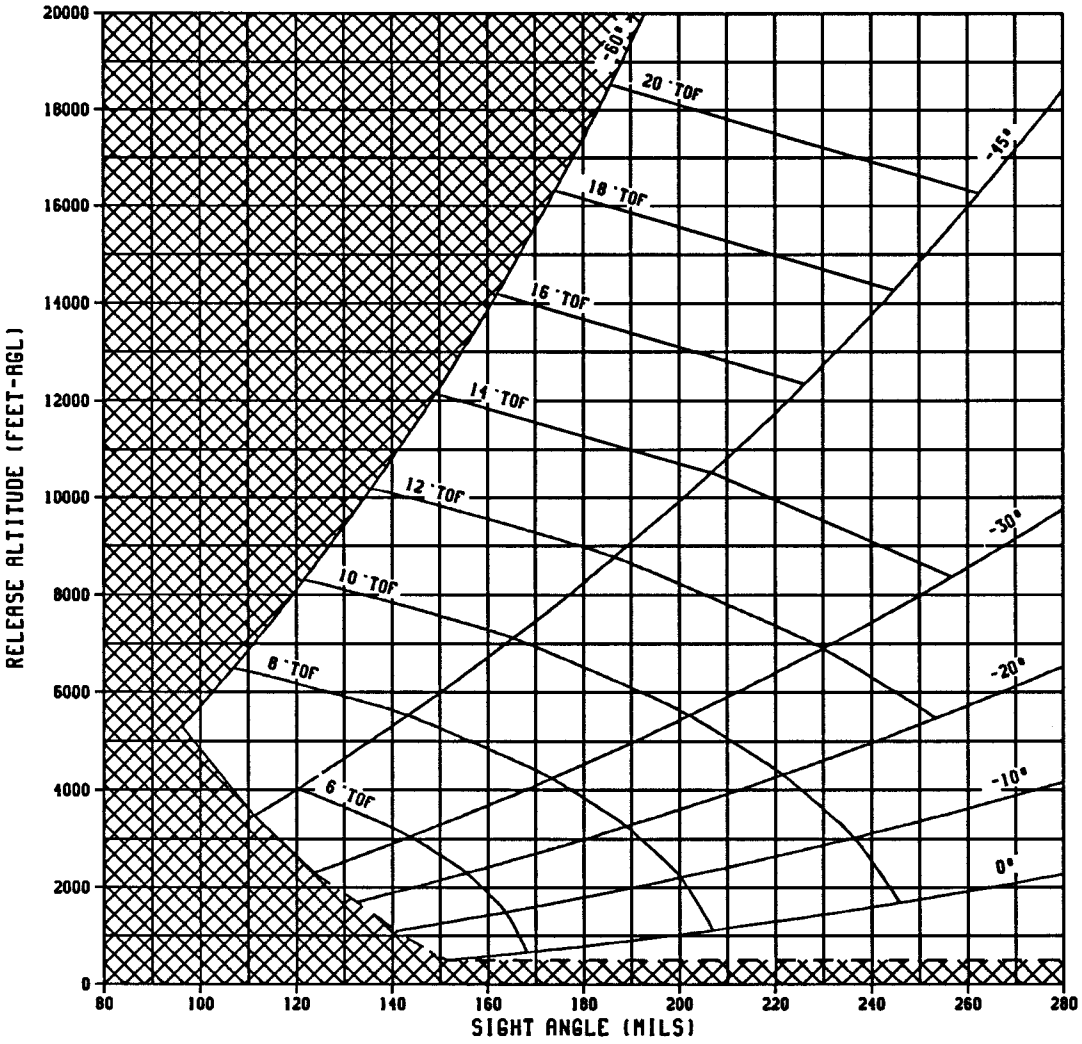


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-7. Sight Angle Chart, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, Low Drag (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 81 MOD 1 : MK 14 MOD 2 FIN ASSEMBLY (LOW DRAG)[2]

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 06
EJECTION VELOCITY - 18.5 FT/SEC.
PARENT RELEASE

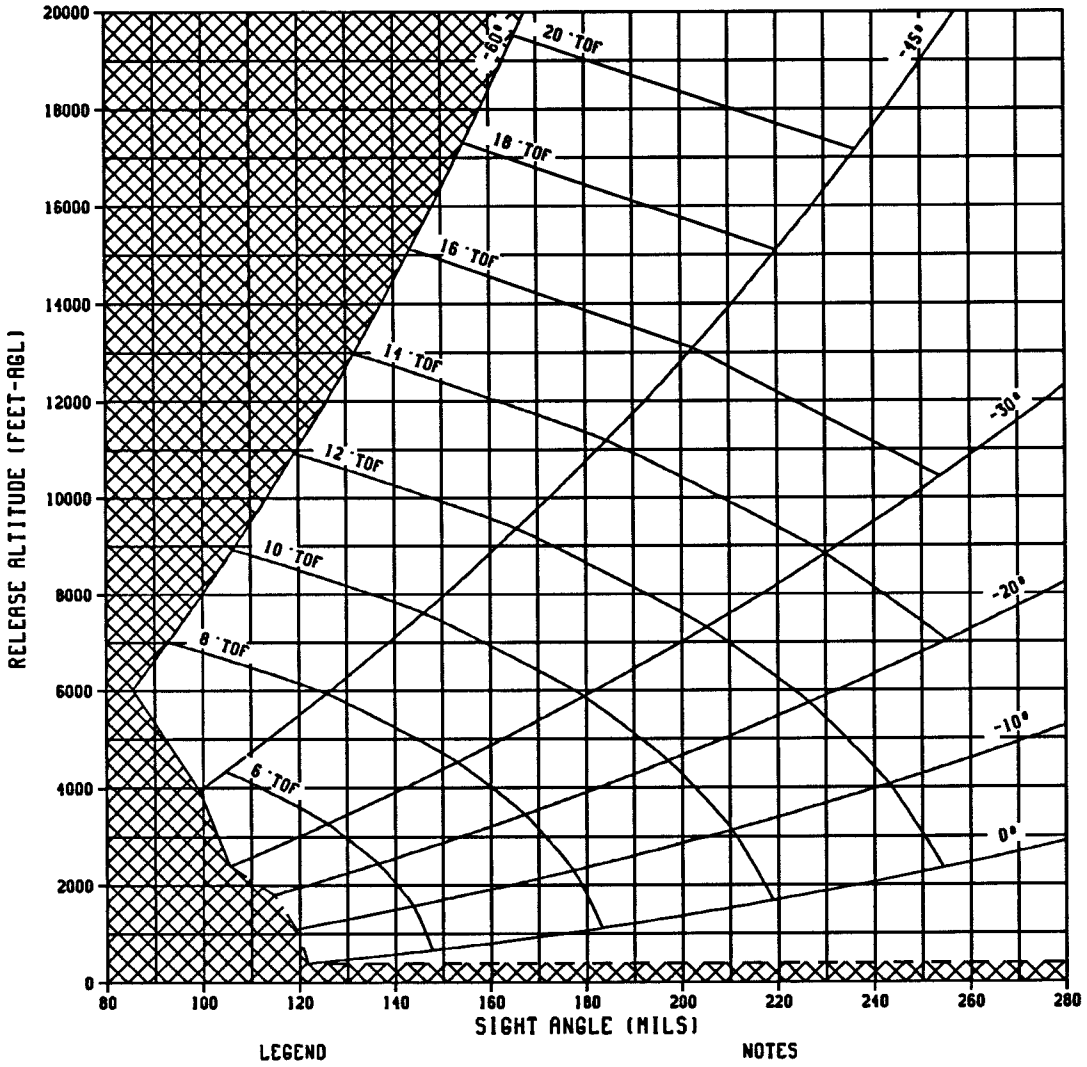
BF 11105-R1-817-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-7. Sight Angle Chart, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, Low Drag (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 81 MOD 1 : MK 14 MOD 2 FIN ASSEMBLY (LOW DRAG)[2]

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-7. Sight Angle Chart, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, Low Drag (Sheet 3 of 3)

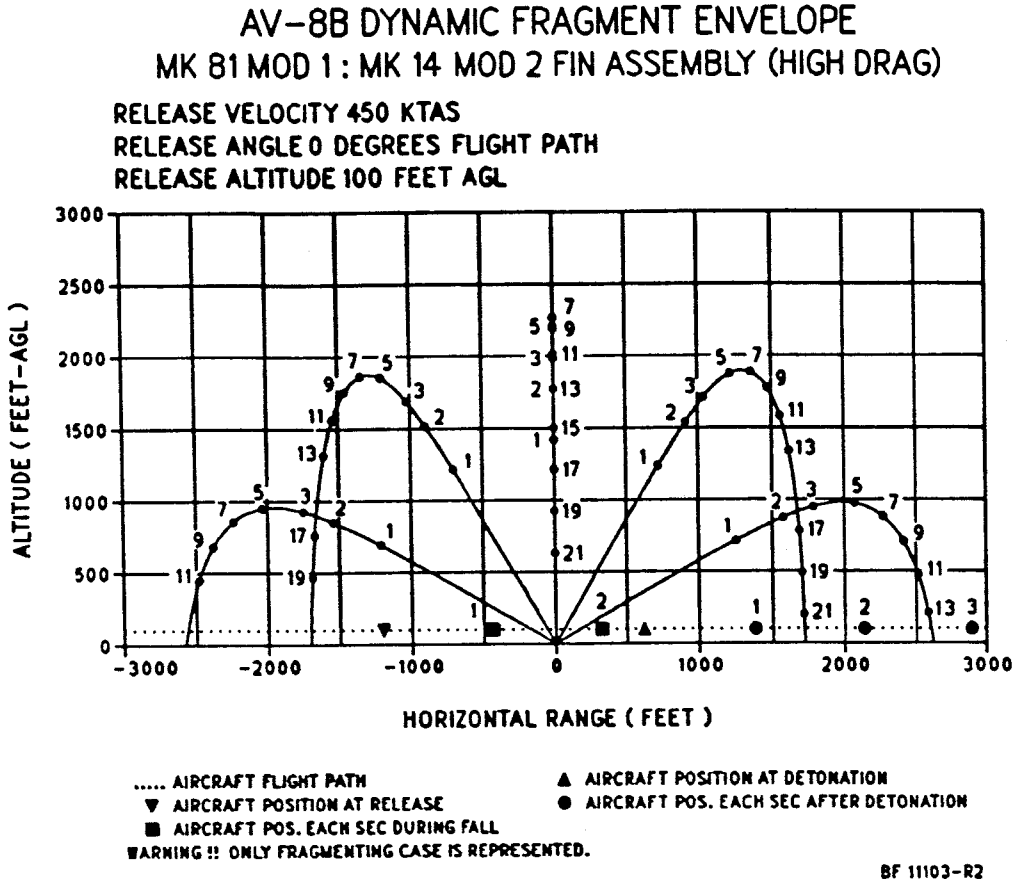
AV-8B SAFE ESCAPE TABLE
MK 81 MOD 1 : MK 14 MOD 2 FIN ASSEMBLY (HIGH DRAG)

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	100	124	100	100	110	100
	5 G LEVEL BREAKAWAY	100	124	100	100	110	100
	6 G LEVEL BREAKAWAY	100	124	100	100	110	100
-10	5 G	490	165	200	531	155	200
	6 G	485	164	200	524	154	200
-20	5 G	1035	206	300	1139	202	300
	6 G	1025	204	300	1117	198	300
-30	5 G	1805	255	500	2005	257	500
	6 G	1788	252	500	1944	249	500

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross weight = 24,000 lbs.

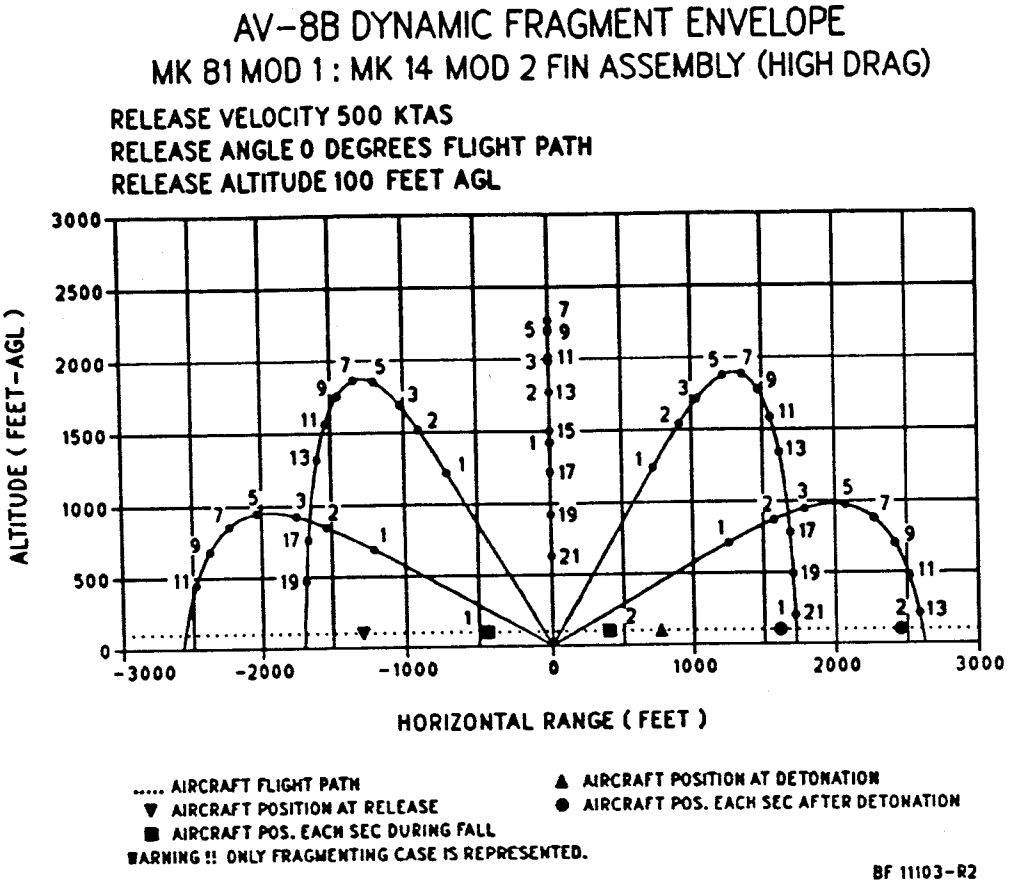
BF 11103-R3-B10-1

Figure 2-8. Safe Escape Table, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, High Drag



BF 11103-R2-B11-1

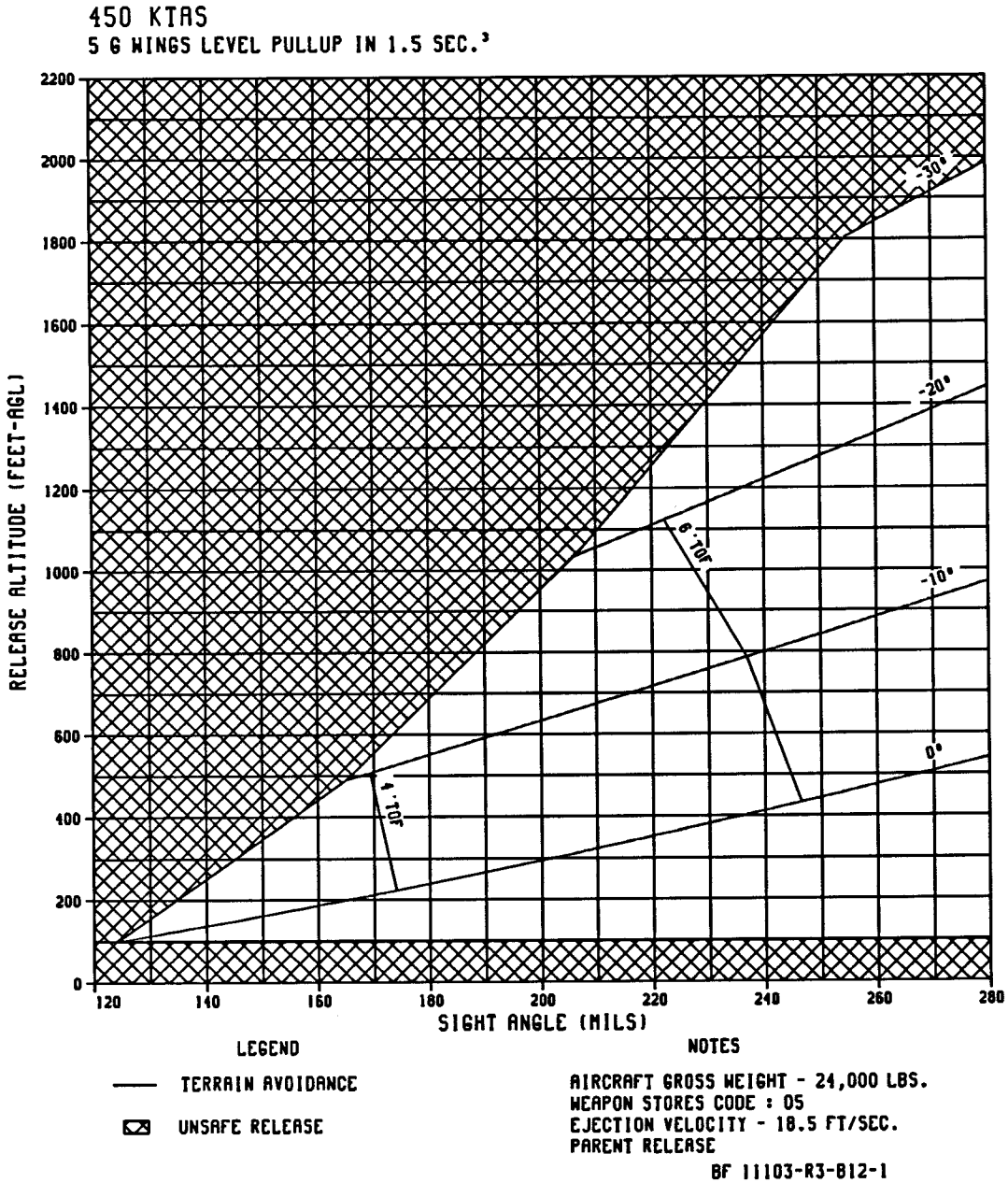
Figure 2-9. Dynamic Fragment Envelope, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, High Drag (Sheet 1 of 2)



BF 11103-R2-B11-2

Figure 2-9. Dynamic Fragment Envelope, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, High Drag (Sheet 2 of 2)

AV-8B SIGHT ANGLE CHART[1]
MK 81 MOD 1 : MK 14 MOD 2 FIN ASSEMBLY (HIGH DRAG)[2]

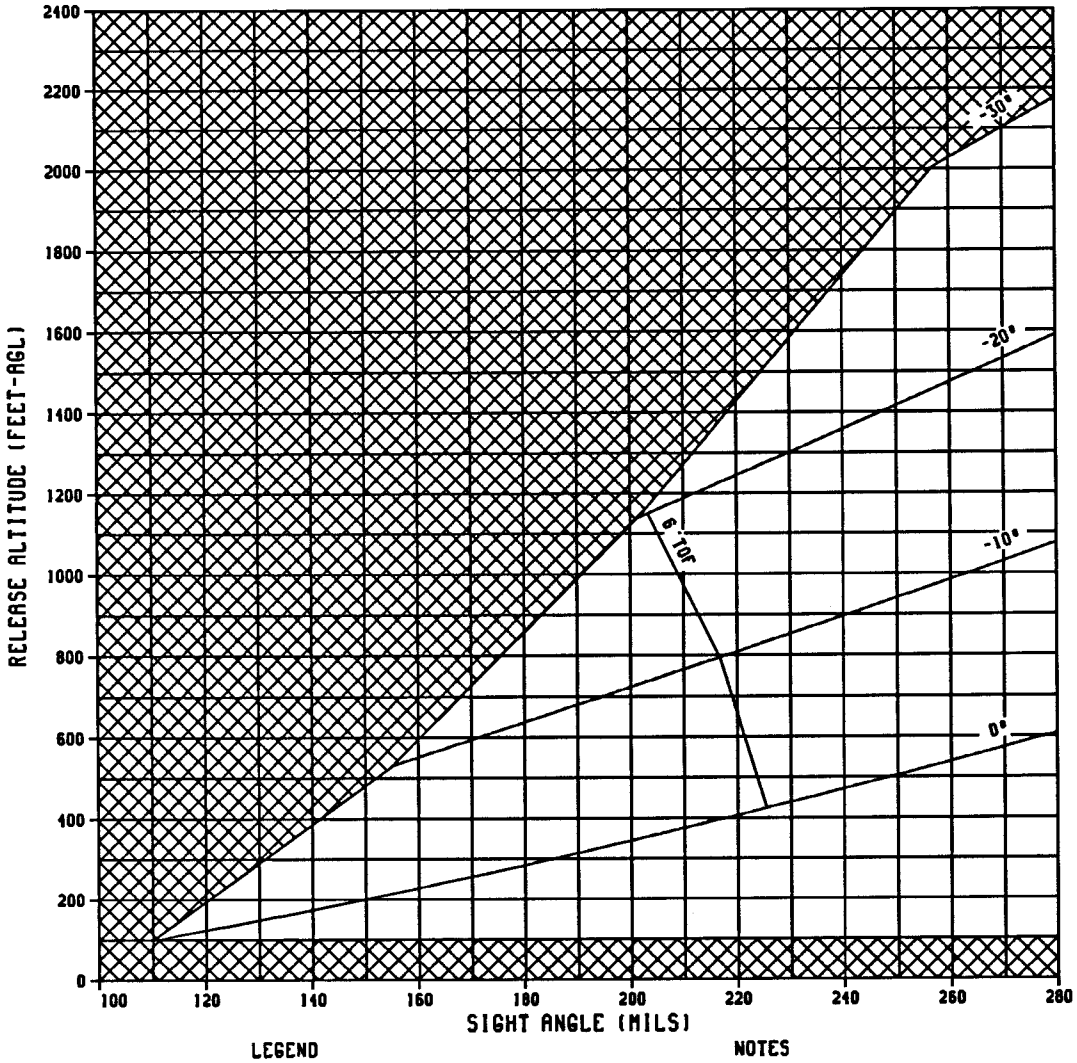


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-10. Sight Angle Chart, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, High Drag (Sheet 1 of 2)

AV-8B SIGHT ANGLE CHART[1]
MK 81 MOD 1 : MK 14 MOD 2 FIN ASSEMBLY (HIGH DRAG)[2]

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 05
EJECTION VELOCITY - 18.5 FT/SEC.
PARENT RELEASE

BF 11103-R3-812-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-10. Sight Angle Chart, Mk 81 Mod 1, Mk 14 Mod 2 Fin Assembly, High Drag (Sheet 2 of 2)

AV-8B SAFE ESCAPE TABLE
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY **

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	1300	240	1300	1200	206	1200	1100	175	1100
	5 G LEVEL BREAKAWAY	500	166	500	500	146	500	500	127	500
	6 G LEVEL BREAKAWAY	500	166	500	400	135	400	400	117	400
-10	5 G	1200	164	911	1200	140	870	1200	118	826
	6 G	1200	164	916	1200	140	876	1200	118	832
-20	5 G	1800	153	1065	1800	129	961	1900	111	936
	6 G	1800	153	1076	1800	129	983	1900	111	954
-30	5 G	2300	138	996	2500	121	996	2600	103	852
	6 G	2300	138	1012	2400	119	957	2500	101	793
-45	5 G	3100	117	773	3468*	104	700	3950*	92	700
	6 G	3001*	115	700	3279*	101	700	3811*	90	700
-60	5 G	4556*	98	1000	5291*	89	1000	6024*	78	1000
	6 G	4416*	96	1000	4864*	85	1000	5615*	75	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

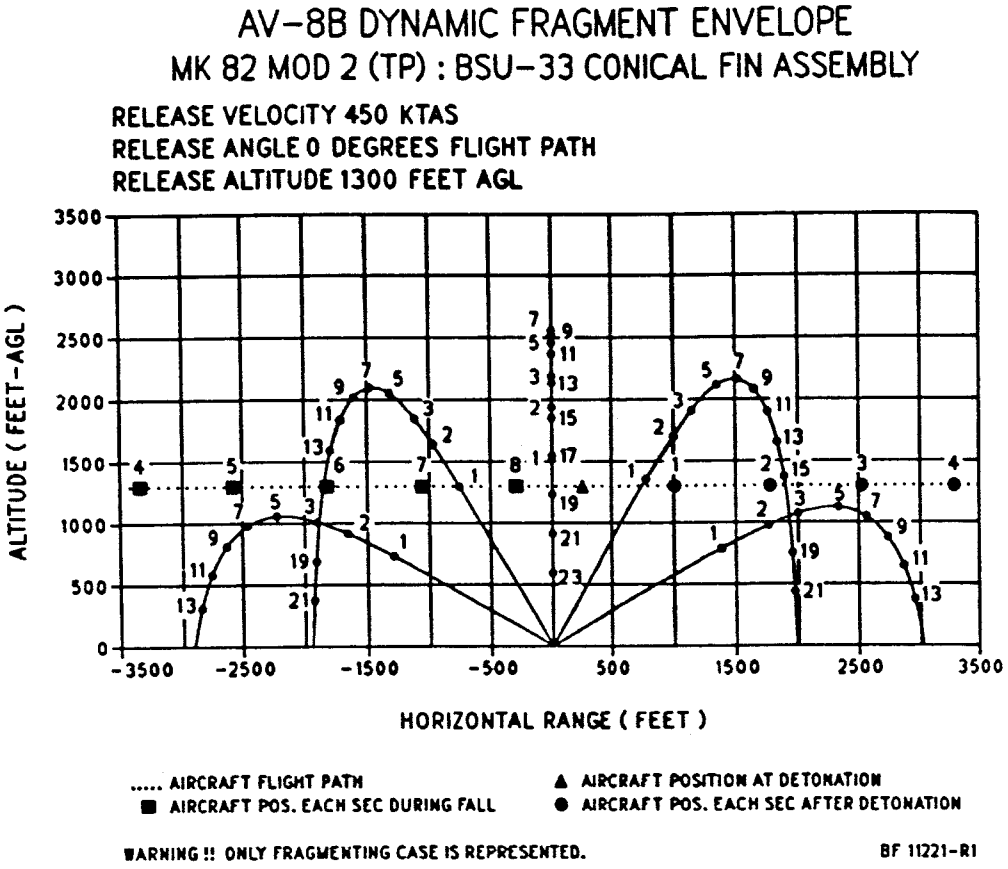
* Terrain avoidance

** ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B FIN ASSEMBLY

** ALSO APPLICABLE TO : BDU-45/B

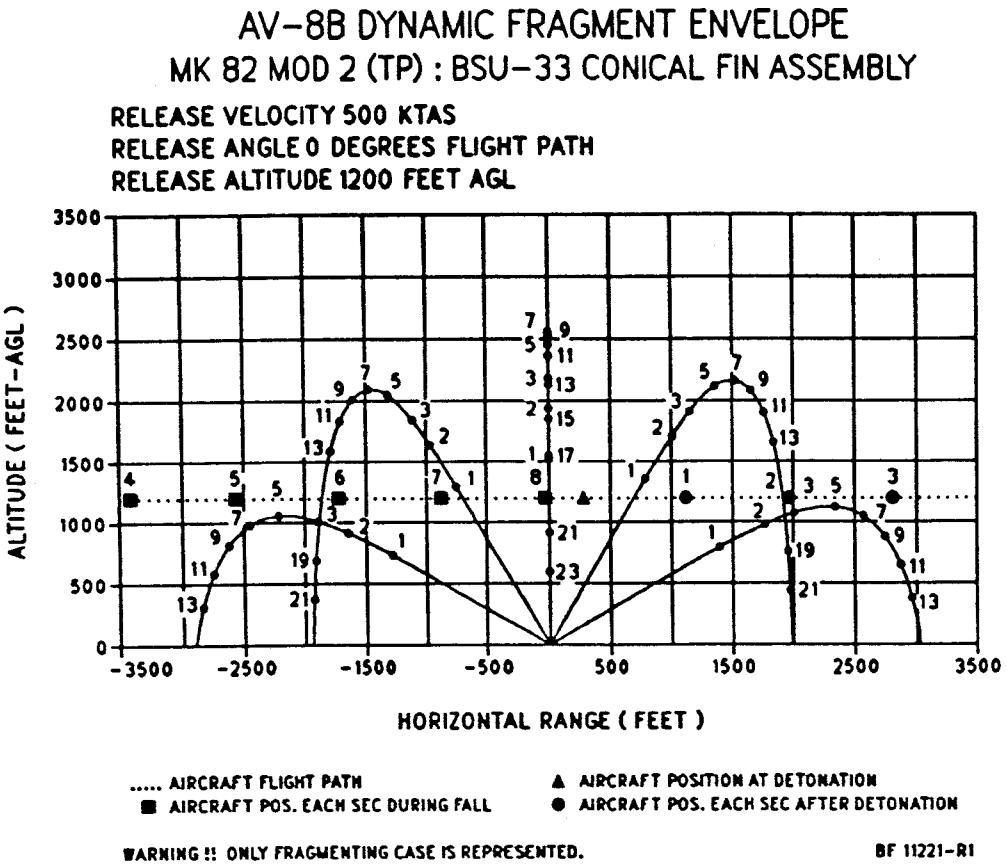
BF 11221-R1-B35-1

Figure 2-11. Safe Escape Table, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly



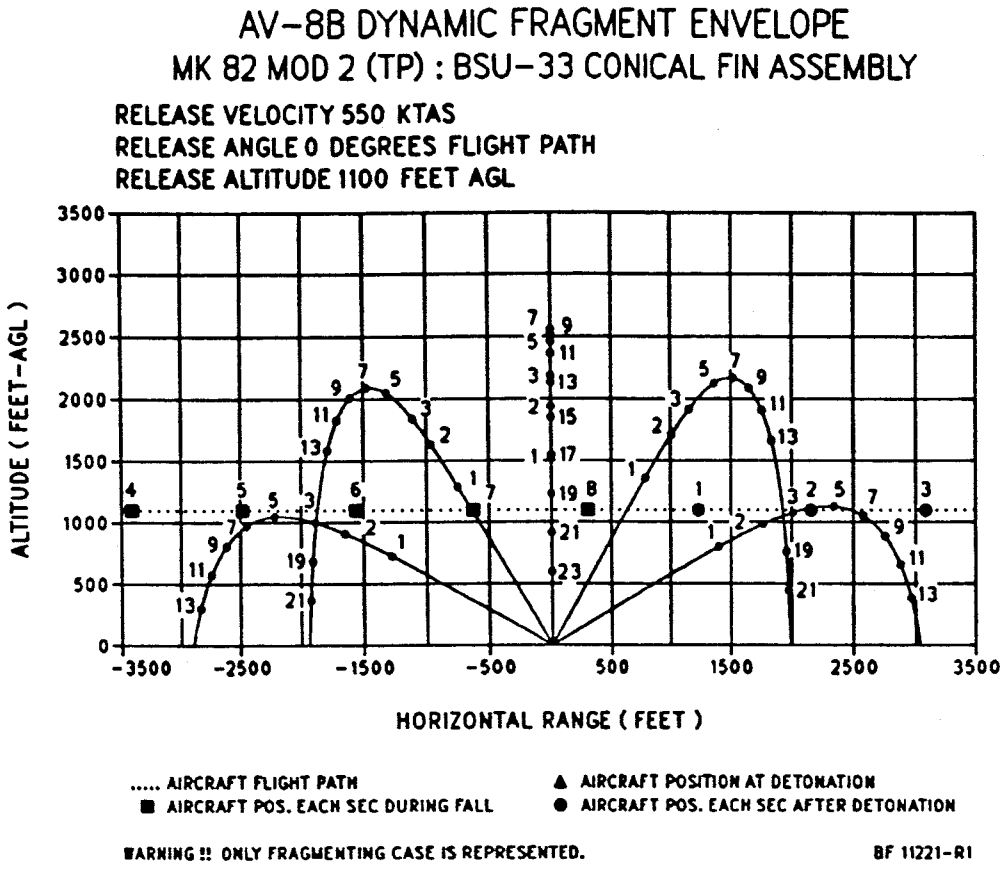
BF 11221-R1-B36-1

Figure 2-12. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 1 of 3)



BF11221-R1-B36-2

Figure 2-12. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 2 of 3)

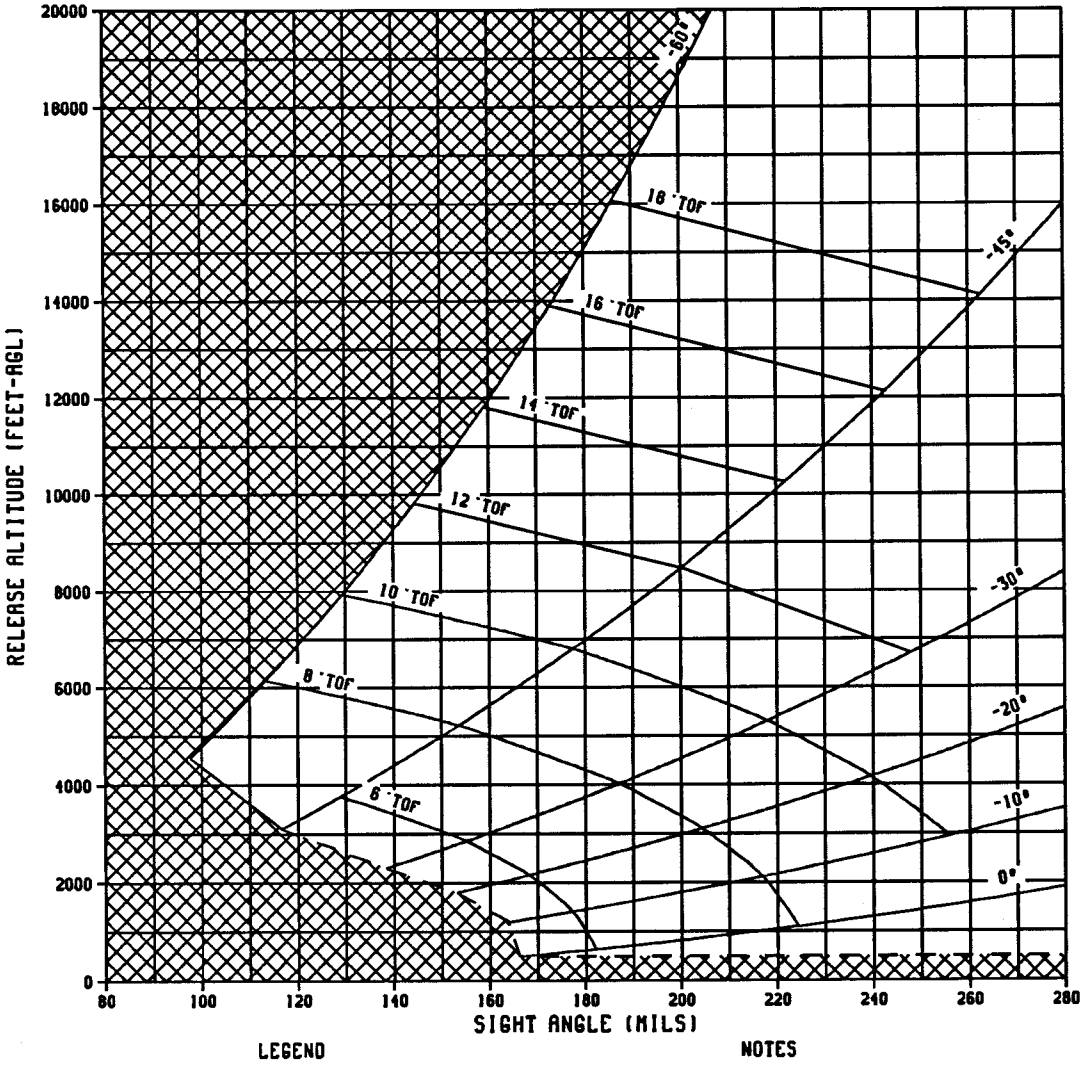


BF 11221-R1-B36-3

Figure 2-12. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY[2]
ALSO APPLICABLE TO : BDU-45/B

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 78
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

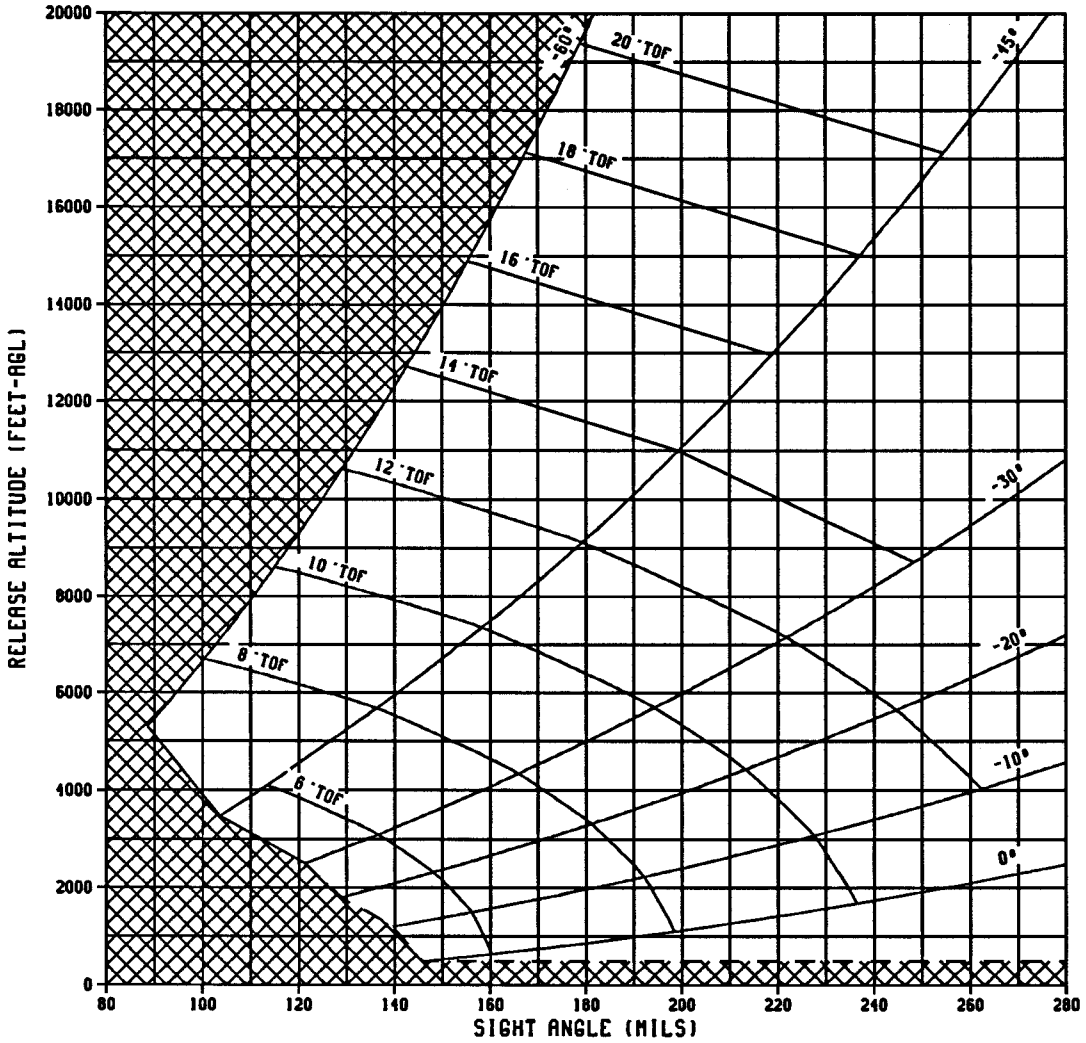
BF 11221-R1-837-1

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.
4. MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

Figure 2-13. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY[2]
ALSO APPLICABLE TO : BDU-45/B

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 78
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

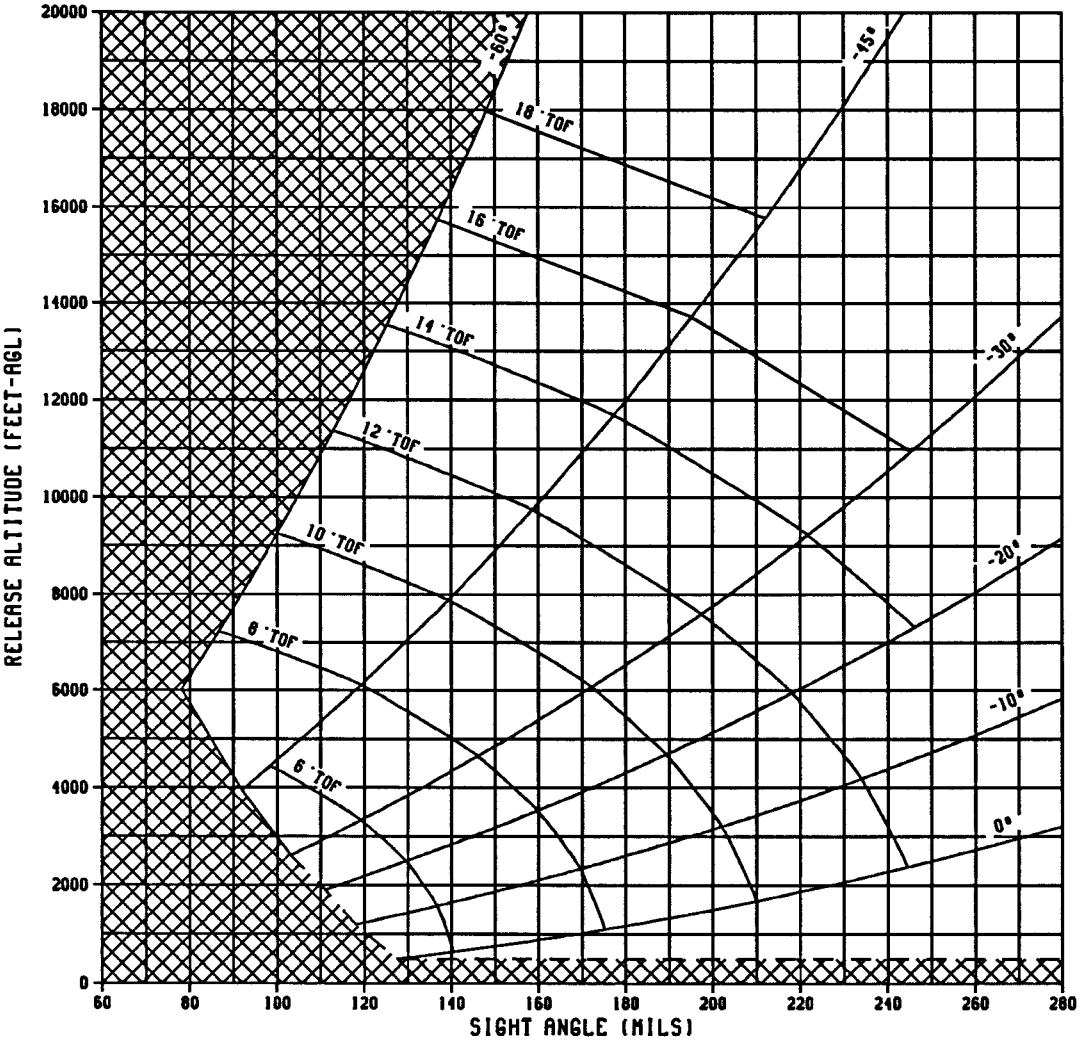
BF 11221-R1-837-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.
4. MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

Figure 2-13. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY[2]
ALSO APPLICABLE TO : BDU-45/B

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

——— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 78
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

BF 11221-R1-837-3

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.
4. MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

Figure 2-13. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.2	3887	3919	166	128	37	2	13.72	747.59
	600	5.8	4278	4320	178	139	37	1	15.01	748.30
	700	6.3	4636	4689	188	150	37	1	16.20	749.28
	800	6.7	4969	5033	198	160	37	1	17.29	750.49
	1000	7.6	5575	5664	216	177	37	1	19.27	753.42
	1200	8.4	6120	6237	232	194	37	1	21.04	756.84
	1400	9.1	6620	6767	247	208	38	1	22.64	760.62
	1600	9.7	7084	7263	261	222	38	1	24.11	764.67
	1800	10.4	7518	7731	274	235	38	1	25.47	768.93
	1900	10.7	7726	7956	280	241	38	1	26.11	771.12
-10	1200	5.3	3878	4059	164	126	37	2	23.22	774.20
	1500	6.3	4545	4786	183	144	37	1	25.26	780.13
	1600	6.6	4754	5016	189	150	37	1	25.89	782.20
	1700	6.9	4957	5240	194	156	37	1	26.50	784.30
	1800	7.1	5155	5460	200	161	37	1	27.09	786.44
	1900	7.4	5349	5676	205	167	37	1	27.67	788.60
	2000	7.7	5537	5887	211	172	37	1	28.22	790.79
	2100	7.9	5722	6095	216	177	38	1	28.77	793.00
	2200	8.2	5902	6299	221	182	38	1	29.29	795.24
	2300	8.5	6079	6500	226	187	38	1	29.80	797.49
	2400	8.7	6252	6697	231	192	38	1	30.30	799.77
	2500	9.0	6422	6891	236	197	38	1	30.79	802.05
	2600	9.2	6589	7083	240	201	38	1	31.26	804.35
	2700	9.4	6752	7272	245	206	38	1	31.72	806.67
	2800	9.7	6913	7459	250	210	38	1	32.17	809.00
	2900	9.9	7071	7643	254	215	38	1	32.61	811.33
	3000	10.1	7227	7825	258	219	38	1	33.05	813.68
	3600	11.4	8111	8874	283	243	39	1	35.44	827.89
-20	1800	5.2	3590	4016	153	116	36	1	31.95	797.99
	2000	5.6	3905	4388	162	124	36	1	32.85	802.68
	2500	6.8	4650	5279	182	144	36	1	34.95	814.55
	2600	7.0	4792	5452	186	148	36	1	35.34	816.94
	2700	7.2	4932	5623	190	152	37	1	35.72	819.33
	2800	7.4	5070	5792	193	155	37	1	36.10	821.73
	2900	7.6	5207	5960	197	159	37	1	36.47	824.13
	3000	7.8	5341	6126	201	163	37	1	36.83	826.54
	3100	8.0	5474	6291	204	166	37	1	37.19	828.94
	3200	8.2	5605	6454	208	170	37	1	37.54	831.35
	3500	8.8	5989	6937	218	180	37	1	38.55	838.57
	4000	9.7	6601	7718	235	196	38	1	40.11	850.59
	4500	10.6	7181	8475	250	211	38	1	41.55	862.58
	5000	11.4	7734	9210	264	225	38	1	42.88	874.50
	5500	12.3	8264	9927	278	238	39	1	44.12	886.32

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B38-1

Figure 2-14. Delivery Data, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 1 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2300	5.0	3177	3922	138	103	34	1	40.43	817.87
	2500	5.4	3409	4228	145	109	34	1	41.06	822.93
	3000	6.3	3969	4975	159	124	34	1	42.56	835.54
	3500	7.1	4501	5701	173	137	35	1	43.93	848.04
	4000	8.0	5009	6410	187	150	35	1	45.21	860.43
	5000	9.5	5964	7783	211	174	36	1	47.49	884.81
	6000	11.0	6851	9107	233	196	37	1	49.50	908.58
	7000	12.4	7682	10393	254	215	38	1	51.26	931.69
	8000	13.8	8467	11648	273	233	39	1	52.84	954.10
	8400	14.3	8769	12143	280	240	39	1	53.43	962.87
-45	3100	5.1	2607	4051	117	86	29	1	53.45	846.59
	4000	6.3	3255	5157	133	102	29	1	55.06	870.13
	5000	7.7	3934	6362	150	119	30	1	56.65	895.44
	6000	9.0	4575	7545	166	134	31	1	58.07	919.87
	7000	10.3	5184	8711	181	148	31	1	59.34	943.44
	8000	11.5	5766	9861	194	161	32	1	60.49	966.16
	9000	12.6	6322	10999	207	173	33	1	61.53	988.09
	10000	13.7	6857	12125	219	184	34	1	62.48	1009.22
	11000	14.8	7372	13242	231	195	35	1	63.36	1029.53
	12000	15.9	7870	14350	241	205	35	0	64.16	1048.96
	14000	17.9	8818	16546	262	223	37	0	65.60	1084.73
	16000	19.8	9713	18717	280	240	39	0	66.86	1115.20
-60	4556	6.1	2200	5060	98	74	22	1	66.95	890.28
	5000	6.7	2388	5541	102	78	23	1	67.38	901.72
	6000	7.8	2795	6619	112	88	23	1	68.27	926.75
	8000	10.1	3562	8757	130	105	24	1	69.81	973.90
	9000	11.1	3925	9818	138	112	25	1	70.48	996.14
	10000	12.2	4275	10875	146	120	25	1	71.09	1017.50
	11000	13.2	4613	11928	153	126	26	1	71.66	1037.97
	12000	14.2	4942	12978	160	133	26	0	72.19	1057.48
	13000	15.2	5261	14024	167	139	27	0	72.68	1075.90
	14000	16.1	5571	15068	174	145	28	0	73.14	1093.11
	16000	17.9	6168	17148	186	156	29	0	73.98	1122.91
	18000	19.7	6737	19219	197	165	30	0	74.73	1144.57
	20000	21.5	7279	21284	207	175	31	0	75.43	1155.91

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B38-2

Figure 2-14. Delivery Data, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 2 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.2	4314	4343	146	115	29	1	12.42	823.68
	600	5.8	4747	4785	156	126	29	1	13.61	823.33
	800	6.7	5512	5570	175	144	29	1	15.70	823.61
	1000	7.6	6183	6264	191	160	29	1	17.53	824.80
	1200	8.4	6787	6893	206	175	30	1	19.16	826.63
	1400	9.1	7341	7473	219	188	30	1	20.65	828.93
	1600	9.7	7854	8015	232	201	30	1	22.03	831.59
	1800	10.4	8335	8527	244	213	30	1	23.30	834.54
	2000	11.0	8788	9012	255	224	30	1	24.49	837.72
	2500	12.3	9825	10139	280	249	30	1	27.17	846.42
-10	1200	5.1	4117	4288	140	109	29	1	21.53	849.03
	1500	6.0	4843	5070	156	126	29	1	23.38	852.93
	1600	6.3	5071	5317	162	131	29	1	23.96	854.34
	1700	6.6	5293	5560	167	136	29	1	24.52	855.81
	1800	6.9	5510	5797	172	141	30	1	25.06	857.31
	1900	7.1	5721	6029	177	146	30	1	25.59	858.86
	2000	7.4	5928	6256	182	151	30	1	26.11	860.45
	2100	7.7	6130	6480	186	156	30	1	26.61	862.07
	2200	7.9	6328	6700	191	160	30	1	27.10	863.72
	2300	8.2	6522	6915	195	165	30	1	27.57	865.40
	2400	8.4	6712	7128	200	169	30	1	28.04	867.11
	2500	8.7	6898	7337	204	173	30	1	28.49	868.85
	2600	8.9	7081	7543	208	177	30	1	28.94	870.61
	2700	9.1	7261	7746	213	181	30	1	29.37	872.39
	2800	9.4	7437	7947	217	186	30	1	29.80	874.19
	2900	9.6	7611	8145	221	190	30	1	30.21	876.01
	3000	9.8	7782	8340	225	193	30	1	30.62	877.85
	4000	11.9	9360	10179	261	229	31	1	34.27	896.94
	4500	12.9	10076	11035	278	245	31	1	35.87	906.81
-20	1800	4.9	3742	4153	129	99	28	1	30.29	871.52
	2000	5.3	4079	4543	137	107	28	1	31.10	875.14
	2500	6.4	4878	5482	155	125	29	1	33.00	884.42
	2600	6.6	5031	5663	158	128	29	1	33.36	886.32
	2700	6.8	5182	5844	161	131	29	1	33.71	888.22
	2800	7.0	5331	6022	165	135	29	1	34.06	890.13
	2900	7.2	5479	6199	168	138	29	1	34.40	892.05
	3000	7.4	5624	6374	171	141	29	1	34.73	893.98
	3100	7.6	5767	6548	174	144	29	1	35.06	895.92
	3200	7.8	5909	6720	178	147	29	1	35.39	897.86
	4000	9.3	6988	8052	201	171	30	1	37.79	913.56
	5000	11.0	8222	9623	229	197	30	1	40.42	933.39
	6000	12.6	9354	11113	253	221	31	1	42.72	953.18
	7000	14.0	10406	12541	276	243	32	1	44.75	972.79

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B38-3

Figure 2-14. Delivery Data, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 3 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2500	5.0	3525	4322	121	93	27	1	39.50	894.44
	3000	5.8	4118	5095	134	106	27	1	40.85	904.82
	4000	7.5	5227	6582	158	130	28	1	43.27	925.53
	5000	9.0	6251	8005	180	151	28	1	45.41	946.02
	6000	10.4	7207	9378	200	171	29	1	47.31	966.19
	7000	11.8	8106	10710	219	189	29	1	49.01	985.97
	8000	13.1	8956	12009	237	205	30	1	50.54	1005.29
	9000	14.4	9764	13279	253	221	31	1	51.94	1024.07
	10000	15.6	10536	14526	268	236	32	1	53.21	1042.22
	11000	16.7	11277	15753	283	249	32	0	54.39	1059.62
-45	3468	5.2	2957	4558	104	79	23	1	52.85	925.14
	4000	5.9	3354	5220	112	88	23	1	53.69	936.95
	6000	8.4	4750	7653	141	116	24	1	56.47	979.73
	7000	9.6	5399	8840	154	128	25	1	57.67	1000.16
	8000	10.8	6020	10012	166	140	25	1	58.77	1019.93
	9000	11.9	6617	11171	178	151	26	1	59.78	1038.96
	10000	13.0	7192	12318	189	162	26	1	60.71	1057.19
	11000	14.0	7747	13454	200	172	27	0	61.57	1074.45
	12000	15.0	8283	14581	210	181	27	0	62.37	1090.64
	14000	17.0	9308	16812	228	199	29	0	63.83	1118.84
	16000	18.9	10276	19015	246	215	30	0	65.14	1139.91
	18000	20.8	11192	21196	261	229	32	0	66.33	1151.63
	20000	22.7	12061	23356	276	243	33	0	67.46	1156.78
-60	5291	6.5	2581	5887	89	70	18	1	66.65	972.38
	6000	7.3	2884	6657	95	76	18	1	67.23	987.78
	7000	8.3	3296	7737	103	84	18	1	67.98	1008.84
	8000	9.4	3694	8812	111	91	19	1	68.67	1029.10
	9000	10.4	4079	9881	118	98	19	1	69.31	1048.49
	10000	11.4	4452	10946	125	105	19	1	69.91	1066.94
	11000	12.4	4814	12007	132	111	20	0	70.47	1084.32
	12000	13.3	5166	13065	138	117	20	0	70.99	1100.44
	13000	14.3	5508	14119	144	123	21	0	71.48	1115.06
	14000	15.2	5841	15170	150	128	21	0	71.94	1127.97
	16000	17.0	6483	17264	162	139	22	0	72.80	1147.04
	18000	18.8	7094	19347	172	148	23	0	73.60	1156.56
	20000	20.5	7676	21422	182	157	24	0	74.37	1161.30

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B38-4

Figure 2-14. Delivery Data, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 4 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.2	4739	4765	127	105	21	1	11.36	899.30
	800	6.8	6053	6105	154	131	21	1	14.38	896.24
	1000	7.6	6788	6861	169	146	21	1	16.08	895.70
	1200	8.4	7450	7546	182	160	21	1	17.61	895.95
	1500	9.4	8342	8476	200	178	21	1	19.65	897.37
	2000	11.0	9640	9845	227	205	22	1	22.61	901.66
	2500	12.3	10775	11061	251	228	22	1	25.15	907.51
	3000	13.6	11795	12170	272	249	22	1	27.38	914.39
	3300	14.3	12364	12797	284	261	22	1	28.61	918.87
-10	1200	4.9	4330	4493	118	96	21	1	20.15	924.02
	1500	5.8	5112	5328	133	111	21	1	21.84	925.88
	1600	6.1	5358	5592	138	116	21	1	22.37	926.65
	1700	6.3	5599	5851	143	120	21	1	22.88	927.47
	1800	6.6	5833	6104	147	125	21	1	23.38	928.35
	1900	6.9	6062	6352	151	129	21	1	23.87	929.28
	2000	7.2	6285	6596	156	134	21	1	24.35	930.25
	2100	7.4	6504	6835	160	138	21	1	24.81	931.28
	2200	7.7	6719	7070	164	142	21	1	25.27	932.34
	2300	7.9	6929	7300	168	146	21	1	25.71	933.44
	2400	8.2	7135	7528	172	150	21	1	26.15	934.58
	2500	8.4	7337	7751	176	154	21	1	26.57	935.76
	2600	8.6	7535	7971	180	158	21	1	26.99	936.96
	2700	8.9	7731	8188	184	161	22	1	27.39	938.20
	2800	9.1	7922	8403	188	165	22	1	27.79	939.46
	2900	9.3	8111	8614	191	169	22	1	28.19	940.75
	3000	9.6	8297	8822	195	172	22	1	28.57	942.06
	4000	11.6	10013	10782	228	206	22	1	32.05	956.26
	6000	15.2	12904	14231	284	261	23	1	37.57	988.01
-20	1900	4.8	4051	4475	111	89	20	1	29.32	946.72
	2500	6.0	5076	5658	130	109	20	1	31.41	954.69
	2600	6.2	5239	5848	133	112	20	1	31.73	956.08
	2700	6.4	5399	6037	136	115	21	1	32.06	957.48
	2800	6.6	5558	6224	139	118	21	1	32.37	958.90
	2900	6.8	5715	6409	142	120	21	1	32.69	960.33
	3000	7.0	5870	6592	145	123	21	1	33.00	961.77
	3100	7.2	6024	6774	148	126	21	1	33.30	963.22
	3200	7.4	6175	6955	151	129	21	1	33.60	964.69
	4000	8.8	7331	8351	172	150	21	1	35.84	976.74
	5000	10.5	8657	9997	197	175	21	1	38.34	992.40
	6000	12.1	9878	11557	219	197	22	1	40.54	1008.39
	7000	13.6	11014	13050	240	217	22	1	42.51	1024.42
	8000	14.9	12080	14489	259	236	23	1	44.29	1040.29
	9000	16.3	13087	15883	277	253	23	0	45.91	1055.80

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B38-5

Figure 2-14. Delivery Data, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 5 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2600	4.8	3748	4561	103	83	19	1	38.49	968.12
	3000	5.5	4242	5196	112	92	19	1	39.46	974.64
	4000	7.0	5411	6729	133	113	19	1	41.68	991.13
	5000	8.5	6497	8198	153	132	20	1	43.66	1007.72
	6000	9.9	7515	9616	171	150	20	1	45.45	1024.19
	7000	11.2	8475	10992	188	167	20	1	47.08	1040.40
	8000	12.5	9385	12332	204	182	21	1	48.56	1056.19
	9000	13.7	10253	13642	219	197	21	0	49.93	1071.34
	10000	14.9	11082	14927	233	211	22	0	51.19	1085.74
	12000	17.2	12643	17431	259	236	23	0	53.45	1111.29
	14000	19.3	14093	19865	283	258	24	0	55.45	1131.22
-45	3950	5.4	3396	5209	92	75	15	1	52.51	1003.60
	4000	5.5	3435	5272	93	76	15	1	52.58	1004.52
	6000	7.9	4896	7744	118	101	16	1	55.13	1040.20
	7000	9.0	5579	8951	130	112	16	1	56.26	1057.14
	8000	10.1	6235	10143	141	123	16	1	57.30	1073.31
	9000	11.2	6868	11321	151	134	17	1	58.27	1088.57
	10000	12.3	7478	12487	161	143	17	0	59.18	1102.70
	11000	13.3	8068	13641	171	153	17	0	60.03	1115.49
	12000	14.3	8639	14786	180	161	18	0	60.84	1126.74
	14000	16.3	9730	17049	198	178	19	0	62.33	1143.55
	16000	18.2	10759	19281	214	193	20	0	63.70	1152.16
	18000	20.1	11730	21485	229	208	21	0	65.00	1156.08
	20000	22.0	12647	23663	244	222	22	0	66.23	1158.88
-60	6024	6.8	2966	6715	78	66	11	1	66.38	1049.96
	7000	7.8	3386	7776	85	73	11	1	67.06	1067.14
	8000	8.8	3803	8858	92	80	11	1	67.71	1083.81
	9000	9.8	4208	9935	98	86	11	1	68.33	1099.34
	10000	10.7	4601	11008	105	92	11	0	68.90	1113.50
	11000	11.7	4983	12076	111	98	12	0	69.45	1126.08
	12000	12.6	5354	13140	117	104	12	0	69.96	1136.79
	13000	13.5	5716	14201	122	109	12	0	70.46	1145.19
	14000	14.4	6068	15259	128	115	12	0	70.93	1151.20
	16000	16.2	6747	17364	138	125	13	0	71.84	1157.84
	18000	18.0	7391	19458	148	134	13	0	72.70	1161.81
	20000	19.8	8003	21542	158	143	14	0	73.51	1165.19

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B38-6

Figure 2-14. Delivery Data, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 6 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	133	-146	-390	346	-329	204	148	-159	3.9	89	2.9	88	22.6
	600	142	-156	-358	325	-329	213	150	-160	4.3	98	3.1	98	22.6
	700	151	-164	-333	306	-329	220	152	-161	4.7	106	3.4	106	22.6
	800	158	-172	-313	291	-330	227	154	-162	5.0	114	3.6	114	22.6
	1000	172	-186	-281	266	-331	238	156	-164	5.7	128	4.0	128	22.6
	1200	185	-199	-258	246	-333	247	158	-165	6.2	141	4.4	141	22.6
	1400	196	-210	-240	231	-335	254	160	-166	6.8	153	4.7	153	22.6
	1600	207	-221	-225	218	-338	261	161	-168	7.3	164	5.0	164	22.6
	1800	217	-231	-213	207	-340	267	163	-169	7.7	175	5.3	175	22.6
	1900	222	-236	-208	202	-342	270	163	-169	8.0	180	5.4	180	22.6
-10	1200	71	-78	-95	87	-78	62	68	-69	4.1	90	6.5	90	22.1
	1500	86	-94	-95	89	-93	76	75	-77	4.8	106	6.9	106	22.1
	1600	91	-99	-95	89	-98	80	77	-79	5.0	111	7.0	111	22.1
	1700	95	-104	-95	90	-102	84	80	-81	5.2	116	7.2	116	22.1
	1800	100	-108	-95	90	-107	88	82	-83	5.5	121	7.3	120	22.1
	1900	104	-113	-94	90	-111	92	84	-85	5.7	125	7.4	125	22.0
	2000	109	-117	-94	90	-115	96	85	-87	5.9	130	7.5	130	22.0
	2100	113	-122	-94	90	-119	99	87	-89	6.1	134	7.6	134	22.0
	2200	117	-126	-93	89	-123	103	89	-90	6.3	139	7.7	139	22.0
	2300	121	-130	-93	89	-126	107	91	-92	6.5	143	7.8	143	22.0
	2400	125	-135	-92	89	-130	110	92	-94	6.7	147	7.9	147	22.0
	2500	129	-139	-92	89	-134	113	94	-95	6.9	151	8.0	151	21.9
	2600	133	-143	-92	88	-137	117	95	-97	7.1	155	8.0	155	21.9
	2700	137	-147	-91	88	-140	120	97	-98	7.3	159	8.1	159	21.9
	2800	140	-151	-91	88	-144	123	98	-100	7.5	163	8.2	163	21.9
	2900	144	-154	-90	88	-147	126	99	-101	7.6	167	8.3	167	21.9
	3000	148	-158	-90	87	-150	129	101	-102	7.8	171	8.4	171	21.8
	3600	168	-180	-87	85	-168	146	108	-110	8.9	193	8.8	193	21.7
-20	1800	46	-51	-41	38	-35	31	44	-44	4.0	87	9.8	87	21.8
	2000	52	-57	-42	40	-40	36	48	-48	4.4	95	9.9	95	21.7
	2500	66	-72	-45	43	-52	46	55	-55	5.3	114	10.2	114	21.6
	2600	69	-75	-45	43	-54	49	57	-57	5.5	118	10.3	118	21.6
	2700	71	-78	-45	43	-57	51	58	-58	5.6	121	10.3	121	21.5
	2800	74	-80	-46	44	-59	53	59	-59	5.8	125	10.4	125	21.5
	2900	77	-83	-46	44	-61	55	61	-61	6.0	128	10.5	128	21.5
	3000	79	-86	-46	44	-63	57	62	-62	6.1	132	10.5	132	21.5
	3100	82	-89	-47	45	-66	59	63	-63	6.3	135	10.6	135	21.4
	3200	85	-92	-47	45	-68	61	65	-65	6.5	138	10.6	138	21.4
	3500	93	-100	-47	46	-75	67	68	-68	6.9	148	10.8	148	21.3
	4000	105	-114	-48	47	-86	78	74	-74	7.7	164	11.0	164	21.2
	4500	118	-127	-48	47	-96	87	79	-79	8.5	179	11.2	179	21.1
	5000	130	-139	-49	47	-107	97	84	-84	9.2	193	11.4	193	21.0
	5500	142	-152	-49	48	-117	107	89	-89	9.9	207	11.6	207	20.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B39-1

Figure 2-15. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 1 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2300	32	-36	-22	21	-20	19	33	-33	3.9	84	12.6	84	21.5
	2500	36	-39	-23	21	-23	22	36	-35	4.2	91	12.7	90	21.4
	3000	44	-49	-24	23	-30	28	41	-41	5.0	106	12.8	106	21.3
	3500	53	-58	-26	25	-37	35	46	-46	5.7	120	13.0	120	21.1
	4000	62	-68	-27	26	-44	41	51	-51	6.4	134	13.1	134	21.0
	5000	80	-86	-29	28	-58	55	60	-60	7.8	161	13.3	161	20.7
	6000	97	-105	-30	29	-73	69	69	-69	9.1	186	13.5	186	20.4
	7000	114	-123	-31	30	-88	83	77	-77	10.4	210	13.6	210	20.2
	8000	131	-141	-31	31	-103	97	84	-84	11.6	232	13.7	232	19.9
	8400	138	-148	-31	31	-109	103	87	-87	12.1	241	13.7	241	19.8
-45	3100	21	-24	-11	10	-13	13	26	-26	4.1	85	16.1	85	21.0
	4000	30	-33	-12	12	-20	20	33	-32	5.2	107	16.1	107	20.7
	5000	40	-44	-14	13	-29	28	40	-40	6.4	130	16.1	130	20.4
	6000	50	-55	-15	14	-38	36	47	-47	7.5	152	16.0	152	20.1
	7000	61	-67	-16	15	-47	45	54	-53	8.7	173	16.0	173	19.9
	8000	72	-78	-16	16	-58	55	61	-60	9.9	193	15.9	193	19.6
	9000	82	-90	-17	17	-68	65	67	-66	11.0	213	15.8	213	19.4
	10000	93	-101	-18	17	-79	76	73	-73	12.1	232	15.8	232	19.1
	11000	104	-113	-18	18	-90	86	79	-79	13.2	250	15.7	250	18.9
	12000	114	-124	-18	18	-102	97	86	-85	14.4	268	15.6	268	18.7
	14000	136	-147	-19	19	-125	120	97	-97	16.5	302	15.4	302	18.3
	16000	157	-170	-19	19	-149	143	109	-109	18.7	335	15.3	335	17.9
-60	4556	19	-21	-6	6	-15	15	28	-27	5.1	103	18.4	103	20.5
	5000	21	-24	-6	6	-17	18	31	-30	5.5	113	18.3	113	20.3
	6000	27	-30	-7	7	-23	24	36	-36	6.6	132	18.1	132	20.0
	8000	39	-43	-8	8	-38	38	48	-47	8.8	170	17.7	170	19.4
	9000	45	-50	-9	9	-45	45	53	-53	9.8	188	17.6	188	19.2
	10000	51	-57	-9	9	-53	53	59	-58	10.9	206	17.4	206	18.9
	11000	58	-64	-10	9	-62	62	65	-64	11.9	223	17.2	223	18.7
	12000	65	-71	-10	10	-71	70	70	-69	13.0	239	17.1	239	18.5
	13000	71	-78	-10	10	-80	80	75	-75	14.0	256	16.9	256	18.2
	14000	78	-85	-10	10	-90	89	81	-80	15.1	272	16.8	272	18.0
	16000	91	-100	-11	11	-109	109	92	-91	17.1	303	16.5	303	17.7
	18000	104	-114	-11	11	-130	129	102	-102	19.2	333	16.2	333	17.3
	20000	117	-128	-11	11	-152	151	113	-112	21.3	362	16.0	362	17.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B39-2

Figure 2-15. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 2 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	500	134	-135	-433	385	-416	244	181	-196	4.3	89	2.3	89	20.4
	600	143	-145	-397	360	-414	255	184	-198	4.8	98	2.6	98	20.4
	800	160	-161	-347	323	-413	271	187	-200	5.6	114	2.9	114	20.5
	1000	174	-175	-312	295	-413	284	190	-201	6.3	128	3.3	128	20.5
	1200	187	-188	-286	273	-414	295	193	-203	6.9	141	3.6	141	20.5
	1400	198	-199	-266	256	-415	304	194	-204	7.5	153	3.8	153	20.5
	1600	209	-210	-250	241	-416	311	196	-205	8.0	165	4.1	165	20.5
	1800	219	-220	-236	229	-418	319	197	-206	8.5	175	4.3	175	20.5
	2000	229	-230	-225	219	-420	325	199	-207	9.0	185	4.6	185	20.5
	2500	251	-252	-202	198	-426	339	202	-209	10.1	208	5.1	208	20.5
-10	1200	65	-67	-95	86	-82	64	75	-77	4.3	86	5.6	86	20.0
	1500	80	-81	-96	89	-99	79	84	-86	5.1	102	5.9	102	20.0
	1600	84	-86	-96	90	-104	84	87	-89	5.3	107	6.0	106	20.0
	1700	89	-90	-96	90	-109	88	90	-91	5.6	111	6.1	111	20.0
	1800	93	-95	-96	91	-114	92	92	-94	5.8	116	6.2	116	20.0
	1900	98	-99	-96	91	-119	97	94	-96	6.0	121	6.3	121	20.0
	2000	102	-103	-96	91	-124	101	96	-98	6.3	125	6.4	125	20.0
	2100	106	-108	-95	91	-128	105	99	-100	6.5	130	6.5	129	20.0
	2200	110	-112	-95	91	-133	109	101	-102	6.7	134	6.6	134	20.0
	2300	114	-116	-95	91	-137	113	103	-104	6.9	138	6.6	138	20.0
	2400	118	-120	-95	91	-141	117	104	-106	7.1	142	6.7	142	20.0
	2500	122	-124	-94	91	-145	120	106	-108	7.3	146	6.8	146	19.9
	2600	126	-128	-94	91	-149	124	108	-110	7.5	150	6.9	150	19.9
	2700	130	-132	-94	91	-153	128	110	-112	7.7	154	6.9	154	19.9
	2800	134	-135	-94	90	-156	131	111	-113	7.9	158	7.0	158	19.9
	2900	137	-139	-93	90	-160	135	113	-115	8.1	162	7.1	162	19.9
	3000	141	-143	-93	90	-164	138	114	-116	8.3	166	7.2	166	19.9
	4000	175	-177	-89	87	-196	169	128	-130	10.2	201	7.8	201	19.8
	4500	191	-193	-87	86	-211	183	134	-136	11.0	218	8.0	218	19.7
-20	1800	40	-41	-39	36	-34	30	47	-47	4.2	82	8.6	82	19.7
	2000	46	-47	-40	37	-39	34	51	-51	4.5	90	8.7	90	19.7
	2500	59	-60	-43	41	-51	45	60	-60	5.5	108	9.0	108	19.6
	2600	61	-63	-43	41	-53	47	61	-61	5.7	111	9.0	111	19.6
	2700	64	-65	-44	42	-56	49	63	-63	5.8	115	9.1	115	19.6
	2800	66	-68	-44	42	-58	51	64	-64	6.0	118	9.1	118	19.6
	2900	69	-70	-44	43	-60	53	66	-66	6.2	121	9.2	121	19.6
	3000	72	-73	-45	43	-63	56	67	-67	6.4	125	9.2	125	19.6
	3100	74	-76	-45	43	-65	58	69	-69	6.5	128	9.3	128	19.5
	3200	77	-78	-45	44	-67	60	70	-70	6.7	131	9.3	131	19.5
	4000	97	-99	-47	46	-86	77	80	-81	8.1	156	9.6	156	19.4
	5000	121	-123	-48	47	-108	97	92	-92	9.6	185	10.0	185	19.2
	6000	144	-146	-49	48	-129	117	102	-103	11.1	212	10.3	212	19.1
	7000	166	-169	-49	48	-149	136	112	-112	12.5	237	10.5	237	18.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B39-3

Figure 2-15. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 3 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2500	31	-31	-21	19	-21	20	37	-37	4.3	84	11.3	84	19.5
	3000	39	-40	-23	21	-27	26	43	-43	5.1	99	11.4	99	19.4
	4000	55	-56	-25	24	-41	38	54	-54	6.6	126	11.6	126	19.2
	5000	72	-74	-27	27	-55	52	64	-63	8.0	152	11.9	152	19.0
	6000	89	-91	-29	28	-70	65	73	-73	9.4	176	12.0	176	18.8
	7000	105	-108	-30	29	-85	79	81	-81	10.7	199	12.2	199	18.6
	8000	122	-125	-31	30	-100	93	90	-90	12.0	221	12.3	221	18.4
	9000	138	-141	-31	31	-114	108	97	-98	13.3	242	12.4	242	18.2
	10000	155	-158	-32	31	-129	122	105	-105	14.5	263	12.4	263	18.1
	11000	171	-174	-32	32	-144	136	112	-112	15.8	282	12.5	282	17.9
-45	3468	21	-22	-10	10	-14	14	30	-29	4.6	87	14.5	87	19.1
	4000	26	-27	-11	10	-18	17	34	-33	5.2	99	14.5	99	19.0
	6000	45	-46	-13	13	-34	32	49	-48	7.7	142	14.5	142	18.5
	7000	55	-57	-14	14	-43	41	56	-55	8.8	162	14.5	162	18.3
	8000	65	-67	-15	15	-52	50	62	-62	10.0	182	14.5	181	18.1
	9000	76	-78	-16	16	-62	59	69	-69	11.2	200	14.5	200	17.9
	10000	87	-89	-17	16	-72	69	76	-75	12.3	219	14.4	219	17.8
	11000	97	-100	-17	17	-83	79	82	-82	13.5	237	14.4	236	17.6
	12000	108	-111	-18	17	-94	89	88	-88	14.6	254	14.3	254	17.4
	14000	130	-133	-18	18	-116	111	101	-100	16.8	287	14.2	287	17.1
	16000	152	-155	-19	19	-139	133	113	-112	19.0	320	14.2	320	16.8
	18000	173	-177	-19	19	-162	156	124	-124	21.2	351	14.1	351	16.6
	20000	194	-198	-20	20	-186	179	136	-136	23.4	383	14.0	383	16.4
-60	5291	20	-21	-6	6	-16	17	33	-32	5.9	109	16.7	109	18.6
	6000	24	-25	-6	6	-20	20	37	-36	6.7	123	16.6	123	18.4
	7000	30	-31	-7	7	-26	26	43	-42	7.7	141	16.5	141	18.2
	8000	36	-37	-7	7	-33	33	48	-48	8.8	158	16.3	158	18.0
	9000	42	-43	-8	8	-39	39	54	-53	9.9	176	16.2	176	17.8
	10000	49	-50	-8	8	-47	47	60	-59	10.9	192	16.1	192	17.6
	11000	56	-57	-9	9	-55	54	65	-65	12.0	209	15.9	209	17.4
	12000	63	-64	-9	9	-63	62	71	-70	13.1	225	15.8	225	17.2
	13000	70	-72	-9	9	-71	70	77	-76	14.1	241	15.7	241	17.1
	14000	77	-79	-10	10	-80	79	82	-81	15.2	256	15.6	256	16.9
	16000	92	-94	-10	10	-98	97	93	-92	17.3	287	15.4	287	16.6
	18000	107	-110	-11	11	-117	116	104	-103	19.3	317	15.2	317	16.4
	20000	122	-125	-11	11	-137	136	115	-114	21.4	347	15.1	347	16.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B39-4

Figure 2-15. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 4 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	175	-179	-475	422	-516	286	217	-237	4.8	89	2.0	89	18.6
	800	201	-204	-380	354	-507	319	224	-241	6.1	114	2.4	114	18.7
	1000	215	-218	-342	323	-505	334	228	-243	6.9	129	2.7	128	18.7
	1200	228	-231	-314	300	-504	347	230	-244	7.5	142	3.0	141	18.7
	1500	244	-247	-282	272	-504	362	233	-245	8.5	159	3.3	159	18.8
	2000	268	-271	-246	239	-507	381	237	-247	9.8	185	3.8	185	18.8
	2500	289	-291	-221	216	-511	397	240	-249	11.1	209	4.3	208	18.8
	3000	307	-310	-202	199	-516	411	242	-251	12.2	229	4.6	229	18.8
	3300	318	-320	-193	190	-519	418	244	-252	12.8	241	4.9	241	18.8
-10	1200	74	-75	-93	84	-85	65	83	-85	4.5	82	4.9	82	18.3
	1500	89	-91	-95	88	-104	81	93	-95	5.3	98	5.2	98	18.3
	1600	94	-95	-96	89	-110	86	96	-98	5.6	102	5.2	102	18.3
	1700	98	-100	-96	90	-115	91	99	-101	5.9	107	5.3	107	18.3
	1800	103	-105	-96	91	-121	96	102	-104	6.1	112	5.4	112	18.3
	1900	108	-109	-96	91	-126	100	105	-107	6.4	116	5.5	116	18.3
	2000	112	-114	-96	91	-131	105	107	-110	6.6	121	5.6	121	18.3
	2100	116	-118	-96	92	-136	109	110	-112	6.8	125	5.6	125	18.3
	2200	121	-122	-96	92	-141	114	112	-114	7.1	129	5.7	129	18.3
	2300	125	-127	-96	92	-146	118	114	-117	7.3	134	5.8	134	18.3
	2400	129	-131	-96	92	-151	122	116	-119	7.5	138	5.8	138	18.3
	2500	133	-135	-96	92	-155	126	118	-121	7.8	142	5.9	142	18.3
	2600	137	-139	-96	92	-160	130	120	-123	8.0	146	6.0	146	18.3
	2700	141	-143	-96	92	-164	134	122	-125	8.2	150	6.0	150	18.3
	2800	144	-147	-95	92	-168	138	124	-127	8.4	154	6.1	154	18.3
	2900	148	-150	-95	92	-172	142	126	-129	8.6	158	6.2	157	18.3
	3000	152	-154	-95	92	-176	146	128	-131	8.8	161	6.2	161	18.3
	4000	186	-189	-92	90	-213	180	144	-146	10.8	196	6.8	196	18.2
	6000	244	-247	-86	85	-271	237	167	-170	14.2	257	7.6	257	18.1
-20	1900	47	-48	-37	34	-34	30	52	-52	4.5	81	7.7	81	18.1
	2500	62	-64	-41	38	-49	43	63	-64	5.7	102	8.0	102	18.0
	2600	65	-66	-41	39	-52	45	65	-65	5.8	105	8.0	105	18.0
	2700	67	-69	-42	40	-54	47	67	-67	6.0	109	8.0	109	18.0
	2800	70	-71	-42	40	-57	49	68	-69	6.2	112	8.1	112	18.0
	2900	72	-74	-43	41	-59	52	70	-71	6.4	115	8.1	115	18.0
	3000	75	-77	-43	41	-61	54	72	-72	6.6	118	8.2	118	18.0
	3100	78	-79	-43	42	-64	56	73	-74	6.8	122	8.2	122	17.9
	3200	80	-82	-44	42	-66	58	75	-75	7.0	125	8.3	125	17.9
	4000	100	-102	-46	44	-85	76	86	-87	8.4	149	8.6	149	17.9
	5000	123	-125	-48	46	-108	97	99	-100	10.0	178	8.9	177	17.8
	6000	145	-148	-49	48	-130	117	110	-111	11.6	204	9.2	204	17.6
	7000	167	-169	-49	48	-152	137	121	-122	13.1	229	9.4	229	17.5
	8000	187	-190	-49	48	-172	156	130	-131	14.5	252	9.6	252	17.4
	9000	207	-210	-49	48	-192	175	139	-140	15.9	275	9.8	275	17.3

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B39-5

Figure 2-15. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 5 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-33 CONICAL FIN ASSEMBLY *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2600	34	-35	-19	18	-20	19	40	-39	4.6	81	10.2	81	17.8
	3000	40	-41	-21	20	-25	23	45	-44	5.2	92	10.3	92	17.8
	4000	56	-57	-24	23	-38	36	56	-56	6.7	119	10.5	119	17.6
	5000	72	-74	-26	25	-52	48	67	-67	8.2	144	10.7	144	17.5
	6000	88	-90	-27	27	-67	62	77	-77	9.6	167	10.8	167	17.4
	7000	104	-106	-29	28	-81	76	86	-86	11.0	190	11.0	190	17.2
	8000	120	-122	-30	29	-96	90	94	-95	12.3	211	11.1	211	17.1
	9000	135	-138	-30	30	-111	104	103	-103	13.6	232	11.2	232	17.0
	10000	150	-153	-31	30	-126	118	111	-111	14.9	252	11.3	252	16.9
	12000	176	-180	-32	32	-156	146	126	-126	17.4	290	11.5	290	16.6
	14000	200	-205	-32	32	-185	175	140	-141	19.9	326	11.6	326	16.4
-45	3950	27	-28	-10	9	-15	15	34	-34	5.2	91	13.3	91	17.5
	4000	27	-28	-10	9	-15	15	35	-34	5.3	92	13.3	92	17.5
	6000	45	-46	-12	12	-30	29	50	-49	7.7	133	13.3	133	17.2
	7000	55	-56	-13	13	-39	37	57	-56	9.0	152	13.3	152	17.0
	8000	64	-66	-14	14	-47	45	64	-64	10.1	171	13.3	171	16.9
	9000	74	-76	-15	15	-57	54	71	-70	11.3	189	13.3	189	16.7
	10000	83	-85	-16	15	-66	63	78	-77	12.5	207	13.3	207	16.6
	11000	92	-94	-16	16	-76	73	84	-84	13.6	225	13.3	224	16.5
	12000	101	-103	-17	17	-86	82	91	-90	14.8	242	13.3	242	16.3
	14000	117	-120	-18	17	-108	103	103	-103	17.0	275	13.2	275	16.1
	16000	132	-136	-18	18	-130	124	116	-116	19.3	307	13.2	307	15.9
	18000	144	-149	-19	19	-152	145	128	-128	21.5	340	13.2	340	15.8
	20000	156	-161	-20	20	-175	168	140	-139	23.7	371	13.3	371	15.7
-60	6024	26	-27	-6	5	-17	18	37	-37	6.7	114	15.3	114	17.0
	7000	31	-32	-6	6	-23	23	43	-42	7.8	131	15.2	131	16.9
	8000	37	-38	-7	7	-28	29	49	-48	8.9	148	15.1	148	16.7
	9000	43	-44	-7	7	-35	35	55	-54	9.9	165	15.0	165	16.6
	10000	49	-50	-8	7	-41	41	60	-60	11.0	181	14.9	181	16.4
	11000	54	-55	-8	8	-48	48	66	-65	12.1	197	14.8	197	16.3
	12000	59	-61	-8	8	-56	55	72	-71	13.1	212	14.8	212	16.2
	13000	64	-66	-9	9	-64	63	77	-77	14.2	228	14.7	228	16.1
	14000	69	-71	-9	9	-72	71	83	-82	15.3	243	14.6	243	15.9
	16000	78	-81	-10	10	-89	87	94	-93	17.4	274	14.5	274	15.8
	18000	86	-89	-10	10	-107	105	105	-104	19.5	304	14.5	304	15.6
	20000	94	-97	-11	11	-126	124	116	-115	21.5	334	14.4	334	15.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 78.
4. ALSO APPLICABLE TO : MK 82 MOD 2 (TP) : MAU-93/B CONICAL FIN ASSEMBLY : STORES CODE : 09.

* ALSO APPLICABLE TO : BDU-45/B

BF 11221-R1-B39-6

Figure 2-15. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-33 Conical Fin Assembly (Sheet 6 of 6)

AV-8B SAFE ESCAPE TABLE
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) **

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	1100	227	1100	1000	193	1000	900	164	900
	5 G LEVEL BREAKAWAY	500	167	500	500	147	500	400	118	400
	6 G LEVEL BREAKAWAY	500	167	500	400	136	400	400	118	400
-10	5 G	1200	165	911	1200	141	870	1200	120	826
	6 G	1200	165	916	1100	135	766	1100	114	732
-20	5 G	1800	155	1065	1800	130	961	1800	109	836
	6 G	1800	155	1076	1800	130	983	1800	109	854
-30	5 G	2300	140	996	2400	120	896	2500	102	752
	6 G	2300	140	1012	2300	117	857	2500	102	793
-45	5 G	3100*	118	773	3468*	105	700	3950*	93	700
	6 G	3001*	116	700	3279*	102	700	3811*	91	700
-60	5 G	4556*	99	1000	5291*	90	1000	6024*	80	1000
	6 G	4416*	97	1000	4864*	86	1000	5615*	76	1000

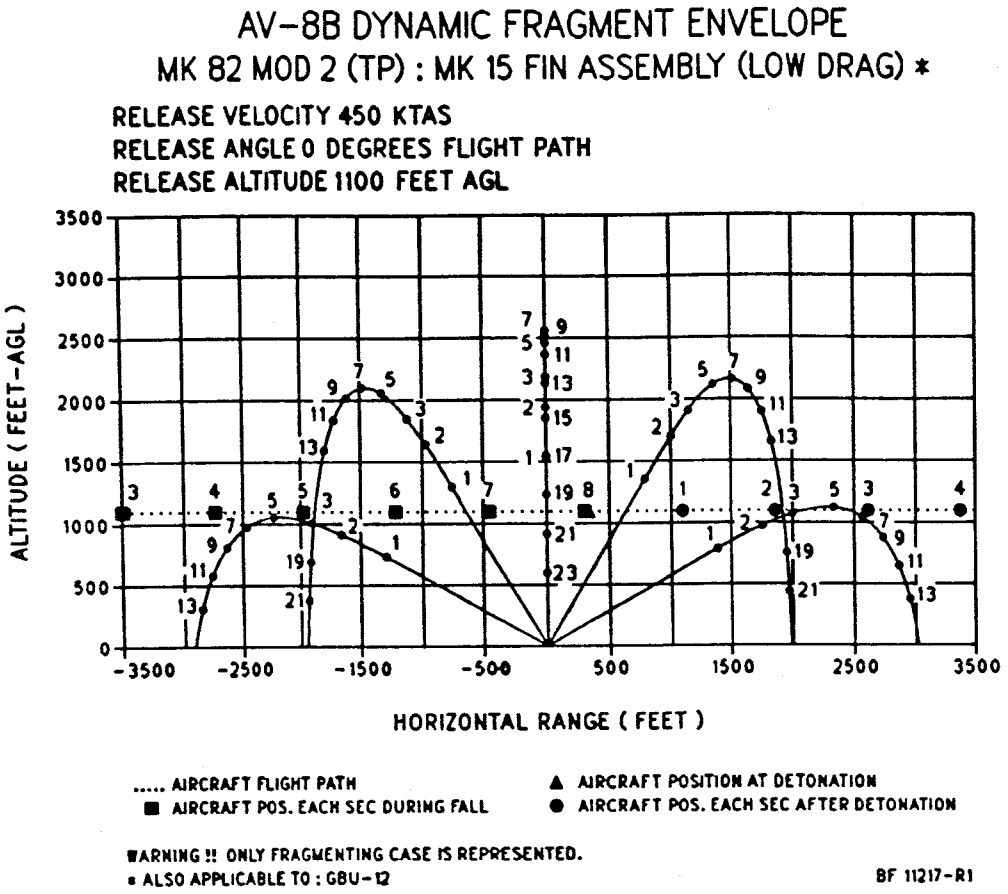
1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

** ALSO APPLICABLE TO : BDU-45/B AND GBU-12

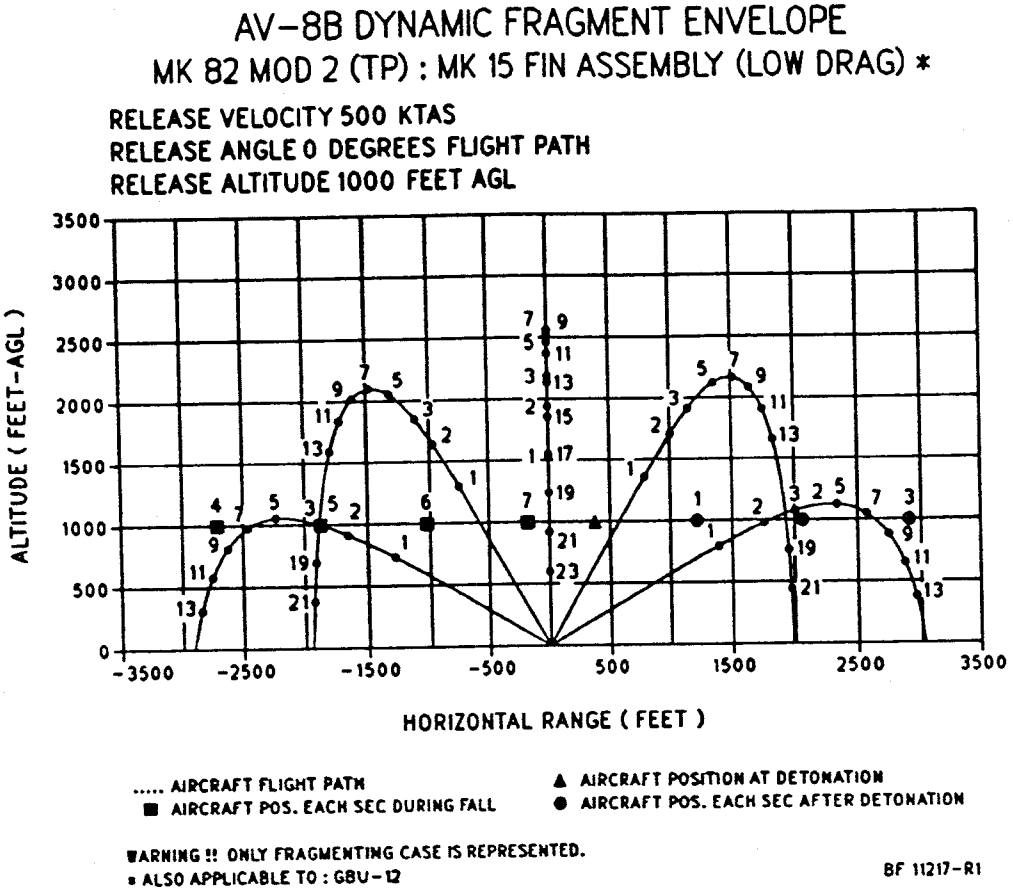
BF 11217-R1-B30-1

Figure 2-16. Safe Escape Table, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag



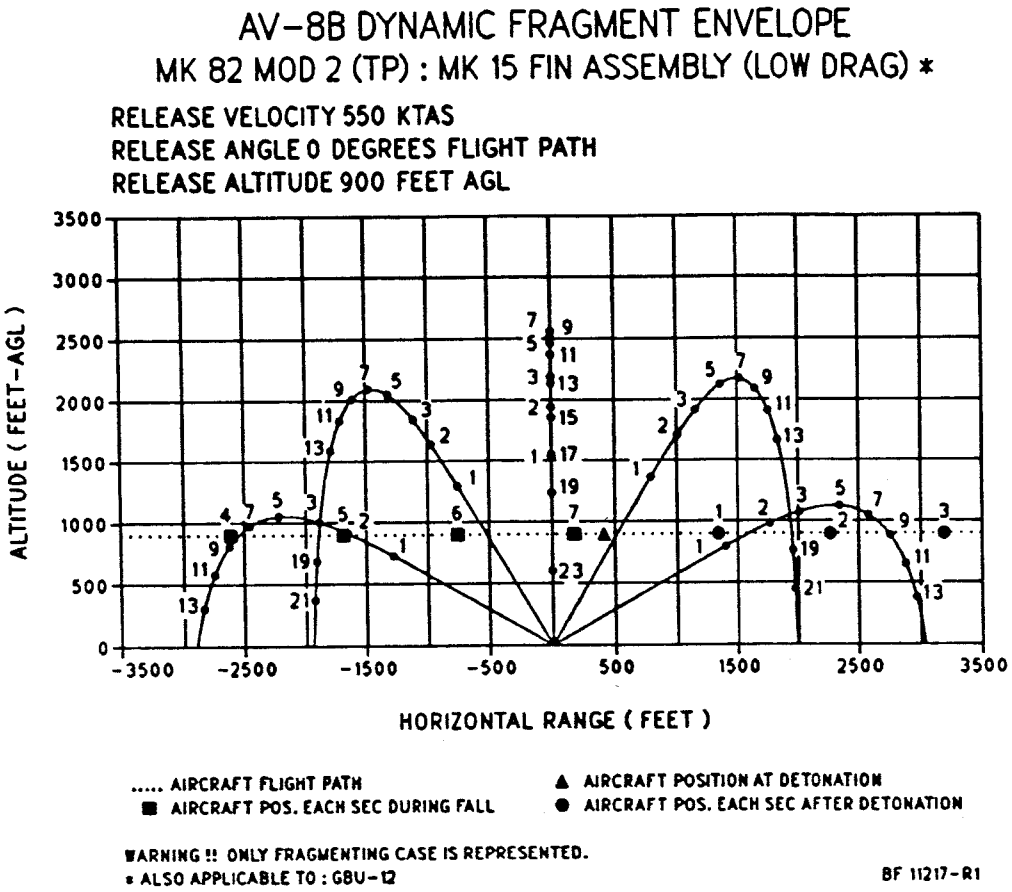
BF11217-R1-B31-1

Figure 2-17. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 1 of 3)



BF 11217-R1-B31-2

Figure 2-17. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 2 of 3)

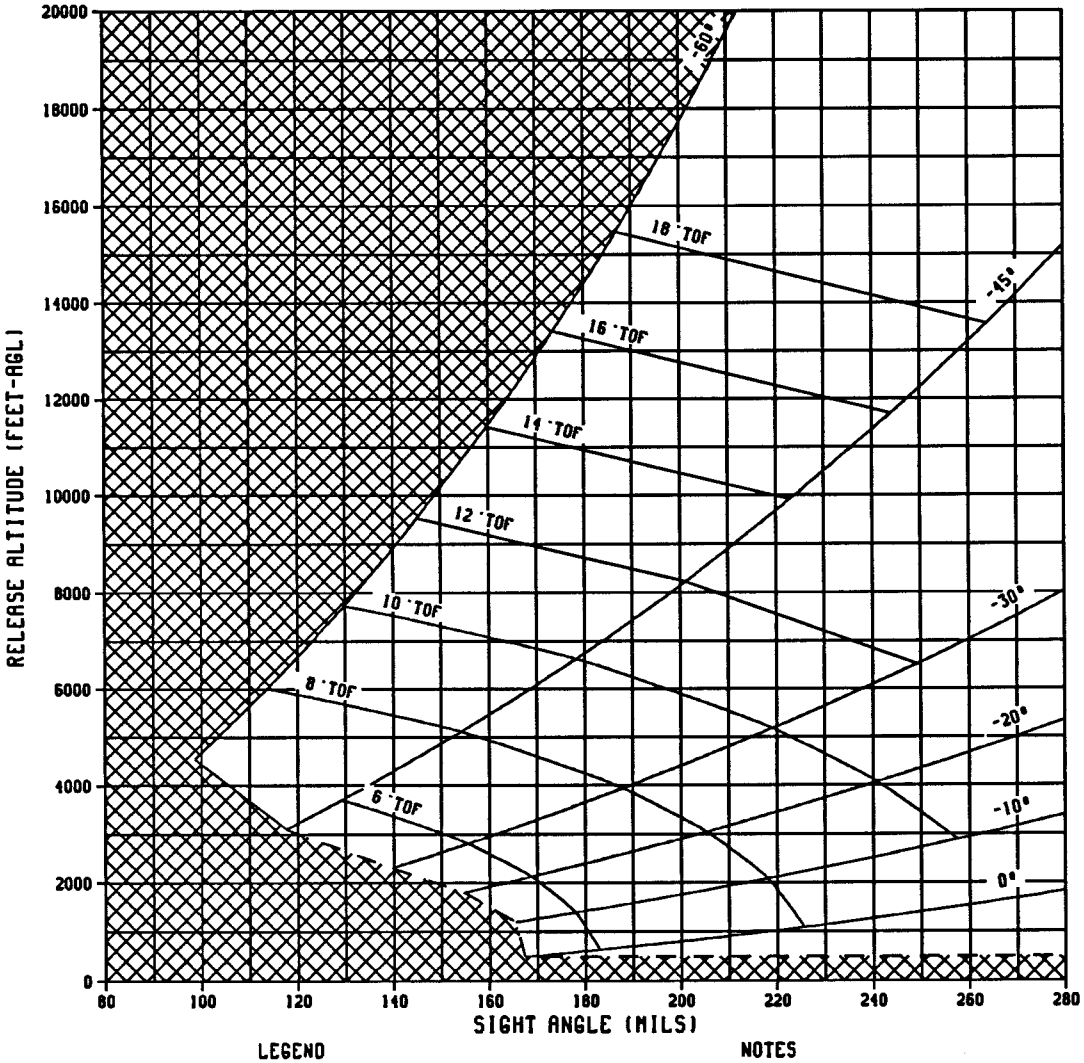


BF 11217-R1-B31-3

Figure 2-17. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B AND GBU-12

450 KIAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE
FRAGMENT AVOIDANCE
UNSAFE RELEASE

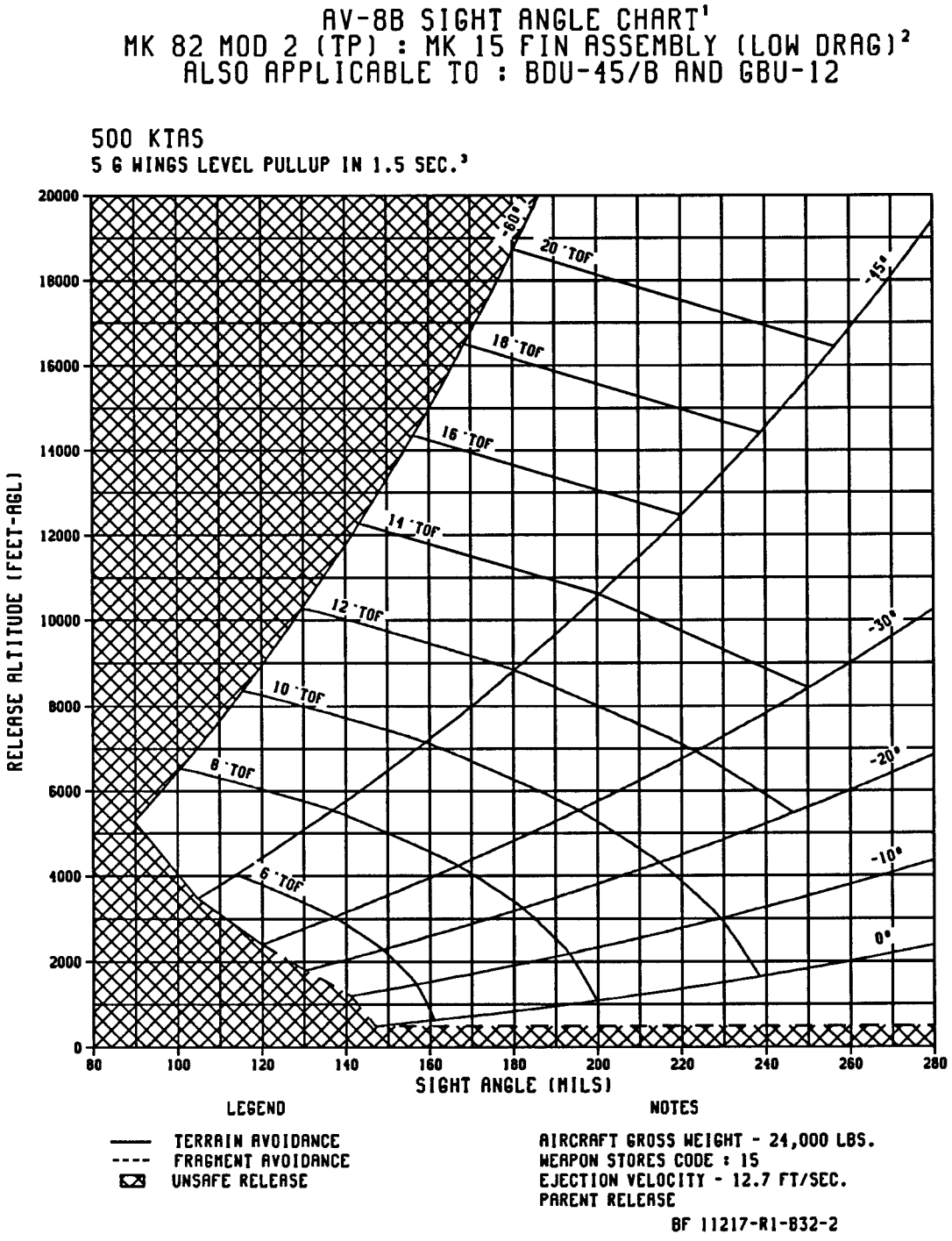
NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 15
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

BF 11217-R1-B32-1

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-18. Sight Angle Chart, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 1 of 3)

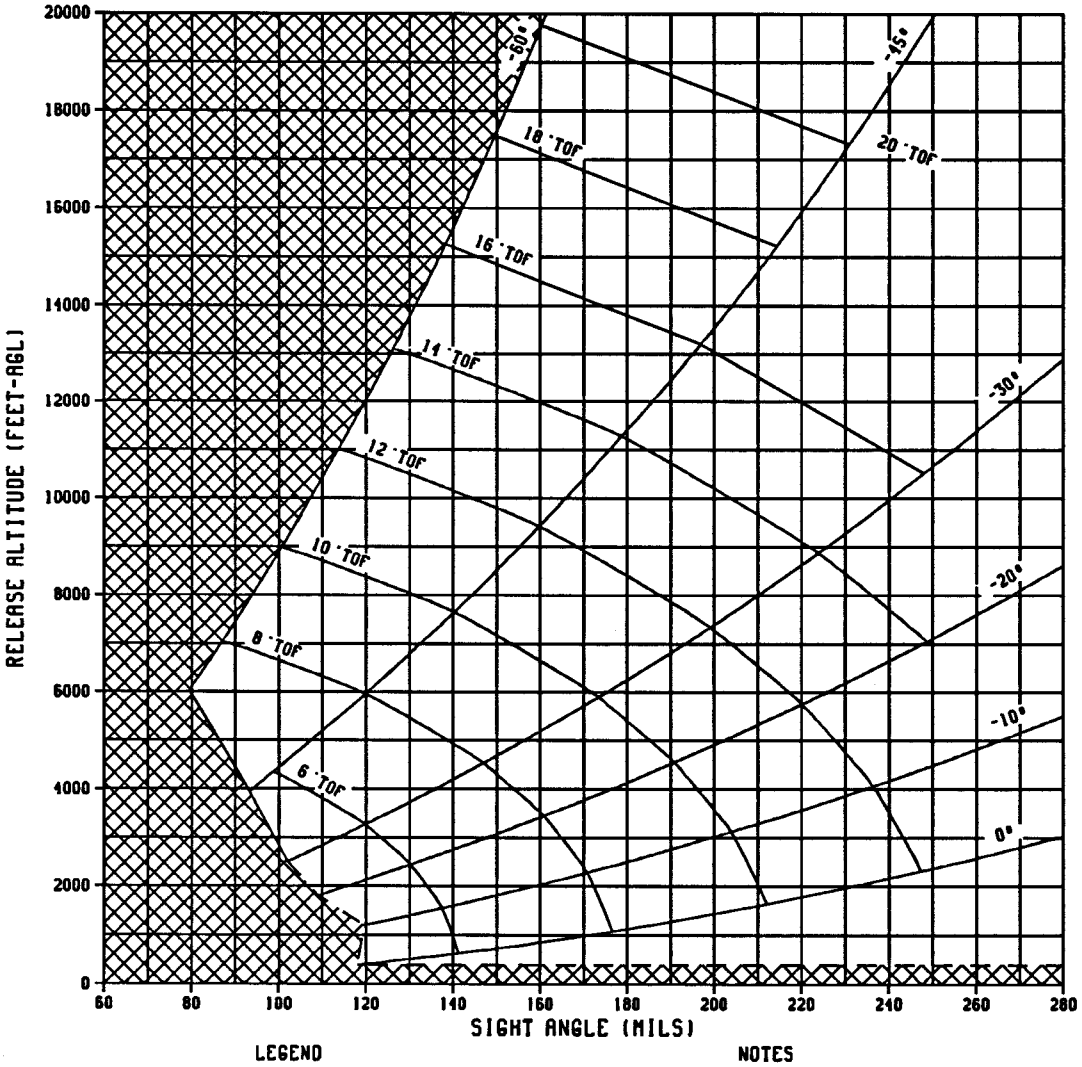


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-18. Sight Angle Chart, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B AND GBU-12

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
⊠ UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 15
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

BF 11217-R1-B32-3

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-18. Sight Angle Chart, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.3	3852	3885	167	129	37	2	13.97	724.97
	600	5.8	4235	4278	179	141	37	1	15.31	723.87
	700	6.3	4586	4639	190	151	37	1	16.54	723.25
	800	6.8	4911	4976	200	161	37	1	17.69	723.00
	1000	7.6	5502	5593	218	180	37	1	19.76	723.35
	1200	8.4	6033	6151	235	196	37	1	21.61	724.53
	1400	9.2	6519	6667	250	212	38	1	23.30	726.31
	1600	9.8	6968	7149	264	226	38	1	24.85	728.56
	1800	10.5	7388	7604	278	239	38	1	26.28	731.17
	1900	10.8	7588	7823	284	245	38	1	26.96	732.59
-10	1200	5.4	3857	4039	165	127	37	2	23.51	751.64
	1400	6.0	4302	4524	179	140	37	1	24.95	753.24
	1500	6.3	4514	4756	185	146	37	1	25.63	754.19
	1600	6.6	4719	4983	191	152	37	1	26.29	755.21
	1700	6.9	4919	5205	197	158	37	1	26.94	756.31
	1800	7.2	5114	5421	203	164	37	1	27.56	757.48
	1900	7.5	5303	5633	208	169	38	1	28.16	758.71
	2000	7.8	5488	5841	214	175	38	1	28.75	760.00
	2100	8.0	5669	6045	219	180	38	1	29.32	761.33
	2200	8.3	5845	6246	224	185	38	1	29.87	762.72
	2300	8.6	6018	6443	229	191	38	1	30.41	764.15
	2400	8.8	6187	6636	235	196	38	1	30.94	765.61
	2500	9.1	6353	6827	239	200	38	1	31.45	767.12
	2600	9.3	6515	7015	244	205	38	1	31.95	768.65
	2700	9.6	6675	7200	249	210	38	1	32.44	770.22
	2800	9.8	6831	7383	254	214	38	1	32.92	771.82
	2900	10.0	6985	7563	258	219	38	1	33.38	773.44
	3000	10.3	7136	7741	263	223	39	1	33.84	775.09
	3500	11.4	7856	8601	284	245	39	1	35.98	783.63
-20	1800	5.2	3577	4004	155	117	36	1	32.21	775.91
	1900	5.5	3734	4190	159	122	36	1	32.68	777.34
	2000	5.7	3889	4373	164	126	36	1	33.15	778.80
	2500	6.8	4624	5256	184	147	37	1	35.35	786.48
	2600	7.1	4764	5427	188	151	37	1	35.76	788.08
	2700	7.3	4902	5596	192	154	37	1	36.17	789.70
	2800	7.5	5038	5764	196	158	37	1	36.56	791.34
	2900	7.7	5172	5930	200	162	37	1	36.95	792.99
	3000	7.9	5304	6094	204	166	37	1	37.34	794.65
	3100	8.1	5435	6257	207	169	37	1	37.71	796.33
	3200	8.3	5564	6418	211	173	37	1	38.08	798.02
	3500	8.9	5940	6895	222	183	37	1	39.15	803.16
	4000	9.9	6539	7665	239	200	38	1	40.81	811.89
	5000	11.7	7644	9134	270	230	39	1	43.75	829.74
	5500	12.5	8158	9839	284	244	39	1	45.07	838.76

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15. BF 11217-R1-B33-1

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

Figure 2-19. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 1 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2300	5.0	3168	3915	140	104	34	1	40.64	796.37
	2500	5.4	3399	4219	146	111	34	1	41.31	799.91
	3000	6.4	3953	4962	161	126	35	1	42.87	808.88
	3500	7.2	4479	5684	176	140	35	1	44.32	817.94
	4000	8.1	4980	6387	189	153	35	1	45.67	827.05
	5000	9.7	5918	7748	215	178	36	1	48.10	845.29
	6000	11.3	6787	9059	238	200	37	1	50.23	863.41
	7000	12.7	7597	10330	260	221	38	1	52.11	881.26
	8000	14.1	8359	11570	279	240	39	1	53.80	898.79
-45	3100	5.1	2602	4047	118	87	29	1	53.62	824.49
	4000	6.4	3245	5151	135	104	30	1	55.31	842.49
	5000	7.8	3916	6351	152	121	30	1	56.99	861.97
	6000	9.2	4549	7529	169	137	31	1	58.49	880.89
	7000	10.5	5148	8689	184	151	32	1	59.85	899.25
	8000	11.7	5718	9833	198	165	33	1	61.07	917.01
	9000	12.9	6262	10964	212	178	33	1	62.18	934.16
	10000	14.1	6784	12084	224	189	34	1	63.20	950.74
	11000	15.2	7285	13193	236	200	35	1	64.14	966.78
	12000	16.3	7768	14295	247	211	36	1	65.00	982.29
	14000	18.5	8686	16475	268	230	38	0	66.53	1011.85
	15500	20.0	9338	18096	283	243	39	0	67.54	1032.76
-60	4556	6.2	2195	5057	99	75	23	1	67.11	863.06
	6000	8.0	2784	6614	114	89	24	1	68.50	891.90
	7000	9.2	3170	7685	123	98	24	1	69.36	910.90
	8000	10.3	3541	8749	132	107	25	1	70.14	929.13
	9000	11.4	3897	9807	141	115	25	1	70.85	946.64
	10000	12.5	4240	10862	149	123	26	1	71.51	963.49
	11000	13.6	4572	11912	157	130	26	1	72.12	979.72
	12000	14.6	4892	12959	164	136	27	0	72.68	995.36
	13000	15.6	5203	14003	171	143	28	0	73.20	1010.45
	15000	17.6	5799	16082	184	155	29	0	74.15	1039.00
	18000	20.4	6637	19185	202	170	31	0	75.35	1077.71
	20000	22.1	7165	21245	212	180	32	0	76.04	1100.11

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15. BF 11217-R1-B33-2

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

Figure 2-19. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 2 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.3	4269	4298	147	117	29	1	12.69	794.69
	800	6.8	5439	5497	177	146	29	1	16.12	788.55
	1000	7.7	6091	6172	193	163	29	1	18.05	786.55
	1200	8.4	6676	6783	208	178	30	1	19.78	785.62
	1400	9.2	7211	7345	222	192	30	1	21.36	785.49
	1600	9.8	7705	7870	236	205	30	1	22.82	785.96
	1800	10.5	8168	8364	248	217	30	1	24.18	786.92
	2000	11.1	8603	8832	259	228	30	1	25.45	788.28
	2500	12.5	9596	9916	286	255	30	1	28.32	792.97
-10	1200	5.1	4093	4266	141	111	29	1	21.81	821.38
	1500	6.1	4808	5037	158	128	29	1	23.76	821.08
	1600	6.4	5032	5281	164	133	29	1	24.37	821.21
	1700	6.7	5250	5519	169	139	30	1	24.96	821.44
	1800	7.0	5463	5752	174	144	30	1	25.53	821.76
	1900	7.2	5670	5980	180	149	30	1	26.09	822.16
	2000	7.5	5872	6203	185	154	30	1	26.64	822.64
	2100	7.8	6070	6423	189	159	30	1	27.17	823.18
	2200	8.0	6263	6638	194	163	30	1	27.69	823.80
	2300	8.3	6452	6849	199	168	30	1	28.20	824.47
	2400	8.6	6637	7058	203	172	30	1	28.69	825.21
	2500	8.8	6818	7262	208	177	30	1	29.18	825.99
	2600	9.1	6996	7464	212	181	30	1	29.65	826.82
	2700	9.3	7171	7662	217	186	30	1	30.12	827.70
	2800	9.5	7343	7858	221	190	30	1	30.57	828.63
	2900	9.8	7511	8051	225	194	30	1	31.01	829.59
	3000	10.0	7677	8242	229	198	30	1	31.45	830.59
	4000	12.2	9201	10033	267	236	31	1	35.37	842.25
	4500	13.1	9890	10866	285	252	31	1	37.09	848.90
-20	1800	4.9	3729	4141	130	101	28	1	30.54	845.05
	2000	5.4	4062	4528	138	108	29	1	31.39	846.48
	2500	6.5	4851	5457	157	127	29	1	33.40	850.73
	2500	6.5	4851	5457	157	127	29	1	33.40	850.73
	2600	6.7	5002	5637	160	130	29	1	33.78	851.68
	2700	6.9	5150	5815	164	134	29	1	34.15	852.65
	2800	7.1	5297	5992	167	137	29	1	34.52	853.65
	2900	7.3	5442	6166	171	141	29	1	34.88	854.68
	3000	7.5	5585	6339	174	144	29	1	35.24	855.73
	3100	7.7	5726	6511	177	147	29	1	35.59	856.81
	3200	7.9	5865	6681	181	150	29	1	35.93	857.90
	4000	9.4	6921	7994	206	175	30	1	38.50	867.34
	5000	11.2	8122	9538	234	203	31	1	41.33	880.35
	6000	12.8	9219	11000	260	228	31	1	43.80	894.20
	7000	14.4	10234	12399	283	251	32	1	45.99	908.47

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15. BF 11217-R1-B33-3

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

Figure 2-19. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 3 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2400	4.9	3394	4157	120	92	27	1	39.44	866.06
	3000	5.9	4102	5082	136	108	27	1	41.15	873.36
	4000	7.6	5197	6558	161	132	28	1	43.73	886.35
	5000	9.2	6204	7968	184	155	28	1	46.01	900.01
	6000	10.7	7139	9326	205	175	29	1	48.05	913.98
	7000	12.1	8015	10642	225	194	30	1	49.88	928.07
	8000	13.5	8841	11923	243	212	30	1	51.53	942.17
	9000	14.8	9624	13176	260	228	31	1	53.04	956.18
	10000	16.0	10369	14406	276	244	32	1	54.41	970.04
	10500	16.6	10729	15012	284	251	32	1	55.05	976.90
-45	3468	5.2	2950	4553	105	81	23	1	53.05	896.86
	4000	6.0	3344	5214	113	89	23	1	53.93	905.04
	6000	8.6	4724	7637	144	118	24	1	56.88	935.33
	7000	9.8	5363	8818	157	132	25	1	58.17	950.12
	8000	11.0	5972	9983	170	144	25	1	59.35	964.63
	9000	12.2	6556	11135	182	156	26	1	60.44	978.85
	10000	13.3	7117	12274	194	167	27	1	61.44	992.76
	11000	14.4	7657	13403	205	177	27	0	62.37	1006.37
	12000	15.5	8179	14522	216	187	28	0	63.23	1019.62
	14000	17.6	9172	16737	235	205	29	0	64.77	1045.08
	16000	19.6	10109	18926	253	222	31	0	66.13	1068.99
	18000	21.5	10998	21094	269	237	32	0	67.32	1090.52
	20000	23.3	11845	23245	284	251	33	0	68.39	1109.47
-60	5291	6.6	2574	5884	90	71	18	1	66.84	937.03
	6000	7.4	2873	6652	96	77	18	1	67.45	948.41
	7000	8.5	3281	7731	105	85	19	1	68.25	964.06
	8000	9.6	3674	8803	113	93	19	1	68.99	979.24
	9000	10.7	4052	9870	120	101	19	1	69.68	993.97
	10000	11.7	4419	10933	128	108	20	1	70.32	1008.26
	11000	12.7	4773	11991	135	114	20	0	70.92	1022.11
	12000	13.7	5117	13045	142	121	21	0	71.48	1035.54
	13000	14.7	5451	14097	148	127	21	0	72.00	1048.53
	15000	16.6	6093	16190	160	138	22	0	72.95	1073.05
	18000	19.4	6998	19312	177	153	23	0	74.18	1105.14
	20000	21.1	7568	21384	187	162	24	0	74.90	1122.67

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15. BF 11217-R1-B33-4

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

Figure 2-19. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 4 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	400	4.7	4168	4187	118	96	21	1	10.37	874.71
	600	5.8	5146	5181	138	116	21	1	12.78	865.27
	800	6.8	5961	6015	156	133	21	1	14.82	858.80
	1000	7.7	6673	6748	171	149	21	1	16.63	854.24
	1200	8.5	7312	7409	185	163	21	1	18.25	851.01
	1500	9.5	8169	8306	204	182	21	1	20.45	847.96
	2000	11.1	9411	9621	232	209	22	1	23.63	846.17
	2500	12.5	10492	10786	257	234	22	1	26.38	847.09
	3000	13.8	11459	11845	279	256	22	1	28.81	849.82
-10	1200	4.9	4305	4469	120	97	21	1	20.42	894.55
	1500	5.9	5075	5292	135	113	21	1	22.21	891.60
	1600	6.2	5317	5552	140	118	21	1	22.77	890.88
	1700	6.4	5552	5806	145	123	21	1	23.32	890.27
	1800	6.7	5781	6055	150	127	21	1	23.85	889.78
	1900	7.0	6005	6299	154	132	21	1	24.37	889.38
	2000	7.3	6224	6537	159	136	21	1	24.88	889.07
	2100	7.5	6437	6771	163	141	21	1	25.38	888.85
	2200	7.8	6646	7001	167	145	21	1	25.86	888.71
	2300	8.0	6851	7227	172	149	21	1	26.34	888.64
	2400	8.3	7052	7449	176	154	21	1	26.81	888.65
	2500	8.5	7248	7667	180	158	21	1	27.26	888.72
	2600	8.8	7441	7882	184	162	21	1	27.71	888.86
	2700	9.0	7630	8094	188	166	22	1	28.15	889.06
	2800	9.3	7816	8303	192	169	22	1	28.58	889.31
	2900	9.5	7999	8509	196	173	22	1	29.00	889.61
	3000	9.7	8179	8712	200	177	22	1	29.41	889.96
	3500	10.8	9036	9690	218	195	22	1	31.38	892.39
	4500	12.9	10581	11498	251	228	22	1	34.84	899.73
	5600	14.9	12088	13322	283	259	23	1	38.11	910.37
-20	1800	4.6	3858	4257	109	87	20	1	29.18	916.88
	2500	6.1	5048	5633	132	111	20	1	31.79	918.07
	2600	6.3	5208	5821	136	114	20	1	32.14	918.40
	2700	6.5	5367	6008	139	117	21	1	32.48	918.77
	2800	6.7	5523	6192	142	120	21	1	32.82	919.17
	2900	6.9	5677	6375	145	123	21	1	33.15	919.60
	3000	7.1	5830	6556	148	126	21	1	33.48	920.07
	3100	7.3	5980	6736	151	129	21	1	33.81	920.56
	3200	7.5	6129	6914	154	132	21	1	34.13	921.08
	4000	9.0	7261	8289	176	154	21	1	36.55	926.16
	5000	10.8	8551	9906	202	180	21	1	39.24	934.25
	6000	12.4	9733	11434	226	203	22	1	41.64	943.70
	7000	13.9	10828	12894	248	225	22	1	43.78	954.06
	8000	15.4	11852	14299	268	245	23	1	45.71	965.03
	8800	16.5	12628	15392	283	260	23	0	47.13	974.10

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15. BF 11217-R1-B33-5

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

Figure 2-19. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 5 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2500	4.7	3611	4392	102	82	19	1	38.46	936.94
	3000	5.6	4227	5183	114	94	19	1	39.75	940.40
	4000	7.2	5381	6705	136	116	19	1	42.11	948.42
	5000	8.7	6450	8161	156	136	20	1	44.25	957.53
	6000	10.2	7446	9563	175	155	20	1	46.18	967.41
	7000	11.5	8382	10921	193	172	20	1	47.94	977.82
	8000	12.9	9267	12242	210	189	21	1	49.56	988.60
	9000	14.2	10107	13533	226	204	21	1	51.03	999.61
	11000	16.6	11675	16041	255	232	22	0	53.65	1021.85
	13000	18.9	13122	18471	281	257	23	0	55.89	1043.89
-45	3950	5.5	3387	5203	93	77	15	1	52.73	969.14
	4000	5.6	3425	5266	94	77	15	1	52.80	969.70
	6000	8.1	4871	7728	120	104	16	1	55.53	992.31
	7000	9.2	5544	8929	133	116	16	1	56.74	1003.74
	8000	10.4	6189	10114	144	127	16	1	57.87	1015.15
	9000	11.5	6808	11285	155	138	17	1	58.91	1026.50
	10000	12.6	7404	12443	166	148	17	0	59.89	1037.71
	11000	13.7	7980	13590	176	158	17	0	60.80	1048.78
	12000	14.8	8536	14726	186	167	18	0	61.65	1059.70
	14000	16.8	9599	16975	204	184	19	0	63.20	1080.15
	15000	17.8	10107	18088	213	192	19	0	63.91	1089.75
	18000	20.6	11555	21390	236	215	21	0	65.81	1115.08
	20000	22.5	12462	23565	251	228	22	0	66.94	1128.21
-60	6024	6.9	2956	6710	80	67	11	1	66.59	1007.44
	7000	8.0	3372	7770	87	75	11	1	67.32	1019.60
	8000	9.0	3784	8850	94	82	11	1	68.02	1031.84
	9000	10.0	4182	9924	101	89	11	1	68.67	1043.77
	10000	11.0	4569	10994	107	95	11	0	69.29	1055.49
	11000	12.0	4944	12060	114	101	12	0	69.87	1066.82
	12000	13.0	5308	13122	120	107	12	0	70.41	1077.59
	13000	13.9	5663	14180	126	113	12	0	70.93	1087.97
	15000	15.8	6345	16287	137	123	13	0	71.88	1106.98
	16000	16.7	6674	17336	142	128	13	0	72.32	1115.49
	18000	18.5	7309	19428	152	138	13	0	73.14	1130.06
	20000	20.2	7916	21510	161	147	14	0	73.91	1138.61

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15. BF 11217-R1-B33-6

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

Figure 2-19. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 6 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	130	-143	-391	347	-325	203	145	-156	3.9	89	2.9	89	22.9
	600	139	-152	-358	325	-325	212	147	-157	4.3	98	3.2	98	22.9
	700	147	-160	-333	307	-325	219	149	-158	4.6	107	3.5	107	23.0
	800	154	-168	-313	291	-325	225	150	-159	5.0	115	3.7	115	23.0
	1000	167	-181	-281	266	-326	236	152	-160	5.6	129	4.1	129	23.1
	1200	179	-193	-258	246	-328	244	154	-161	6.2	142	4.5	142	23.1
	1400	190	-203	-240	231	-330	251	155	-162	6.7	155	4.9	154	23.2
	1600	199	-213	-225	218	-332	258	156	-162	7.1	166	5.2	166	23.2
	1800	209	-222	-213	207	-334	264	157	-163	7.6	177	5.5	177	23.2
	1900	213	-227	-208	202	-335	266	158	-163	7.8	182	5.6	182	23.2
-10	1200	71	-78	-97	88	-79	63	67	-68	4.0	91	6.7	91	22.5
	1400	80	-88	-97	90	-89	72	72	-73	4.5	102	7.0	102	22.5
	1500	85	-93	-97	90	-94	77	74	-76	4.8	107	7.1	107	22.5
	1600	90	-98	-97	91	-99	81	76	-78	5.0	112	7.2	112	22.5
	1700	94	-102	-96	91	-103	85	79	-80	5.2	117	7.3	117	22.5
	1800	98	-107	-96	91	-107	89	80	-82	5.4	122	7.5	122	22.5
	1900	103	-111	-96	91	-112	93	82	-84	5.6	127	7.6	127	22.5
	2000	107	-116	-95	91	-116	97	84	-85	5.8	131	7.7	131	22.5
	2100	111	-120	-95	91	-120	100	86	-87	6.0	136	7.8	136	22.5
	2200	115	-124	-95	91	-123	104	87	-89	6.2	140	7.9	140	22.5
	2300	119	-128	-94	91	-127	107	89	-90	6.4	145	8.0	145	22.5
	2400	123	-132	-94	90	-131	111	91	-92	6.6	149	8.1	149	22.5
	2500	126	-136	-93	90	-134	114	92	-93	6.8	153	8.2	153	22.4
	2600	130	-140	-93	90	-138	117	93	-95	7.0	157	8.3	157	22.4
	2700	134	-143	-92	89	-141	120	95	-96	7.2	162	8.4	161	22.4
	2800	137	-147	-92	89	-144	124	96	-98	7.4	166	8.5	166	22.4
	2900	141	-151	-92	89	-147	127	97	-99	7.6	170	8.6	170	22.4
	3000	144	-154	-91	88	-151	130	99	-100	7.7	174	8.7	173	22.4
	3500	161	-171	-89	87	-165	144	105	-106	8.6	192	9.1	192	22.4
-20	1800	46	-51	-42	39	-36	32	44	-44	4.0	88	9.9	88	22.1
	1900	49	-54	-43	40	-38	34	46	-46	4.2	92	10.0	92	22.1
	2000	52	-57	-43	41	-41	36	47	-47	4.4	96	10.1	96	22.0
	2500	66	-71	-46	44	-53	47	55	-55	5.3	116	10.5	116	22.0
	2600	68	-74	-46	44	-55	49	56	-56	5.4	119	10.5	119	22.0
	2700	71	-77	-46	44	-57	51	57	-58	5.6	123	10.6	123	21.9
	2800	74	-80	-47	45	-60	54	59	-59	5.8	126	10.7	126	21.9
	2900	76	-83	-47	45	-62	56	60	-60	5.9	130	10.7	130	21.9
	3000	79	-85	-47	46	-64	58	61	-61	6.1	134	10.8	133	21.9
	3100	81	-88	-48	46	-67	60	63	-63	6.3	137	10.8	137	21.9
	3200	84	-91	-48	46	-69	62	64	-64	6.4	140	10.9	140	21.9
	3500	92	-99	-48	47	-76	68	67	-67	6.9	151	11.1	150	21.8
	4000	104	-112	-49	48	-87	79	73	-73	7.7	167	11.3	167	21.7
	5000	127	-137	-50	49	-108	99	83	-83	9.1	197	11.8	197	21.6
	5500	139	-149	-50	49	-118	108	87	-88	9.8	211	12.0	211	21.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15.

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

BF 11217-R1-B34-1

Figure 2-20. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 1 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2300	32	-36	-22	21	-21	20	33	-33	3.9	85	12.8	85	21.7
	2500	36	-39	-23	22	-23	22	35	-35	4.2	92	12.9	92	21.7
	3000	44	-49	-25	24	-30	29	41	-40	5.0	107	13.1	107	21.6
	3500	53	-58	-27	26	-37	35	46	-45	5.7	122	13.2	122	21.5
	4000	62	-67	-28	27	-45	42	51	-50	6.4	137	13.4	137	21.4
	5000	79	-86	-30	29	-60	56	60	-59	7.7	164	13.7	164	21.2
	6000	96	-104	-31	30	-75	70	68	-68	9.1	190	13.9	190	21.0
	7000	113	-122	-32	31	-90	85	76	-76	10.3	214	14.1	214	20.8
	8000	129	-139	-32	32	-105	99	83	-83	11.6	238	14.2	238	20.6
-45	3100	22	-24	-11	10	-14	13	26	-26	4.0	86	16.3	86	21.3
	4000	30	-33	-12	12	-21	20	33	-32	5.2	109	16.4	109	21.1
	5000	40	-44	-14	14	-29	28	40	-39	6.4	132	16.4	132	20.8
	6000	50	-55	-15	15	-39	37	47	-46	7.5	155	16.4	155	20.6
	7000	61	-67	-16	16	-48	46	54	-53	8.7	177	16.4	177	20.4
	8000	71	-78	-17	17	-59	56	60	-60	9.8	198	16.4	198	20.1
	9000	82	-89	-17	17	-70	67	67	-66	11.0	218	16.3	218	19.9
	10000	92	-100	-18	18	-81	77	73	-72	12.1	238	16.3	238	19.7
	11000	103	-112	-19	18	-92	88	79	-78	13.2	257	16.2	257	19.5
	12000	113	-123	-19	19	-104	100	85	-84	14.3	276	16.2	276	19.3
	14000	134	-145	-19	19	-128	123	97	-96	16.5	312	16.1	312	18.9
	15500	150	-162	-20	20	-146	141	105	-105	18.1	337	16.0	337	18.6
-60	4556	19	-21	-6	6	-15	16	28	-27	5.1	105	18.7	105	20.8
	6000	27	-30	-7	7	-24	24	36	-36	6.6	135	18.5	135	20.4
	7000	33	-37	-8	8	-31	31	42	-41	7.7	155	18.3	155	20.1
	8000	39	-43	-9	8	-38	38	48	-47	8.7	174	18.2	174	19.9
	9000	45	-50	-9	9	-46	46	53	-53	9.8	193	18.0	193	19.7
	10000	51	-57	-10	9	-55	54	59	-58	10.9	211	17.9	211	19.4
	11000	58	-64	-10	10	-64	63	64	-64	11.9	229	17.7	229	19.2
	12000	64	-71	-10	10	-73	72	70	-69	13.0	246	17.6	246	19.0
	13000	71	-78	-10	10	-82	82	75	-75	14.0	263	17.5	263	18.8
	15000	84	-92	-11	11	-102	101	86	-85	16.1	296	17.2	296	18.4
	18000	104	-113	-11	11	-134	133	102	-101	19.2	344	16.8	344	17.9
	20000	117	-128	-12	11	-156	155	113	-112	21.2	374	16.6	374	17.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15.

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

BF 11217-R1-B34-2

Figure 2-20. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 2 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	131	-132	-434	385	-411	242	177	-192	4.3	89	2.4	89	20.7
	800	155	-156	-347	323	-406	269	183	-195	5.5	115	3.0	115	20.9
	1000	168	-169	-312	295	-406	281	185	-195	6.2	130	3.4	129	21.0
	1200	180	-181	-286	273	-406	291	187	-196	6.8	143	3.7	143	21.0
	1400	190	-191	-266	256	-406	300	188	-197	7.3	155	4.0	155	21.1
	1600	200	-201	-249	241	-407	307	189	-197	7.9	166	4.3	166	21.1
	1800	209	-210	-236	229	-409	314	190	-198	8.4	177	4.6	177	21.2
	2000	218	-219	-224	218	-410	320	191	-198	8.8	187	4.8	187	21.2
	2500	238	-239	-201	197	-415	333	193	-200	9.9	211	5.4	211	21.2
-10	1200	65	-66	-96	88	-83	65	75	-76	4.3	87	5.7	87	20.4
	1500	79	-80	-98	91	-100	80	83	-85	5.0	103	6.1	103	20.4
	1600	83	-85	-98	91	-105	85	86	-88	5.3	108	6.2	108	20.4
	1700	88	-89	-98	92	-110	89	88	-90	5.5	113	6.3	113	20.4
	1800	92	-93	-98	92	-115	94	91	-92	5.8	118	6.4	118	20.4
	1900	96	-98	-98	93	-120	98	93	-95	6.0	122	6.5	122	20.4
	2000	100	-102	-97	93	-125	102	95	-97	6.2	127	6.6	127	20.4
	2100	104	-106	-97	93	-129	106	97	-99	6.4	131	6.7	131	20.5
	2200	108	-110	-97	93	-134	110	99	-101	6.6	136	6.8	136	20.5
	2300	112	-114	-97	93	-138	114	101	-102	6.8	140	6.9	140	20.5
	2400	116	-117	-97	93	-142	118	102	-104	7.1	145	7.0	144	20.5
	2500	120	-121	-96	93	-146	122	104	-106	7.3	149	7.0	149	20.5
	2600	123	-125	-96	92	-150	125	106	-108	7.5	153	7.1	153	20.5
	2700	127	-129	-96	92	-154	129	107	-109	7.7	157	7.2	157	20.5
	2800	130	-132	-95	92	-157	132	109	-111	7.9	161	7.3	161	20.5
	2900	134	-136	-95	92	-161	136	110	-112	8.1	165	7.4	165	20.5
	3000	137	-139	-94	92	-164	139	112	-114	8.2	169	7.5	169	20.5
	4000	169	-171	-91	89	-196	170	124	-126	10.0	205	8.2	205	20.4
	4500	184	-186	-89	87	-211	184	130	-132	10.9	222	8.5	222	20.4
-20	1800	40	-41	-40	37	-34	30	47	-47	4.1	83	8.7	83	20.0
	2000	45	-47	-41	38	-39	35	51	-51	4.5	91	8.9	91	20.0
	2500	58	-60	-44	42	-52	46	59	-59	5.5	109	9.2	109	20.0
	2600	61	-62	-45	42	-54	48	61	-61	5.6	113	9.2	113	20.0
	2700	63	-65	-45	43	-57	50	62	-62	5.8	116	9.3	116	20.0
	2800	66	-67	-45	43	-59	52	64	-64	6.0	120	9.4	120	20.0
	2900	68	-70	-46	44	-62	54	65	-65	6.2	123	9.4	123	20.0
	3000	71	-72	-46	44	-64	57	66	-67	6.3	127	9.5	127	20.0
	3100	73	-75	-46	45	-66	59	68	-68	6.5	130	9.5	130	20.0
	3200	76	-78	-47	45	-69	61	69	-69	6.7	134	9.6	133	20.0
	4000	95	-97	-49	47	-87	78	79	-80	8.0	159	10.0	159	19.9
	5000	119	-121	-50	49	-110	99	90	-91	9.5	189	10.4	189	19.8
	6000	141	-143	-50	49	-131	119	100	-101	11.0	217	10.8	217	19.7
	7000	162	-165	-50	50	-151	138	109	-110	12.4	243	11.1	243	19.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15.

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

BF 11217-R1-B34-3

Figure 2-20. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 3 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2400	29	-30	-21	20	-20	19	36	-35	4.2	82	11.4	82	19.8
	3000	39	-40	-23	22	-28	26	43	-42	5.1	100	11.6	100	19.7
	4000	55	-56	-26	25	-42	39	53	-53	6.6	128	11.9	128	19.6
	5000	72	-73	-28	28	-57	53	63	-63	8.0	155	12.2	155	19.5
	6000	88	-90	-30	29	-72	67	72	-72	9.3	180	12.4	180	19.3
	7000	104	-107	-31	30	-87	81	80	-80	10.6	204	12.6	204	19.2
	8000	121	-123	-32	31	-102	96	88	-88	11.9	227	12.8	227	19.0
	9000	136	-139	-32	32	-117	110	96	-96	13.2	249	12.9	249	18.9
	10000	152	-155	-33	32	-132	125	103	-103	14.4	270	13.0	270	18.8
	10500	160	-163	-33	33	-140	132	107	-107	15.0	281	13.1	281	18.7
-45	3468	22	-22	-10	10	-14	14	30	-29	4.6	88	14.8	88	19.4
	4000	26	-27	-11	11	-18	18	34	-33	5.2	101	14.8	101	19.3
	6000	45	-46	-14	14	-35	33	48	-48	7.6	145	14.9	145	19.0
	7000	55	-57	-15	15	-44	42	55	-55	8.8	166	14.9	166	18.8
	8000	65	-67	-16	16	-54	51	62	-62	10.0	186	14.9	186	18.6
	9000	76	-78	-17	16	-64	61	69	-68	11.1	206	14.9	206	18.5
	10000	86	-88	-17	17	-74	71	75	-75	12.3	225	14.9	225	18.3
	11000	97	-99	-18	18	-85	81	81	-81	13.4	244	14.9	244	18.2
	12000	108	-110	-18	18	-96	92	88	-87	14.5	262	14.9	262	18.0
	14000	130	-132	-19	19	-119	114	100	-99	16.7	297	14.8	297	17.7
	16000	152	-155	-19	19	-143	137	112	-111	18.9	330	14.8	330	17.5
	18000	174	-177	-19	19	-167	160	123	-123	21.1	363	14.7	363	17.2
	20000	197	-200	-20	20	-191	184	135	-134	23.2	394	14.6	394	16.9
-60	5291	20	-21	-6	6	-16	17	33	-32	5.9	111	17.0	111	18.9
	6000	24	-25	-7	6	-21	21	37	-36	6.7	125	16.9	125	18.8
	7000	30	-31	-7	7	-27	27	43	-42	7.7	144	16.8	144	18.6
	8000	36	-37	-8	8	-33	33	48	-48	8.8	162	16.7	162	18.4
	9000	43	-44	-8	8	-41	40	54	-53	9.9	180	16.6	180	18.3
	10000	49	-50	-9	9	-48	48	60	-59	10.9	198	16.5	198	18.1
	11000	56	-57	-9	9	-56	56	65	-64	12.0	215	16.4	215	17.9
	12000	63	-65	-9	9	-65	64	71	-70	13.0	232	16.3	232	17.8
	13000	70	-72	-10	10	-73	72	76	-76	14.1	248	16.2	248	17.6
	15000	85	-87	-10	10	-91	90	87	-87	16.2	280	16.0	280	17.3
	18000	109	-111	-11	11	-121	119	103	-103	19.3	327	15.8	327	16.9
	20000	125	-127	-11	11	-141	140	114	-114	21.4	356	15.6	356	16.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15.

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

BF 11217-R1-B34-4

Figure 2-20. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 4 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	400	161	-165	-529	455	-515	268	208	-230	4.2	79	1.8	79	18.9
	600	180	-183	-436	396	-504	297	214	-233	5.2	99	2.2	98	19.0
	800	195	-198	-381	355	-498	316	218	-234	6.0	115	2.5	115	19.1
	1000	208	-210	-342	324	-495	331	220	-235	6.7	130	2.8	130	19.2
	1200	219	-222	-314	300	-493	342	222	-235	7.4	143	3.1	143	19.3
	1500	234	-236	-282	272	-492	356	224	-235	8.3	161	3.5	161	19.4
	2000	255	-257	-245	239	-493	374	226	-236	9.6	188	4.1	188	19.5
	2500	273	-276	-220	215	-495	388	228	-237	10.8	211	4.5	211	19.6
	3000	289	-292	-201	198	-499	401	229	-237	11.8	233	5.0	233	19.7
-10	1200	73	-75	-95	86	-86	66	82	-84	4.5	83	5.0	83	18.6
	1500	88	-90	-97	90	-105	82	92	-94	5.3	99	5.3	99	18.7
	1600	93	-94	-98	91	-111	87	95	-97	5.6	104	5.4	104	18.7
	1700	97	-99	-98	92	-117	92	98	-100	5.8	109	5.5	109	18.7
	1800	102	-103	-98	92	-122	97	100	-103	6.1	113	5.6	113	18.7
	1900	106	-108	-98	93	-128	102	103	-105	6.3	118	5.7	118	18.7
	2000	110	-112	-98	93	-133	106	105	-108	6.5	123	5.7	123	18.8
	2100	114	-116	-98	94	-138	111	108	-110	6.8	127	5.8	127	18.8
	2200	119	-120	-98	94	-143	115	110	-112	7.0	132	5.9	132	18.8
	2300	122	-124	-98	94	-148	120	112	-114	7.2	136	6.0	136	18.8
	2400	126	-128	-98	94	-152	124	114	-116	7.4	140	6.1	140	18.8
	2500	130	-132	-98	94	-157	128	116	-118	7.7	144	6.1	144	18.8
	2600	134	-136	-98	94	-161	132	118	-120	7.9	148	6.2	148	18.8
	2700	138	-140	-98	94	-165	136	120	-122	8.1	153	6.3	152	18.8
	2800	141	-143	-97	94	-170	140	121	-124	8.3	156	6.4	156	18.8
	2900	145	-147	-97	94	-174	144	123	-126	8.5	160	6.4	160	18.8
	3000	148	-150	-97	94	-178	147	125	-127	8.7	164	6.5	164	18.9
	3500	165	-167	-95	93	-196	165	132	-135	9.7	183	6.8	183	18.9
	4500	195	-197	-92	90	-229	197	145	-148	11.5	217	7.4	217	18.9
	5600	224	-227	-89	87	-260	227	157	-159	13.3	252	7.9	251	18.9
-20	1800	44	-45	-37	34	-33	28	50	-50	4.3	78	7.8	78	18.4
	2500	62	-63	-42	40	-50	44	63	-63	5.6	104	8.2	104	18.4
	2600	65	-66	-42	40	-53	46	65	-65	5.8	107	8.2	107	18.4
	2700	67	-68	-43	41	-55	48	66	-67	6.0	110	8.3	110	18.4
	2800	70	-71	-43	41	-58	51	68	-68	6.2	114	8.3	114	18.4
	2900	72	-74	-44	42	-60	53	69	-70	6.4	117	8.4	117	18.4
	3000	75	-76	-44	42	-63	55	71	-71	6.6	121	8.4	121	18.4
	3100	77	-79	-45	43	-65	57	72	-73	6.7	124	8.5	124	18.4
	3200	80	-81	-45	43	-68	60	74	-74	6.9	127	8.5	127	18.4
	4000	99	-100	-47	46	-87	77	85	-86	8.3	152	8.9	152	18.4
	5000	121	-123	-49	48	-111	99	97	-98	9.9	182	9.3	182	18.3
	6000	143	-145	-50	49	-133	120	108	-109	11.4	209	9.6	209	18.3
	7000	163	-166	-50	50	-155	140	118	-119	12.9	235	9.9	235	18.2
	8000	183	-185	-50	50	-175	159	127	-128	14.3	260	10.2	260	18.2
	8800	198	-201	-50	50	-191	175	134	-135	15.4	279	10.3	278	18.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15.

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

BF 11217-R1-B34-5

Figure 2-20. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 5 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (LOW DRAG) *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2500	32	-33	-19	18	-19	18	38	-38	4.4	80	10.3	80	18.1
	3000	40	-41	-21	20	-26	24	44	-44	5.2	94	10.5	94	18.1
	4000	56	-57	-24	24	-39	37	56	-56	6.7	121	10.8	121	18.1
	5000	72	-73	-27	26	-54	50	66	-66	8.2	147	11.0	147	18.0
	6000	88	-90	-29	28	-69	64	76	-76	9.6	171	11.2	171	17.9
	7000	104	-105	-30	29	-84	78	85	-85	10.9	195	11.4	195	17.8
	8000	119	-121	-31	30	-99	92	93	-93	12.2	217	11.6	217	17.7
	9000	134	-136	-31	31	-114	107	101	-101	13.5	239	11.7	239	17.7
	11000	163	-165	-33	32	-145	136	116	-117	16.0	280	12.0	280	17.5
	13000	188	-191	-33	33	-175	165	131	-131	18.5	319	12.1	319	17.2
-45	3950	27	-28	-10	10	-15	15	34	-33	5.2	93	13.5	93	17.8
	4000	27	-28	-10	10	-16	16	35	-34	5.3	94	13.5	94	17.8
	6000	46	-47	-13	12	-31	30	50	-49	7.7	136	13.7	136	17.6
	7000	55	-56	-14	14	-40	38	57	-56	8.9	156	13.7	156	17.5
	8000	65	-66	-15	14	-49	47	64	-63	10.1	176	13.7	176	17.4
	9000	74	-76	-15	15	-59	56	70	-70	11.3	195	13.8	195	17.3
	10000	84	-86	-16	16	-69	65	77	-77	12.4	213	13.8	213	17.1
	11000	93	-95	-17	17	-79	75	84	-83	13.6	231	13.8	231	17.0
	12000	102	-104	-17	17	-89	85	90	-90	14.7	249	13.8	249	16.9
	14000	120	-122	-18	18	-111	106	103	-102	17.0	284	13.8	284	16.7
	15000	128	-131	-18	18	-122	117	109	-108	18.1	300	13.8	300	16.6
	18000	152	-155	-19	19	-157	150	127	-126	21.4	348	13.7	348	16.3
	20000	166	-170	-19	19	-181	173	138	-138	23.6	380	13.7	380	16.1
-60	6024	26	-27	-6	6	-18	18	37	-36	6.7	117	15.6	117	17.4
	7000	32	-32	-6	6	-23	24	43	-42	7.8	134	15.6	134	17.3
	8000	38	-38	-7	7	-29	29	49	-48	8.8	152	15.5	152	17.2
	9000	43	-44	-7	7	-36	36	55	-54	9.9	169	15.4	169	17.0
	10000	50	-50	-8	8	-43	43	60	-60	11.0	186	15.4	186	16.9
	11000	55	-56	-8	8	-50	50	66	-65	12.1	202	15.3	202	16.8
	12000	61	-62	-9	9	-58	57	72	-71	13.1	219	15.2	219	16.7
	13000	66	-67	-9	9	-66	65	77	-77	14.2	235	15.2	235	16.6
	15000	76	-78	-10	9	-83	81	88	-88	16.3	266	15.0	266	16.3
	16000	82	-83	-10	10	-92	90	94	-93	17.3	281	15.0	281	16.2
	18000	91	-93	-10	10	-110	108	105	-104	19.4	311	14.9	311	16.0
	20000	99	-102	-11	11	-129	127	115	-115	21.5	341	14.7	341	15.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 15.

* ALSO APPLICABLE TO : BDU-45/B AND GBU-12

BF 11217-R1-B34-6

Figure 2-20. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, Low Drag (Sheet 6 of 6)

AV-8B SAFE ESCAPE TABLE
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG) **

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	200	153	200	100*	102	100	100*	90	100
	5 G LEVEL BREAKAWAY	100*	115	100	100*	102	100	100*	90	100
	6 G LEVEL BREAKAWAY	100*	115	100	100*	102	100	100*	90	100
-10	5 G	490*	146	200	531*	137	200	575*	129	200
	6 G	485*	145	200	524*	136	200	568*	128	200
-20	5 G	1035*	177	300	1139*	174	300	1265*	174	300
	6 G	1025*	176	300	1117*	170	300	1246*	171	300
-30	5 G	1805*	215	500	2005*	219	500	2249*	228	500
	6 G	1788*	213	500	1944*	212	500	2208*	224	500

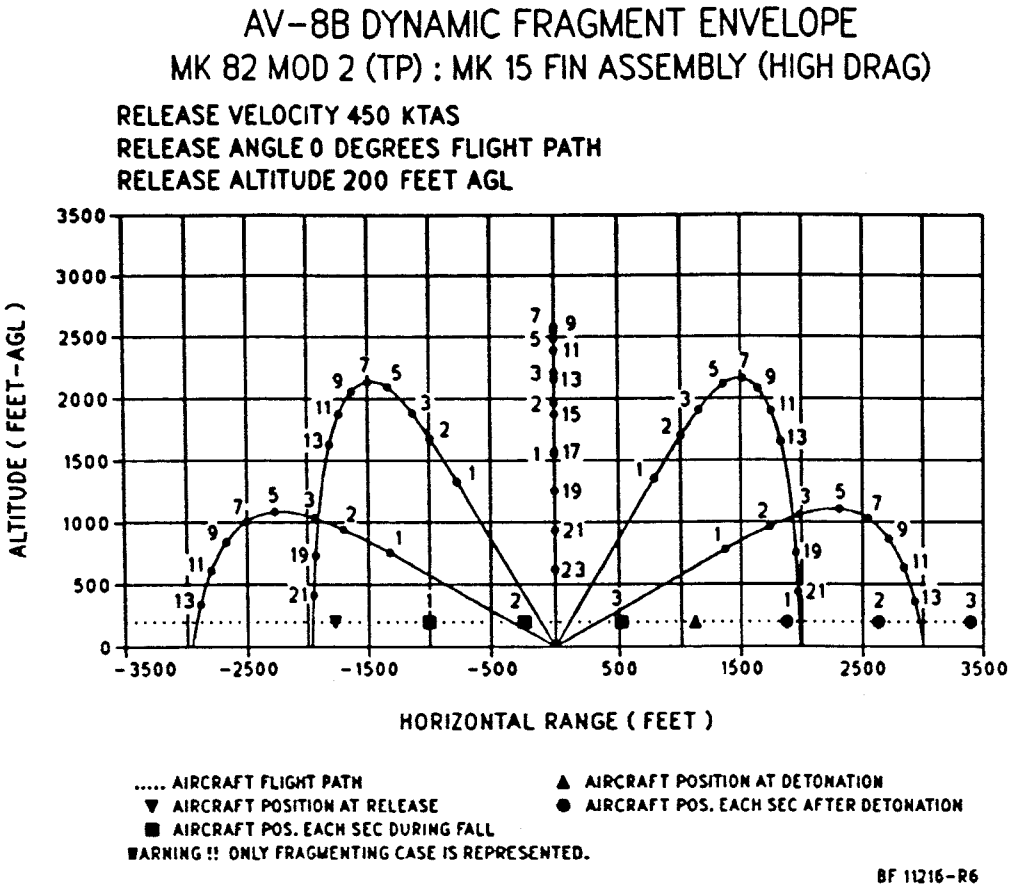
1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

** ALSO APPLICABLE TO : BDU-45/B

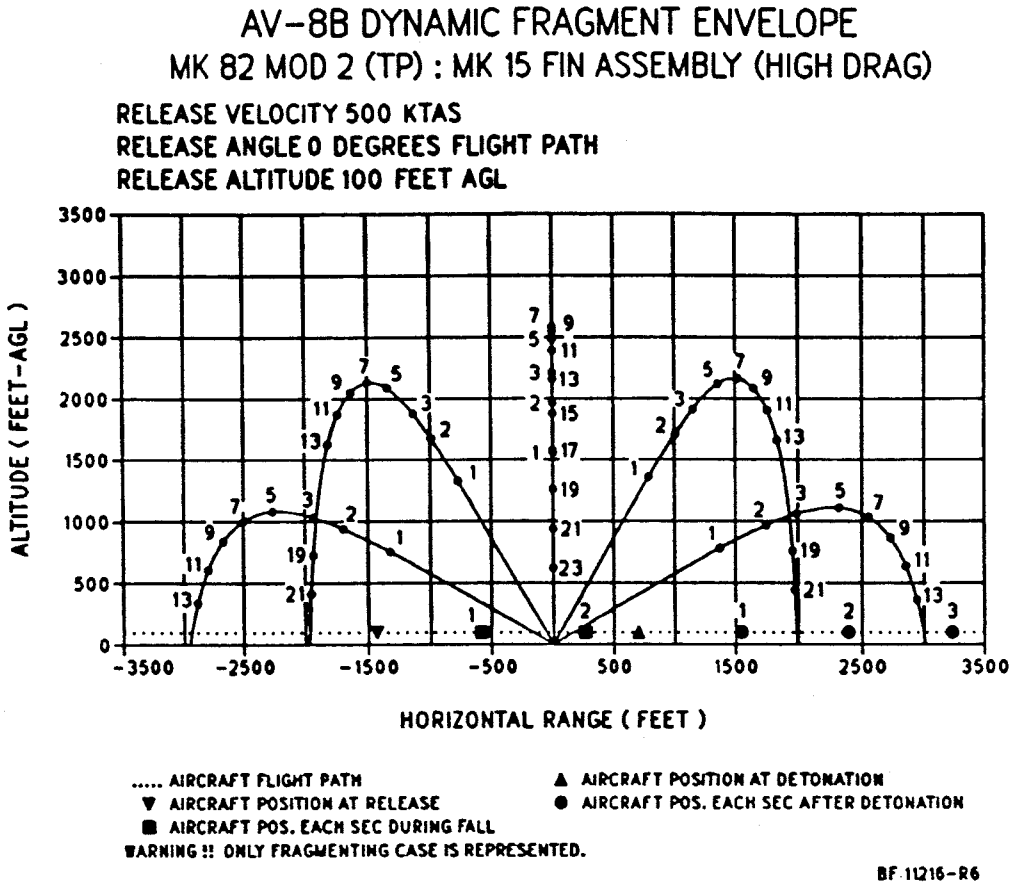
BF 11216-R9-B25-1

Figure 2-21. Safe Escape Table, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag



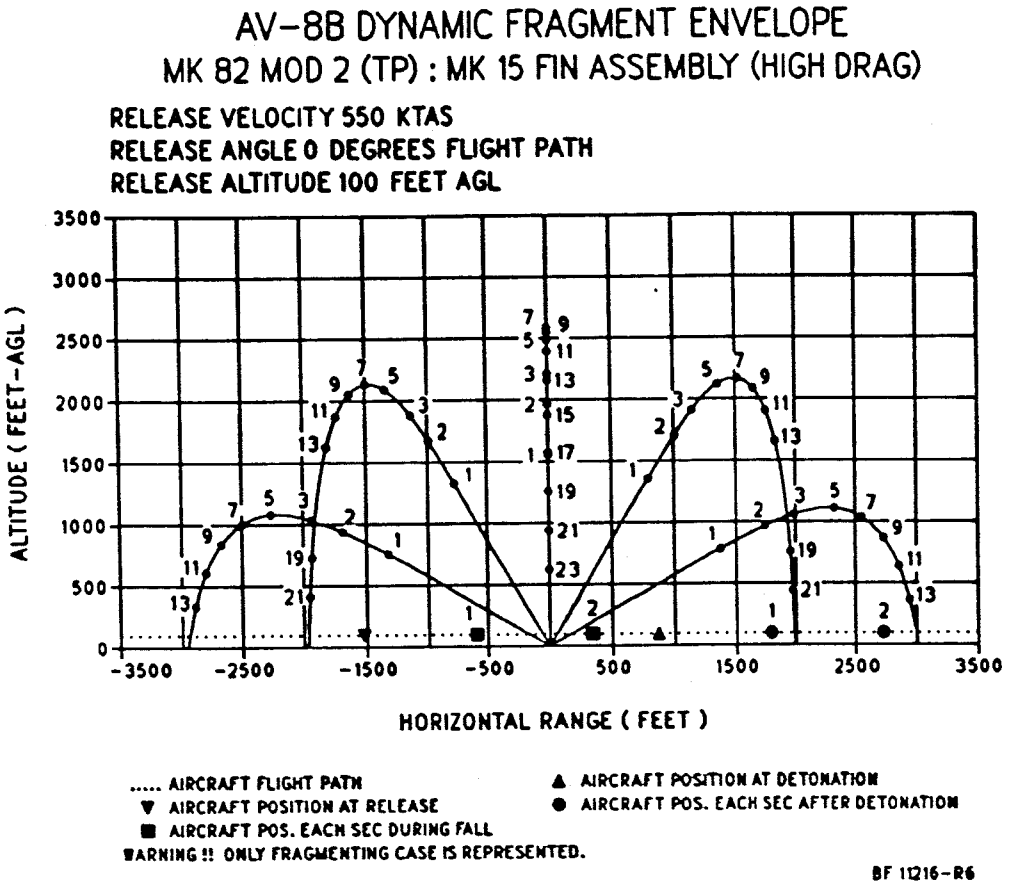
BF 11216-R9-B26-1

Figure 2-22. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 1 of 3)



BF 11216-R9-B26-2

Figure 2-22. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 2 of 3)

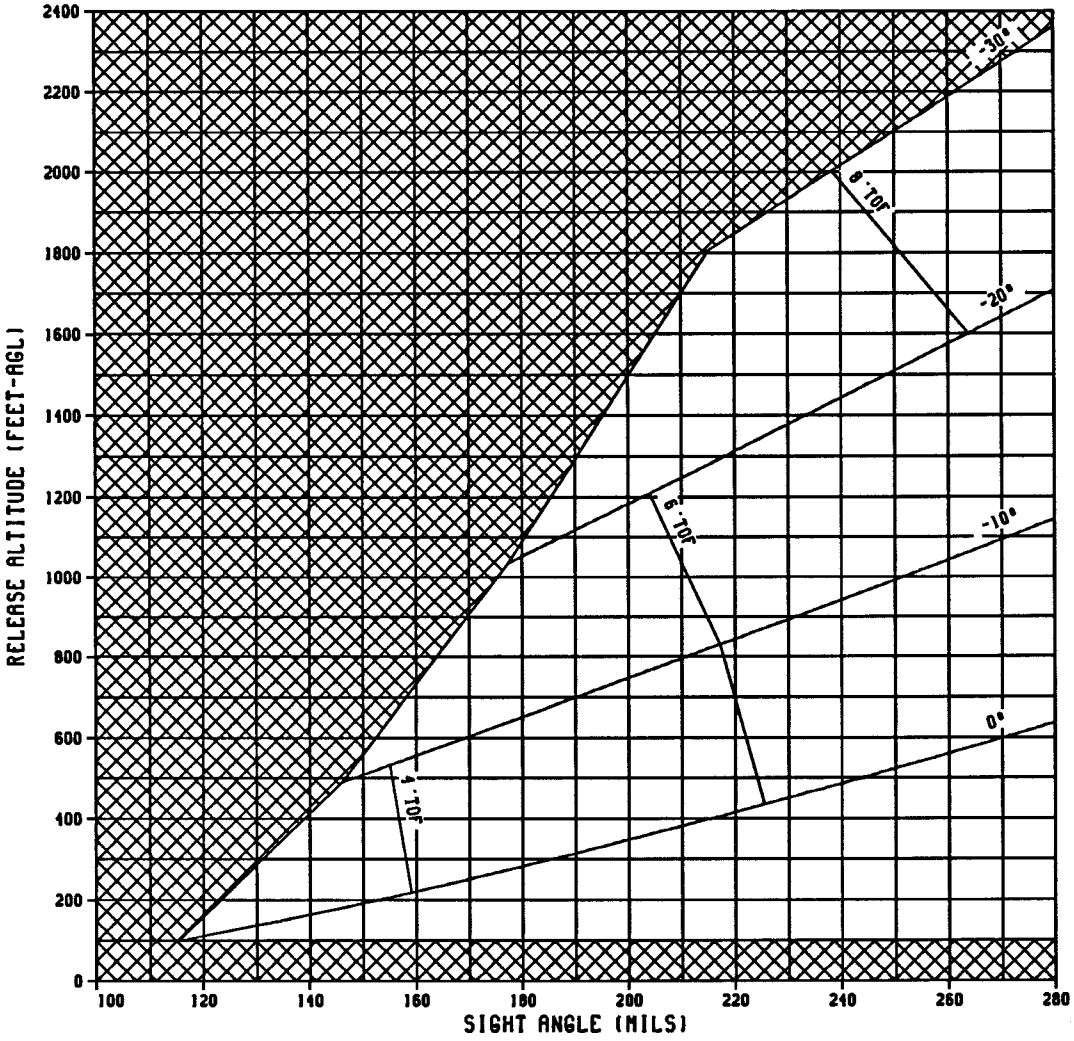


BF 11216-R9-B26-3

Figure 2-22. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 13
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

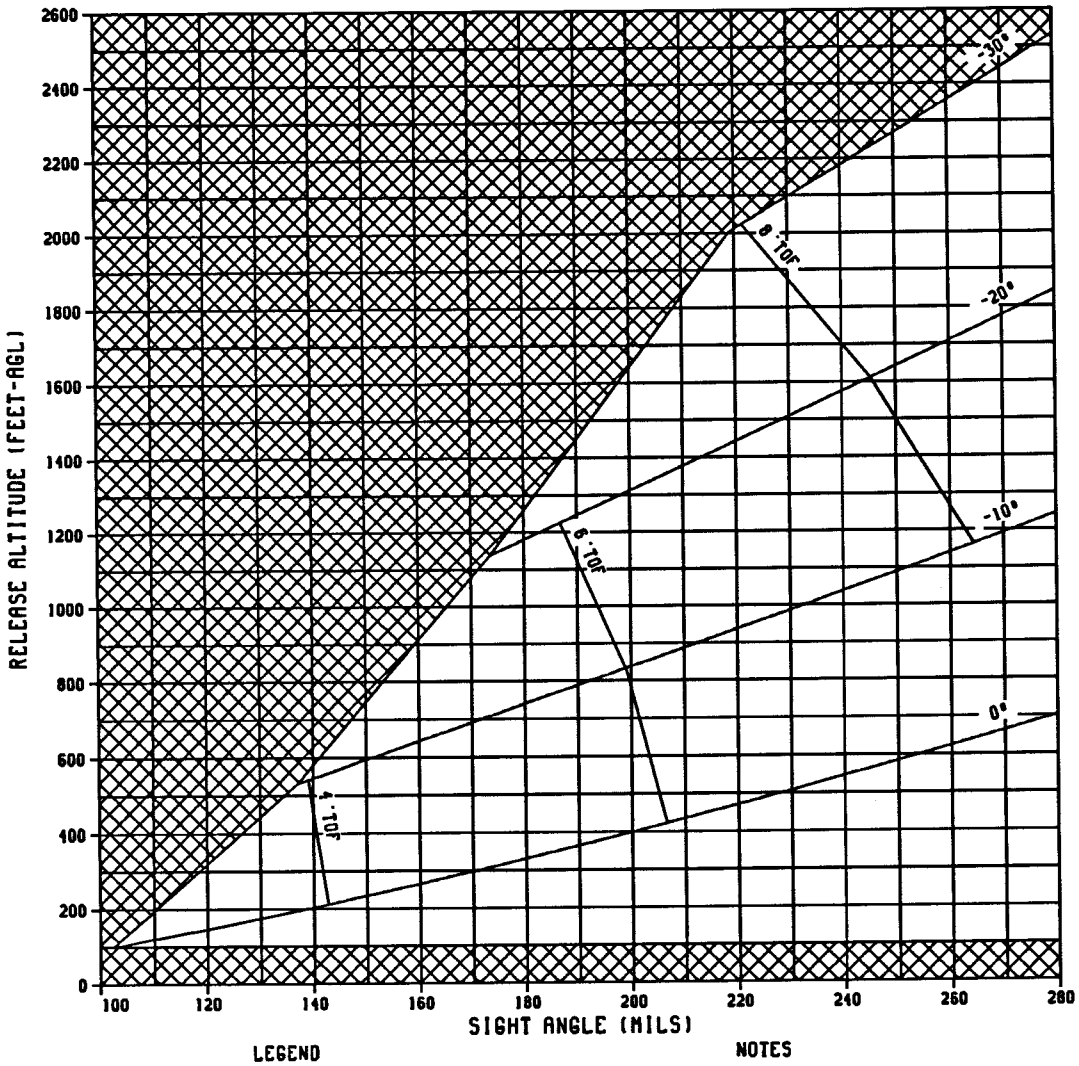
BF 11216-R9-B27-1

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-23. Sight Angle Chart, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 13
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

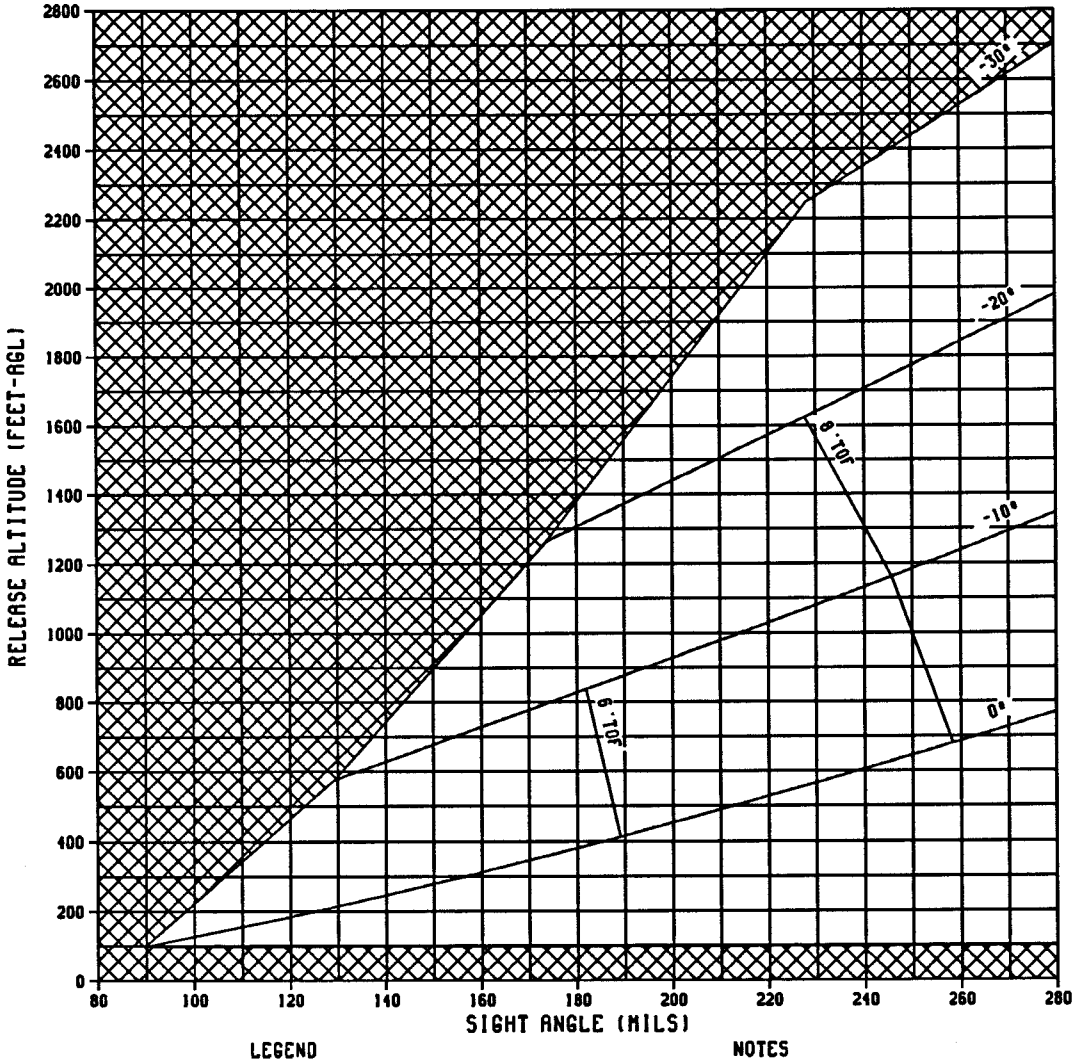
BF 11216-R9-827-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-23. Sight Angle Chart, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-23. Sight Angle Chart, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG) *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	1333	1336	115	75	36	4	9.81	406.65
	150	3.2	1578	1585	135	95	36	4	13.41	353.96
	200	3.8	1764	1776	153	113	36	3	16.80	320.05
	250	4.3	1915	1932	170	130	36	3	20.02	296.31
	300	4.8	2043	2065	185	146	37	3	23.09	278.83
	350	5.3	2153	2181	201	161	37	3	26.01	265.57
	400	5.7	2251	2286	216	176	37	3	28.79	255.29
	500	6.5	2417	2468	244	204	37	3	33.95	240.79
	600	7.2	2556	2625	270	231	37	3	38.60	231.58
	650	7.6	2617	2697	283	243	37	3	40.74	228.32
-10	490	3.7	1697	1767	146	107	36	3	25.35	328.11
	550	4.1	1818	1900	159	119	36	3	27.65	310.06
	600	4.5	1910	2002	169	130	36	3	29.58	297.53
	650	4.8	1996	2099	180	140	36	3	31.49	286.86
	700	5.2	2075	2190	190	151	36	3	33.38	277.77
	800	5.8	2218	2358	211	172	36	3	37.08	263.34
	900	6.4	2344	2511	231	192	36	3	40.60	252.75
	1000	7.0	2456	2652	252	212	37	3	43.93	244.98
	1100	7.6	2556	2783	271	232	37	3	47.04	239.30
	1150	7.9	2603	2846	281	242	37	3	48.52	237.07
-20	1035	5.1	1949	2206	177	139	35	3	40.84	288.23
	1050	5.2	1966	2229	180	141	35	3	41.23	286.29
	1100	5.4	2022	2302	187	149	35	3	42.53	280.24
	1200	6.0	2128	2443	203	164	35	3	45.11	269.98
	1300	6.5	2224	2576	218	180	35	3	47.61	261.78
	1400	7.0	2313	2704	233	195	35	3	50.03	255.25
	1500	7.5	2396	2826	249	210	36	3	52.34	250.07
	1600	8.0	2472	2944	264	225	36	3	54.54	245.98
	1700	8.5	2542	3058	279	240	36	2	56.62	242.78
-30	1805	7.1	2131	2793	215	179	33	2	56.64	262.13
	1850	7.3	2161	2845	220	184	33	2	57.42	260.00
	1900	7.5	2193	2902	226	190	33	2	58.27	257.82
	1950	7.8	2224	2958	232	196	33	2	59.10	255.83
	2000	8.0	2255	3014	238	202	33	2	59.92	254.02
	2050	8.2	2284	3069	244	208	33	2	60.71	252.37
	2100	8.4	2312	3124	250	214	34	2	61.50	250.87
	2200	8.9	2367	3231	261	225	34	2	63.01	248.27
	2300	9.3	2418	3337	273	237	34	2	64.45	246.14
	2400	9.8	2467	3442	284	248	34	2	65.81	244.40

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 13. BF 11216-R9-B28-1

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-24. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 1 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG) *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	1430	1434	102	70	29	4	9.59	413.10
	150	3.2	1680	1687	121	89	29	3	13.25	355.39
	200	3.9	1868	1879	139	107	29	3	16.71	319.01
	250	4.4	2020	2035	155	123	29	3	20.02	293.88
	300	4.9	2147	2168	171	139	29	3	23.17	275.58
	400	5.8	2354	2388	200	168	29	3	29.03	251.19
	500	6.6	2519	2568	228	196	29	3	34.32	236.37
	600	7.4	2655	2722	254	222	29	3	39.08	227.07
	700	8.0	2773	2860	279	247	29	3	43.35	221.23
-10	531	3.9	1848	1922	137	105	29	3	26.15	318.60
	600	4.4	1981	2070	151	120	29	3	28.87	298.71
	650	4.8	2069	2168	162	130	29	3	30.85	286.92
	700	5.1	2150	2261	172	140	29	3	32.80	276.92
	800	5.8	2296	2431	192	161	29	3	36.63	261.17
	900	6.4	2423	2585	213	181	29	3	40.29	249.72
	1000	7.0	2537	2727	233	201	29	3	43.75	241.38
	1100	7.6	2638	2858	252	221	29	3	46.98	235.33
	1200	8.2	2729	2981	272	240	29	3	49.98	230.99
	1250	8.5	2771	3040	281	249	29	2	51.40	229.32
-20	1139	5.5	2124	2410	174	143	28	3	42.76	275.24
	1150	5.6	2136	2426	175	145	28	3	43.06	273.97
	1200	5.9	2189	2496	183	152	28	3	44.39	268.58
	1300	6.4	2288	2632	198	168	28	2	47.00	259.49
	1400	6.9	2379	2760	213	183	28	2	49.52	252.29
	1500	7.4	2463	2883	229	198	28	2	51.93	246.61
	1600	7.9	2540	3002	244	213	28	2	54.23	242.15
	1700	8.4	2611	3116	259	228	28	2	56.40	238.68
	1800	8.9	2677	3226	274	243	28	2	58.45	236.00
	1850	9.2	2709	3280	281	250	28	2	59.43	234.91
-30	2005	7.9	2314	3062	219	190	26	2	59.54	250.26
	2050	8.1	2341	3112	224	196	26	2	60.29	248.64
	2100	8.3	2370	3167	230	201	26	2	61.11	246.99
	2150	8.6	2398	3221	236	207	26	2	61.91	245.49
	2200	8.8	2425	3275	242	213	26	2	62.70	244.14
	2250	9.0	2452	3328	248	219	27	2	63.46	242.92
	2300	9.3	2478	3381	254	225	27	2	64.21	241.81
	2400	9.7	2527	3485	265	236	27	2	65.64	239.92
	2500	10.1	2573	3587	276	247	27	2	66.99	238.38
	2550	10.4	2595	3638	282	253	27	2	67.64	237.74

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 13. BF 11216-R9-B28-2

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-24. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 2 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG) *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.6	1523	1526	90	66	21	3	9.41	418.88
	150	3.3	1776	1783	108	84	21	3	13.12	356.92
	200	3.9	1966	1976	125	101	21	3	16.65	318.54
	250	4.5	2118	2133	141	117	21	3	20.01	292.32
	300	5.0	2245	2265	157	133	21	3	23.22	273.39
	400	5.9	2451	2484	185	162	21	3	29.20	248.37
	500	6.7	2615	2662	213	189	21	3	34.59	233.32
	600	7.4	2750	2815	238	215	21	3	39.43	223.97
	700	8.1	2866	2950	263	240	21	2	43.77	218.15
	775	8.6	2943	3043	281	257	21	2	46.71	215.33
-10	575	4.2	1998	2079	129	106	21	3	27.18	308.53
	600	4.4	2046	2132	134	111	21	3	28.18	301.22
	700	5.1	2220	2327	154	131	21	3	32.20	277.49
	800	5.8	2369	2500	175	151	21	2	36.13	260.47
	900	6.4	2499	2656	195	171	21	2	39.89	248.18
	1000	7.0	2613	2798	214	191	21	2	43.45	239.29
	1100	7.6	2715	2930	234	210	21	2	46.78	232.89
	1200	8.2	2807	3053	253	229	21	2	49.87	228.31
	1300	8.8	2890	3169	272	248	21	2	52.73	225.09
	1350	9.1	2929	3225	281	257	21	2	54.07	223.88
-20	1265	6.1	2313	2637	174	151	20	2	45.37	262.12
	1300	6.3	2348	2684	179	157	20	2	46.30	258.89
	1350	6.6	2395	2750	187	164	20	2	47.62	254.72
	1400	6.8	2441	2814	194	172	20	2	48.91	251.02
	1500	7.4	2526	2938	209	187	20	2	51.41	244.82
	1600	7.9	2605	3057	224	202	20	2	53.79	239.98
	1700	8.4	2678	3172	239	217	20	2	56.04	236.22
	1800	8.9	2745	3282	254	231	20	2	58.16	233.32
	1900	9.4	2807	3390	269	246	20	2	60.15	231.12
	2000	9.9	2865	3494	283	260	20	2	62.02	229.47
-30	2249	8.9	2508	3369	228	207	19	2	63.02	240.45
	2300	9.1	2535	3423	234	213	19	2	63.81	239.22
	2350	9.4	2560	3475	240	219	19	2	64.57	238.13
	2400	9.6	2585	3527	246	225	19	2	65.30	237.15
	2450	9.8	2609	3579	251	230	19	2	66.02	236.27
	2500	10.1	2632	3630	257	236	19	2	66.71	235.49
	2550	10.3	2654	3681	263	242	19	2	67.39	234.78
	2600	10.5	2676	3731	268	247	19	2	68.04	234.15
	2700	11.0	2718	3831	279	258	19	2	69.29	233.10

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 13.

BF 11216-R9-B28-3

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-24. Delivery Data, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 3 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG) *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	49	-58	-904	0	-268	121	84	-95	1.3	42	2.3	42	31.3
	150	50	-58	-717	439	-240	131	80	-87	1.6	54	3.2	54	33.9
	200	50	-57	-606	451	-221	135	75	-81	1.8	64	4.1	64	36.0
	250	49	-56	-530	429	-207	136	72	-77	1.9	73	4.9	73	37.9
	300	49	-56	-475	403	-195	136	69	-73	2.1	82	5.7	81	39.5
	350	49	-55	-432	378	-186	135	66	-69	2.2	89	6.6	89	40.9
	400	49	-54	-398	356	-179	134	64	-66	2.3	97	7.4	96	42.2
	500	48	-54	-346	318	-166	130	59	-61	2.5	110	9.0	110	44.5
	600	47	-53	-308	288	-157	127	56	-58	2.6	123	10.7	122	46.6
	650	47	-53	-293	275	-153	126	55	-56	2.7	128	11.5	128	47.5
-10	490	25	-28	-152	115	-48	38	31	-31	1.8	62	9.8	62	35.2
	550	27	-30	-154	122	-53	42	32	-32	1.9	70	10.6	70	36.6
	600	28	-32	-154	127	-57	46	33	-33	2.0	76	11.3	75	37.7
	650	29	-33	-155	130	-60	49	33	-33	2.1	81	12.0	81	38.7
	700	30	-34	-154	132	-63	52	34	-34	2.2	87	12.7	87	39.7
	800	32	-36	-152	135	-67	57	34	-34	2.4	98	14.1	98	41.6
	900	33	-37	-149	135	-71	61	35	-34	2.5	109	15.5	109	43.3
	1000	35	-38	-146	134	-73	64	35	-35	2.7	119	16.9	119	44.8
	1100	35	-39	-142	133	-76	67	35	-35	2.8	129	18.3	129	46.2
	1150	36	-39	-140	131	-77	68	35	-35	2.8	134	19.0	133	46.9
-20	1035	22	-24	-77	67	-31	28	23	-23	2.2	86	18.2	86	38.8
	1050	22	-25	-78	67	-32	28	23	-23	2.2	87	18.4	87	39.1
	1100	23	-25	-79	69	-34	30	24	-23	2.3	92	19.0	92	39.8
	1200	25	-27	-81	72	-37	33	25	-24	2.4	101	20.2	100	41.1
	1300	26	-28	-83	75	-40	36	25	-25	2.6	109	21.4	109	42.4
	1400	27	-30	-84	77	-43	39	26	-25	2.7	118	22.6	118	43.6
	1500	28	-31	-84	78	-46	42	26	-26	2.8	127	23.8	127	44.8
	1600	29	-32	-84	79	-48	44	27	-26	2.9	135	24.9	135	45.8
	1700	30	-33	-84	79	-50	47	27	-27	3.1	143	26.1	143	46.8
-30	1805	22	-24	-53	49	-29	28	21	-21	2.8	120	27.8	120	43.0
	1850	22	-25	-54	50	-30	29	22	-21	2.8	124	28.2	123	43.4
	1900	23	-25	-54	50	-31	30	22	-21	2.9	127	28.7	127	43.9
	1950	23	-26	-55	51	-32	31	22	-22	3.0	131	29.2	131	44.3
	2000	24	-26	-55	52	-33	32	23	-22	3.0	135	29.7	135	44.8
	2050	24	-26	-56	52	-34	33	23	-22	3.1	139	30.2	139	45.2
	2100	25	-27	-56	53	-35	34	23	-22	3.1	143	30.7	142	45.6
	2200	25	-28	-57	53	-37	35	24	-23	3.2	150	31.6	150	46.4
	2300	26	-29	-57	54	-39	37	24	-23	3.3	158	32.5	157	47.2
	2400	27	-29	-57	55	-41	39	25	-24	3.4	165	33.4	165	47.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 13.

* ALSO APPLICABLE TO : BDU-45/B

BF 11216-R9-B29-1

Figure 2-25. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 1 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG) *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	47	-48	-995	0	-328	141	96	-110	1.4	43	2.1	43	29.8
	150	46	-47	-782	489	-285	151	90	-99	1.7	55	2.9	55	32.5
	200	46	-47	-657	497	-258	155	84	-92	1.9	65	3.7	65	34.7
	250	45	-46	-572	469	-238	154	80	-85	2.0	75	4.5	74	36.6
	300	45	-45	-510	437	-223	153	76	-80	2.2	83	5.3	83	38.2
	400	44	-44	-425	382	-201	149	69	-72	2.4	98	6.9	98	41.1
	500	43	-44	-368	340	-185	144	64	-67	2.6	112	8.5	112	43.5
	600	42	-43	-326	306	-173	139	60	-62	2.7	124	10.1	124	45.6
	700	42	-42	-295	280	-164	135	57	-59	2.9	136	11.6	136	47.5
-10	531	24	-24	-160	125	-56	44	34	-34	1.9	66	9.5	66	34.5
	600	25	-26	-162	132	-61	49	35	-35	2.1	75	10.5	75	36.1
	650	26	-27	-162	136	-65	52	36	-36	2.2	81	11.2	81	37.2
	700	27	-28	-162	139	-68	56	36	-36	2.3	87	11.9	86	38.2
	800	29	-29	-160	141	-73	61	36	-36	2.4	98	13.2	98	40.2
	900	30	-30	-157	142	-76	65	37	-37	2.6	109	14.6	108	42.0
	1000	31	-31	-153	141	-79	68	37	-37	2.7	119	16.0	119	43.6
	1100	32	-32	-149	139	-81	71	37	-37	2.9	129	17.4	129	45.1
	1200	32	-33	-145	137	-83	73	37	-36	3.0	139	18.7	139	46.5
	1250	33	-33	-143	135	-84	74	37	-36	3.0	144	19.4	143	47.1
-20	1139	21	-21	-82	72	-36	32	25	-25	2.4	94	18.3	93	38.8
	1150	21	-21	-83	73	-37	33	25	-25	2.4	95	18.5	94	38.9
	1200	22	-22	-84	74	-39	34	26	-25	2.5	99	19.1	99	39.6
	1300	23	-23	-86	77	-42	38	26	-26	2.6	108	20.3	108	41.0
	1400	24	-24	-87	79	-45	41	27	-26	2.8	117	21.5	117	42.3
	1500	25	-25	-87	81	-48	43	27	-27	2.9	126	22.7	126	43.5
	1600	26	-26	-88	82	-50	46	28	-27	3.0	134	23.8	134	44.7
	1700	26	-27	-88	83	-53	48	28	-28	3.1	143	25.0	143	45.8
	1800	27	-28	-87	83	-55	51	29	-28	3.2	151	26.1	151	46.8
	1850	28	-28	-87	83	-56	52	29	-28	3.3	155	26.7	155	47.3
-30	2005	21	-21	-57	53	-34	32	23	-23	3.1	134	28.6	134	43.6
	2050	21	-22	-57	54	-35	33	23	-23	3.1	137	29.0	137	44.0
	2100	22	-22	-58	54	-36	34	24	-23	3.2	141	29.5	141	44.5
	2150	22	-23	-58	55	-37	35	24	-23	3.2	145	30.0	145	44.9
	2200	23	-23	-58	55	-38	36	24	-24	3.3	149	30.5	149	45.4
	2250	23	-23	-59	56	-39	37	24	-24	3.3	152	31.0	152	45.8
	2300	23	-24	-59	56	-40	38	25	-24	3.4	156	31.5	156	46.2
	2400	24	-24	-59	56	-42	40	25	-24	3.5	164	32.4	164	47.0
	2500	24	-25	-59	57	-44	41	26	-25	3.6	171	33.3	171	47.7
	2550	25	-25	-60	57	-45	42	26	-25	3.6	175	33.7	175	48.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 13.

* ALSO APPLICABLE TO : BDU-45/B

BF 11216-R9-B29-2

Figure 2-25. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 2 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : MK 15 FIN ASSEMBLY (HIGH DRAG) *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	65	-68	-1082	0	-392	161	108	-125	1.5	44	1.9	43	28.5
	150	63	-65	-844	539	-332	172	100	-112	1.8	56	2.6	56	31.3
	200	60	-62	-705	540	-296	174	93	-102	2.0	66	3.4	66	33.5
	250	58	-60	-611	506	-270	172	87	-94	2.1	76	4.2	76	35.5
	300	57	-58	-543	469	-250	170	82	-88	2.3	84	4.9	84	37.1
	400	54	-55	-450	407	-222	163	75	-79	2.5	100	6.5	99	40.0
	500	52	-53	-388	360	-203	157	69	-72	2.7	113	8.0	113	42.5
	600	50	-51	-343	323	-189	151	65	-67	2.8	126	9.5	126	44.6
	700	49	-50	-309	294	-177	146	61	-62	3.0	138	11.1	137	46.5
	775	48	-49	-288	276	-170	142	59	-60	3.0	146	12.2	146	47.8
-10	575	29	-30	-167	134	-64	50	37	-37	2.1	71	9.4	71	34.0
	600	30	-30	-168	136	-66	52	37	-38	2.1	74	9.7	74	34.6
	700	31	-32	-168	144	-73	59	38	-38	2.3	86	11.1	86	36.8
	800	33	-33	-166	147	-78	64	38	-39	2.5	97	12.5	97	38.9
	900	34	-34	-163	148	-81	69	39	-39	2.7	108	13.8	108	40.7
	1000	35	-35	-160	147	-84	72	39	-39	2.8	119	15.2	119	42.4
	1100	35	-36	-155	145	-86	75	39	-39	2.9	129	16.5	129	44.0
	1200	36	-36	-151	142	-88	77	38	-38	3.1	139	17.9	139	45.4
	1300	36	-37	-147	140	-89	79	38	-38	3.2	148	19.2	148	46.8
	1350	36	-37	-145	138	-90	80	38	-38	3.2	153	19.9	153	47.4
-20	1265	25	-25	-87	78	-42	38	27	-27	2.6	103	18.8	103	39.1
	1300	25	-26	-88	79	-44	39	27	-27	2.7	107	19.2	106	39.6
	1350	26	-26	-89	80	-45	40	28	-27	2.7	111	19.8	111	40.3
	1400	26	-27	-89	82	-47	42	28	-28	2.8	116	20.4	115	41.0
	1500	27	-28	-90	83	-50	45	29	-28	2.9	124	21.6	124	42.3
	1600	28	-29	-90	84	-52	48	29	-28	3.1	133	22.8	133	43.5
	1700	29	-29	-90	85	-55	50	29	-29	3.2	142	24.0	142	44.6
	1800	30	-30	-90	85	-57	52	30	-29	3.3	150	25.1	150	45.7
	1900	30	-31	-90	86	-59	54	30	-29	3.4	159	26.2	158	46.7
	2000	31	-31	-89	85	-61	56	30	-30	3.5	167	27.3	167	47.7
-30	2249	25	-25	-60	57	-40	37	25	-24	3.4	151	29.8	150	44.7
	2300	25	-25	-60	57	-41	38	25	-25	3.4	155	30.3	154	45.1
	2350	25	-26	-61	58	-42	39	26	-25	3.5	158	30.8	158	45.5
	2400	26	-26	-61	58	-43	40	26	-25	3.5	162	31.3	162	45.9
	2450	26	-26	-61	58	-44	41	26	-25	3.6	166	31.8	166	46.4
	2500	26	-27	-61	58	-44	42	26	-25	3.6	170	32.2	170	46.8
	2550	27	-27	-61	59	-45	43	26	-26	3.7	174	32.7	174	47.1
	2600	27	-27	-61	59	-46	44	27	-26	3.7	177	33.1	177	47.5
	2700	27	-28	-61	59	-48	46	27	-26	3.8	185	34.0	185	48.3

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 13.

* ALSO APPLICABLE TO : BDU-45/B

BF 11216-R9-B29-3

Figure 2-25. Release Error Sensitivities, Mk 82 Mod 2 (TP), Mk 15 Fin Assembly, High Drag (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) **

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	1100	228	1100	900	187	900	900	165	900
	5 G LEVEL BREAKAWAY	500	168	500	500	148	500	400	119	400
	6 G LEVEL BREAKAWAY	500	168	500	500	148	500	400	119	400
-10	5 G	1200	167	911	1100	136	770	1100	115	726
	6 G	1200	167	916	1100	136	776	1100	115	732
-20	5 G	1800	156	1065	1800	132	861	1800	110	836
	6 G	1700	151	976	1700	127	883	1800	110	854
-30	5 G	2300	141	996	2400	121	896	2400	101	652
	6 G	2300	141	1012	2300	118	857	2400	101	693
-45	5 G	3027*	117	700	3468*	106	700	3950*	94	700
	6 G	3001*	117	700	3279*	102	700	3811*	92	700
-60	5 G	4556*	99	1000	5291*	91	1000	6024*	81	1000
	6 G	4416*	98	1000	4864*	87	1000	5615*	77	1000

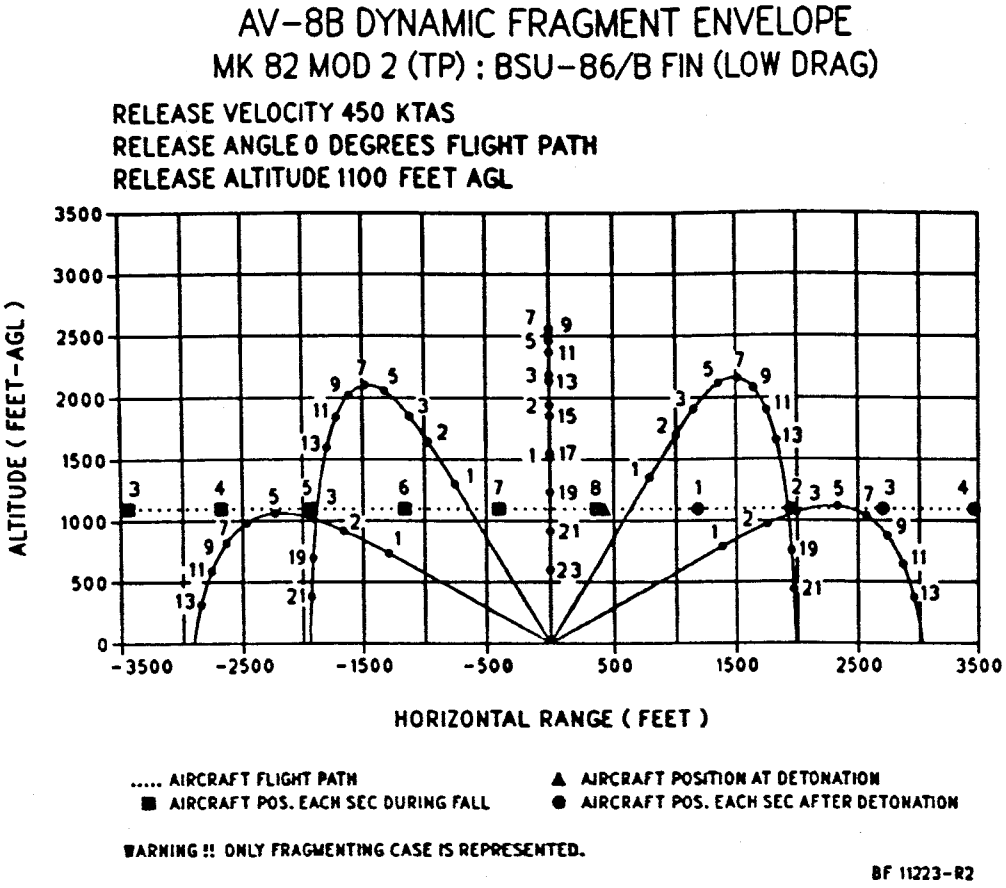
1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

** ALSO APPLICABLE TO : BDU-45/B

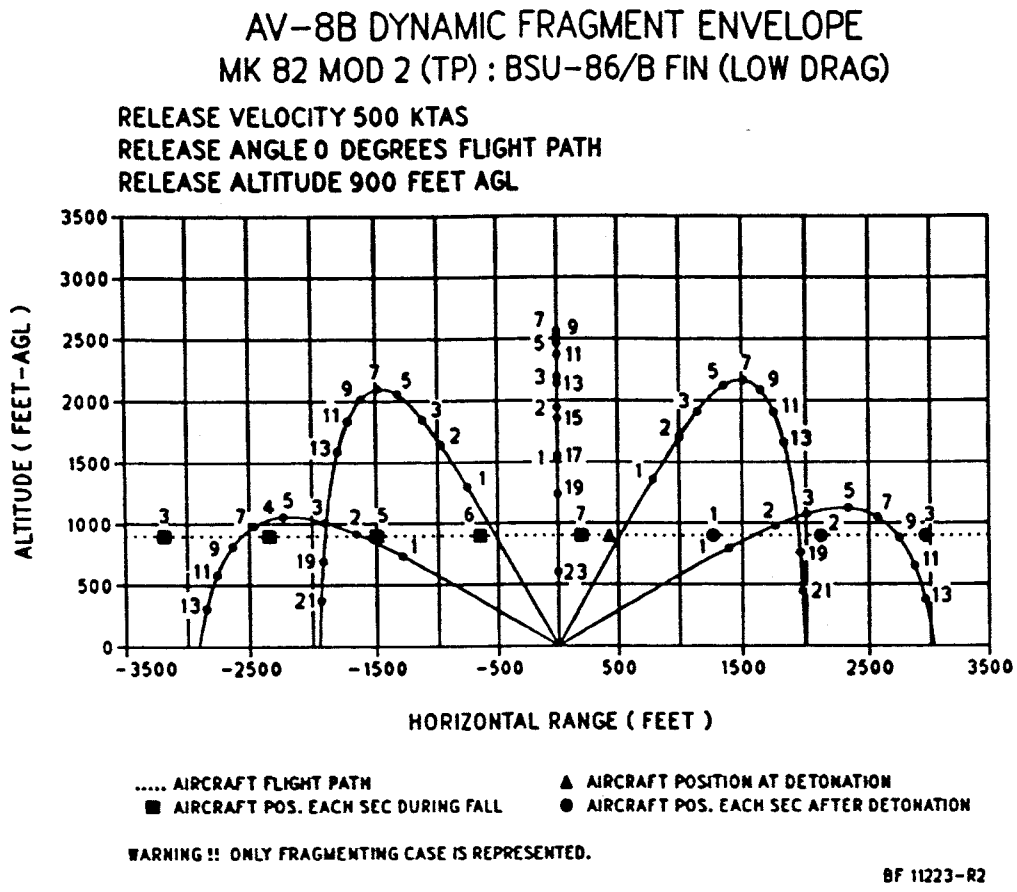
BF 11223-R2-B45-1

Figure 2-26. Safe Escape Table, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag



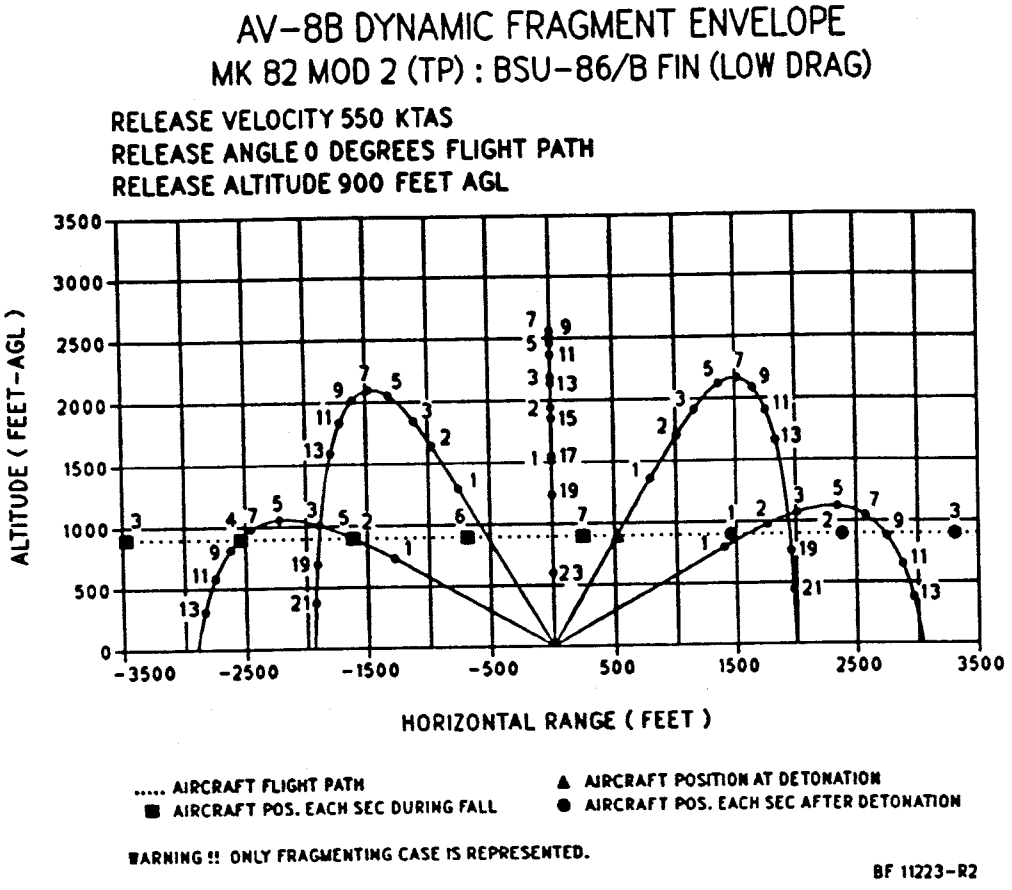
BF 11223-R2-B46-1

Figure 2-27. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 1 of 3)



BF 11223-R2-B46-2

Figure 2-27. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 2 of 3)

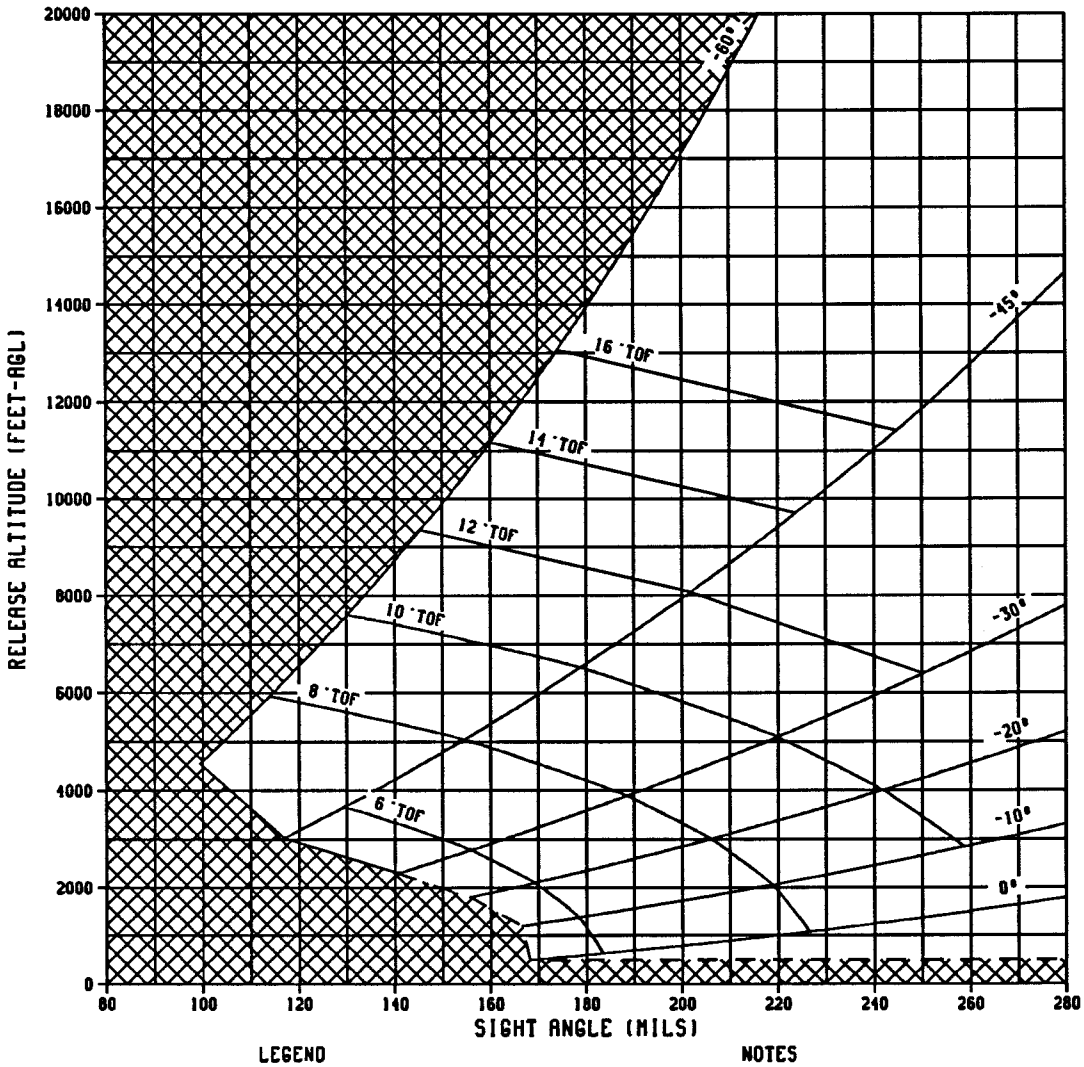


BF 11223-R2-B46-3

Figure 2-27. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 94
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

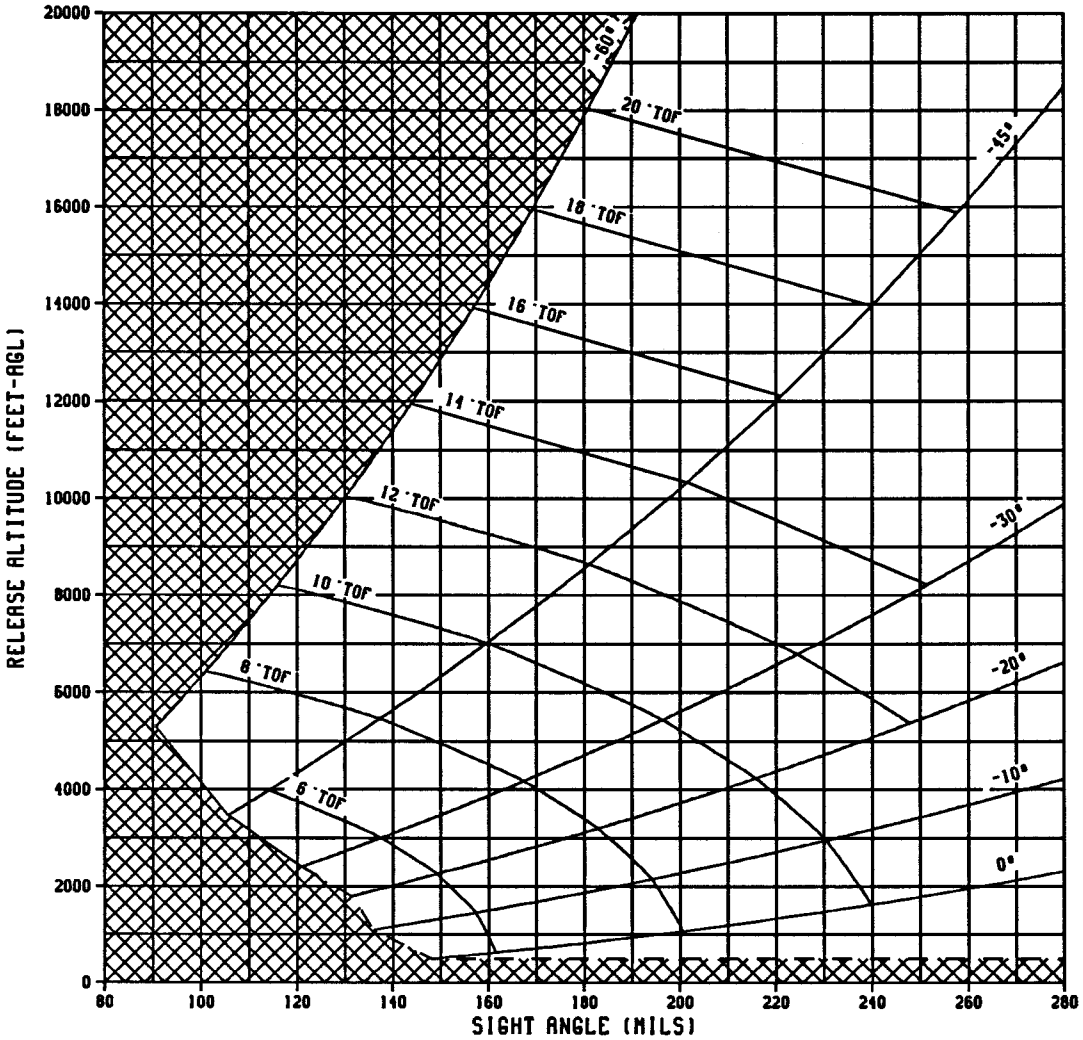
BF 11223-R2-847-1

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-28. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
UNSAFE RELEASE

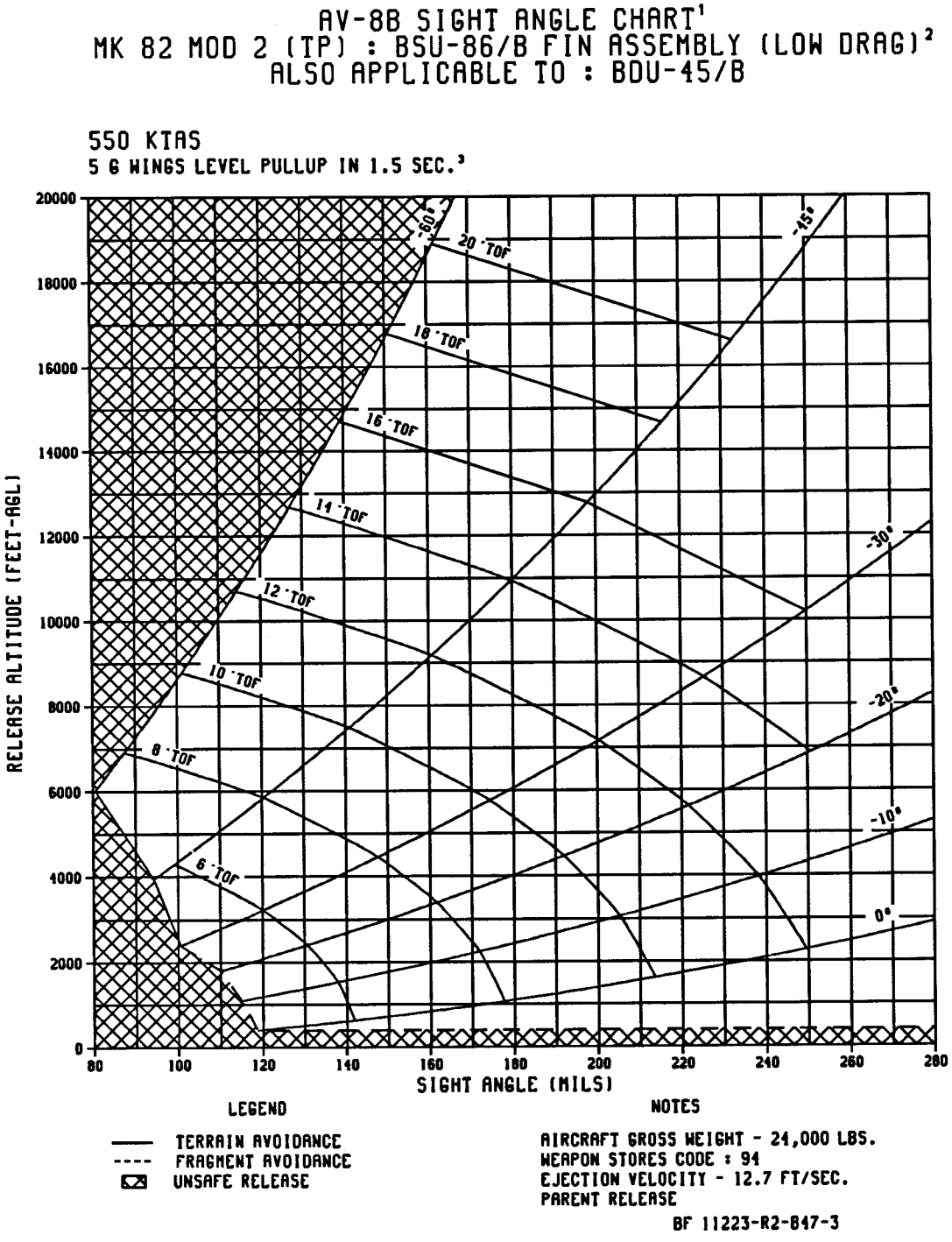
NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 94
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

BF 11223-R2-B47-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-28. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-28. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.3	3828	3861	168	130	37	2	14.15	715.55
	600	5.8	4206	4249	180	142	37	1	15.52	713.22
	700	6.3	4552	4605	191	153	37	1	16.79	711.50
	800	6.8	4872	4937	201	163	37	1	17.97	710.24
	900	7.3	5171	5249	211	172	37	1	19.07	709.37
	1000	7.7	5453	5544	220	181	37	1	20.10	708.81
	1200	8.5	5973	6093	237	198	37	1	22.02	708.45
	1400	9.2	6449	6599	252	214	38	1	23.77	708.88
	1600	9.9	6888	7072	267	228	38	1	25.37	709.91
	1800	10.5	7299	7517	281	242	38	1	26.86	711.42
-10	1200	5.4	3842	4025	167	128	37	2	23.71	739.84
	1400	6.1	4283	4506	180	141	37	1	25.19	740.07
	1500	6.4	4492	4736	186	148	37	1	25.90	740.36
	1600	6.7	4695	4960	192	154	37	1	26.58	740.76
	1700	7.0	4893	5180	198	160	37	1	27.24	741.26
	1800	7.3	5085	5394	204	166	37	1	27.89	741.84
	1900	7.6	5272	5604	210	171	37	1	28.51	742.51
	2000	7.8	5454	5809	216	177	37	1	29.12	743.24
	2100	8.1	5632	6011	221	182	38	1	29.71	744.05
	2200	8.4	5806	6208	227	188	38	1	30.28	744.92
	2300	8.6	5975	6403	232	193	38	1	30.84	745.84
	2400	8.9	6142	6594	237	198	38	1	31.39	746.82
	2500	9.2	6305	6782	242	203	38	1	31.92	747.85
	2600	9.4	6464	6968	247	208	38	1	32.44	748.93
	2700	9.7	6621	7150	252	213	38	1	32.95	750.04
	2800	9.9	6774	7330	257	217	38	1	33.44	751.20
	2900	10.1	6925	7508	261	222	38	1	33.93	752.39
	3000	10.4	7073	7683	266	227	38	1	34.40	753.62
	3400	11.3	7642	8364	284	244	39	1	36.20	758.82
-20	1800	5.3	3567	3996	156	118	36	2	32.39	763.33
	2000	5.8	3877	4362	165	127	36	1	33.37	765.16
	2500	6.9	4605	5240	186	148	36	1	35.63	770.36
	2600	7.1	4744	5410	190	152	36	1	36.06	771.50
	2700	7.3	4881	5578	194	156	37	1	36.48	772.66
	2800	7.6	5015	5744	198	160	37	1	36.89	773.84
	2900	7.8	5148	5908	202	164	37	1	37.30	775.05
	3000	8.0	5278	6071	206	168	37	1	37.69	776.29
	3100	8.2	5407	6233	210	171	37	1	38.08	777.54
	3200	8.4	5534	6393	213	175	37	1	38.46	778.81
	3500	9.0	5906	6865	224	186	37	1	39.57	782.74
	4000	10.0	6495	7628	242	203	38	1	41.30	789.56
	4500	10.9	7052	8366	258	219	38	1	42.89	796.65
	5000	11.8	7581	9081	274	234	38	1	44.37	803.93
	5400	12.5	7986	9640	285	246	39	1	45.47	809.85

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 94. BF 11223-R2-B48-1

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-29. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 1 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2300	5.1	3162	3910	141	105	34	1	40.80	783.53
	2500	5.5	3391	4213	147	112	34	1	41.48	786.17
	3000	6.4	3942	4953	163	127	34	1	43.10	792.97
	3500	7.3	4463	5672	177	141	35	1	44.60	800.00
	4000	8.2	4959	6371	192	155	35	1	46.00	807.18
	4500	9.0	5433	7054	205	168	35	1	47.30	814.47
	5000	9.8	5886	7723	218	181	36	1	48.52	821.82
	6000	11.4	6741	9025	242	204	37	1	50.74	836.62
	7000	12.9	7537	10286	264	225	38	1	52.71	851.34
	7900	14.2	8211	11394	282	242	38	1	54.31	864.40
-45	3027	5.0	2544	3954	117	87	29	1	53.59	809.48
	4000	6.5	3237	5146	136	105	29	1	55.49	825.30
	5000	7.9	3904	6343	154	123	30	1	57.23	841.25
	6000	9.3	4530	7518	171	139	31	1	58.79	856.79
	7000	10.6	5122	8674	186	154	31	1	60.21	871.87
	8000	11.9	5684	9814	201	168	32	1	61.49	886.49
	9000	13.2	6219	10940	215	181	33	1	62.65	900.63
	10000	14.4	6731	12055	228	193	34	1	63.72	914.26
	11000	15.5	7223	13159	240	204	35	1	64.70	927.39
	12000	16.7	7695	14255	252	215	35	1	65.60	939.95
	15000	19.9	9018	17502	283	244	38	0	67.94	974.08
-60	4556	6.3	2190	5055	99	75	22	1	67.23	845.60
	5000	6.8	2375	5535	104	80	23	1	67.69	853.13
	6000	8.1	2776	6611	115	90	23	1	68.67	869.57
	8000	10.5	3525	8742	134	109	24	1	70.37	900.40
	9000	11.6	3877	9800	143	117	25	1	71.12	914.84
	10000	12.7	4215	10852	151	125	25	1	71.81	928.64
	11000	13.8	4542	11901	159	132	26	1	72.45	941.77
	12000	14.9	4857	12946	167	139	26	0	73.04	954.24
	13000	15.9	5162	13987	174	146	27	0	73.59	966.06
	14000	17.0	5458	15026	181	152	28	0	74.11	977.18
	16000	19.0	6024	17096	194	164	29	0	75.04	997.25
	18000	20.9	6561	19158	205	174	30	0	75.87	1014.52
	20000	22.8	7072	21214	216	184	31	0	76.61	1028.91

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 94. BF 11223-R2-B48-2

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-29. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 2 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.3	4238	4268	148	117	29	1	12.87	777.55
	600	5.9	4655	4694	159	128	29	1	14.15	773.55
	800	6.8	5388	5448	178	147	29	1	16.41	767.67
	1000	7.7	6028	6110	195	164	29	1	18.41	763.74
	1200	8.5	6600	6709	210	180	30	1	20.21	761.17
	1400	9.2	7123	7259	225	194	30	1	21.86	759.60
	1600	9.9	7605	7772	238	207	30	1	23.38	758.82
	1800	10.6	8056	8254	251	220	30	1	24.79	758.65
	2000	11.2	8479	8712	263	232	30	1	26.12	758.97
	2350	12.2	9166	9463	282	251	30	1	28.26	760.50
-10	1100	4.8	3825	3980	136	105	29	1	21.30	805.38
	1500	6.1	4784	5014	160	129	29	1	24.02	801.23
	1600	6.4	5006	5255	166	135	29	1	24.65	800.59
	1700	6.7	5221	5491	171	140	30	1	25.27	800.08
	1800	7.0	5430	5721	176	146	30	1	25.87	799.69
	1900	7.3	5634	5946	181	151	30	1	26.45	799.41
	2000	7.6	5833	6167	187	156	30	1	27.02	799.24
	2100	7.9	6028	6383	192	161	30	1	27.57	799.16
	2200	8.1	6218	6595	196	166	30	1	28.11	799.17
	2300	8.4	6403	6804	201	170	30	1	28.64	799.26
	2400	8.6	6585	7009	206	175	30	1	29.16	799.42
	2500	8.9	6763	7211	211	180	30	1	29.66	799.66
	2600	9.1	6938	7409	215	184	30	1	30.16	799.97
	2700	9.4	7109	7605	220	188	30	1	30.64	800.33
	2800	9.6	7277	7797	224	193	30	1	31.11	800.76
	2900	9.9	7442	7987	228	197	30	1	31.58	801.24
	3000	10.1	7605	8175	232	201	30	1	32.03	801.77
	4000	12.3	9093	9934	272	240	31	1	36.14	809.30
	4300	12.9	9500	10428	283	250	31	1	37.24	812.16
-20	1800	5.0	3719	4132	132	102	28	1	30.72	828.02
	2000	5.4	4050	4517	139	110	29	1	31.60	828.11
	2500	6.5	4832	5440	158	128	29	1	33.68	829.28
	2600	6.8	4981	5619	162	132	29	1	34.07	829.65
	2700	7.0	5128	5795	166	136	29	1	34.46	830.07
	2800	7.2	5273	5970	169	139	29	1	34.85	830.52
	2900	7.4	5416	6144	173	143	29	1	35.22	831.01
	3000	7.6	5557	6315	176	146	29	1	35.59	831.54
	3100	7.8	5696	6485	180	149	29	1	35.96	832.10
	3200	8.0	5834	6654	183	153	29	1	36.32	832.69
	4000	9.6	6874	7953	209	178	30	1	39.01	838.42
	5000	11.4	8052	9478	238	207	31	1	41.97	847.38
	6000	13.1	9125	10921	265	233	31	1	44.57	857.65
	6700	14.2	9825	11892	282	249	32	1	46.21	865.34

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 94. BF 11223-R2-B48-3

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-29. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 3 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2400	4.9	3387	4151	121	93	27	1	39.60	848.81
	3000	6.0	4091	5073	138	109	27	1	41.38	852.85
	3500	6.9	4646	5817	151	122	28	1	42.76	856.72
	4000	7.7	5175	6541	163	134	28	1	44.06	860.97
	5000	9.3	6170	7941	187	157	28	1	46.45	870.32
	6000	10.8	7091	9289	208	179	29	1	48.58	880.47
	7000	12.3	7951	10593	229	198	30	1	50.51	891.11
	8000	13.7	8759	11863	248	217	30	1	52.25	902.02
	9000	15.0	9523	13103	265	234	31	1	53.84	912.99
	10000	16.3	10249	14320	282	249	32	1	55.28	923.94
-45	3468	5.3	2945	4550	106	81	23	1	53.19	877.89
	4000	6.0	3337	5209	115	90	23	1	54.11	883.69
	6000	8.7	4705	7625	145	120	24	1	57.19	905.89
	7000	10.0	5336	8802	160	134	25	1	58.54	917.01
	8000	11.2	5937	9962	173	147	25	1	59.78	928.03
	9000	12.4	6512	11109	186	159	26	1	60.93	938.82
	10000	13.6	7062	12242	198	171	27	1	61.98	949.30
	11000	14.8	7591	13365	209	181	27	1	62.97	959.48
	12000	15.9	8101	14478	220	192	28	0	63.88	969.28
	14000	18.0	9068	16680	240	211	29	0	65.53	987.42
	16000	20.1	9977	18856	259	228	31	0	66.98	1003.59
	18000	22.1	10834	21009	276	244	32	0	68.28	1017.43
	19000	23.1	11246	22079	284	251	33	0	68.87	1023.58
-60	5291	6.7	2568	5881	91	72	18	1	66.98	913.04
	6000	7.5	2865	6649	97	78	18	1	67.62	921.73
	7000	8.7	3269	7726	106	87	19	1	68.46	933.68
	8000	9.8	3658	8797	114	95	19	1	69.23	945.20
	9000	10.9	4032	9862	122	102	19	1	69.96	956.28
	10000	12.0	4393	10923	130	110	20	1	70.64	966.91
	11000	13.0	4742	11979	137	117	20	0	71.27	977.02
	12000	14.0	5080	13031	144	123	21	0	71.86	986.57
	13000	15.1	5407	14080	151	129	21	0	72.42	995.53
	14000	16.1	5725	15125	157	135	22	0	72.94	1003.99
	16000	18.0	6334	17208	170	147	23	0	73.91	1018.97
	18000	20.0	6912	19281	181	157	23	0	74.78	1031.77
	20000	21.8	7462	21347	191	167	24	0	75.57	1042.12

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 94. BF 11223-R2-B48-4

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-29. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 4 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	400	4.7	4137	4156	119	96	21	1	10.53	848.73
	600	5.9	5098	5133	139	117	21	1	13.02	835.84
	1000	7.7	6593	6668	173	151	21	1	17.02	820.16
	1200	8.5	7215	7314	187	165	21	1	18.72	815.21
	1400	9.3	7783	7908	200	178	21	1	20.28	811.52
	1500	9.6	8050	8188	207	184	22	1	21.02	810.05
	2000	11.2	9254	9468	235	213	22	1	24.36	805.53
	2500	12.6	10299	10598	261	238	22	1	27.25	804.37
	2950	13.8	11143	11527	282	259	22	1	29.56	805.22
-10	1100	4.6	4017	4164	115	93	21	1	19.97	872.64
	1500	5.9	5048	5266	137	114	21	1	22.48	863.91
	1600	6.2	5286	5523	142	119	21	1	23.06	862.22
	1700	6.5	5518	5774	147	124	21	1	23.64	860.70
	1800	6.8	5744	6020	151	129	21	1	24.19	859.33
	1900	7.1	5964	6260	156	134	21	1	24.74	858.09
	2000	7.3	6179	6495	161	138	21	1	25.27	856.99
	2100	7.6	6389	6726	165	143	21	1	25.79	856.01
	2200	7.9	6595	6952	170	147	21	1	26.30	855.14
	2300	8.1	6795	7174	174	152	21	1	26.80	854.37
	2400	8.4	6992	7392	178	156	22	1	27.29	853.71
	2500	8.7	7185	7607	183	160	22	1	27.77	853.14
	2600	8.9	7373	7818	187	164	22	1	28.24	852.65
	2700	9.1	7559	8026	191	169	22	1	28.70	852.25
	2800	9.4	7741	8231	195	173	22	1	29.15	851.93
	2900	9.6	7919	8433	199	177	22	1	29.60	851.67
	3000	9.9	8095	8633	203	180	22	1	30.03	851.49
	4000	12.1	9706	10498	239	216	22	1	34.00	852.68
	5000	14.0	11115	12188	271	248	23	1	37.40	857.78
	5300	14.6	11508	12670	280	257	23	1	38.32	859.83
-20	1800	4.7	3848	4248	110	88	20	1	29.36	894.29
	2500	6.2	5027	5615	134	112	21	1	32.07	889.92
	2600	6.4	5186	5801	137	116	21	1	32.44	889.54
	2700	6.6	5343	5986	140	119	21	1	32.80	889.22
	2800	6.8	5497	6169	144	122	21	1	33.15	888.95
	2900	7.0	5650	6350	147	125	21	1	33.50	888.72
	3000	7.2	5800	6530	150	128	21	1	33.85	888.55
	3100	7.4	5949	6708	153	131	21	1	34.19	888.42
	3200	7.6	6095	6884	156	134	21	1	34.53	888.34
	4000	9.2	7209	8244	179	158	21	1	37.07	889.02
	5000	10.9	8474	9839	206	184	22	1	39.92	892.55
	6000	12.6	9627	11344	231	208	22	1	42.45	898.13
	8000	15.7	11685	14161	275	251	23	1	46.78	913.04
	8500	16.4	12158	14834	285	261	23	1	47.73	917.26

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 94. BF 11223-R2-B48-5

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-29. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 5 of 6)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2400	4.6	3478	4226	101	80	19	1	38.35	914.25
	3000	5.6	4215	5174	115	95	19	1	39.96	914.35
	4000	7.3	5359	6687	138	118	19	1	42.44	916.53
	5000	8.8	6414	8132	159	139	20	1	44.69	920.60
	6000	10.3	7394	9522	179	158	20	1	46.74	926.00
	7000	11.8	8312	10867	198	176	21	1	48.61	932.31
	8000	13.1	9176	12174	215	193	21	1	50.33	939.29
	9000	14.5	9995	13450	231	209	21	1	51.90	946.73
	10000	15.8	10773	14699	247	225	22	0	53.35	954.43
	12000	18.2	12227	17132	276	252	23	0	55.94	969.90
	12400	18.7	12504	17610	281	258	23	0	56.42	972.91
-45	3950	5.6	3380	5199	94	78	16	1	52.90	943.00
	4000	5.6	3418	5261	95	78	16	1	52.98	943.29
	6000	8.2	4851	7716	122	105	16	1	55.84	955.97
	7000	9.4	5516	8912	135	118	17	1	57.13	962.86
	8000	10.6	6151	10091	147	130	17	1	58.33	969.89
	9000	11.8	6760	11256	159	141	17	1	59.45	976.92
	10000	12.9	7344	12407	170	152	17	0	60.49	983.88
	11000	14.1	7906	13546	181	162	18	0	61.47	990.67
	12000	15.2	8448	14675	191	172	18	0	62.40	997.35
	14000	17.3	9477	16906	210	190	19	0	64.08	1009.82
	16000	19.4	10444	19107	228	207	20	0	65.59	1020.91
	18000	21.4	11356	21283	244	223	21	0	66.95	1030.74
	20000	23.4	12218	23437	259	237	22	0	68.19	1038.68
-60	6024	7.0	2948	6707	81	69	11	1	66.76	974.46
	7000	8.1	3360	7765	88	76	11	1	67.53	982.01
	8000	9.2	3768	8843	96	83	12	1	68.28	989.53
	9000	10.2	4161	9915	103	91	12	1	68.98	996.81
	10000	11.3	4541	10983	110	97	12	0	69.64	1003.88
	11000	12.3	4910	12046	116	104	12	0	70.26	1010.53
	12000	13.3	5266	13105	123	110	12	0	70.86	1016.80
	13000	14.3	5613	14160	129	116	13	0	71.42	1022.68
	14000	15.3	5949	15212	135	122	13	0	71.95	1028.27
	16000	17.3	6594	17306	146	133	13	0	72.95	1038.16
	18000	19.2	7206	19389	157	143	14	0	73.85	1046.01
	20000	21.0	7788	21463	167	152	15	0	74.69	1052.37

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 94. BF 11223-R2-B48-6

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-29. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 6 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	500	129	-142	-391	347	-323	202	144	-154	3.9	89	3.0	89	23.1
	600	137	-150	-359	325	-322	211	145	-155	4.2	99	3.3	99	23.2
	700	145	-158	-333	307	-322	218	147	-156	4.6	107	3.5	107	23.3
	800	152	-165	-313	291	-322	224	148	-156	4.9	115	3.8	115	23.3
	900	158	-171	-296	278	-323	229	149	-157	5.2	123	4.0	123	23.4
	1000	164	-177	-281	266	-323	234	150	-157	5.5	130	4.2	130	23.4
	1200	175	-189	-258	246	-324	242	151	-158	6.1	143	4.6	143	23.5
	1400	185	-199	-240	231	-326	249	152	-158	6.6	156	5.0	155	23.5
	1600	195	-208	-225	217	-327	255	153	-159	7.1	167	5.3	167	23.6
	1800	203	-217	-213	206	-329	261	154	-159	7.5	178	5.7	178	23.6
-10	1200	70	-77	-98	89	-79	63	66	-68	4.0	91	6.8	91	22.7
	1400	80	-87	-98	91	-90	73	71	-73	4.5	102	7.1	102	22.7
	1500	84	-92	-98	91	-94	77	74	-75	4.7	108	7.2	108	22.7
	1600	89	-97	-98	92	-99	81	76	-77	5.0	113	7.3	113	22.8
	1700	93	-101	-97	92	-104	85	78	-79	5.2	118	7.5	118	22.8
	1800	97	-106	-97	92	-108	89	80	-81	5.4	123	7.6	123	22.8
	1900	102	-110	-97	92	-112	93	82	-83	5.6	128	7.7	128	22.8
	2000	106	-114	-96	92	-116	97	83	-85	5.8	132	7.8	132	22.8
	2100	110	-118	-96	92	-120	101	85	-86	6.0	137	8.0	137	22.8
	2200	114	-122	-96	92	-124	104	86	-88	6.2	142	8.1	142	22.8
	2300	117	-126	-95	91	-127	108	88	-89	6.4	146	8.2	146	22.8
	2400	121	-130	-95	91	-131	111	89	-91	6.6	150	8.3	150	22.8
	2500	125	-134	-94	91	-134	114	91	-92	6.8	155	8.4	155	22.8
	2600	128	-138	-94	91	-138	118	92	-94	7.0	159	8.5	159	22.8
	2700	132	-141	-93	90	-141	121	94	-95	7.2	163	8.6	163	22.8
	2800	135	-145	-93	90	-144	124	95	-96	7.3	167	8.7	167	22.8
	2900	139	-149	-92	90	-148	127	96	-97	7.5	171	8.8	171	22.8
	3000	142	-152	-92	89	-151	130	97	-99	7.7	175	8.9	175	22.8
	3400	155	-165	-90	88	-163	142	102	-103	8.4	191	9.3	191	22.8
-20	1800	46	-51	-43	40	-36	32	44	-44	4.0	89	10.0	89	22.3
	2000	52	-57	-44	41	-41	37	47	-47	4.4	97	10.2	97	22.3
	2500	65	-71	-46	44	-53	48	54	-54	5.2	117	10.6	117	22.3
	2600	68	-74	-47	45	-56	50	56	-56	5.4	120	10.7	120	22.2
	2700	71	-77	-47	45	-58	52	57	-57	5.6	124	10.8	124	22.2
	2800	73	-79	-48	46	-60	54	58	-58	5.7	128	10.8	128	22.2
	2900	76	-82	-48	46	-63	56	60	-60	5.9	131	10.9	131	22.2
	3000	78	-85	-48	46	-65	58	61	-61	6.1	135	11.0	135	22.2
	3100	81	-88	-48	47	-67	61	62	-62	6.2	138	11.0	138	22.2
	3200	83	-90	-49	47	-70	63	63	-63	6.4	142	11.1	142	22.2
	3500	91	-98	-49	48	-77	69	67	-67	6.9	152	11.3	152	22.2
	4000	103	-111	-50	48	-88	79	72	-72	7.6	169	11.6	169	22.1
	4500	115	-123	-50	49	-98	90	77	-77	8.4	184	11.9	184	22.0
	5000	126	-135	-51	49	-109	99	82	-82	9.1	200	12.1	200	22.0
	5400	135	-144	-51	50	-117	107	85	-86	9.6	211	12.3	211	21.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 94.

* ALSO APPLICABLE TO : BDU-45/B

BF 11223-R2-B49-1

Figure 2-30. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 1 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2300	32	-36	-23	21	-21	20	33	-32	3.9	86	12.9	86	22.0
	2500	36	-39	-24	22	-24	22	35	-35	4.2	92	13.0	92	21.9
	3000	44	-49	-26	24	-31	29	41	-40	5.0	108	13.2	108	21.8
	3500	53	-58	-27	26	-38	36	46	-45	5.7	123	13.4	123	21.8
	4000	62	-67	-28	27	-45	43	50	-50	6.4	138	13.6	138	21.7
	4500	70	-76	-29	29	-53	50	55	-55	7.1	152	13.8	152	21.6
	5000	79	-85	-30	29	-60	57	59	-59	7.7	166	13.9	166	21.5
	6000	95	-103	-32	31	-76	71	67	-67	9.0	193	14.2	193	21.3
	7000	112	-121	-32	32	-91	86	75	-75	10.3	218	14.4	218	21.2
	7900	126	-136	-33	32	-105	99	82	-82	11.4	239	14.6	239	21.0
-45	3027	21	-23	-11	10	-13	13	26	-25	4.0	85	16.5	85	21.5
	4000	30	-33	-13	12	-21	20	33	-32	5.1	110	16.6	110	21.3
	5000	40	-44	-14	14	-30	29	40	-39	6.3	134	16.6	134	21.1
	6000	50	-55	-16	15	-39	38	47	-46	7.5	157	16.7	157	20.9
	7000	61	-66	-17	16	-49	47	54	-53	8.7	179	16.7	179	20.7
	8000	71	-78	-17	17	-60	57	60	-59	9.8	201	16.7	201	20.5
	9000	81	-89	-18	18	-71	68	66	-66	10.9	222	16.7	222	20.3
	10000	92	-100	-19	18	-82	79	72	-72	12.1	242	16.7	242	20.1
	11000	102	-111	-19	19	-94	90	78	-78	13.2	262	16.7	262	19.9
	12000	112	-122	-19	19	-106	101	84	-84	14.3	281	16.6	281	19.7
	15000	143	-154	-20	20	-142	137	102	-101	17.5	336	16.5	336	19.2
-60	4556	19	-21	-6	6	-15	16	28	-27	5.1	106	18.9	106	21.0
	5000	21	-24	-7	7	-18	18	31	-30	5.5	116	18.9	116	20.9
	6000	27	-30	-8	7	-24	25	36	-36	6.6	137	18.7	137	20.7
	8000	39	-43	-9	9	-39	39	48	-47	8.7	177	18.5	177	20.2
	9000	45	-50	-9	9	-47	47	53	-52	9.8	196	18.4	196	20.0
	10000	51	-57	-10	9	-56	55	59	-58	10.9	215	18.2	215	19.8
	11000	58	-64	-10	10	-65	64	64	-64	11.9	233	18.1	233	19.6
	12000	64	-71	-10	10	-74	73	70	-69	12.9	251	18.0	251	19.4
	13000	71	-78	-11	11	-84	83	75	-74	14.0	269	17.9	269	19.2
	14000	77	-85	-11	11	-94	93	80	-80	15.0	286	17.8	286	19.1
	16000	90	-98	-11	11	-114	113	91	-91	17.1	320	17.5	320	18.7
	18000	102	-112	-12	12	-136	135	102	-101	19.2	353	17.3	353	18.4
	20000	115	-125	-12	12	-159	158	112	-112	21.2	385	17.1	385	18.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 94.

* ALSO APPLICABLE TO : BDU-45/B

BF 11223-R2-B49-2

Figure 2-30. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 2 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	129	-130	-434	386	-407	242	175	-189	4.3	90	2.5	89	21.0
	600	137	-138	-398	361	-405	252	177	-190	4.7	99	2.7	99	21.0
	800	151	-153	-347	323	-402	268	179	-191	5.4	116	3.1	115	21.2
	1000	164	-165	-312	295	-401	279	181	-191	6.1	130	3.5	130	21.3
	1200	175	-176	-286	273	-400	289	183	-192	6.7	144	3.8	143	21.4
	1400	185	-186	-266	255	-400	297	184	-192	7.3	156	4.1	156	21.5
	1600	194	-195	-249	241	-401	304	184	-192	7.8	168	4.4	167	21.5
	1800	202	-204	-235	228	-402	310	185	-193	8.3	178	4.7	178	21.6
	2000	210	-212	-224	218	-403	316	186	-193	8.7	189	5.0	189	21.6
	2350	223	-225	-207	202	-406	325	187	-193	9.5	206	5.4	205	21.7
-10	1100	60	-61	-97	87	-77	60	71	-72	4.0	82	5.7	82	20.6
	1500	78	-79	-99	92	-101	80	82	-84	5.0	104	6.2	104	20.7
	1600	82	-84	-99	93	-106	85	85	-87	5.3	109	6.3	109	20.7
	1700	87	-88	-99	93	-111	90	87	-89	5.5	114	6.4	114	20.7
	1800	91	-92	-99	93	-116	94	90	-91	5.7	119	6.5	119	20.7
	1900	95	-96	-99	94	-121	99	92	-93	5.9	123	6.6	123	20.7
	2000	99	-100	-99	94	-125	103	94	-95	6.2	128	6.7	128	20.8
	2100	103	-104	-98	94	-130	107	96	-97	6.4	133	6.8	133	20.8
	2200	106	-108	-98	94	-134	111	97	-99	6.6	137	6.9	137	20.8
	2300	110	-112	-98	94	-138	115	99	-101	6.8	142	7.0	142	20.8
	2400	114	-116	-98	94	-142	119	101	-103	7.0	146	7.1	146	20.8
	2500	117	-119	-97	94	-146	122	103	-104	7.2	150	7.2	150	20.8
	2600	121	-123	-97	94	-150	126	104	-106	7.4	154	7.3	154	20.8
	2700	124	-126	-97	93	-154	129	106	-108	7.6	159	7.4	159	20.8
	2800	128	-130	-96	93	-158	133	107	-109	7.8	163	7.5	163	20.9
	2900	131	-133	-96	93	-161	136	109	-110	8.0	167	7.6	167	20.9
	3000	135	-136	-96	93	-165	140	110	-112	8.2	171	7.7	171	20.9
	4000	165	-167	-92	90	-196	170	122	-124	9.9	208	8.4	208	20.9
	4300	173	-176	-90	89	-205	178	125	-127	10.4	218	8.6	218	20.9
-20	1800	40	-41	-40	37	-35	30	47	-47	4.1	84	8.8	84	20.3
	2000	45	-46	-42	39	-40	35	51	-51	4.5	92	9.0	92	20.3
	2500	58	-59	-45	43	-52	46	59	-59	5.4	110	9.3	110	20.3
	2600	60	-62	-45	43	-55	48	60	-60	5.6	114	9.4	114	20.3
	2700	63	-64	-46	44	-57	51	62	-62	5.8	118	9.5	118	20.3
	2800	65	-67	-46	44	-60	53	63	-63	6.0	121	9.5	121	20.3
	2900	68	-69	-47	45	-62	55	64	-65	6.1	125	9.6	125	20.3
	3000	70	-72	-47	45	-65	57	66	-66	6.3	128	9.6	128	20.3
	3100	73	-74	-47	45	-67	60	67	-67	6.5	132	9.7	132	20.3
	3200	75	-77	-48	46	-70	62	69	-69	6.7	135	9.8	135	20.3
	4000	94	-96	-49	48	-89	79	78	-79	8.0	161	10.2	161	20.3
	5000	117	-119	-51	50	-111	100	89	-90	9.5	192	10.7	192	20.2
	6000	138	-140	-51	50	-132	120	99	-99	10.9	220	11.1	220	20.2
	6700	152	-155	-51	50	-147	134	105	-105	11.9	239	11.3	239	20.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 94.

* ALSO APPLICABLE TO : BDU-45/B

BF 11223-R2-B49-3

Figure 2-30. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 3 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) :BSU-86/B FIN ASSEMBLY (LOW DRAG) *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2400	29	-30	-21	20	-20	19	36	-35	4.2	83	11.6	83	20.0
	3000	38	-39	-24	23	-28	27	43	-42	5.1	101	11.8	101	20.0
	3500	46	-48	-25	24	-35	33	48	-48	5.8	116	12.0	116	19.9
	4000	55	-56	-27	26	-43	40	53	-53	6.5	130	12.2	130	19.9
	5000	71	-73	-29	28	-58	54	63	-62	7.9	157	12.5	157	19.8
	6000	87	-89	-31	30	-73	68	71	-71	9.3	183	12.7	183	19.7
	7000	103	-105	-32	31	-88	83	80	-80	10.6	208	13.0	208	19.6
	8000	119	-121	-32	32	-104	97	87	-87	11.9	231	13.2	231	19.5
	9000	134	-137	-33	33	-119	112	95	-95	13.1	254	13.3	254	19.4
	10000	149	-152	-34	33	-134	127	102	-102	14.3	276	13.5	276	19.3
-45	3468	22	-22	-11	10	-14	14	30	-29	4.5	89	14.9	89	19.6
	4000	26	-27	-11	11	-18	18	34	-33	5.2	102	15.0	102	19.5
	6000	45	-46	-14	14	-35	34	48	-48	7.6	147	15.2	147	19.3
	7000	55	-56	-15	15	-45	43	55	-55	8.8	169	15.2	169	19.2
	8000	65	-67	-16	16	-55	52	62	-61	10.0	190	15.3	190	19.0
	9000	75	-77	-17	17	-65	62	68	-68	11.1	210	15.3	210	18.9
	10000	86	-88	-18	17	-76	72	75	-74	12.2	230	15.3	230	18.8
	11000	96	-98	-18	18	-87	83	81	-80	13.4	249	15.3	249	18.6
	12000	107	-109	-19	19	-98	94	87	-87	14.5	268	15.3	268	18.5
	14000	127	-130	-19	19	-121	116	99	-99	16.7	304	15.3	304	18.3
	16000	148	-151	-20	20	-145	139	111	-110	18.9	340	15.3	340	18.0
	18000	168	-172	-20	20	-170	163	122	-122	21.0	374	15.2	374	17.8
	19000	179	-182	-20	20	-182	175	128	-128	22.1	390	15.2	390	17.7
-60	5291	20	-21	-6	6	-17	17	33	-32	5.9	113	17.2	113	19.2
	6000	24	-25	-7	7	-21	21	37	-36	6.6	127	17.2	127	19.1
	7000	30	-31	-7	7	-27	27	43	-42	7.7	146	17.1	146	18.9
	8000	36	-37	-8	8	-34	34	48	-47	8.8	165	17.1	165	18.8
	9000	42	-43	-9	8	-41	41	54	-53	9.9	184	17.0	184	18.6
	10000	49	-50	-9	9	-49	49	60	-59	10.9	202	16.9	202	18.5
	11000	56	-57	-9	9	-57	57	65	-64	12.0	220	16.8	220	18.3
	12000	63	-64	-10	10	-66	65	71	-70	13.0	237	16.8	237	18.2
	13000	70	-71	-10	10	-75	74	76	-75	14.1	254	16.7	254	18.1
	14000	77	-79	-10	10	-84	83	82	-81	15.1	271	16.6	271	17.9
	16000	91	-93	-11	11	-103	102	92	-92	17.2	305	16.5	305	17.7
	18000	106	-108	-11	11	-124	122	103	-102	19.3	337	16.3	337	17.5
	20000	121	-124	-12	11	-145	143	114	-113	21.3	368	16.2	369	17.3

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 94.

* ALSO APPLICABLE TO : BDU-45/B

BF 11223-R2-B49-4

Figure 2-30. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 4 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	400	158	-162	-530	456	-510	267	205	-227	4.2	80	1.8	79	19.1
	600	176	-179	-437	397	-498	295	211	-228	5.1	99	2.3	99	19.3
	1000	201	-204	-342	324	-487	328	215	-229	6.7	131	2.9	130	19.6
	1200	212	-215	-313	299	-485	339	216	-229	7.3	144	3.2	144	19.7
	1400	221	-224	-291	280	-483	348	217	-229	7.9	157	3.5	156	19.8
	1500	225	-228	-281	271	-483	352	218	-229	8.2	162	3.6	162	19.8
	2000	244	-247	-245	238	-483	369	219	-228	9.5	189	4.2	189	20.0
	2500	261	-264	-219	215	-484	382	220	-228	10.6	213	4.7	213	20.1
	2950	274	-277	-202	199	-487	392	221	-229	11.5	233	5.2	233	20.2
-10	1100	67	-69	-95	85	-80	61	77	-79	4.2	78	5.0	78	18.8
	1500	87	-89	-99	92	-106	83	91	-93	5.3	100	5.4	100	19.0
	1600	91	-93	-99	92	-112	88	94	-96	5.5	105	5.5	105	19.0
	1700	96	-98	-99	93	-118	93	96	-99	5.8	110	5.6	110	19.0
	1800	100	-102	-100	94	-123	98	99	-101	6.0	115	5.7	115	19.0
	1900	104	-106	-100	94	-129	103	102	-104	6.3	119	5.8	119	19.1
	2000	108	-110	-100	95	-134	107	104	-106	6.5	124	5.9	124	19.1
	2100	112	-114	-100	95	-139	112	106	-108	6.7	129	6.0	129	19.1
	2200	116	-118	-100	95	-144	116	108	-111	7.0	133	6.1	133	19.1
	2300	120	-122	-100	95	-148	121	110	-113	7.2	138	6.1	137	19.2
	2400	124	-126	-100	96	-153	125	112	-115	7.4	142	6.2	142	19.2
	2500	127	-130	-99	96	-158	129	114	-116	7.6	146	6.3	146	19.2
	2600	131	-133	-99	96	-162	133	116	-118	7.8	150	6.4	150	19.2
	2700	134	-137	-99	96	-166	137	118	-120	8.0	154	6.5	154	19.2
	2800	138	-140	-99	95	-170	141	119	-122	8.2	158	6.5	158	19.2
	2900	141	-144	-99	95	-174	145	121	-123	8.4	163	6.6	162	19.3
	3000	145	-147	-98	95	-178	148	123	-125	8.6	166	6.7	166	19.3
	4000	175	-177	-95	93	-214	182	136	-138	10.5	204	7.4	203	19.4
	5000	201	-204	-92	90	-243	211	147	-149	12.2	237	8.0	237	19.4
	5300	208	-211	-91	89	-252	219	150	-152	12.7	246	8.1	246	19.4
-20	1800	44	-45	-38	35	-33	29	50	-50	4.2	79	7.9	79	18.6
	2500	61	-63	-43	41	-51	45	62	-63	5.6	105	8.3	105	18.7
	2600	64	-65	-43	41	-54	47	64	-64	5.8	108	8.4	108	18.7
	2700	66	-68	-44	42	-56	49	66	-66	6.0	112	8.4	112	18.7
	2800	69	-70	-44	42	-59	51	67	-68	6.2	115	8.5	115	18.7
	2900	71	-73	-45	43	-61	54	69	-69	6.4	119	8.5	119	18.7
	3000	74	-75	-45	43	-64	56	70	-71	6.5	122	8.6	122	18.7
	3100	76	-78	-46	44	-66	58	72	-72	6.7	126	8.6	126	18.7
	3200	79	-80	-46	44	-69	61	73	-74	6.9	129	8.7	129	18.7
	4000	97	-99	-49	47	-89	79	84	-85	8.2	155	9.1	155	18.8
	5000	119	-121	-50	49	-112	100	96	-97	9.8	185	9.5	185	18.8
	6000	139	-142	-51	50	-135	121	106	-107	11.3	213	9.9	213	18.8
	8000	176	-179	-51	51	-177	161	124	-125	14.2	265	10.6	265	18.7
	8500	184	-188	-51	51	-187	171	129	-129	14.8	277	10.7	277	18.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 94.

* ALSO APPLICABLE TO : BDU-45/B

BF 11223-R2-B49-5

Figure 2-30. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 5 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (LOW DRAG) *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2400	31	-32	-19	18	-18	17	37	-36	4.2	78	10.4	78	18.4
	3000	40	-41	-22	21	-26	24	44	-44	5.2	95	10.7	95	18.4
	4000	55	-57	-25	24	-40	37	56	-55	6.7	123	11.0	123	18.4
	5000	71	-73	-28	27	-55	51	66	-66	8.1	149	11.3	149	18.4
	6000	86	-88	-29	29	-70	65	75	-75	9.5	175	11.5	174	18.3
	7000	101	-103	-31	30	-86	79	84	-84	10.9	199	11.8	199	18.3
	8000	116	-118	-32	31	-101	94	92	-92	12.2	222	12.0	222	18.2
	9000	130	-133	-32	32	-116	109	100	-100	13.4	244	12.2	244	18.2
	10000	143	-147	-33	32	-132	123	107	-108	14.7	266	12.3	266	18.1
	12000	166	-171	-34	34	-162	153	122	-122	17.1	307	12.6	307	17.9
	12400	171	-175	-34	34	-168	158	124	-125	17.6	316	12.6	315	17.9
-45	3950	27	-28	-10	10	-16	15	34	-33	5.2	94	13.7	94	18.0
	4000	27	-28	-10	10	-16	16	34	-34	5.3	95	13.7	95	18.0
	6000	45	-46	-13	13	-32	30	49	-49	7.7	138	13.9	138	17.9
	7000	54	-56	-14	14	-41	39	57	-56	8.9	159	14.0	159	17.8
	8000	63	-65	-15	15	-50	48	63	-63	10.1	179	14.1	179	17.8
	9000	73	-75	-16	16	-60	57	70	-70	11.3	199	14.1	199	17.7
	10000	82	-84	-17	16	-70	67	77	-76	12.4	219	14.2	218	17.6
	11000	90	-92	-18	17	-81	77	83	-83	13.5	237	14.2	237	17.5
	12000	98	-101	-18	18	-92	87	89	-89	14.7	256	14.3	256	17.4
	14000	114	-117	-19	19	-114	109	102	-101	16.9	292	14.3	292	17.3
	16000	128	-132	-20	19	-137	131	114	-113	19.1	327	14.3	327	17.1
	18000	142	-146	-20	20	-161	154	125	-125	21.3	361	14.4	361	17.0
	20000	154	-158	-20	20	-185	177	137	-137	23.4	395	14.4	395	16.8
-60	6024	26	-27	-6	6	-18	19	37	-36	6.7	119	15.9	119	17.7
	7000	31	-32	-7	7	-24	24	43	-42	7.8	137	15.9	137	17.6
	8000	37	-38	-7	7	-30	30	49	-48	8.8	155	15.8	155	17.5
	9000	43	-44	-8	8	-37	37	54	-54	9.9	173	15.8	173	17.4
	10000	49	-50	-8	8	-44	44	60	-59	11.0	190	15.8	190	17.3
	11000	54	-55	-9	9	-51	51	66	-65	12.0	208	15.7	208	17.2
	12000	59	-60	-9	9	-59	59	71	-71	13.1	225	15.7	225	17.2
	13000	64	-65	-10	9	-68	67	77	-76	14.2	242	15.7	242	17.1
	14000	69	-70	-10	10	-76	75	82	-82	15.2	258	15.6	258	17.0
	16000	78	-80	-10	10	-94	93	93	-93	17.3	291	15.6	291	16.8
	18000	86	-89	-11	11	-113	111	104	-104	19.4	323	15.5	323	16.7
	20000	94	-97	-11	11	-134	131	115	-114	21.5	355	15.4	355	16.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 94.

* ALSO APPLICABLE TO : BDU-45/B

BF 11223-R2-B49-6

Figure 2-30. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, Low Drag (Sheet 6 of 6)

AV-8B SAFE ESCAPE TABLE
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG) **

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	200	143	200	200	126	200	200	109	200
	5 G LEVEL BREAKAWAY	200	143	200	200	126	200	100*	83	100
	6 G LEVEL BREAKAWAY	200	143	200	200	126	200	100*	83	100
-10	5 G	500	134	211	531*	118	200	575*	107	200
	6 G	500	134	216	524*	115	200	568*	102	200
-20	5 G	1035*	154	300	1139*	142	300	1265*	135	300
	6 G	1025*	153	300	1117*	136	300	1246*	126	300
-30	5 G	1805*	181	500	2005*	173	500	2249*	173	500
	6 G	1788*	179	500	1944*	162	500	2208*	156	500

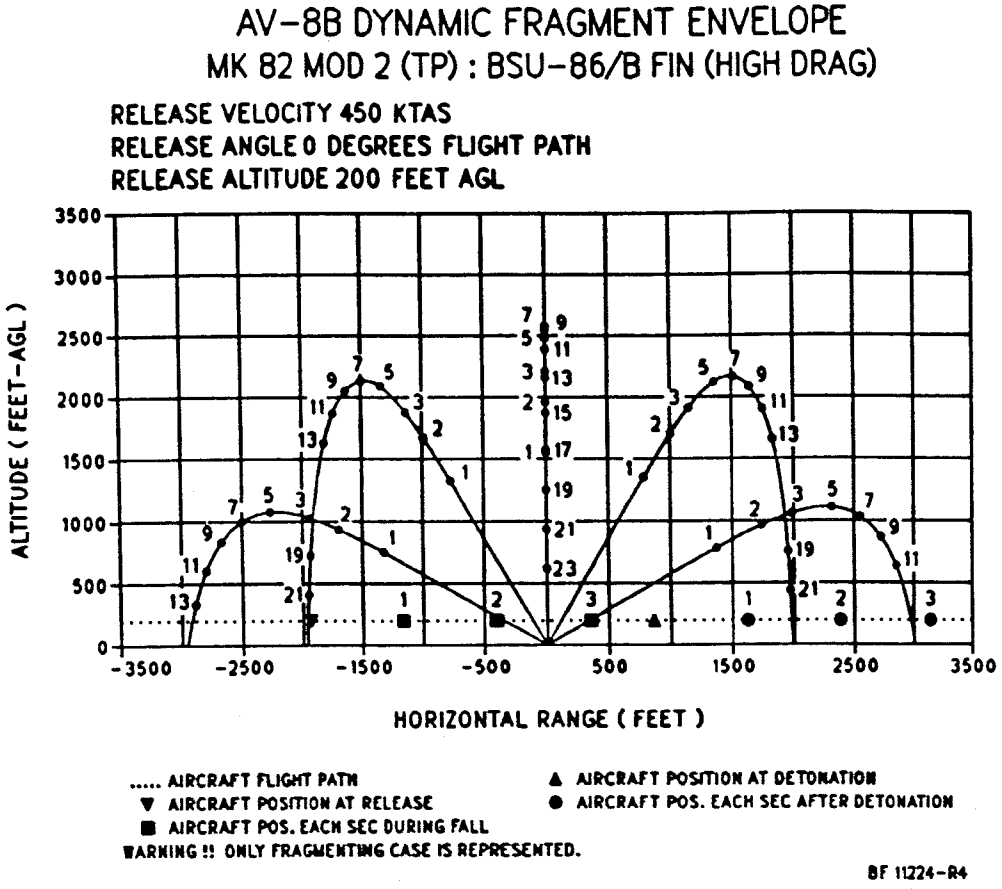
1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

** ALSO APPLICABLE TO : BDU-45/B

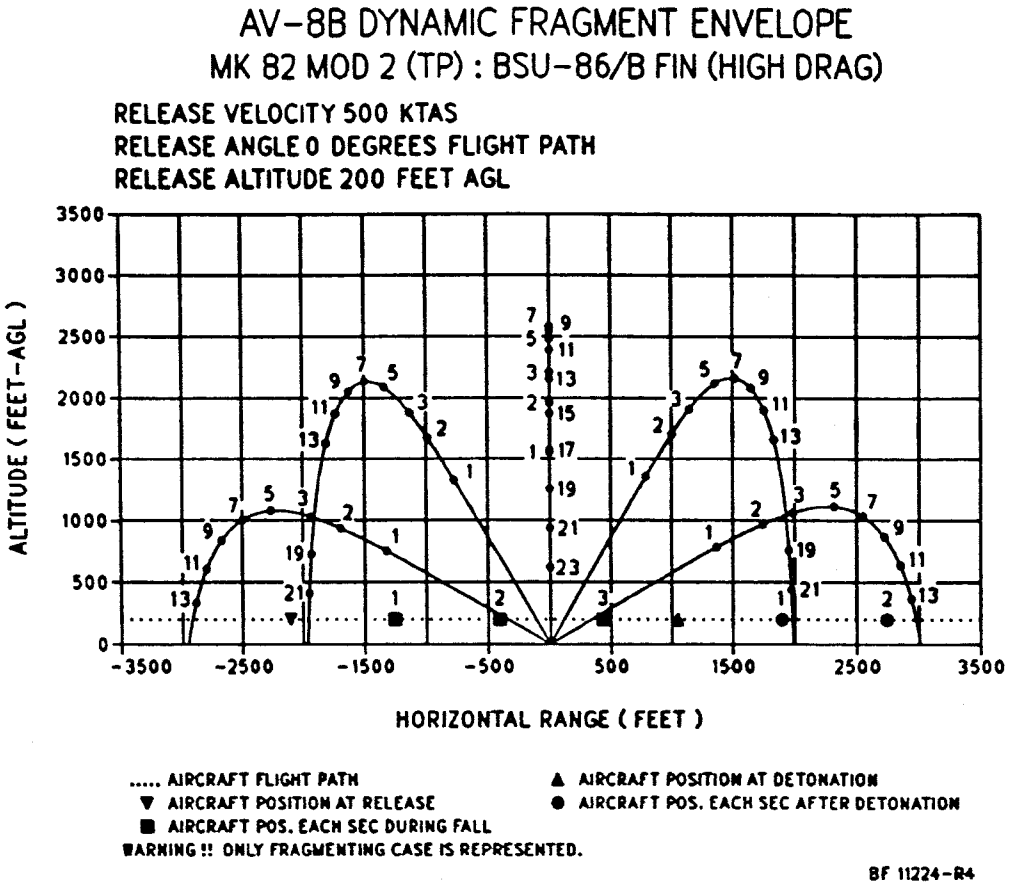
BF 11224-R6-B40-1

Figure 2-31. Safe Escape Table, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag



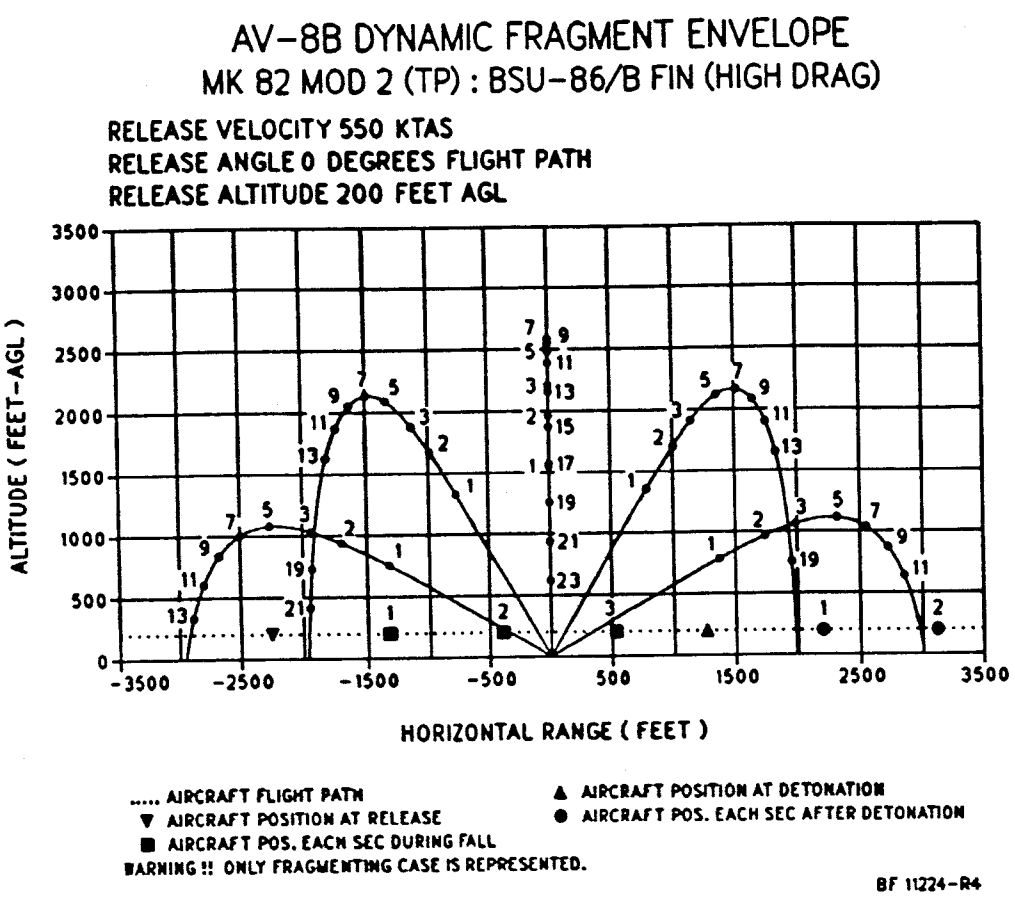
BF 11224-R5-B41-1

Figure 2-32. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 1 of 3)



BF11224-R5-B41-2

Figure 2-32. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 2 of 3)

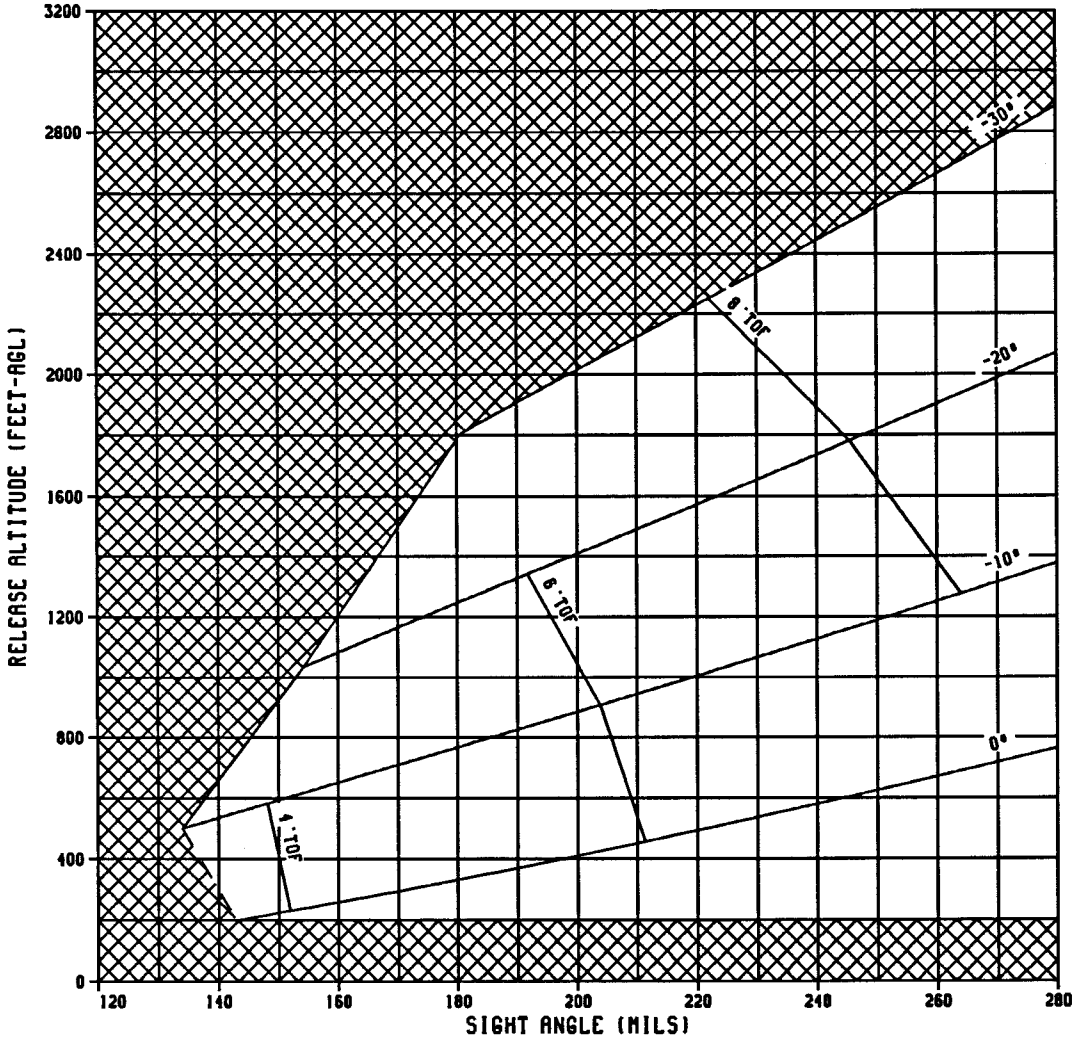


BF 11224-R5-B41-3

Figure 2-32. Dynamic Fragment Envelope, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE
FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 96
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

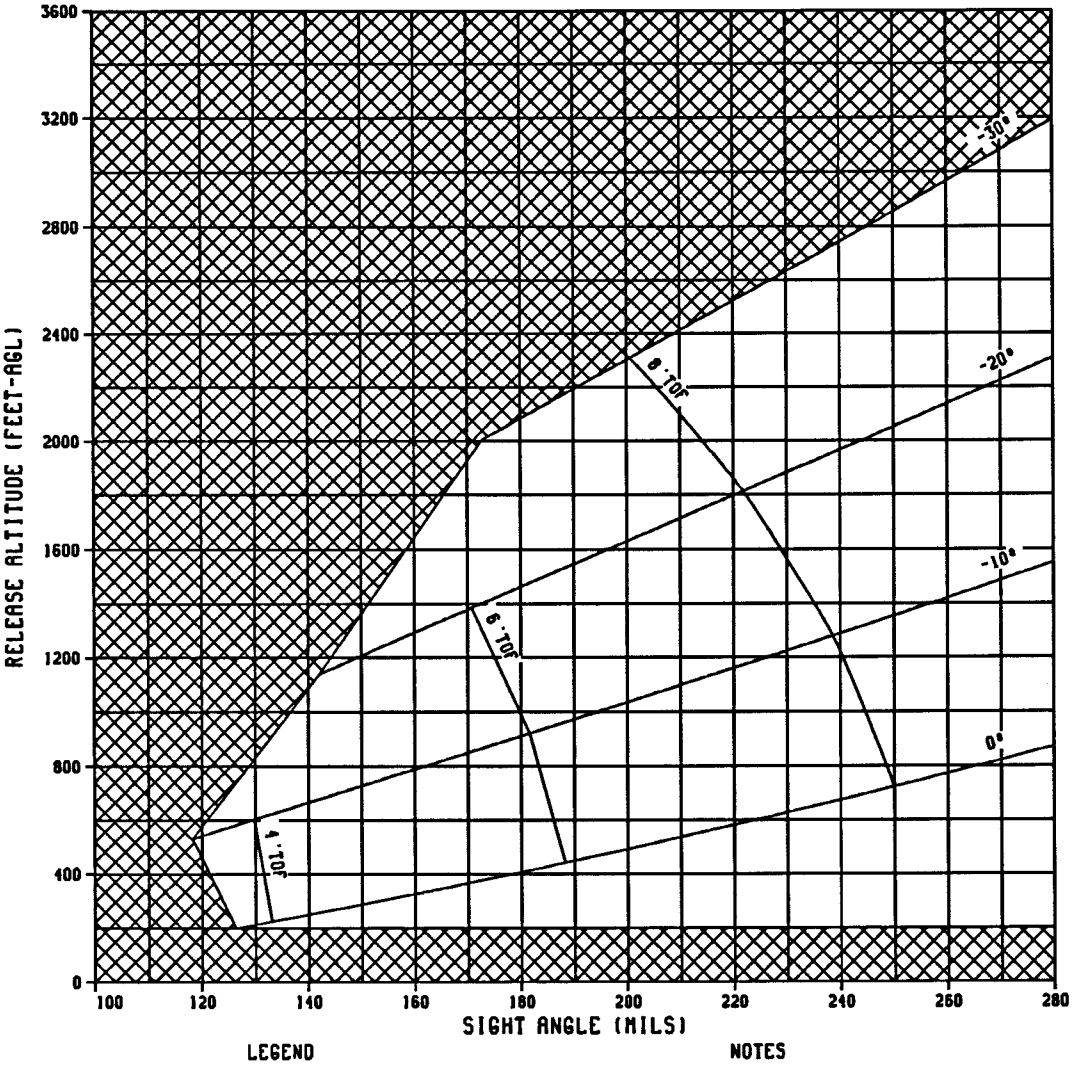
BF 11224-R6-B42-1

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-33. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

——— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 96
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

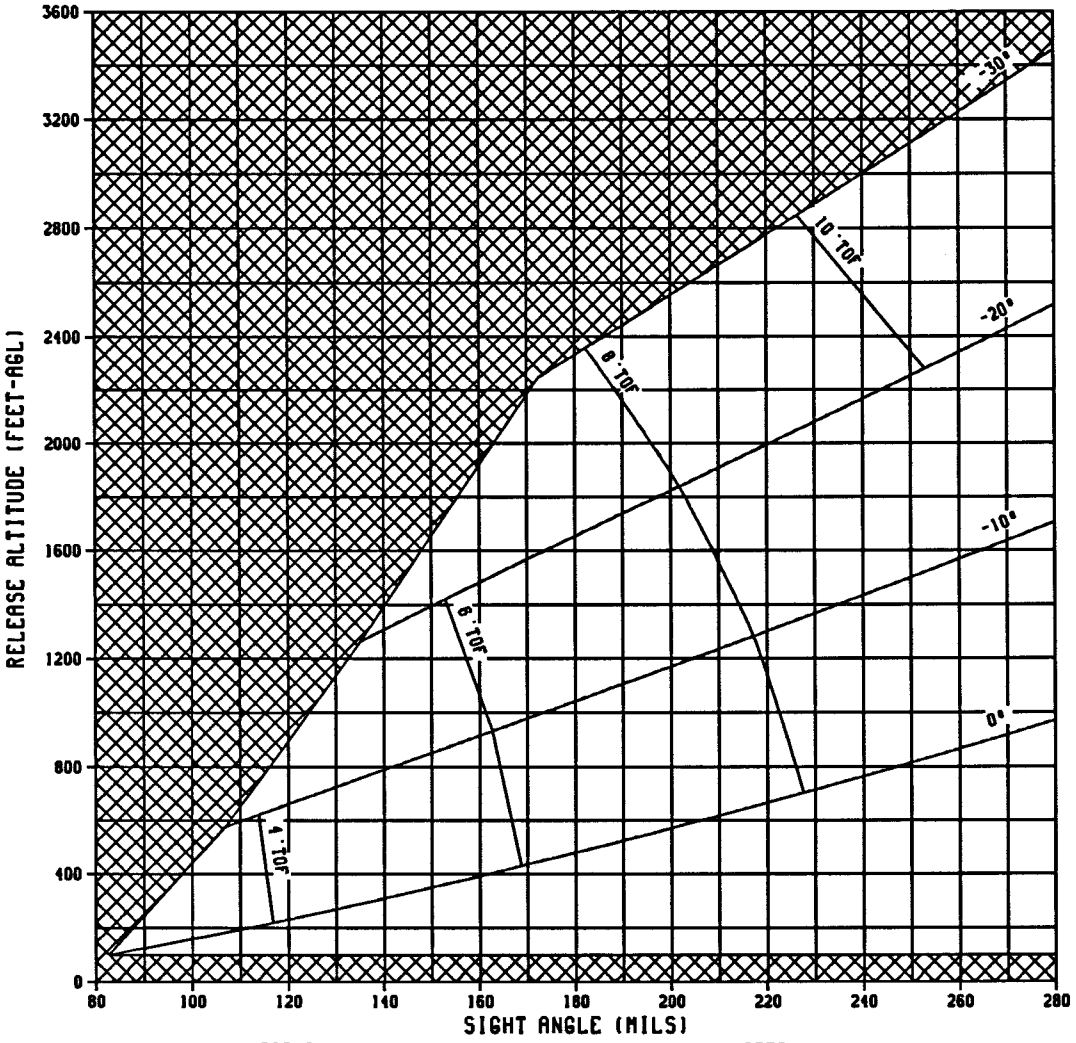
BF 11224-R6-842-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-33. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG)[2]
ALSO APPLICABLE TO : BDU-45/B

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE

⊠ UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 96
EJECTION VELOCITY - 12.7 FT/SEC.
PARENT RELEASE

BF 11224-R6-B42-3

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-33. Sight Angle Chart, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG) *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	200	3.7	1926	1936	143	103	36	3	14.35	382.57
	250	4.2	2105	2119	158	118	36	3	17.01	355.78
	300	4.7	2257	2277	171	132	37	3	19.56	335.63
	350	5.1	2390	2415	185	145	37	3	22.00	319.95
	400	5.6	2508	2539	197	158	37	3	24.34	307.47
	450	5.9	2614	2652	210	170	37	3	26.58	297.38
	500	6.3	2711	2756	222	182	37	2	28.72	289.12
	600	7.0	2882	2943	245	205	37	2	32.76	276.62
	700	7.7	3030	3109	266	227	37	2	36.46	267.92
	780	8.2	3135	3231	283	244	37	2	39.21	262.88
-10	500	3.5	1812	1879	134	95	36	3	22.64	396.43
	600	4.1	2036	2122	151	112	36	3	25.64	364.79
	700	4.8	2232	2339	168	129	36	3	28.67	340.82
	800	5.4	2406	2535	186	147	36	3	31.67	322.45
	900	6.0	2561	2714	203	163	36	2	34.60	308.23
	1000	6.5	2700	2879	219	180	37	2	37.43	297.17
	1100	7.1	2827	3033	236	197	37	2	40.15	288.54
	1200	7.6	2942	3178	252	213	37	2	42.74	281.79
	1300	8.1	3049	3314	268	229	37	2	45.19	276.51
	1400	8.6	3147	3444	283	244	37	2	47.52	272.41
-20	1035	4.5	2061	2306	154	116	35	3	36.19	356.51
	1100	4.9	2148	2414	162	124	35	3	37.51	346.43
	1200	5.3	2275	2572	174	136	35	2	39.55	333.04
	1300	5.8	2393	2723	187	149	35	2	41.58	321.84
	1400	6.3	2503	2868	199	161	35	2	43.59	312.46
	1500	6.7	2606	3007	211	173	36	2	45.56	304.63
	1600	7.2	2703	3141	223	185	36	2	47.48	298.09
	1700	7.6	2794	3270	236	198	36	2	49.33	292.64
	1800	8.1	2879	3396	248	210	36	2	51.13	288.11
	2000	9.0	3036	3635	272	233	36	2	54.51	281.23
	2100	9.4	3108	3751	283	245	36	2	56.10	278.66
-30	1805	6.2	2286	2912	181	145	33	2	50.59	322.53
	1900	6.6	2363	3032	189	154	33	2	51.95	316.05
	2000	7.0	2441	3155	199	163	33	2	53.36	310.09
	2100	7.4	2515	3276	208	172	34	2	54.75	304.91
	2200	7.8	2585	3395	217	181	34	2	56.10	300.42
	2300	8.2	2653	3511	227	191	34	2	57.42	296.53
	2400	8.6	2717	3625	236	200	34	2	58.70	293.17
	2600	9.4	2837	3848	254	218	34	2	61.14	287.78
	2800	10.1	2947	4065	272	236	34	2	63.41	283.79
	2900	10.5	2999	4172	281	245	34	2	64.48	282.22

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 96. BF 11224-R6-B43-1

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-34. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 1 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG) *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	200	3.7	2102	2112	126	95	29	3	13.78	392.07
	300	4.8	2445	2463	154	122	29	2	19.13	337.21
	400	5.7	2701	2730	178	147	29	2	24.07	305.28
	500	6.5	2906	2948	202	170	29	2	28.64	284.85
	600	7.2	3077	3135	224	193	29	2	32.85	271.12
	700	7.9	3225	3300	245	214	29	2	36.71	261.66
	800	8.5	3355	3449	266	234	29	2	40.25	255.10
	900	9.1	3471	3585	285	254	29	2	43.50	250.58
-10	531	3.5	1985	2055	118	87	29	3	22.11	405.01
	600	4.0	2147	2229	129	98	29	3	24.18	378.71
	700	4.6	2356	2458	146	114	29	2	27.26	348.86
	800	5.3	2540	2663	162	131	29	2	30.35	326.27
	900	5.9	2702	2848	178	147	29	2	33.41	309.00
	1000	6.5	2848	3018	194	163	29	2	36.39	295.69
	1100	7.0	2979	3176	210	179	29	2	39.27	285.40
	1200	7.6	3099	3323	226	195	29	2	42.02	277.40
	1300	8.1	3208	3461	242	211	29	2	44.63	271.18
	1400	8.6	3308	3592	257	226	29	2	47.10	266.37
	1600	9.6	3487	3836	287	256	29	2	51.62	259.86
-20	1139	4.8	2293	2560	142	112	28	2	36.61	349.67
	1200	5.1	2374	2660	149	119	28	2	37.88	339.73
	1300	5.6	2499	2817	161	131	28	2	39.98	325.65
	1400	6.1	2616	2967	173	142	28	2	42.08	313.93
	1500	6.5	2724	3110	185	154	28	2	44.16	304.19
	1600	7.0	2825	3247	197	166	28	2	46.19	296.09
	1700	7.5	2920	3379	208	178	28	2	48.18	289.38
	1800	7.9	3009	3506	220	190	28	2	50.10	283.81
	1900	8.4	3093	3630	232	202	28	2	51.95	279.19
	2000	8.8	3171	3749	244	214	28	2	53.73	275.38
	2300	10.2	3382	4090	279	248	29	2	58.61	267.62
-30	2005	6.8	2541	3237	173	144	26	2	51.98	309.40
	2100	7.1	2615	3354	182	153	26	2	53.38	303.24
	2200	7.6	2689	3474	191	162	26	2	54.83	297.61
	2300	8.0	2760	3593	200	171	27	2	56.25	292.75
	2400	8.4	2827	3708	209	180	27	2	57.62	288.57
	2500	8.8	2891	3822	218	189	27	2	58.96	284.96
	2600	9.2	2952	3934	227	198	27	2	60.26	281.86
	2800	10.0	3066	4152	245	216	27	2	62.71	276.93
	3000	10.7	3171	4365	263	234	27	2	64.98	273.33
	3200	11.5	3266	4573	281	252	27	2	67.06	270.76

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 96.

BF 11224-R6-B43-2

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-34. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 2 of 3)

AV-8B DELIVERY DATA
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG) *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	1700	1703	83	59	21	3	7.55	535.79
	200	3.8	2255	2264	112	88	21	2	13.41	398.55
	300	4.9	2605	2623	138	115	21	2	18.89	337.15
	400	5.8	2864	2891	162	139	21	2	23.99	302.35
	500	6.6	3069	3109	185	162	21	2	28.72	280.48
	600	7.3	3240	3295	206	183	21	2	33.07	265.95
	700	8.0	3386	3458	227	204	21	2	37.07	256.06
	800	8.6	3514	3604	247	224	21	2	40.73	249.27
	900	9.2	3628	3738	266	243	21	2	44.07	244.64
	1000	9.8	3731	3863	285	262	21	2	47.13	241.55
-10	575	3.7	2177	2252	107	84	21	2	22.28	402.21
	600	3.9	2238	2317	111	87	21	2	23.04	391.54
	700	4.5	2458	2555	126	103	21	2	26.14	356.11
	800	5.2	2650	2768	142	119	21	2	29.32	329.64
	900	5.8	2819	2959	157	135	21	2	32.49	309.63
	1000	6.4	2969	3133	173	150	21	2	35.60	294.38
	1100	7.0	3104	3293	189	166	21	2	38.61	282.68
	1200	7.6	3226	3442	205	182	21	2	41.50	273.65
	1400	8.6	3439	3713	235	212	21	2	46.84	261.33
	1600	9.7	3619	3957	265	242	21	2	51.59	254.14
	1740	10.3	3730	4116	285	262	21	2	54.56	251.09
-20	1265	5.2	2539	2837	135	113	20	2	37.94	335.13
	1300	5.4	2584	2892	139	117	20	2	38.70	329.61
	1400	5.9	2705	3046	151	128	20	2	40.87	315.73
	1500	6.4	2818	3193	162	140	20	2	43.03	304.25
	1600	6.9	2924	3333	174	152	20	2	45.16	294.76
	1700	7.3	3022	3467	186	163	20	2	47.25	286.92
	1800	7.8	3113	3596	197	175	20	2	49.29	280.44
	2000	8.7	3280	3841	221	199	20	2	53.13	270.72
	2200	9.6	3427	4072	244	222	20	2	56.67	264.21
	2400	10.5	3558	4292	267	244	20	2	59.87	259.94
	2550	11.2	3647	4450	283	261	20	2	62.06	257.80
-30	2249	7.6	2807	3597	173	152	19	2	54.54	292.82
	2300	7.8	2844	3657	177	156	19	2	55.30	290.01
	2400	8.2	2913	3775	186	165	19	2	56.76	285.09
	2500	8.6	2979	3889	195	175	19	2	58.18	280.87
	2600	9.0	3042	4002	204	184	19	2	59.56	277.25
	2800	9.8	3159	4222	222	202	19	2	62.18	271.52
	3000	10.6	3266	4435	240	219	19	2	64.59	267.38
	3200	11.4	3363	4642	258	237	19	2	66.81	264.42
	3400	12.2	3452	4845	275	254	19	2	68.84	262.36
	3500	12.6	3494	4946	283	263	19	2	69.78	261.58

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 96. BF 11224-R6-B43-3

* ALSO APPLICABLE TO : BDU-45/B

Figure 2-34. Delivery Data, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 3 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG) *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	200	72	-79	-634	461	-259	149	89	-97	1.9	62	3.3	62	32.0
	250	73	-80	-559	445	-245	153	86	-93	2.1	71	4.0	71	33.5
	300	75	-81	-504	422	-234	154	83	-89	2.3	79	4.6	79	34.7
	350	76	-81	-461	399	-224	155	81	-85	2.4	87	5.2	87	35.9
	400	76	-82	-426	377	-216	155	78	-82	2.5	94	5.8	94	36.9
	450	77	-82	-397	358	-209	154	76	-80	2.7	101	6.4	100	37.9
	500	77	-82	-373	340	-203	153	74	-77	2.8	107	7.0	107	38.7
	600	78	-83	-334	310	-193	151	71	-73	2.9	119	8.2	119	40.3
	700	79	-83	-304	286	-185	149	68	-70	3.1	130	9.4	130	41.8
	780	79	-83	-284	269	-180	147	66	-67	3.2	139	10.3	138	42.8
-10	500	34	-37	-139	104	-47	36	35	-35	1.9	58	8.3	58	31.0
	600	40	-43	-144	116	-57	45	37	-37	2.1	70	9.3	69	32.7
	700	44	-47	-146	123	-64	52	38	-39	2.3	80	10.3	80	34.3
	800	48	-51	-147	128	-70	58	40	-40	2.5	91	11.3	91	35.7
	900	51	-55	-146	130	-75	63	40	-41	2.7	101	12.3	100	37.0
	1000	54	-57	-144	131	-80	67	41	-41	2.9	110	13.3	110	38.2
	1100	57	-60	-142	131	-83	71	41	-41	3.0	120	14.3	119	39.4
	1200	59	-62	-140	130	-86	74	42	-42	3.2	129	15.3	128	40.4
	1300	61	-64	-137	129	-88	77	42	-42	3.3	137	16.2	137	41.4
	1400	62	-66	-134	127	-91	80	42	-42	3.4	146	17.2	146	42.3
-20	1035	30	-32	-67	57	-29	25	25	-25	2.3	77	14.9	77	33.2
	1100	32	-34	-69	60	-31	28	26	-26	2.4	82	15.5	82	33.9
	1200	35	-37	-72	63	-35	31	27	-27	2.6	90	16.3	90	35.0
	1300	38	-40	-74	66	-39	35	28	-28	2.7	98	17.2	98	35.9
	1400	40	-43	-76	69	-42	38	29	-29	2.9	106	18.0	106	36.9
	1500	43	-45	-78	71	-45	41	30	-29	3.0	114	18.9	114	37.8
	1600	45	-47	-79	73	-48	44	31	-30	3.1	121	19.7	121	38.6
	1700	47	-49	-79	74	-51	46	31	-31	3.3	129	20.5	129	39.4
	1800	49	-51	-80	75	-54	49	32	-31	3.4	137	21.3	136	40.2
	2000	52	-55	-80	76	-59	54	33	-32	3.6	151	22.9	151	41.6
	2100	54	-56	-80	77	-61	56	33	-33	3.8	159	23.7	158	42.2
-30	1805	31	-34	-46	42	-27	25	23	-23	2.9	105	22.4	105	36.1
	1900	33	-35	-47	43	-29	27	24	-23	3.0	112	23.1	112	36.8
	2000	35	-37	-48	45	-31	29	25	-24	3.2	118	23.8	118	37.5
	2100	37	-39	-50	46	-33	31	25	-25	3.3	125	24.5	125	38.1
	2200	38	-41	-51	47	-35	33	26	-25	3.4	132	25.1	132	38.8
	2300	40	-43	-51	48	-37	35	27	-26	3.5	138	25.8	138	39.4
	2400	42	-44	-52	49	-39	37	27	-27	3.6	145	26.5	145	40.0
	2600	44	-47	-53	51	-43	41	28	-28	3.8	158	27.8	158	41.1
	2800	47	-50	-54	52	-47	45	29	-29	4.1	171	29.0	171	42.1
	2900	48	-51	-54	52	-49	46	30	-29	4.2	178	29.6	178	42.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 96.

* ALSO APPLICABLE TO : BDU-45/B

BF 11224-R6-B44-1

Figure 2-35. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 1 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG) *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	200	67	-69	-711	519	-325	178	106	-117	2.1	63	2.8	63	29.9
	300	69	-71	-561	473	-287	184	97	-104	2.5	81	4.0	81	32.7
	400	70	-71	-472	420	-261	183	90	-95	2.7	96	5.1	96	35.0
	500	71	-72	-411	377	-242	179	84	-89	2.9	109	6.3	109	37.0
	600	71	-72	-366	342	-228	176	80	-83	3.1	121	7.4	121	38.6
	700	71	-73	-332	314	-216	172	76	-79	3.3	133	8.5	133	40.2
	800	71	-73	-305	290	-206	168	73	-75	3.4	143	9.6	143	41.5
	900	71	-73	-282	271	-199	165	70	-72	3.6	154	10.7	153	42.8
-10	531	31	-32	-144	108	-54	41	39	-40	2.1	59	7.5	59	28.9
	600	35	-36	-149	118	-62	47	41	-41	2.2	67	8.1	67	30.1
	700	39	-40	-154	128	-71	56	42	-43	2.5	78	9.1	78	31.8
	800	42	-44	-155	134	-78	63	44	-44	2.7	89	10.0	89	33.4
	900	45	-47	-155	138	-84	69	44	-45	2.8	99	11.0	99	34.8
	1000	48	-49	-154	140	-89	74	45	-45	3.0	109	12.0	109	36.1
	1100	50	-52	-152	140	-93	78	45	-45	3.2	119	13.0	119	37.3
	1200	52	-53	-150	139	-96	82	45	-46	3.3	128	13.9	128	38.5
	1300	54	-55	-147	138	-98	85	46	-46	3.5	137	14.9	137	39.6
	1400	55	-57	-144	137	-101	88	46	-46	3.6	146	15.8	146	40.6
	1600	58	-59	-138	132	-104	92	45	-46	3.8	163	17.7	163	42.4
-20	1139	28	-29	-71	61	-34	29	28	-28	2.6	81	14.1	81	31.7
	1200	30	-31	-73	64	-36	32	29	-29	2.7	86	14.6	86	32.4
	1300	32	-33	-76	67	-40	35	30	-30	2.8	94	15.5	94	33.5
	1400	34	-36	-79	71	-44	39	31	-31	3.0	103	16.3	102	34.5
	1500	37	-38	-81	73	-48	42	32	-32	3.1	111	17.2	111	35.5
	1600	39	-40	-82	76	-51	46	33	-32	3.2	119	18.0	118	36.5
	1700	41	-42	-83	77	-54	49	33	-33	3.4	126	18.8	126	37.4
	1800	42	-43	-84	79	-57	52	34	-33	3.5	134	19.6	134	38.2
	1900	44	-45	-85	80	-60	54	34	-34	3.6	142	20.5	142	39.0
	2000	45	-47	-85	80	-63	57	35	-34	3.7	149	21.3	149	39.8
	2300	49	-51	-85	81	-69	64	36	-36	4.1	172	23.6	171	41.9
-30	2005	30	-31	-49	45	-31	29	26	-25	3.2	114	21.9	114	35.3
	2100	31	-32	-51	47	-33	31	27	-26	3.4	121	22.5	121	36.0
	2200	33	-34	-52	48	-36	33	27	-27	3.5	128	23.2	127	36.7
	2300	34	-35	-53	50	-38	35	28	-27	3.6	134	24.0	134	37.4
	2400	36	-37	-54	51	-40	38	28	-28	3.7	141	24.6	141	38.1
	2500	37	-38	-55	52	-42	40	29	-28	3.8	148	25.3	148	38.7
	2600	38	-39	-56	53	-44	42	30	-29	3.9	155	26.0	155	39.3
	2800	40	-42	-57	54	-48	46	31	-30	4.2	168	27.3	168	40.5
	3000	43	-44	-57	55	-52	49	32	-31	4.4	182	28.6	181	41.6
	3200	45	-46	-58	56	-56	53	33	-32	4.6	195	29.8	195	42.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 96.

* ALSO APPLICABLE TO : BDU-45/B

BF 11224-R6-B44-2

Figure 2-35. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 2 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 82 MOD 2 (TP) : BSU-86/B FIN ASSEMBLY (HIGH DRAG) *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	83	-88	-1148	0	-492	171	134	-158	1.7	42	1.4	41	24.3
	200	83	-87	-779	573	-391	207	121	-135	2.3	64	2.5	64	28.3
	300	81	-84	-612	519	-338	211	110	-119	2.6	82	3.6	82	31.3
	400	79	-82	-512	458	-303	208	101	-107	2.9	97	4.7	97	33.6
	500	77	-80	-444	409	-278	203	94	-99	3.1	111	5.7	111	35.6
	600	75	-79	-394	370	-259	197	88	-92	3.3	123	6.8	123	37.4
	700	74	-77	-356	338	-244	192	83	-87	3.5	135	7.9	135	39.0
	800	73	-76	-326	312	-231	187	79	-82	3.6	146	9.0	146	40.4
	900	72	-75	-301	290	-221	182	76	-78	3.7	156	10.1	156	41.7
	1000	72	-75	-280	271	-213	178	73	-75	3.9	166	11.1	166	42.9
-10	575	35	-37	-151	115	-63	46	43	-44	2.3	62	7.1	62	27.7
	600	36	-38	-153	119	-66	49	44	-45	2.3	65	7.3	65	28.1
	700	40	-42	-159	131	-76	59	46	-46	2.6	76	8.2	76	29.9
	800	43	-45	-162	140	-85	67	47	-48	2.8	87	9.1	87	31.6
	900	46	-47	-163	144	-92	74	48	-48	3.0	98	10.1	98	33.1
	1000	48	-50	-162	147	-97	80	48	-49	3.1	108	11.0	108	34.5
	1100	49	-51	-161	148	-101	85	49	-49	3.3	118	12.0	118	35.8
	1200	51	-53	-158	147	-104	89	49	-49	3.4	128	12.9	127	37.0
	1400	53	-55	-152	144	-109	95	49	-49	3.7	146	14.8	146	39.2
	1600	54	-57	-146	140	-112	99	48	-48	4.0	163	16.7	163	41.2
	1740	55	-58	-142	136	-114	102	48	-48	4.1	175	18.0	175	42.4
-20	1265	30	-32	-76	66	-40	35	31	-31	2.8	89	13.9	89	31.2
	1300	31	-33	-77	68	-42	36	32	-31	2.9	91	14.2	91	31.6
	1400	33	-35	-80	72	-46	40	33	-32	3.0	100	15.1	100	32.7
	1500	35	-37	-83	75	-50	44	34	-33	3.2	108	15.9	108	33.8
	1600	37	-38	-85	78	-54	47	34	-34	3.3	116	16.7	116	34.8
	1700	38	-40	-86	80	-57	51	35	-35	3.5	124	17.6	124	35.8
	1800	39	-42	-87	82	-60	54	36	-35	3.6	132	18.4	132	36.7
	2000	42	-44	-89	84	-66	59	37	-36	3.8	148	20.0	148	38.4
	2200	44	-46	-89	85	-71	64	37	-37	4.1	163	21.6	163	40.0
	2400	46	-48	-88	85	-75	69	38	-38	4.3	178	23.2	178	41.4
	2550	47	-49	-88	85	-78	72	39	-38	4.5	189	24.3	189	42.4
-30	2249	31	-32	-54	50	-37	35	29	-28	3.6	128	22.2	127	35.4
	2300	31	-33	-54	51	-39	36	29	-28	3.7	131	22.5	131	35.8
	2400	33	-34	-55	52	-41	38	30	-29	3.8	138	23.3	138	36.5
	2500	34	-35	-56	53	-43	40	30	-29	3.9	145	24.0	145	37.3
	2600	35	-36	-57	54	-45	42	31	-30	4.0	152	24.7	152	37.9
	2800	37	-38	-59	56	-50	46	32	-31	4.2	166	26.0	166	39.2
	3000	38	-40	-59	57	-54	50	33	-32	4.4	179	27.4	179	40.4
	3200	40	-42	-60	58	-57	54	33	-33	4.6	193	28.6	193	41.5
	3400	41	-43	-60	58	-61	57	34	-34	4.8	206	29.9	206	42.5
	3500	42	-44	-60	58	-63	59	35	-34	4.9	213	30.5	213	43.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code 96.

* ALSO APPLICABLE TO : BDU-45/B

BF 11224-R6-B44-3

Figure 2-35. Release Error Sensitivities, Mk 82 Mod 2 (TP), BSU-86/B Fin Assembly, High Drag (Sheet 3 of 3)

2.2 MK 36 AND 40 DESTRUCTORS (DST)

2.2.1 Description. The Mk 36 and 40 DSTs (Figure 2-36) are respectively 500-lbs and 1,000-lbs aircraft-laid mines which can be utilized either as shallow/deep water mines or as land mines. DSTs are basic Mk 82/83 GP bombs with a specially designed arming and firing mechanism installed which responds to a magnetic or magnetic-seismic influence from a target (ship, vehicle, personnel, etc.) to trigger the firing mechanism. Appearance, external configuration, weight, center of gravity, blast/fragmentation effects, and handling and loading are basically identical to the Mk 82/83 GP bombs. For ballistics information, use the Mk 82/83 delivery data corresponding to the high drag fin/tail section used.

NOTE

DSTs are not authorized for AV8 carriage/release at this time.

Mission requirements dictate the particular mine setting codes and specifications for the operational assemblies. Mks/Mods to be assembled are provided in the Mine Setting Sheet Folder issued to the assembly activity. The Mk-36 DST is configured with either a Mk 15 or BSU-86 high drag fin. The Mk 40 DST may be configured with a MAU-91 high drag fin or a Mk 12 tail section (parachute).

A Mk 32 arming device, which resembles a M904 mechanical nose fuze, is installed in the GP bomb nose fuze cavity and provides an out of line explosive firing train until certain conditions have been met. The Mk 42 firing mechanism and Mk 95 battery are installed in the bomb tail fuze cavity and provide target detection and the triggering mechanism for weapon detonation.

The Mk 32 arming device requires a MINIMUM of 175 KIAS release speed, 2.45 seconds of air travel (enabling time), and weapon impact/water inertia entry to complete the alignment of the explosive train. The weapon is NOT completely armed (activated) until the Mk 42 firing mechanism preset arming delay runs down.

NOTE

An inert Mk 30 arming device is authorized in the Mk 36/40 ET DSTs.

The Mk 42 firing mechanism triggers weapon detonation in response to magnetic or magnetic-seismic influences from a movable target (ship, vehicle, personnel, etc.). Influence criteria is preset into the firing mechanism during weapon assembly. Once the mechanism is dedicated for a given mission, it can NOT be changed. Mission requirements and Mk 95 battery Mod dictates the particular Mod of DST to be assembled. The Mk 36 and 40 DSTs are normally configured for high drag delivery.

2.2.2 Delivery Data. See Figures 2-38 through 2-53 for delivery data applicable to appropriate DST configuration.

2.2.3 Limitations. DSTs are not authorized for carriage/release at this time. Authorization is contingent upon successful completion of flight test.

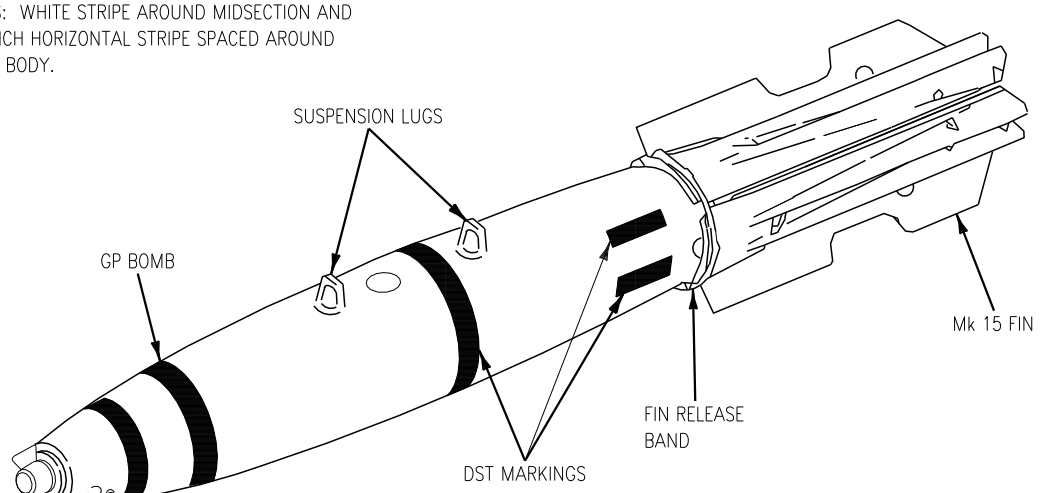
2.2.4 Preflight Checks (All Configurations). Arming wires/cables/lanyards installed.

CHARACTERISTICS

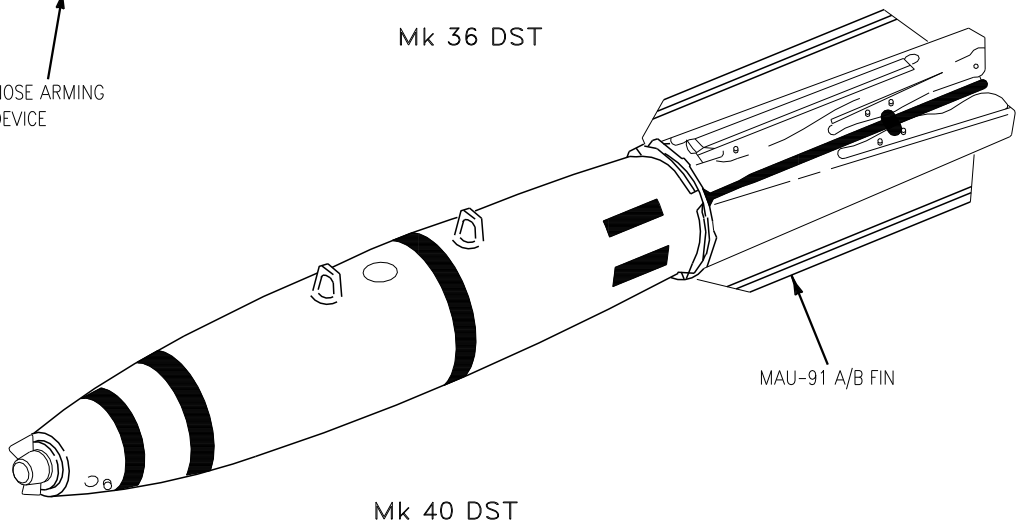
	Mk 36/ Mk 15 FIN	Mk 36/ BSU-86 FIN	Mk 40/ MAU-91 FIN	Mk 40/ Mk 12 TAIL
BOMB BODY	Mk 82	Mk 82	Mk 83	Mk 83
LENGTH (INCHES)	90.0	86.0	113.5	110.4
EXPLOSIVE WEIGHT (LBS)	192.0	192.0	445.0	445.0
DIAMETER (INCHES)	11.0	11.0	14.0	14.0
SUSPENSION (INCHES)	14.0	14.0	14.0	14.0
TOTAL WEIGHT (LBS)				
NON-THERMAL	556.0	562.0	1054.0	1016.0
THERMAL	569.0	575.0	1069.0	1031.0
OPERATIONAL ASSEMBLIES				
SERVICE	48	54	48	51
ET	48k	54K	48K	51K

NOTE

CHARACTERISTICS AND MARKINGS ARE IDENTICAL FOR Mk 62/63 UNDERWATER MINES (QUICKSTRIKE). MARKINGS: WHITE STRIPE AROUND MIDSECTION AND FOUR 6-INCH HORIZONTAL STRIPE SPACED AROUND AFT BOMB BODY.



Mk 36 DST



Mk 40 DST

AV8BB-TAC-05-(41-1)09-CATI

Figure 2-36. Destructor Configurations (Sheet 1 of 2)

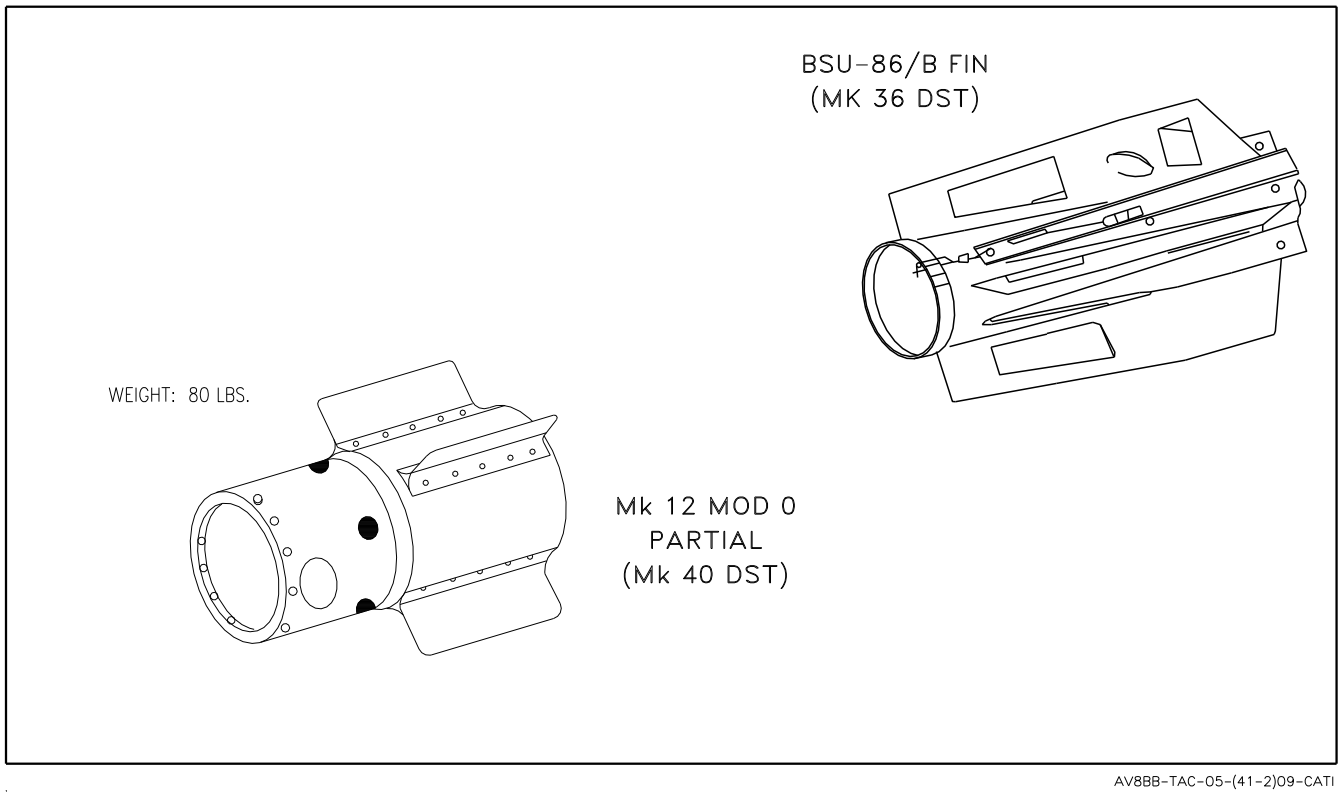


Figure 2-36. Destructor Configurations (Sheet 2 of 2)

2.3 Mk 12 MOD 0 PARATAIL FIN ASSEMBLY.

2.3.1 Description. The Mk 12 Mod 0 tail section (Figure 2-36) is a parachute retardation system used with Mk 83 bomb bodies that allows high speed/low altitude delivery of the Destructor (DST) Mk 40 and the Mk 63 Quickstrike Mine but NOT the GP bomb. The Mk 12 Mod 0 tail section is an 80-pound aluminum-alloy finned cylinder. A cross-type parachute is housed in the aft end of the tail section which produces 36 square feet of drag area when deployed. Parachute deployment is initiated when the Mk 32 explosive actuator functions at approximately 0.3 seconds after weapon release.

2.4 BDU-45/B PRACTICE BOMB.

2.4.1 Description. The BDU-45/B practice bomb (see Figure 2-37) was designed to simulate Mk 80 series GP bombs in low/high drag configurations. It is identical to the Mk 82 GP with the exception of an inert filler and provisions for spotting charges for target impact spotting/fuze functioning indication.

The BDU-45/B contains an internal cable assembly connecting the nose/tail fuze cavities for use of electrical fuzes/VT elements. Spotting is accomplished by the use of an electrical fuze (night time) or electrical fuze and two CXU-4/B spotting charges (daytime). Two spotting charge receptacles, 180É apart, are located on the after bomb body just forward of the fin attachment point.

Detonation of the electrical fuze booster ruptures the spotting charges which create a white cloud and indicate fuze functioning and weapon impact point. The fuze booster produces sufficient flash for nighttime use without installation of the spotting charges.

2.4.2 Fins. Mk 82 GP conical/retard (MAU-93/BSU-33/Mk 15/BSU-86) fins are used for either low/high drag configurations. The Mk 15 fin is actuated by the withdrawal of a fin release wire which is positive rigged to ALWAYS withdraw at weapon release. This DOES NOT allow a pilot option delivery mode (retard/non-retard).

WARNING

See ''External Stores Limitations,'' chapter 5, Specific Notes for current Mk 15 fin restrictions.

When carried on parent stations and high drag is desired, the BSU-86 fin is actuated by the withdrawal of a fin release lanyard which is positive rigged to ALWAYS withdraw at weapon release. Positive rigging or attachment to the tail arming solenoid (pilot option) is authorized only on the ITER.

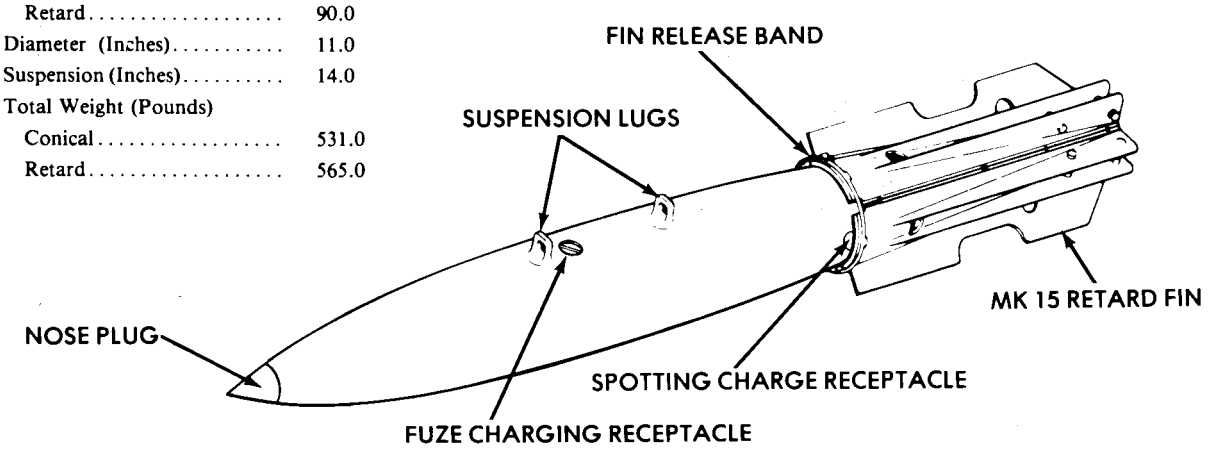
2.4.3 Limitations. Additional information on use and application of electrical fuzes/VT elements is found in ''Weapon Fuzing,'' chapter 3, of this volume. Use Mk 82 release data.

2.4.4 Preflight Checks. Refer to NWP 55-3-AV8B PG, Pocket Guide, for current Preflight checks. See GP Bombs High Drag/Low Drag.

2.4.5 Delivery Data. The BDU-45/B practice bomb delivery data is identical to that for the Mk 82 bomb. Although the BDU-45/B is inert, the same altitude and aircraft spacing restrictions as the Mk 82 MUST be used.

Characteristics

Length (Inches)	
Conical	90.0
Retard	90.0
Diameter (Inches)	11.0
Suspension (Inches)	14.0
Total Weight (Pounds)	
Conical	531.0
Retard	565.0



AV8BB-TAC-05-(20-1)09

Figure 2-37. BDU-45/B Practice Bomb

AV-8B SAFE ESCAPE TABLE
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY **

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	1500	249	1500	1400	214	1400	1300	184	1300
	5 G LEVEL BREAKAWAY	500	162	500	500	142	500	500	124	500
	6 G LEVEL BREAKAWAY	500	162	500	500	142	500	500	124	500
-10	5 G	1400	171	1111	1400	146	1070	1300	119	926
	6 G	1400	171	1116	1300	141	976	1300	119	932
-20	5 G	1900	152	1165	2000	131	1161	2000	109	1036
	6 G	1900	152	1176	1900	128	1083	2000	109	1054
-30	5 G	2500	139	1196	2600	119	1096	2800	103	1052
	6 G	2500	139	1212	2600	119	1157	2700	100	993
-45	5 G	3300	115	973	3500	99	732	3950*	87	700
	6 G	3300	115	999	3400	97	821	3811*	85	700
-60	5 G	4556*	92	1000	5291*	83	1000	6024*	73	1000
	6 G	4416*	90	1000	4864*	80	1000	5615*	70	1000

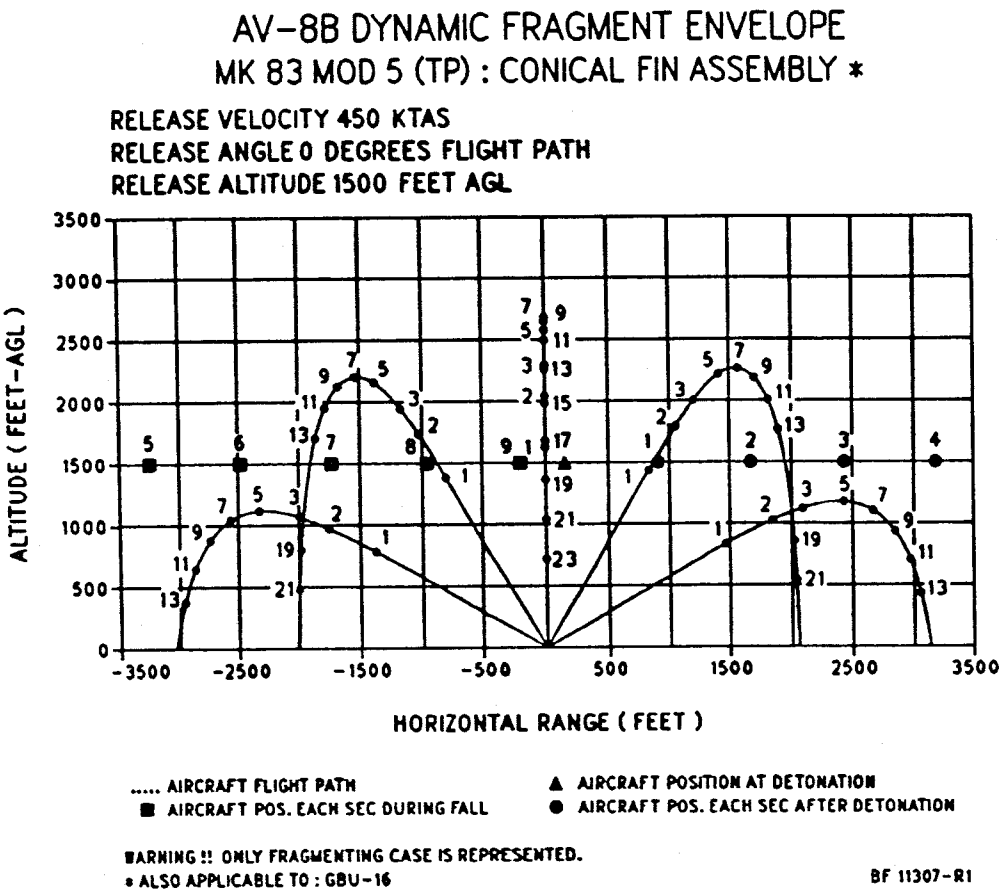
1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

** ALSO APPLICABLE TO : GBU-16

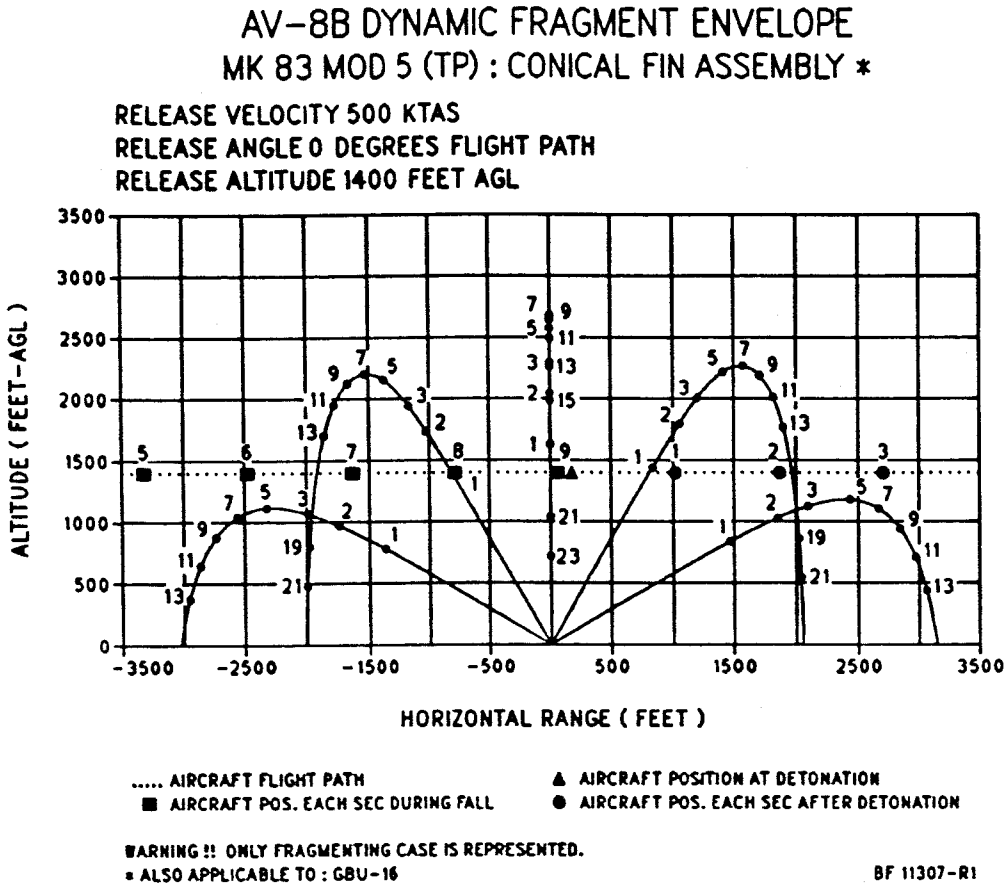
BF 11307-R1-B50-1

Figure 2-38. Safe Escape Table, Mk 83 Mod 5 (TP), Conical Fin Assembly



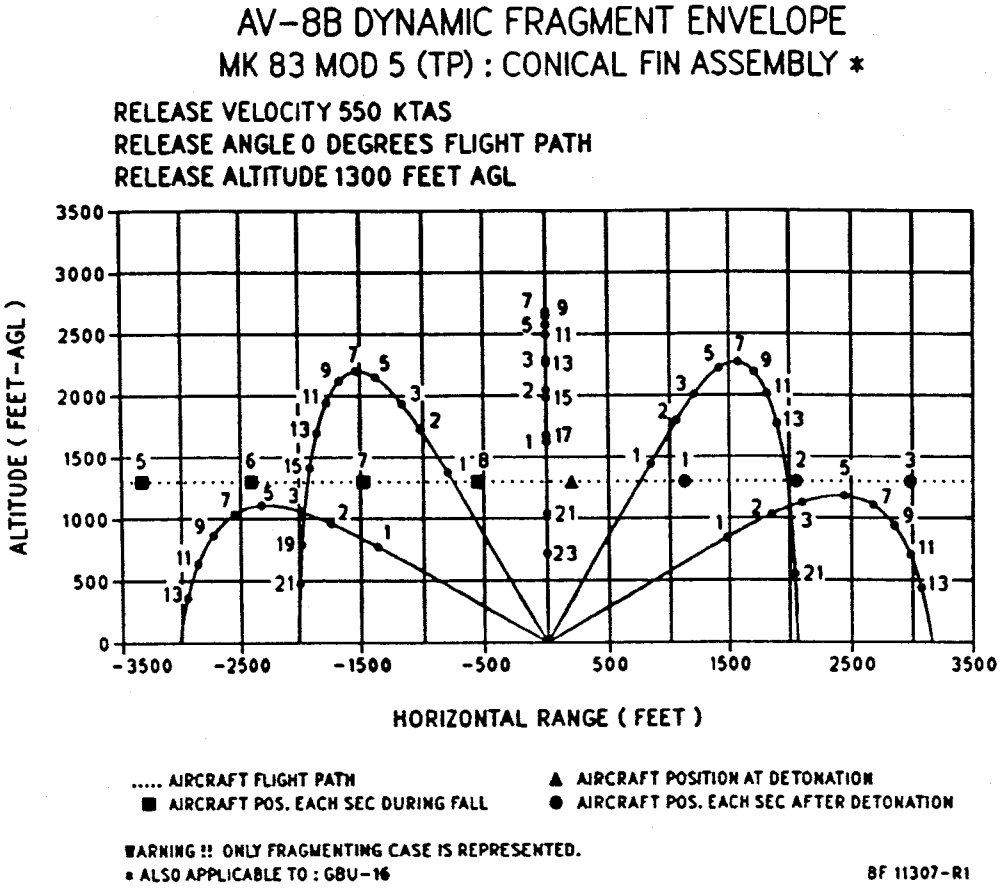
BF 11307-R1-B51-1

Figure 2-39. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 1 of 3)



BF 11307-R1-B51-2

Figure 2-39. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 2 of 3)

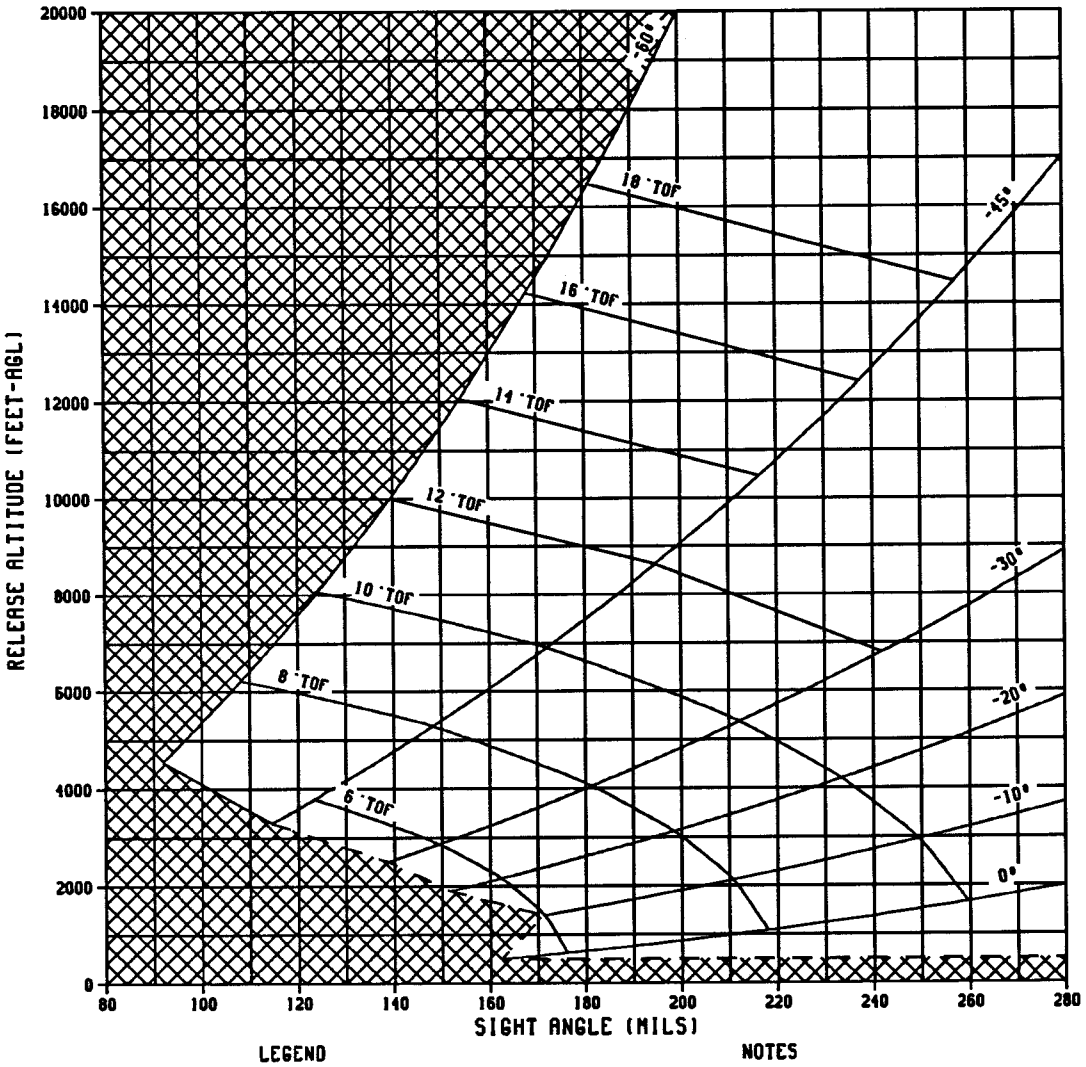


BF 11307-R1-B51-3

Figure 2-39. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY[2]
ALSO APPLICABLE TO : GBU-16

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE
FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 21
EJECTION VELOCITY - 8.4 FT/SEC.
PARENT RELEASE

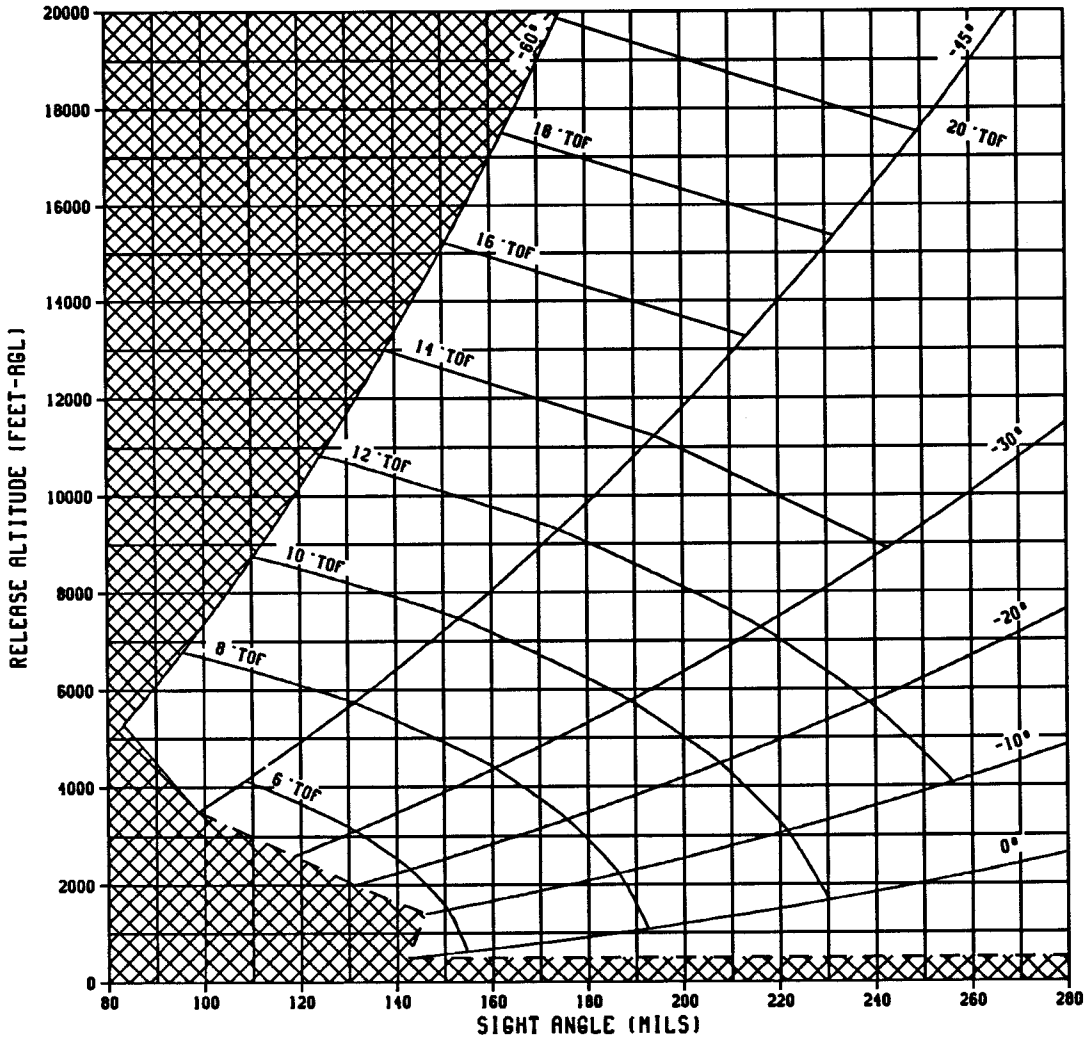
BF 11307-R1-852-1

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-40. Sight Angle Chart, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY[2]
ALSO APPLICABLE TO : GBU-16

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE
---- FRAGMENT AVOIDANCE
⊠ UNSAFE RELEASE

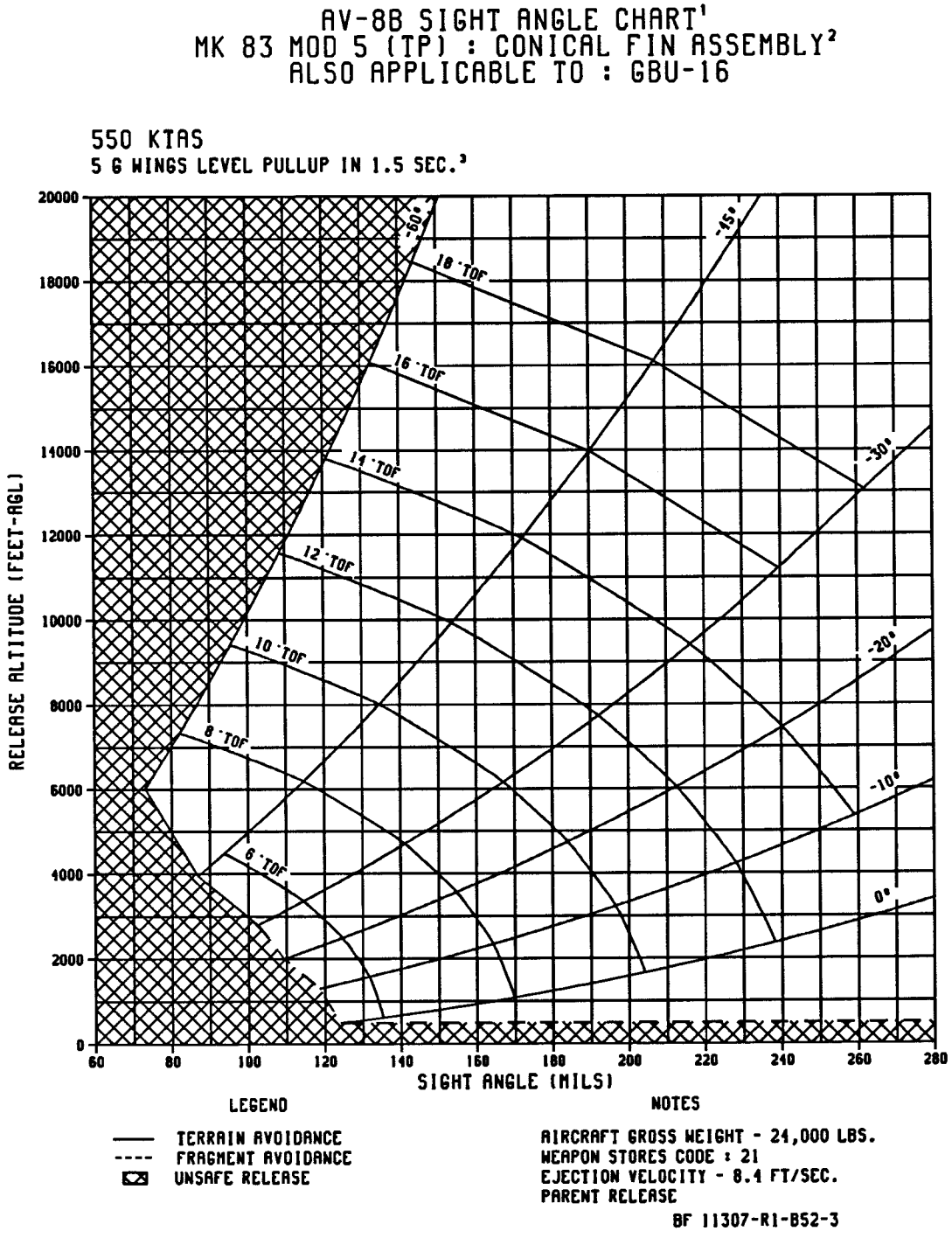
NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 21
EJECTION VELOCITY - 8.4 FT/SEC.
PARENT RELEASE

BF 11307-R1-B52-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-40. Sight Angle Chart, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-40. Sight Angle Chart, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.3	4009	4040	162	124	37	2	13.51	761.73
	600	5.9	4406	4446	174	135	37	1	14.77	764.04
	800	6.8	5109	5171	194	155	37	1	16.97	769.05
	1000	7.7	5728	5814	211	173	37	1	18.89	774.38
	1200	8.4	6285	6399	227	189	37	1	20.58	779.92
	1400	9.1	6798	6940	242	203	38	1	22.12	785.61
	1600	9.8	7273	7447	255	217	38	1	23.53	791.40
	1800	10.4	7720	7927	268	229	38	1	24.82	797.25
	2000	11.0	8141	8383	280	241	38	1	26.03	803.15
-10	1400	6.0	4410	4627	171	133	37	1	24.21	795.55
	1500	6.3	4630	4867	177	139	37	1	24.84	798.44
	1600	6.6	4843	5100	183	145	37	1	25.46	801.35
	1700	6.9	5050	5329	189	150	37	1	26.05	804.26
	1800	7.2	5252	5552	194	156	37	1	26.62	807.18
	1900	7.4	5449	5771	200	161	38	1	27.18	810.11
	2000	7.7	5642	5986	205	166	38	1	27.71	813.05
	2100	8.0	5831	6197	210	171	38	1	28.24	815.98
	2200	8.2	6015	6405	215	176	38	1	28.74	818.92
	2300	8.5	6196	6609	220	181	38	1	29.23	821.87
	2400	8.7	6373	6810	225	186	38	1	29.71	824.81
	2500	9.0	6547	7008	229	190	38	1	30.18	827.75
	2600	9.2	6717	7203	234	195	38	1	30.64	830.69
	2700	9.4	6885	7395	238	199	38	1	31.08	833.63
	2800	9.7	7049	7585	243	204	38	1	31.51	836.57
	2900	9.9	7211	7773	247	208	38	1	31.94	839.50
	3000	10.1	7371	7958	251	212	39	1	32.35	842.43
	3500	11.2	8133	8854	272	232	39	1	34.28	857.02
	3800	11.8	8565	9370	283	243	39	1	35.35	865.72
-20	1900	5.4	3803	4251	152	114	36	1	32.00	816.75
	2500	6.7	4718	5340	176	138	37	1	34.47	834.83
	2600	7.0	4863	5514	180	142	37	1	34.85	837.83
	2700	7.2	5006	5687	183	146	37	1	35.22	840.81
	2800	7.4	5146	5859	187	149	37	1	35.59	843.79
	2900	7.6	5285	6029	191	153	37	1	35.94	846.77
	3000	7.8	5422	6197	194	156	37	1	36.29	849.74
	3100	8.0	5558	6364	198	160	37	1	36.64	852.70
	3200	8.2	5692	6530	201	163	37	1	36.97	855.65
	3500	8.7	6083	7018	211	173	37	1	37.95	864.47
	4000	9.6	6708	7810	227	189	38	1	39.45	879.01
	4500	10.5	7302	8577	242	203	38	1	40.83	893.36
	5000	11.4	7869	9323	256	217	39	1	42.11	907.50
	5500	12.2	8412	10050	270	230	39	1	43.29	921.43
	6000	12.9	8934	10762	283	242	40	1	44.40	935.16

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21.

BF 11307-R1-B53-1

* ALSO APPLICABLE TO : GBU-16

Figure 2-41. Delivery Data, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 1 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2500	5.3	3452	4262	139	103	34	1	40.65	839.55
	3000	6.2	4019	5015	153	118	35	1	42.11	854.82
	3500	7.1	4560	5748	167	131	35	1	43.44	869.84
	4000	7.9	5077	6463	180	144	35	1	44.68	884.61
	4500	8.7	5573	7163	192	156	36	1	45.82	899.13
	5000	9.5	6050	7849	204	167	36	1	46.88	913.42
	6000	10.9	6956	9186	226	188	37	1	48.81	941.27
	7000	12.3	7807	10486	246	207	38	1	50.51	968.21
	8000	13.6	8612	11754	265	225	39	1	52.02	994.23
	9000	14.8	9377	12997	282	241	40	1	53.38	1019.29
-45	3300	5.3	2787	4320	115	84	29	1	53.44	868.82
	3500	5.6	2935	4568	118	88	29	1	53.79	874.96
	4500	7.0	3645	5791	136	105	30	1	55.44	904.93
	6000	8.9	4638	7583	159	127	31	1	57.56	947.78
	7000	10.1	5259	8755	174	141	32	1	58.78	975.06
	8000	11.3	5853	9912	187	154	33	1	59.89	1001.32
	9000	12.4	6422	11056	200	166	33	1	60.90	1026.55
	10000	13.5	6970	12189	211	177	34	1	61.81	1050.64
	11000	14.6	7499	13313	223	187	35	1	62.66	1073.50
	12000	15.6	8009	14427	233	197	36	0	63.43	1095.04
	14000	17.6	8984	16635	253	215	38	0	64.84	1132.07
	16000	19.5	9905	18818	271	231	40	0	66.08	1158.16
	17500	20.9	10563	20441	284	242	41	0	66.94	1174.48
-60	4556	6.1	2233	5074	92	68	23	1	66.59	909.96
	6000	7.8	2839	6638	106	82	24	1	67.87	951.74
	7000	8.9	3237	7712	115	90	24	1	68.65	979.33
	8000	9.9	3622	8782	124	99	25	1	69.36	1005.86
	9000	11.0	3992	9846	132	106	25	1	70.01	1031.30
	10000	12.0	4351	10905	139	113	26	1	70.61	1055.56
	11000	13.0	4698	11961	147	120	26	0	71.16	1078.56
	12000	13.9	5036	13014	154	126	27	0	71.67	1100.18
	13000	14.9	5364	14063	160	132	28	0	72.15	1119.94
	15000	16.7	5994	16153	173	143	29	0	73.02	1150.76
	18000	19.4	6882	19271	190	158	31	0	74.18	1185.33
	20000	21.1	7440	21339	200	167	32	0	74.87	1206.09

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21. BF 11307-R1-B53-2

* ALSO APPLICABLE TO : GBU-16

Figure 2-41. Delivery Data, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 2 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.3	4450	4478	142	112	29	1	12.23	841.47
	600	5.9	4891	4927	153	122	29	1	13.37	842.98
	700	6.4	5295	5341	162	131	29	1	14.42	844.66
	800	6.8	5671	5727	171	140	29	1	15.39	846.48
	1000	7.7	6356	6434	187	156	29	1	17.15	850.44
	1500	9.5	7810	7953	220	190	30	1	20.82	861.47
	2000	11.0	9030	9249	249	218	30	1	23.80	873.42
	2500	12.3	10101	10406	274	243	30	1	26.34	885.83
	2700	12.8	10498	10840	283	252	31	1	27.27	890.88
-10	1400	5.7	4691	4896	146	115	29	1	22.42	871.83
	1500	6.0	4930	5154	151	121	29	1	23.00	874.19
	1600	6.3	5163	5405	157	126	29	1	23.55	876.57
	1700	6.6	5390	5651	162	131	29	1	24.10	878.97
	1800	6.9	5611	5892	167	136	30	1	24.62	881.39
	1900	7.2	5826	6128	171	141	30	1	25.13	883.82
	2000	7.4	6037	6360	176	145	30	1	25.63	886.27
	2100	7.7	6244	6587	181	150	30	1	26.11	888.72
	2200	7.9	6446	6811	185	154	30	1	26.58	891.18
	2300	8.2	6644	7031	190	159	30	1	27.04	893.66
	2400	8.4	6838	7247	194	163	30	1	27.49	896.14
	2500	8.7	7029	7460	198	167	30	1	27.92	898.62
	2600	8.9	7216	7670	202	171	30	1	28.35	901.12
	2700	9.1	7400	7877	206	175	30	1	28.76	903.61
	2800	9.4	7581	8081	210	179	30	1	29.17	906.11
	2900	9.6	7759	8283	214	183	30	1	29.56	908.61
	3000	9.8	7934	8482	218	187	30	1	29.95	911.12
	4000	11.9	9555	10359	254	222	31	1	33.44	936.20
	5000	13.7	10993	12076	285	252	32	1	36.35	961.12
-20	2000	5.3	4134	4593	131	101	28	1	30.72	894.42
	2500	6.4	4946	5542	149	119	29	1	32.56	907.33
	2600	6.6	5101	5726	152	122	29	1	32.91	909.91
	2700	6.8	5255	5908	156	126	29	1	33.25	912.48
	2800	7.0	5407	6089	159	129	29	1	33.58	915.06
	2900	7.2	5556	6268	162	132	29	1	33.91	917.63
	3000	7.4	5704	6445	165	135	29	1	34.23	920.20
	3100	7.5	5851	6621	168	138	29	1	34.55	922.77
	3200	7.7	5995	6796	171	141	29	1	34.86	925.33
	3500	8.3	6419	7311	181	150	29	1	35.76	933.00
	4000	9.2	7096	8146	195	164	30	1	37.17	945.71
	5000	10.9	8358	9739	221	190	30	1	39.69	970.77
	6000	12.4	9519	11252	245	213	31	1	41.88	995.24
	7000	13.9	10601	12704	267	235	32	1	43.82	1019.00

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21. BF 11307-R1-B53-3

* ALSO APPLICABLE TO : GBU-16

Figure 2-41. Delivery Data, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 3 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2600	5.1	3688	4512	119	90	27	1	39.40	915.54
	3000	5.8	4166	5134	129	100	27	1	40.44	926.22
	4000	7.4	5292	6633	152	124	28	1	42.78	952.46
	5000	8.9	6335	8070	174	145	28	1	44.84	978.00
	6000	10.3	7310	9457	193	164	29	1	46.65	1002.76
	7000	11.7	8229	10803	212	181	29	1	48.28	1026.68
	8000	12.9	9100	12117	229	198	30	1	49.75	1049.59
	9000	14.1	9930	13402	244	213	31	1	51.08	1071.40
	10000	15.3	10723	14663	259	227	32	0	52.30	1091.98
	11500	17.0	11855	16516	280	247	33	0	53.96	1119.76
-45	3500	5.2	3014	4619	99	75	23	1	52.55	945.33
	4000	5.8	3391	5244	106	82	23	1	53.31	958.83
	5000	7.1	4118	6477	121	96	23	1	54.72	985.12
	6000	8.3	4809	7689	135	110	24	1	55.99	1010.48
	7000	9.5	5470	8883	148	122	25	1	57.15	1034.82
	8000	10.6	6103	10062	160	134	25	1	58.20	1058.05
	9000	11.7	6713	11228	171	145	26	1	59.17	1080.08
	10000	12.7	7301	12381	182	155	26	1	60.07	1100.75
	11000	13.8	7869	13525	192	164	27	0	60.90	1119.61
	12000	14.8	8419	14659	202	174	27	0	61.68	1135.54
	15000	17.7	9973	18013	229	199	29	0	63.77	1170.44
	18000	20.5	11401	21307	253	221	32	0	65.59	1199.68
	20000	22.2	12295	23477	268	234	33	0	66.67	1218.38
-60	5291	6.4	2616	5902	83	64	18	1	66.30	996.82
	6000	7.2	2923	6674	89	70	18	1	66.86	1015.02
	7000	8.2	3344	7758	97	78	18	1	67.59	1039.76
	8000	9.3	3750	8835	105	85	19	1	68.26	1063.31
	9000	10.2	4143	9908	112	92	19	1	68.88	1085.62
	10000	11.2	4524	10976	119	99	19	1	69.45	1106.46
	11000	12.2	4894	12040	126	105	20	0	69.99	1125.29
	12000	13.1	5254	13100	132	111	20	0	70.50	1140.92
	13000	14.0	5605	14157	138	117	21	0	70.98	1154.07
	15000	15.8	6280	16261	150	127	21	0	71.87	1176.98
	18000	18.4	7232	19398	165	142	23	0	73.07	1207.87
	20000	20.1	7831	21478	175	150	24	0	73.79	1227.47

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21. BF 11307-R1-B53-4

* ALSO APPLICABLE TO : GBU-16

Figure 2-41. Delivery Data, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 4 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.3	4891	4916	124	102	21	1	11.16	917.57
	600	5.9	5374	5408	133	111	21	1	12.22	918.30
	800	6.8	6230	6282	150	128	21	1	14.09	920.39
	1000	7.7	6982	7054	164	142	21	1	15.71	923.06
	1500	9.5	8577	8707	195	173	22	1	19.12	931.24
	2000	11.0	9915	10114	221	199	22	1	21.92	940.70
	3000	13.6	12146	12511	265	242	22	1	26.43	961.44
	3500	14.7	13116	13575	284	261	22	1	28.32	972.26
-10	1300	5.2	4679	4856	119	96	21	1	20.40	944.94
	1500	5.8	5202	5414	128	106	21	1	21.47	948.54
	1600	6.1	5453	5683	133	111	21	1	21.98	950.39
	1700	6.4	5698	5946	138	115	21	1	22.48	952.27
	1800	6.6	5937	6204	142	120	21	1	22.96	954.17
	1900	6.9	6170	6456	146	124	21	1	23.43	956.10
	2000	7.2	6399	6704	151	128	21	1	23.89	958.05
	2100	7.4	6622	6947	155	133	21	1	24.34	960.01
	2200	7.7	6841	7186	159	137	21	1	24.77	962.00
	2300	7.9	7056	7421	163	141	21	1	25.20	964.00
	2400	8.1	7267	7653	167	144	22	1	25.62	966.01
	2500	8.4	7474	7881	171	148	22	1	26.02	968.03
	2600	8.6	7677	8105	174	152	22	1	26.42	970.07
	2700	8.8	7877	8327	178	156	22	1	26.81	972.12
	2800	9.1	8073	8545	182	159	22	1	27.19	974.17
	2900	9.3	8267	8761	185	163	22	1	27.56	976.24
	3000	9.5	8457	8974	189	166	22	1	27.92	978.31
	4000	11.6	10222	10976	221	198	22	1	31.22	999.32
	5000	13.4	11788	12805	250	227	23	1	34.02	1020.42
	6200	15.4	13480	14838	280	257	23	1	36.89	1045.24
-20	2000	5.0	4282	4726	109	88	20	1	29.33	968.65
	2500	6.0	5142	5718	125	103	21	1	30.99	979.36
	2600	6.2	5308	5910	128	106	21	1	31.31	981.51
	2700	6.4	5471	6101	131	109	21	1	31.62	983.67
	2800	6.6	5633	6290	134	112	21	1	31.93	985.82
	2900	6.8	5793	6478	137	115	21	1	32.23	987.98
	3000	7.0	5950	6664	140	118	21	1	32.52	990.13
	3100	7.2	6106	6848	142	121	21	1	32.82	992.29
	3200	7.4	6261	7031	145	123	21	1	33.10	994.45
	4000	8.8	7440	8447	166	144	21	1	35.25	1011.65
	5000	10.4	8796	10117	190	168	22	1	37.62	1032.83
	6000	11.9	10048	11703	212	189	22	1	39.72	1053.39
	7000	13.4	11215	13221	232	209	22	1	41.59	1073.14
	8000	14.7	12314	14684	250	227	23	0	43.29	1091.88
	9000	16.0	13353	16102	268	244	23	0	44.83	1109.26
	10000	17.3	14340	17483	284	260	24	0	46.25	1124.61

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21. BF 11307-R1-B53-5

* ALSO APPLICABLE TO : GBU-16

Figure 2-41. Delivery Data, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 5 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2800	5.1	4040	4916	103	82	19	1	38.62	993.17
	3000	5.4	4289	5234	107	87	19	1	39.08	997.73
	4000	7.0	5474	6780	128	107	19	1	41.21	1020.18
	5000	8.4	6579	8263	147	126	20	1	43.12	1041.94
	6000	9.8	7616	9696	164	144	20	1	44.83	1062.83
	7000	11.1	8597	11086	181	160	21	1	46.38	1082.73
	8000	12.3	9529	12442	196	175	21	1	47.80	1101.43
	9000	13.5	10418	13767	211	189	21	0	49.11	1118.43
	10000	14.7	11269	15066	224	202	22	0	50.32	1132.63
	15000	20.1	15064	21259	285	260	25	0	55.43	1179.40
-45	3950	5.4	3431	5232	87	70	16	1	52.16	1026.87
	5000	6.6	4227	6547	100	84	16	1	53.51	1050.75
	6000	7.8	4951	7779	112	95	16	1	54.69	1072.40
	7000	8.9	5646	8993	124	107	17	1	55.77	1092.86
	8000	10.0	6314	10192	135	117	17	1	56.77	1111.78
	9000	11.0	6959	11377	145	127	17	1	57.71	1128.43
	10000	12.1	7582	12549	155	137	17	0	58.58	1142.03
	11000	13.1	8184	13711	164	146	18	0	59.41	1153.36
	12000	14.1	8768	14862	173	154	18	0	60.20	1163.56
	14000	16.0	9883	17137	190	171	19	0	61.67	1182.60
	16000	17.9	10935	19380	206	186	20	0	63.01	1200.78
	20000	21.5	12883	23790	236	213	22	0	65.32	1236.44
-60	6024	6.7	3003	6731	73	61	11	1	66.04	1078.53
	7000	7.7	3430	7795	80	68	11	1	66.69	1098.98
	8000	8.7	3855	8880	87	75	12	1	67.33	1118.23
	9000	9.6	4267	9960	93	81	12	1	67.92	1134.74
	10000	10.5	4668	11036	99	87	12	0	68.48	1148.43
	11000	11.5	5057	12107	105	93	12	0	69.01	1160.32
	12000	12.4	5437	13174	111	98	12	0	69.52	1171.33
	13000	13.3	5806	14238	117	104	13	0	70.00	1181.79
	14000	14.2	6167	15298	122	109	13	0	70.47	1191.90
	16000	15.9	6861	17409	132	118	13	0	71.33	1211.46
	18000	17.6	7524	19509	142	128	14	0	72.13	1230.50
	20000	19.3	8159	21600	151	136	15	0	72.85	1249.22

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21. BF 11307-R1-B53-6

* ALSO APPLICABLE TO : GBU-16

Figure 2-41. Delivery Data, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 6 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	500	139	-153	-408	364	-357	219	157	-169	4.0	90	2.8	90	22.3
	600	148	-162	-373	340	-355	228	159	-170	4.4	99	3.0	99	22.3
	800	165	-179	-324	302	-353	241	162	-172	5.2	116	3.5	115	22.3
	1000	179	-193	-291	275	-352	251	164	-173	5.8	130	3.8	130	22.3
	1200	192	-206	-266	254	-353	260	166	-174	6.4	143	4.2	142	22.3
	1400	204	-218	-247	237	-354	267	168	-175	6.9	154	4.5	154	22.2
	1600	215	-230	-231	224	-356	274	169	-176	7.4	165	4.8	165	22.2
	1800	225	-240	-219	212	-358	280	171	-177	7.9	176	5.0	176	22.2
	2000	235	-250	-208	202	-360	285	172	-178	8.4	186	5.3	185	22.1
-10	1400	83	-90	-97	90	-92	74	75	-77	4.6	101	6.6	101	21.9
	1500	88	-96	-97	91	-97	78	78	-79	4.9	106	6.7	106	21.8
	1600	92	-101	-97	91	-101	83	80	-82	5.1	111	6.8	111	21.8
	1700	97	-105	-97	91	-106	87	82	-84	5.3	116	6.9	116	21.8
	1800	102	-110	-96	91	-110	91	84	-86	5.6	121	7.1	121	21.7
	1900	106	-115	-96	91	-115	95	86	-88	5.8	125	7.2	125	21.7
	2000	110	-120	-95	91	-119	99	88	-90	6.0	130	7.3	130	21.7
	2100	115	-124	-95	91	-123	102	90	-92	6.2	134	7.3	134	21.7
	2200	119	-129	-95	91	-126	106	92	-94	6.4	139	7.4	139	21.6
	2300	123	-133	-94	90	-130	109	94	-95	6.6	143	7.5	143	21.6
	2400	127	-137	-94	90	-134	113	95	-97	6.8	147	7.6	147	21.6
	2500	131	-141	-93	90	-137	116	97	-99	7.0	151	7.7	151	21.6
	2600	135	-145	-93	89	-141	120	98	-100	7.2	155	7.8	155	21.5
	2700	139	-149	-92	89	-144	123	100	-102	7.4	159	7.9	159	21.5
	2800	143	-153	-92	89	-148	126	101	-103	7.6	163	7.9	163	21.5
	2900	147	-157	-91	88	-151	129	103	-104	7.8	167	8.0	167	21.5
	3000	150	-161	-91	88	-154	132	104	-106	8.0	171	8.1	171	21.4
	3500	168	-180	-88	86	-169	147	111	-112	8.9	189	8.4	189	21.3
	3800	179	-191	-87	85	-178	155	114	-116	9.4	199	8.6	199	21.2
-20	1900	49	-54	-42	39	-38	34	47	-47	4.3	91	9.6	91	21.5
	2500	66	-72	-45	43	-53	47	56	-57	5.3	114	10.0	114	21.3
	2600	69	-75	-45	43	-55	49	58	-58	5.5	117	10.0	117	21.3
	2700	72	-78	-46	44	-57	51	59	-59	5.7	121	10.1	121	21.2
	2800	74	-81	-46	44	-60	54	61	-61	5.9	124	10.1	124	21.2
	2900	77	-84	-46	44	-62	56	62	-62	6.0	128	10.2	128	21.2
	3000	80	-87	-46	45	-64	58	63	-64	6.2	131	10.2	131	21.2
	3100	83	-90	-47	45	-67	60	65	-65	6.4	134	10.3	134	21.1
	3200	85	-92	-47	45	-69	62	66	-66	6.5	138	10.3	138	21.1
	3500	93	-101	-47	46	-76	68	70	-70	7.0	147	10.5	147	21.0
	4000	106	-114	-48	47	-87	78	76	-76	7.8	163	10.7	163	20.8
	4500	119	-128	-48	47	-97	88	81	-81	8.6	178	10.9	178	20.7
	5000	131	-141	-49	47	-108	98	86	-87	9.3	192	11.0	192	20.6
	5500	143	-153	-49	48	-118	108	91	-92	10.1	205	11.2	205	20.4
	6000	155	-166	-49	48	-128	117	96	-96	10.8	218	11.3	218	20.3

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21.

* ALSO APPLICABLE TO : GBU-16

BF 11307-R1-B54-1

Figure 2-42. Release Error Sensitivities, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 1 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2500	35	-39	-23	21	-23	22	36	-36	4.3	90	12.4	90	21.2
	3000	44	-49	-24	23	-30	28	42	-41	5.0	105	12.6	105	21.0
	3500	53	-58	-26	25	-37	35	47	-47	5.7	120	12.7	120	20.8
	4000	62	-68	-27	26	-44	42	52	-52	6.5	134	12.8	134	20.7
	4500	71	-77	-28	27	-51	48	57	-56	7.2	147	12.9	147	20.5
	5000	79	-86	-29	28	-59	55	61	-61	7.8	160	13.0	160	20.3
	6000	97	-105	-30	29	-73	69	70	-70	9.2	184	13.1	184	20.0
	7000	114	-124	-31	30	-88	83	78	-78	10.5	207	13.2	207	19.8
	8000	131	-142	-31	31	-103	97	86	-86	11.8	229	13.3	229	19.5
	9000	148	-159	-31	31	-118	112	93	-93	13.0	250	13.3	250	19.2
-45	3300	23	-26	-11	10	-15	15	28	-27	4.3	90	15.9	90	20.8
	3500	25	-28	-11	11	-16	16	30	-29	4.6	94	15.9	94	20.7
	4500	34	-38	-13	12	-24	24	37	-36	5.8	118	15.8	118	20.3
	6000	50	-55	-15	14	-38	36	48	-47	7.6	150	15.7	150	19.8
	7000	60	-66	-15	15	-47	45	55	-54	8.8	171	15.6	171	19.5
	8000	71	-78	-16	16	-57	55	61	-61	9.9	191	15.5	191	19.2
	9000	81	-89	-17	16	-68	65	68	-67	11.1	210	15.4	210	19.0
	10000	92	-101	-17	17	-78	75	74	-74	12.2	228	15.4	228	18.7
	11000	103	-112	-18	18	-89	86	80	-80	13.3	246	15.3	246	18.5
	12000	114	-124	-18	18	-101	96	86	-86	14.4	263	15.2	263	18.2
	14000	135	-147	-19	19	-124	119	99	-98	16.6	297	15.0	297	17.8
	16000	157	-169	-19	19	-148	142	110	-110	18.8	329	14.8	329	17.5
	17500	172	-186	-20	20	-167	160	119	-119	20.4	352	14.7	352	17.2
-60	4556	18	-20	-6	6	-15	15	28	-27	5.1	103	18.2	103	20.2
	6000	26	-29	-7	7	-23	24	37	-36	6.6	131	17.8	131	19.7
	7000	32	-36	-8	7	-30	30	42	-42	7.7	150	17.6	150	19.4
	8000	38	-42	-8	8	-37	37	48	-47	8.8	168	17.4	168	19.1
	9000	44	-49	-9	8	-45	45	54	-53	9.8	185	17.2	185	18.8
	10000	51	-56	-9	9	-53	53	59	-59	10.9	202	17.0	202	18.6
	11000	57	-63	-9	9	-61	61	65	-64	12.0	219	16.8	219	18.3
	12000	64	-70	-10	10	-70	70	70	-70	13.0	235	16.7	235	18.1
	13000	70	-77	-10	10	-79	79	76	-75	14.1	251	16.5	251	17.9
	15000	83	-91	-10	10	-98	97	87	-86	16.2	282	16.2	282	17.5
	18000	103	-112	-11	11	-129	128	103	-102	19.3	327	15.8	327	16.9
	20000	116	-126	-11	11	-150	149	114	-113	21.3	356	15.6	356	16.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21.

* ALSO APPLICABLE TO : GBU-16

BF 11307-R1-B54-2

Figure 2-42. Release Error Sensitivities, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 2 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	140	-142	-453	404	-452	262	192	-209	4.5	90	2.3	90	20.2
	600	150	-151	-414	377	-448	272	194	-210	4.9	100	2.5	99	20.2
	700	158	-159	-384	354	-445	281	196	-211	5.3	108	2.6	108	20.2
	800	166	-167	-359	335	-442	288	198	-212	5.7	116	2.8	115	20.2
	1000	181	-182	-322	305	-440	300	201	-213	6.4	130	3.1	130	20.1
	1500	212	-213	-265	255	-439	323	205	-215	8.0	160	3.8	160	20.1
	2000	238	-239	-230	224	-442	340	209	-218	9.2	186	4.3	186	20.1
	2500	261	-262	-207	202	-447	354	212	-220	10.4	208	4.8	208	20.0
	2700	270	-271	-199	195	-450	359	213	-221	10.8	217	5.0	217	20.0
-10	1400	76	-78	-97	90	-97	76	84	-86	4.9	97	5.7	97	19.8
	1500	81	-82	-97	91	-103	81	87	-89	5.2	102	5.8	102	19.8
	1600	86	-87	-97	91	-108	86	90	-92	5.4	107	5.8	107	19.8
	1700	90	-92	-97	92	-113	91	92	-94	5.7	112	5.9	112	19.7
	1800	95	-96	-97	92	-118	95	95	-97	5.9	116	6.0	116	19.7
	1900	99	-101	-97	92	-123	99	97	-99	6.1	121	6.1	121	19.7
	2000	104	-105	-97	92	-127	104	100	-102	6.4	125	6.2	125	19.7
	2100	108	-110	-97	92	-132	108	102	-104	6.6	130	6.3	130	19.7
	2200	112	-114	-96	92	-136	112	104	-106	6.8	134	6.3	134	19.6
	2300	116	-118	-96	92	-141	116	106	-108	7.0	138	6.4	138	19.6
	2400	120	-122	-96	92	-145	120	108	-110	7.2	142	6.5	142	19.6
	2500	124	-126	-95	92	-149	123	110	-112	7.5	146	6.6	146	19.6
	2600	128	-130	-95	92	-153	127	112	-114	7.7	150	6.6	150	19.6
	2700	132	-134	-95	92	-157	131	113	-116	7.9	154	6.7	154	19.6
	2800	136	-138	-94	91	-161	134	115	-117	8.1	158	6.8	158	19.5
	2900	140	-142	-94	91	-164	138	117	-119	8.3	162	6.8	162	19.5
	3000	144	-146	-94	91	-168	141	118	-121	8.5	166	6.9	165	19.5
	4000	179	-181	-90	88	-201	172	133	-135	10.4	200	7.5	200	19.3
	5000	211	-213	-87	85	-229	200	144	-146	12.1	231	7.9	231	19.1
-20	2000	46	-47	-40	38	-39	34	52	-52	4.6	90	8.5	90	19.5
	2500	59	-60	-43	41	-52	45	61	-61	5.5	107	8.7	107	19.4
	2600	61	-63	-43	41	-54	48	62	-63	5.7	111	8.8	111	19.4
	2700	64	-65	-44	42	-56	50	64	-64	5.9	114	8.8	114	19.3
	2800	67	-68	-44	42	-59	52	66	-66	6.1	118	8.9	118	19.3
	2900	69	-71	-45	43	-61	54	67	-67	6.3	121	8.9	121	19.3
	3000	72	-73	-45	43	-64	56	69	-69	6.4	124	9.0	124	19.3
	3100	74	-76	-45	43	-66	58	70	-70	6.6	127	9.0	127	19.2
	3200	77	-79	-45	44	-68	60	71	-72	6.8	131	9.1	131	19.2
	3500	85	-86	-46	45	-75	67	76	-76	7.3	140	9.2	140	19.2
	4000	97	-99	-47	46	-87	77	82	-83	8.1	155	9.4	155	19.0
	5000	122	-124	-48	47	-109	98	94	-95	9.7	183	9.7	183	18.8
	6000	146	-148	-49	48	-130	118	105	-105	11.3	210	9.9	210	18.6
	7000	168	-171	-49	48	-150	137	114	-115	12.7	234	10.2	234	18.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code 21.

* ALSO APPLICABLE TO : GBU-16

BF 11307-R1-B54-3

Figure 2-42. Release Error Sensitivities, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 3 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2600	32	-33	-21	20	-22	21	39	-38	4.5	87	11.1	87	19.2
	3000	38	-39	-23	21	-28	26	44	-43	5.1	98	11.2	98	19.1
	4000	55	-56	-25	24	-41	38	55	-54	6.6	125	11.4	125	18.9
	5000	72	-73	-27	26	-55	52	65	-65	8.1	150	11.6	150	18.6
	6000	89	-91	-29	28	-70	65	74	-74	9.5	174	11.7	174	18.4
	7000	106	-108	-30	29	-85	79	83	-83	10.8	197	11.8	197	18.2
	8000	122	-125	-30	30	-99	93	91	-91	12.1	218	11.9	218	18.0
	9000	139	-142	-31	30	-114	107	99	-99	13.4	239	12.0	239	17.8
	10000	156	-159	-32	31	-129	121	107	-107	14.7	258	12.0	258	17.6
	11500	180	-184	-32	32	-151	143	118	-118	16.5	287	12.1	287	17.4
-45	3500	21	-22	-10	10	-14	14	30	-30	4.6	87	14.3	87	18.9
	4000	26	-26	-11	10	-18	17	34	-34	5.2	98	14.3	98	18.8
	5000	35	-36	-12	12	-25	24	42	-41	6.5	120	14.3	120	18.5
	6000	44	-46	-13	13	-33	32	49	-48	7.7	140	14.2	140	18.2
	7000	55	-56	-14	14	-42	41	56	-56	8.9	160	14.2	160	18.0
	8000	65	-66	-15	15	-52	49	63	-63	10.1	179	14.1	179	17.8
	9000	75	-77	-16	15	-61	59	70	-69	11.2	197	14.1	197	17.6
	10000	86	-88	-16	16	-72	68	76	-76	12.4	215	14.0	215	17.4
	11000	97	-99	-17	17	-82	78	83	-82	13.5	233	14.0	233	17.2
	12000	108	-110	-17	17	-93	88	89	-89	14.7	249	13.9	249	17.0
	15000	140	-143	-18	18	-126	120	108	-108	18.0	298	13.8	298	16.6
	18000	172	-176	-19	19	-161	154	126	-126	21.3	345	13.7	345	16.2
	20000	194	-198	-20	20	-185	177	137	-137	23.5	375	13.6	375	16.0
-60	5291	20	-20	-6	6	-16	17	33	-32	5.9	108	16.4	108	18.3
	6000	23	-24	-6	6	-20	20	37	-36	6.7	121	16.3	121	18.2
	7000	29	-30	-7	7	-26	26	43	-42	7.8	139	16.2	139	17.9
	8000	35	-36	-7	7	-32	32	49	-48	8.8	156	16.0	156	17.7
	9000	42	-43	-8	8	-39	39	54	-54	9.9	173	15.9	173	17.5
	10000	48	-49	-8	8	-46	46	60	-59	11.0	189	15.7	189	17.3
	11000	55	-56	-9	9	-54	54	66	-65	12.0	205	15.6	205	17.1
	12000	62	-63	-9	9	-62	61	71	-71	13.1	221	15.5	221	16.9
	13000	69	-71	-9	9	-70	69	77	-76	14.2	237	15.3	237	16.7
	15000	84	-86	-10	10	-87	87	88	-87	16.3	267	15.1	267	16.4
	18000	106	-109	-11	10	-116	114	104	-104	19.4	311	14.9	311	16.0
	20000	122	-124	-11	11	-136	134	115	-115	21.5	339	14.7	339	15.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code 21.

* ALSO APPLICABLE TO : GBU-16

BF 11307-R1-B54-4

Figure 2-42. Release Error Sensitivities, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 4 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	184	-188	-497	444	-562	307	230	-253	4.9	91	1.9	90	18.4
	600	194	-198	-454	414	-554	320	233	-254	5.4	100	2.0	99	18.4
	800	211	-214	-394	368	-544	339	237	-256	6.3	116	2.3	116	18.4
	1000	225	-228	-353	335	-539	354	240	-257	7.1	130	2.6	130	18.4
	1500	256	-259	-290	280	-534	380	246	-259	8.7	160	3.2	160	18.4
	2000	281	-284	-252	245	-534	399	250	-261	10.1	186	3.6	186	18.4
	3000	323	-326	-207	203	-542	428	256	-265	12.5	229	4.4	229	18.3
	3500	342	-344	-192	189	-547	441	258	-267	13.6	248	4.7	248	18.3
-10	1300	81	-82	-96	87	-95	72	89	-91	4.9	88	4.8	88	18.1
	1500	91	-92	-97	90	-107	83	96	-98	5.4	98	5.0	98	18.1
	1600	96	-97	-97	91	-113	88	99	-102	5.7	103	5.1	103	18.1
	1700	101	-102	-97	91	-119	93	102	-105	5.9	107	5.2	107	18.0
	1800	105	-107	-97	92	-124	98	105	-108	6.2	112	5.2	112	18.0
	1900	110	-112	-97	92	-130	103	108	-111	6.5	116	5.3	116	18.0
	2000	114	-116	-97	92	-135	108	111	-113	6.7	121	5.4	121	18.0
	2100	119	-121	-97	93	-140	112	113	-116	6.9	125	5.4	125	18.0
	2200	123	-125	-97	93	-145	116	116	-118	7.2	129	5.5	129	18.0
	2300	128	-130	-97	93	-150	121	118	-121	7.4	133	5.6	133	18.0
	2400	132	-134	-97	93	-155	125	120	-123	7.7	138	5.6	137	18.0
	2500	136	-138	-97	93	-159	129	122	-125	7.9	142	5.7	141	18.0
	2600	140	-142	-96	93	-164	133	125	-127	8.1	145	5.8	145	17.9
	2700	144	-146	-96	93	-168	137	127	-129	8.3	149	5.8	149	17.9
	2800	148	-150	-96	93	-172	141	129	-131	8.5	153	5.9	153	17.9
	2900	152	-154	-96	93	-176	145	130	-133	8.8	157	5.9	157	17.9
	3000	156	-158	-95	92	-181	149	132	-135	9.0	161	6.0	161	17.9
	4000	191	-194	-92	90	-217	183	149	-152	11.0	195	6.5	195	17.8
	5000	223	-226	-89	88	-249	213	162	-165	12.8	226	6.9	226	17.6
	6200	257	-261	-86	85	-282	246	176	-178	14.8	260	7.3	260	17.5
-20	2000	49	-51	-38	35	-37	32	55	-55	4.7	84	7.6	84	17.8
	2500	63	-64	-41	39	-50	43	65	-65	5.7	102	7.8	102	17.8
	2600	65	-67	-41	39	-52	46	67	-67	5.9	105	7.8	105	17.7
	2700	68	-69	-42	40	-55	48	68	-69	6.1	108	7.8	108	17.7
	2800	70	-72	-42	40	-57	50	70	-70	6.3	111	7.9	111	17.7
	2900	73	-75	-42	41	-60	52	72	-72	6.5	115	7.9	115	17.7
	3000	76	-77	-43	41	-62	54	73	-74	6.7	118	8.0	118	17.7
	3100	78	-80	-43	41	-65	56	75	-75	6.8	121	8.0	121	17.7
	3200	81	-82	-44	42	-67	59	76	-77	7.0	124	8.0	124	17.6
	4000	101	-103	-46	44	-86	76	88	-89	8.4	148	8.3	148	17.5
	5000	124	-127	-47	46	-109	97	101	-102	10.1	176	8.6	176	17.4
	6000	147	-150	-48	47	-131	117	113	-114	11.7	202	8.8	201	17.2
	7000	169	-172	-49	48	-152	137	124	-125	13.2	226	9.0	226	17.1
	8000	189	-193	-49	48	-173	157	134	-135	14.7	249	9.2	249	16.9
	9000	209	-213	-49	48	-193	175	143	-144	16.1	271	9.4	271	16.8
	10000	228	-232	-49	48	-212	194	152	-153	17.5	292	9.5	292	16.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21.

* ALSO APPLICABLE TO : GBU-16

BF 11307-R1-B54-5

Figure 2-42. Release Error Sensitivities, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 5 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : CONICAL FIN ASSEMBLY *

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2800	37	-38	-20	19	-23	21	43	-42	4.9	87	10.0	87	17.6
	3000	40	-41	-21	20	-25	24	45	-45	5.2	92	10.1	92	17.6
	4000	56	-57	-23	23	-38	36	57	-57	6.8	118	10.3	118	17.4
	5000	72	-74	-26	25	-52	48	68	-68	8.3	142	10.4	142	17.2
	6000	88	-90	-27	27	-67	62	78	-78	9.7	165	10.5	165	17.0
	7000	104	-106	-28	28	-81	75	87	-87	11.1	187	10.7	187	16.9
	8000	120	-122	-29	29	-96	89	96	-96	12.4	208	10.8	208	16.7
	9000	135	-138	-30	29	-110	103	105	-105	13.8	228	10.8	228	16.6
	10000	150	-153	-31	30	-125	117	113	-113	15.1	248	10.9	248	16.4
	15000	209	-214	-33	33	-199	188	150	-150	21.3	339	11.2	339	15.9
-45	3950	27	-27	-9	9	-15	15	35	-34	5.2	90	13.0	90	17.3
	5000	36	-37	-11	11	-22	22	43	-42	6.5	112	13.0	112	17.1
	6000	45	-46	-12	12	-30	29	50	-50	7.8	131	13.0	131	16.9
	7000	54	-55	-13	13	-38	36	58	-57	9.0	150	13.0	150	16.7
	8000	64	-65	-14	14	-47	45	65	-64	10.2	169	13.0	169	16.5
	9000	73	-75	-15	14	-56	53	72	-71	11.4	186	13.0	186	16.4
	10000	82	-85	-15	15	-66	62	78	-78	12.5	204	12.9	204	16.2
	11000	91	-93	-16	16	-75	72	85	-85	13.7	221	12.9	221	16.1
	12000	99	-102	-17	16	-85	81	92	-91	14.9	238	12.9	238	16.0
	14000	115	-118	-18	17	-106	101	105	-104	17.1	270	12.9	270	15.8
	16000	130	-134	-18	18	-128	122	117	-117	19.4	302	12.9	302	15.6
	20000	159	-164	-19	19	-174	166	141	-141	23.8	363	12.8	363	15.2
-60	6024	26	-26	-6	5	-17	18	38	-37	6.7	113	15.0	113	16.8
	7000	31	-32	-6	6	-22	23	43	-43	7.8	130	14.9	130	16.6
	8000	37	-37	-7	6	-28	28	49	-48	8.9	146	14.8	146	16.4
	9000	42	-43	-7	7	-34	34	55	-54	10.0	162	14.7	162	16.3
	10000	48	-49	-8	7	-41	41	61	-60	11.0	178	14.6	178	16.1
	11000	53	-54	-8	8	-48	47	66	-66	12.1	194	14.5	194	16.0
	12000	58	-60	-8	8	-55	55	72	-71	13.2	209	14.5	209	15.9
	13000	63	-65	-9	9	-63	62	78	-77	14.2	224	14.4	224	15.8
	14000	68	-70	-9	9	-71	70	83	-83	15.3	239	14.3	239	15.6
	16000	78	-80	-10	9	-87	86	95	-94	17.4	269	14.2	269	15.4
	18000	87	-89	-10	10	-105	103	106	-105	19.5	297	14.1	297	15.2
	20000	96	-98	-10	10	-124	122	116	-116	21.6	325	14.0	325	15.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 21.

* ALSO APPLICABLE TO : GBU-16

BF 11307-R1-B54-6

Figure 2-42. Release Error Sensitivities, Mk 83 Mod 5 (TP), Conical Fin Assembly (Sheet 6 of 6)

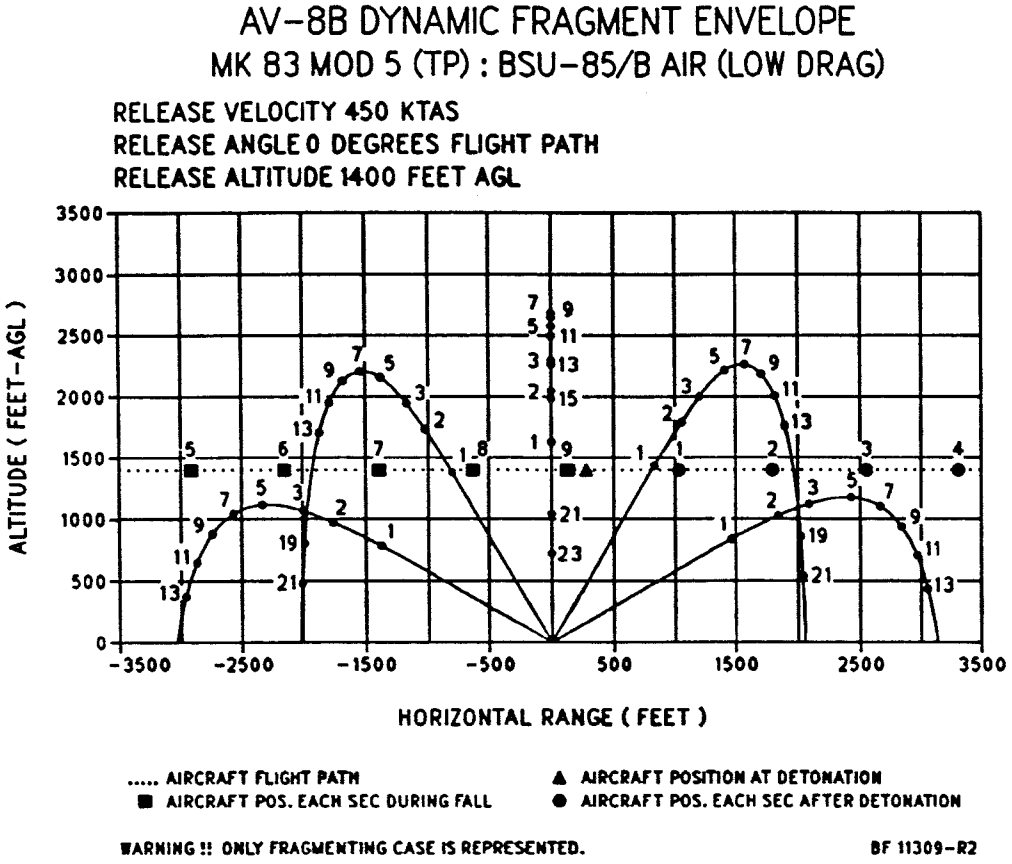
AV-8B SAFE ESCAPE TABLE
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	1400	244	1400	1200	203	1200	1200	180	1200
	5 G LEVEL BREAKAWAY	500	163	500	500	143	500	500	125	500
	6 G LEVEL BREAKAWAY	500	163	500	500	143	500	500	125	500
-10	5 G	1400	173	1111	1300	142	970	1300	120	926
	6 G	1300	166	1016	1300	142	976	1300	120	932
-20	5 G	1900	153	1165	1900	129	1061	2000	111	1036
	6 G	1900	153	1176	1900	129	1083	2000	111	1054
-30	5 G	2500	140	1196	2600	120	1096	2700	102	952
	6 G	2500	140	1212	2500	117	1057	2700	102	993
-45	5 G	3300	116	973	3500	100	732	3950*	88	700
	6 G	3200	114	899	3400	98	821	3811*	86	700
-60	5 G	4556*	93	1000	5291*	84	1000	6024*	74	1000
	6 G	4416*	91	1000	4864*	80	1000	5615*	71	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.
* Terrain avoidance

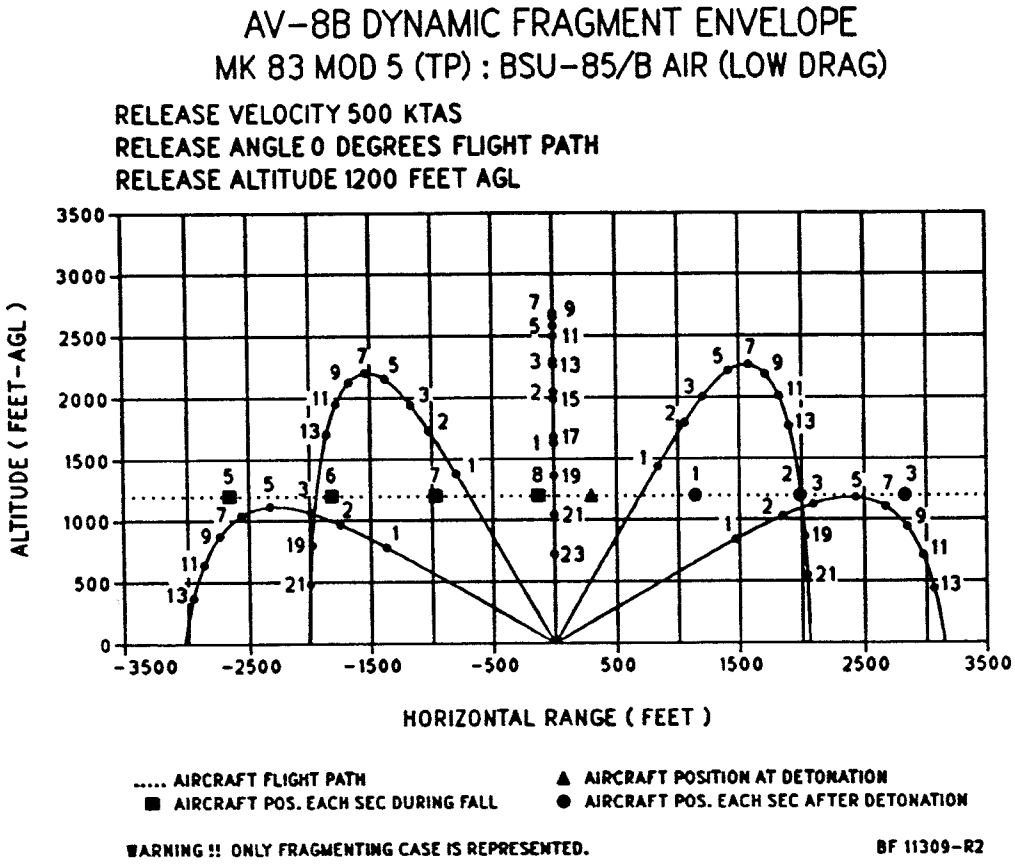
BF 11309-R2-B60-1

Figure 2-43. Safe Escape Table, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag



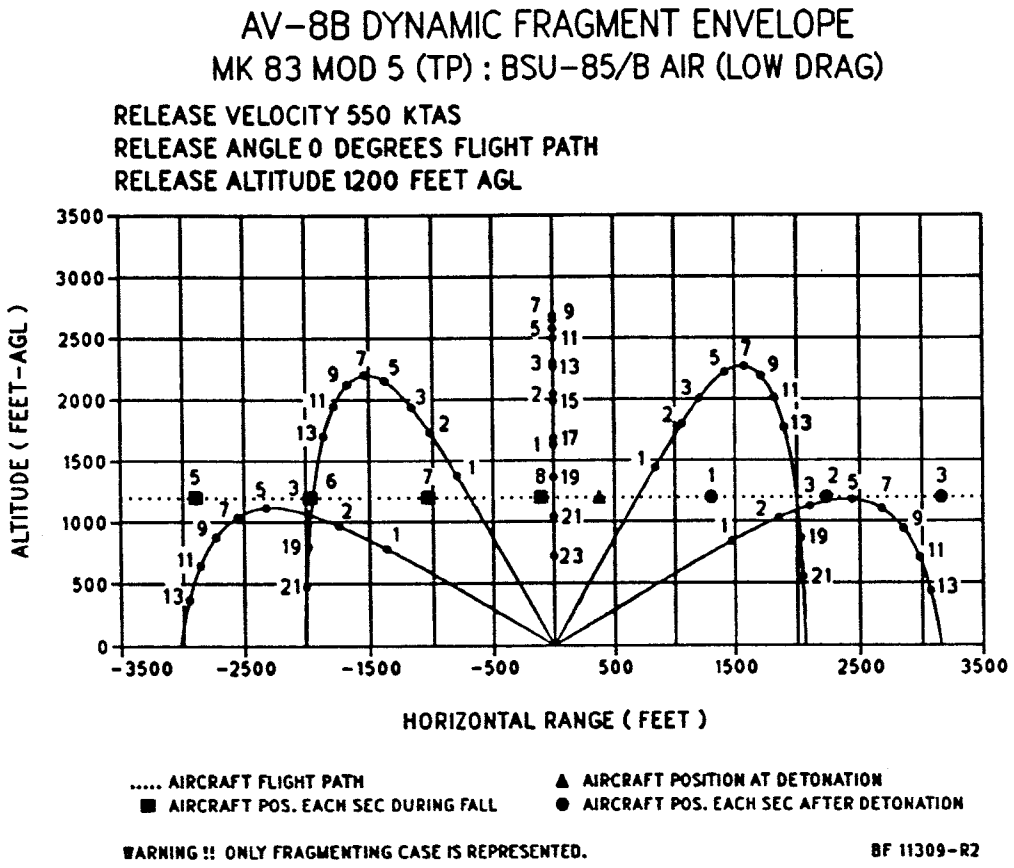
BF 11309-R2-B61-1

Figure 2-44. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 1 of 3)



BF 11309-R2-B61-2

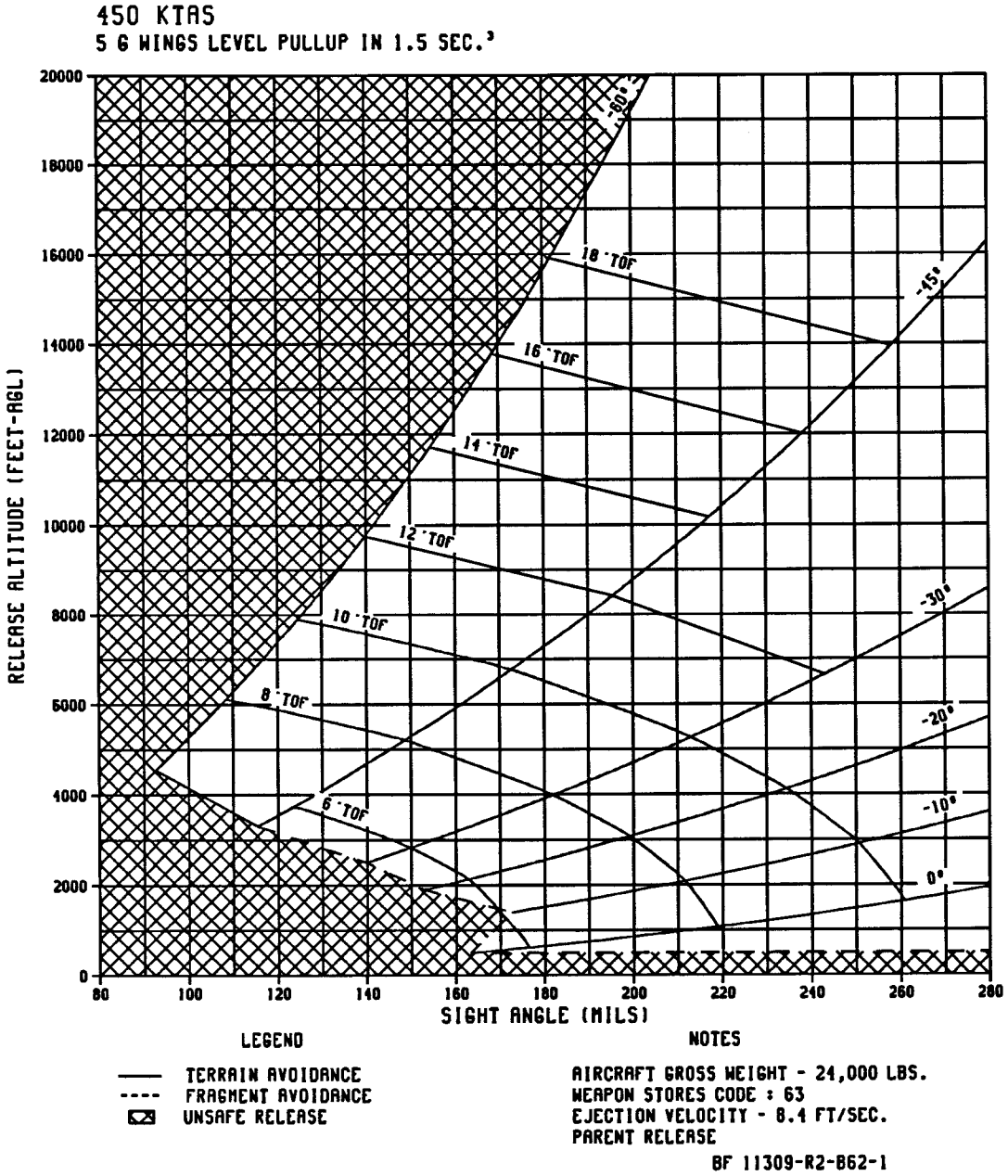
Figure 2-44. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 2 of 3)



BF 11309-R2-B61-3

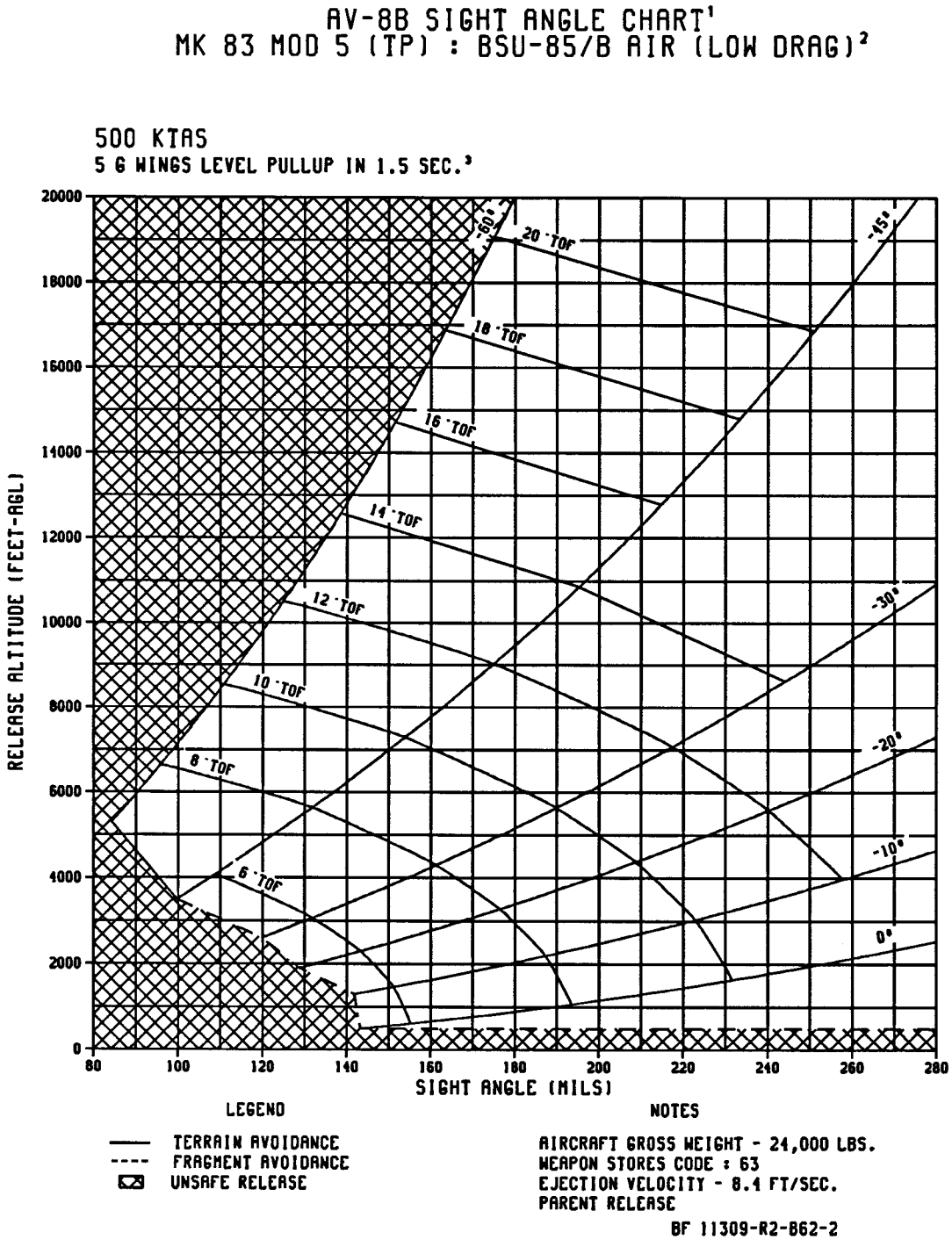
Figure 2-44. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

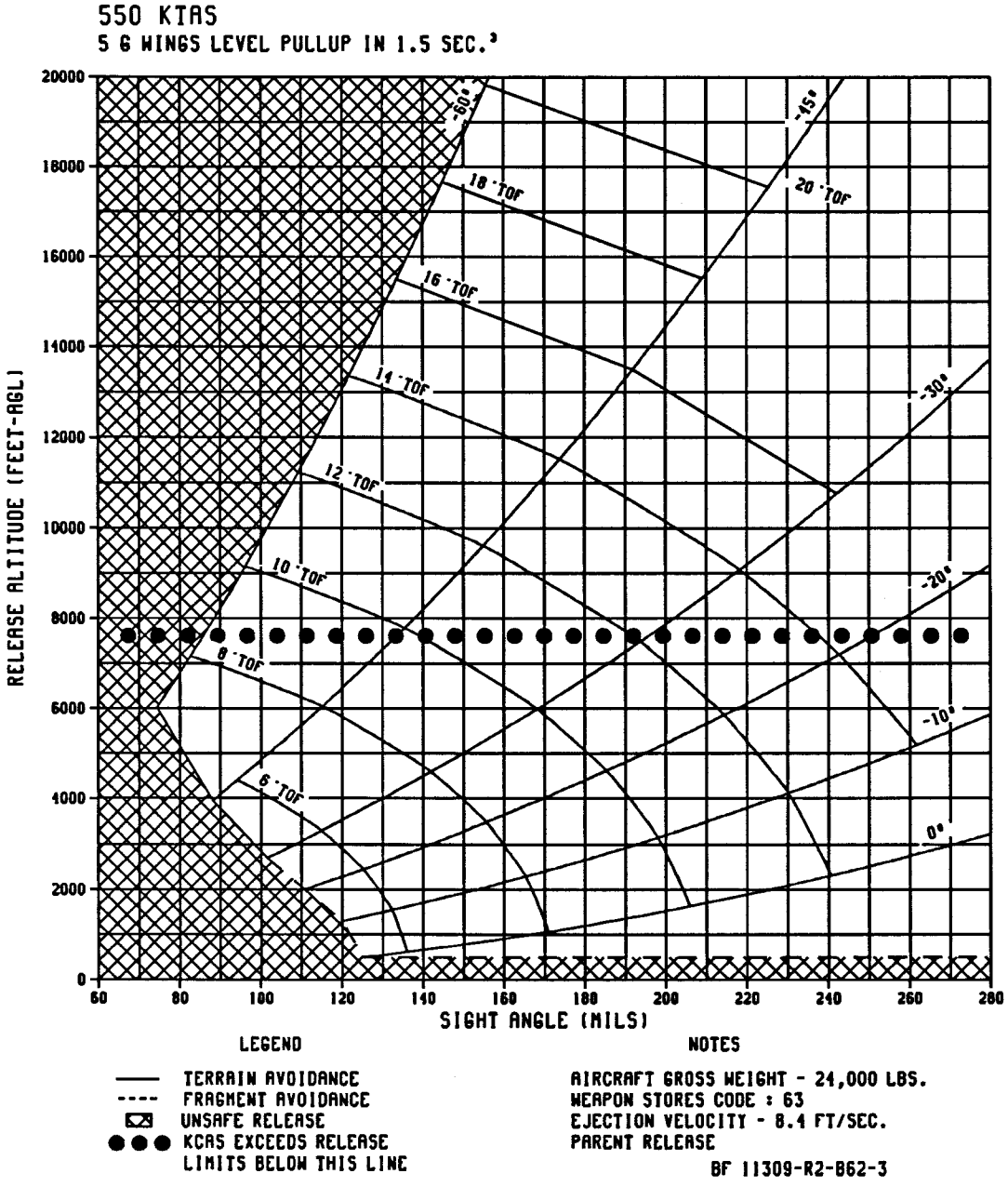
Figure 2-45. Sight Angle Chart, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 1 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-45. Sight Angle Chart, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-45. Sight Angle Chart, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.4	3979	4010	163	125	37	2	13.71	744.77
	600	5.9	4370	4411	175	136	37	1	15.01	745.53
	700	6.4	4728	4780	185	147	37	1	16.19	746.57
	800	6.9	5061	5124	195	157	37	1	17.29	747.83
	1000	7.7	5667	5754	213	175	37	1	19.27	750.85
	1200	8.5	6212	6327	229	191	37	1	21.04	754.35
	1400	9.2	6712	6857	244	206	38	1	22.64	758.20
	1600	9.9	7176	7352	258	219	38	1	24.11	762.30
	1800	10.5	7610	7820	271	232	38	1	25.47	766.60
	2000	11.1	8020	8265	283	244	38	1	26.74	771.05
-10	1400	6.0	4388	4606	173	134	37	1	24.48	776.21
	1500	6.3	4604	4843	179	140	37	1	25.14	778.19
	1600	6.6	4815	5074	185	146	37	1	25.77	780.22
	1700	6.9	5019	5299	191	152	37	1	26.39	782.28
	1800	7.2	5218	5520	196	158	37	1	26.98	784.38
	1900	7.5	5413	5736	202	163	38	1	27.56	786.50
	2000	7.8	5602	5948	207	168	38	1	28.12	788.65
	2100	8.0	5787	6157	212	174	38	1	28.67	790.82
	2200	8.3	5969	6361	217	179	38	1	29.20	793.02
	2300	8.6	6146	6562	222	184	38	1	29.71	795.23
	2400	8.8	6320	6760	227	188	38	1	30.21	797.46
	2500	9.0	6490	6955	232	193	38	1	30.70	799.70
	2600	9.3	6657	7147	237	198	38	1	31.18	801.96
	2700	9.5	6821	7336	242	202	38	1	31.64	804.22
	2800	9.8	6983	7523	246	207	38	1	32.09	806.50
	2900	10.0	7141	7708	251	211	38	1	32.54	808.79
	3000	10.2	7297	7890	255	216	39	1	32.97	811.08
	3500	11.3	8041	8770	276	236	39	1	35.00	822.63
	3700	11.7	8324	9109	284	244	39	1	35.75	827.26
-20	1900	5.5	3791	4240	153	116	36	1	32.22	798.77
	2000	5.7	3948	4426	157	120	36	1	32.67	801.06
	2500	6.8	4697	5321	178	140	37	1	34.78	812.61
	2600	7.0	4840	5495	182	144	37	1	35.18	814.93
	2700	7.2	4981	5666	186	148	37	1	35.57	817.25
	2800	7.4	5120	5836	189	151	37	1	35.95	819.58
	2900	7.7	5258	6004	193	155	37	1	36.32	821.91
	3000	7.9	5393	6171	197	159	37	1	36.68	824.24
	3100	8.1	5526	6337	200	162	37	1	37.04	826.57
	3200	8.3	5658	6501	204	166	37	1	37.39	828.90
	3500	8.8	6044	6985	214	176	37	1	38.41	835.88
	4000	9.8	6659	7768	231	192	38	1	39.99	847.48
	5000	11.5	7796	9262	261	221	39	1	42.79	870.43
	5800	12.8	8635	10402	283	242	40	1	44.75	888.40

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.

BF 11309-R2-B63-1

Figure 2-46. Delivery Data, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 1 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2500	5.4	3443	4255	140	104	34	1	40.85	821.40
	3000	6.3	4006	5005	155	119	35	1	42.36	833.64
	3500	7.2	4542	5734	169	133	35	1	43.75	845.73
	4000	8.0	5053	6445	182	146	35	1	45.03	857.67
	4500	8.8	5543	7140	195	158	36	1	46.23	869.44
	5000	9.6	6014	7821	207	170	36	1	47.35	881.02
	6000	11.1	6905	9148	230	192	37	1	49.38	903.57
	7000	12.5	7739	10435	250	212	38	1	51.17	925.19
	8000	13.8	8526	11691	270	230	39	1	52.78	945.84
	8800	14.9	9125	12677	284	244	40	1	53.95	961.70
-45	3300	5.4	2782	4316	116	85	29	1	53.58	850.23
	3500	5.7	2929	4564	119	89	29	1	53.95	855.33
	4000	6.4	3287	5177	128	98	30	1	54.84	867.89
	6000	9.1	4617	7571	161	130	31	1	57.89	915.38
	7000	10.3	5230	8738	176	144	32	1	59.18	937.39
	8000	11.5	5815	9890	190	157	33	1	60.35	958.34
	9000	12.7	6374	11029	203	169	33	1	61.42	978.23
	10000	13.8	6911	12156	215	181	34	1	62.40	997.12
	11000	14.9	7428	13273	227	191	35	1	63.30	1015.11
	12000	16.0	7926	14381	238	202	36	0	64.13	1032.31
	14000	18.1	8874	16576	259	220	38	0	65.62	1064.45
	16000	20.0	9767	18746	278	237	40	0	66.93	1093.24
	16500	20.5	9983	19285	282	241	40	0	67.23	1099.78
-60	4556	6.2	2228	5072	93	69	23	1	66.71	887.92
	5000	6.7	2417	5554	97	73	23	1	67.15	898.91
	6000	7.9	2830	6634	107	83	24	1	68.05	922.72
	7000	9.0	3225	7707	117	92	24	1	68.88	945.26
	8000	10.1	3605	8775	126	100	25	1	69.63	966.61
	9000	11.2	3970	9837	134	108	25	1	70.31	986.84
	10000	12.3	4323	10894	142	116	26	1	70.95	1006.02
	11000	13.3	4665	11948	149	123	26	0	71.54	1024.27
	12000	14.3	4995	12998	157	129	27	0	72.08	1041.68
	13000	15.3	5316	14045	164	135	28	0	72.59	1058.29
	15000	17.2	5931	16130	176	147	29	0	73.52	1088.86
	20000	21.7	7339	21304	205	172	32	0	75.46	1125.28

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63. BF 11309-R2-B63-2

Figure 2-46. Delivery Data, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 2 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.4	4412	4440	143	113	29	1	12.44	818.00
	600	5.9	4844	4881	154	123	29	1	13.63	817.56
	800	6.9	5608	5665	172	142	29	1	15.73	817.70
	1000	7.7	6278	6357	188	158	29	1	17.57	818.78
	1200	8.5	6880	6984	203	173	30	1	19.21	820.51
	1500	9.6	7692	7837	223	193	30	1	21.41	823.97
	1800	10.5	8423	8613	241	211	30	1	23.37	828.15
	2100	11.4	9091	9330	258	227	30	1	25.14	832.84
	2400	12.2	9711	10003	273	242	30	1	26.75	837.91
	2600	12.7	10101	10430	283	252	31	1	27.76	841.46
-10	1300	5.5	4423	4610	142	111	29	1	22.06	845.85
	1500	6.1	4902	5126	153	122	29	1	23.29	848.20
	1600	6.4	5131	5375	158	128	29	1	23.88	849.46
	1700	6.7	5354	5618	164	133	30	1	24.44	850.78
	1800	7.0	5572	5855	169	138	30	1	24.99	852.15
	1900	7.2	5784	6088	174	143	30	1	25.53	853.56
	2000	7.5	5991	6316	178	148	30	1	26.05	855.02
	2100	7.8	6194	6540	183	152	30	1	26.55	856.51
	2200	8.0	6392	6760	188	157	30	1	27.05	858.03
	2300	8.3	6586	6976	192	161	30	1	27.53	859.59
	2400	8.5	6777	7189	197	166	30	1	28.00	861.17
	2500	8.8	6963	7398	201	170	30	1	28.46	862.78
	2600	9.0	7146	7605	205	174	30	1	28.91	864.42
	2700	9.2	7326	7808	210	179	30	1	29.35	866.08
	2800	9.5	7503	8009	214	183	30	1	29.78	867.76
	2900	9.7	7677	8206	218	187	30	1	30.20	869.45
	3000	9.9	7848	8402	222	191	30	1	30.61	871.17
	4000	12.0	9425	10238	259	227	31	1	34.31	889.00
	4800	13.6	10550	11590	285	252	32	1	36.83	903.76
-20	1900	5.1	3952	4385	129	99	29	1	30.54	869.38
	2500	6.4	4924	5522	151	121	29	1	32.87	879.54
	2600	6.6	5078	5705	154	124	29	1	33.24	881.28
	2700	6.9	5229	5885	158	128	29	1	33.59	883.02
	2800	7.1	5379	6064	161	131	29	1	33.95	884.78
	2900	7.3	5527	6241	164	134	29	1	34.29	886.55
	3000	7.5	5673	6417	168	137	29	1	34.63	888.32
	3100	7.7	5817	6591	171	141	29	1	34.96	890.10
	3200	7.8	5959	6764	174	144	29	1	35.29	891.89
	4000	9.3	7041	8098	198	168	30	1	37.73	906.32
	5000	11.1	8276	9669	226	194	31	1	40.41	924.42
	6000	12.7	9409	11159	251	219	31	1	42.75	942.30
	7000	14.2	10458	12585	273	241	32	1	44.82	959.83
	7500	14.9	10957	13278	284	251	32	1	45.78	968.42

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.

BF 11309-R2-B63-3

Figure 2-46. Delivery Data, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 3 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2600	5.2	3679	4505	120	92	27	1	39.60	892.46
	3000	5.9	4153	5123	130	102	27	1	40.68	900.14
	4000	7.5	5268	6614	155	126	28	1	43.15	919.18
	5000	9.1	6296	8040	177	148	28	1	45.32	937.78
	6000	10.5	7254	9414	197	167	29	1	47.25	955.92
	7000	11.9	8154	10747	216	186	30	1	49.00	973.47
	8000	13.2	9004	12045	234	203	30	1	50.57	990.42
	9000	14.5	9811	13314	250	219	31	1	52.01	1006.75
	10000	15.7	10581	14559	266	234	32	1	53.33	1022.54
	11000	16.9	11317	15782	281	248	33	0	54.54	1037.84
-45	3500	5.2	3008	4615	100	76	23	1	52.70	921.42
	4000	5.9	3383	5239	108	83	23	1	53.50	931.67
	6000	8.5	4788	7676	137	112	24	1	56.33	970.59
	7000	9.7	5440	8865	150	125	25	1	57.56	988.78
	8000	10.8	6063	10038	163	137	25	1	58.69	1006.18
	9000	12.0	6661	11197	175	148	26	1	59.73	1022.88
	10000	13.1	7237	12344	186	159	27	1	60.70	1038.94
	11000	14.2	7791	13480	197	169	27	0	61.59	1054.37
	12000	15.2	8327	14606	207	179	28	0	62.42	1069.10
	14000	17.2	9349	16835	226	197	29	0	63.93	1096.14
	16000	19.2	10313	19036	244	213	31	0	65.27	1113.64
	18000	21.1	11224	21212	260	228	32	0	66.53	1120.55
	20000	23.0	12084	23367	276	242	33	0	67.72	1124.12
-60	5291	6.5	2610	5900	84	65	18	1	66.46	965.59
	6000	7.3	2915	6670	90	71	18	1	67.04	979.58
	7000	8.4	3331	7752	99	79	19	1	67.81	998.47
	8000	9.4	3732	8828	107	87	19	1	68.53	1016.47
	9000	10.5	4120	9898	114	94	19	1	69.19	1033.69
	10000	11.5	4495	10964	121	101	20	1	69.81	1050.17
	11000	12.5	4859	12025	128	108	20	0	70.39	1065.88
	12000	13.5	5212	13083	135	114	21	0	70.93	1080.79
	13000	14.4	5555	14137	141	120	21	0	71.43	1094.73
	14000	15.3	5889	15188	147	125	22	0	71.91	1106.78
	15000	16.3	6214	16236	153	131	22	0	72.37	1114.57
	20000	20.8	7720	21438	180	155	24	0	74.46	1128.48

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.

BF 11309-R2-B63-4

Figure 2-46. Delivery Data, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 4 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	500	5.4	4839	4865	125	103	21	1	11.40	889.13
	800	6.9	6147	6199	152	129	21	1	14.46	885.21
	1000	7.7	6878	6951	167	144	21	1	16.17	884.25
	1500	9.6	8422	8554	199	176	22	1	19.79	885.11
	2000	11.1	9709	9913	226	203	22	1	22.78	888.74
	2500	12.5	10834	11119	249	227	22	1	25.35	894.00
	3000	13.7	11844	12218	271	248	22	1	27.62	900.30
	3300	14.4	12407	12839	283	260	22	1	28.87	904.40
-10	1300	5.3	4654	4832	120	98	21	1	20.66	915.99
	1500	5.9	5169	5382	130	108	21	1	21.79	916.61
	1600	6.2	5416	5647	135	113	21	1	22.33	917.05
	1700	6.4	5656	5906	140	117	21	1	22.85	917.55
	1800	6.7	5891	6160	144	122	21	1	23.36	918.13
	1900	7.0	6120	6408	149	126	21	1	23.86	918.76
	2000	7.3	6344	6652	153	131	21	1	24.35	919.45
	2100	7.5	6563	6891	157	135	21	1	24.82	920.20
	2200	7.8	6777	7125	162	139	21	1	25.28	920.99
	2300	8.0	6987	7356	166	143	21	1	25.74	921.82
	2400	8.3	7193	7583	170	148	22	1	26.18	922.70
	2500	8.5	7395	7806	174	151	22	1	26.61	923.61
	2600	8.7	7593	8026	178	155	22	1	27.04	924.56
	2700	9.0	7787	8242	182	159	22	1	27.45	925.55
	2800	9.2	7979	8456	185	163	22	1	27.86	926.56
	2900	9.4	8167	8666	189	167	22	1	28.26	927.61
	3000	9.7	8352	8874	193	170	22	1	28.65	928.68
	4000	11.8	10060	10826	227	204	22	1	32.20	940.68
	5000	13.7	11567	12602	257	233	23	1	35.22	954.10
	6000	15.4	12929	14253	284	260	23	1	37.85	968.17
-20	2000	5.1	4267	4712	111	89	20	1	29.56	939.78
	2500	6.1	5118	5696	127	105	21	1	31.32	944.97
	2600	6.3	5281	5886	130	108	21	1	31.66	946.06
	2700	6.5	5442	6075	133	111	21	1	31.99	947.18
	2800	6.7	5602	6262	136	114	21	1	32.31	948.31
	2900	6.9	5759	6448	139	117	21	1	32.63	949.46
	3000	7.1	5914	6632	142	120	21	1	32.95	950.62
	3100	7.3	6068	6814	145	123	21	1	33.26	951.79
	3200	7.5	6220	6995	148	126	21	1	33.56	952.98
	4000	8.9	7376	8391	170	148	21	1	35.86	962.85
	5000	10.6	8700	10034	195	173	22	1	38.42	975.84
	6000	12.2	9916	11590	218	195	22	1	40.69	989.19
	8000	15.1	12102	14507	258	235	23	1	44.56	1016.17
	9000	16.5	13099	15893	277	253	23	0	46.24	1029.63

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL. Refer to stores limitations for specific KCAS restrictions.

BF 11309-R2-B63-5

Figure 2-46. Delivery Data, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 5 of 6)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2700	5.0	3904	4746	102	82	19	1	38.60	961.35
	3000	5.5	4275	5222	109	88	19	1	39.33	965.39
	4000	7.1	5448	6758	130	110	19	1	41.60	979.04
	5000	8.6	6536	8229	150	129	20	1	43.64	992.82
	6000	10.0	7553	9646	168	148	20	1	45.48	1006.56
	7000	11.4	8512	11020	186	165	21	1	47.16	1020.23
	8000	12.7	9419	12358	202	181	21	1	48.70	1033.77
	9000	13.9	10282	13664	217	195	21	0	50.11	1047.09
	10000	15.1	11105	14944	232	209	22	0	51.42	1060.11
	12000	17.4	12654	17439	259	235	23	0	53.75	1084.77
	14000	19.6	14091	19863	283	259	24	0	55.79	1105.34
-45	3950	5.4	3423	5227	88	71	16	1	52.35	993.80
	4000	5.5	3461	5290	89	72	16	1	52.42	994.58
	6000	7.9	4928	7765	115	98	16	1	55.05	1025.08
	7000	9.1	5614	8973	127	109	17	1	56.21	1039.71
	8000	10.2	6271	10165	138	121	17	1	57.29	1053.90
	9000	11.3	6903	11343	149	131	17	1	58.30	1067.58
	10000	12.4	7513	12508	159	141	17	0	59.23	1080.67
	11000	13.5	8102	13661	169	151	18	0	60.11	1093.01
	12000	14.5	8671	14805	178	160	18	0	60.94	1104.03
	14000	16.5	9759	17066	196	177	19	0	62.48	1115.23
	16000	18.5	10781	19293	213	192	20	0	63.93	1120.13
	18000	20.4	11741	21491	229	207	21	0	65.29	1122.99
	20000	22.4	12644	23662	244	222	22	0	66.58	1124.94
-60	6024	6.8	2994	6727	74	62	11	1	66.23	1036.63
	7000	7.8	3417	7790	82	69	11	1	66.93	1051.80
	8000	8.9	3837	8872	89	76	12	1	67.61	1066.69
	9000	9.9	4243	9950	95	83	12	1	68.24	1080.86
	10000	10.8	4638	11023	102	89	12	0	68.84	1094.18
	11000	11.8	5021	12092	108	95	12	0	69.40	1105.88
	12000	12.7	5394	13156	114	101	12	0	69.93	1113.53
	13000	13.7	5756	14217	120	107	13	0	70.45	1118.42
	14000	14.6	6109	15275	125	112	13	0	70.95	1121.80
	16000	16.5	6785	17379	136	123	13	0	71.91	1125.96
	18000	18.3	7425	19471	147	132	14	0	72.82	1128.37
	20000	20.2	8031	21552	157	142	15	0	73.69	1129.78

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL. Refer to stores limitations for specific KCAS restrictions.

BF 11309-R2-B63-6

Figure 2-46. Delivery Data, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 6 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

450 KTAS CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	137	-151	-409	365	-354	218	155	-166	4.0	91	2.8	91	22.6
	600	146	-160	-373	340	-351	227	156	-167	4.4	100	3.1	100	22.6
	700	154	-168	-346	320	-350	233	158	-168	4.8	108	3.3	108	22.6
	800	161	-175	-324	302	-349	239	159	-168	5.1	116	3.5	116	22.6
	1000	175	-189	-291	275	-348	249	161	-169	5.8	130	3.9	130	22.6
	1200	187	-201	-266	254	-348	257	163	-170	6.3	143	4.3	143	22.7
	1400	198	-213	-247	237	-349	264	164	-171	6.9	155	4.6	155	22.7
	1600	209	-223	-231	224	-351	271	165	-172	7.4	167	4.9	166	22.6
	1800	218	-233	-218	212	-353	277	166	-173	7.8	177	5.2	177	22.6
	2000	227	-242	-208	202	-355	282	167	-173	8.3	187	5.5	187	22.6
-10	1400	82	-90	-98	91	-92	75	75	-76	4.6	102	6.7	102	22.1
	1500	87	-95	-98	92	-97	79	77	-78	4.8	107	6.9	107	22.1
	1600	91	-100	-98	92	-102	83	79	-81	5.1	112	7.0	112	22.1
	1700	96	-104	-98	92	-106	87	81	-83	5.3	117	7.1	117	22.1
	1800	100	-109	-97	92	-111	91	83	-85	5.5	122	7.2	122	22.1
	1900	105	-114	-97	92	-115	95	85	-87	5.7	127	7.3	127	22.1
	2000	109	-118	-97	92	-119	99	87	-89	5.9	131	7.4	131	22.0
	2100	113	-122	-96	92	-123	103	89	-91	6.2	136	7.5	136	22.0
	2200	117	-127	-96	92	-127	106	91	-92	6.4	140	7.6	140	22.0
	2300	121	-131	-95	91	-131	110	92	-94	6.6	144	7.7	144	22.0
	2400	125	-135	-95	91	-134	113	94	-95	6.8	149	7.8	149	22.0
	2500	129	-139	-94	91	-138	117	96	-97	7.0	153	7.9	153	22.0
	2600	133	-143	-94	91	-141	120	97	-99	7.1	157	8.0	157	21.9
	2700	137	-147	-93	90	-145	123	98	-100	7.3	161	8.1	161	21.9
	2800	140	-151	-93	90	-148	127	100	-101	7.5	165	8.2	165	21.9
	2900	144	-155	-92	90	-151	130	101	-103	7.7	169	8.2	169	21.9
	3000	148	-158	-92	89	-155	133	103	-104	7.9	173	8.3	173	21.9
	3500	165	-176	-89	87	-170	147	109	-110	8.8	191	8.7	191	21.8
	3700	171	-183	-88	86	-175	153	111	-112	9.1	198	8.8	198	21.7
-20	1900	49	-54	-43	40	-39	35	47	-47	4.2	92	9.8	92	21.8
	2000	52	-57	-44	41	-41	37	48	-48	4.4	96	9.8	96	21.7
	2500	66	-72	-46	44	-53	48	56	-56	5.3	115	10.2	115	21.6
	2600	69	-75	-46	44	-56	50	58	-58	5.5	119	10.2	119	21.6
	2700	71	-78	-46	44	-58	52	59	-59	5.7	122	10.3	122	21.6
	2800	74	-80	-47	45	-61	54	60	-60	5.8	126	10.3	126	21.5
	2900	77	-83	-47	45	-63	56	62	-62	6.0	129	10.4	129	21.5
	3000	79	-86	-47	45	-65	58	63	-63	6.2	133	10.4	133	21.5
	3100	82	-89	-48	46	-68	61	64	-64	6.3	136	10.5	136	21.5
	3200	85	-92	-48	46	-70	63	65	-66	6.5	139	10.6	139	21.4
	3500	92	-100	-48	47	-77	69	69	-69	7.0	149	10.7	149	21.4
	4000	105	-113	-49	48	-88	79	75	-75	7.8	165	10.9	165	21.2
	5000	129	-139	-50	48	-109	99	85	-85	9.3	195	11.3	195	21.0
	5800	147	-158	-50	49	-125	115	93	-93	10.4	217	11.6	217	20.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.

BF 11309-R2-B65-1

Figure 2-47. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 1 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2500	35	-39	-23	22	-24	22	36	-35	4.3	91	12.6	91	21.4
	3000	44	-48	-25	24	-30	29	41	-41	5.0	106	12.8	106	21.3
	3500	53	-58	-26	25	-38	35	47	-46	5.7	121	12.9	121	21.1
	4000	62	-67	-28	27	-45	42	52	-51	6.4	135	13.0	135	21.0
	4500	70	-77	-28	28	-52	49	56	-56	7.1	149	13.1	149	20.9
	5000	79	-86	-29	29	-60	56	61	-61	7.8	162	13.2	162	20.7
	6000	96	-104	-31	30	-75	70	69	-69	9.1	187	13.4	187	20.5
	7000	113	-122	-31	31	-90	85	77	-77	10.4	211	13.6	211	20.2
	8000	129	-140	-32	31	-105	99	85	-85	11.7	234	13.7	234	20.0
	8800	142	-153	-32	32	-117	110	91	-91	12.7	251	13.8	251	19.8
-45	3300	23	-26	-11	11	-15	15	28	-27	4.3	91	16.0	91	21.0
	3500	25	-28	-11	11	-17	16	30	-29	4.6	95	16.0	95	20.9
	4000	30	-33	-12	12	-20	20	33	-33	5.2	108	16.0	108	20.8
	6000	50	-55	-15	15	-38	37	48	-47	7.6	153	16.0	153	20.2
	7000	60	-66	-16	16	-48	46	54	-54	8.7	174	15.9	174	19.9
	8000	70	-77	-17	16	-58	56	61	-60	9.9	194	15.9	194	19.7
	9000	81	-88	-17	17	-69	66	67	-67	11.0	214	15.8	214	19.4
	10000	91	-100	-18	17	-80	76	74	-73	12.2	233	15.8	233	19.2
	11000	102	-111	-18	18	-91	87	80	-79	13.3	252	15.7	252	19.0
	12000	112	-122	-19	19	-103	98	86	-85	14.4	270	15.7	270	18.8
	14000	133	-144	-19	19	-126	121	98	-97	16.6	305	15.5	305	18.4
	16000	154	-167	-20	20	-151	145	109	-109	18.7	338	15.4	338	18.0
	16500	159	-172	-20	20	-157	151	112	-112	19.3	346	15.4	346	17.9
-60	4556	18	-20	-6	6	-15	15	28	-27	5.1	104	18.4	104	20.5
	5000	20	-23	-7	6	-17	18	31	-30	5.6	113	18.3	113	20.3
	6000	26	-29	-7	7	-24	24	37	-36	6.6	133	18.1	133	20.0
	7000	32	-36	-8	8	-31	31	42	-42	7.7	152	17.9	152	19.7
	8000	38	-42	-8	8	-38	38	48	-47	8.8	171	17.8	171	19.5
	9000	44	-49	-9	9	-46	46	54	-53	9.8	189	17.6	189	19.2
	10000	50	-56	-9	9	-54	54	59	-58	10.9	207	17.4	207	19.0
	11000	57	-63	-10	10	-63	62	65	-64	11.9	224	17.3	224	18.8
	12000	63	-70	-10	10	-72	71	70	-70	13.0	241	17.1	241	18.5
	13000	70	-77	-10	10	-81	80	76	-75	14.0	258	17.0	258	18.3
	15000	83	-91	-11	11	-100	100	87	-86	16.1	290	16.7	290	18.0
	20000	114	-125	-12	12	-153	152	113	-113	21.3	366	16.1	366	17.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.

BF 11309-R2-B65-2

Figure 2-47. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 2 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	137	-139	-453	405	-447	261	189	-205	4.4	91	2.3	91	20.4
	600	146	-147	-414	377	-442	271	191	-206	4.9	100	2.5	100	20.5
	800	162	-163	-359	336	-436	286	194	-207	5.7	116	2.9	116	20.5
	1000	175	-177	-322	305	-433	298	196	-208	6.4	131	3.2	131	20.5
	1200	188	-189	-295	282	-432	307	198	-208	7.0	144	3.5	144	20.6
	1500	204	-205	-264	255	-432	319	200	-209	7.8	161	3.9	161	20.6
	1800	219	-220	-242	235	-433	329	201	-210	8.6	178	4.3	177	20.6
	2100	232	-233	-224	219	-434	338	203	-211	9.3	192	4.6	192	20.6
	2400	245	-246	-210	206	-437	346	204	-212	10.0	206	4.9	206	20.6
	2600	253	-254	-202	198	-439	351	205	-212	10.4	215	5.1	215	20.6
-10	1300	71	-72	-98	90	-92	72	80	-82	4.6	93	5.7	93	20.1
	1500	80	-82	-99	92	-103	82	86	-88	5.1	103	5.9	103	20.1
	1600	85	-86	-99	93	-109	87	89	-91	5.4	108	6.0	108	20.1
	1700	89	-91	-99	93	-114	91	91	-93	5.6	113	6.1	113	20.1
	1800	93	-95	-99	93	-119	96	94	-96	5.9	117	6.2	117	20.1
	1900	98	-99	-99	93	-124	100	96	-98	6.1	122	6.3	122	20.0
	2000	102	-104	-98	94	-128	105	98	-100	6.3	127	6.3	127	20.0
	2100	106	-108	-98	94	-133	109	100	-102	6.5	131	6.4	131	20.0
	2200	110	-112	-98	94	-137	113	102	-104	6.8	135	6.5	135	20.0
	2300	114	-116	-98	94	-141	117	104	-106	7.0	140	6.6	140	20.0
	2400	118	-120	-97	93	-146	120	106	-108	7.2	144	6.7	144	20.0
	2500	122	-124	-97	93	-150	124	108	-110	7.4	148	6.8	148	20.0
	2600	125	-128	-97	93	-154	128	110	-112	7.6	152	6.8	152	20.0
	2700	129	-131	-96	93	-157	132	111	-113	7.8	156	6.9	156	20.0
	2800	133	-135	-96	93	-161	135	113	-115	8.0	160	7.0	160	20.0
	2900	136	-139	-95	92	-165	139	115	-117	8.2	164	7.1	164	20.0
	3000	140	-142	-95	92	-168	142	116	-118	8.4	168	7.1	168	20.0
	4000	173	-176	-91	89	-201	173	130	-132	10.2	203	7.8	203	19.9
	4800	197	-200	-88	86	-224	195	138	-140	11.6	229	8.2	229	19.8
-20	1900	43	-44	-41	38	-37	33	50	-50	4.4	87	8.6	87	19.8
	2500	58	-60	-44	42	-52	46	60	-61	5.5	109	8.9	109	19.7
	2600	61	-62	-44	42	-55	48	62	-62	5.7	112	9.0	112	19.7
	2700	63	-65	-45	43	-57	50	64	-64	5.9	116	9.0	116	19.7
	2800	66	-68	-45	43	-60	53	65	-65	6.1	119	9.1	119	19.6
	2900	69	-70	-46	44	-62	55	67	-67	6.2	123	9.1	122	19.6
	3000	71	-73	-46	44	-65	57	68	-68	6.4	126	9.2	126	19.6
	3100	74	-75	-46	44	-67	59	69	-70	6.6	129	9.2	129	19.6
	3200	76	-78	-47	45	-69	61	71	-71	6.8	132	9.3	132	19.6
	4000	96	-98	-48	47	-88	79	81	-82	8.1	158	9.6	158	19.5
	5000	119	-122	-50	48	-110	99	93	-93	9.7	187	10.0	187	19.3
	6000	142	-144	-50	49	-131	119	103	-104	11.2	214	10.3	214	19.2
	7000	163	-166	-50	49	-152	139	112	-113	12.6	239	10.6	239	19.0
	7500	173	-177	-50	49	-162	148	117	-117	13.3	251	10.7	251	18.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.

BF 11309-R2-B65-3

Figure 2-47. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 3 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2600	32	-33	-22	20	-23	21	39	-38	4.5	88	11.2	88	19.5
	3000	38	-39	-23	22	-28	26	43	-43	5.1	99	11.4	99	19.4
	4000	54	-56	-26	25	-42	39	54	-54	6.6	127	11.6	127	19.2
	5000	71	-73	-28	27	-57	53	64	-64	8.0	153	11.8	153	19.0
	6000	87	-89	-30	29	-71	67	73	-73	9.4	178	12.0	178	18.9
	7000	103	-106	-31	30	-86	81	82	-82	10.7	201	12.2	201	18.7
	8000	119	-122	-31	31	-101	95	90	-90	12.0	223	12.3	223	18.5
	9000	135	-138	-32	31	-116	109	98	-98	13.3	245	12.4	245	18.4
	10000	151	-154	-33	32	-131	124	105	-106	14.6	265	12.5	265	18.2
	11000	166	-170	-33	33	-146	138	113	-113	15.8	285	12.6	285	18.1
-45	3500	21	-22	-10	10	-14	14	30	-30	4.6	88	14.5	88	19.1
	4000	26	-26	-11	11	-18	17	34	-33	5.2	100	14.5	100	19.0
	6000	44	-45	-14	13	-34	33	49	-48	7.7	143	14.5	143	18.6
	7000	54	-55	-15	14	-43	41	56	-55	8.9	163	14.5	163	18.4
	8000	64	-66	-16	15	-53	51	63	-62	10.0	183	14.5	183	18.2
	9000	74	-76	-16	16	-63	60	69	-69	11.2	202	14.5	202	18.0
	10000	85	-87	-17	17	-73	70	76	-75	12.3	221	14.5	221	17.9
	11000	95	-98	-18	17	-84	80	82	-82	13.5	239	14.5	239	17.7
	12000	106	-108	-18	18	-95	91	89	-88	14.6	257	14.4	257	17.6
	14000	127	-130	-19	19	-117	112	101	-101	16.8	291	14.4	291	17.3
	16000	149	-152	-19	19	-141	135	113	-113	19.0	324	14.3	324	17.0
	18000	169	-173	-20	20	-165	158	125	-124	21.2	356	14.2	356	16.8
	20000	189	-193	-21	20	-189	181	136	-136	23.4	388	14.2	388	16.6
-60	5291	20	-20	-6	6	-16	17	33	-32	5.9	110	16.7	110	18.6
	6000	23	-24	-7	6	-20	21	37	-36	6.7	123	16.6	123	18.5
	7000	29	-30	-7	7	-26	27	43	-42	7.8	142	16.5	142	18.3
	8000	35	-36	-8	8	-33	33	49	-48	8.8	159	16.4	159	18.1
	9000	41	-42	-8	8	-40	40	54	-54	9.9	177	16.3	177	17.9
	10000	48	-49	-9	8	-47	47	60	-59	11.0	194	16.1	194	17.7
	11000	55	-56	-9	9	-55	55	66	-65	12.0	211	16.0	211	17.5
	12000	61	-63	-9	9	-63	63	71	-70	13.1	227	15.9	227	17.4
	13000	69	-70	-10	10	-72	71	77	-76	14.1	243	15.8	243	17.2
	14000	76	-78	-10	10	-81	80	82	-82	15.2	259	15.7	259	17.1
	15000	83	-85	-10	10	-90	89	88	-87	16.2	275	15.6	275	16.9
	20000	119	-122	-12	11	-139	137	115	-114	21.4	352	15.3	352	16.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.

BF 11309-R2-B65-4

Figure 2-47. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 4 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	500	179	-183	-497	444	-554	306	226	-248	4.9	91	1.9	91	18.7
	800	203	-206	-394	368	-535	336	231	-249	6.2	117	2.4	116	18.8
	1000	216	-219	-353	335	-529	350	234	-249	7.0	131	2.7	131	18.8
	1500	242	-245	-290	279	-522	374	237	-250	8.6	162	3.3	162	18.9
	2000	264	-267	-251	245	-521	392	240	-251	9.9	188	3.8	188	18.9
	2500	282	-286	-225	221	-523	406	242	-252	11.1	211	4.3	211	19.0
	3000	299	-303	-206	202	-526	419	244	-253	12.2	232	4.7	232	19.0
	3300	308	-312	-196	193	-528	426	245	-254	12.8	244	4.9	244	19.0
-10	1300	79	-81	-97	89	-96	73	88	-90	4.8	89	4.9	89	18.4
	1500	89	-91	-98	91	-108	84	95	-97	5.4	99	5.1	99	18.4
	1600	94	-95	-99	92	-114	89	98	-100	5.6	104	5.2	104	18.4
	1700	98	-100	-99	93	-120	94	101	-103	5.9	109	5.3	109	18.4
	1800	103	-104	-99	93	-126	99	104	-106	6.2	113	5.4	113	18.4
	1900	107	-109	-99	94	-131	104	106	-109	6.4	118	5.5	118	18.4
	2000	112	-113	-99	94	-136	109	109	-111	6.7	122	5.5	122	18.4
	2100	116	-117	-99	94	-141	113	111	-114	6.9	127	5.6	127	18.4
	2200	120	-121	-99	95	-146	118	114	-116	7.1	131	5.7	131	18.4
	2300	124	-126	-99	95	-151	122	116	-118	7.4	135	5.8	135	18.4
	2400	128	-129	-99	95	-156	126	118	-121	7.6	140	5.8	140	18.4
	2500	132	-133	-99	95	-160	131	120	-123	7.8	144	5.9	144	18.4
	2600	135	-137	-98	95	-165	135	122	-125	8.0	148	6.0	148	18.4
	2700	139	-141	-98	95	-169	139	124	-127	8.2	152	6.0	152	18.4
	2800	143	-145	-98	95	-173	143	126	-129	8.5	156	6.1	156	18.4
	2900	146	-148	-98	94	-177	146	128	-130	8.7	159	6.2	159	18.4
	3000	150	-152	-97	94	-182	150	129	-132	8.9	163	6.2	163	18.4
	4000	182	-184	-94	92	-218	184	145	-147	10.8	199	6.8	199	18.4
	5000	211	-214	-91	89	-249	214	157	-160	12.6	231	7.3	231	18.3
	6000	236	-240	-88	87	-276	241	167	-170	14.3	260	7.7	260	18.2
-20	2000	49	-50	-39	36	-38	33	55	-55	4.7	85	7.7	85	18.1
	2500	62	-63	-42	40	-51	44	64	-65	5.7	103	7.9	103	18.1
	2600	64	-66	-42	40	-53	46	66	-66	5.9	106	8.0	106	18.1
	2700	67	-68	-43	41	-56	49	68	-68	6.1	110	8.0	110	18.1
	2800	69	-71	-43	41	-58	51	69	-70	6.3	113	8.1	113	18.1
	2900	72	-73	-44	42	-61	53	71	-71	6.4	116	8.1	116	18.1
	3000	74	-76	-44	42	-63	55	73	-73	6.6	120	8.2	120	18.1
	3100	77	-78	-44	43	-66	58	74	-75	6.8	123	8.2	123	18.0
	3200	79	-81	-45	43	-68	60	76	-76	7.0	126	8.3	126	18.0
	4000	98	-100	-47	46	-88	78	87	-88	8.4	151	8.6	151	18.0
	5000	121	-123	-49	48	-111	99	100	-101	10.0	180	8.9	180	17.9
	6000	142	-145	-50	49	-133	120	111	-112	11.6	206	9.2	206	17.8
	8000	181	-184	-50	50	-175	159	131	-132	14.5	256	9.7	255	17.6
	9000	200	-203	-50	50	-195	178	139	-140	15.9	278	9.9	278	17.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL. Refer to stores limitations for specific KCAS restrictions.

BF 11309-R2-B65-5

Figure 2-47. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 5 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (LOW DRAG)

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2700	35	-36	-20	19	-22	21	41	-41	4.7	85	10.2	85	17.9
	3000	40	-41	-21	20	-26	24	45	-45	5.2	93	10.3	93	17.9
	4000	55	-57	-24	23	-39	36	57	-56	6.8	120	10.5	120	17.7
	5000	71	-72	-27	26	-54	50	67	-67	8.2	145	10.7	145	17.6
	6000	86	-88	-28	28	-68	63	77	-77	9.6	169	10.9	169	17.5
	7000	102	-104	-29	29	-83	77	86	-86	11.0	192	11.1	192	17.4
	8000	117	-119	-30	30	-98	91	95	-95	12.4	214	11.2	214	17.3
	9000	132	-134	-31	31	-113	106	103	-103	13.7	235	11.3	235	17.2
	10000	147	-149	-32	31	-128	120	111	-111	14.9	255	11.4	255	17.1
	12000	173	-175	-33	32	-159	149	126	-126	17.4	294	11.6	294	16.9
	14000	197	-200	-33	33	-189	178	140	-141	19.9	331	11.7	331	16.7
-45	3950	26	-27	-10	9	-15	15	34	-34	5.2	92	13.3	92	17.6
	4000	27	-28	-10	9	-16	15	35	-34	5.3	93	13.3	93	17.6
	6000	45	-46	-13	12	-31	30	50	-49	7.8	134	13.3	134	17.3
	7000	54	-55	-14	13	-39	38	57	-57	9.0	154	13.4	154	17.1
	8000	63	-64	-14	14	-48	46	64	-64	10.2	173	13.4	173	17.0
	9000	73	-74	-15	15	-58	55	71	-71	11.3	191	13.4	191	16.9
	10000	82	-84	-16	16	-68	64	78	-78	12.5	210	13.4	210	16.8
	11000	91	-93	-17	16	-78	74	85	-84	13.7	227	13.4	227	16.6
	12000	100	-102	-17	17	-88	84	91	-91	14.8	245	13.4	245	16.5
	14000	115	-118	-18	18	-110	104	104	-103	17.1	278	13.4	278	16.3
	16000	129	-133	-19	19	-132	126	116	-116	19.3	312	13.4	312	16.2
	18000	140	-145	-20	20	-155	148	128	-128	21.5	345	13.4	345	16.1
	20000	150	-156	-21	21	-178	170	140	-139	23.7	378	13.5	378	16.0
-60	6024	26	-26	-6	6	-18	18	37	-37	6.7	115	15.3	115	17.1
	7000	31	-31	-6	6	-23	23	43	-42	7.8	132	15.3	132	17.0
	8000	37	-37	-7	7	-29	29	49	-48	8.9	149	15.2	149	16.8
	9000	42	-43	-7	7	-35	35	55	-54	10.0	166	15.1	166	16.7
	10000	48	-49	-8	8	-42	42	61	-60	11.0	183	15.0	183	16.6
	11000	53	-55	-8	8	-49	49	66	-66	12.1	199	15.0	199	16.4
	12000	59	-60	-9	9	-57	56	72	-71	13.2	215	14.9	215	16.3
	13000	63	-65	-9	9	-65	64	78	-77	14.2	231	14.8	231	16.2
	14000	68	-70	-9	9	-73	72	83	-83	15.3	246	14.8	246	16.1
	16000	76	-79	-10	10	-90	89	94	-94	17.4	278	14.7	278	16.0
	18000	83	-86	-11	11	-109	107	105	-105	19.5	309	14.7	309	15.9
	20000	90	-93	-11	11	-128	126	116	-115	21.6	340	14.7	340	15.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 63.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL. Refer to stores limitations for specific KCAS restrictions.

BF 11309-R2-B65-6

Figure 2-47. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, Low Drag (Sheet 6 of 6)

AV-8B SAFE ESCAPE TABLE
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)

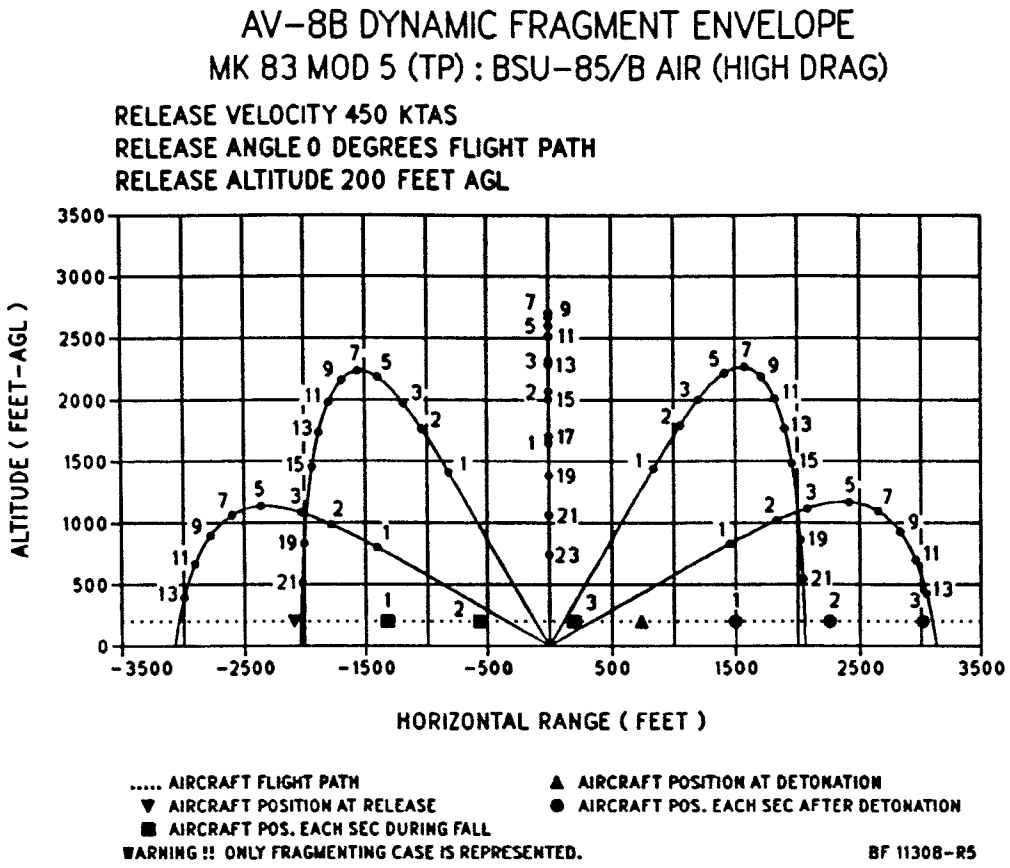
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	200	135	200	200	119	200	200	105	200
	5 G LEVEL BREAKAWAY	200	135	200	200	119	200	200	105	200
	6 G LEVEL BREAKAWAY	200	135	200	100*	91	100	100*	78	100
-10	5 G	600	138	311	531*	108	200	575*	97	200
	6 G	600	138	316	524*	107	200	568*	96	200
-20	5 G	1035*	139	300	1139*	127	300	1265*	119	300
	6 G	1025*	138	300	1117*	125	300	1246*	118	300
-30	5 G	1805*	160	500	2005*	151	500	2249*	149	500
	6 G	1788*	158	500	1944*	147	500	2208*	145	500

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

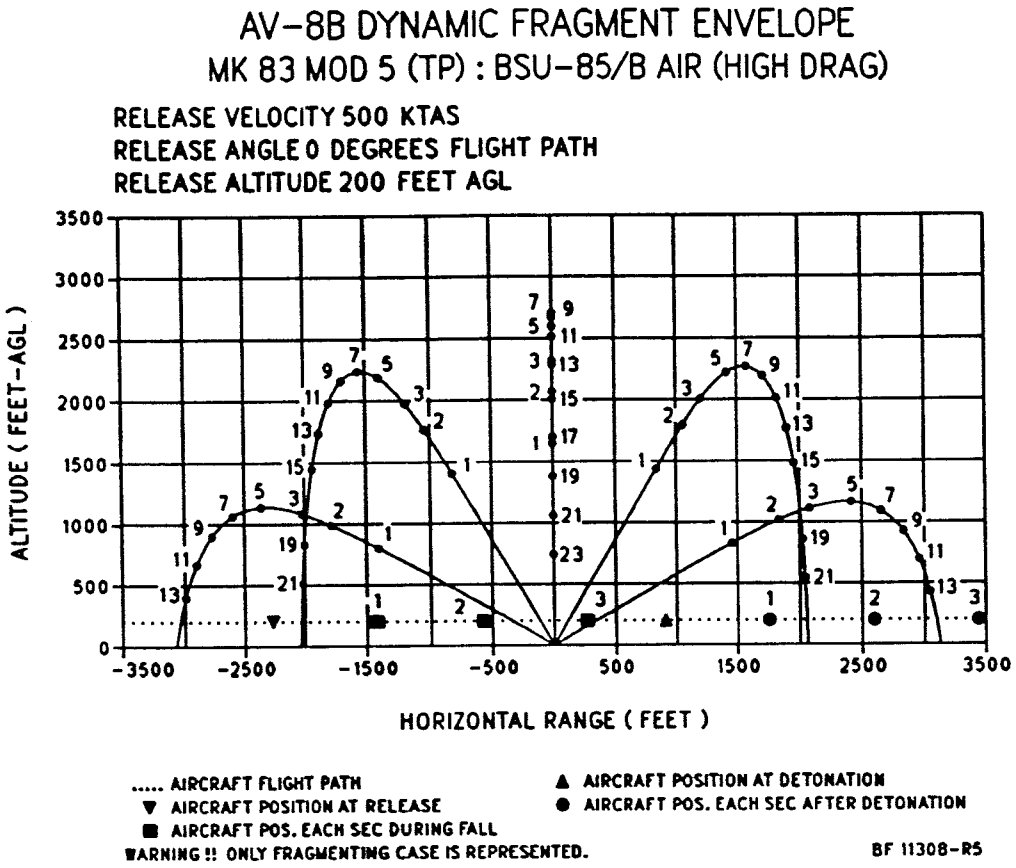
BF 11308-R6-B55-1

Figure 2-48. Safe Escape Table, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag



BF-11308-R5-B56-1

Figure 2-49. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 1 of 3)



BF 11308-R5-B56-2

Figure 2-49. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 2 of 3)

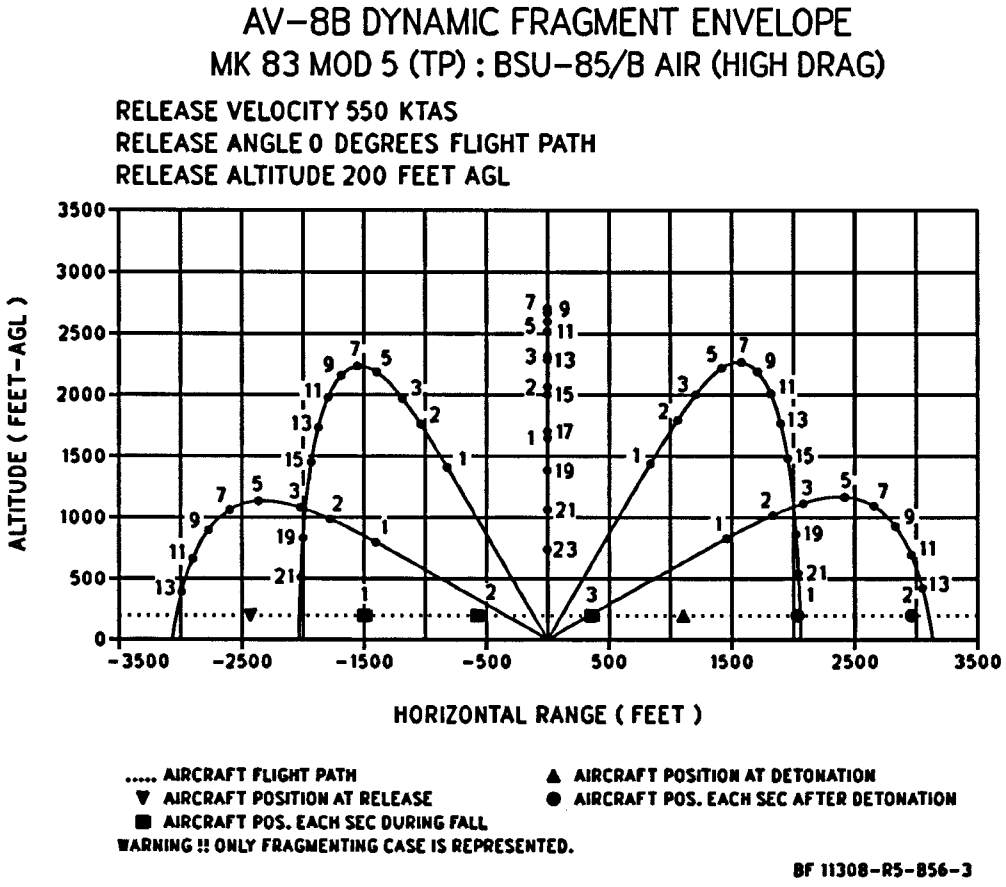
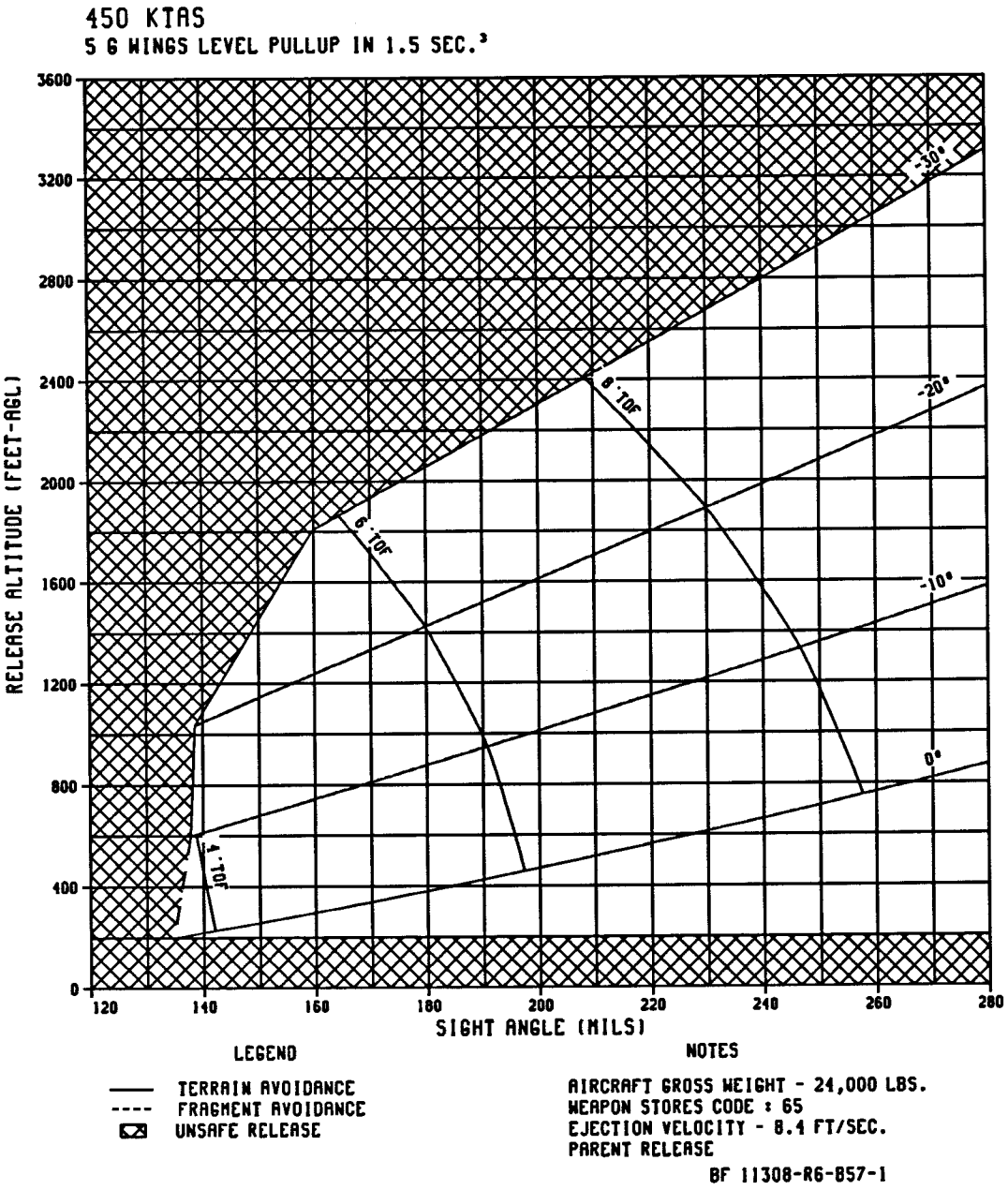


Figure 2-49. Dynamic Fragment Envelope, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 3 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)[2]

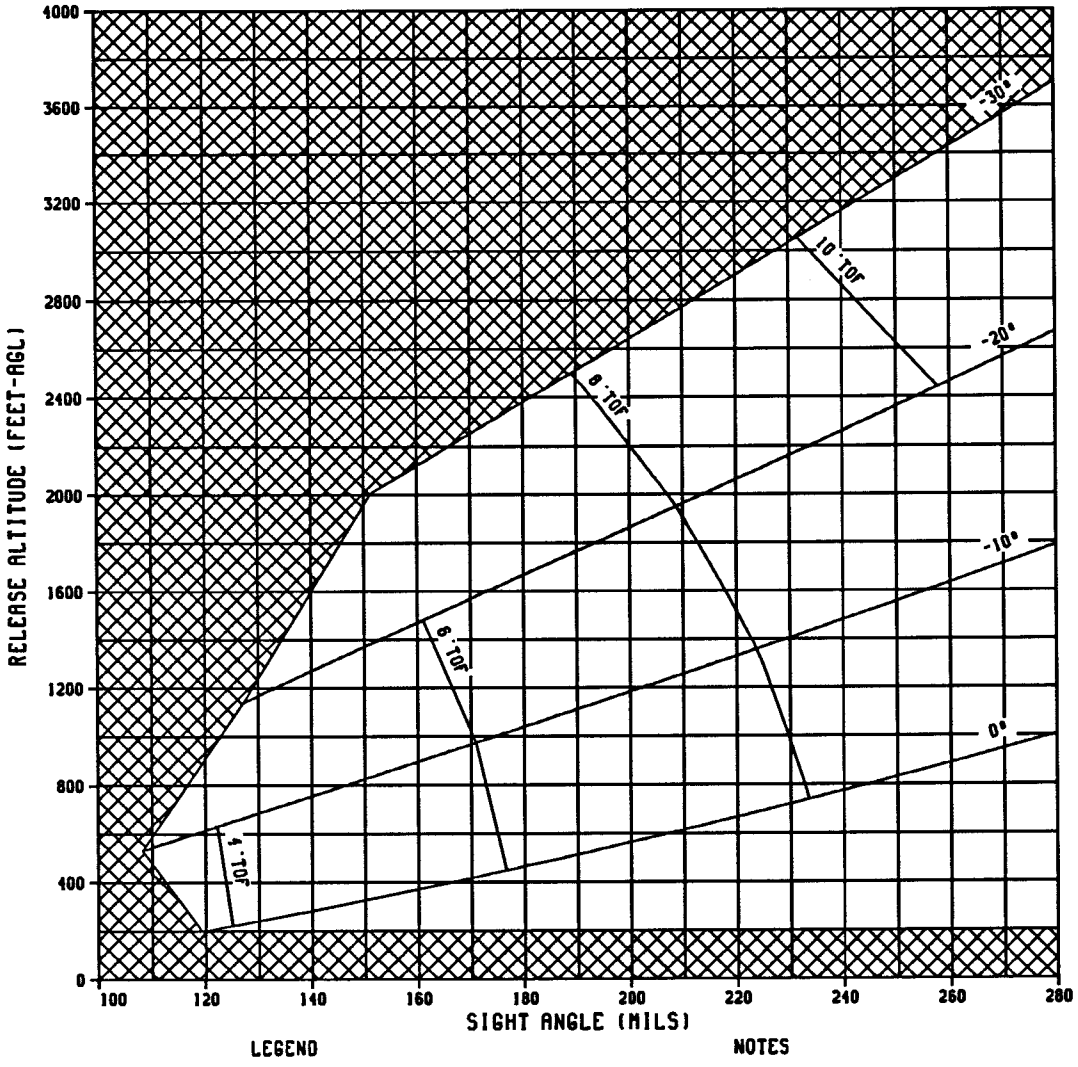


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-50. Sight Angle Chart, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)[2]

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]

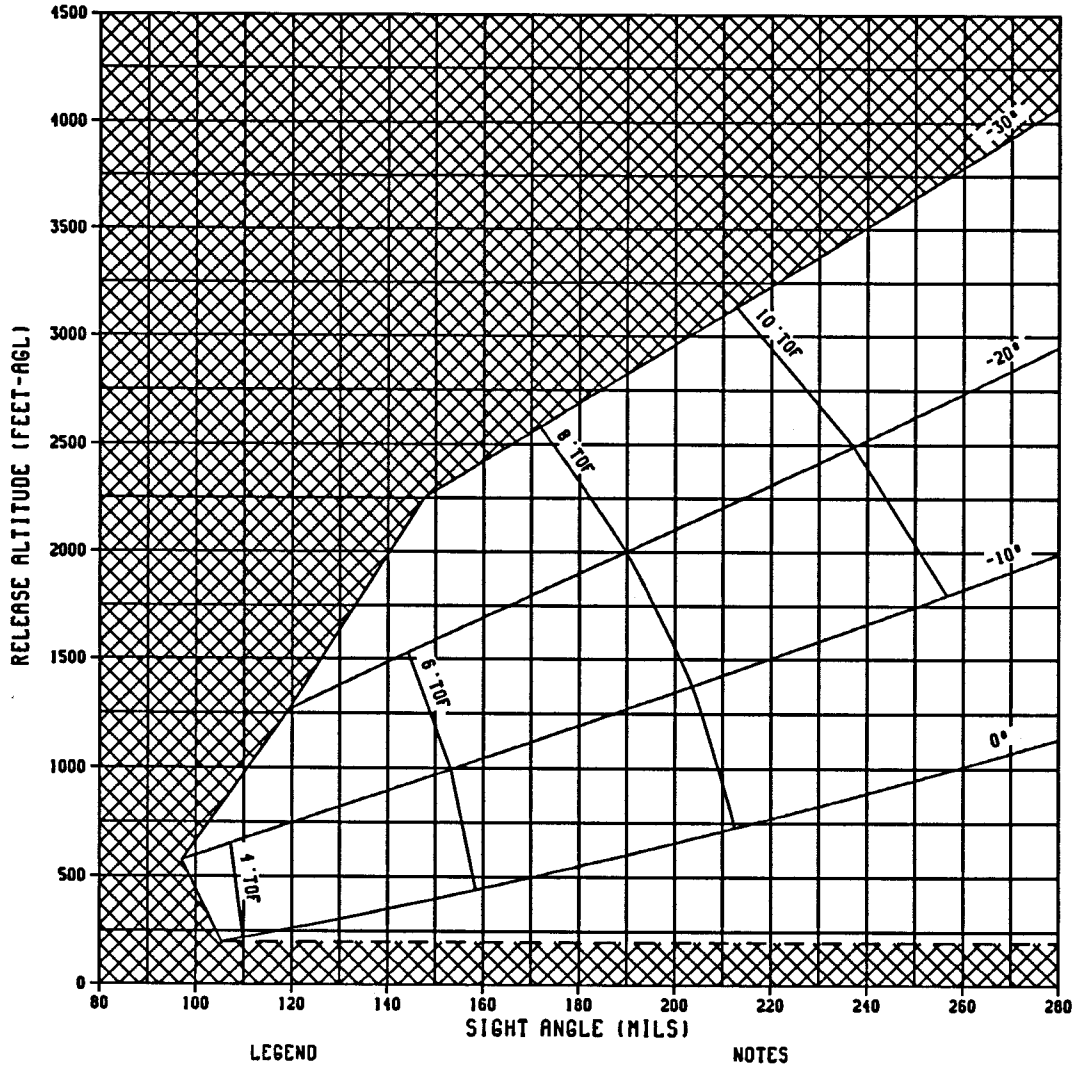


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-50. Sight Angle Chart, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)[2]

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO FUZING RESTRICTIONS AND EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-50. Sight Angle Chart, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	200	3.7	2086	2096	135	96	36	3	13.18	425.14
	250	4.2	2282	2296	148	109	36	3	15.54	397.18
	300	4.7	2450	2469	161	122	37	2	17.80	375.54
	350	5.1	2597	2621	173	134	37	2	19.97	358.30
	400	5.6	2728	2758	185	146	37	2	22.06	344.26
	500	6.3	2955	2997	207	168	37	2	26.01	322.96
	600	7.0	3147	3203	227	188	37	2	29.70	307.80
	700	7.7	3313	3386	247	208	37	2	33.12	296.77
	800	8.3	3460	3552	266	227	37	2	36.31	288.65
	900	8.9	3592	3703	285	245	37	2	39.27	282.64
-10	600	4.0	2139	2222	138	99	36	3	23.56	414.45
	700	4.6	2356	2458	153	114	36	2	26.16	387.93
	800	5.2	2549	2672	168	130	36	2	28.76	366.78
	900	5.7	2724	2868	183	145	36	2	31.34	349.80
	1000	6.3	2881	3050	198	160	37	2	33.87	336.10
	1100	6.8	3025	3219	213	174	37	2	36.33	324.99
	1200	7.3	3158	3378	228	189	37	2	38.71	315.95
	1300	7.8	3279	3528	242	203	37	2	41.00	308.59
	1400	8.3	3393	3670	256	217	37	2	43.20	302.61
	1600	9.3	3596	3936	283	244	37	2	47.29	293.82
-20	1035	4.3	2143	2380	139	101	35	2	33.74	408.00
	1100	4.6	2239	2494	145	108	35	2	34.86	396.68
	1200	5.0	2379	2664	156	118	35	2	36.59	381.22
	1300	5.5	2510	2827	167	129	35	2	38.33	367.87
	1400	5.9	2633	2982	177	140	35	2	40.08	356.35
	1500	6.3	2750	3132	188	150	36	2	41.82	346.40
	1600	6.8	2860	3277	199	161	36	2	43.54	337.82
	1700	7.2	2963	3416	210	172	36	2	45.23	330.43
	1800	7.6	3061	3551	220	182	36	2	46.88	324.06
	2000	8.5	3242	3809	242	204	36	2	50.06	313.86
	2200	9.3	3405	4054	263	225	36	2	53.05	306.37
	2400	10.1	3553	4288	283	245	36	2	55.83	300.91
-30	1805	5.8	2385	2991	160	124	33	2	47.35	369.24
	1900	6.1	2472	3118	167	132	33	2	48.53	361.12
	2000	6.5	2559	3248	175	140	33	2	49.77	353.46
	2200	7.2	2723	3501	192	156	34	2	52.22	340.52
	2400	8.0	2875	3745	208	172	34	2	54.61	330.24
	2600	8.7	3014	3980	224	188	34	2	56.91	322.11
	2800	9.4	3143	4209	240	204	34	2	59.10	315.70
	3000	10.2	3262	4432	256	220	34	2	61.17	310.69
	3200	10.9	3372	4649	272	236	34	2	63.11	306.79
	3350	11.4	3450	4809	283	247	34	2	64.49	304.46

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 65.

BF 11308-R6-B58-1

Figure 2-51. Delivery Data Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 1 of 3)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	200	3.8	2266	2275	119	88	29	2	12.52	444.93
	250	4.3	2472	2485	132	101	29	2	14.84	413.48
	300	4.8	2648	2665	144	113	29	2	17.06	389.27
	400	5.6	2938	2965	166	135	29	2	21.27	354.45
	500	6.4	3174	3213	187	156	29	2	25.21	330.82
	600	7.1	3372	3425	207	176	29	2	28.88	314.04
	700	7.8	3545	3613	226	195	29	2	32.31	301.79
	800	8.4	3697	3782	244	213	29	2	35.51	292.73
	900	9.0	3833	3937	262	231	29	2	38.49	285.99
	1020	9.6	3980	4108	282	251	29	2	41.80	280.14
-10	531	3.4	2066	2133	108	77	29	3	20.47	467.12
	600	3.8	2243	2322	118	87	29	2	22.15	440.92
	700	4.4	2476	2573	132	101	29	2	24.65	409.75
	800	5.0	2683	2799	146	115	29	2	27.18	384.88
	900	5.6	2868	3006	161	129	29	2	29.71	364.89
	1000	6.1	3037	3197	175	144	29	2	32.22	348.73
	1100	6.7	3190	3374	189	158	29	2	34.68	335.61
	1200	7.2	3330	3540	202	171	29	2	37.07	324.91
	1400	8.2	3579	3843	230	198	29	2	41.62	309.02
	1600	9.2	3794	4117	256	225	29	2	45.81	298.41
	1800	10.1	3982	4370	281	250	30	2	49.62	291.42
-20	1139	4.5	2381	2639	127	97	28	2	33.81	413.80
	1200	4.8	2471	2747	133	103	28	2	34.83	402.89
	1300	5.2	2611	2917	143	113	28	2	36.51	386.95
	1400	5.6	2743	3079	153	123	28	2	38.22	373.13
	1500	6.1	2867	3236	163	133	28	2	39.93	361.16
	1600	6.5	2984	3386	173	143	28	2	41.63	350.79
	1700	6.9	3095	3531	183	153	28	2	43.32	341.83
	1800	7.4	3200	3671	194	163	28	2	44.99	334.08
	2000	8.2	3393	3938	214	184	28	2	48.22	321.60
	2200	9.0	3567	4191	234	204	29	2	51.28	312.32
	2400	9.8	3724	4430	254	223	29	2	54.15	305.47
	2700	11.0	3935	4772	283	252	29	2	58.08	298.53
-30	2005	6.2	2657	3328	151	123	26	2	47.96	368.47
	2200	6.9	2827	3582	166	138	26	2	50.34	353.13
	2400	7.6	2989	3833	181	153	27	2	52.74	340.51
	2600	8.4	3138	4075	197	168	27	2	55.07	330.45
	2800	9.1	3275	4309	212	184	27	2	57.32	322.45
	3000	9.8	3403	4536	228	199	27	2	59.46	316.14
	3200	10.5	3521	4758	243	214	27	1	61.49	311.17
	3400	11.2	3631	4974	258	229	27	1	63.40	307.29
	3600	11.9	3733	5186	273	244	27	1	65.18	304.28
	3750	12.5	3805	5343	284	254	27	1	66.44	302.49

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 65.

BF 11308-R6-B58-2

Figure 2-51. Delivery Data Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 2 of 3)

AV-8B DELIVERY DATA
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	STRIKING VELOCITY (FT/SEC)
0	200	3.8	2428	2437	105	82	21	2	12.06	460.35
	300	4.8	2824	2840	129	106	21	2	16.55	399.68
	400	5.7	3124	3149	150	127	21	2	20.73	362.05
	500	6.5	3366	3403	170	147	21	2	24.64	336.62
	600	7.2	3570	3620	189	167	21	2	28.32	318.59
	700	7.8	3746	3811	208	185	21	2	31.75	305.43
	800	8.4	3901	3983	225	202	21	2	34.96	295.67
	900	9.0	4041	4140	242	219	21	2	37.96	288.38
	1000	9.6	4167	4285	259	236	21	2	40.75	282.93
	1200	10.6	4388	4549	290	267	21	2	45.78	275.92
-10	575	3.5	2265	2337	97	74	21	2	20.46	474.68
	700	4.3	2577	2670	114	91	21	2	23.46	428.98
	800	4.9	2796	2908	127	104	21	2	25.93	400.72
	900	5.5	2992	3124	140	118	21	2	28.43	378.02
	1000	6.0	3169	3323	154	131	21	2	30.92	359.66
	1200	7.1	3477	3678	181	158	21	2	35.77	332.57
	1400	8.1	3738	3991	207	184	21	2	40.36	314.45
	1600	9.1	3962	4273	232	209	21	2	44.62	302.28
	1800	10.0	4158	4531	257	234	21	2	48.52	294.16
	2000	10.9	4332	4771	281	258	21	2	52.05	288.86
-20	1265	4.8	2643	2930	119	97	20	2	34.49	410.37
	1400	5.4	2833	3160	132	110	20	2	36.73	388.34
	1500	5.9	2964	3322	141	119	20	2	38.41	374.52
	1600	6.3	3088	3478	151	129	20	2	40.10	362.53
	1700	6.7	3205	3628	161	139	20	2	41.78	352.13
	1800	7.2	3315	3772	170	148	20	2	43.45	343.12
	2000	8.0	3518	4047	190	168	20	2	46.71	328.56
	2200	8.8	3701	4306	209	187	20	2	49.83	317.66
	2400	9.6	3867	4551	228	206	20	2	52.77	309.56
	2600	10.4	4017	4785	247	225	20	1	55.52	303.58
	2800	11.2	4155	5011	266	244	21	1	58.07	299.23
	3000	12.0	4282	5228	284	262	21	1	60.43	296.12
-30	2249	6.8	2955	3713	148	127	19	2	49.39	360.85
	2400	7.3	3082	3906	159	138	19	2	51.20	349.99
	2600	8.1	3239	4154	173	153	19	1	53.56	338.15
	2800	8.8	3385	4393	188	168	19	1	55.85	328.69
	3000	9.5	3519	4624	203	182	19	1	58.04	321.17
	3200	10.2	3644	4849	218	197	19	1	60.13	315.22
	3400	10.9	3759	5069	232	212	19	1	62.10	310.53
	3600	11.6	3867	5284	247	226	19	1	63.96	306.87
	3800	12.3	3968	5494	261	240	19	1	65.70	304.03
	4000	13.0	4062	5701	275	254	19	1	67.32	301.84
	4200	13.7	4150	5905	289	268	19	1	68.83	300.18

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 65.

BF 11308-R6-B58-3

Figure 2-51. Delivery Data Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 3 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	200	71	-81	-682	501	-309	170	104	-115	2.1	63	2.9	63	29.9
	250	72	-81	-601	480	-291	174	101	-109	2.3	72	3.4	71	31.1
	300	72	-82	-541	454	-277	176	98	-105	2.5	80	3.9	79	32.2
	350	73	-82	-495	428	-266	177	95	-101	2.6	87	4.4	87	33.2
	400	73	-82	-458	405	-256	177	92	-97	2.8	94	4.9	94	34.0
	500	74	-82	-401	366	-241	176	87	-92	3.0	107	5.9	107	35.6
	600	74	-82	-360	334	-229	174	83	-87	3.2	119	6.9	118	37.0
	700	74	-82	-328	308	-219	172	80	-83	3.4	130	7.9	129	38.2
	800	74	-82	-302	287	-211	170	77	-80	3.6	140	8.9	140	39.3
	900	74	-82	-281	268	-204	168	75	-77	3.7	150	9.8	149	40.4
-10	600	35	-39	-141	112	-58	45	40	-41	2.2	67	8.1	67	30.1
	700	39	-43	-144	120	-67	53	42	-43	2.5	77	8.9	77	31.4
	800	42	-47	-145	126	-74	59	44	-44	2.7	87	9.8	87	32.6
	900	45	-50	-146	129	-80	65	45	-45	2.9	97	10.6	97	33.7
	1000	47	-52	-145	131	-85	71	46	-46	3.1	106	11.4	106	34.7
	1100	49	-54	-144	132	-89	75	46	-47	3.2	115	12.2	115	35.7
	1200	51	-56	-142	132	-93	79	47	-47	3.4	124	13.0	124	36.6
	1300	53	-58	-140	131	-96	83	47	-47	3.5	132	13.8	132	37.5
	1400	55	-60	-138	130	-99	86	48	-48	3.7	141	14.6	140	38.3
	1600	57	-62	-133	127	-103	91	48	-48	3.9	157	16.2	156	39.7
-20	1035	25	-28	-62	52	-28	24	27	-27	2.4	72	13.2	72	30.4
	1100	27	-29	-64	55	-30	26	28	-28	2.5	77	13.7	77	30.9
	1200	29	-32	-67	59	-34	30	29	-29	2.7	85	14.3	85	31.8
	1300	31	-34	-70	62	-38	33	30	-30	2.8	92	15.0	92	32.6
	1400	33	-36	-72	65	-41	37	31	-31	3.0	100	15.7	100	33.4
	1500	35	-39	-74	67	-45	40	32	-32	3.1	107	16.4	107	34.1
	1600	37	-40	-76	70	-48	43	33	-33	3.3	114	17.0	114	34.9
	1700	39	-42	-77	71	-51	46	34	-34	3.4	122	17.7	121	35.6
	1800	40	-44	-78	73	-54	49	35	-34	3.6	129	18.4	129	36.2
	2000	43	-47	-79	75	-60	54	36	-36	3.8	143	19.7	143	37.5
	2200	46	-50	-80	76	-65	59	37	-37	4.1	157	21.0	157	38.6
	2400	48	-52	-80	76	-69	64	38	-38	4.3	170	22.2	170	39.6
-30	1805	25	-27	-42	38	-25	23	25	-24	3.0	98	19.7	98	32.6
	1900	26	-29	-43	39	-27	25	25	-25	3.1	104	20.2	104	33.2
	2000	28	-30	-45	41	-29	27	26	-26	3.2	110	20.8	110	33.8
	2200	31	-33	-47	44	-34	31	28	-27	3.5	122	21.9	122	34.9
	2400	33	-36	-49	46	-38	36	29	-28	3.7	135	23.0	135	35.9
	2600	36	-39	-51	48	-42	40	30	-30	4.0	147	24.1	147	36.9
	2800	38	-41	-52	50	-46	43	31	-31	4.2	159	25.2	159	37.8
	3000	40	-43	-53	51	-50	47	33	-32	4.4	171	26.2	171	38.7
	3200	42	-46	-54	52	-54	51	34	-33	4.6	184	27.2	183	39.5
	3350	43	-47	-54	52	-57	54	34	-34	4.8	193	27.9	192	40.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 65.

BF 11308-R6-B59-1

Figure 2-52. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 1 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	200	67	-69	-753	558	-382	199	122	-136	2.3	64	2.5	64	27.9
	250	67	-69	-662	532	-355	204	118	-129	2.5	73	2.9	72	29.1
	300	68	-69	-594	501	-335	206	113	-123	2.7	81	3.4	80	30.2
	400	68	-69	-501	445	-306	206	106	-113	3.0	95	4.3	95	32.0
	500	68	-69	-438	400	-285	204	100	-106	3.2	108	5.2	108	33.6
	600	68	-69	-391	364	-268	200	95	-100	3.4	120	6.1	120	35.0
	700	67	-69	-356	335	-255	197	91	-95	3.6	131	7.0	131	36.2
	800	67	-69	-327	311	-245	194	87	-91	3.8	141	7.9	141	37.3
	900	67	-69	-304	291	-236	191	84	-87	3.9	151	8.8	151	38.4
	1020	67	-69	-280	270	-227	187	81	-83	4.1	163	9.8	162	39.5
-10	531	28	-29	-137	103	-54	40	42	-43	2.1	57	6.7	57	26.8
	600	31	-32	-142	112	-61	46	44	-45	2.3	64	7.2	64	27.7
	700	34	-35	-147	122	-71	55	46	-47	2.6	75	7.9	75	29.0
	800	37	-38	-150	129	-80	63	48	-49	2.8	85	8.6	85	30.2
	900	40	-41	-151	133	-87	70	49	-50	3.0	94	9.4	94	31.4
	1000	42	-43	-151	136	-92	76	50	-51	3.2	104	10.2	104	32.4
	1100	44	-45	-150	137	-97	81	51	-52	3.4	113	10.9	113	33.4
	1200	46	-47	-149	138	-102	85	51	-52	3.5	122	11.7	122	34.4
	1400	48	-50	-145	137	-108	93	52	-52	3.8	139	13.2	139	36.1
	1600	51	-52	-141	134	-113	99	52	-53	4.1	155	14.6	155	37.6
	1800	53	-54	-136	131	-117	103	52	-53	4.4	170	16.1	170	38.9
-20	1139	23	-24	-64	55	-31	27	30	-30	2.6	76	12.4	76	28.8
	1200	25	-25	-66	57	-34	29	31	-31	2.7	81	12.8	81	29.3
	1300	26	-27	-69	61	-38	33	32	-32	2.9	88	13.5	88	30.2
	1400	28	-29	-72	64	-42	37	34	-33	3.1	95	14.1	95	31.0
	1500	30	-31	-74	67	-46	40	35	-34	3.2	103	14.7	103	31.7
	1600	32	-33	-76	70	-50	44	36	-35	3.4	110	15.4	110	32.5
	1700	33	-34	-78	72	-53	47	36	-36	3.5	117	16.0	117	33.2
	1800	35	-36	-79	74	-56	50	37	-37	3.7	125	16.6	124	33.9
	2000	38	-39	-81	76	-62	56	38	-38	3.9	139	17.9	139	35.2
	2200	40	-41	-82	78	-68	61	40	-39	4.2	153	19.1	152	36.4
	2400	42	-43	-82	79	-73	66	41	-40	4.4	166	20.3	166	37.5
	2700	45	-46	-82	79	-79	73	42	-41	4.8	186	22.1	186	39.0
-30	2005	23	-24	-44	40	-29	26	27	-27	3.3	105	18.9	105	31.4
	2200	26	-27	-46	43	-33	31	29	-28	3.6	117	20.0	117	32.5
	2400	28	-29	-49	46	-38	35	30	-30	3.8	129	21.1	129	33.6
	2600	30	-32	-51	48	-42	39	32	-31	4.1	141	22.1	141	34.6
	2800	33	-34	-52	50	-46	43	33	-32	4.3	153	23.1	153	35.6
	3000	34	-36	-54	51	-50	47	34	-33	4.5	166	24.1	166	36.5
	3200	36	-37	-55	52	-54	51	35	-35	4.8	178	25.1	178	37.3
	3400	38	-39	-55	53	-58	55	36	-36	5.0	190	26.1	190	38.1
	3600	40	-41	-56	54	-62	58	37	-37	5.2	202	27.0	201	38.8
	3750	41	-42	-56	54	-65	61	38	-37	5.3	210	27.6	210	39.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 65.

BF 11308-R6-B59-2

Figure 2-52. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 2 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 83 MOD 5 (TP) : BSU-85/B AIR (HIGH DRAG)

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	200	89	-93	-820	613	-457	229	140	-157	2.4	65	2.2	64	26.4
	300	86	-89	-643	546	-394	235	128	-140	2.8	82	3.0	81	28.6
	400	84	-86	-540	482	-355	234	119	-128	3.1	96	3.9	96	30.5
	500	82	-84	-471	432	-327	230	112	-119	3.4	109	4.7	109	32.0
	600	80	-82	-420	392	-306	225	106	-112	3.6	121	5.5	121	33.4
	700	79	-81	-381	360	-290	221	101	-106	3.8	132	6.4	132	34.7
	800	77	-79	-349	333	-276	216	97	-101	4.0	143	7.2	143	35.8
	900	76	-78	-324	310	-265	212	93	-96	4.1	153	8.0	152	36.8
	1000	76	-77	-302	291	-256	208	90	-93	4.3	162	8.8	162	37.8
	1200	74	-76	-268	260	-241	202	85	-87	4.5	180	10.4	180	39.5
-10	575	34	-35	-141	108	-61	45	47	-47	2.3	60	6.3	60	25.5
	700	39	-40	-150	123	-75	57	50	-51	2.7	73	7.1	72	27.1
	800	42	-43	-154	131	-85	66	52	-53	2.9	83	7.8	83	28.4
	900	44	-45	-156	137	-93	73	53	-54	3.1	92	8.5	92	29.5
	1000	46	-47	-156	140	-99	80	54	-55	3.3	102	9.2	102	30.6
	1200	49	-51	-155	143	-110	91	56	-56	3.7	120	10.6	120	32.6
	1400	52	-53	-151	142	-117	99	56	-57	4.0	137	12.0	137	34.3
	1600	54	-55	-147	140	-122	105	56	-57	4.3	153	13.4	153	35.9
	1800	55	-56	-142	136	-126	110	56	-57	4.5	169	14.8	169	37.3
	2000	56	-58	-137	133	-129	114	56	-57	4.8	184	16.2	184	38.5
	2200	57	-59	-132	129	-131	118	56	-56	5.0	199	17.5	198	39.7
-20	1265	28	-29	-67	58	-37	31	34	-33	2.9	82	12.1	82	27.9
	1400	30	-31	-72	63	-43	37	35	-35	3.2	92	12.9	92	29.0
	1500	32	-33	-74	67	-47	40	36	-36	3.3	99	13.5	99	29.8
	1600	34	-35	-77	70	-51	44	37	-37	3.5	106	14.1	106	30.6
	1700	35	-36	-78	72	-54	48	38	-38	3.6	114	14.7	114	31.3
	1800	37	-37	-80	74	-58	51	39	-39	3.8	121	15.3	121	32.0
	2000	39	-40	-82	77	-65	57	41	-40	4.0	135	16.5	135	33.4
	2200	41	-42	-84	79	-70	63	42	-41	4.3	149	17.7	149	34.6
	2400	43	-44	-84	81	-76	68	43	-43	4.6	163	18.9	163	35.7
	2600	45	-46	-84	81	-80	73	44	-43	4.8	176	20.0	176	36.8
	2800	46	-48	-84	81	-85	78	45	-44	5.0	189	21.1	189	37.7
	3000	48	-49	-84	81	-89	82	45	-45	5.2	202	22.2	202	38.6
-30	2249	27	-28	-46	43	-34	31	30	-30	3.7	115	18.7	115	30.9
	2400	29	-30	-48	45	-37	34	32	-31	3.9	124	19.5	124	31.7
	2600	31	-32	-51	48	-42	39	33	-32	4.2	136	20.5	136	32.8
	2800	33	-34	-53	50	-46	43	34	-34	4.4	149	21.6	148	33.8
	3000	35	-36	-54	52	-51	47	35	-35	4.6	161	22.5	161	34.7
	3200	36	-37	-55	53	-55	51	37	-36	4.8	173	23.5	173	35.6
	3400	38	-39	-56	54	-59	55	38	-37	5.1	185	24.5	185	36.4
	3600	39	-40	-56	55	-63	59	39	-38	5.3	197	25.4	197	37.2
	3800	41	-42	-57	55	-66	62	40	-39	5.5	208	26.2	208	37.9
	4000	42	-43	-57	55	-70	66	40	-40	5.7	220	27.1	220	38.6
	4200	43	-44	-57	56	-73	69	41	-41	5.9	232	27.9	232	39.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 8.4 ft/sec. Stores code : 65.

BF 11308-R6-B59-3

Figure 2-52. Release Error Sensitivities, Mk 83 Mod 5 (TP), BSU-85/B Air, High Drag (Sheet 3 of 3)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
GBU-16
ALSO APPLICABLE TO : MK80 SERIES (LOW DRAG) & GBU-12
WITH UP TO 12 PERCENT ERROR

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-AGL)	WEAPON APOGEE FROM RELEASE			PULLUP TO RELEASE		PULLUP TO TARGET		RELEASE TO TARGET	
					DRT (FT)	TOF (SEC)	ALT (FT-AGL)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)
0	10	450	15	339	2883	4	582	2533	3	9724	13	7191	10
		500	14	370	3488	4	667	2987	4	11490	14	8503	11
		550	13	400	4066	5	748	3442	4	13186	15	9745	12
	20	450	26	749	5298	8	1708	4082	5	16056	23	11974	18
		500	25	865	6309	8	2016	4857	6	18967	26	14110	20
		550	24	975	7185	9	2294	5617	6	21576	27	15960	21
	30	450	36	1368	6729	11	3327	5423	7	20339	33	14917	26
		500	35	1616	7949	12	3949	6483	8	23975	36	17493	28
		550	34	1836	8993	13	4491	7478	8	27159	38	19681	30
	38	450	44	1985	7130	13	4803	6345	9	22150	40	15805	31
		500	43	2349	8417	14	5701	7574	10	26107	43	18533	33
		550	43	2680	9446	15	6464	8739	10	29464	46	20725	36
5000	10	450	16	339	2876	4	581	2528	3	9729	13	7201	10
		500	15	370	3487	4	666	2983	4	11518	14	8534	11
		550	14	400	4071	5	748	3438	4	13235	15	9797	12
	20	450	27	740	5246	8	1686	4042	5	15957	23	11915	18
		500	25	857	6297	8	2001	4827	6	18978	25	14151	20
		550	24	966	7215	9	2285	5578	6	21680	27	16101	21
	30	450	37	1353	6626	11	3272	5365	7	20150	33	14786	25
		500	36	1601	7929	12	3915	6438	8	23989	36	17550	28
		550	35	1820	9001	13	4462	7428	8	27248	38	19821	30
	38	450	46	1939	6963	13	4676	6238	9	21777	39	15539	30
		500	44	2314	8337	14	5615	7496	10	25972	43	18476	33
		550	43	2645	9461	15	6412	8664	10	29538	46	20874	36
10000	10	450	17	339	2842	4	577	2520	3	9675	13	7155	10
		500	16	370	3484	4	665	2978	4	11535	14	8557	11
		550	15	396	4087	5	744	3416	4	13267	15	9851	12
	20	450	28	731	5142	8	1654	4002	5	15749	23	11746	18
		500	26	848	6274	8	1983	4785	6	18948	25	14163	20
		550	25	956	7234	9	2272	5548	6	21758	27	16210	21
	30	450	39	1317	6423	11	3168	5269	7	19695	32	14426	25
		500	37	1574	7831	12	3847	6363	8	23798	35	17435	27
		550	36	1804	8988	13	4428	7382	8	27292	38	19910	30
	38	450	48	1878	6688	13	4492	6100	9	21134	38	15034	30
		500	46	2265	8171	14	5482	7386	9	25611	42	18225	33
		550	44	2607	9384	15	6321	8584	10	29417	45	20834	35

BF 16003-R1-B64-1

Figure 2-53. Loft Delivery Data, GBU-16 and Mk 80 Series Low Drag (Sheet 1 of 3)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
GBU-16
ALSO APPLICABLE TO : MK80 SERIES (LOW DRAG) & GBU-12
WITH UP TO 12 PERCENT ERROR

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-AGL)	WEAPON APOGEE FROM RELEASE			PULLUP TO RELEASE		PULLUP TO TARGET		RELEASE TO TARGET	
					DRT (FT)	TOF (SEC)	ALT (FT-AGL)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)
0	10	450	16	5139	2875	4	5381	2528	3	18036	26	15508	23
		500	15	5170	3486	4	5466	2984	4	20308	27	17324	23
		550	14	5200	4070	5	5548	3438	4	22398	28	18961	24
	20	450	27	5540	5244	8	6485	4043	5	21972	34	17929	28
		500	25	5657	6293	8	6800	4828	6	25151	35	20323	30
		550	24	5766	7211	9	7084	5579	6	27940	37	22361	31
	30	450	37	6153	6622	11	8071	5367	7	24514	41	19147	34
		500	36	6401	7924	12	8714	6440	8	28387	44	21947	36
		550	35	6621	9026	13	9271	7429	8	31711	46	24282	38
	38	450	45	6740	6960	13	9476	6241	9	25182	47	18941	38
		500	44	7115	8332	14	10415	7499	10	29380	50	21881	40
		550	43	7445	9454	15	11210	8666	10	32928	53	24262	42
5000	10	450	17	5139	2842	4	5377	2520	3	18061	26	15541	23
		500	16	5170	3483	4	5465	2978	4	20460	27	17482	23
		550	15	5200	4086	5	5548	3434	4	22633	28	19199	24
	20	450	28	5531	5162	8	6458	4004	5	21897	33	17893	28
		500	26	5648	6272	8	6783	4786	6	25249	35	20463	29
		550	25	5756	7231	9	7072	5549	6	28172	37	22623	31
	30	450	39	6117	6449	11	7976	5271	7	24191	41	18920	34
		500	37	6375	7857	12	8657	6365	8	28361	44	21995	36
		550	36	6604	8983	13	9227	7384	8	31811	46	24428	37
	38	450	48	6679	6685	13	9292	6104	9	24599	46	18495	37
		500	46	7065	8199	14	10294	7389	9	29164	50	21775	40
		550	44	7408	9378	15	11121	8586	10	32903	52	24316	42
10000	10	450	20	5135	2806	4	5370	2488	3	18034	26	15546	23
		500	17	5166	3463	4	5458	2954	4	20525	27	17571	23
		550	16	5196	4070	5	5542	3411	4	22735	27	19324	24
	20	450	31	5515	5006	7	6411	3936	5	21594	33	17659	28
		500	27	5638	6192	8	6754	4744	6	25199	35	20455	29
		550	26	5754	7213	9	7061	5530	6	28327	37	22797	31
	30	450	43	6070	6149	10	7833	5141	7	23532	40	18391	33
		500	39	6336	7651	12	8546	6254	8	27979	43	21725	35
		550	37	6575	8887	13	9156	7305	8	31736	45	24431	37
	38	450	53	6592	6244	12	9019	5914	9	23571	45	17658	36
		500	49	6999	7880	14	10085	7243	9	28502	49	21259	39
		550	46	7354	9207	15	10979	8469	10	32616	52	24146	42

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Figure 2-53. Loft Delivery Data GBU-16 and Mk 80 Series Low Drag (Sheet 2 of 3)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
GBU-16
ALSO APPLICABLE TO : MK80 SERIES (LOW DRAG) & GBU-12
WITH UP TO 12 PERCENT ERROR

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-AGL)	WEAPON APOGEE FROM RELEASE			PULLUP TO RELEASE		PULLUP TO TARGET		RELEASE TO TARGET	
					DRT (FT)	TOF (SEC)	ALT (FT-AGL)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)
0	10	450	17	10139	2842	4	10377	2520	3	22603	34	20082	30
		500	16	10170	3483	4	10465	2978	4	25361	34	22383	31
		550	15	10200	4086	5	10548	3434	4	27821	35	24387	32
	20	450	28	10531	5162	8	11458	4004	5	25787	41	21784	35
		500	26	10648	6272	8	11783	4786	6	29373	42	24587	37
		550	25	10756	7231	9	12072	5549	6	32458	44	26909	38
	30	450	39	11117	6449	11	12976	5271	7	27360	47	22089	40
		500	37	11375	7857	12	13657	6365	8	31674	50	25309	42
		550	36	11604	8983	13	14227	7384	8	35209	52	27825	44
	38	450	48	11679	6685	13	14292	6104	9	27222	52	21119	44
		500	46	12065	8199	14	15294	7389	9	31890	56	24501	46
		550	44	12408	9378	15	16121	8586	10	35681	58	27095	48
5000	10	450	20	10135	2806	4	10370	2488	3	22650	33	20162	30
		500	17	10166	3463	4	10458	2954	4	25531	34	22577	31
		550	16	10196	4070	5	10542	3411	4	28042	35	24631	31
	20	450	31	10515	5006	7	11411	3936	5	25534	40	21598	35
		500	27	10638	6192	8	11754	4744	6	29413	42	24668	36
		550	26	10754	7213	9	12061	5530	6	32726	44	27196	38
	30	450	43	11070	6149	10	12833	5141	7	26734	47	21593	40
		500	39	11336	7651	12	13546	6254	8	31360	50	25106	42
		550	37	11575	8887	13	14156	7305	8	35225	52	27920	43
	38	450	53	11592	6244	12	14019	5914	9	26210	51	20296	43
		500	49	11999	7880	14	15085	7243	9	31276	55	24033	46
		550	46	12354	9207	15	15979	8469	10	35466	58	26996	48
10000	10	450	24	10135	2743	4	10364	2476	3	22590	33	20114	30
		500	20	10166	3413	4	10453	2942	4	25580	34	22638	31
		550	18	10196	4051	5	10540	3404	4	28231	35	24827	31
	20	450	37	10499	4777	7	11350	3860	5	25039	40	21179	35
		500	32	10620	6005	8	11698	4666	6	29107	42	24441	36
		550	31	10744	7107	9	12027	5479	6	32713	43	27234	37
	30	450	49	11028	5673	10	12646	5005	7	25642	46	20637	39
		500	45	11283	7273	11	13373	6100	8	30568	49	24468	41
		550	41	11533	8672	12	14039	7187	8	34898	51	27711	43
	38	450	58	11569	5620	12	13740	5806	9	24837	50	19032	42
		500	57	11900	7312	13	14746	7024	9	29986	54	22962	44
		550	52	12280	8836	15	15739	8310	10	34735	57	26425	47

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Figure 2-53. Loft Delivery Data GBU-16 and Mk 80 Series Low Drag (Sheet 3 of 3)

2.5 MK 77 MOD 4/5 FIRE BOMB

2.5.1 Description. The Mk 77 Mod 4/5 fire bomb (see Figure 2-54) is a thin-skinned unstabilized container filled with gelled fuel (fire bomb mix). Lack of stabilizing fins ensures that it tumbles, impacts, and ruptures in a trajectory which maximizes the dispersal of the 71 gallons of fire bomb mix. Fuzes and igniters are used to ignite the combustible filling.

The filler holes are located 31É down the side of the container and provide the primary fuzing configuration. An alternate fuzing configuration is provided for some delivery aircraft by the igniter wells located on the nose and tail bulkheads. The Mk 13 Initiator is the ONLY AUTHORIZED fuzing configuration for this aircraft. Refer to the Mk 13 Initiator description for additional details.

The only difference between the Mod 4/5 fire bomb is the fuel gel mixing/filling method. The Mod 4 caustic gel solutions have been replaced by polymer imbiber beads that absorb approximately 27 times their own volume in hydrocarbons. The beads are non-caustic, non-toxic and unaffected by moisture which enhances filling/assembly operations and increases ready service storage times. Additionally, fuel gel (absorption) time has decreased to 10 minutes and gel burn intensity has increased by 200 to 300 ÉF.

The elliptical burn pattern for low level releases at speeds of 400 to 500 KIAS is approximately 50 feet in width and 250 to 300 feet in length. Temperature at the center of the pattern is approximately 1,300ÉF (Mod 4) or 1,500 to 1,600 ÉF (Mod 5).

Fire bombs are most effective when released in pairs at dive angles less than 30É where the bombs fall short of the target by at least one-half the effective pattern length. Higher than 30É releases will increase impact angles and decrease the elliptical burn pattern area.

WARNING

- The top of the fireball reaches approximately 250 AGL and burn duration is 15 to 30 seconds. Trailing aircraft should take appropriate interval.

- Mod 4 fire bombs should not be returned. Every effort should be made to normal release or safe jettison the weapon. Mod 5 fire bombs can be returned unless CV/LPH/Shorebased NATOPS or other instructions dictate otherwise.

NOTE

Mk-77 releases from the AV-8B are currently authorized from 0É to 15É dive angles only.

Refer to External Store Limitations, chapter 5 for carriage and release restrictions.

2.5.2 Preflight Checks. Refer to NWP 3-22.5-AV8B PG, Pocket Guide, for current Preflight checks.

2.5.3 Delivery Data. A safe escape table providing terrain avoidance minimum altitudes for various recovery maneuvers is presented in Figure 2-55. Sight angle charts, ballistic tables, and release error sensitivities tables for the Mk 77 Fire Bomb are presented in Figures 2-56 through 2-58.

NOTE

The sight settings for the Mk 77 were calculated to place the beginning of the splash pattern on target.

Characteristics

Length (Inches)	81.2
Diameter (Inches)	18.6
Weight (Pounds)	520.0
Suspension (Inches)	14.0

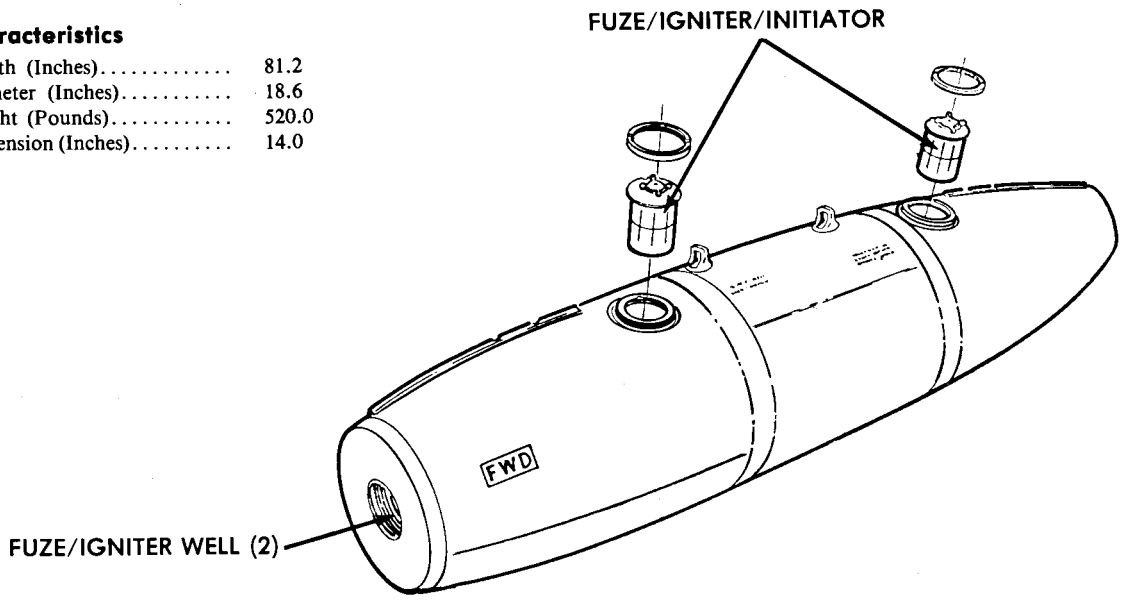

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Figure 2-54. Mk 77 Mod 4/5 Fire Bomb

AV-8B SAFE ESCAPE TABLE
MK 77 FIRE BOMB

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	100	107	100
	5 G LEVEL BREAKAWAY	100	107	100
	6 G LEVEL BREAKAWAY	100	107	100
-5	5 G	271	114	150
	6 G	270	114	150
-10	5 G	490	122	200
	6 G	485	122	200
-15	5 G	745	129	250
	6 G	738	129	250

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross weight = 24,000 lbs.

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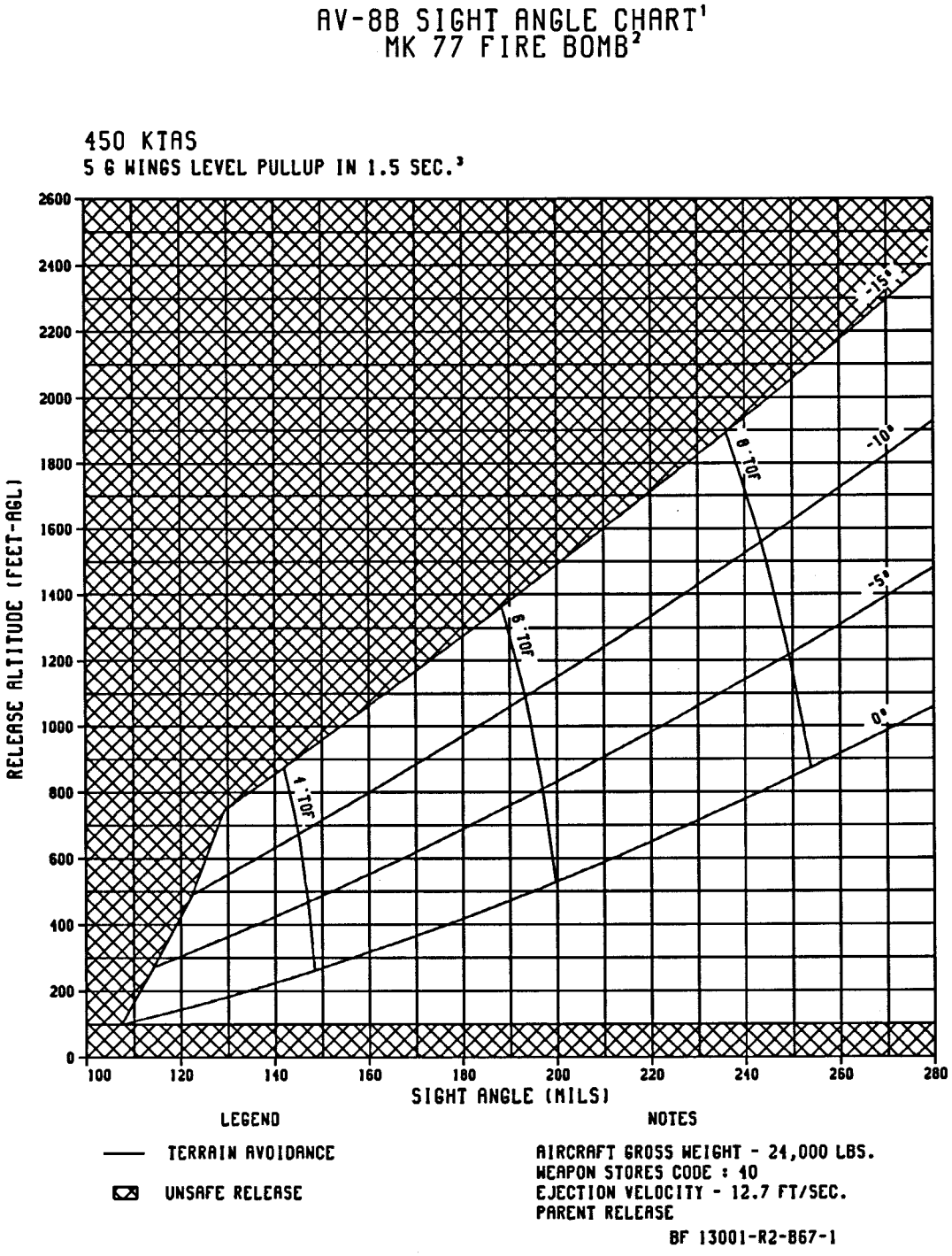
Figure 2-55. Safe Escape Table, Mk 77 Fire Bomb



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-56. Sight Angle Chart, Mk 77 Fire Bomb

AV-8B DELIVERY DATA
MK 77 FIRE BOMB

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.3	1482	1485	107	67	36	4	7.36	591.91
	150	2.9	1822	1828	122	82	36	3	9.41	555.38
	200	3.4	2097	2106	134	95	36	3	11.26	528.01
	250	3.9	2331	2344	146	107	36	3	12.97	506.34
	400	5.1	2884	2911	177	138	37	2	17.59	461.02
	500	5.8	3176	3215	195	156	37	2	20.36	440.51
	600	6.5	3430	3482	212	173	37	2	22.95	424.69
	800	7.6	3859	3941	243	204	37	2	27.67	402.18
	1000	8.7	4214	4331	272	233	37	2	31.89	387.46
	1100	9.1	4372	4508	285	246	37	2	33.84	382.06
-5	271	2.6	1659	1681	114	75	36	3	13.33	569.61
	300	2.8	1778	1803	119	80	36	3	14.05	557.96
	400	3.5	2146	2183	136	97	36	3	16.47	524.07
	500	4.2	2461	2512	152	113	36	2	18.79	497.56
	600	4.8	2739	2804	167	128	37	2	21.02	476.31
	800	5.9	3210	3308	196	157	37	2	25.25	444.69
	1000	7.0	3603	3739	222	183	37	2	29.16	422.77
	1200	7.9	3941	4119	247	208	37	2	32.79	407.19
	1500	9.2	4374	4624	282	243	37	2	37.72	391.61
-10	490	3.0	1858	1922	122	83	36	3	19.49	550.97
	500	3.1	1886	1951	124	85	36	3	19.66	548.41
	600	3.6	2154	2236	136	97	36	3	21.42	525.09
	800	4.6	2623	2743	160	121	36	2	24.89	488.32
	1000	5.6	3026	3187	183	145	37	2	28.25	461.15
	1200	6.5	3377	3584	206	167	37	2	31.46	440.74
	1400	7.4	3688	3945	227	188	37	2	34.53	425.25
	1600	8.2	3968	4278	248	209	37	2	37.42	413.43
	1800	8.9	4222	4589	268	228	37	2	40.16	404.40
	1950	9.5	4398	4811	282	243	37	2	42.10	399.07
-15	745	3.4	2024	2157	129	91	36	3	25.50	537.16
	800	3.7	2138	2282	135	96	36	3	26.25	527.70
	1000	4.5	2521	2712	154	116	36	2	28.99	498.09
	1200	5.4	2865	3106	173	135	36	2	31.69	474.69
	1400	6.1	3174	3469	192	154	36	2	34.34	456.10
	1600	6.9	3456	3809	210	172	36	2	36.91	441.27
	1800	7.7	3714	4127	228	189	37	2	39.38	429.42
	2000	8.4	3952	4429	245	207	37	2	41.75	419.96
	2200	9.1	4171	4716	262	224	37	2	44.01	412.42
	2400	9.8	4376	4991	279	240	37	2	46.16	406.43

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 40.

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Figure 2-57. Delivery Data, Mk 77 Fire Bomb

AV-8B RELEASE ERROR SENSITIVITIES
MK 77 FIRE BOMB

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	64	-74	-871	0	-305	118	103	-118	1.5	39	1.7	38	25.8
	150	70	-80	-710	409	-292	137	105	-118	1.8	49	2.2	49	26.7
	200	75	-85	-613	434	-282	149	105	-116	2.1	58	2.6	58	27.4
	250	78	-88	-548	425	-275	157	105	-114	2.3	66	3.0	66	28.1
	400	85	-95	-431	374	-259	171	102	-109	2.9	87	4.1	86	29.7
	500	89	-98	-384	344	-252	175	100	-106	3.2	98	4.8	98	30.5
	600	92	-101	-349	319	-246	178	98	-103	3.5	109	5.4	109	31.3
	800	96	-105	-299	281	-237	182	95	-98	3.9	129	6.6	129	32.6
	1000	99	-108	-265	252	-230	183	92	-95	4.3	146	7.8	146	33.7
	1100	101	-109	-252	241	-227	184	91	-93	4.5	154	8.4	154	34.2
-5	271	37	-42	-227	143	-72	45	51	-53	1.7	44	4.2	44	26.1
	300	39	-45	-226	151	-78	50	53	-55	1.8	48	4.4	48	26.4
	400	47	-53	-222	170	-94	64	58	-60	2.2	60	5.0	60	27.4
	500	54	-60	-216	177	-107	75	62	-64	2.5	71	5.6	71	28.3
	600	59	-65	-210	180	-116	85	64	-66	2.8	81	6.2	81	29.0
	800	68	-74	-198	178	-130	100	67	-69	3.3	101	7.3	100	30.4
	1000	74	-81	-187	173	-139	110	69	-70	3.7	118	8.4	118	31.5
	1200	80	-86	-177	167	-146	119	70	-71	4.1	134	9.5	134	32.5
	1500	86	-93	-164	157	-153	128	70	-71	4.6	156	10.9	156	33.7
-10	490	30	-34	-110	82	-39	29	37	-37	1.9	51	6.8	51	26.6
	500	30	-34	-111	83	-40	30	37	-38	2.0	52	6.8	52	26.6
	600	36	-40	-115	92	-49	37	41	-41	2.2	61	7.3	61	27.3
	800	45	-49	-120	104	-64	51	46	-47	2.7	78	8.3	78	28.6
	1000	52	-57	-122	109	-76	62	50	-51	3.2	95	9.3	94	29.6
	1200	59	-64	-122	112	-86	72	53	-53	3.6	110	10.3	110	30.6
	1400	64	-70	-121	113	-95	80	55	-55	3.9	124	11.2	124	31.4
	1600	69	-75	-119	113	-102	88	57	-57	4.3	138	12.1	138	32.2
	1800	74	-80	-117	112	-109	94	58	-58	4.6	151	12.9	151	32.9
	1950	77	-83	-115	111	-113	99	59	-59	4.8	161	13.5	161	33.4
-15	745	27	-30	-68	56	-28	23	31	-31	2.2	58	9.3	58	26.9
	800	29	-32	-71	58	-31	25	32	-32	2.3	62	9.5	62	27.2
	1000	36	-39	-77	66	-40	33	36	-36	2.7	77	10.4	76	28.2
	1200	42	-46	-81	72	-49	41	40	-40	3.1	90	11.2	90	29.1
	1400	48	-52	-83	76	-58	49	43	-42	3.5	104	12.1	104	29.9
	1600	53	-57	-85	79	-65	56	45	-45	3.8	117	12.9	117	30.6
	1800	57	-62	-86	81	-72	63	47	-47	4.1	129	13.7	129	31.3
	2000	62	-67	-87	82	-79	69	49	-49	4.4	142	14.4	141	31.9
	2200	66	-71	-87	83	-85	75	50	-50	4.7	153	15.2	153	32.5
	2400	69	-75	-86	83	-90	80	51	-51	5.0	165	15.9	165	33.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. PARENT release. Ejection velocity : 12.7 ft/sec. Stores code : 40.

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Figure 2-58. Release Error Sensitivities, Mk 77 Fire Bomb

2.6 MK 20 / CBU-99, -100 CLUSTER BOMB (ROCKEYE)

NOTE

CBU-99 and CBU-100 bombs are direct Form / Fit / Function replacements for Mk 20 and are cleared to the same respective carriage / release limits.

2.6.1 Description. The Mk 20 / CBU-99, -100 series Rockeye (see Figure 2-59) is designed as a freefall dispenser/cluster bomb weapon for use against a variety of area targets. It is effective against trucks, radar vans, missile sites, fuel storage tanks, surface ships and snorkeling submarines. The dispenser contains 247 bomblets designed to penetrate armor.

The Rockeye is received in an all-up round configuration and consists of a Mk 7 dispenser, either an FMU-140/B dispenser proximity fuze (DPF) which opens the dispenser at a preselected altitude/time or a Mk 339 mechanical time fuze which opens the dispenser at a preselected time, and 247 Mk 118 Mod 0/1 bomblets. Several Rockeye Mods have a thermal protective coating to improve cook off protection in the event of a fire. For Rockeye configuration variants, refer to Rockeye Configurations (Figure 2-60).

NOTE

- Several Rockeye Mods have Airborne Weapons Change (AWC) 283 incorporated, which is a special tether kit and improved fin release band installation. The tether kit alleviates possible aircraft damage from loose weapon hardware during release. The kit provides weapon retention of the Mk 339 fuze impeller sealing band and fin release band by means of a short cable/lanyard.
- More recent Rockeye Mods have AWC-372 or -373 incorporated, which introduces a fin band with backing plate and a nomenclature change to CBU-99/B, -100/B or CBU-99A/B, -100A/B, respectively.
- Only those weapons with AWC-283, -372 or -373 incorporated are authorized for use.

AWC-283 is a special “Tether Kit” and improved fin release band installation. The “Tether Kit” alleviates possible aircraft damage from loose weapon hardware during release. The “Kit” provides weapon retention of the Mk 339 fuze impeller sealing band and fin release bands by means of a short cable/lanyard. Refer to ‘‘External Stores Limitations,’’ chapter 5 for carriage, release, and jettison restrictions.

2.6.1.1 Mk 7 Dispenser. The Mk 7 series dispenser is a one-piece container enclosing the individual bomblets. It has stabilizing fins that extend at weapon release and a linear shaped charge that separates the container longitudinally when the fuze functions, dispersing the bomblets.

The Mk 339 mechanical time fuze is factory set to provide an in-flight option of either 1.2-second (primary mode) or 4.0-second (option mode) functioning time. The primary mode is used for low-altitude releases to ensure that the bomblets have adequate time of fall for proper dispersal prior to impact. The option mode is used for high-altitude releases to minimize the effects of wind and required mil lead. To better serve/operational requirements, the factory set primary/option mode functioning times may be preflight changed to other settings, from 1.2 to 100 seconds. In-flight selection of either primary or option mode remains available with ZRF configured racks. Aircraft with Omnibus 6+C, or 7.0 installed can set an option mode from 1.2 to 50 seconds for computed releases.

The FMU-140/B dispenser proximity fuze has two preflight selectable switches (ARM TIME and HOF) that provide 10 HOF settings (primary mode) from 300 to 3,000 feet with 5 arm times from 1.2 to 10.0 seconds, or a 1.2 second arm and fire time (option mode). The primary mode also has a 300 foot HOF built-in backup. The proximity mode is normally used for loft/

high altitude deliveries and the 1.2 second arm and fire mode is used for low altitude dive and level deliveries.

Two fuze arming wires (primary and option) are installed in conduits that are slotted at various intervals to allow positioning of the arming wire/lanyard extractor to correspond with the placement of the arming unit (solenoid) on different suspension equipment. All Mods have a tail fin actuating wire which is always positive armed to the suspension equipment at a designated point.

NOTE

Pilot option delivery mode is reliable only when the zero retention force (ZRF) arming unit is incorporated in the bomb rack. Bomb racks not using ZRF arming units (arming solenoids) are not reliable and delivery mode (primary/option) must be preflight selected.

Placement of the extractor for the primary and option mode wires is labeled on the dispenser. This placement/positioning of the extractors was determined by the aircraft arming unit location and circuitry. For the primary mode only the primary wire/lanyard is withdrawn at release. To select the option mode, both fuze arming wires/lanyards must be withdrawn. Failure to withdraw the primary wire during any normal release will cause the weapon to dud since it prevents the Mk 339 fuze impeller from turning and prevents FMU-140 thermal battery initiation.

The multitude of options available to ordance during loading and to the pilot in the cockpit makes CBU employment confusing. This confusion frequently leads to a dud weapon or inaccurate delivery. This usually happens because the HUD aiming symbology selected does not match the fuze arming time (The ″wrong″ wire/s gets pulled). Some of the pre-flight mission planning variables which must be taken into account when planning a CBU delivery are as follows:

1. What CBU/fuze combination is being used?

2. What aircraft is that CBU being loaded on? Is it a Day/Night aircraft (OMNIBUS 7/6+C) or a Radar aircraft (OMNIBUS R3)?

3. Are the CBUs being loaded on parent station racks (Non-ZRF) or ITERs (ZRF)?

4. What fuze arming time is required for the given weather and tactical situation? The options available depend on all the variables listed in steps 1 through 3 above.

Because there are so many variables involved in CBU employment, it has a lower success rate then GP bombs in terms of fuze functioning (CBUs have a higher dud rate). The CBU dud rate can be reduced if standarized procedures are followed by ordnance personnel and aircrew throughout the AV-8B community.

Figure 2-61 has been developed to standardize CBU loading and employment throughout the AV-8B community, using the AV-8B loading manual, A1-AV8BB-LWS-000, as a reference in an attempt to elimnate any contradiction between the loading manual and this Tacman. The intent of this figure is to provide loading and switchology standardization procedures which reduce variables while maintaining tactical flexibility.

2.6.1.2 Mk 339 Mechanical Time Fuze. The safe/armed status of the Rockeye can be checked by viewing the Mk 339 mechanical time fuze through the observation window on the nose fairing. On early fuzes, the fuze is armed if the safe/arm indicator pin protrudes upward into the indicator bubble. On later fuzes, the fuze is armed if the red safe/arm indicator pin has penetrated upward into the indicator bubble through the green foil disk. The fuze functioning time settings can be checked by viewing the primary and option time dials, through the fuze setting dial observation window. The primary dial is black and the option dial is silver/white. Refer to the Mk 339 Mod 0/1 Mechanical Time Fuze description for additional details.

2.6.1.3 FMU-140/B Dispenser Proximity Fuze (DPF). The arm time switch SAFE position provides ground handling safety by internally

grounding the circuitry if inadvertent primary arming lanyard actuation were to occur. The safe/armed status of the DPF is readily apparent as protrusion of the red tipped indicator pitot tube through the radome which indicates the DPF is armed.

A 300 foot backup functioning mode is automatically provided by the DPF in the primary (proximity) functioning mode if the DPF has not armed prior to reaching the preset HOF or the dispenser has never reached the preselected HOF. The DPF will initiate dispenser opening after arm time completion if approximately 300 feet AGL has been reached. Refer to the FMU-140/B DPF description for additional details.

2.6.1.4 Mk 118 - Mod 0/1 Bomblet. The Mk 118 bomblet has a small shaped-charge warhead that is capable of penetrating 6 inches of armor-plate. It uses a fuzing system which has a small tail mounted arming vane. The tail fuze, which arms the bomblet after dispersal from the dispenser detonates the bomblets after a short delay on impact with soft targets. The nose element of the fuzing system detonates the bomblet instantaneously, maximizing the shaped-charge effect on impact with hard targets (steel, concrete, etc.). The discriminating feature of the fuzing system permits penetration of light materials (vegetation, camouflage nets, light plywood, etc.) with a delayed detonation until the bomblet impacts with a more solid material. Minimum airspeed of dispersed bomblets to complete the arming cycle is 225 KIAS.

The Mod 0 antitank bomblets arm approximately 1.5 seconds after dispenser opening, while the Mod 1 bomblets arm 0.5 second after dispenser opening. The Mod 1 bomblets are loaded in the Mk 20 Mod 4 bomb cluster only.

2.6.2 Rockeye Employment. A single Rockeye is an effective weapon against a point target. However, effectiveness studies show that a multiple weapon drop of up to four weapons will yield the most desirable results when all aspects are considered (i.e., bomblet pattern density and delivery accuracy when using single-run tactics). Four weapons dropped in pairs are recommended for small point targets to increase bomblet density within the impact pattern. A stick of four weapons is recommended for linear targets such as a convoy.

A time of flight of at least 3 seconds after dispenser opening is necessary for the pattern to properly form. A time of flight of less than 3 seconds will give a very tight grouping of bomblets and an increased bomblet dud rate. A Rockeye that fails to open may produce a high order detonation on impact. The bomblet fuzing system has demonstrated a functioning rate of 97 percent.

Rockeye patterns are described by the length, width and density of the effective elliptical pattern of the bomblets at impact. Patterns are a function of release conditions and fuze settings.

An effective pattern includes 75 percent of the bomblets. For safety considerations, a maximum elliptical pattern containing 95 percent of the bomblets can be found by increasing the pattern length by 31 percent and the pattern width by 10 percent. The pattern data also provides information on the average bomblet density for the effective pattern. The numbers in the tables represent, as an average, the number of bomblets found per 100 square meters in the pattern. Bomblet impacts will be most concentrated at the center of the pattern.

When employing the Mk 339 fuze care must be taken to ensure that release conditions are controlled and fuze settings are consistent with the planned canister opening altitude in order to achieve proper functioning and desired impact parameters.

When employing the FMU-140 fuze, ensure release conditions allow sufficient time of fall for bomblet arming and impact pattern development. Bomblet time of fall decreases for a given fuze function altitude (HOF) as the canister flight path angle approaches -90É at HOF. Thus, as release altitude increases, the bomblets have sufficient time to deploy effectively.

The aim point should be the center of the target (no wind) and the manual weapon release button should be pressed as the pipper crosses the target and held until all weapons are released.

2.6.3 CBU Loading/Employment Matrix. See Figure 2-61.

2.6.4 Preflight Checks. Refer to NWP 55-3-AV8B PG, Pocket Guide for current Preflight Checks.

2.6.5 Delivery Data Tables. Delivery data tables and release error sensitivities tables are given for fuze function altitudes (see Figure 2-62 and Figure 2-63). Data are provided for minimum safe release altitudes which ensure aircraft terrain avoidance and sufficient weapon time of fall to allow the dispenser to open and bomblets to arm. The terrain avoidance minimum altitude computations and assumptions are identical to that used for GP bomb delivery data tables.

CAUTION

Delivery Data were generated for FMU-140 fuze HOF settings. Care should be taken when applying these data to canister with a Mk 339 fuze.

NOTE

If using the FMU-140 in primary (HOF mode) allow a minimum of 2.0 seconds time of fall, to initiate thermal battery functioning, prior to reaching desired HOF.

The cluster munitions delivery data charts depict the use of the FMU-140 fuze. This data can be used with the Mk 339 fuze, by simply using the ″canister time to function″ column of the charts. This time if put into the Mk 339 fuze will yield the same functioning height as the FMU-140, assuming the aircraft is reasonably close to delivery parameters in terms of dive angle, airspeed and release altitude.

Error sensitivities in regard to bomblet time of fall can be approximated by comparing similar releases but varying one of the parameters, i.e., 500 vice 550 knots, 30É vice 45É dive and differing release altitudes.

2.6.6 Loft Delivery Data Tables. Loft delivery data tables are provided for Mk 20 Rockeye. A loft delivery with a wing-over escape maneuver was used. A 3g load factor (or the maximum attainable within the angle-of-attack limits) is maintained at weapon release. Immediately after release, the aircraft is rolled 135É in 2.0 seconds and recovery is initiated. Release and impact data are provided for various flight path angles, run-in velocities, run-in altitudes, and target altitudes (see Figure 2-64).

Aircraft pitch attitude, which is the flight path angle plus angle of attack, is provided at the indicated release altitude (REL ALT). It should be noted that the release altitude is higher than the run-in altitude. Also, the run-in altitude is the same as the pullup altitude. At apogee (the point of maximum altitude), weapon downrange travel (DRT) from release, time of flight (TOF) from release, and altitude (ALT) are provided. Weapon downrange travel and time of flight are then provided from the aircraft initial pullup point (prior to release) to impact.

Cluster bomb pattern data provide length and width of the effective elliptical pattern of the bomblets at impact. The effective pattern includes 75 percent of the bomblets. For safety considerations, a maximum elliptical pattern containing 95 percent of the bomblets can be found by increasing the pattern length by 31 percent and the pattern width by 10 percent. The pattern data also provide information on the average bomblet density for the effective pattern. The numbers in the tables represent, as an average, the number of bomblets found per 100 square meters in the pattern. Bomblet impacts are concentrated at the center of the pattern.

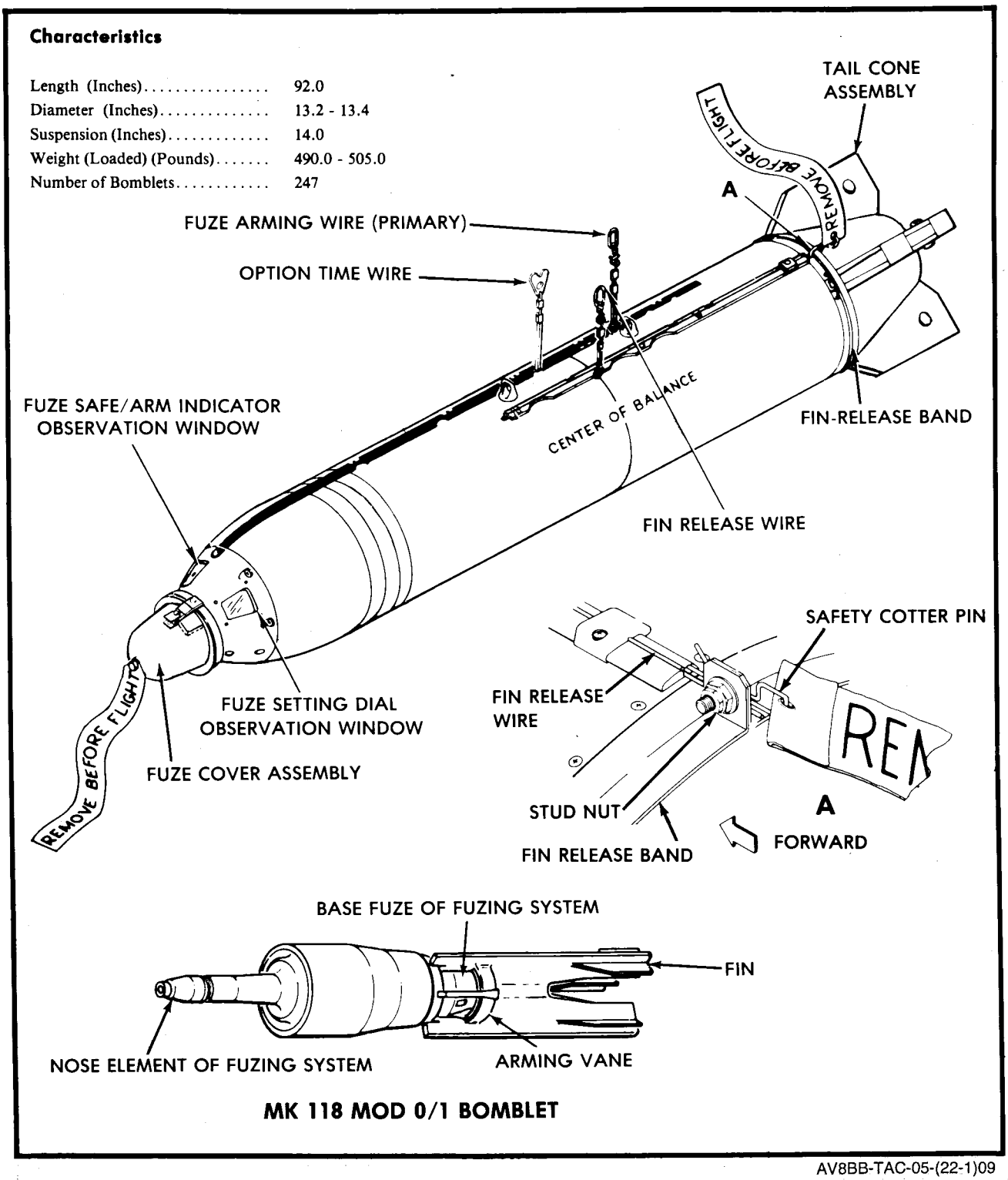

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Figure 2-59. Mk 20/CBU-99, -100 Cluster Bomb (Rockeye)

COMPONENTS	MK 20 (ROCKEYE II) CLUSTER BOMB CONFIGURATIONS										CBU CONFIGURATIONS			
	NOMENCLATURE													
	MOD 2 (NTP)	MOD 3 (NTP)	MOD 4 (NTP)	MOD 6 (TP)	MOD 7 (TP)	MOD 8 (NTP)	MOD 9 (TP)	MOD 10 (NTP)	MOD 11 (TP)	MOD 12 (NTP)	99 /B (TP)	99 A/B (TP)	100 /B (NTP)	100 A/B (NTP)
Mk 7 Mods Dispenser	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mk 339 Mod 0 Mechanical Fuze	•	•	•											
Mk 339 Mod 1 Mechanical Fuze		•	•	•	•	•			•	•	•		•	
FMU-140/B Proximity Fuze							•	•				•		•
Mk 118 Mod 0 Bomblet with MK 1 Mod 0 Fuze	•	•		•	•	•	•	•	•	•	•	•	•	•
Mk 118 Mod 1 Bomblet with MK 1 Mod 1 Fuze			•											
GBU-1/B Laser Guidance System (Air Force only)			•											
Fuze/Fin Band Tethers (AWC-283)					•	•	•	•	•	•				
Fin Band Tether only	•		•											
Fin Band with Backing Plate (AWC-372/373)											•	•	•	•
Single Fuze Arm Wire (Option only)	•													
Double Fuze Arm Wire (Primary and Option)		•	•	•	•	•	•	•	•	•	•	•	•	•

Figure 2-60. Rockeye Configurations

OMNIBUS 6+C (Night Attack) and OMNIBUS 7 (Day Attack)				
	Mk 339 (Mod 1)		FMU-140	
	PRIMARY	OPTION	PRIMARY	OPTION
FUZE CAPABILITY	1.2 to 100 seconds	1.2 to 100 seconds	300 to 3000 feet Height of Function (HOF)	1.2 seconds
HUD AIMING SYMBOLOGY DISPLAYED (BALLISTICS)	CCIP or AUTO symbology for 1.2 seconds fuze function ballistics is displayed with PRIMARY selected.	CCIP or AUTO symbology for 4.0 to 50 seconds (cockpit selectable) fuze function ballistics is displayed with OPTION selected (defaults to 4.0 sec).	CCIP or AUTO symbology for the HOF dialed into the SMC tail fuze code setting is displayed with PRIMARY selected.	CCIP or AUTO symbology for 1.2 seconds fuze function ballistics is displayed with OPTION selected.
PARENT STATION CARRIAGE (NON-ZRF)	Pilot Action: • Select - PR Ordnance Action: • Connect both primary and option wires • Set 1.2 seconds on both fuze dials Results: • CCIP or AUTO symbology for 1.2 seconds is displayed in HUD • Primary and option wires are both pulled at weapon release • Fuze functions at 1.2 seconds	Pilot Action: • Select - OP • Enter time to match that set on fuze dials Ordnance Action: • Connect both primary and option wires • Set same time on both fuze dials (time as directed by pilot/ operations) Results: • CCIP or AUTO symbology for pilot entered fuze function time displayed in HUD • Primary and option wires are both pulled at weapon release • Fuze functions at time entered on option fuze dial	Pilot Action: • Select - PR Ordnance Action: • Connect primary wire only • Set HOF/ARM time as directed by pilot/ operations on FMU-140 fuze face plate • Enter correct fuze code in SMC to match HOF set on FMU-140 fuze face plate Results: • CCIP or AUTO symbology for HOF entered as fuze code on SMC is displayed in HUD • Primary wire is pulled at weapon release • Fuze functions at HOF entered on FMU-140 fuze face plate	Pilot Action: • Select - OP Ordnance Action: • Connect both primary and option wires Results: • CCIP or AUTO symbology for 1.2 seconds is displayed in HUD • Primary and option wires are both pulled at weapon release • Fuze functions at 1.2 seconds

Figure 2-61. CBU Loading/Employment Matrix (Sheet 1 of 4)

OMNIBUS R3 (Radar)		
	Mk 339 (Mod 1)	
	PRIMARY	OPTION
FUZE CAPABILITY	1.2 to 100 seconds	1.2 to 100 seconds
HUD AIMING SYMBOLOGY DISPLAYED (BALLISTICS)	CCIP or AUTO symbology for 1.2 seconds fuze function ballistics is displayed with PRIMARY selected.	CCIP or AUTO symbology for 4.0 seconds fuze function ballistics is displayed with OPTION selected.
PARENT STATION CARRIAGE (NON-ZRF)	Pilot Action: • Select - PR Ordnance Action: • Connect both primary and option wires • Set 1.2 seconds on both fuze dials Results: • CCIP or AUTO symbology for 1.2 seconds is displayed in HUD • Primary and option wires are both pulled at weapon release • Fuze functions at 1.2 seconds	Pilot Action: • Select - OP Ordnance Action: • Connect both primary and option wires • Set 4.0 seconds on both fuze dials Results: • CCIP or AUTO symbology for 4.0 seconds is displayed in HUD • Primary and option wires are both pulled at weapon release • Fuze functions at 4.0 seconds

Figure 2-61. CBU Loading/Employment Matrix (Sheet 2 of 4)

OMNIBUS 6+C (Night Attack) and OMNIBUS 7 (Day Attack)				
	Mk 339 (Mod 1)		FMU-140	
	PRIMARY	OPTION	PRIMARY	OPTION
FUZE CAPABILITY	1.2 to 100 seconds	1.2 to 100 seconds	300 to 3000 feet Height of Function (HOF)	1.2 seconds
HUD AIMING SYMBOLOGY DISPLAYED (BALLISTICS)	CCIP or AUTO symbology for 1.2 seconds fuze function ballistics is displayed with PRIMARY selected.	CCIP or AUTO symbology for 4.0 to 50 seconds (cockpit selectable) fuze function ballistics is displayed with OPTION selected (defaults to 4.0 sec).	CCIP or AUTO symbology for the HOF dialed into the SMC tail fuze code setting is displayed with PRIMARY selected.	CCIP or AUTO symbology for 1.2 seconds fuze function ballistics is displayed with OPTION selected.
ITER CARRIAGE (ZRF)	Pilot Action: • Select - PR Ordnance: • Connect both primary and option wires • Set 1.2 seconds on primary fuze dial, set time as directed by pilot/ operations on option fuze dial Results: • CCIP or AUTO symbology for 1.2 seconds is displayed in HUD • Primary wire only is pulled at weapon release Fuze functions at 1.2 seconds	Pilot Action: •- Select - OP • Enter time to match that set on fuze option dials Ordnance Action: • Connect both primary and option wires • Set 1.2 seconds on primary fuze dial, set time as directed by pilot/ operations on option fuze dial Results: • CCIP or AUTO symbology for pilot entered fuze function time displayed in HUD • Primary and option wires are both pulled at weapon release • Fuze functions at time entered on option fuze dial	Pilot Action: • Select - PR Ordnance Action: • Connect both primary and option wires • Set HOF/ARM time as directed by pilot/ operations on FMU-140 fuze face plate • Enter correct fuze code in SMC to match HOF set on FMU-140 fuze face plate Results: • CCIP or AUTO symbology for HOF entered as fuze code on SMC is displayed in HUD • Primary wire is pulled at weapon release • Fuze functions at HOF entered on FMU-140 fuze face plate	Pilot Action: • Select - OP Ordnance Action: • Connect both primary and option wires • Set HOF/ARM time as directed by pilot/ operations on FMU-140 fuze face plate • Enter correct fuze code in SMC to match HOF set on FMU-140 fuze face plate Results: • CCIP or AUTO symbology for 1.2 seconds is displayed in HUD • Primary and option wires are both pulled at weapon release • Fuze functions at 1.2 seconds

Figure 2-61. CBU Loading/Employment Matrix (Sheet 3 of 4)

OMNIBUS R3 (Radar)		
	Mk 339 (Mod 1)	
FUZE CAPABILITY	**1.2 to 100 seconds**	**1.2 to 100 seconds**
HUD AIMING SYMBOLOGY DISPLAYED (BALLISTICS)	CCIP or AUTO symbology for 1.2 seconds fuze function ballistics is displayed with PRIMARY selected.	CCIP or AUTO symbology for 4.0 seconds fuze function ballistics is displayed with OPTION selected.
ITER CARRIAGE (ZRF)	Pilot Action: • Select - PR Ordnance Action: • Connect both primary and option wires • Set 1.2 seconds on primary fuze dial, 4.0 seconds on option fuze dial Results: • CCIP or AUTO symbology for 1.2 seconds is displayed in HUD • Primary wire only is pulled at weapon release • Fuze functions at 1.2 seconds	Pilot Action: • Select - OP Ordnance Action: • Connect both primary and option wires • Set 1.2 seconds on primary fuze dial, 4.0 seconds on option fuze dial Results: • CCIP or AUTO symbology for 4.0 seconds is displayed in HUD • Primary and option wires are both pulled at weapon release • Fuze functions at 4.0 seconds

Figure 2-61. CBU Loading/Employment Matrix (Sheet 4 of 4)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	740	1.2	8.0	3403	3482	253	138	275	6.79	214
	800	2.1	8.4	3896	3977	241	132	273	7.14	203
	900	3.2	8.8	4447	4537	238	126	269	7.64	200
	1000	4.0	9.1	4867	4968	241	121	263	8.12	203
	1100	4.7	9.4	5219	5334	246	117	257	8.59	208
	1200	5.3	9.8	5530	5659	252	114	250	9.07	214
	1300	5.9	10.1	5811	5955	259	111	244	9.54	220
	1400	6.4	10.4	6070	6230	265	108	237	10.01	227
	1500	6.9	10.7	6312	6488	272	106	231	10.49	233
	1600	7.3	11.0	6540	6733	279	104	225	10.96	240
	1700	7.8	11.3	6756	6967	285	103	219	11.42	247
	1800	8.2	11.5	6962	7191	292	101	214	11.89	253
	1900	8.6	11.8	7160	7407	298	100	209	12.35	259
	2000	8.9	12.1	7349	7617	305	99	204	12.80	266
	2100	9.3	12.4	7532	7820	311	97	200	13.25	272
-10	900	1.2	5.7	2763	2906	179	117	265	8.35	140
	1000	1.8	6.0	3064	3223	180	114	258	8.76	141
	1100	2.3	6.3	3341	3518	182	111	252	9.18	144
	1200	2.7	6.6	3601	3796	186	109	246	9.60	147
	1300	3.2	6.9	3845	4059	190	107	239	10.02	151
	1400	3.6	7.1	4077	4311	195	106	234	10.44	156
	1500	4.0	7.4	4299	4553	200	104	228	10.86	161
	1600	4.4	7.7	4510	4786	205	103	223	11.28	166
	1700	4.8	8.0	4714	5011	210	101	218	11.70	172
	1800	5.1	8.2	4910	5230	216	100	213	12.12	177
	1900	5.5	8.5	5100	5442	221	99	208	12.53	182

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-1

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 1 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	740	1.2	8.2	3648	3722	231	143	288	6.25	200
	800	2.2	8.5	4208	4284	219	137	287	6.56	188
	900	3.2	8.9	4832	4915	215	130	283	6.99	184
	1000	4.0	9.3	5304	5397	217	125	278	7.40	186
	1100	4.7	9.6	5699	5804	221	121	272	7.81	191
	1200	5.3	9.9	6045	6163	227	118	266	8.23	196
	1400	6.4	10.5	6644	6790	238	112	253	9.06	208
	1600	7.4	11.1	7162	7339	251	108	241	9.91	220
	1800	8.2	11.7	7626	7836	263	104	229	10.75	232
	2000	9.0	12.2	8050	8295	275	102	219	11.59	244
	2200	9.7	12.8	8443	8725	286	99	209	12.42	255
-10	905	1.2	5.6	2911	3049	158	120	282	7.63	127
	950	1.4	5.7	3059	3203	158	119	279	7.79	127
	1000	1.7	5.9	3216	3368	158	117	276	7.96	127
	1100	2.1	6.2	3516	3684	159	115	269	8.32	129
	1200	2.6	6.5	3797	3982	162	113	263	8.69	132
	1300	3.0	6.7	4062	4265	166	111	257	9.05	135
	1400	3.4	7.0	4315	4536	170	109	251	9.42	139
	1500	3.8	7.3	4555	4796	174	107	245	9.79	144
	1600	4.2	7.6	4786	5047	179	106	240	10.17	148
	1700	4.6	7.8	5008	5289	183	104	234	10.54	153
	1800	4.9	8.1	5222	5524	188	103	229	10.91	157
	1900	5.3	8.3	5429	5752	193	102	224	11.28	162

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-2

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 2 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	740	1.2	8.3	3879	3948	211	147	300	5.83	189
	800	2.2	8.6	4503	4573	199	141	299	6.11	176
	900	3.2	9.0	5194	5272	194	134	296	6.49	172
	1000	4.0	9.4	5716	5802	196	129	291	6.86	173
	1200	5.4	10.1	6529	6639	204	121	279	7.60	182
	1400	6.5	10.7	7183	7318	215	116	267	8.35	192
	1600	7.4	11.3	7745	7908	226	111	254	9.12	204
	1800	8.3	11.8	8246	8440	237	107	243	9.90	215
	2000	9.0	12.4	8703	8930	248	104	231	10.68	226
	2200	9.8	12.9	9126	9388	259	102	221	11.45	237
	2300	10.1	13.2	9327	9606	264	100	217	11.84	242
-10	920	1.2	5.5	3080	3214	138	123	297	7.08	116
	950	1.3	5.6	3183	3322	138	122	295	7.17	116
	1000	1.6	5.8	3350	3496	138	120	292	7.32	116
	1100	2.0	6.1	3668	3830	139	118	286	7.64	117
	1200	2.4	6.3	3968	4146	142	116	279	7.96	119
	1300	2.9	6.6	4252	4447	145	114	273	8.29	122
	1400	3.3	6.9	4523	4734	148	112	267	8.62	126
	1500	3.7	7.2	4781	5011	152	110	261	8.95	129
	1600	4.0	7.4	5029	5277	156	109	255	9.29	133
	1700	4.4	7.7	5268	5535	160	107	249	9.63	138
	1800	4.7	8.0	5498	5785	164	106	244	9.97	142
	1900	5.1	8.2	5720	6027	169	105	239	10.30	146
	2000	5.4	8.5	5935	6263	173	103	234	10.64	150

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-3

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 3 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	940	1.2	9.3	3645	3764	292	149	258	6.71	252
	1100	3.2	10.0	4716	4843	268	137	252	7.45	229
	1200	4.0	10.3	5143	5281	268	133	248	7.83	229
	1400	5.3	10.9	5813	5979	275	126	240	8.55	236
	1600	6.4	11.5	6354	6552	286	120	231	9.25	247
	1800	7.3	12.0	6820	7054	297	116	223	9.94	258
	2000	8.2	12.6	7237	7509	309	113	215	10.62	270
	2500	10.0	13.8	8141	8516	337	107	197	12.28	298
	3000	11.6	15.0	8915	9406	365	102	183	13.83	325
	3500	13.0	16.1	9605	10223	390	99	171	15.27	349
	3700	13.5	16.5	9863	10534	399	98	167	15.81	359
-10	1100	1.2	6.8	3057	3248	210	129	252	7.93	171
	1200	1.8	7.1	3358	3566	207	126	248	8.24	169
	1300	2.3	7.4	3635	3860	208	124	244	8.55	169
	1400	2.7	7.7	3893	4137	209	122	239	8.86	171
	1500	3.2	7.9	4136	4400	212	120	235	9.16	173
	1600	3.6	8.2	4366	4650	215	118	231	9.47	177
	1700	4.0	8.5	4585	4890	219	116	227	9.78	181
	1800	4.4	8.7	4794	5121	223	114	223	10.09	185
	1900	4.8	9.0	4994	5344	228	113	219	10.40	189
	2000	5.1	9.2	5187	5560	232	112	215	10.70	193
	2100	5.5	9.5	5374	5770	237	110	212	11.01	198
	2200	5.8	9.7	5554	5974	242	109	208	11.31	203
	2300	6.2	9.9	5729	6173	246	108	205	11.61	207
	2400	6.5	10.2	5898	6368	251	107	202	11.91	212
	2500	6.8	10.4	6063	6559	256	106	199	12.20	217
	3000	8.3	11.5	6830	7460	279	102	185	13.63	239
	3500	9.6	12.6	7519	8294	301	99	174	14.97	261
-20	1250	1.2	5.1	2469	2767	157	112	219	10.52	120
	1400	1.7	5.5	2745	3082	160	110	214	10.94	123
	1600	2.3	6.0	3096	3485	166	108	207	11.50	128
	1800	2.9	6.4	3429	3873	172	106	201	12.05	134
	2000	3.5	6.9	3746	4247	179	105	195	12.59	141
	2200	4.1	7.3	4050	4609	186	103	190	13.12	149
	2300	4.3	7.5	4197	4785	190	103	188	13.39	152
	2400	4.6	7.7	4341	4960	194	102	185	13.65	156
	2500	4.9	7.9	4482	5132	198	101	183	13.91	160
	2600	5.1	8.2	4621	5302	201	101	181	14.16	163
	2700	5.4	8.4	4757	5470	205	100	179	14.41	167

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-4

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 4 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	940	1.2	9.4	3896	4008	268	154	269	6.23	237
	1100	3.2	10.1	5107	5225	243	142	264	6.88	212
	1200	4.0	10.5	5588	5716	242	137	260	7.21	212
	1400	5.3	11.1	6338	6491	248	130	253	7.84	217
	1600	6.4	11.7	6939	7122	258	125	244	8.46	227
	1800	7.4	12.2	7456	7670	268	120	236	9.08	237
	2000	8.2	12.7	7915	8164	279	117	228	9.70	247
	2500	10.1	14.0	8905	9250	305	110	209	11.23	274
	3000	11.6	15.1	9750	10201	330	105	194	12.70	299
	3500	13.1	16.3	10499	11067	354	101	181	14.08	322
	3700	13.6	16.7	10778	11396	363	100	177	14.61	331
-10	1105	1.2	6.8	3218	3403	187	133	266	7.30	156
	1200	1.7	7.0	3524	3723	185	130	262	7.55	154
	1300	2.1	7.3	3824	4039	184	128	258	7.82	153
	1400	2.6	7.6	4104	4336	185	125	254	8.08	154
	1500	3.0	7.8	4368	4618	187	123	250	8.35	156
	1600	3.4	8.1	4618	4888	190	122	246	8.62	159
	1700	3.8	8.3	4857	5146	193	120	242	8.90	162
	1800	4.2	8.6	5085	5395	196	118	238	9.17	166
	1900	4.6	8.8	5305	5635	200	117	234	9.44	169
	2000	4.9	9.1	5516	5867	204	115	230	9.72	173
	2100	5.3	9.3	5719	6093	208	114	226	9.99	177
	2200	5.6	9.6	5916	6312	212	113	223	10.26	181
	2300	5.9	9.8	6107	6526	217	112	219	10.54	186
	2400	6.3	10.0	6293	6735	221	111	216	10.81	190
	2500	6.6	10.3	6473	6939	225	110	212	11.08	194
	3000	8.0	11.4	7310	7901	246	105	197	12.41	215
	3700	9.9	12.9	8343	9127	275	101	181	14.17	243
-20	1275	1.2	5.0	2604	2899	136	114	230	9.85	106
	1400	1.6	5.3	2845	3171	138	112	226	10.15	108
	1500	1.9	5.5	3033	3383	140	111	222	10.40	110
	1600	2.2	5.7	3216	3592	143	110	219	10.65	113
	2000	3.3	6.6	3906	4389	154	107	207	11.62	124
	2200	3.8	7.0	4230	4768	160	106	202	12.11	130
	2300	4.1	7.2	4388	4954	164	105	199	12.35	134
	2400	4.3	7.4	4542	5137	167	104	196	12.58	137
	2500	4.6	7.7	4694	5318	170	104	194	12.82	140
	2600	4.8	7.9	4842	5496	174	103	192	13.05	144
	2700	5.1	8.1	4989	5672	177	102	189	13.29	147

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-5

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 5 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	940	1.2	9.5	4130	4236	247	159	278	5.84	224
	1100	3.2	10.3	5475	5584	221	146	274	6.44	198
	1200	4.0	10.6	6006	6124	220	141	271	6.74	197
	1400	5.4	11.3	6830	6972	225	134	263	7.31	202
	1600	6.5	11.8	7487	7656	233	128	255	7.88	211
	1800	7.4	12.4	8048	8247	243	124	247	8.44	220
	2000	8.3	12.9	8547	8778	252	120	239	9.01	230
	2500	10.1	14.1	9614	9934	277	112	220	10.43	254
	3000	11.7	15.3	10521	10940	301	107	203	11.83	278
	3500	13.2	16.4	11322	11851	323	103	190	13.17	300
	3900	14.2	17.3	11908	12531	340	101	180	14.18	316
-10	1120	1.2	6.7	3399	3579	166	136	279	6.81	144
	1200	1.6	7.0	3670	3862	164	133	276	6.99	141
	1300	2.0	7.2	3989	4195	163	131	272	7.23	141
	1400	2.4	7.5	4288	4511	164	129	268	7.47	141
	1500	2.9	7.7	4571	4811	165	127	263	7.71	143
	1600	3.3	8.0	4840	5097	167	125	259	7.95	145
	1700	3.7	8.2	5096	5372	170	123	255	8.20	147
	1800	4.0	8.5	5342	5637	173	122	251	8.44	150
	1900	4.4	8.7	5578	5892	176	120	247	8.69	154
	2000	4.7	9.0	5805	6140	180	119	243	8.94	157
	2100	5.1	9.2	6024	6380	183	117	239	9.19	161
	2200	5.4	9.5	6236	6613	187	116	235	9.44	165
	2300	5.7	9.7	6442	6840	191	115	232	9.69	168
	2400	6.1	9.9	6642	7062	195	114	228	9.95	172
	2500	6.4	10.1	6836	7279	199	113	225	10.20	176
	3000	7.8	11.3	7737	8298	218	108	209	11.44	195
	3500	9.2	12.3	8545	9234	237	104	195	12.66	214
	3800	9.9	13.0	8995	9764	248	102	188	13.36	225
-20	1300	1.2	4.9	2730	3024	117	115	240	9.30	95
	1600	2.0	5.5	3317	3683	122	113	230	9.96	100
	1800	2.5	5.9	3687	4103	127	111	224	10.40	105
	2000	3.1	6.4	4042	4510	132	109	218	10.85	110
	2200	3.6	6.8	4384	4905	138	108	212	11.29	116
	2300	3.8	7.0	4550	5098	141	107	209	11.51	119
	2400	4.1	7.2	4713	5289	144	106	207	11.73	122
	2500	4.3	7.4	4873	5477	147	106	204	11.95	125
	2600	4.6	7.6	5031	5663	150	105	202	12.16	128
	2700	4.8	7.8	5186	5847	153	104	199	12.38	131

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-6

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 6 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1200 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1240	1.2	10.9	3928	4119	345	163	248	6.37	306
	1500	4.0	12.0	5466	5668	307	148	238	7.33	268
	2000	6.9	13.3	6936	7219	320	134	223	8.62	281
	4000	13.5	17.7	10163	10921	416	112	179	12.87	375
	6000	18.1	21.5	12318	13702	496	104	155	16.00	453
	7500	21.0	24.0	13656	15580	547	100	144	17.75	502
-10	1400	1.2	8.5	3401	3678	255	145	241	7.38	216
	1600	2.3	9.0	3985	4294	246	140	236	7.82	207
	1700	2.7	9.2	4245	4572	245	138	233	8.04	206
	1800	3.2	9.5	4488	4836	246	136	230	8.26	207
	1900	3.6	9.7	4718	5086	247	134	227	8.47	208
	2000	4.0	10.0	4936	5326	249	132	225	8.69	210
	2100	4.4	10.2	5144	5556	252	130	222	8.90	213
	2200	4.8	10.4	5343	5778	255	129	219	9.11	216
	2300	5.1	10.6	5534	5993	258	128	217	9.31	219
	2400	5.5	10.9	5718	6202	262	126	214	9.52	223
	2500	5.8	11.1	5897	6405	266	125	212	9.73	226
	3000	7.4	12.2	6711	7351	285	120	200	10.73	246
	4000	10.1	14.2	8080	9016	325	113	182	12.58	285
	6000	14.5	17.9	10249	11876	397	105	158	15.62	355
	7500	17.4	20.4	11593	13808	443	101	147	17.38	400
-20	1530	1.2	6.5	2785	3178	191	128	221	9.09	153
	2200	3.2	7.9	3926	4501	199	121	205	10.36	162
	2300	3.5	8.2	4080	4684	202	120	203	10.54	164
	2400	3.8	8.4	4231	4864	205	119	201	10.73	167
	2500	4.1	8.6	4378	5041	208	119	199	10.91	170
	2600	4.3	8.8	4522	5216	211	118	197	11.09	173
	2700	4.6	9.0	4663	5388	214	117	195	11.27	176
	2800	4.9	9.2	4801	5558	217	116	193	11.45	179
	2900	5.1	9.4	4937	5726	220	116	192	11.63	182
	3000	5.4	9.6	5070	5891	223	115	190	11.80	185
	4000	7.7	11.5	6289	7454	256	110	175	13.45	217
	6500	12.7	15.8	8740	10892	331	102	150	16.75	290
-30	1805	1.5	5.5	2437	3032	150	114	188	12.06	114
	2000	1.9	5.9	2681	3345	153	113	184	12.38	117
	3000	4.1	7.7	3831	4866	177	108	171	13.92	141
	4000	6.2	9.4	4843	6281	203	105	160	15.30	167
	5000	8.0	11.1	5753	7622	229	103	152	16.51	192

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-7

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 7 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1200 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1240	1.2	11.0	4184	4364	320	168	257	5.95	288
	1500	4.0	12.1	5919	6106	279	153	248	6.82	248
	2000	6.9	13.5	7560	7820	290	138	233	7.98	259
	4000	13.6	17.9	11097	11796	378	115	188	11.97	346
	6000	18.2	21.7	13429	14709	454	106	161	15.11	420
	7500	21.1	24.2	14872	16656	502	102	149	16.92	467
-10	1405	1.2	8.4	3577	3843	231	149	253	6.86	200
	1600	2.1	8.9	4188	4483	221	144	247	7.24	190
	1700	2.6	9.2	4470	4782	220	142	245	7.43	189
	1800	3.0	9.4	4735	5065	220	140	242	7.62	189
	2000	3.8	9.9	5224	5594	222	136	237	8.00	191
	2100	4.2	10.1	5451	5842	224	135	234	8.18	193
	2200	4.6	10.3	5670	6081	227	133	231	8.37	196
	2300	4.9	10.6	5879	6313	229	132	229	8.56	198
	2500	5.6	11.0	6276	6756	236	129	224	8.93	205
	3000	7.2	12.1	7168	7771	253	123	212	9.85	222
	4000	9.9	14.1	8665	9543	290	116	192	11.61	258
	6000	14.3	17.7	11024	12551	357	107	165	14.62	324
	7500	17.2	20.2	12481	14561	401	103	153	16.43	367
-20	1565	1.2	6.4	2957	3345	168	130	231	8.55	138
	2200	3.0	7.7	4095	4649	174	124	216	9.62	144
	2300	3.3	7.9	4259	4841	176	123	214	9.78	146
	2400	3.5	8.1	4420	5030	178	122	212	9.95	148
	2500	3.8	8.3	4578	5216	181	121	210	10.12	151
	2600	4.1	8.5	4732	5399	183	121	208	10.28	153
	2700	4.3	8.7	4883	5580	186	120	206	10.45	156
	2800	4.6	8.9	5032	5759	189	119	204	10.61	159
	3000	5.1	9.3	5321	6109	195	118	200	10.93	164
	5000	9.5	12.9	7784	9252	253	108	171	13.91	222
	7000	13.2	16.2	9745	11998	307	103	153	16.31	274
-30	2005	1.8	5.6	2770	3419	131	114	192	11.74	103
	2200	2.2	5.9	3018	3734	135	114	189	12.02	106
	2400	2.6	6.3	3265	4053	139	113	186	12.31	110
	2600	3.0	6.6	3507	4366	143	112	183	12.59	114
	2800	3.5	7.0	3743	4674	147	111	181	12.87	119
	3000	3.9	7.3	3973	4978	152	110	178	13.14	123
	4000	5.8	9.0	5049	6442	175	107	167	14.44	146
	5000	7.6	10.6	6022	7827	199	104	158	15.61	169

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-8

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 8 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1200 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1240	1.2	11.2	4423	4593	296	173	265	5.62	273
	1500	4.0	12.3	6341	6516	255	157	256	6.43	232
	2000	6.9	13.7	8139	8382	264	142	242	7.51	241
	4000	13.7	18.1	11954	12605	346	117	195	11.29	323
	6000	18.3	21.8	14440	15637	418	107	167	14.40	394
	8000	22.2	25.2	16442	18285	478	102	150	16.78	453
-10	1420	1.2	8.4	3771	4030	208	152	263	6.45	186
	1600	2.0	8.9	4365	4649	199	148	258	6.76	177
	1700	2.4	9.1	4666	4966	197	146	255	6.94	175
	1800	2.9	9.3	4950	5267	197	144	252	7.11	174
	2000	3.7	9.8	5476	5830	198	140	247	7.45	176
	2100	4.0	10.0	5721	6094	200	138	244	7.62	177
	2200	4.4	10.3	5956	6350	202	137	242	7.79	179
	2300	4.7	10.5	6182	6596	204	135	239	7.96	182
	2400	5.1	10.7	6401	6836	207	134	237	8.14	184
	2500	5.4	10.9	6611	7068	209	133	234	8.31	187
	4000	9.7	14.0	9186	10019	259	118	201	10.83	236
	6000	14.1	17.6	11716	13163	322	109	172	13.81	299
	8000	17.9	20.9	13746	15904	377	103	154	16.19	353
-20	1595	1.2	6.3	3109	3494	147	132	241	8.09	125
	2200	2.8	7.5	4239	4776	151	127	226	9.01	130
	2300	3.1	7.7	4412	4975	153	126	224	9.17	131
	2400	3.3	7.9	4581	5172	155	125	222	9.32	133
	2500	3.6	8.1	4748	5366	157	124	219	9.47	136
	2600	3.8	8.3	4911	5557	160	123	217	9.63	138
	2700	4.1	8.5	5071	5745	162	122	215	9.78	140
	2800	4.3	8.7	5229	5931	164	122	213	9.93	143
	3000	4.8	9.0	5536	6296	169	120	209	10.23	148
	4000	7.1	10.9	6935	8006	196	115	192	11.71	174
	5000	9.1	12.6	8160	9570	223	110	178	13.08	201
	7000	12.8	15.9	10252	12414	273	104	159	15.49	250
-30	2249	2.1	5.8	3159	3878	115	115	195	11.53	95
	2400	2.4	6.0	3353	4123	118	114	193	11.72	98
	2600	2.8	6.3	3604	4444	122	113	190	11.98	101
	2800	3.2	6.7	3850	4761	125	112	187	12.24	105
	3000	3.6	7.0	4091	5073	129	112	185	12.50	109
	4000	5.5	8.7	5221	6577	150	108	173	13.73	130
	5000	7.2	10.3	6249	8003	172	106	164	14.87	151

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-9

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 9 of 39)

1500 FT-AGL FUZE FUNCTION ALTITUDE

0 KTAS

LEASE IGHT ATH DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1540	1.2	12.4	4150	4427	395	176	247	5.91	355
	2000	5.3	14.0	6411	6716	342	155	231	7.21	302
	3000	9.7	16.3	8582	9091	376	137	209	9.00	336
	4000	12.7	18.3	10045	10813	420	128	192	10.49	379
	5000	15.2	20.2	11233	12296	460	122	180	11.78	419
	8000	21.3	25.3	14033	16153	563	113	157	14.61	518
	10000	24.7	28.2	15559	18496	618	109	148	15.89	571
	12000	27.7	31.0	16927	20749	666	107	142	16.86	617
	16000	33.1	36.2	19355	25112	746	105	135	18.18	691
-10	1700	1.2	10.0	3669	4044	299	159	238	6.81	259
	1900	2.3	10.5	4259	4664	284	154	234	7.17	245
	2000	2.7	10.7	4521	4944	281	152	231	7.34	242
	2100	3.2	11.0	4767	5209	280	150	229	7.51	240
	2200	3.6	11.2	4998	5460	279	148	227	7.67	240
	2300	4.0	11.4	5216	5701	280	146	225	7.83	241
	2400	4.4	11.6	5425	5932	281	145	223	7.99	242
	2500	4.8	11.8	5624	6155	283	143	221	8.15	244
	3000	6.5	12.9	6515	7173	297	137	211	8.90	257
	4000	9.3	14.8	7963	8911	331	128	195	10.28	291
	5000	11.8	16.7	9155	10432	366	123	183	11.51	325
	8000	17.7	21.6	11970	14397	459	113	159	14.32	415
	10000	21.0	24.6	13493	16794	510	110	150	15.64	463
	12000	24.0	27.4	14848	19091	554	108	144	16.64	505
	16000	29.4	32.4	17227	23511	628	105	136	18.04	574
-20	1830	1.2	7.9	3073	3577	226	143	223	8.11	188
	2200	2.3	8.7	3726	4327	222	138	216	8.63	184
	2300	2.6	8.9	3891	4520	223	137	214	8.77	185
	2400	2.9	9.1	4051	4709	224	136	212	8.90	186
	2500	3.2	9.3	4208	4894	225	135	211	9.04	187
	2600	3.5	9.5	4360	5077	227	134	209	9.17	189
	2700	3.8	9.6	4509	5256	229	134	207	9.30	190
	2800	4.1	9.8	4655	5432	231	133	206	9.44	192
	3000	4.6	10.2	4937	5777	235	131	203	9.70	197
	4000	7.0	12.1	6200	7379	263	125	189	10.93	224
	5000	9.2	13.8	7286	8837	292	120	178	12.03	252
	8000	14.8	18.6	9926	12748	372	112	157	14.61	329
	10000	18.0	21.4	11371	15143	417	109	149	15.85	372
	12000	20.9	24.2	12658	17442	457	107	143	16.80	410
	14000	23.6	26.7	13828	19678	492	106	138	17.56	443

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-10

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 10 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	2000	1.2	6.5	2571	3258	173	128	198	10.12	137
	3000	3.5	8.3	3754	4805	187	123	186	11.28	151
	4000	5.6	10.0	4786	6237	209	119	175	12.32	173
	5000	7.5	11.6	5708	7589	233	116	167	13.26	196
	6000	9.3	13.1	6547	8880	256	114	161	14.08	218
	7000	11.0	14.7	7317	10126	278	112	156	14.81	240
	8000	12.6	16.1	8033	11337	299	110	151	15.45	260
	9000	14.1	17.5	8703	12519	319	109	147	16.02	279
	10000	15.6	18.9	9333	13679	338	108	144	16.52	296
	12000	18.4	21.5	10499	15944	372	106	140	17.35	328
-45	3027	2.7	6.4	2469	3906	132	112	156	14.69	101
	3500	3.5	7.1	2813	4490	139	111	154	15.03	108
	4000	4.3	7.9	3162	5099	147	111	152	15.37	116
	5000	5.9	9.3	3822	6294	164	109	148	15.98	133
	6000	7.4	10.7	4438	7463	181	108	144	16.52	149
	7000	8.9	12.1	5015	8611	196	107	142	17.00	164
	8000	10.3	13.5	5559	9742	211	106	139	17.43	178
	9000	11.7	14.8	6073	10857	226	106	137	17.80	192
	10000	13.0	16.0	6562	11961	239	105	135	18.14	205

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-11

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 11 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1540	1.2	12.6	4410	4671	368	182	255	5.56	336
	2000	5.3	14.2	6951	7233	311	160	239	6.75	280
	3000	9.7	16.5	9358	9827	342	141	218	8.41	310
	4000	12.8	18.6	10960	11667	382	131	200	9.83	350
	5000	15.3	20.4	12251	13232	420	124	187	11.09	388
	8000	21.5	25.5	15275	17244	518	114	162	13.98	482
	10000	24.8	28.5	16918	19653	571	111	152	15.33	534
	12000	27.9	31.3	18389	21958	617	108	145	16.36	578
	16000	33.4	36.4	20997	26398	694	106	137	17.80	651
-10	1705	1.2	9.9	3855	4215	273	163	248	6.38	242
	1900	2.1	10.4	4472	4859	258	158	243	6.69	227
	2000	2.6	10.7	4756	5159	255	156	241	6.84	224
	2100	3.0	10.9	5023	5444	253	154	239	6.99	221
	2200	3.4	11.1	5275	5716	252	152	237	7.14	221
	2300	3.8	11.3	5515	5975	252	151	235	7.28	221
	2400	4.2	11.6	5743	6225	252	149	233	7.43	221
	2500	4.6	11.8	5962	6465	254	148	231	7.57	223
	3000	6.3	12.8	6940	7561	265	141	221	8.26	233
	4000	9.1	14.7	8528	9419	296	132	205	9.55	264
	5000	11.5	16.6	9830	11028	329	126	191	10.74	296
	8000	17.5	21.5	12885	15167	416	115	165	13.60	381
	10000	20.9	24.5	14530	17639	465	111	154	14.99	428
	12000	23.9	27.3	15991	19993	508	109	147	16.07	469
	16000	29.3	32.4	18551	24498	579	106	138	17.61	537
-20	1865	1.2	7.8	3259	3755	201	145	232	7.66	171
	2200	2.2	8.5	3879	4460	197	141	226	8.08	167
	2300	2.4	8.7	4054	4661	197	140	224	8.20	167
	2400	2.7	8.8	4225	4859	198	139	222	8.32	168
	2500	3.0	9.0	4391	5053	199	139	220	8.45	168
	2700	3.5	9.4	4714	5432	201	137	217	8.69	171
	2800	3.8	9.6	4870	5617	203	136	215	8.81	173
	2900	4.1	9.8	5023	5800	205	135	214	8.93	175
	3000	4.3	10.0	5173	5980	207	134	212	9.05	177
	4000	6.7	11.8	6535	7662	231	128	198	10.20	200
	5000	8.8	13.5	7711	9190	258	123	186	11.26	226
	8000	14.4	18.2	10568	13255	332	114	163	13.88	299
	10000	17.6	21.1	12130	15721	375	111	153	15.18	340
	12000	20.5	23.8	13518	18076	414	109	146	16.22	377
	16000	25.8	28.9	15943	22587	479	106	138	17.71	438

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-12

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 12 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	2010	1.2	6.2	2665	3338	151	130	205	9.63	123
	3000	3.2	7.9	3891	4913	162	125	193	10.67	133
	4000	5.2	9.6	4987	6393	181	121	182	11.66	152
	5000	7.1	11.2	5973	7789	203	118	174	12.56	173
	6000	8.8	12.7	6872	9123	224	116	167	13.37	194
	7000	10.5	14.2	7701	10407	245	114	161	14.11	214
	8000	12.0	15.6	8471	11652	264	112	156	14.77	233
	9000	13.6	17.0	9192	12865	283	110	152	15.37	251
	10000	15.0	18.4	9872	14052	301	109	148	15.90	268
	12000	17.8	21.0	11127	16365	334	107	143	16.80	300
	14000	20.5	23.5	12271	18617	363	106	139	17.53	328
-45	3468	3.1	6.7	2870	4502	118	112	158	14.55	94
	4000	4.0	7.4	3260	5160	126	112	155	14.89	102
	4500	4.7	8.1	3614	5771	133	111	153	15.19	109
	5000	5.5	8.8	3955	6375	141	110	151	15.48	116
	5500	6.2	9.5	4286	6973	148	110	149	15.76	123
	6000	6.9	10.2	4607	7565	156	109	148	16.02	131
	6500	7.6	10.9	4918	8151	163	108	146	16.27	138
	7000	8.3	11.5	5220	8732	170	108	145	16.50	145
	7500	9.0	12.2	5514	9309	177	108	143	16.73	151
	8000	9.7	12.8	5800	9881	184	107	142	16.94	158

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-13

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 13 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1540	1.2	12.7	4651	4900	343	186	263	5.27	320
	2000	5.4	14.4	7453	7717	285	164	246	6.40	262
	3000	9.8	16.8	10074	10511	312	144	225	7.96	289
	4000	12.9	18.8	11799	12458	350	134	207	9.32	327
	5000	15.4	20.6	13180	14097	386	127	193	10.55	363
	8000	21.6	25.7	16399	18246	479	115	166	13.47	454
	10000	25.0	28.7	18142	20716	530	112	155	14.87	504
	12000	28.1	31.5	19701	23068	574	109	148	15.96	547
	16000	33.6	36.7	22466	27581	649	106	139	17.50	619
-10	1720	1.2	9.9	4058	4408	249	166	256	6.04	226
	1900	2.0	10.4	4657	5030	236	162	252	6.30	213
	2000	2.4	10.6	4961	5349	231	160	250	6.44	209
	2100	2.9	10.8	5247	5651	229	158	248	6.58	206
	2200	3.3	11.1	5518	5940	227	156	246	6.71	205
	2300	3.7	11.3	5775	6216	227	155	243	6.84	204
	2400	4.0	11.5	6022	6482	227	153	241	6.98	205
	2500	4.4	11.7	6257	6738	228	151	239	7.11	206
	3000	6.1	12.7	7315	7906	237	145	230	7.75	215
	4000	8.9	14.7	9029	9875	265	135	213	8.98	243
	5000	11.3	16.5	10430	11566	296	128	198	10.13	272
	8000	17.3	21.4	13700	15865	379	117	170	13.01	354
	10000	20.7	24.4	15453	18407	425	113	158	14.45	400
	12000	23.8	27.2	17007	20814	467	110	150	15.60	440
	16000	29.3	32.4	19724	25398	537	107	140	17.24	507
-20	1895	1.2	7.7	3425	3914	178	147	240	7.28	156
	2200	2.0	8.3	4010	4574	175	144	234	7.62	153
	2300	2.3	8.5	4194	4783	174	143	232	7.74	153
	2400	2.5	8.6	4373	4988	175	142	231	7.85	153
	2500	2.8	8.8	4548	5190	175	141	229	7.96	154
	2600	3.1	9.0	4720	5388	176	140	227	8.07	154
	2700	3.3	9.2	4888	5584	177	140	225	8.18	156
	2800	3.6	9.4	5053	5777	179	139	224	8.30	157
	3000	4.1	9.8	5373	6154	182	137	220	8.52	160
	4000	6.4	11.5	6822	7909	203	130	206	9.61	181
	5000	8.5	13.2	8077	9499	227	125	193	10.63	205
	8000	14.0	17.9	11129	13706	298	116	168	13.26	274
	10000	17.2	20.8	12794	16239	339	112	157	14.61	314
	12000	20.2	23.5	14273	18647	376	110	150	15.71	350
	16000	25.6	28.6	16850	23236	439	106	140	17.31	410

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-14

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 14 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	2249	1.5	6.4	3055	3794	131	131	209	9.45	111
	3000	3.0	7.6	4006	5005	139	127	199	10.17	119
	4000	4.9	9.2	5155	6525	157	123	189	11.10	136
	5000	6.7	10.8	6195	7961	176	120	180	11.97	155
	6000	8.4	12.3	7148	9332	196	117	172	12.78	175
	7000	10.0	13.8	8027	10650	215	115	166	13.52	194
	8000	11.6	15.2	8846	11927	233	113	160	14.19	212
	9000	13.1	16.6	9612	13168	251	112	156	14.81	229
	10000	14.6	17.9	10335	14381	268	110	152	15.36	245
	12000	17.3	20.5	11670	16739	299	108	146	16.32	276
	14000	20.0	23.0	12887	19028	328	107	141	17.10	303
-45	3950	3.6	7.0	3303	5149	106	112	159	14.46	89
	4000	3.7	7.1	3340	5211	106	112	158	14.49	90
	4500	4.4	7.7	3708	5831	113	112	156	14.78	96
	5000	5.1	8.4	4064	6444	120	111	154	15.06	103
	5500	5.8	9.1	4410	7050	126	110	152	15.33	110
	6000	6.5	9.7	4746	7650	133	110	151	15.59	116
	6500	7.2	10.4	5073	8245	140	109	149	15.84	123
	7000	7.9	11.0	5391	8835	146	109	147	16.07	129
	7500	8.6	11.7	5700	9420	153	108	146	16.30	136
	8000	9.2	12.3	6001	10001	159	108	145	16.52	142

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-15

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 15 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1840	1.2	13.8	4332	4706	442	189	252	5.43	402
	2000	3.2	14.5	5471	5825	390	178	243	5.96	350
	3000	8.6	17.0	8276	8803	388	154	219	7.63	348
	4000	11.9	19.0	9874	10653	426	143	204	8.83	385
	5000	14.5	20.8	11119	12192	464	136	193	9.84	423
	8000	20.8	25.8	13982	16109	565	125	171	12.07	520
	10000	24.2	28.7	15523	18465	619	122	162	13.08	572
	12000	27.3	31.5	16900	20727	667	119	156	13.85	617
	15000	31.4	35.3	18758	24018	728	117	150	14.70	675
	20000	37.6	41.2	21498	29363	810	115	144	15.62	749
-10	2000	1.2	11.4	3886	4370	340	171	240	6.25	301
	2200	2.3	11.9	4482	4993	321	167	236	6.55	282
	2300	2.7	12.1	4746	5274	316	165	234	6.69	277
	2400	3.2	12.3	4993	5540	313	163	232	6.83	274
	2500	3.6	12.6	5226	5793	311	161	230	6.96	272
	3000	5.5	13.6	6232	6917	314	154	221	7.58	274
	4000	8.5	15.5	7794	8760	340	144	207	8.68	300
	5000	11.1	17.3	9040	10331	372	137	195	9.63	331
	8000	17.2	22.1	11917	14353	461	126	173	11.83	417
	10000	20.5	25.1	13455	16764	511	122	164	12.87	465
	12000	23.6	27.8	14819	19068	555	120	157	13.67	506
	15000	27.7	31.6	16644	22406	612	117	151	14.56	559
	20000	33.9	37.5	19302	27795	688	115	144	15.54	629
-20	2130	1.2	9.3	3310	3936	261	156	226	7.31	223
	2300	1.7	9.6	3620	4289	255	154	224	7.50	217
	2400	2.0	9.8	3794	4490	253	153	222	7.60	215
	2500	2.3	10.0	3964	4686	252	151	221	7.71	214
	2600	2.6	10.2	4128	4879	251	150	219	7.82	213
	2700	2.9	10.4	4288	5067	251	149	218	7.92	213
	2800	3.2	10.6	4444	5252	251	148	216	8.02	213
	2900	3.5	10.7	4596	5434	252	148	215	8.13	214
	3000	3.8	10.9	4744	5613	253	147	213	8.23	215
	4000	6.3	12.7	6070	7270	272	139	201	9.18	234
	5000	8.6	14.4	7192	8759	298	134	191	10.04	258
	8000	14.3	19.1	9878	12711	374	125	171	12.06	332
	10000	17.5	21.9	11336	15117	418	122	162	13.04	374
	12000	20.5	24.6	12631	17422	458	119	156	13.81	411
	15000	24.5	28.4	14359	20765	509	117	150	14.67	458
	20000	30.6	34.2	16860	26158	578	115	144	15.62	521

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-16

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 16 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	2265	1.2	7.7	2758	3569	200	142	206	8.81	164
	2500	1.7	8.1	3052	3945	199	140	204	9.02	163
	3000	2.9	8.9	3641	4717	202	137	198	9.46	166
	4000	5.0	10.6	4701	6172	218	133	189	10.27	181
	5000	6.9	12.2	5642	7539	239	129	181	10.99	202
	6000	8.7	13.7	6493	8840	260	127	175	11.64	222
	7000	10.5	15.2	7272	10094	281	124	170	12.22	243
	8000	12.1	16.6	7995	11310	302	123	165	12.72	262
	9000	13.6	18.0	8670	12496	321	121	161	13.18	280
	10000	15.1	19.3	9304	13659	339	120	158	13.57	298
	12000	17.9	21.9	10476	15929	373	118	153	14.25	330
	15000	21.9	25.6	12044	19237	418	116	148	15.01	371
	20000	27.8	31.3	14312	24593	479	114	142	15.86	426
-45	3027	2.2	6.9	2423	3877	141	125	170	12.12	110
	3500	3.0	7.6	2770	4464	147	124	168	12.39	116
	4000	3.8	8.4	3123	5075	153	123	166	12.66	123
	5000	5.4	9.8	3789	6273	168	121	162	13.15	137
	6000	7.0	11.2	4409	7445	184	120	158	13.58	152
	7000	8.4	12.6	4989	8596	199	119	155	13.97	166
	8000	9.9	13.9	5536	9728	213	118	153	14.31	180
	9000	11.3	15.2	6052	10846	227	117	151	14.61	193
	10000	12.6	16.5	6543	11950	241	116	149	14.88	206
	11000	13.9	17.7	7010	13044	254	116	147	15.12	218
	12000	15.2	18.9	7457	14128	266	115	146	15.34	229
	15000	18.9	22.4	8693	17337	299	114	142	15.86	260
	20000	24.6	27.9	10492	22585	346	113	139	16.46	302
-60	4556	4.0	7.8	2139	5033	109	115	145	15.41	85
	5000	4.6	8.4	2322	5513	113	115	145	15.52	89
	5500	5.3	9.1	2523	6051	118	115	144	15.63	94
	6000	6.0	9.7	2718	6587	123	114	143	15.73	98
	7000	7.3	11.0	3094	7653	132	114	142	15.92	107
	8000	8.6	12.2	3452	8713	142	114	141	16.09	116
	9000	9.8	13.4	3793	9767	151	113	140	16.24	125
	10000	11.1	14.6	4119	10815	159	113	139	16.37	133
	11000	12.3	15.8	4432	11859	167	113	139	16.49	141
	12000	13.5	16.9	4732	12899	175	112	138	16.60	148
	13000	14.7	18.1	5021	13936	183	112	137	16.69	155
	15000	17.0	20.3	5569	16000	198	112	137	16.86	168
	20000	22.4	25.6	6797	21123	229	111	135	17.16	196

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-17

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 17 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1840	1.2	14.0	4595	4950	413	194	259	5.13	381
	2000	3.2	14.7	5876	6207	360	183	250	5.62	328
	3000	8.6	17.3	9004	9490	353	158	227	7.18	322
	4000	11.9	19.3	10761	11480	388	146	211	8.32	356
	5000	14.6	21.1	12120	13111	424	139	199	9.30	391
	8000	20.9	26.0	15218	17192	519	127	175	11.56	484
	10000	24.3	29.0	16878	19618	572	123	166	12.63	535
	12000	27.5	31.7	18359	21933	618	120	159	13.45	579
	15000	31.7	35.6	20355	25285	677	118	152	14.37	635
	20000	37.9	41.6	23300	30706	756	115	146	15.38	709
-10	2005	1.2	11.4	4079	4545	314	176	249	5.89	282
	2200	2.1	11.8	4701	5191	295	171	244	6.15	263
	2300	2.6	12.1	4988	5493	289	169	242	6.28	258
	2400	3.0	12.3	5257	5779	285	167	240	6.40	254
	2500	3.4	12.5	5511	6051	283	166	239	6.52	251
	3000	5.3	13.6	6615	7263	283	158	230	7.09	251
	4000	8.3	15.5	8330	9241	305	147	215	8.12	273
	5000	10.8	17.2	9695	10909	334	140	203	9.04	302
	8000	17.0	22.1	12824	15115	418	128	178	11.26	383
	10000	20.4	25.0	14488	17604	466	124	168	12.36	430
	12000	23.4	27.7	15959	19967	509	121	161	13.22	470
	15000	27.6	31.6	17923	23372	564	118	154	14.19	522
	20000	33.9	37.5	20779	28841	638	115	146	15.27	592
-20	2175	1.2	9.2	3527	4144	234	158	234	6.95	203
	2300	1.6	9.4	3765	4412	230	157	232	7.07	199
	2400	1.9	9.6	3949	4621	227	156	230	7.17	197
	2500	2.2	9.8	4128	4826	226	155	229	7.26	195
	2600	2.4	10.0	4302	5027	225	154	228	7.36	195
	2700	2.7	10.2	4473	5224	224	153	226	7.45	194
	2800	3.0	10.3	4639	5418	224	152	225	7.55	194
	2900	3.3	10.5	4801	5609	225	151	223	7.64	194
	3000	3.5	10.7	4960	5797	225	150	222	7.73	195
	4000	6.0	12.5	6388	7537	241	143	209	8.62	210
	5000	8.2	14.1	7603	9099	264	137	199	9.44	233
	8000	13.9	18.8	10514	13211	335	127	177	11.48	301
	10000	17.1	21.6	12091	15690	377	123	167	12.51	342
	12000	20.1	24.3	13488	18053	415	121	160	13.33	378
	15000	24.2	28.1	15350	21462	464	118	153	14.28	425
	20000	30.3	33.9	18038	26932	532	115	146	15.34	488

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-18

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 18 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	2320	1.2	7.5	2922	3731	176	144	213	8.44	147
	2500	1.6	7.8	3155	4026	175	142	211	8.59	146
	3000	2.6	8.6	3773	4820	177	140	205	8.99	148
	4000	4.6	10.2	4895	6322	190	135	196	9.74	161
	5000	6.5	11.7	5900	7734	209	132	187	10.44	179
	6000	8.3	13.2	6812	9078	228	129	181	11.08	198
	7000	10.0	14.7	7651	10370	248	126	175	11.66	217
	8000	11.6	16.1	8429	11621	267	124	170	12.18	236
	9000	13.1	17.5	9156	12838	285	123	166	12.65	253
	10000	14.6	18.8	9840	14029	302	121	162	13.08	270
	12000	17.4	21.4	11101	16348	335	119	157	13.80	301
	15000	21.3	25.1	12790	19712	378	117	151	14.64	341
	20000	27.3	30.8	15228	25137	437	115	144	15.59	396
-45	3468	2.7	7.2	2827	4474	126	125	172	12.00	101
	4000	3.5	7.9	3220	5135	132	124	169	12.27	108
	5000	5.0	9.3	3921	6354	145	122	165	12.74	120
	6000	6.5	10.7	4576	7546	159	121	162	13.17	134
	7000	7.9	12.0	5193	8716	173	120	158	13.56	147
	8000	9.3	13.3	5775	9867	186	119	156	13.91	160
	9000	10.7	14.6	6327	11002	199	118	153	14.23	173
	10000	12.0	15.8	6852	12122	212	117	151	14.51	185
	11000	13.3	17.0	7353	13231	224	117	150	14.77	196
	12000	14.5	18.2	7832	14330	236	116	148	15.01	207
	15000	18.2	21.7	9158	17575	268	115	144	15.59	237
	20000	23.8	27.2	11090	22869	313	113	140	16.26	279
-60	5291	4.6	8.3	2513	5858	99	115	146	15.37	80
	6000	5.5	9.1	2806	6624	105	115	145	15.52	86
	6500	6.1	9.7	3007	7162	110	115	144	15.61	90
	7000	6.8	10.3	3202	7698	114	114	143	15.71	95
	8000	8.0	11.5	3581	8765	122	114	142	15.88	103
	9000	9.2	12.7	3943	9826	131	114	141	16.04	111
	10000	10.4	13.9	4290	10881	139	113	141	16.18	118
	11000	11.6	15.0	4623	11932	146	113	140	16.31	126
	12000	12.8	16.2	4943	12978	154	113	139	16.42	133
	13000	13.9	17.3	5252	14021	161	113	138	16.53	140
	15000	16.2	19.5	5838	16096	175	112	137	16.71	152
	20000	21.6	24.8	7156	21242	205	112	135	17.05	180

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-19

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 19 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	1840	1.2	14.1	4839	5177	387	199	266	4.87	363
	2000	3.2	14.9	6254	6566	332	188	257	5.35	310
	2500	6.4	16.4	8356	8722	314	171	243	6.19	291
	3000	8.6	17.5	9676	10130	324	162	233	6.83	301
	4000	12.0	19.5	11575	12247	356	149	217	7.93	333
	5000	14.7	21.3	13033	13960	390	142	205	8.89	366
	8000	21.0	26.2	16335	18189	480	129	179	11.16	455
	10000	24.5	29.2	18098	20677	531	124	169	12.27	505
	12000	27.7	32.0	19668	23040	575	121	162	13.13	548
	15000	31.9	35.9	21785	26450	633	118	154	14.10	603
	20000	38.2	41.9	24909	31945	710	116	147	15.18	677
-10	2020	1.2	11.4	4289	4741	289	180	256	5.61	266
	2200	2.0	11.8	4893	5365	271	175	252	5.83	248
	2300	2.4	12.0	5198	5684	265	173	250	5.95	242
	2400	2.9	12.3	5486	5988	261	172	248	6.06	238
	2500	3.3	12.5	5759	6278	258	170	246	6.17	235
	3000	5.1	13.5	6950	7570	256	162	237	6.70	233
	4000	8.1	15.4	8805	9671	275	151	222	7.68	252
	5000	10.6	17.2	10277	11429	301	143	210	8.57	278
	8000	16.8	22.0	13632	15806	381	130	183	10.80	356
	10000	20.2	24.9	15406	18367	427	125	172	11.93	401
	12000	23.3	27.7	16971	20785	468	122	164	12.84	441
	15000	27.5	31.6	19058	24253	521	119	156	13.88	492
	20000	33.8	37.5	22089	29798	594	116	148	15.04	561
-20	2200	1.2	9.1	3694	4299	210	161	241	6.63	188
	2400	1.7	9.4	4082	4735	204	159	238	6.81	182
	2500	2.0	9.6	4269	4947	203	158	237	6.89	181
	2600	2.3	9.8	4452	5155	201	157	235	6.98	180
	2700	2.5	10.0	4631	5360	201	156	234	7.07	179
	2800	2.8	10.2	4805	5562	200	155	232	7.15	179
	2900	3.1	10.3	4977	5760	200	154	231	7.24	179
	3000	3.3	10.5	5144	5955	201	153	229	7.33	179
	4000	5.7	12.2	6661	7769	214	146	217	8.16	192
	5000	7.9	13.9	7957	9397	234	140	206	8.96	212
	8000	13.5	18.5	11068	13656	300	129	182	10.99	277
	10000	16.8	21.3	12751	16204	340	125	171	12.06	316
	12000	19.7	24.0	14239	18621	377	122	164	12.93	351
	15000	23.8	27.8	16219	22092	425	119	156	13.94	397
	20000	30.0	33.7	19076	27639	491	116	147	15.09	460

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-20

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 20 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	2360	1.2	7.3	3057	3862	154	145	219	8.12	134
	2500	1.4	7.5	3243	4095	154	144	217	8.22	133
	3000	2.4	8.3	3884	4907	155	142	211	8.59	134
	4000	4.3	9.9	5058	6449	166	137	202	9.31	146
	5000	6.2	11.4	6117	7900	182	134	193	9.98	162
	6000	7.9	12.9	7083	9283	200	131	186	10.61	179
	7000	9.5	14.3	7972	10609	218	128	180	11.19	197
	8000	11.1	15.7	8799	11892	236	126	174	11.72	214
	9000	12.6	17.1	9572	13139	253	124	170	12.21	231
	10000	14.1	18.4	10300	14356	269	123	166	12.65	247
	12000	16.9	21.0	11642	16719	300	120	160	13.41	277
	15000	20.8	24.7	13438	20139	342	118	153	14.31	317
	20000	26.8	30.4	16031	25632	400	115	146	15.35	372
-45	3950	3.2	7.5	3262	5123	112	125	173	11.92	95
	4000	3.3	7.6	3300	5186	112	125	173	11.94	96
	5000	4.7	8.9	4029	6421	124	123	168	12.40	107
	6000	6.1	10.2	4715	7631	136	122	165	12.82	119
	7000	7.5	11.5	5362	8818	149	121	161	13.21	132
	8000	8.8	12.8	5975	9985	161	120	159	13.57	144
	9000	10.1	14.0	6558	11136	173	119	156	13.89	156
	10000	11.4	15.2	7112	12271	185	118	154	14.19	167
	11000	12.7	16.5	7642	13394	197	117	152	14.46	178
	12000	14.0	17.6	8149	14506	208	117	150	14.71	189
	15000	17.6	21.1	9556	17785	238	115	146	15.33	218
	18000	21.0	24.4	10823	21003	266	114	143	15.81	244
	20000	23.2	26.6	11606	23123	282	114	141	16.07	260
-60	6024	5.2	8.7	2888	6680	89	115	146	15.33	77
	6500	5.7	9.2	3086	7195	92	115	145	15.43	80
	7000	6.3	9.8	3291	7735	96	115	145	15.52	84
	7500	6.9	10.4	3491	8273	100	115	144	15.61	88
	8000	7.5	11.0	3687	8809	104	114	144	15.70	92
	9000	8.7	12.1	4066	9876	111	114	143	15.86	99
	10000	9.9	13.3	4431	10938	119	114	142	16.00	106
	11000	11.0	14.4	4782	11994	126	113	141	16.14	114
	12000	12.2	15.5	5120	13047	133	113	140	16.26	120
	13000	13.3	16.6	5446	14095	140	113	139	16.38	127
	15000	15.5	18.8	6066	16180	153	113	138	16.57	139
	18000	18.7	22.0	6927	19287	171	112	137	16.82	156
	20000	20.8	24.0	7461	21346	181	112	136	16.95	167

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-21

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II CBU-99/100 FMU-140/B Fuze (Sheet 21 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	2240	1.2	15.6	4531	5055	499	204	262	4.82	459
	2500	4.0	16.6	6145	6634	426	190	248	5.47	386
	3000	6.9	17.9	7672	8238	413	177	235	6.19	373
	4000	10.6	19.9	9549	10353	437	163	220	7.20	397
	5000	13.5	21.7	10905	11997	472	155	209	7.99	430
	8000	20.0	26.6	13884	16024	568	142	188	9.67	523
	10000	23.5	29.5	15453	18406	621	138	179	10.43	574
	12000	26.6	32.2	16846	20683	669	135	174	11.01	619
	15000	30.9	36.0	18718	23987	729	132	167	11.66	676
	20000	37.1	41.9	21470	29342	810	129	161	12.36	750
-10	2400	1.2	13.2	4120	4768	393	188	248	5.53	353
	2500	1.8	13.4	4435	5091	379	185	246	5.66	339
	3000	4.0	14.5	5695	6437	350	176	236	6.22	310
	4000	7.4	16.4	7477	8480	357	163	222	7.11	317
	5000	10.1	18.2	8824	10142	382	156	211	7.85	341
	8000	16.4	22.9	11815	14269	465	143	190	9.50	421
	10000	19.9	25.8	13382	16706	514	138	181	10.28	467
	12000	23.0	28.5	14763	19025	557	135	175	10.88	508
	15000	27.2	32.3	16603	22375	613	132	168	11.56	560
	20000	33.4	38.1	19274	27776	689	130	162	12.30	629
-20	2530	1.2	11.0	3568	4374	306	172	234	6.39	268
	2600	1.4	11.1	3698	4521	302	171	233	6.45	264
	2700	1.7	11.3	3879	4726	297	170	232	6.54	259
	2800	2.0	11.5	4054	4927	294	169	230	6.62	255
	2900	2.3	11.7	4223	5123	291	168	229	6.70	253
	3000	2.6	11.9	4388	5315	289	167	228	6.78	251
	3500	4.1	12.8	5149	6226	287	162	222	7.16	248
	4000	5.4	13.6	5828	7069	291	158	216	7.52	252
	5000	7.7	15.3	7014	8613	310	152	207	8.16	270
	8000	13.6	19.9	9786	12640	379	142	188	9.67	336
	10000	16.9	22.7	11269	15066	421	138	180	10.40	377
	12000	19.9	25.3	12578	17384	460	135	174	10.98	413
	15000	24.0	29.0	14320	20738	510	132	168	11.63	460
	20000	30.1	34.8	16833	26141	579	129	161	12.36	522

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-22

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 22 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP
-30	2665	1.2	9.3	3017	4026	236	158	217	7.51	200
	3000	1.9	9.8	3430	4557	231	156	214	7.73	195
	3500	3.1	10.6	4006	5319	231	153	209	8.04	195
	4000	4.1	11.4	4541	6051	235	151	205	8.33	199
	5000	6.2	13.0	5515	7444	250	147	198	8.88	213
	6000	8.0	14.5	6389	8765	268	144	192	9.36	230
	7000	9.8	15.9	7186	10032	287	141	187	9.79	249
	8000	11.4	17.3	7921	11258	306	139	183	10.17	267
	9000	13.0	18.7	8606	12452	325	137	179	10.50	284
	10000	14.5	20.0	9248	13621	342	136	176	10.81	301
	12000	17.4	22.6	10430	15899	375	133	171	11.31	332
	15000	21.3	26.3	12009	19215	419	131	165	11.89	372
	20000	27.3	31.9	14288	24579	480	129	160	12.55	427
-45	3027	1.5	7.7	2333	3822	159	141	188	9.72	129
	3500	2.3	8.4	2688	4413	161	140	185	9.92	131
	4000	3.1	9.1	3047	5028	165	139	183	10.12	134
	5000	4.8	10.5	3723	6234	177	137	179	10.48	145
	6000	6.3	11.9	4351	7412	190	136	176	10.81	158
	7000	7.8	13.3	4939	8567	204	134	173	11.10	171
	8000	9.3	14.6	5491	9703	217	133	170	11.36	184
	9000	10.7	15.8	6012	10823	231	132	168	11.59	196
	10000	12.1	17.1	6506	11930	243	131	166	11.80	209
	11000	13.4	18.3	6977	13026	256	131	165	11.98	220
	12000	14.7	19.5	7426	14112	268	130	163	12.15	231
	15000	18.4	23.0	8668	17325	301	129	160	12.55	261
	20000	24.1	28.5	10473	22576	347	127	156	13.01	303
-60	4556	3.4	8.5	2106	5019	115	130	162	12.20	91
	5000	4.0	9.0	2291	5500	118	130	162	12.28	94
	5500	4.7	9.7	2493	6039	122	129	161	12.37	98
	6000	5.4	10.3	2690	6575	127	129	160	12.45	102
	7000	6.8	11.6	3068	7643	135	129	159	12.59	110
	8000	8.1	12.8	3428	8704	144	128	158	12.72	119
	9000	9.3	14.0	3771	9758	153	128	157	12.84	127
	10000	10.6	15.2	4099	10807	161	127	156	12.94	135
	11000	11.8	16.4	4413	11852	169	127	156	13.03	142
	12000	13.0	17.5	4714	12893	177	127	155	13.12	149
	13000	14.2	18.7	5004	13930	184	127	154	13.19	156
	15000	16.5	20.9	5554	15995	198	126	153	13.32	169
	20000	21.9	26.2	6785	21120	229	125	152	13.55	197

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-23

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 23 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	2240	1.2	15.7	4798	5295	469	210	269	4.57	437
	2500	4.0	16.8	6609	7066	393	195	255	5.18	362
	3000	6.9	18.2	8313	8838	378	182	242	5.86	346
	4000	10.7	20.2	10389	11133	400	167	226	6.83	368
	5000	13.6	22.0	11875	12884	431	158	215	7.59	399
	8000	20.1	26.8	15107	17094	522	144	192	9.30	487
	10000	23.7	29.7	16800	19551	574	139	183	10.10	537
	12000	26.8	32.5	18299	21883	619	136	177	10.71	580
	15000	31.1	36.3	20312	25250	678	133	170	11.41	636
	20000	37.4	42.2	23270	30684	757	130	163	12.17	710
-10	2405	1.2	13.2	4320	4945	365	192	255	5.25	333
	2500	1.7	13.4	4639	5269	351	190	253	5.36	320
	3000	3.8	14.5	6008	6716	320	180	244	5.87	289
	4000	7.2	16.4	7967	8914	323	168	229	6.70	291
	5000	9.9	18.2	9446	10687	345	159	218	7.41	312
	8000	16.2	22.9	12708	15016	422	145	195	9.08	387
	10000	19.7	25.8	14406	17536	469	140	186	9.89	432
	12000	22.8	28.5	15896	19917	510	137	179	10.54	472
	15000	27.1	32.3	17878	23337	565	134	171	11.27	524
	20000	33.3	38.1	20749	28818	639	130	164	12.09	592
-20	2565	1.2	10.9	3778	4566	278	175	241	6.11	247
	2600	1.3	11.0	3845	4642	276	175	240	6.13	245
	2700	1.6	11.2	4035	4855	271	174	239	6.21	241
	2800	1.9	11.3	4219	5064	267	173	237	6.28	237
	2900	2.2	11.5	4399	5269	264	172	236	6.36	234
	3000	2.4	11.7	4574	5470	262	171	235	6.43	231
	4000	5.1	13.4	6118	7310	261	162	224	7.11	230
	5000	7.4	15.0	7401	8932	276	156	214	7.72	245
	8000	13.2	19.6	10409	13128	340	144	194	9.24	306
	10000	16.5	22.4	12015	15632	380	140	184	10.00	345
	12000	19.5	25.0	13429	18009	417	136	178	10.62	380
	15000	23.6	28.7	15306	21431	466	133	171	11.34	426
	18000	27.4	32.3	16978	24743	508	131	166	11.86	466
	20000	29.8	34.5	18008	26912	533	130	163	12.14	489

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-24

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 24 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	2715	1.2	9.1	3189	4188	210	160	223	7.22	182
	3000	1.8	9.5	3553	4650	206	159	220	7.39	178
	4000	3.8	11.1	4724	6190	208	153	211	7.95	179
	5000	5.8	12.6	5762	7629	220	149	204	8.47	191
	6000	7.6	14.1	6698	8993	237	146	197	8.94	207
	7000	9.3	15.5	7555	10299	254	143	192	9.37	224
	8000	10.9	16.9	8346	11561	272	141	187	9.76	241
	9000	12.5	18.2	9084	12788	289	139	183	10.11	257
	10000	14.0	19.6	9777	13985	306	137	180	10.43	273
	12000	16.8	22.1	11051	16313	337	135	174	10.97	303
	15000	20.8	25.8	12751	19688	379	132	168	11.61	343
	18000	24.5	29.2	14267	22969	416	130	164	12.09	377
	20000	26.8	31.4	15201	25121	438	129	161	12.34	397
-45	3468	2.0	8.0	2744	4422	140	142	189	9.62	116
	4000	2.9	8.7	3143	5087	144	140	187	9.82	119
	5000	4.4	10.1	3853	6312	154	139	183	10.18	129
	6000	5.9	11.4	4516	7510	165	137	179	10.50	140
	7000	7.3	12.7	5140	8684	178	136	176	10.79	152
	8000	8.7	14.0	5727	9839	190	134	173	11.06	164
	9000	10.1	15.2	6284	10977	202	133	171	11.30	176
	10000	11.4	16.5	6812	12100	214	132	169	11.52	187
	11000	12.7	17.7	7316	13211	226	132	167	11.71	198
	12000	14.0	18.9	7798	14311	238	131	165	11.89	209
	15000	17.7	22.3	9131	17561	269	129	161	12.33	239
	18000	21.1	25.7	10329	20753	297	128	159	12.67	264
	20000	23.4	27.8	11070	22859	314	128	157	12.85	280
-60	5291	4.1	8.9	2483	5845	104	130	163	12.17	85
	6000	5.0	9.8	2778	6612	109	130	162	12.28	90
	7000	6.3	11.0	3176	7687	117	129	161	12.43	98
	8000	7.5	12.2	3556	8755	125	129	160	12.56	105
	9000	8.7	13.3	3920	9817	133	128	159	12.68	113
	10000	9.9	14.5	4268	10873	141	128	158	12.79	120
	11000	11.1	15.6	4603	11924	148	128	157	12.89	127
	12000	12.3	16.8	4924	12971	155	127	156	12.98	134
	13000	13.5	17.9	5234	14014	162	127	155	13.06	141
	15000	15.7	20.1	5822	16090	176	126	154	13.20	153
	18000	19.0	23.3	6637	19185	194	126	153	13.37	170
	20000	21.1	25.3	7143	21237	205	126	152	13.47	181

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-25

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 25 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	2240	1.2	15.8	5045	5520	441	214	275	4.36	418
	2500	4.0	17.0	7041	7472	364	199	261	4.95	341
	3000	6.9	18.4	8906	9398	348	186	248	5.60	325
	4000	10.8	20.4	11161	11856	367	170	231	6.54	344
	5000	13.7	22.2	12760	13705	397	161	220	7.29	373
	8000	20.3	27.1	16213	18080	483	146	196	9.00	458
	10000	23.8	30.0	18012	20602	533	141	186	9.82	507
	12000	27.0	32.7	19603	22985	577	137	179	10.47	549
	15000	31.3	36.6	21738	26411	634	134	172	11.20	604
	20000	37.7	42.5	24877	31920	710	131	164	12.02	677
-10	2420	1.2	13.2	4537	5142	339	196	262	5.02	315
	2500	1.6	13.4	4817	5427	327	194	260	5.11	304
	3000	3.6	14.5	6280	6960	294	185	250	5.58	271
	4000	7.0	16.4	8397	9301	293	172	235	6.38	270
	5000	9.7	18.1	9996	11177	312	163	224	7.07	289
	8000	16.0	22.8	13502	15694	385	148	200	8.73	360
	10000	19.5	25.7	15315	18290	429	142	189	9.57	404
	12000	22.7	28.4	16902	20729	470	138	182	10.25	443
	15000	27.0	32.3	19008	24214	523	135	174	11.03	494
	20000	33.3	38.2	22056	29774	595	131	165	11.91	562
-20	2600	1.2	10.8	3974	4749	252	178	247	5.86	230
	2700	1.5	11.0	4171	4969	248	177	245	5.93	225
	2800	1.7	11.2	4363	5184	244	176	244	6.00	221
	2900	2.0	11.4	4550	5396	240	175	243	6.07	218
	3000	2.3	11.5	4733	5604	238	174	241	6.14	216
	3500	3.6	12.4	5590	6595	232	169	235	6.46	210
	4000	4.8	13.2	6365	7518	234	165	230	6.78	212
	5000	7.0	14.8	7734	9210	247	159	220	7.37	225
	8000	12.8	19.3	10952	13562	305	146	198	8.87	282
	10000	16.1	22.1	12666	16138	344	141	189	9.67	319
	12000	19.1	24.7	14174	18572	379	138	181	10.32	353
	15000	23.3	28.5	16172	22057	426	134	173	11.08	399
	20000	29.5	34.3	19044	27617	492	131	165	11.95	461

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-26

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 26 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	2760	1.2	8.9	3342	4335	187	162	228	6.97	167
	3000	1.6	9.3	3658	4731	184	161	226	7.10	163
	3500	2.6	10.0	4285	5533	182	158	221	7.37	161
	4000	3.6	10.8	4877	6308	184	156	217	7.63	163
	5000	5.4	12.3	5969	7786	194	152	209	8.13	174
	6000	7.2	13.7	6960	9189	209	148	203	8.59	188
	7000	8.9	15.1	7868	10531	225	145	197	9.02	203
	8000	10.5	16.5	8709	11826	241	143	192	9.41	219
	9000	12.0	17.8	9494	13082	257	141	187	9.78	235
	10000	13.5	19.1	10231	14306	273	139	184	10.10	250
	12000	16.3	21.7	11587	16681	303	136	177	10.68	279
	15000	20.3	25.3	13396	20111	344	133	170	11.36	318
	20000	26.3	31.0	16002	25614	401	130	163	12.15	372
-45	3950	2.6	8.3	3184	5074	124	142	190	9.56	107
	4000	2.7	8.3	3222	5137	124	142	190	9.57	107
	5000	4.1	9.6	3960	6378	132	140	186	9.92	116
	6000	5.5	10.9	4653	7593	143	138	182	10.23	126
	7000	6.9	12.2	5306	8784	154	137	179	10.53	137
	8000	8.3	13.5	5925	9955	165	135	176	10.79	148
	9000	9.6	14.7	6512	11109	177	134	174	11.04	159
	10000	10.9	15.9	7070	12247	188	133	171	11.27	170
	11000	12.2	17.1	7603	13372	199	133	169	11.47	181
	12000	13.4	18.3	8114	14485	210	132	168	11.66	191
	15000	17.1	21.7	9527	17770	240	130	163	12.14	220
	18000	20.5	25.0	10799	20991	267	129	160	12.50	245
	20000	22.7	27.2	11584	23113	283	128	158	12.70	260
-60	6024	4.7	9.3	2859	6668	93	130	163	12.14	80
	6500	5.3	9.9	3059	7184	96	130	163	12.21	84
	7000	5.9	10.4	3264	7724	99	130	162	12.28	87
	7500	6.5	11.0	3465	8262	103	129	161	12.35	91
	8000	7.1	11.6	3662	8798	107	129	161	12.42	94
	9000	8.2	12.7	4043	9866	114	129	160	12.54	101
	10000	9.4	13.9	4409	10929	121	128	159	12.65	108
	11000	10.6	15.0	4761	11986	128	128	158	12.76	115
	12000	11.7	16.1	5100	13039	134	128	157	12.85	122
	13000	12.8	17.2	5428	14088	141	127	156	12.94	128
	15000	15.0	19.4	6049	16174	154	127	155	13.09	140
	18000	18.3	22.5	6912	19281	171	126	154	13.28	157
	20000	20.4	24.6	7447	21341	182	126	153	13.38	167

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-27

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 27 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	2640	1.2	17.2	4696	5387	553	219	274	4.28	512
	3000	4.7	18.6	6711	7351	461	202	256	4.97	420
	3500	7.3	19.8	8104	8827	448	191	245	5.52	408
	4000	9.3	20.8	9100	9941	455	183	236	5.95	414
	4500	11.0	21.7	9912	10886	467	178	230	6.31	426
	5000	12.4	22.6	10614	11733	482	173	225	6.62	440
	8000	19.2	27.4	13749	15907	572	158	204	7.97	527
	10000	22.8	30.3	15356	18325	624	153	196	8.56	577
	12000	26.0	33.0	16771	20622	671	150	190	9.01	621
	15000	30.3	36.7	18662	23943	731	147	184	9.51	677
	20000	36.6	42.6	21431	29314	811	144	178	10.05	751
-10	2800	1.2	14.9	4310	5140	442	203	259	4.90	402
	3000	2.3	15.3	4918	5761	413	198	254	5.10	373
	4000	6.1	17.4	7047	8103	382	183	238	5.91	342
	5000	9.1	19.1	8532	9889	397	174	227	6.53	356
	6000	11.5	20.7	9730	11431	420	168	218	7.03	378
	7000	13.7	22.3	10759	12836	445	163	212	7.47	402
	8000	15.7	23.8	11676	14153	470	159	206	7.84	426
	10000	19.2	26.6	13282	16625	517	154	198	8.44	471
	12000	22.3	29.3	14685	18965	560	151	192	8.91	511
	15000	26.6	33.1	16545	22333	615	147	185	9.43	562
	20000	32.9	38.8	19234	27748	690	144	179	10.00	630
-20	2930	1.2	12.7	3777	4780	349	188	244	5.61	311
	3000	1.4	12.8	3907	4926	344	187	243	5.66	306
	3500	2.9	13.7	4760	5908	324	182	237	5.98	285
	4000	4.3	14.6	5503	6804	318	177	232	6.27	279
	5000	6.8	16.2	6774	8419	326	170	223	6.79	287
	8000	12.8	20.7	9660	12542	385	158	204	7.97	343
	10000	16.2	23.5	11175	14996	425	153	197	8.54	381
	12000	19.3	26.1	12505	17331	463	150	191	8.99	416
	15000	23.4	29.8	14264	20700	512	147	185	9.49	461
	20000	29.6	35.5	16794	26116	580	144	178	10.05	523

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-28

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 28 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	3075	1.2	10.9	3244	4470	271	174	228	6.49	235
	3500	2.2	11.6	3761	5137	262	171	225	6.70	226
	4000	3.3	12.3	4326	5892	259	168	221	6.94	223
	4500	4.3	13.1	4851	6617	261	166	217	7.15	224
	5000	5.4	13.9	5344	7318	266	164	214	7.36	229
	6000	7.3	15.3	6248	8663	279	160	208	7.73	242
	7000	9.1	16.8	7067	9947	296	157	203	8.06	257
	8000	10.8	18.2	7819	11186	313	155	199	8.36	273
	9000	12.4	19.5	8516	12391	330	153	196	8.62	289
	10000	13.9	20.8	9169	13567	347	151	193	8.85	305
	12000	16.8	23.4	10367	15858	378	149	188	9.24	335
	15000	20.8	27.0	11961	19185	421	146	182	9.69	374
	20000	26.8	32.6	14253	24559	481	143	176	10.20	428
-45	3250	1.2	8.9	2384	4030	183	157	203	8.08	153
	4000	2.5	9.9	2942	4965	182	155	200	8.32	151
	5000	4.1	11.3	3632	6180	189	153	196	8.60	157
	6000	5.7	12.7	4272	7365	199	151	192	8.85	167
	7000	7.2	14.0	4868	8526	210	150	190	9.08	178
	8000	8.7	15.3	5427	9667	223	148	187	9.28	189
	9000	10.1	16.6	5955	10792	235	147	185	9.46	201
	10000	11.5	17.8	6454	11902	247	146	183	9.62	212
	11000	12.9	19.1	6929	13000	259	146	181	9.76	223
	12000	14.2	20.3	7382	14089	270	145	180	9.89	234
	15000	17.9	23.7	8633	17307	302	143	176	10.20	263
	20000	23.6	29.2	10446	22564	348	141	173	10.56	304
-60	4556	2.9	9.2	2061	5000	123	145	179	9.93	99
	5000	3.5	9.8	2247	5482	125	144	179	9.99	101
	5500	4.2	10.4	2451	6022	129	144	178	10.06	104
	6000	4.9	11.0	2650	6559	132	144	177	10.12	108
	7000	6.2	12.3	3031	7628	140	143	176	10.23	115
	8000	7.5	13.5	3394	8690	148	143	175	10.33	122
	9000	8.8	14.7	3739	9746	156	142	174	10.42	130
	10000	10.1	15.9	4069	10796	163	142	173	10.50	137
	11000	11.3	17.0	4385	11842	171	141	172	10.58	144
	12000	12.5	18.2	4688	12883	179	141	172	10.64	151
	13000	13.7	19.3	4980	13921	186	141	171	10.70	158
	15000	16.0	21.5	5532	15988	200	140	170	10.80	170
	20000	21.5	26.8	6768	21114	230	139	168	10.98	197

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-29

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 29 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	2640	1.2	17.4	4966	5624	521	225	281	4.07	489
	3000	4.7	18.8	7224	7822	426	207	263	4.73	394
	3500	7.4	20.1	8775	9448	412	195	251	5.25	380
	4000	9.3	21.1	9879	10658	417	188	243	5.66	385
	5000	12.5	22.9	11544	12580	442	177	230	6.32	409
	8000	19.4	27.7	14956	16961	526	161	209	7.68	491
	10000	23.0	30.6	16692	19458	577	155	200	8.30	540
	12000	26.2	33.3	18216	21813	621	152	193	8.78	583
	15000	30.5	37.1	20250	25201	679	148	187	9.31	638
	20000	36.9	42.9	23227	30651	758	145	180	9.91	711
-10	2810	1.2	14.9	4534	5334	412	208	266	4.67	380
	3000	2.1	15.3	5149	5959	385	203	261	4.85	353
	4000	5.9	17.3	7478	8481	349	188	245	5.60	317
	5000	8.8	19.1	9112	10394	360	178	233	6.20	327
	6000	11.3	20.7	10427	12030	381	171	224	6.70	348
	7000	13.5	22.3	11551	13507	404	166	217	7.13	370
	8000	15.4	23.8	12550	14883	428	162	211	7.52	393
	9000	17.3	25.2	13456	16188	451	159	206	7.85	415
	10000	19.0	26.6	14292	17443	472	157	202	8.15	436
	12000	22.2	29.3	15809	19848	513	153	195	8.64	475
	15000	26.5	33.0	17814	23288	567	149	188	9.21	525
	20000	32.8	38.8	20705	28787	640	145	180	9.84	594
-20	2970	1.2	12.6	4005	4986	320	191	250	5.39	289
	4000	4.1	14.4	5761	7013	289	181	238	5.97	258
	5000	6.5	16.0	7133	8711	294	174	229	6.46	262
	6000	8.6	17.5	8304	10245	309	169	221	6.90	277
	7000	10.6	19.0	9336	11669	327	164	215	7.29	294
	8000	12.4	20.4	10266	13015	346	161	210	7.64	313
	9000	14.2	21.8	11119	14305	366	158	205	7.96	331
	10000	15.8	23.2	11909	15551	384	156	201	8.24	349
	12000	18.9	25.8	13347	17948	420	152	194	8.71	383
	15000	23.0	29.5	15245	21387	468	148	187	9.26	428
	18000	26.9	33.0	16929	24710	509	146	183	9.67	467
	20000	29.3	35.2	17965	26884	534	145	180	9.88	490

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-30

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 30 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	3135	1.2	10.7	3439	4654	244	176	233	6.27	216
	4000	3.0	12.0	4494	6017	233	171	226	6.65	204
	5000	5.0	13.5	5575	7489	237	167	219	7.05	207
	6000	6.9	15.0	6543	8878	248	163	213	7.42	218
	7000	8.6	16.4	7424	10203	263	160	208	7.75	232
	8000	10.3	17.7	8233	11480	279	157	204	8.05	247
	9000	11.9	19.1	8985	12718	294	155	200	8.32	263
	10000	13.4	20.4	9689	13924	310	153	197	8.56	278
	12000	16.3	22.9	10981	16266	340	150	191	8.98	306
	15000	20.2	26.5	12697	19653	381	147	185	9.47	345
	18000	24.0	29.9	14224	22942	418	145	181	9.84	378
	20000	26.3	32.1	15162	25098	439	144	178	10.03	399
-45	3468	1.4	8.8	2629	4352	161	158	205	7.94	137
	4000	2.3	9.5	3036	5022	161	157	203	8.10	136
	5000	3.8	10.9	3759	6255	166	154	199	8.37	141
	6000	5.3	12.2	4433	7460	174	153	196	8.62	149
	7000	6.8	13.5	5065	8640	185	151	193	8.84	159
	8000	8.2	14.7	5660	9800	196	150	190	9.05	170
	9000	9.6	16.0	6222	10942	207	149	188	9.23	180
	10000	10.9	17.2	6756	12069	218	148	186	9.40	191
	11000	12.2	18.4	7265	13182	229	147	184	9.55	202
	12000	13.5	19.6	7750	14285	240	146	182	9.69	212
	15000	17.2	23.0	9092	17541	271	144	178	10.03	240
	18000	20.7	26.4	10297	20737	298	143	175	10.29	266
	20000	22.9	28.5	11041	22845	315	142	174	10.43	281
-60	5291	3.6	9.6	2440	5827	110	145	180	9.90	91
	6000	4.5	10.5	2737	6595	115	144	179	9.99	96
	7000	5.8	11.7	3138	7671	122	144	177	10.10	102
	8000	7.0	12.8	3521	8741	129	143	176	10.21	109
	9000	8.2	14.0	3887	9803	136	143	175	10.30	116
	10000	9.5	15.2	4237	10861	143	142	174	10.39	123
	11000	10.6	16.3	4574	11913	150	142	174	10.46	130
	12000	11.8	17.4	4897	12961	157	142	173	10.53	136
	13000	13.0	18.5	5208	14005	164	141	172	10.60	143
	15000	15.2	20.7	5799	16082	177	141	171	10.71	155
	18000	18.5	23.9	6617	19178	195	140	170	10.84	171
	20000	20.6	26.0	7125	21231	206	140	169	10.91	181

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-31

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 31 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	2640	1.2	17.5	5216	5846	492	230	288	3.90	469
	3000	4.7	19.0	7700	8264	395	211	269	4.53	372
	4000	9.4	21.3	10595	11325	384	191	248	5.44	361
	5000	12.6	23.2	12394	13365	407	180	235	6.09	383
	6000	15.2	24.9	13800	15048	434	173	226	6.61	410
	7000	17.4	26.4	14992	16546	461	167	218	7.07	437
	8000	19.5	28.0	16048	17931	487	163	212	7.45	462
	10000	23.1	30.8	17895	20499	536	157	203	8.09	510
	12000	26.4	33.5	19513	22908	579	153	196	8.59	551
	15000	30.8	37.4	21672	26357	635	149	189	9.16	605
	20000	37.2	43.2	24832	31885	711	145	181	9.79	678
-10	2820	1.2	14.9	4738	5514	386	212	272	4.48	362
	3000	2.0	15.3	5351	6134	360	208	268	4.64	336
	3500	4.0	16.4	6743	7597	327	199	258	5.02	304
	4000	5.7	17.3	7855	8815	319	192	251	5.35	296
	5000	8.6	19.1	9624	10846	328	182	239	5.93	305
	6000	11.1	20.7	11044	12568	347	175	230	6.43	323
	7000	13.3	22.3	12255	14113	369	169	222	6.86	344
	8000	15.3	23.7	13326	15543	391	165	216	7.25	366
	10000	18.9	26.6	15190	18186	433	158	206	7.90	408
	12000	22.1	29.3	16807	20651	473	154	198	8.42	446
	15000	26.4	33.0	18939	24159	525	150	190	9.03	495
	20000	32.8	38.9	22009	29739	596	146	182	9.71	563
-20	3000	1.2	12.5	4201	5162	293	194	256	5.19	271
	4000	3.8	14.2	5980	7194	263	184	244	5.72	240
	5000	6.2	15.8	7440	8964	265	177	235	6.19	243
	6000	8.3	17.3	8692	10562	278	172	227	6.62	255
	7000	10.2	18.8	9797	12041	294	167	220	7.01	271
	8000	12.1	20.2	10793	13435	312	163	214	7.37	289
	9000	13.8	21.6	11705	14765	330	160	209	7.69	306
	10000	15.5	22.9	12550	16047	348	158	205	7.98	324
	12000	18.5	25.6	14083	18503	382	154	198	8.48	357
	15000	22.7	29.3	16105	22008	429	150	190	9.06	401
	20000	29.0	35.0	18998	27585	493	146	182	9.74	462

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-32

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 32 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	3175	1.2	10.5	3597	4798	220	178	238	6.07	200
	4000	2.8	11.8	4637	6124	209	174	231	6.41	188
	5000	4.7	13.2	5771	7635	211	169	224	6.80	190
	6000	6.5	14.6	6793	9063	221	165	218	7.15	200
	7000	8.2	16.0	7726	10425	234	162	213	7.48	213
	8000	9.8	17.4	8586	11735	248	159	208	7.78	226
	9000	11.4	18.7	9386	13004	263	157	204	8.06	241
	10000	12.9	20.0	10135	14238	277	155	200	8.31	255
	12000	15.8	22.5	11510	16628	306	152	194	8.75	283
	15000	19.8	26.1	13337	20072	346	148	187	9.28	320
	20000	25.8	31.7	15960	25588	402	145	180	9.89	374
-45	3950	2.0	9.1	3076	5007	141	158	207	7.89	124
	5000	3.5	10.5	3864	6319	144	156	202	8.17	127
	6000	5.0	11.7	4566	7540	152	154	199	8.41	135
	7000	6.4	13.0	5228	8737	161	152	196	8.64	144
	8000	7.7	14.2	5854	9913	171	151	193	8.84	154
	9000	9.1	15.5	6447	11071	181	150	190	9.03	164
	10000	10.4	16.7	7011	12213	192	149	188	9.21	174
	11000	11.7	17.9	7548	13341	202	148	186	9.37	184
	12000	12.9	19.0	8063	14457	213	147	184	9.51	194
	15000	16.6	22.4	9486	17748	242	145	180	9.88	221
	18000	20.0	25.7	10764	20973	268	143	177	10.16	246
	20000	22.2	27.9	11553	23097	284	143	175	10.32	262
-60	6024	4.2	10.0	2819	6651	98	145	180	9.88	86
	7000	5.4	11.1	3226	7708	104	144	179	9.99	92
	8000	6.6	12.3	3626	8783	110	144	178	10.09	98
	9000	7.8	13.4	4009	9853	117	143	177	10.19	105
	10000	8.9	14.6	4377	10916	123	143	176	10.28	111
	11000	10.1	15.7	4731	11974	130	142	175	10.36	117
	12000	11.2	16.8	5072	13028	137	142	174	10.43	124
	13000	12.4	17.9	5401	14077	143	142	173	10.50	130
	15000	14.6	20.0	6025	16165	155	141	172	10.62	142
	18000	17.8	23.2	6890	19274	172	140	170	10.77	158
	20000	19.9	25.2	7428	21335	183	140	170	10.85	168

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-33

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 33 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	3040	1.2	18.9	4835	5712	602	234	288	3.81	561
	4000	7.7	21.6	8493	9387	481	204	256	4.93	440
	5000	11.3	23.5	10239	11394	496	192	242	5.55	454
	6000	14.0	25.2	11541	13007	522	184	233	6.01	479
	7000	16.4	26.8	12626	14436	550	179	226	6.38	506
	8000	18.4	28.3	13577	15759	577	175	221	6.69	532
	9000	20.4	29.7	14438	17013	603	172	216	6.95	557
	10000	22.1	31.1	15231	18221	628	169	212	7.17	581
	12000	25.4	33.8	16673	20543	673	166	207	7.53	624
	15000	29.7	37.6	18589	23886	733	162	201	7.92	679
	20000	36.1	43.3	21379	29276	812	159	195	8.35	752
-10	3200	1.2	16.5	4469	5496	487	218	272	4.34	447
	4000	4.8	18.2	6483	7618	419	203	256	4.94	378
	5000	8.0	20.0	8160	9570	416	192	244	5.49	375
	6000	10.6	21.7	9455	11198	433	185	235	5.93	391
	7000	12.8	23.2	10543	12655	455	180	228	6.29	412
	8000	14.9	24.7	11498	14007	478	176	222	6.59	433
	9000	16.7	26.1	12360	15290	500	173	218	6.85	455
	10000	18.5	27.5	13153	16523	522	170	214	7.08	476
	12000	21.7	30.1	14585	18887	563	166	208	7.45	514
	15000	26.0	33.9	16470	22277	617	162	202	7.86	564
	20000	32.4	39.6	19181	27711	691	159	195	8.31	632
-20	3330	1.2	14.3	3950	5166	390	203	257	4.94	351
	4000	3.2	15.5	5092	6476	356	196	249	5.29	317
	5000	5.8	17.1	6472	8178	348	188	239	5.73	309
	6000	8.1	18.7	7616	9696	359	182	232	6.11	318
	7000	10.2	20.2	8610	11097	375	178	226	6.43	334
	8000	12.1	21.6	9498	12419	393	174	221	6.70	351
	9000	13.9	23.0	10307	13684	412	171	216	6.95	369
	10000	15.6	24.3	11055	14907	431	169	213	7.16	386
	12000	18.7	26.9	12409	17262	467	166	207	7.51	420
	15000	22.9	30.6	14192	20650	515	162	201	7.91	464
	20000	29.1	36.3	16743	26083	582	159	195	8.35	525

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-34

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 34 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	3470	1.2	12.4	3415	4869	306	189	241	5.66	270
	4000	2.4	13.3	4055	5696	292	186	237	5.86	255
	5000	4.6	14.8	5127	7161	286	181	230	6.21	249
	6000	6.5	16.2	6069	8534	294	177	224	6.51	256
	7000	8.4	17.7	6915	9840	307	173	219	6.78	268
	8000	10.1	19.0	7688	11095	321	171	215	7.01	282
	9000	11.7	20.4	8402	12312	337	168	212	7.22	296
	10000	13.3	21.7	9067	13499	352	167	209	7.40	311
	12000	16.2	24.2	10284	15804	382	164	204	7.71	339
	15000	20.3	27.8	11896	19145	424	161	199	8.07	377
	20000	26.3	33.4	14207	24532	483	158	193	8.46	430
-45	3640	1.2	10.3	2536	4436	208	172	217	6.89	177
	4000	1.8	10.8	2807	4887	205	171	216	6.98	174
	5000	3.5	12.2	3515	6112	204	169	212	7.21	173
	6000	5.1	13.5	4169	7306	210	167	209	7.41	178
	7000	6.6	14.9	4776	8474	219	165	206	7.58	187
	8000	8.1	16.1	5345	9621	230	164	204	7.74	196
	9000	9.6	17.4	5880	10750	241	162	201	7.88	207
	10000	11.0	18.6	6386	11865	252	161	200	8.01	217
	11000	12.3	19.8	6866	12967	263	160	198	8.12	227
	12000	13.6	21.0	7324	14059	274	160	196	8.22	237
	15000	17.4	24.5	8586	17283	305	158	193	8.47	266
	20000	23.1	29.9	10411	22548	349	156	189	8.75	305
-60	4556	2.3	10.0	2001	4976	134	159	196	8.25	110
	5000	2.9	10.5	2190	5458	135	159	195	8.30	111
	6000	4.3	11.8	2597	6538	140	158	194	8.40	115
	7000	5.7	13.0	2983	7609	146	158	193	8.49	121
	8000	7.0	14.3	3349	8673	152	157	191	8.57	127
	9000	8.3	15.5	3697	9730	160	156	191	8.64	134
	10000	9.6	16.6	4030	10782	167	156	190	8.71	140
	11000	10.8	17.8	4348	11828	174	156	189	8.76	147
	12000	12.0	18.9	4654	12871	181	155	188	8.81	154
	13000	13.2	20.1	4947	13910	188	155	188	8.86	160
	15000	15.5	22.3	5503	15978	201	154	187	8.94	172
	20000	21.0	27.6	6745	21107	231	154	185	9.09	198

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-35

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 35 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	3040	1.2	19.0	5108	5944	569	240	295	3.64	537
	3500	5.3	20.7	7760	8512	456	219	273	4.30	424
	4000	7.8	21.9	9192	10025	443	209	262	4.71	410
	5000	11.3	23.8	11121	12193	455	196	248	5.31	423
	6000	14.1	25.5	12548	13909	480	188	238	5.77	446
	7000	16.4	27.1	13731	15412	506	182	231	6.15	471
	8000	18.6	28.6	14764	16792	532	177	225	6.46	497
	9000	20.5	30.0	15696	18093	557	174	220	6.73	521
	10000	22.3	31.4	16554	19340	580	171	216	6.96	543
	12000	25.6	34.1	18108	21724	624	167	210	7.35	585
	15000	29.9	37.9	20170	25137	681	163	203	7.77	639
	20000	36.4	43.7	23171	30609	759	159	196	8.24	712
-10	3210	1.2	16.5	4697	5689	457	223	278	4.15	425
	3500	2.6	17.2	5609	6611	416	216	272	4.38	383
	4000	4.6	18.2	6846	7929	386	208	263	4.71	354
	5000	7.7	20.0	8691	10027	380	197	250	5.23	348
	6000	10.3	21.6	10115	11761	394	189	241	5.66	361
	7000	12.6	23.2	11306	13298	414	183	233	6.02	380
	8000	14.7	24.7	12349	14714	435	179	227	6.34	400
	9000	16.5	26.1	13287	16049	456	175	222	6.61	421
	10000	18.3	27.5	14147	17325	477	172	218	6.85	441
	12000	21.6	30.1	15697	19758	517	168	212	7.24	478
	15000	25.9	33.9	17731	23224	569	164	204	7.69	528
	20000	32.3	39.6	20647	28745	641	160	197	8.19	595
-20	3370	1.2	14.2	4186	5374	360	206	262	4.76	329
	4000	3.0	15.3	5315	6652	327	200	255	5.06	296
	4500	4.3	16.1	6094	7576	318	196	250	5.28	287
	5000	5.5	16.9	6799	8439	317	192	245	5.48	285
	6000	7.8	18.5	8040	10032	324	186	237	5.84	292
	7000	9.8	19.9	9120	11497	338	181	231	6.16	306
	8000	11.7	21.3	10085	12873	355	177	226	6.45	322
	9000	13.5	22.7	10964	14185	372	174	221	6.70	338
	10000	15.1	24.1	11774	15448	390	172	217	6.92	355
	12000	18.3	26.6	13240	17869	424	168	211	7.29	387
	15000	22.5	30.3	15165	21330	470	164	204	7.73	431
	18000	26.3	33.8	16865	24667	511	161	199	8.05	469
	20000	28.8	36.0	17909	26847	536	160	197	8.22	491

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-36

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 36 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	3520	1.2	12.3	3607	5040	279	191	246	5.48	250
	4000	2.2	13.0	4209	5806	265	189	242	5.65	236
	5000	4.2	14.5	5342	7317	258	184	235	5.98	229
	6000	6.1	15.9	6348	8735	264	179	229	6.27	234
	7000	7.9	17.3	7257	10083	274	176	224	6.53	244
	8000	9.6	18.6	8089	11377	287	173	220	6.77	256
	9000	11.2	19.9	8858	12628	302	171	216	6.99	270
	10000	12.8	21.2	9576	13846	316	169	213	7.18	283
	11000	14.2	22.5	10251	15036	330	167	210	7.35	297
	12000	15.7	23.7	10889	16204	344	165	207	7.51	310
	15000	19.7	27.3	12627	19607	384	162	201	7.89	347
	18000	23.4	30.7	14167	22906	420	160	197	8.18	380
	20000	25.8	32.9	15112	25067	441	159	195	8.34	400
-45	3720	1.2	10.1	2682	4586	185	173	220	6.75	161
	4000	1.6	10.4	2899	4940	183	173	219	6.81	158
	5000	3.2	11.7	3638	6183	181	170	215	7.03	156
	6000	4.7	13.0	4325	7396	186	168	212	7.22	161
	7000	6.2	14.3	4968	8584	194	166	209	7.40	168
	8000	7.6	15.6	5572	9749	203	165	207	7.56	177
	9000	9.0	16.8	6142	10896	213	164	204	7.70	187
	10000	10.4	18.0	6683	12028	223	163	202	7.84	196
	11000	11.7	19.2	7197	13145	234	162	200	7.96	206
	12000	13.0	20.4	7688	14251	244	161	199	8.06	216
	15000	16.7	23.8	9041	17514	273	159	195	8.33	243
	18000	20.2	27.1	10254	20716	300	157	192	8.54	268
	20000	22.4	29.2	11002	22826	316	156	190	8.65	282
-60	5291	3.1	10.4	2384	5803	119	159	196	8.23	100
	6000	4.0	11.2	2684	6573	122	159	195	8.30	103
	7000	5.3	12.4	3089	7651	127	158	194	8.39	108
	8000	6.5	13.6	3475	8722	134	158	193	8.47	114
	9000	7.7	14.8	3843	9786	140	157	192	8.55	120
	10000	9.0	15.9	4196	10845	147	157	191	8.61	126
	11000	10.2	17.1	4535	11898	153	156	190	8.67	133
	12000	11.3	18.2	4861	12947	160	156	189	8.73	139
	13000	12.5	19.3	5174	13992	166	155	189	8.78	145
	15000	14.8	21.5	5768	16071	179	155	188	8.87	156
	18000	18.1	24.6	6590	19168	196	154	186	8.97	173
	20000	20.2	26.7	7100	21223	207	154	185	9.03	182

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-37

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 37 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
0	3040	1.2	19.1	5361	6163	540	245	302	3.49	516
	3500	5.4	20.9	8274	8983	424	224	279	4.13	400
	4000	7.8	22.1	9837	10619	410	213	267	4.54	386
	5000	11.4	24.1	11928	12933	421	199	252	5.13	397
	6000	14.2	25.8	13465	14742	443	191	242	5.59	419
	7000	16.6	27.4	14733	16312	468	184	234	5.96	444
	8000	18.7	28.9	15838	17744	493	180	228	6.28	468
	9000	20.6	30.3	16832	19087	516	176	223	6.56	491
	10000	22.4	31.7	17745	20369	539	173	219	6.80	513
	11000	24.1	33.1	18596	21606	561	171	215	7.01	534
	12000	25.7	34.4	19397	22809	581	169	212	7.20	554
	15000	30.2	38.2	21587	26286	637	164	205	7.65	607
	20000	36.7	44.0	24772	31838	713	160	198	8.15	679
-10	3220	1.2	16.5	4905	5868	430	227	284	4.00	406
	3500	2.4	17.1	5833	6802	389	221	278	4.20	366
	4000	4.4	18.2	7161	8203	358	213	269	4.51	335
	5000	7.5	20.0	9158	10434	349	201	255	5.02	325
	6000	10.1	21.7	10698	12265	360	193	246	5.45	337
	7000	12.4	23.2	11983	13878	378	186	238	5.81	354
	8000	14.5	24.7	13104	15353	398	182	232	6.13	374
	9000	16.4	26.1	14110	16736	418	178	226	6.41	393
	10000	18.2	27.5	15030	18053	438	175	222	6.65	413
	11000	19.8	28.8	15884	19321	457	172	218	6.87	431
	12000	21.4	30.1	16684	20551	476	170	215	7.07	449
	15000	25.8	33.9	18848	24089	527	165	207	7.54	498
	20000	32.3	39.7	21947	29693	597	161	199	8.08	564
-20	3400	1.2	14.1	4388	5551	333	209	267	4.61	310
	3500	1.5	14.3	4585	5769	325	208	266	4.65	303
	4000	2.8	15.1	5505	6804	302	203	260	4.87	279
	5000	5.2	16.7	7077	8665	288	195	250	5.27	266
	6000	7.5	18.3	8403	10325	294	189	242	5.63	271
	7000	9.5	19.7	9560	11849	306	184	236	5.94	283
	8000	11.4	21.1	10594	13275	321	180	230	6.23	298
	9000	13.1	22.5	11534	14630	337	177	225	6.48	314
	10000	14.8	23.8	12401	15931	354	174	221	6.72	330
	11000	16.4	25.1	13208	17189	370	171	217	6.92	345
	12000	17.9	26.4	13967	18414	386	169	214	7.11	361
	15000	22.2	30.1	16017	21944	431	165	206	7.57	404
	20000	28.5	35.8	18938	27543	495	160	198	8.10	464

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-38

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 38 of 39)

AV-8B DELIVERY DATA
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	TRAJECTORY DROP (MIL)
-30	3560	1.2	12.1	3773	5188	253	194	250	5.32	233
	4000	2.0	12.7	4341	5903	242	191	246	5.47	221
	5000	4.0	14.2	5523	7450	233	186	240	5.78	212
	6000	5.8	15.6	6583	8907	236	182	234	6.06	215
	7000	7.5	16.9	7546	10293	246	178	228	6.33	224
	8000	9.2	18.3	8429	11621	257	175	224	6.57	236
	9000	10.8	19.6	9248	12904	270	173	220	6.78	248
	10000	12.3	20.8	10012	14151	284	171	216	6.98	261
	11000	13.8	22.1	10731	15367	297	169	213	7.17	274
	12000	15.2	23.3	11410	16559	311	167	210	7.33	287
	13000	16.6	24.5	12055	17729	324	166	208	7.48	299
	15000	19.2	26.9	13260	20021	349	163	204	7.74	323
	20000	25.3	32.5	15905	25553	404	159	197	8.22	375
-45	3950	1.4	10.0	2938	4923	163	174	223	6.66	146
	5000	3.0	11.3	3740	6244	160	172	219	6.87	143
	6000	4.4	12.6	4455	7473	164	170	215	7.06	147
	7000	5.8	13.9	5127	8677	170	168	212	7.24	153
	8000	7.2	15.1	5761	9859	179	166	209	7.40	161
	9000	8.5	16.3	6362	11022	188	165	207	7.55	170
	10000	9.8	17.5	6933	12168	197	164	205	7.69	179
	11000	11.1	18.7	7476	13300	207	163	203	7.81	188
	12000	12.4	19.8	7996	14420	216	162	201	7.93	198
	13000	13.6	21.0	8493	15529	226	161	199	8.03	207
	15000	16.1	23.2	9431	17719	244	159	197	8.22	224
	18000	19.5	26.5	10718	20950	270	158	193	8.44	248
	20000	21.8	28.6	11512	23076	286	157	192	8.56	263
-60	6024	3.7	10.8	2765	6628	105	159	197	8.21	93
	6500	4.3	11.3	2968	7145	107	159	196	8.26	95
	7000	4.9	11.9	3176	7687	110	159	195	8.30	98
	7500	5.5	12.5	3379	8226	112	159	195	8.34	100
	8000	6.1	13.1	3578	8764	115	158	194	8.38	103
	9000	7.3	14.2	3964	9834	121	158	193	8.46	109
	10000	8.4	15.3	4335	10899	127	157	192	8.53	115
	11000	9.6	16.4	4691	11958	133	157	191	8.59	121
	12000	10.8	17.5	5034	13013	139	156	190	8.65	126
	13000	11.9	18.6	5364	14063	145	156	190	8.71	132
	15000	14.1	20.8	5992	16153	157	155	188	8.80	144
	18000	17.4	23.9	6862	19264	174	155	187	8.92	159
	20000	19.5	26.0	7401	21326	184	154	186	8.98	169

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37. BF 12110-R1-B87-39

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-62. Delivery Data, Mk 20 Rockeye II, CBU-99/100, FMU-140/B Fuze (Sheet 39 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	740	76	-84	276	-306	-51	57	80	-83	3.5	136	8.3	136	39.0
	800	95	-104	62	-694	-114	88	96	-100	4.0	141	7.1	141	35.4
	900	115	-125	-77	-55	-176	129	112	-116	4.5	148	6.5	148	32.6
	1000	128	-140	-136	69	-213	157	120	-125	5.0	154	6.2	154	30.9
	1100	139	-151	-166	124	-237	177	126	-131	5.3	160	6.2	159	29.9
	1200	148	-160	-182	152	-254	192	130	-136	5.7	165	6.2	165	29.1
	1300	155	-168	-191	168	-266	204	133	-139	6.0	170	6.2	170	28.6
	1400	162	-175	-194	177	-276	213	136	-141	6.2	175	6.3	175	28.1
	1500	168	-181	-196	181	-283	221	137	-142	6.5	180	6.4	180	27.8
	1600	173	-186	-195	183	-289	228	139	-144	6.7	185	6.5	185	27.5
	1700	178	-191	-194	184	-294	233	140	-145	7.0	190	6.7	190	27.3
	1800	182	-196	-192	183	-298	238	141	-145	7.2	195	6.8	195	27.1
	1900	187	-200	-190	182	-301	243	142	-146	7.4	200	6.9	199	26.9
	2000	191	-204	-187	180	-304	247	142	-147	7.6	204	7.0	204	26.8
	2100	194	-208	-184	178	-307	250	143	-147	7.8	209	7.2	209	26.7
-10	900	42	-47	-8	-22	-57	48	46	-47	2.9	96	10.2	96	33.0
	1000	48	-54	-30	7	-61	51	51	-52	3.2	101	9.7	101	31.3
	1100	54	-60	-45	27	-66	55	55	-56	3.5	106	9.4	106	30.2
	1200	60	-66	-57	42	-72	59	59	-60	3.8	111	9.3	111	29.2
	1300	66	-72	-65	52	-77	64	62	-63	4.1	116	9.1	116	28.5
	1400	71	-78	-71	60	-83	69	65	-66	4.3	121	9.1	121	28.0
	1500	76	-83	-76	67	-88	73	68	-69	4.6	125	9.1	125	27.5
	1600	81	-88	-80	71	-93	78	71	-72	4.8	130	9.1	130	27.2
	1700	85	-93	-83	75	-98	82	73	-74	5.0	135	9.1	135	26.8
	1800	90	-98	-85	78	-103	86	75	-76	5.2	139	9.2	139	26.6
	1900	94	-102	-86	80	-107	90	77	-78	5.4	144	9.2	143	26.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-1)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 1 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	740	72	-73	343	-372	-39	53	91	-95	3.7	138	7.4	138	37.0
	800	91	-92	96	-819	-119	90	112	-117	4.3	143	6.2	143	33.4
	900	110	-111	-67	-85	-200	141	131	-137	4.9	150	5.6	150	30.5
	1000	123	-125	-138	60	-248	177	142	-149	5.4	156	5.4	156	28.9
	1100	134	-136	-174	125	-280	202	149	-156	5.8	162	5.3	162	27.9
	1200	142	-144	-194	159	-302	221	154	-161	6.2	168	5.3	167	27.1
	1400	156	-158	-210	190	-330	248	161	-168	6.8	178	5.4	178	26.2
	1600	167	-169	-213	199	-346	265	165	-171	7.3	188	5.6	188	25.6
	1800	176	-178	-210	200	-357	278	167	-173	7.8	197	5.8	197	25.2
	2000	183	-186	-205	197	-364	288	169	-175	8.3	207	6.0	206	24.9
	2200	190	-193	-199	193	-369	296	170	-175	8.7	216	6.2	215	24.7
-10	905	38	-39	-2	-26	-61	50	51	-51	3.0	94	9.2	94	31.0
	950	41	-41	-13	-13	-63	52	53	-54	3.2	97	9.0	97	30.2
	1000	43	-44	-23	0	-65	53	56	-57	3.4	99	8.7	99	29.4
	1100	49	-50	-40	21	-70	57	61	-62	3.7	104	8.4	104	28.3
	1200	54	-55	-52	36	-76	62	65	-66	4.0	109	8.3	109	27.4
	1300	59	-60	-61	48	-82	67	69	-70	4.3	114	8.1	114	26.7
	1400	64	-65	-68	57	-88	72	72	-74	4.5	119	8.1	118	26.1
	1500	69	-70	-74	64	-94	77	76	-77	4.8	123	8.0	123	25.7
	1600	73	-75	-78	69	-100	82	78	-80	5.0	128	8.0	128	25.3
	1700	78	-79	-82	74	-105	86	81	-83	5.3	132	8.0	132	25.0
	1800	82	-83	-85	77	-110	91	84	-85	5.5	137	8.1	137	24.7
	1900	86	-87	-87	80	-115	95	86	-87	5.8	141	8.1	141	24.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-2)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 2 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	740	87	-88	407	-435	-21	47	103	-107	3.9	140	6.6	139	35.3
	800	110	-112	128	-940	-123	90	127	-133	4.6	145	5.6	145	31.7
	900	132	-135	-57	-113	-224	152	150	-158	5.3	153	4.9	152	28.9
	1000	148	-150	-139	51	-285	196	164	-172	5.8	159	4.7	159	27.3
	1200	168	-171	-205	166	-352	250	179	-188	6.6	170	4.6	170	25.6
	1400	181	-184	-225	202	-387	283	186	-195	7.3	180	4.7	180	24.6
	1600	192	-195	-229	213	-406	304	191	-199	7.9	190	4.9	190	24.0
	1800	200	-203	-226	215	-418	319	193	-202	8.4	200	5.0	200	23.6
	2000	207	-210	-222	213	-426	331	195	-203	8.9	209	5.2	209	23.4
	2200	213	-216	-216	209	-432	340	196	-204	9.4	218	5.4	218	23.2
	2300	216	-219	-212	206	-434	343	197	-204	9.6	222	5.5	222	23.1
-10	920	45	-46	0	-26	-65	53	55	-56	3.2	94	8.3	93	29.1
	950	47	-47	-7	-18	-66	54	57	-58	3.3	95	8.2	95	28.6
	1000	49	-50	-17	-5	-69	56	60	-61	3.5	98	8.0	97	27.9
	1100	55	-56	-34	16	-74	60	66	-67	3.8	102	7.7	102	26.7
	1200	61	-62	-47	31	-80	64	70	-72	4.1	107	7.5	107	25.8
	1300	66	-67	-57	44	-86	69	75	-76	4.4	112	7.4	112	25.1
	1400	71	-72	-65	53	-93	74	79	-80	4.7	117	7.3	116	24.6
	1500	76	-77	-72	61	-99	80	82	-84	5.0	121	7.2	121	24.1
	1600	80	-82	-77	67	-105	85	86	-87	5.3	126	7.2	125	23.8
	1700	85	-86	-81	72	-111	90	89	-91	5.5	130	7.2	130	23.5
	1800	89	-91	-84	76	-117	95	92	-93	5.8	134	7.2	134	23.2
	1900	93	-95	-87	79	-123	100	94	-96	6.0	139	7.3	139	23.0
	2000	97	-99	-89	82	-128	105	97	-99	6.3	143	7.3	143	22.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-3)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 3 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	940	75	-82	368	-382	-24	42	74	-76	3.8	157	10.4	157	41.6
	1100	114	-124	-4	-134	-142	109	104	-108	4.8	169	7.9	168	34.7
	1200	128	-139	-74	3	-181	139	114	-118	5.3	174	7.5	174	32.9
	1400	148	-160	-136	104	-229	178	125	-129	6.0	184	7.2	184	30.8
	1600	163	-176	-159	141	-257	202	132	-136	6.6	194	7.2	194	29.6
	1800	175	-188	-168	155	-274	220	136	-140	7.1	203	7.3	203	28.8
	2000	185	-198	-170	161	-286	232	138	-143	7.5	212	7.5	212	28.2
	2500	205	-219	-165	160	-305	254	143	-146	8.5	233	8.0	233	27.4
	3000	221	-235	-156	153	-317	269	145	-149	9.4	253	8.6	253	26.9
	3500	234	-250	-147	145	-326	281	147	-150	10.2	272	9.1	272	26.6
	3700	239	-255	-144	141	-329	285	148	-151	10.5	279	9.3	279	26.5
-10	1100	45	-50	22	-53	-62	54	47	-48	3.2	116	12.1	116	35.6
	1200	52	-57	-3	-20	-65	56	52	-53	3.6	120	11.4	120	33.8
	1300	58	-64	-22	3	-70	60	57	-57	3.9	125	10.9	125	32.4
	1400	64	-70	-36	21	-75	64	60	-61	4.1	130	10.6	130	31.3
	1500	69	-76	-47	34	-81	68	64	-64	4.4	134	10.4	134	30.5
	1600	75	-82	-55	44	-86	73	67	-68	4.7	139	10.3	138	29.8
	1700	80	-87	-62	52	-91	77	69	-70	4.9	143	10.2	143	29.2
	1800	84	-92	-67	59	-96	82	72	-73	5.1	147	10.1	147	28.7
	1900	89	-97	-71	64	-101	86	74	-75	5.3	151	10.1	151	28.3
	2000	94	-102	-75	68	-106	90	76	-77	5.6	156	10.1	155	28.0
	2100	98	-106	-77	71	-111	94	78	-79	5.8	160	10.1	160	27.7
	2200	102	-111	-79	74	-115	98	80	-81	6.0	164	10.1	164	27.4
	2300	106	-115	-81	76	-119	102	82	-83	6.2	168	10.1	168	27.2
	2400	110	-119	-82	78	-123	106	83	-85	6.4	172	10.2	172	27.0
	2500	114	-123	-83	79	-127	109	85	-86	6.6	176	10.2	176	26.8
	3000	131	-141	-86	83	-145	126	92	-93	7.5	195	10.5	195	26.1
	3500	146	-157	-86	84	-161	141	97	-98	8.3	213	10.8	213	25.7
-20	1250	28	-31	-12	6	-27	24	30	-30	2.8	87	14.2	87	31.4
	1400	32	-35	-19	14	-30	27	34	-33	3.1	93	13.7	93	30.1
	1600	37	-41	-26	21	-33	30	38	-37	3.5	101	13.3	101	28.9
	1800	43	-47	-31	27	-38	34	41	-41	3.9	108	13.0	108	28.0
	2000	48	-53	-35	31	-42	38	45	-45	4.2	116	12.8	116	27.3
	2200	54	-59	-38	35	-47	42	48	-48	4.6	123	12.8	123	26.7
	2300	56	-62	-39	36	-49	44	49	-49	4.8	127	12.7	127	26.5
	2400	59	-65	-40	38	-52	46	51	-51	5.0	131	12.7	131	26.3
	2500	62	-67	-42	39	-54	49	52	-52	5.1	134	12.7	134	26.1
	2600	64	-70	-42	40	-56	51	54	-54	5.3	138	12.7	138	26.0
	2700	67	-73	-43	41	-59	53	55	-55	5.5	141	12.8	141	25.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-4)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 4 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	940	71	-72	442	-454	-4	33	84	-86	4.0	159	9.3	158	39.6
	1100	109	-110	15	-172	-155	115	121	-126	5.2	171	6.9	171	32.7
	1200	123	-124	-67	-14	-206	152	133	-138	5.7	177	6.5	177	30.9
	1400	142	-144	-141	105	-268	201	147	-153	6.5	187	6.2	187	28.8
	1600	157	-159	-169	148	-303	232	155	-161	7.1	197	6.2	197	27.6
	1800	168	-170	-181	167	-325	253	160	-166	7.7	206	6.3	206	26.8
	2000	177	-180	-184	174	-340	269	163	-169	8.2	215	6.4	215	26.3
	2500	196	-199	-180	174	-362	295	168	-173	9.2	236	6.9	236	25.5
	3000	211	-214	-171	167	-374	311	171	-175	10.2	256	7.4	256	25.1
	3500	224	-227	-161	158	-383	324	172	-177	11.1	275	7.8	274	24.8
	3700	229	-232	-158	155	-386	328	173	-177	11.4	282	8.0	282	24.7
-10	1105	41	-42	30	-59	-66	57	52	-52	3.4	114	10.9	114	33.6
	1200	46	-47	5	-29	-70	59	57	-58	3.7	119	10.3	119	31.9
	1300	52	-53	-15	-5	-74	63	62	-63	4.0	124	9.8	123	30.6
	1400	57	-58	-30	14	-80	67	66	-67	4.3	128	9.5	128	29.5
	1500	62	-64	-42	28	-86	72	70	-71	4.6	132	9.3	132	28.6
	1600	67	-69	-51	39	-91	76	74	-75	4.9	137	9.2	137	27.9
	1700	72	-74	-59	48	-97	81	77	-78	5.1	141	9.0	141	27.4
	1800	77	-78	-65	55	-103	86	80	-81	5.4	145	9.0	145	26.9
	1900	81	-83	-69	61	-108	91	82	-84	5.6	149	8.9	149	26.5
	2000	85	-87	-73	66	-114	95	85	-86	5.9	153	8.9	153	26.1
	2100	89	-91	-77	70	-119	100	87	-89	6.1	158	8.9	157	25.8
	2200	93	-95	-79	73	-124	104	89	-91	6.3	162	8.9	161	25.6
	2300	97	-99	-81	76	-129	108	91	-93	6.5	166	8.9	165	25.3
	2400	101	-103	-83	78	-133	112	93	-95	6.7	169	9.0	169	25.1
	2500	104	-106	-85	80	-138	117	95	-97	6.9	173	9.0	173	25.0
	3000	121	-123	-89	85	-158	135	103	-104	7.9	192	9.2	192	24.3
	3700	140	-143	-90	87	-182	158	111	-113	9.1	218	9.7	217	23.8
-20	1275	25	-25	-11	6	-28	25	33	-32	2.9	84	12.8	84	29.1
	1400	28	-28	-16	11	-29	26	36	-35	3.2	89	12.4	89	28.1
	1500	30	-31	-20	15	-31	28	38	-38	3.4	93	12.2	93	27.5
	1600	32	-33	-23	19	-33	30	40	-40	3.6	97	12.0	97	26.9
	2000	42	-43	-32	29	-42	37	48	-48	4.4	111	11.6	111	25.4
	2200	47	-48	-36	33	-47	41	51	-51	4.8	119	11.5	119	24.9
	2300	49	-51	-37	34	-49	44	53	-53	5.0	122	11.5	122	24.7
	2400	52	-53	-38	36	-51	46	54	-55	5.1	126	11.4	126	24.5
	2500	54	-55	-40	37	-54	48	56	-56	5.3	129	11.4	129	24.3
	2600	57	-58	-41	38	-56	50	58	-58	5.5	133	11.4	133	24.1
	2700	59	-60	-42	39	-59	52	59	-59	5.7	136	11.4	136	24.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-5)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 5 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	940	84	-85	513	-523	20	23	93	-97	4.2	161	8.4	160	37.8
	1100	128	-130	32	-208	-168	120	138	-144	5.6	174	6.1	173	31.0
	1200	144	-146	-61	-29	-231	164	152	-159	6.1	180	5.7	179	29.3
	1400	165	-168	-146	106	-307	224	169	-177	7.0	190	5.5	190	27.2
	1600	180	-183	-179	156	-351	262	179	-187	7.7	200	5.5	200	26.1
	1800	191	-194	-193	177	-378	288	185	-192	8.2	209	5.5	209	25.3
	2000	200	-203	-198	186	-396	306	189	-196	8.8	218	5.6	217	24.8
	2500	217	-220	-195	188	-420	337	194	-200	9.9	239	6.0	238	24.0
	3000	230	-233	-185	181	-433	355	196	-202	10.9	258	6.5	258	23.6
	3500	240	-244	-174	171	-442	368	197	-203	11.9	277	6.9	277	23.4
	3900	248	-252	-167	164	-447	377	198	-203	12.5	292	7.2	292	23.3
-10	1120	48	-48	32	-59	-71	61	56	-57	3.6	114	9.9	114	31.7
	1200	52	-53	12	-35	-74	62	61	-62	3.9	117	9.4	117	30.4
	1300	58	-59	-8	-11	-79	66	67	-68	4.2	122	9.0	122	29.0
	1400	64	-65	-24	8	-84	70	72	-73	4.5	126	8.7	126	28.0
	1500	69	-70	-37	22	-90	75	76	-77	4.8	131	8.5	131	27.2
	1600	74	-75	-47	34	-96	79	80	-81	5.1	135	8.3	135	26.5
	1700	79	-80	-55	44	-103	84	84	-85	5.4	139	8.2	139	25.9
	1800	84	-85	-62	52	-109	90	87	-89	5.6	143	8.1	143	25.4
	1900	88	-90	-67	58	-115	95	90	-92	5.9	148	8.1	147	25.0
	2000	92	-94	-72	64	-121	100	93	-95	6.1	152	8.0	152	24.7
	2100	96	-98	-75	68	-127	104	96	-97	6.4	156	8.0	156	24.4
	2200	100	-102	-79	72	-132	109	98	-100	6.6	160	8.0	160	24.1
	2300	104	-106	-81	75	-137	114	100	-102	6.8	164	8.0	163	23.9
	2400	108	-110	-83	78	-143	118	102	-104	7.1	167	8.1	167	23.7
	2500	111	-113	-85	80	-148	123	105	-106	7.3	171	8.1	171	23.5
	3000	127	-130	-91	87	-170	143	113	-115	8.3	190	8.3	190	22.9
	3500	141	-144	-93	90	-190	162	120	-122	9.2	208	8.5	208	22.5
	3800	149	-151	-93	90	-200	171	124	-126	9.8	219	8.7	219	22.4
-20	1300	28	-29	-10	5	-28	25	35	-35	3.0	82	11.7	82	27.2
	1600	36	-36	-21	16	-33	29	42	-42	3.7	93	11.0	93	25.3
	1800	40	-41	-26	22	-37	33	46	-46	4.1	100	10.7	100	24.5
	2000	45	-46	-30	27	-41	36	50	-50	4.5	108	10.6	107	23.8
	2200	50	-51	-34	30	-46	41	54	-54	4.9	115	10.5	115	23.3
	2300	53	-54	-35	32	-49	43	56	-56	5.1	118	10.4	118	23.1
	2400	55	-56	-36	34	-51	45	58	-58	5.3	122	10.4	121	23.0
	2500	57	-58	-38	35	-54	47	59	-60	5.5	125	10.4	125	22.8
	2600	60	-61	-39	36	-56	49	61	-61	5.7	128	10.4	128	22.7
	2700	62	-63	-40	37	-59	52	63	-63	5.8	132	10.4	132	22.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-6)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 6 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1200 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	1240	74	-81	461	-460	3	24	67	-69	4.1	185	13.5	184	44.8
	1500	127	-137	-2	-71	-143	114	105	-108	5.7	202	9.4	202	35.6
	2000	170	-183	-123	107	-241	195	128	-132	7.2	225	8.6	225	31.1
	4000	243	-259	-134	132	-326	284	147	-150	10.9	299	10.0	299	27.4
	6000	286	-303	-114	113	-358	323	155	-157	13.7	363	11.6	362	26.4
	7500	312	-331	-102	102	-380	347	160	-162	15.6	405	12.5	405	26.0
-10	1400	49	-54	60	-93	-65	59	48	-48	3.7	143	14.8	143	38.9
	1600	61	-67	10	-29	-72	64	57	-57	4.3	152	13.2	152	35.4
	1700	67	-74	-7	-9	-77	68	61	-61	4.6	156	12.7	156	34.1
	1800	73	-80	-21	7	-82	72	64	-65	4.8	160	12.3	160	33.1
	1900	78	-86	-32	20	-88	76	67	-68	5.1	164	12.1	164	32.3
	2000	83	-91	-40	30	-93	81	70	-71	5.3	168	11.9	168	31.6
	2100	88	-96	-47	38	-98	85	73	-73	5.6	172	11.7	172	31.0
	2200	93	-101	-53	45	-103	89	75	-76	5.8	176	11.6	176	30.4
	2300	98	-106	-58	51	-108	94	77	-78	6.0	180	11.5	180	30.0
	2400	102	-111	-62	55	-113	98	79	-80	6.2	184	11.5	184	29.6
	2500	106	-115	-65	59	-117	102	81	-82	6.4	187	11.4	187	29.2
	3000	125	-135	-75	71	-138	120	89	-90	7.4	206	11.4	205	27.9
	4000	156	-168	-80	78	-170	151	101	-102	9.0	240	11.8	240	26.6
	6000	203	-217	-78	77	-219	199	117	-118	11.9	302	12.8	302	25.4
	7500	232	-248	-74	73	-249	229	126	-127	13.8	344	13.5	344	24.9
-20	1530	32	-35	2	-8	-35	32	33	-32	3.2	110	16.7	110	34.6
	2200	50	-55	-25	22	-47	42	46	-45	4.5	134	14.6	134	29.8
	2300	53	-58	-28	24	-49	44	47	-47	4.7	138	14.4	138	29.4
	2400	56	-61	-30	27	-51	46	49	-49	4.9	141	14.3	141	29.0
	2500	59	-64	-32	29	-53	48	50	-50	5.0	145	14.2	145	28.7
	2600	61	-67	-34	31	-56	50	52	-52	5.2	148	14.1	148	28.4
	2700	64	-70	-35	32	-58	52	53	-53	5.4	151	14.1	151	28.1
	2800	67	-73	-37	34	-60	55	55	-55	5.6	155	14.0	155	27.8
	2900	69	-75	-38	35	-62	57	56	-56	5.7	158	14.0	158	27.6
	3000	72	-78	-39	37	-65	59	57	-57	5.9	161	14.0	161	27.4
	4000	96	-104	-46	45	-87	80	69	-69	7.5	193	13.9	193	25.9
	6500	147	-158	-51	50	-139	129	91	-91	10.9	266	14.6	266	24.4
-30	1805	23	-25	-9	7	-19	18	25	-25	3.0	93	18.2	93	30.6
	2000	26	-29	-12	10	-20	19	28	-27	3.3	99	17.7	99	29.6
	3000	42	-47	-22	20	-33	31	39	-39	4.9	130	16.5	130	26.7
	4000	59	-65	-27	26	-47	44	49	-49	6.3	159	16.1	159	25.4
	5000	76	-82	-30	29	-62	59	58	-57	7.6	187	16.1	187	24.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-7)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 7 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1200 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	1240	70	-71	541	-537	30	12	76	-77	4.4	187	12.2	186	42.7
	1500	121	-123	12	-96	-156	120	122	-126	6.1	205	8.2	205	33.5
	2000	163	-165	-129	111	-280	221	150	-155	7.8	228	7.5	228	29.2
	4000	232	-236	-146	144	-380	326	172	-175	11.8	302	8.7	302	25.6
	6000	273	-277	-124	123	-411	365	178	-181	14.7	366	10.1	365	24.8
	7500	298	-303	-112	111	-431	389	183	-186	16.7	409	11.0	408	24.5
-10	1405	44	-45	70	-100	-70	63	52	-52	3.8	142	13.5	142	37.0
	1600	55	-56	19	-39	-76	67	62	-63	4.5	151	12.0	151	33.6
	1700	60	-62	1	-18	-81	71	66	-67	4.8	155	11.5	155	32.4
	1800	65	-67	-13	-1	-87	75	70	-71	5.1	159	11.2	159	31.4
	2000	75	-77	-35	24	-98	84	77	-78	5.6	167	10.7	167	29.8
	2100	80	-82	-43	33	-104	89	80	-81	5.8	171	10.5	171	29.2
	2200	85	-86	-49	41	-110	94	83	-84	6.1	175	10.4	174	28.7
	2300	89	-91	-55	47	-115	98	86	-87	6.3	178	10.3	178	28.2
	2500	97	-99	-63	57	-126	107	90	-91	6.8	186	10.2	186	27.5
	3000	115	-118	-76	72	-149	128	99	-101	7.8	204	10.1	204	26.2
	4000	145	-148	-84	81	-185	162	113	-114	9.5	238	10.4	238	24.9
	6000	190	-194	-82	81	-238	214	130	-132	12.6	300	11.4	299	23.9
	7500	218	-222	-78	77	-270	246	140	-142	14.6	342	12.1	342	23.5
-20	1565	29	-30	2	-8	-37	33	35	-35	3.3	108	15.1	108	32.3
	2200	44	-45	-23	19	-47	42	49	-49	4.6	130	13.3	130	28.0
	2300	47	-48	-25	22	-49	44	50	-50	4.8	134	13.1	133	27.6
	2400	49	-50	-27	24	-51	46	52	-52	5.0	137	13.0	137	27.2
	2500	51	-53	-29	26	-54	48	54	-54	5.2	140	12.9	140	26.9
	2600	54	-55	-31	28	-56	50	56	-56	5.4	144	12.8	144	26.6
	2700	56	-58	-33	30	-58	52	57	-57	5.6	147	12.7	147	26.3
	2800	59	-60	-35	32	-60	54	59	-59	5.8	150	12.7	150	26.1
	3000	63	-65	-37	35	-65	58	62	-62	6.1	157	12.6	157	25.6
	5000	107	-109	-49	48	-111	101	85	-85	9.3	218	12.7	218	23.6
	7000	143	-147	-52	51	-153	141	102	-103	12.0	274	13.3	274	22.8
-30	2005	22	-23	-10	9	-19	18	29	-28	3.4	94	16.2	94	27.6
	2200	25	-26	-13	11	-21	20	31	-31	3.7	100	15.8	100	26.8
	2400	28	-29	-15	13	-24	22	34	-33	4.1	106	15.5	106	26.2
	2600	31	-32	-17	15	-26	24	36	-36	4.4	112	15.3	112	25.7
	2800	34	-35	-18	17	-28	27	39	-38	4.7	118	15.1	118	25.2
	3000	37	-38	-20	19	-31	29	41	-41	5.0	124	15.0	124	24.9
	4000	52	-53	-25	24	-45	42	52	-51	6.4	152	14.7	152	23.6
	5000	67	-69	-29	28	-60	56	61	-61	7.8	180	14.7	180	23.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-8)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 8 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1200 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	1240	81	-82	618	-611	63	-2	84	-86	4.6	189	11.1	188	41.0
	1500	139	-141	25	-119	-167	124	139	-144	6.5	208	7.3	208	31.9
	2000	183	-186	-135	115	-320	247	172	-178	8.4	231	6.6	231	27.6
	4000	246	-250	-158	155	-435	368	196	-201	12.6	305	7.7	305	24.2
	6000	279	-284	-134	133	-464	408	201	-205	15.6	369	9.1	369	23.6
	8000	305	-311	-116	115	-488	438	207	-210	18.3	426	10.2	425	23.3
-10	1420	50	-51	73	-101	-75	67	56	-57	4.0	142	12.4	142	35.1
	1600	60	-61	27	-47	-80	70	67	-67	4.6	150	11.1	149	32.1
	1700	66	-67	9	-26	-85	74	72	-73	5.0	154	10.6	154	30.9
	1800	71	-73	-6	-8	-91	78	76	-77	5.3	158	10.2	158	29.9
	2000	81	-83	-29	18	-103	88	84	-85	5.8	166	9.7	165	28.4
	2100	86	-88	-38	28	-110	93	87	-89	6.1	169	9.6	169	27.8
	2200	91	-92	-45	36	-116	98	90	-92	6.3	173	9.5	173	27.3
	2300	95	-97	-51	43	-122	103	93	-95	6.6	177	9.4	177	26.8
	2400	99	-101	-57	49	-128	107	96	-98	6.8	181	9.3	181	26.4
	2500	103	-105	-61	55	-133	112	99	-100	7.1	184	9.2	184	26.1
	4000	150	-153	-86	83	-200	172	124	-126	10.0	236	9.4	236	23.5
	6000	192	-195	-86	85	-257	228	143	-145	13.2	298	10.3	298	22.6
	8000	224	-228	-81	80	-301	272	157	-158	15.9	353	11.2	353	22.2
-20	1595	33	-33	2	-7	-38	34	38	-38	3.5	106	13.9	106	30.3
	2200	47	-48	-20	16	-47	42	51	-51	4.8	127	12.2	126	26.5
	2300	50	-51	-23	19	-49	44	53	-53	5.0	130	12.1	130	26.1
	2400	52	-53	-25	22	-51	46	55	-55	5.2	133	11.9	133	25.7
	2500	55	-56	-27	24	-54	48	57	-57	5.4	136	11.8	136	25.4
	2600	57	-58	-29	26	-56	50	59	-59	5.6	140	11.8	140	25.1
	2700	59	-60	-31	28	-58	52	61	-61	5.7	143	11.7	143	24.9
	2800	62	-63	-32	30	-61	54	62	-62	5.9	146	11.6	146	24.6
	3000	66	-68	-35	33	-65	58	65	-66	6.3	153	11.5	152	24.2
	4000	88	-90	-45	43	-90	80	79	-80	8.0	183	11.5	183	22.9
	5000	107	-109	-49	48	-114	102	91	-91	9.6	213	11.6	213	22.3
	7000	141	-144	-52	52	-157	144	109	-110	12.4	268	12.2	268	21.6
-30	2249	28	-28	-12	10	-21	20	33	-33	3.9	97	14.5	97	25.0
	2400	30	-30	-13	12	-23	21	35	-35	4.1	101	14.3	101	24.6
	2600	32	-33	-15	14	-25	23	38	-37	4.4	107	14.1	107	24.1
	2800	35	-36	-17	15	-27	25	40	-40	4.8	113	13.9	113	23.7
	3000	38	-39	-18	17	-30	28	43	-42	5.1	119	13.8	119	23.4
	4000	53	-54	-24	23	-43	40	54	-53	6.6	146	13.5	146	22.2
	5000	67	-68	-28	27	-58	54	64	-63	8.0	173	13.5	173	21.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

AV8BB-TAC-05-(85-9)10

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 9 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	1540	74	-80	524	-512	22	12	63	-63	4.4	210	16.5	210	47.4
	2000	148	-158	-34	0	-167	136	111	-114	6.7	237	10.5	237	35.2
	3000	205	-219	-123	117	-275	233	136	-139	9.1	276	10.0	275	30.3
	4000	238	-254	-126	123	-313	273	144	-147	10.8	310	10.6	309	28.6
	5000	263	-279	-119	117	-336	298	150	-152	12.3	341	11.3	341	27.7
	8000	319	-339	-98	97	-385	353	162	-164	16.2	426	13.1	426	26.4
	10000	351	-371	-89	87	-414	385	170	-171	18.5	477	13.9	477	25.8
	12000	379	-403	-81	80	-444	416	178	-180	20.7	524	14.6	524	25.2
	16000	434	-464	-70	69	-504	477	196	-197	25.1	610	15.5	610	24.3
-10	1700	51	-56	91	-124	-67	62	48	-48	4.0	169	17.5	168	41.7
	1900	63	-69	37	-57	-72	65	57	-57	4.7	177	15.5	177	37.9
	2000	69	-76	18	-35	-76	69	60	-61	4.9	181	14.8	181	36.6
	2100	75	-82	3	-17	-82	73	64	-64	5.2	185	14.3	185	35.5
	2200	80	-88	-10	-3	-87	77	67	-68	5.5	189	13.9	189	34.6
	2300	86	-94	-20	9	-92	82	70	-70	5.7	193	13.6	192	33.8
	2400	91	-99	-28	19	-98	86	72	-73	5.9	196	13.4	196	33.1
	2500	96	-104	-35	27	-103	91	75	-76	6.2	200	13.2	200	32.5
	3000	117	-127	-57	52	-126	111	85	-86	7.2	218	12.7	217	30.3
	4000	151	-163	-73	70	-163	145	98	-99	8.9	250	12.6	250	28.1
	5000	178	-191	-76	74	-191	173	108	-109	10.4	281	12.9	281	27.0
	8000	239	-256	-71	71	-257	237	129	-130	14.4	365	14.1	365	25.3
	10000	272	-291	-68	66	-293	273	140	-141	16.8	415	14.7	415	24.7
	12000	302	-323	-64	63	-327	308	151	-152	19.1	462	15.2	462	24.2
	16000	358	-382	-57	57	-392	374	172	-173	23.5	548	15.9	548	23.3
-20	1830	36	-39	16	-22	-42	39	35	-34	3.6	134	19.1	134	37.4
	2200	46	-50	-5	1	-47	43	42	-42	4.3	146	17.2	146	33.8
	2300	49	-53	-10	5	-49	45	44	-44	4.5	150	16.9	150	33.1
	2400	51	-56	-13	9	-50	46	46	-46	4.7	153	16.6	153	32.5
	2500	54	-59	-17	13	-52	48	48	-47	4.9	156	16.3	156	31.9
	2600	57	-62	-20	16	-54	50	49	-49	5.1	160	16.1	160	31.4
	2700	60	-65	-22	19	-56	52	51	-51	5.3	163	15.9	163	31.0
	2800	62	-68	-25	21	-59	54	52	-52	5.4	166	15.8	166	30.6
	3000	68	-74	-29	26	-63	58	55	-55	5.8	173	15.5	172	29.9
	4000	93	-101	-41	39	-86	78	68	-68	7.4	204	15.0	203	27.6
	5000	115	-125	-46	45	-107	99	78	-78	8.8	233	14.9	233	26.3
	8000	172	-185	-49	49	-166	155	101	-101	12.7	313	15.4	313	24.6
	10000	203	-218	-49	48	-202	190	114	-114	15.1	362	15.8	362	23.9
	12000	232	-249	-48	47	-236	223	126	-126	17.4	408	16.1	408	23.4
	14000	259	-278	-46	46	-268	256	138	-138	19.7	451	16.3	451	22.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-10)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 10 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2000	25	-28	-2	0	-23	22	26	-26	3.3	110	20.7	110	33.7
	3000	41	-45	-17	15	-34	32	38	-38	4.8	140	18.1	140	29.0
	4000	58	-63	-24	23	-47	45	48	-48	6.2	168	17.3	168	27.0
	5000	74	-81	-28	27	-62	59	57	-57	7.6	196	17.0	196	25.8
	6000	90	-98	-30	30	-78	73	65	-65	8.9	222	16.9	222	25.0
	7000	105	-114	-32	31	-93	88	73	-73	10.1	247	16.9	247	24.4
	8000	120	-130	-33	33	-109	103	80	-80	11.3	272	16.9	272	24.0
	9000	134	-145	-34	33	-124	118	87	-86	12.5	296	17.0	296	23.6
	10000	147	-159	-34	34	-139	133	93	-93	13.7	319	17.0	319	23.3
	12000	173	-186	-35	34	-170	163	105	-105	15.9	363	17.1	363	22.8
-45	3027	21	-23	-8	7	-15	15	25	-24	3.9	108	21.5	108	27.7
	3500	25	-28	-10	9	-19	18	29	-28	4.5	120	20.9	120	26.8
	4000	30	-33	-11	11	-23	22	32	-32	5.1	133	20.5	133	26.1
	5000	39	-43	-14	13	-32	30	39	-39	6.3	158	19.9	157	25.0
	6000	49	-54	-15	15	-41	40	46	-46	7.5	181	19.5	181	24.3
	7000	59	-65	-17	16	-52	50	53	-52	8.6	204	19.3	204	23.7
	8000	69	-75	-18	17	-63	60	59	-59	9.7	227	19.1	227	23.3
	9000	78	-86	-19	18	-74	71	65	-65	10.9	249	19.0	249	22.9
	10000	88	-96	-19	19	-86	82	71	-71	12.0	271	18.9	271	22.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-11)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 11 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	1540	69	-70	608	-593	54	-3	70	-71	4.7	212	15.0	212	45.4
	2000	141	-142	-27	-12	-185	146	129	-132	7.2	241	9.2	240	33.2
	3000	196	-199	-132	125	-319	265	158	-163	9.8	279	8.7	279	28.4
	4000	227	-231	-137	133	-363	311	168	-172	11.7	313	9.2	313	26.8
	5000	251	-255	-130	127	-387	339	173	-176	13.2	345	9.9	345	26.1
	8000	305	-310	-107	106	-434	394	184	-187	17.2	430	11.6	430	24.9
	10000	335	-342	-96	95	-462	425	191	-194	19.7	481	12.4	481	24.5
	12000	365	-372	-87	87	-490	455	199	-201	22.0	528	13.1	528	24.0
	16000	422	-430	-75	75	-546	514	216	-218	26.4	615	14.1	615	23.3
-10	1705	46	-47	102	-133	-71	66	52	-52	4.2	168	16.1	168	39.8
	1900	57	-58	48	-69	-75	68	61	-62	4.9	176	14.2	176	36.2
	2000	62	-63	28	-45	-80	72	66	-66	5.2	180	13.5	180	34.9
	2100	67	-69	12	-27	-85	76	70	-70	5.4	184	13.0	184	33.8
	2200	72	-74	-1	-12	-91	80	73	-74	5.7	188	12.7	188	32.8
	2300	77	-79	-12	1	-97	85	77	-78	6.0	192	12.3	191	32.0
	2400	82	-84	-22	12	-102	89	80	-81	6.2	195	12.1	195	31.3
	2500	87	-89	-30	21	-108	94	83	-84	6.5	199	11.9	199	30.7
	3000	107	-109	-55	50	-135	117	94	-95	7.6	216	11.4	216	28.6
	4000	140	-143	-74	71	-176	155	110	-111	9.4	249	11.2	249	26.4
	5000	166	-169	-79	77	-208	185	120	-122	11.0	280	11.5	280	25.3
	8000	225	-229	-76	75	-278	254	143	-144	15.2	363	12.6	363	23.9
	10000	257	-262	-72	71	-315	291	154	-156	17.6	413	13.3	413	23.4
	12000	287	-293	-67	67	-350	326	165	-167	20.0	460	13.8	460	23.0
	16000	343	-350	-60	60	-415	392	186	-188	24.5	547	14.6	547	22.3
-20	1865	32	-33	16	-22	-44	40	37	-37	3.8	132	17.4	132	35.1
	2200	40	-41	-2	-2	-48	44	45	-45	4.5	143	15.8	143	32.0
	2300	43	-44	-6	2	-49	45	47	-47	4.7	146	15.5	146	31.3
	2400	45	-46	-10	6	-51	47	49	-49	4.9	149	15.2	149	30.7
	2500	48	-49	-13	10	-53	48	51	-51	5.1	153	14.9	153	30.2
	2700	53	-54	-19	16	-57	52	54	-54	5.4	159	14.5	159	29.3
	2800	55	-56	-22	19	-59	54	56	-56	5.6	162	14.4	162	28.8
	2900	57	-59	-24	21	-61	56	57	-58	5.8	165	14.3	165	28.5
	3000	60	-61	-26	23	-64	58	59	-59	6.0	168	14.1	168	28.1
	4000	83	-85	-40	38	-87	79	73	-73	7.7	199	13.5	199	25.9
	5000	105	-107	-46	44	-110	100	84	-84	9.2	228	13.5	228	24.8
	8000	159	-162	-51	50	-171	159	109	-110	13.3	308	14.0	307	23.2
	10000	189	-193	-51	50	-208	194	123	-123	15.7	356	14.4	356	22.7
	12000	218	-223	-49	49	-243	228	135	-136	18.1	402	14.8	402	22.2
	16000	272	-277	-47	46	-308	293	159	-159	22.6	487	15.3	487	21.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-12)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 12 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2010	22	-22	-1	-1	-23	22	28	-27	3.3	105	19.0	105	31.6
	3000	36	-37	-15	13	-33	31	40	-39	4.9	134	16.6	134	27.2
	4000	51	-52	-22	21	-46	43	51	-50	6.4	162	15.8	162	25.3
	5000	66	-68	-27	26	-60	56	60	-60	7.8	188	15.5	188	24.2
	6000	81	-83	-30	29	-76	71	69	-69	9.1	214	15.4	214	23.5
	7000	95	-98	-32	31	-91	86	77	-77	10.4	239	15.5	239	23.0
	8000	109	-112	-33	32	-107	100	84	-84	11.7	263	15.5	263	22.6
	9000	123	-126	-34	33	-122	115	91	-91	12.9	287	15.6	287	22.3
	10000	136	-139	-35	34	-138	130	98	-98	14.1	310	15.7	310	22.1
	12000	161	-165	-35	35	-168	160	111	-111	16.4	354	15.9	354	21.6
	14000	186	-190	-35	35	-198	190	123	-123	18.6	396	16.0	396	21.3
-45	3468	21	-22	-9	8	-17	16	29	-28	4.5	113	19.3	113	25.0
	4000	26	-26	-10	10	-21	20	33	-32	5.2	126	18.9	125	24.3
	4500	30	-31	-11	11	-24	24	37	-36	5.8	137	18.6	137	23.8
	5000	34	-35	-13	12	-29	28	40	-40	6.4	149	18.3	149	23.4
	5500	39	-40	-13	13	-33	32	44	-43	7.0	161	18.2	161	23.0
	6000	43	-45	-14	14	-38	36	48	-47	7.6	172	18.0	172	22.7
	6500	48	-49	-15	15	-42	41	51	-50	8.2	183	17.9	183	22.5
	7000	53	-54	-16	15	-47	45	54	-54	8.7	195	17.9	195	22.3
	7500	57	-59	-16	16	-53	50	58	-57	9.3	206	17.8	206	22.1
	8000	62	-64	-17	17	-58	55	61	-60	9.9	217	17.8	217	21.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-13)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 13 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	1540	78	-79	688	-670	92	-20	77	-78	4.9	214	13.7	214	43.6
	2000	158	-160	-21	-22	-202	156	146	-151	7.7	244	8.2	243	31.5
	3000	213	-216	-141	133	-364	298	181	-186	10.5	283	7.7	283	26.9
	4000	241	-245	-147	143	-414	350	191	-196	12.5	317	8.2	317	25.4
	5000	260	-265	-140	137	-439	380	196	-200	14.1	349	8.8	348	24.7
	8000	304	-310	-114	114	-484	435	206	-209	18.2	434	10.4	434	23.8
	10000	328	-335	-103	101	-510	465	213	-216	20.7	485	11.3	485	23.4
	12000	347	-354	-93	93	-536	493	220	-223	23.1	532	12.0	532	23.1
	16000	382	-390	-79	79	-589	550	236	-238	27.6	620	13.0	620	22.5
-10	1720	51	-52	106	-134	-76	70	56	-56	4.4	168	14.8	167	38.0
	1900	62	-63	58	-78	-79	71	66	-66	5.0	175	13.2	175	34.8
	2000	67	-68	37	-55	-84	74	71	-71	5.3	179	12.5	179	33.5
	2100	73	-74	21	-35	-89	78	75	-76	5.7	183	12.0	183	32.4
	2200	78	-79	6	-20	-95	83	79	-80	5.9	187	11.7	187	31.4
	2300	83	-84	-5	-6	-101	88	83	-84	6.2	191	11.3	190	30.6
	2400	88	-89	-16	5	-107	92	86	-88	6.5	194	11.1	194	29.9
	2500	92	-94	-24	15	-113	98	90	-91	6.7	198	10.9	198	29.3
	3000	113	-115	-53	47	-142	122	103	-104	7.9	215	10.3	215	27.2
	4000	145	-147	-75	72	-189	164	121	-122	9.9	248	10.2	248	25.1
	5000	169	-172	-82	79	-224	197	132	-134	11.6	278	10.4	278	24.1
	8000	223	-227	-79	78	-298	270	156	-158	15.9	362	11.5	362	22.8
	10000	250	-255	-75	74	-337	309	168	-170	18.4	412	12.2	412	22.4
	12000	271	-277	-71	70	-372	344	179	-181	20.8	460	12.7	459	22.1
	16000	308	-315	-63	63	-437	410	200	-202	25.4	547	13.6	546	21.5
-20	1895	36	-37	16	-21	-46	41	40	-40	3.9	130	16.1	130	33.1
	2200	43	-44	0	-5	-49	44	47	-47	4.6	140	14.7	140	30.5
	2300	46	-47	-4	0	-50	46	49	-49	4.8	143	14.4	143	29.9
	2400	48	-49	-7	3	-52	47	51	-51	5.0	146	14.1	146	29.3
	2500	51	-52	-11	7	-54	49	53	-53	5.2	149	13.8	149	28.7
	2600	53	-54	-14	10	-56	50	55	-55	5.4	152	13.6	152	28.3
	2700	55	-57	-17	13	-58	52	57	-57	5.6	155	13.5	155	27.8
	2800	58	-59	-19	16	-60	54	59	-59	5.8	159	13.3	158	27.4
	3000	63	-64	-24	21	-64	58	63	-63	6.2	165	13.0	165	26.7
	4000	85	-87	-38	36	-88	79	78	-78	7.9	195	12.4	194	24.6
	5000	105	-107	-45	44	-112	101	90	-90	9.5	223	12.4	223	23.5
	8000	155	-158	-51	51	-176	162	117	-117	13.7	303	12.9	303	22.1
	10000	182	-186	-52	51	-214	199	131	-132	16.2	351	13.3	351	21.6
	12000	204	-209	-51	51	-250	233	144	-145	18.6	397	13.7	397	21.3
	16000	242	-247	-48	48	-316	299	168	-169	23.2	483	14.3	483	20.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-14)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 14 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1500 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2249	27	-27	-4	3	-24	23	32	-31	3.8	108	16.9	108	28.5
	3000	37	-38	-13	12	-31	29	41	-41	5.0	129	15.4	129	25.7
	4000	52	-53	-21	20	-44	41	53	-53	6.5	156	14.6	156	23.9
	5000	66	-67	-26	25	-59	54	63	-63	8.0	182	14.4	182	22.9
	6000	80	-82	-29	28	-74	69	72	-72	9.3	207	14.3	207	22.2
	7000	93	-95	-31	30	-89	83	81	-80	10.7	232	14.3	232	21.8
	8000	106	-108	-32	32	-105	98	88	-88	11.9	256	14.4	256	21.5
	9000	119	-121	-33	33	-121	113	96	-96	13.2	280	14.5	280	21.2
	10000	130	-133	-35	34	-136	128	103	-103	14.4	303	14.6	302	21.0
	12000	150	-154	-35	35	-167	158	116	-116	16.7	347	14.8	347	20.7
	14000	168	-173	-35	35	-198	188	129	-129	19.0	389	15.0	389	20.4
-45	3950	27	-27	-9	9	-18	18	33	-33	5.1	118	17.6	118	22.9
	4000	27	-28	-9	9	-19	18	34	-33	5.2	119	17.5	119	22.8
	4500	31	-32	-10	10	-22	22	38	-37	5.8	130	17.3	130	22.4
	5000	35	-36	-12	11	-26	25	41	-41	6.4	142	17.1	142	22.0
	5500	40	-40	-12	12	-30	29	45	-44	7.0	153	16.9	153	21.7
	6000	44	-45	-13	13	-35	33	49	-48	7.7	164	16.8	164	21.5
	6500	48	-49	-14	14	-39	38	52	-52	8.2	175	16.8	175	21.2
	7000	52	-54	-15	14	-44	42	56	-55	8.8	186	16.7	186	21.1
	7500	57	-58	-15	15	-49	47	59	-58	9.4	197	16.7	197	20.9
	8000	61	-62	-16	16	-54	51	62	-62	10.0	208	16.6	208	20.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-15)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 15 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	1840	74	-79	569	-550	35	3	59	-60	4.7	234	19.4	233	49.6
	2000	111	-119	177	-325	-52	48	84	-85	5.8	246	14.5	245	42.1
	3000	193	-206	-92	83	-238	202	127	-130	8.8	288	11.1	287	32.6
	4000	231	-246	-113	110	-294	257	140	-143	10.7	321	11.3	321	30.1
	5000	258	-275	-113	110	-325	288	147	-149	12.2	352	11.8	352	28.8
	8000	318	-337	-96	96	-381	349	161	-163	16.1	435	13.4	435	27.0
	10000	349	-370	-88	86	-412	383	169	-171	18.5	485	14.2	485	26.3
	12000	379	-402	-80	80	-442	414	178	-179	20.7	532	14.9	532	25.6
	15000	420	-448	-72	71	-487	461	191	-192	24.0	597	15.5	597	24.8
	20000	485	-522	-62	62	-564	538	214	-216	29.4	696	16.2	696	23.7
-10	2000	52	-57	116	-150	-67	64	47	-47	4.4	193	20.2	192	44.0
	2200	65	-71	59	-80	-71	66	56	-56	5.0	201	17.7	201	40.2
	2300	71	-77	40	-57	-75	69	60	-60	5.3	205	16.9	205	38.8
	2400	76	-83	23	-38	-80	73	63	-64	5.5	209	16.3	208	37.6
	2500	82	-89	10	-22	-85	77	66	-67	5.8	212	15.8	212	36.6
	3000	107	-116	-31	25	-111	99	79	-80	6.9	230	14.4	230	33.2
	4000	145	-156	-61	58	-153	137	95	-96	8.8	262	13.7	262	29.9
	5000	174	-186	-70	67	-185	167	106	-107	10.3	292	13.7	292	28.3
	8000	237	-254	-70	69	-254	234	128	-129	14.4	374	14.5	374	26.0
	10000	271	-290	-67	65	-291	272	140	-140	16.8	423	15.1	423	25.2
	12000	301	-322	-63	63	-326	307	151	-151	19.1	470	15.5	469	24.6
	15000	344	-367	-58	58	-375	357	166	-167	22.4	534	16.0	534	23.8
	20000	410	-437	-52	52	-454	437	192	-193	27.8	633	16.4	633	22.8
-20	2130	39	-42	28	-35	-48	45	36	-36	3.9	157	21.5	157	39.8
	2300	43	-47	16	-22	-49	46	40	-39	4.3	162	20.3	162	37.8
	2400	46	-50	10	-16	-50	47	42	-41	4.5	166	19.7	165	36.8
	2500	49	-53	5	-10	-52	48	44	-43	4.7	169	19.2	169	36.0
	2600	52	-56	0	-5	-53	50	45	-45	4.9	172	18.8	172	35.2
	2700	54	-59	-4	0	-55	51	47	-47	5.1	175	18.4	175	34.5
	2800	57	-62	-8	4	-57	53	49	-49	5.3	178	18.1	178	33.9
	2900	60	-65	-11	7	-59	55	51	-50	5.4	181	17.8	181	33.4
	3000	63	-68	-14	11	-61	56	52	-52	5.6	185	17.6	184	32.9
	4000	89	-97	-33	31	-83	76	66	-66	7.3	215	16.2	215	29.5
	5000	112	-122	-42	40	-105	97	76	-76	8.8	243	15.9	243	27.8
	8000	170	-183	-48	47	-165	154	100	-101	12.7	322	15.9	322	25.3
	10000	202	-217	-48	47	-201	189	114	-114	15.1	370	16.2	370	24.5
	12000	231	-248	-47	47	-235	223	126	-126	17.4	415	16.4	415	23.8
	15000	271	-291	-45	45	-284	271	143	-143	20.8	479	16.7	479	23.1
	20000	331	-357	-42	42	-363	350	170	-171	26.2	577	16.9	577	22.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-16)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 16 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2265	28	-30	4	-6	-29	27	28	-27	3.6	129	23.0	129	36.2
	2500	31	-34	-1	-1	-30	29	31	-30	3.9	136	21.9	136	34.5
	3000	39	-43	-9	8	-35	34	37	-36	4.7	150	20.3	150	31.9
	4000	56	-61	-19	18	-48	45	47	-47	6.2	178	18.7	178	28.9
	5000	73	-79	-25	24	-62	59	57	-56	7.5	205	18.1	205	27.2
	6000	89	-97	-29	28	-77	73	65	-64	8.8	231	17.7	231	26.1
	7000	104	-113	-31	30	-93	88	72	-72	10.1	256	17.6	256	25.4
	8000	119	-129	-32	31	-108	103	80	-79	11.3	280	17.5	280	24.8
	9000	133	-144	-33	32	-124	118	86	-86	12.5	304	17.5	304	24.3
	10000	146	-158	-34	33	-139	132	93	-93	13.7	326	17.5	326	23.9
	12000	172	-186	-34	34	-170	162	105	-105	15.9	370	17.5	370	23.2
	15000	208	-224	-34	34	-215	207	123	-123	19.2	432	17.5	432	22.5
	20000	263	-284	-33	33	-289	282	151	-151	24.6	529	17.5	529	21.5
-45	3027	21	-23	-6	5	-17	17	25	-24	3.9	117	23.6	117	30.2
	3500	25	-28	-8	7	-20	20	28	-28	4.5	129	22.7	129	28.9
	4000	29	-33	-10	9	-24	23	32	-31	5.1	141	22.0	141	27.8
	5000	39	-43	-12	12	-32	31	39	-39	6.3	166	21.0	166	26.4
	6000	49	-54	-14	14	-42	40	46	-45	7.4	189	20.5	189	25.4
	7000	58	-64	-16	16	-52	50	53	-52	8.6	212	20.1	212	24.7
	8000	68	-75	-17	17	-63	60	59	-58	9.7	234	19.8	234	24.1
	9000	78	-85	-18	18	-74	71	65	-65	10.8	256	19.6	256	23.6
	10000	87	-96	-19	19	-86	82	71	-71	12.0	278	19.4	278	23.2
	11000	97	-106	-20	19	-98	94	77	-77	13.0	299	19.3	299	22.9
	12000	106	-116	-20	20	-110	106	83	-82	14.1	319	19.2	319	22.6
	15000	133	-145	-21	21	-148	142	100	-99	17.3	379	18.9	379	21.8
	20000	176	-191	-22	21	-214	207	127	-127	22.6	472	18.5	472	20.9
-60	4556	19	-21	-6	5	-17	18	28	-27	5.0	132	23.8	132	26.3
	5000	21	-24	-6	6	-20	20	30	-29	5.5	142	23.4	142	25.8
	5500	24	-27	-7	6	-23	23	33	-32	6.1	153	23.0	153	25.3
	6000	27	-30	-7	7	-26	27	36	-35	6.6	164	22.6	164	24.8
	7000	32	-36	-8	8	-34	34	42	-41	7.7	185	22.1	185	24.2
	8000	38	-43	-9	9	-41	41	47	-47	8.7	206	21.7	206	23.6
	9000	44	-49	-9	9	-50	50	53	-52	9.8	226	21.4	226	23.2
	10000	50	-56	-10	10	-59	58	58	-58	10.8	246	21.1	246	22.8
	11000	56	-62	-11	10	-68	68	64	-63	11.9	266	20.8	266	22.5
	12000	62	-68	-11	11	-78	77	69	-68	12.9	286	20.6	286	22.2
	13000	68	-75	-11	11	-88	87	75	-74	13.9	305	20.4	305	21.9
	15000	79	-88	-12	12	-109	108	85	-84	16.0	343	20.1	343	21.4
	20000	108	-119	-13	13	-167	166	111	-111	21.1	433	19.4	433	20.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-17)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 17 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	1840	69	-70	657	-633	71	-14	66	-66	4.9	236	17.7	236	47.6
	2000	105	-106	212	-379	-40	37	95	-97	6.2	249	12.9	249	40.1
	3000	184	-186	-97	87	-272	226	148	-151	9.5	292	9.7	291	30.7
	4000	221	-224	-122	119	-339	291	163	-166	11.5	325	9.9	325	28.3
	5000	246	-250	-123	120	-373	326	170	-173	13.1	356	10.4	356	27.1
	8000	303	-309	-105	104	-430	389	183	-186	17.2	439	11.9	439	25.5
	10000	334	-340	-95	94	-459	422	191	-193	19.6	489	12.7	489	24.9
	12000	364	-371	-87	86	-488	453	199	-201	21.9	536	13.4	536	24.4
	15000	407	-415	-77	77	-531	498	212	-214	25.3	602	14.1	601	23.8
	20000	479	-488	-66	66	-603	574	234	-236	30.7	702	14.9	702	22.8
-10	2005	47	-48	127	-159	-72	68	51	-51	4.5	192	18.6	192	42.2
	2200	58	-59	72	-93	-74	68	61	-61	5.2	200	16.3	200	38.5
	2300	63	-65	51	-69	-78	71	65	-65	5.5	204	15.6	204	37.1
	2400	69	-70	34	-49	-82	75	69	-69	5.8	208	14.9	208	35.9
	2500	74	-75	20	-33	-88	79	72	-73	6.1	212	14.4	211	34.9
	3000	97	-99	-26	19	-116	103	87	-88	7.3	229	13.0	229	31.5
	4000	133	-136	-61	58	-164	145	106	-107	9.2	261	12.2	261	28.2
	5000	161	-164	-72	70	-200	178	118	-119	10.9	291	12.2	291	26.7
	8000	223	-228	-74	73	-274	251	142	-143	15.1	373	13.0	372	24.6
	10000	256	-261	-70	69	-313	289	154	-155	17.6	422	13.6	422	24.0
	12000	286	-292	-67	66	-348	325	165	-166	20.0	468	14.1	468	23.4
	15000	329	-335	-62	61	-398	375	181	-182	23.4	533	14.6	533	22.8
	20000	397	-404	-55	55	-477	454	207	-208	28.8	633	15.2	633	21.9
-20	2175	35	-36	28	-34	-50	47	39	-39	4.1	155	19.6	155	37.4
	2300	38	-39	20	-25	-51	47	42	-42	4.4	159	18.8	159	36.0
	2400	41	-41	14	-19	-52	48	44	-44	4.6	162	18.2	162	35.1
	2500	43	-44	9	-13	-53	49	46	-46	4.8	165	17.8	165	34.3
	2600	45	-46	4	-8	-55	50	48	-48	5.0	169	17.3	168	33.5
	2700	48	-49	0	-4	-56	52	50	-50	5.2	172	17.0	172	32.8
	2800	50	-52	-4	0	-58	53	52	-52	5.4	175	16.7	175	32.2
	2900	53	-54	-7	4	-60	55	54	-54	5.6	178	16.4	178	31.7
	3000	55	-57	-11	7	-62	57	56	-55	5.8	181	16.1	181	31.2
	4000	79	-81	-31	29	-84	77	70	-71	7.5	210	14.8	210	27.9
	5000	102	-104	-41	39	-107	98	82	-82	9.1	239	14.4	238	26.2
	8000	157	-161	-49	48	-170	157	108	-109	13.2	317	14.5	317	24.0
	10000	188	-192	-50	49	-207	193	122	-123	15.7	365	14.8	365	23.2
	12000	217	-222	-49	49	-242	227	135	-136	18.1	410	15.1	410	22.7
	15000	258	-263	-47	47	-292	276	153	-153	21.5	474	15.4	474	22.1
	20000	323	-329	-44	44	-370	355	181	-181	26.9	572	15.8	572	21.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-18)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 18 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2320	25	-26	4	-6	-29	27	30	-29	3.7	126	21.0	126	33.8
	2500	27	-28	0	-2	-30	28	32	-32	4.0	131	20.3	131	32.6
	3000	34	-35	-8	6	-34	33	38	-38	4.8	145	18.7	145	30.1
	4000	49	-51	-18	17	-46	44	50	-49	6.3	172	17.2	172	27.2
	5000	65	-66	-24	23	-60	57	59	-59	7.7	198	16.6	198	25.6
	6000	80	-82	-28	27	-75	71	68	-68	9.1	224	16.3	224	24.6
	7000	94	-97	-30	29	-91	85	76	-76	10.4	248	16.2	248	23.9
	8000	108	-111	-32	31	-106	100	84	-84	11.6	272	16.1	272	23.4
	9000	122	-125	-33	32	-122	115	91	-91	12.8	295	16.1	295	23.0
	10000	135	-138	-34	33	-137	130	98	-98	14.0	318	16.2	318	22.7
	12000	161	-164	-35	34	-168	160	111	-111	16.3	362	16.2	362	22.1
	15000	197	-202	-35	34	-213	204	129	-129	19.7	424	16.4	424	21.5
	20000	257	-262	-34	34	-287	278	157	-158	25.1	520	16.5	520	20.7
-45	3468	21	-22	-7	6	-18	18	29	-28	4.5	121	21.0	121	27.1
	4000	26	-26	-9	8	-22	21	33	-32	5.1	134	20.3	134	26.1
	5000	34	-35	-11	11	-29	28	40	-40	6.4	157	19.5	157	24.7
	6000	43	-44	-13	13	-38	37	47	-47	7.5	180	19.0	180	23.9
	7000	52	-54	-15	15	-48	46	54	-53	8.7	202	18.6	202	23.2
	8000	62	-63	-16	16	-58	56	61	-60	9.9	224	18.4	224	22.7
	9000	71	-73	-17	17	-69	66	67	-66	11.0	246	18.3	246	22.3
	10000	80	-83	-18	18	-80	77	73	-73	12.1	267	18.2	267	22.0
	11000	90	-92	-19	19	-92	88	79	-79	13.2	287	18.1	287	21.7
	12000	99	-102	-20	19	-103	99	85	-85	14.3	308	18.0	308	21.5
	15000	127	-130	-21	21	-140	134	103	-102	17.6	367	17.8	367	20.9
	20000	175	-178	-21	21	-204	197	130	-130	22.9	459	17.6	459	20.1
-60	5291	20	-21	-6	6	-19	19	32	-32	5.9	139	21.5	139	23.8
	6000	24	-24	-7	6	-23	23	36	-36	6.6	154	21.1	154	23.3
	6500	27	-27	-7	7	-26	26	39	-39	7.2	164	20.8	164	23.0
	7000	29	-30	-7	7	-30	30	42	-41	7.7	175	20.6	175	22.7
	8000	35	-36	-8	8	-37	37	48	-47	8.8	195	20.3	195	22.2
	9000	41	-42	-9	9	-44	44	54	-53	9.8	215	20.0	215	21.9
	10000	47	-48	-10	9	-53	52	59	-58	10.9	234	19.8	234	21.5
	11000	54	-55	-10	10	-61	61	65	-64	11.9	254	19.6	254	21.3
	12000	60	-61	-10	10	-70	70	70	-69	13.0	273	19.4	273	21.0
	13000	67	-68	-11	11	-80	79	75	-75	14.0	292	19.3	292	20.8
	15000	80	-82	-11	11	-100	99	86	-86	16.1	329	19.0	329	20.4
	20000	116	-118	-12	12	-154	152	113	-112	21.2	418	18.5	418	19.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-19)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 19 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	1840	77	-78	739	-713	112	-34	72	-73	5.2	238	16.3	238	45.9
	2000	117	-118	244	-430	-25	25	106	-108	6.6	252	11.7	251	38.3
	2500	171	-173	-36	11	-220	174	150	-154	8.7	277	9.1	276	31.7
	3000	199	-202	-101	90	-306	250	168	-173	10.1	296	8.6	295	29.2
	4000	233	-237	-131	126	-385	325	185	-189	12.2	329	8.8	329	26.9
	5000	256	-260	-131	129	-422	365	192	-196	14.0	360	9.2	360	25.8
	8000	303	-308	-112	111	-478	430	205	-208	18.2	443	10.7	443	24.4
	10000	327	-333	-102	100	-506	461	212	-215	20.7	493	11.5	493	23.9
	12000	346	-353	-93	92	-533	491	219	-222	23.0	540	12.2	540	23.4
	15000	373	-381	-82	82	-574	534	232	-234	26.4	606	13.0	606	22.9
	20000	414	-423	-70	69	-644	607	254	-256	31.9	707	13.9	707	22.1
-10	2020	52	-53	132	-161	-76	71	55	-55	4.7	192	17.2	192	40.4
	2200	62	-63	83	-103	-77	71	65	-65	5.4	199	15.2	199	37.1
	2300	68	-69	61	-79	-80	74	69	-70	5.7	203	14.5	203	35.7
	2400	73	-75	44	-59	-85	77	74	-75	6.0	207	13.9	207	34.5
	2500	78	-80	28	-42	-91	81	78	-79	6.3	211	13.4	211	33.5
	3000	102	-104	-21	13	-121	106	94	-96	7.6	228	12.0	228	30.1
	4000	138	-140	-60	57	-174	152	116	-117	9.7	260	11.1	260	26.9
	5000	164	-167	-73	71	-214	188	129	-131	11.4	290	11.1	290	25.4
	8000	221	-225	-77	76	-294	266	155	-156	15.8	372	11.9	371	23.5
	10000	249	-254	-74	73	-334	307	167	-169	18.4	421	12.5	421	22.9
	12000	271	-276	-70	70	-370	343	179	-180	20.8	468	13.0	468	22.5
	15000	299	-306	-65	64	-420	393	195	-196	24.3	533	13.6	533	22.0
	20000	341	-348	-57	57	-498	472	221	-222	29.8	633	14.3	633	21.3
-20	2200	39	-40	28	-33	-52	48	42	-41	4.3	153	18.2	153	35.6
	2400	44	-44	17	-21	-54	49	46	-46	4.7	159	17.1	159	33.6
	2500	46	-47	12	-16	-55	50	49	-48	4.9	162	16.6	162	32.8
	2600	48	-49	7	-11	-56	51	51	-51	5.2	165	16.2	165	32.1
	2700	51	-52	3	-7	-57	53	53	-53	5.4	169	15.8	168	31.4
	2800	53	-54	-1	-3	-59	54	55	-55	5.6	172	15.5	171	30.8
	2900	55	-57	-4	1	-61	56	57	-57	5.8	175	15.3	174	30.3
	3000	58	-59	-8	4	-63	57	59	-59	6.0	178	15.0	177	29.8
	4000	81	-83	-29	27	-85	77	75	-75	7.8	207	13.7	206	26.6
	5000	102	-104	-40	38	-109	99	88	-88	9.4	234	13.3	234	24.9
	8000	153	-156	-50	49	-174	160	116	-116	13.7	312	13.4	312	22.8
	10000	181	-185	-51	50	-213	197	130	-131	16.2	360	13.7	360	22.2
	12000	203	-208	-50	50	-249	232	144	-144	18.6	405	14.0	405	21.8
	15000	233	-238	-48	48	-299	282	162	-163	22.1	470	14.4	469	21.3
	20000	275	-281	-45	45	-379	361	190	-191	27.6	568	14.9	568	20.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-20)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 20 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
1800 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2360	28	-28	4	-6	-29	27	31	-31	3.9	123	19.5	123	31.9
	2500	29	-30	1	-3	-30	28	33	-33	4.1	127	18.9	127	31.0
	3000	36	-37	-6	5	-34	32	40	-39	4.9	140	17.5	140	28.6
	4000	50	-51	-16	15	-45	42	52	-51	6.4	167	16.0	167	25.8
	5000	65	-66	-22	21	-59	55	62	-62	7.9	192	15.4	192	24.3
	6000	79	-80	-27	26	-74	69	71	-71	9.3	217	15.1	217	23.4
	7000	92	-94	-29	29	-89	83	80	-80	10.6	241	15.0	241	22.7
	8000	105	-107	-31	31	-105	98	88	-88	11.9	265	15.0	265	22.3
	9000	118	-120	-32	32	-120	113	95	-95	13.1	288	15.0	288	21.9
	10000	129	-132	-34	33	-136	128	103	-103	14.4	311	15.1	311	21.6
	12000	150	-153	-35	34	-167	158	116	-116	16.7	354	15.2	354	21.2
	15000	177	-181	-35	35	-213	202	135	-135	20.1	416	15.4	416	20.7
	20000	215	-220	-34	34	-287	275	164	-164	25.6	513	15.6	513	20.0
-45	3950	27	-27	-8	7	-20	19	33	-32	5.1	126	19.0	126	24.7
	4000	27	-27	-8	7	-20	19	33	-33	5.2	128	19.0	128	24.6
	5000	35	-36	-10	10	-27	26	41	-40	6.4	150	18.2	150	23.4
	6000	44	-44	-12	12	-35	34	48	-48	7.6	172	17.7	172	22.6
	7000	52	-53	-14	14	-45	43	55	-55	8.8	194	17.5	194	22.0
	8000	61	-62	-15	15	-54	52	62	-62	10.0	215	17.3	215	21.6
	9000	69	-71	-17	16	-65	62	69	-68	11.1	236	17.2	236	21.2
	10000	78	-80	-18	17	-75	72	75	-75	12.3	257	17.1	257	21.0
	11000	85	-88	-19	18	-87	83	81	-81	13.4	278	17.0	278	20.7
	12000	93	-95	-19	19	-98	94	87	-87	14.5	298	17.0	298	20.5
	15000	113	-116	-20	20	-133	128	105	-105	17.8	356	16.9	356	20.0
	18000	132	-135	-21	21	-170	163	122	-122	21.0	412	16.8	412	19.6
	20000	144	-147	-21	21	-196	188	133	-133	23.1	449	16.8	449	19.4
-60	6024	26	-26	-6	6	-21	21	37	-36	6.7	146	19.8	146	21.9
	6500	28	-29	-6	6	-23	24	40	-39	7.2	156	19.6	156	21.7
	7000	31	-32	-7	7	-26	27	43	-42	7.7	166	19.4	166	21.4
	7500	34	-34	-7	7	-30	30	46	-45	8.3	176	19.2	176	21.2
	8000	36	-37	-8	7	-33	33	48	-48	8.8	185	19.1	185	21.0
	9000	42	-43	-8	8	-40	40	54	-53	9.9	205	18.9	205	20.7
	10000	47	-49	-9	9	-48	47	60	-59	10.9	224	18.7	224	20.5
	11000	52	-54	-9	9	-56	55	65	-65	12.0	243	18.6	243	20.3
	12000	57	-59	-10	10	-64	64	71	-70	13.0	262	18.5	262	20.1
	13000	62	-63	-10	10	-73	72	76	-76	14.1	280	18.4	280	19.9
	15000	71	-72	-11	11	-92	91	87	-86	16.2	317	18.2	317	19.6
	18000	83	-85	-12	12	-123	120	103	-103	19.3	371	17.9	371	19.2
	20000	91	-93	-12	12	-144	141	114	-113	21.3	406	17.8	406	19.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-21)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 21 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	2240	74	-79	614	-588	47	-4	56	-57	5.1	263	23.1	263	52.0
	2500	124	-133	133	-211	-66	58	87	-88	6.6	281	16.0	281	42.3
	3000	170	-181	-25	9	-170	145	112	-114	8.2	303	13.4	302	36.7
	4000	219	-233	-90	85	-261	228	132	-135	10.4	337	12.6	336	32.5
	5000	251	-266	-101	98	-304	270	142	-145	12.0	367	12.7	367	30.6
	8000	314	-333	-93	92	-373	343	159	-161	16.0	448	14.0	448	28.0
	10000	347	-368	-86	85	-407	378	168	-170	18.4	498	14.7	497	27.0
	12000	377	-401	-79	79	-439	411	177	-179	20.7	543	15.2	543	26.3
	15000	419	-447	-71	71	-485	459	191	-192	24.0	608	15.8	608	25.3
	20000	485	-521	-62	61	-562	537	214	-215	29.3	707	16.4	706	24.1
-10	2400	54	-59	142	-176	-68	66	47	-47	4.8	223	23.5	222	46.6
	2500	60	-66	110	-136	-67	65	51	-51	5.1	227	21.9	226	44.5
	3000	89	-97	20	-31	-87	80	68	-69	6.4	246	17.8	245	38.1
	4000	133	-143	-40	36	-135	122	89	-90	8.5	278	15.5	278	32.7
	5000	166	-178	-58	56	-172	156	102	-103	10.1	307	14.9	307	30.3
	8000	234	-250	-66	65	-249	230	126	-127	14.3	387	15.2	387	27.1
	10000	268	-287	-65	63	-288	269	139	-139	16.7	436	15.6	436	26.1
	12000	300	-320	-62	61	-323	304	150	-151	19.0	481	16.0	481	25.3
	15000	343	-366	-58	57	-374	355	166	-167	22.4	545	16.3	545	24.4
	20000	409	-436	-52	52	-453	436	192	-193	27.8	644	16.7	644	23.2
-20	2530	42	-46	43	-50	-54	52	38	-37	4.4	186	24.6	186	42.5
	2600	44	-48	38	-44	-55	52	39	-39	4.5	188	23.9	188	41.6
	2700	46	-50	31	-36	-55	52	41	-41	4.7	191	23.1	191	40.5
	2800	49	-53	24	-29	-56	53	43	-43	4.9	195	22.4	194	39.5
	2900	52	-57	18	-23	-57	54	45	-45	5.1	198	21.8	197	38.5
	3000	54	-60	13	-18	-58	55	47	-46	5.3	201	21.3	201	37.7
	3500	68	-75	-6	3	-67	63	55	-55	6.2	216	19.5	216	34.6
	4000	82	-89	-19	16	-78	73	62	-62	7.1	230	18.4	230	32.6
	5000	107	-116	-33	31	-101	93	74	-74	8.6	258	17.4	258	30.0
	8000	167	-180	-45	44	-162	152	99	-99	12.6	335	16.8	335	26.5
	10000	200	-215	-47	46	-199	188	113	-113	15.1	383	16.9	382	25.4
	12000	230	-246	-46	46	-233	221	125	-126	17.4	427	17.0	427	24.6
	15000	270	-290	-45	44	-283	270	143	-143	20.7	490	17.1	490	23.6
	20000	331	-356	-42	42	-363	349	170	-171	26.1	587	17.2	587	22.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-22)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 22 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2665	31	-34	12	-14	-36	34	30	-30	4.0	157	25.7	156	38.9
	3000	36	-40	4	-6	-38	36	34	-34	4.6	166	24.0	166	36.4
	3500	45	-49	-5	3	-43	41	40	-40	5.3	180	22.2	180	33.8
	4000	53	-58	-11	10	-49	46	46	-45	6.1	193	21.1	193	31.9
	5000	70	-76	-20	19	-62	59	55	-55	7.4	219	19.8	219	29.4
	6000	86	-94	-25	24	-77	73	64	-63	8.8	245	19.1	244	27.9
	7000	102	-111	-28	27	-92	87	72	-71	10.0	269	18.7	269	26.8
	8000	117	-127	-30	29	-108	102	79	-79	11.3	293	18.5	293	26.0
	9000	131	-142	-31	31	-123	117	86	-86	12.5	316	18.3	316	25.4
	10000	145	-156	-33	32	-138	132	92	-92	13.6	338	18.2	338	24.8
	12000	171	-184	-33	33	-169	162	105	-105	15.9	382	18.1	382	24.0
	15000	207	-223	-34	33	-214	207	123	-123	19.2	443	18.0	443	23.1
	20000	262	-283	-33	33	-289	281	150	-151	24.6	539	17.8	539	21.9
-45	3027	21	-23	-1	1	-20	19	24	-23	3.8	130	27.0	130	34.1
	3500	24	-27	-4	3	-22	22	28	-27	4.4	142	25.5	142	32.1
	4000	29	-32	-6	6	-26	25	31	-31	5.0	154	24.4	154	30.6
	5000	38	-42	-10	10	-34	33	39	-38	6.2	178	22.9	178	28.5
	6000	48	-53	-13	12	-43	41	46	-45	7.4	201	22.0	201	27.1
	7000	58	-64	-15	14	-53	51	52	-52	8.6	224	21.3	224	26.1
	8000	68	-74	-16	16	-63	61	59	-58	9.7	246	20.9	246	25.3
	9000	77	-85	-17	17	-75	72	65	-64	10.8	267	20.5	267	24.7
	10000	87	-95	-18	18	-86	83	71	-70	11.9	289	20.3	289	24.2
	11000	96	-105	-19	19	-98	94	77	-76	13.0	309	20.1	309	23.8
	12000	105	-115	-20	19	-110	106	83	-82	14.1	330	19.9	330	23.4
	15000	133	-144	-21	20	-148	143	100	-99	17.3	389	19.4	389	22.4
	20000	175	-191	-21	21	-214	207	127	-127	22.6	481	18.9	481	21.3
-60	4556	19	-21	-4	4	-18	19	28	-27	5.0	143	25.8	143	28.5
	5000	21	-24	-5	5	-21	21	30	-29	5.5	153	25.2	153	27.7
	5500	24	-27	-6	6	-24	24	33	-32	6.0	163	24.6	163	27.1
	6000	27	-30	-6	6	-27	28	36	-35	6.6	174	24.2	174	26.5
	7000	32	-36	-7	7	-34	35	42	-41	7.6	195	23.4	195	25.6
	8000	38	-42	-8	8	-42	42	47	-46	8.7	216	22.8	216	24.8
	9000	44	-49	-9	9	-51	50	53	-52	9.8	236	22.3	236	24.2
	10000	50	-55	-10	9	-59	59	58	-58	10.8	256	22.0	257	23.7
	11000	56	-62	-10	10	-69	68	64	-63	11.9	276	21.6	276	23.3
	12000	62	-68	-11	11	-79	78	69	-68	12.9	296	21.3	296	22.9
	13000	68	-75	-11	11	-89	88	74	-74	13.9	315	21.1	315	22.6
	15000	79	-87	-12	12	-110	109	85	-84	16.0	352	20.7	352	22.0
	20000	108	-118	-13	12	-167	166	111	-111	21.1	442	19.8	442	20.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-23)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 23 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	2240	69	-70	704	-673	86	-25	62	-62	5.3	266	21.2	265	50.1
	2500	118	-120	160	-248	-56	48	99	-100	7.1	285	14.3	284	40.2
	3000	161	-164	-21	2	-186	155	128	-131	8.8	307	11.8	306	34.7
	4000	208	-212	-96	90	-296	254	153	-156	11.1	341	11.0	341	30.6
	5000	239	-242	-109	106	-347	304	164	-167	12.9	371	11.2	371	28.8
	8000	300	-305	-101	100	-420	381	181	-183	17.1	453	12.4	453	26.5
	10000	332	-338	-93	92	-454	417	190	-192	19.6	502	13.1	502	25.7
	12000	363	-369	-85	85	-484	449	198	-200	21.9	548	13.7	548	25.0
	15000	406	-414	-76	76	-528	496	211	-213	25.3	613	14.4	613	24.3
	20000	478	-487	-66	66	-601	572	234	-236	30.7	712	15.1	712	23.2
-10	2405	49	-50	154	-186	-71	69	50	-50	4.9	222	21.9	222	44.9
	2500	54	-55	124	-150	-70	67	55	-55	5.3	226	20.4	226	42.9
	3000	80	-82	30	-42	-89	81	74	-75	6.7	245	16.3	245	36.4
	4000	122	-124	-37	32	-142	127	98	-99	8.9	277	14.0	277	31.1
	5000	153	-156	-59	56	-184	165	113	-114	10.7	307	13.4	307	28.7
	8000	220	-224	-70	69	-267	245	140	-141	15.0	386	13.7	386	25.7
	10000	254	-259	-68	67	-309	286	153	-154	17.5	435	14.1	435	24.8
	12000	285	-290	-65	65	-345	322	164	-165	19.9	481	14.5	480	24.1
	15000	328	-334	-61	61	-396	373	180	-182	23.3	545	15.0	545	23.3
	20000	396	-404	-54	54	-476	453	207	-208	28.8	644	15.5	644	22.3
-20	2565	38	-39	44	-50	-57	53	40	-40	4.6	184	22.7	184	40.3
	2600	39	-40	41	-47	-57	53	41	-41	4.6	185	22.4	185	39.9
	2700	41	-42	34	-40	-57	54	43	-43	4.9	188	21.6	188	38.8
	2800	43	-44	28	-33	-58	54	45	-45	5.1	192	20.9	191	37.8
	2900	46	-47	22	-27	-59	55	48	-47	5.3	195	20.3	194	36.9
	3000	48	-49	17	-22	-60	56	49	-49	5.5	198	19.8	197	36.1
	4000	73	-75	-16	13	-79	73	66	-66	7.3	227	17.0	226	31.0
	5000	96	-99	-31	29	-102	94	79	-79	8.9	254	15.9	254	28.4
	8000	154	-158	-46	45	-167	154	107	-107	13.1	330	15.3	330	25.2
	10000	186	-190	-48	47	-205	191	121	-122	15.6	377	15.4	377	24.1
	12000	216	-220	-48	47	-240	226	134	-135	18.0	422	15.6	422	23.4
	15000	257	-262	-46	46	-290	275	152	-153	21.4	485	15.8	485	22.6
	18000	296	-302	-45	44	-338	323	169	-170	24.7	545	16.0	545	22.0
	20000	322	-328	-43	43	-369	354	180	-181	26.9	583	16.1	583	21.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-24)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 24 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2715	28	-29	12	-14	-36	34	32	-31	4.2	153	23.8	153	36.6
	3000	32	-33	5	-7	-38	36	36	-35	4.6	161	22.4	161	34.6
	4000	47	-48	-9	8	-48	45	48	-47	6.2	187	19.6	187	30.3
	5000	62	-64	-18	17	-61	57	58	-58	7.6	213	18.3	213	27.9
	6000	77	-79	-24	23	-75	71	67	-67	9.0	238	17.6	237	26.4
	7000	92	-94	-27	26	-90	85	75	-75	10.3	262	17.3	262	25.4
	8000	106	-109	-29	29	-106	100	83	-83	11.6	285	17.1	285	24.7
	9000	120	-123	-31	31	-121	114	90	-90	12.8	308	16.9	308	24.1
	10000	133	-137	-32	32	-137	129	97	-97	14.0	330	16.9	330	23.6
	12000	159	-163	-34	33	-167	159	110	-110	16.3	373	16.8	373	22.9
	15000	196	-201	-34	34	-213	204	129	-129	19.7	435	16.8	435	22.1
	18000	232	-237	-34	34	-257	248	146	-146	23.0	493	16.8	493	21.5
	20000	256	-261	-33	33	-287	277	157	-157	25.1	531	16.8	531	21.1
-45	3468	21	-22	-3	3	-21	20	28	-27	4.4	134	23.9	134	30.4
	4000	25	-26	-6	5	-24	23	32	-31	5.1	147	22.7	147	28.9
	5000	34	-35	-9	9	-31	30	40	-39	6.3	170	21.3	170	26.9
	6000	43	-44	-12	11	-40	38	47	-46	7.5	192	20.4	192	25.6
	7000	52	-53	-14	13	-49	47	54	-53	8.7	214	19.9	214	24.7
	8000	61	-63	-15	15	-59	56	60	-60	9.8	236	19.5	236	24.0
	9000	70	-72	-17	16	-70	67	67	-66	11.0	257	19.2	257	23.4
	10000	80	-82	-18	17	-81	77	73	-72	12.1	278	19.0	278	23.0
	11000	89	-92	-18	18	-92	88	79	-79	13.2	298	18.8	298	22.6
	12000	99	-101	-19	19	-104	99	85	-85	14.3	318	18.7	318	22.3
	15000	127	-130	-20	20	-140	134	102	-102	17.6	377	18.3	377	21.5
	18000	155	-158	-21	21	-178	171	119	-119	20.8	433	18.1	433	20.9
	20000	174	-177	-21	21	-204	197	130	-130	22.9	469	18.0	469	20.5
-60	5291	20	-21	-5	5	-20	20	32	-31	5.8	150	23.2	150	25.7
	6000	24	-24	-6	6	-24	24	36	-36	6.6	165	22.6	165	24.9
	7000	29	-30	-7	7	-31	31	42	-41	7.7	185	21.9	185	24.1
	8000	35	-36	-8	8	-38	38	48	-47	8.8	205	21.4	205	23.4
	9000	41	-42	-8	8	-45	45	53	-53	9.8	225	21.0	225	22.9
	10000	47	-48	-9	9	-53	53	59	-58	10.9	244	20.7	244	22.5
	11000	53	-55	-10	10	-62	61	64	-64	11.9	264	20.4	264	22.1
	12000	60	-61	-10	10	-71	70	70	-69	13.0	283	20.2	283	21.8
	13000	66	-68	-11	10	-80	80	75	-75	14.0	302	20.0	302	21.5
	15000	80	-81	-11	11	-100	99	86	-85	16.1	339	19.6	339	21.1
	18000	101	-103	-12	12	-132	131	102	-101	19.2	393	19.2	393	20.5
	20000	116	-118	-12	12	-155	153	113	-112	21.2	428	19.0	428	20.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-25)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 25 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	2240	76	-76	788	-754	131	-47	67	-68	5.5	268	19.7	267	48.4
	2500	129	-131	185	-282	-44	37	110	-112	7.5	288	12.9	287	38.5
	3000	175	-177	-17	-5	-201	163	145	-148	9.4	311	10.5	310	33.0
	4000	220	-224	-101	95	-333	281	173	-177	11.9	345	9.8	345	29.1
	5000	248	-252	-116	113	-390	337	185	-189	13.7	376	10.0	375	27.4
	8000	299	-305	-108	107	-467	420	202	-205	18.1	457	11.2	457	25.3
	10000	325	-331	-100	98	-500	455	210	-213	20.6	506	11.9	506	24.6
	12000	345	-352	-91	91	-529	487	218	-221	23.0	553	12.6	552	24.0
	15000	372	-380	-81	81	-571	532	231	-233	26.4	618	13.3	618	23.4
	20000	414	-422	-69	69	-642	605	253	-255	31.9	718	14.1	718	22.5
-10	2420	53	-54	160	-189	-75	72	54	-54	5.1	222	20.3	222	43.2
	2500	58	-59	136	-160	-73	70	58	-58	5.4	226	19.1	225	41.5
	3000	84	-85	39	-51	-90	83	80	-81	7.0	245	15.1	244	35.1
	4000	125	-128	-34	29	-149	131	107	-108	9.3	277	12.8	277	29.8
	5000	156	-159	-59	56	-195	173	124	-125	11.2	306	12.3	306	27.4
	8000	217	-221	-73	72	-286	259	153	-154	15.7	386	12.5	386	24.6
	10000	247	-252	-72	70	-329	302	166	-168	18.3	434	13.0	434	23.7
	12000	269	-275	-69	68	-366	339	178	-179	20.7	480	13.4	480	23.2
	15000	298	-304	-64	63	-417	391	194	-196	24.2	545	13.9	545	22.5
	20000	340	-347	-57	57	-496	471	220	-222	29.8	644	14.5	644	21.6
-20	2600	42	-42	44	-49	-59	55	43	-43	4.7	183	21.1	183	38.4
	2700	44	-45	37	-42	-59	55	45	-45	5.0	186	20.3	186	37.4
	2800	46	-47	31	-36	-59	56	48	-47	5.2	189	19.7	189	36.4
	2900	48	-49	26	-30	-60	56	50	-50	5.4	192	19.1	192	35.5
	3000	51	-52	21	-25	-61	57	52	-52	5.6	195	18.6	195	34.7
	3500	63	-64	1	-4	-69	64	62	-62	6.6	209	16.8	209	31.7
	4000	74	-76	-13	10	-80	73	70	-70	7.5	223	15.8	223	29.7
	5000	96	-98	-29	27	-103	94	84	-84	9.2	250	14.8	250	27.2
	8000	150	-153	-46	45	-171	157	114	-115	13.6	326	14.2	326	24.0
	10000	179	-182	-49	48	-210	195	129	-130	16.1	373	14.3	373	23.1
	12000	202	-206	-49	49	-247	230	143	-144	18.6	418	14.5	418	22.5
	15000	232	-237	-48	47	-298	281	161	-162	22.1	481	14.8	481	21.8
	20000	274	-280	-45	44	-378	360	190	-191	27.6	579	15.2	579	21.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

AV8BB-TAC-05-(85-26)10

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 26 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2200 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2760	31	-32	11	-13	-37	35	34	-33	4.3	150	22.1	150	34.7
	3000	34	-35	6	-8	-38	36	37	-37	4.7	157	21.0	157	33.1
	3500	41	-42	-2	0	-42	39	43	-43	5.5	170	19.4	170	30.6
	4000	48	-49	-8	7	-47	44	49	-49	6.3	182	18.3	182	28.9
	5000	62	-63	-17	15	-59	56	60	-60	7.8	207	17.1	207	26.6
	6000	76	-78	-22	21	-74	69	70	-70	9.2	232	16.5	231	25.2
	7000	90	-92	-26	25	-89	83	79	-79	10.5	255	16.1	255	24.2
	8000	103	-106	-29	28	-104	98	87	-87	11.8	278	15.9	278	23.5
	9000	116	-119	-31	30	-120	112	95	-95	13.1	301	15.8	301	23.0
	10000	128	-131	-32	31	-135	127	102	-102	14.3	323	15.8	323	22.6
	12000	149	-152	-34	33	-166	157	115	-116	16.7	366	15.8	366	22.0
	15000	176	-180	-34	34	-212	202	134	-134	20.1	428	15.9	428	21.3
	20000	214	-219	-34	34	-286	275	163	-164	25.6	524	16.0	524	20.4
-45	3950	26	-27	-5	4	-22	21	32	-32	5.1	139	21.4	139	27.5
	4000	27	-27	-5	4	-22	22	33	-32	5.1	141	21.3	141	27.4
	5000	35	-35	-8	8	-29	28	41	-40	6.4	163	20.0	163	25.5
	6000	43	-44	-11	10	-37	35	48	-47	7.6	184	19.2	184	24.3
	7000	52	-53	-13	12	-46	44	55	-54	8.8	206	18.7	206	23.4
	8000	60	-61	-14	14	-55	53	62	-61	10.0	227	18.3	227	22.8
	9000	69	-70	-16	15	-65	62	68	-68	11.1	248	18.1	248	22.3
	10000	77	-79	-17	16	-76	73	75	-74	12.2	269	17.9	268	21.9
	11000	85	-87	-18	18	-87	83	81	-81	13.4	289	17.8	289	21.6
	12000	92	-95	-19	18	-98	94	87	-87	14.5	309	17.7	309	21.3
	15000	113	-116	-20	20	-134	128	105	-105	17.8	367	17.4	367	20.6
	18000	132	-135	-21	21	-170	164	122	-122	21.0	423	17.3	423	20.1
	20000	144	-147	-21	21	-196	188	133	-133	23.1	459	17.2	459	19.8
-60	6024	26	-26	-5	5	-22	22	37	-36	6.7	157	21.3	157	23.5
	6500	28	-29	-6	6	-24	25	40	-39	7.2	166	20.9	166	23.1
	7000	31	-32	-6	6	-27	28	43	-42	7.7	176	20.7	176	22.8
	7500	34	-34	-7	6	-31	31	45	-45	8.3	186	20.4	186	22.5
	8000	36	-37	-7	7	-34	34	48	-47	8.8	196	20.2	196	22.2
	9000	42	-43	-8	8	-41	41	54	-53	9.9	215	19.9	215	21.8
	10000	47	-48	-9	8	-48	48	60	-59	10.9	234	19.6	234	21.4
	11000	52	-54	-9	9	-56	56	65	-64	12.0	253	19.4	253	21.1
	12000	57	-58	-10	10	-65	64	71	-70	13.0	272	19.2	272	20.8
	13000	61	-63	-10	10	-74	73	76	-75	14.1	290	19.0	290	20.6
	15000	71	-72	-11	11	-93	91	87	-86	16.2	327	18.7	327	20.2
	18000	83	-85	-11	11	-123	121	103	-102	19.3	380	18.4	380	19.7
	20000	91	-93	-12	12	-145	142	114	-113	21.3	415	18.2	415	19.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-27)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 27 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	2640	74	-79	647	-616	55	-9	54	-54	5.4	292	26.5	291	54.0
	3000	136	-145	109	-159	-75	66	89	-90	7.4	315	17.5	314	42.7
	3500	176	-187	-13	-1	-164	142	110	-112	8.8	335	15.0	334	37.9
	4000	203	-216	-56	49	-216	189	122	-124	9.9	352	14.2	351	35.3
	4500	223	-237	-75	71	-252	222	130	-132	10.9	367	13.9	367	33.7
	5000	240	-255	-85	81	-278	247	136	-138	11.7	382	13.9	382	32.5
	8000	310	-329	-89	88	-364	334	157	-159	15.9	463	14.6	462	29.1
	10000	344	-365	-84	82	-401	373	167	-168	18.3	511	15.2	511	27.9
	12000	375	-399	-78	77	-435	407	176	-177	20.6	557	15.7	556	27.0
	15000	418	-446	-70	70	-482	456	190	-191	23.9	620	16.2	620	25.9
	20000	484	-520	-61	61	-561	535	214	-215	29.3	719	16.7	718	24.5
-10	2800	55	-60	162	-197	-69	68	47	-47	5.1	251	26.6	251	48.8
	3000	67	-73	104	-125	-68	66	55	-55	5.8	259	23.4	259	44.9
	4000	118	-128	-10	4	-114	104	81	-82	8.1	293	17.9	293	36.2
	5000	155	-167	-43	40	-157	143	97	-98	9.9	323	16.5	323	32.6
	6000	184	-198	-55	54	-190	174	108	-109	11.4	350	16.1	350	30.6
	7000	208	-223	-60	59	-217	200	117	-118	12.8	377	16.0	376	29.3
	8000	229	-245	-62	61	-241	223	124	-125	14.2	402	16.0	402	28.4
	10000	265	-284	-62	61	-283	264	137	-138	16.6	450	16.3	449	27.0
	12000	297	-318	-60	60	-320	301	149	-150	19.0	495	16.5	494	26.1
	15000	341	-364	-57	56	-371	353	165	-166	22.3	558	16.8	558	25.0
	20000	408	-435	-51	51	-452	435	192	-192	27.7	656	17.0	655	23.6
-20	2930	44	-48	56	-63	-60	57	39	-38	4.8	214	27.5	214	44.8
	3000	46	-50	50	-57	-60	57	40	-40	4.9	216	26.7	216	43.9
	3500	60	-65	19	-24	-64	61	50	-49	5.9	232	23.2	231	39.2
	4000	74	-80	0	-3	-73	69	57	-57	6.8	246	21.3	246	36.1
	5000	100	-108	-22	20	-95	89	70	-70	8.4	274	19.3	274	32.5
	8000	163	-176	-41	41	-158	149	98	-98	12.5	350	17.8	349	27.9
	10000	197	-212	-44	43	-196	185	112	-112	15.0	396	17.6	396	26.4
	12000	228	-244	-45	44	-231	220	125	-125	17.3	440	17.6	440	25.4
	15000	268	-288	-44	44	-282	269	142	-143	20.7	503	17.6	503	24.3
	20000	330	-355	-41	41	-362	348	170	-170	26.1	599	17.6	599	22.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-28)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 28 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	3075	35	-38	19	-21	-43	41	32	-32	4.5	184	28.3	184	41.1
	3500	41	-45	8	-10	-45	43	38	-37	5.1	195	25.9	195	38.0
	4000	49	-54	-1	-1	-50	48	43	-43	5.9	209	24.0	208	35.4
	4500	58	-63	-8	6	-55	53	48	-48	6.6	222	22.8	221	33.5
	5000	66	-72	-13	12	-62	59	53	-53	7.3	234	21.9	234	32.0
	6000	83	-90	-20	19	-76	72	62	-62	8.7	259	20.7	259	29.9
	7000	99	-108	-24	24	-91	87	70	-70	9.9	283	20.0	283	28.5
	8000	114	-124	-27	27	-107	101	78	-78	11.2	307	19.6	307	27.4
	9000	129	-140	-29	29	-122	116	85	-85	12.4	329	19.3	329	26.6
	10000	143	-154	-31	30	-137	131	92	-91	13.6	352	19.1	352	25.9
	12000	169	-183	-32	32	-168	161	104	-104	15.9	395	18.8	394	24.9
	15000	206	-222	-33	33	-214	206	122	-122	19.2	456	18.6	456	23.7
	20000	261	-282	-32	32	-288	281	150	-150	24.6	551	18.3	551	22.4
-45	3250	22	-24	3	-4	-24	23	25	-24	4.0	150	30.0	150	37.2
	4000	28	-31	-2	2	-28	27	31	-30	5.0	168	27.2	168	33.8
	5000	37	-41	-7	6	-35	34	38	-37	6.2	191	25.1	191	31.0
	6000	47	-52	-10	10	-44	43	45	-44	7.4	214	23.7	214	29.1
	7000	57	-62	-13	12	-54	52	52	-51	8.5	237	22.8	237	27.8
	8000	66	-73	-15	14	-64	62	58	-58	9.7	259	22.1	259	26.7
	9000	76	-84	-16	16	-75	72	64	-64	10.8	280	21.6	280	25.9
	10000	86	-94	-17	17	-87	83	71	-70	11.9	301	21.3	301	25.3
	11000	95	-104	-18	18	-98	95	77	-76	13.0	322	20.9	322	24.7
	12000	105	-114	-19	19	-110	106	82	-82	14.1	342	20.7	342	24.3
	15000	132	-144	-20	20	-148	143	100	-99	17.3	401	20.1	401	23.1
	20000	175	-190	-21	21	-214	207	127	-127	22.6	493	19.4	493	21.8
-60	4556	19	-21	-3	3	-20	20	27	-27	5.0	155	28.2	155	31.0
	5000	21	-24	-4	4	-23	23	30	-29	5.5	165	27.4	165	30.0
	5500	24	-27	-5	5	-26	26	33	-32	6.0	175	26.6	175	29.1
	6000	26	-30	-5	5	-29	29	36	-35	6.6	186	25.9	186	28.4
	7000	32	-36	-7	6	-36	36	41	-41	7.6	207	24.9	207	27.1
	8000	38	-42	-8	7	-43	43	47	-46	8.7	228	24.1	228	26.2
	9000	44	-48	-8	8	-52	51	53	-52	9.7	248	23.5	248	25.4
	10000	49	-55	-9	9	-60	60	58	-57	10.8	268	23.0	268	24.8
	11000	55	-61	-10	10	-70	69	64	-63	11.8	288	22.6	288	24.3
	12000	61	-68	-10	10	-79	79	69	-68	12.9	307	22.2	307	23.8
	13000	67	-74	-11	11	-89	89	74	-74	13.9	326	21.9	326	23.4
	15000	79	-87	-11	11	-110	109	85	-84	16.0	363	21.3	363	22.7
	20000	108	-118	-12	12	-168	167	111	-111	21.1	453	20.3	453	21.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

AV8BB-TAC-05-(85-29)10

* ALSO APPLICABLE TO : MK 339 FUZE

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 29 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	2640	69	-70	738	-702	97	-32	59	-59	5.6	294	24.5	293	52.2
	3000	129	-130	131	-188	-66	57	101	-102	7.8	318	15.6	318	40.6
	3500	167	-170	-8	-8	-176	149	126	-128	9.4	339	13.3	339	35.8
	4000	193	-196	-57	49	-241	206	140	-143	10.7	356	12.5	356	33.4
	5000	229	-232	-91	87	-314	274	156	-159	12.6	387	12.2	387	30.7
	8000	296	-301	-96	95	-408	370	178	-180	17.0	467	13.0	467	27.5
	10000	330	-336	-90	89	-446	410	188	-190	19.5	516	13.6	516	26.5
	12000	361	-367	-84	83	-479	444	197	-199	21.8	561	14.2	561	25.7
	15000	405	-413	-75	75	-525	493	210	-212	25.2	626	14.8	625	24.8
	20000	477	-486	-65	65	-599	570	234	-235	30.7	724	15.4	724	23.6
-10	2810	50	-51	174	-205	-71	70	50	-50	5.3	251	24.8	251	47.0
	3000	60	-62	119	-140	-69	67	59	-59	6.0	259	21.9	259	43.4
	4000	108	-110	-4	-3	-117	106	89	-90	8.5	293	16.3	293	34.5
	5000	143	-146	-41	38	-165	148	107	-108	10.4	323	14.9	322	31.0
	6000	171	-175	-56	54	-202	183	120	-121	12.0	350	14.5	350	29.1
	7000	195	-199	-62	61	-233	212	129	-130	13.5	376	14.4	376	27.8
	8000	215	-219	-65	64	-259	237	137	-139	14.9	401	14.5	401	26.9
	9000	233	-238	-65	65	-282	260	145	-146	16.2	425	14.6	425	26.3
	10000	250	-255	-66	64	-303	280	151	-152	17.4	449	14.8	449	25.7
	12000	282	-288	-64	63	-341	318	163	-164	19.8	494	15.0	494	24.9
	15000	326	-332	-60	60	-393	370	180	-181	23.3	558	15.4	558	23.9
	20000	395	-403	-54	54	-474	451	206	-207	28.8	656	15.8	656	22.8
-20	2970	40	-41	57	-63	-62	59	42	-41	5.0	213	25.4	213	42.6
	4000	65	-67	4	-7	-74	69	61	-61	7.0	243	19.7	243	34.6
	5000	90	-92	-19	17	-96	89	75	-75	8.7	270	17.8	270	31.0
	6000	112	-114	-31	30	-119	110	87	-87	10.2	296	16.9	296	28.9
	7000	132	-135	-38	37	-141	131	97	-97	11.7	321	16.5	321	27.5
	8000	150	-154	-42	41	-162	151	105	-106	13.0	345	16.3	345	26.5
	9000	167	-171	-44	43	-182	170	113	-113	14.3	369	16.2	368	25.8
	10000	183	-187	-45	44	-201	188	120	-121	15.6	391	16.2	391	25.2
	12000	214	-218	-46	46	-238	224	133	-134	17.9	435	16.2	435	24.3
	15000	255	-261	-45	45	-288	274	152	-152	21.4	498	16.3	498	23.3
	18000	295	-301	-44	44	-337	321	169	-169	24.7	557	16.4	557	22.5
	20000	321	-327	-43	43	-368	353	180	-181	26.9	595	16.5	595	22.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-30)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 30 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	3135	32	-32	19	-21	-43	41	34	-34	4.7	181	26.2	181	38.9
	4000	44	-45	1	-3	-49	47	45	-45	6.0	203	22.5	203	33.8
	5000	59	-60	-11	10	-61	57	56	-55	7.5	228	20.4	228	30.5
	6000	74	-76	-18	17	-74	70	65	-65	8.9	253	19.2	253	28.4
	7000	89	-92	-23	23	-89	84	74	-74	10.2	276	18.6	276	27.1
	8000	104	-106	-26	26	-105	99	82	-82	11.5	299	18.2	299	26.1
	9000	118	-121	-29	28	-120	114	89	-89	12.7	322	17.9	322	25.3
	10000	131	-135	-31	30	-135	128	96	-96	13.9	344	17.7	344	24.7
	12000	158	-161	-32	32	-166	158	110	-110	16.3	386	17.5	386	23.8
	15000	195	-200	-33	33	-212	203	128	-128	19.7	447	17.4	447	22.8
	18000	231	-236	-33	33	-257	247	146	-146	22.9	505	17.3	505	22.0
	20000	255	-260	-33	33	-286	277	157	-157	25.1	543	17.2	543	21.6
-45	3468	21	-22	2	-2	-24	23	27	-26	4.4	149	27.3	149	34.2
	4000	25	-26	-1	1	-27	26	31	-31	5.0	161	25.5	161	32.1
	5000	33	-34	-6	6	-33	32	39	-38	6.3	184	23.5	184	29.3
	6000	42	-43	-9	9	-41	39	46	-46	7.5	206	22.2	206	27.6
	7000	51	-52	-12	11	-50	48	53	-53	8.6	227	21.3	227	26.3
	8000	60	-62	-14	13	-60	57	60	-59	9.8	249	20.7	249	25.4
	9000	70	-71	-15	15	-70	67	66	-66	10.9	270	20.3	270	24.7
	10000	79	-81	-17	16	-81	78	73	-72	12.1	290	19.9	290	24.1
	11000	88	-91	-18	17	-92	89	79	-78	13.2	311	19.7	311	23.6
	12000	98	-100	-18	18	-104	100	85	-84	14.3	331	19.4	331	23.2
	15000	126	-129	-20	20	-140	135	102	-102	17.5	389	19.0	389	22.2
	18000	155	-157	-21	21	-178	172	119	-119	20.7	445	18.6	445	21.4
	20000	174	-177	-21	21	-204	197	130	-130	22.8	481	18.4	481	21.0
-60	5291	20	-21	-4	4	-22	22	32	-31	5.8	162	25.3	162	27.8
	6000	24	-24	-5	5	-26	26	36	-35	6.6	177	24.4	177	26.8
	7000	29	-30	-6	6	-32	32	42	-41	7.7	197	23.4	197	25.7
	8000	35	-36	-7	7	-39	39	48	-47	8.7	217	22.7	217	24.8
	9000	41	-42	-8	8	-46	46	53	-53	9.8	237	22.1	237	24.1
	10000	47	-48	-9	8	-54	54	59	-58	10.9	256	21.7	256	23.6
	11000	53	-54	-9	9	-63	62	64	-64	11.9	275	21.3	275	23.1
	12000	59	-61	-10	10	-72	71	70	-69	13.0	294	21.0	294	22.7
	13000	66	-68	-10	10	-81	80	75	-75	14.0	313	20.7	313	22.4
	15000	80	-81	-11	11	-101	100	86	-85	16.1	350	20.3	350	21.8
	18000	101	-103	-12	12	-133	131	102	-101	19.2	404	19.8	404	21.0
	20000	115	-117	-12	12	-155	153	112	-112	21.2	438	19.5	439	20.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-31)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 31 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	2640	75	-76	824	-785	144	-56	64	-64	5.8	296	22.9	296	50.6
	3000	139	-140	152	-214	-56	46	112	-114	8.3	322	14.1	321	38.9
	4000	204	-207	-58	49	-265	223	158	-161	11.3	361	11.2	360	31.8
	5000	237	-241	-96	92	-350	302	176	-180	13.4	392	11.0	391	29.3
	6000	261	-265	-105	103	-397	349	187	-190	15.0	420	11.1	419	27.9
	7000	279	-284	-105	104	-429	381	193	-197	16.5	446	11.4	446	27.0
	8000	295	-300	-103	102	-453	406	199	-202	17.9	472	11.7	472	26.3
	10000	322	-329	-97	95	-490	447	208	-211	20.5	521	12.4	520	25.4
	12000	343	-350	-89	89	-522	481	217	-219	22.9	566	12.9	566	24.7
	15000	371	-378	-80	80	-567	528	230	-232	26.4	631	13.6	630	23.9
	20000	413	-421	-69	69	-639	603	253	-255	31.9	730	14.4	730	22.9
-10	2820	54	-55	182	-211	-74	73	53	-53	5.5	251	23.3	251	45.5
	3000	63	-65	131	-152	-70	69	62	-62	6.1	258	20.6	258	42.1
	3500	89	-90	47	-58	-90	83	82	-82	7.6	277	16.8	276	36.4
	4000	111	-113	3	-9	-119	107	96	-97	8.8	293	15.1	293	33.2
	5000	145	-148	-39	36	-173	153	117	-118	10.8	322	13.7	322	29.7
	6000	172	-175	-56	54	-214	192	130	-132	12.6	350	13.3	350	27.8
	7000	194	-197	-64	62	-248	223	141	-143	14.1	376	13.2	376	26.6
	8000	212	-216	-67	66	-276	250	150	-151	15.5	401	13.3	401	25.8
	10000	243	-248	-69	67	-322	296	164	-166	18.2	449	13.6	449	24.7
	12000	267	-272	-67	66	-361	335	176	-178	20.7	494	13.9	494	23.9
	15000	297	-303	-63	62	-414	388	193	-195	24.2	558	14.3	558	23.1
	20000	339	-346	-56	56	-494	469	220	-221	29.7	656	14.8	656	22.1
-20	3000	44	-44	57	-62	-64	61	44	-44	5.2	211	23.8	211	40.9
	4000	67	-68	8	-11	-75	70	64	-64	7.2	240	18.5	240	33.3
	5000	90	-92	-16	14	-97	89	80	-80	9.0	267	16.6	267	29.7
	6000	111	-113	-29	28	-120	111	92	-93	10.6	292	15.7	292	27.7
	7000	129	-132	-37	36	-144	132	103	-103	12.0	317	15.3	317	26.3
	8000	146	-149	-41	40	-166	153	112	-113	13.4	341	15.1	341	25.4
	9000	162	-165	-44	43	-187	173	120	-121	14.8	365	15.1	364	24.7
	10000	176	-180	-46	45	-206	192	128	-129	16.0	387	15.0	387	24.1
	12000	200	-204	-47	47	-244	228	142	-142	18.5	431	15.1	431	23.3
	15000	230	-235	-47	46	-296	279	161	-161	22.0	494	15.3	494	22.4
	20000	274	-280	-44	44	-377	359	189	-190	27.6	591	15.5	591	21.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-32)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 32 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
2600 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	3175	34	-35	18	-20	-44	41	36	-35	4.8	178	24.5	178	37.1
	4000	45	-46	3	-4	-49	46	47	-46	6.1	199	21.2	198	32.4
	5000	59	-60	-9	8	-60	56	58	-58	7.6	223	19.1	223	29.2
	6000	73	-75	-17	16	-73	69	68	-68	9.1	247	18.0	247	27.2
	7000	88	-89	-22	21	-88	82	77	-77	10.4	270	17.4	270	25.9
	8000	101	-103	-26	25	-103	97	86	-86	11.7	293	17.0	293	25.0
	9000	114	-116	-28	27	-119	112	93	-93	13.0	315	16.8	315	24.2
	10000	126	-129	-30	29	-134	126	101	-101	14.2	337	16.6	337	23.7
	12000	147	-151	-32	32	-165	156	115	-115	16.6	380	16.5	380	22.8
	15000	175	-179	-34	33	-211	201	134	-134	20.1	440	16.4	440	21.9
	20000	214	-219	-33	33	-286	274	163	-163	25.6	536	16.4	536	20.9
-45	3950	26	-27	-1	0	-25	24	32	-31	5.0	154	24.2	154	30.7
	5000	34	-35	-5	5	-31	30	40	-39	6.3	177	22.1	177	28.0
	6000	42	-43	-8	8	-39	37	47	-47	7.5	198	20.9	198	26.3
	7000	51	-52	-11	11	-47	45	54	-54	8.7	219	20.1	219	25.1
	8000	59	-61	-13	12	-56	54	61	-61	9.9	240	19.6	240	24.2
	9000	68	-69	-14	14	-66	63	68	-67	11.1	261	19.2	261	23.6
	10000	76	-78	-16	15	-77	73	74	-74	12.2	281	18.9	281	23.0
	11000	84	-86	-17	17	-88	84	81	-80	13.3	301	18.6	301	22.6
	12000	91	-94	-18	18	-99	94	87	-86	14.5	321	18.4	321	22.2
	15000	112	-115	-20	19	-134	128	105	-104	17.7	379	18.0	379	21.3
	18000	131	-134	-20	20	-171	164	122	-122	21.0	434	17.8	434	20.7
	20000	143	-146	-21	21	-196	188	133	-133	23.1	470	17.6	470	20.4
-60	6024	26	-26	-4	4	-23	23	37	-36	6.7	169	23.0	169	25.4
	7000	31	-32	-5	5	-29	29	42	-42	7.7	188	22.1	188	24.4
	8000	36	-37	-6	6	-35	35	48	-47	8.8	207	21.5	207	23.6
	9000	42	-43	-7	7	-42	42	54	-53	9.9	227	21.0	227	23.0
	10000	47	-48	-8	8	-49	49	59	-59	10.9	246	20.6	246	22.5
	11000	52	-53	-9	9	-57	57	65	-64	12.0	264	20.3	265	22.1
	12000	57	-58	-9	9	-66	65	71	-70	13.0	283	20.0	283	21.7
	13000	61	-63	-10	10	-75	74	76	-75	14.1	302	19.8	302	21.4
	15000	70	-72	-10	10	-93	92	87	-86	16.2	338	19.4	338	20.9
	18000	83	-85	-11	11	-124	121	103	-102	19.3	391	19.0	391	20.3
	20000	91	-93	-12	12	-145	142	114	-113	21.3	426	18.7	426	20.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-33)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 33 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	3040	74	-80	672	-637	61	-12	53	-53	5.7	319	29.7	318	55.7
	4000	182	-193	-5	-8	-160	140	109	-110	9.4	365	16.6	365	38.9
	5000	227	-242	-63	59	-244	217	129	-130	11.4	397	15.3	397	34.8
	6000	259	-275	-79	77	-292	263	140	-141	13.0	425	15.1	425	32.7
	7000	284	-301	-83	82	-325	296	148	-149	14.4	452	15.2	452	31.3
	8000	305	-323	-84	83	-351	322	154	-156	15.8	478	15.4	477	30.3
	9000	324	-343	-82	81	-373	345	160	-161	17.0	502	15.6	502	29.5
	10000	341	-361	-80	79	-393	365	165	-166	18.2	526	15.8	525	28.8
	12000	372	-396	-76	75	-429	402	175	-176	20.5	571	16.2	570	27.8
	15000	416	-444	-69	69	-479	453	189	-190	23.9	634	16.7	634	26.5
	20000	483	-519	-61	60	-558	533	213	-214	29.3	732	17.1	731	25.0
-10	3200	56	-61	179	-213	-70	70	47	-47	5.5	279	29.5	278	50.6
	4000	101	-109	32	-41	-91	85	72	-72	7.6	308	21.2	307	40.4
	5000	143	-154	-23	19	-138	127	91	-91	9.6	338	18.5	338	35.3
	6000	175	-188	-43	41	-176	161	104	-104	11.2	366	17.5	365	32.6
	7000	201	-216	-52	51	-206	190	114	-114	12.7	392	17.1	392	30.9
	8000	224	-239	-56	55	-232	215	122	-123	14.0	417	17.0	417	29.7
	9000	243	-260	-58	57	-256	238	129	-130	15.3	441	17.0	441	28.8
	10000	261	-280	-59	58	-277	259	136	-136	16.5	464	17.0	464	28.1
	12000	294	-315	-58	58	-316	297	148	-149	18.9	509	17.1	509	26.9
	15000	339	-362	-56	55	-368	350	165	-165	22.3	572	17.3	572	25.7
	20000	407	-434	-51	51	-450	433	191	-192	27.7	669	17.4	669	24.1
-20	3330	46	-50	67	-74	-64	62	40	-39	5.2	241	30.1	241	46.7
	4000	64	-70	24	-28	-69	66	52	-52	6.5	261	24.9	261	40.3
	5000	92	-100	-8	5	-89	84	66	-66	8.2	289	21.6	289	35.3
	6000	116	-126	-23	22	-111	104	78	-78	9.7	315	20.1	315	32.5
	7000	139	-150	-32	31	-133	125	87	-88	11.1	340	19.3	340	30.7
	8000	159	-171	-37	36	-154	145	96	-96	12.4	365	18.9	364	29.3
	9000	177	-190	-39	39	-173	164	103	-104	13.7	388	18.6	388	28.3
	10000	194	-208	-42	40	-192	182	110	-111	14.9	411	18.5	411	27.5
	12000	225	-241	-43	42	-229	217	124	-124	17.3	454	18.3	454	26.3
	15000	267	-286	-43	42	-280	267	141	-142	20.6	516	18.2	516	25.0
	20000	329	-354	-41	41	-360	347	169	-170	26.1	612	18.0	612	23.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-34)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 34 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	3470	37	-40	26	-28	-49	47	34	-33	4.9	210	30.8	210	43.1
	4000	45	-49	12	-14	-51	50	40	-40	5.7	224	27.6	224	39.3
	5000	62	-68	-4	3	-62	59	51	-51	7.2	250	24.3	250	34.8
	6000	79	-86	-14	13	-75	72	60	-60	8.5	274	22.6	274	32.1
	7000	95	-104	-20	19	-90	86	69	-69	9.8	298	21.6	298	30.3
	8000	111	-121	-24	23	-105	100	77	-76	11.1	321	20.9	321	28.9
	9000	126	-136	-26	26	-121	115	84	-84	12.3	344	20.4	344	27.9
	10000	140	-152	-29	28	-136	130	91	-91	13.5	366	20.1	366	27.1
	12000	167	-180	-31	30	-167	160	104	-104	15.8	408	19.6	408	25.8
	15000	204	-220	-32	32	-213	205	122	-122	19.1	469	19.2	469	24.5
	20000	260	-281	-32	32	-288	281	150	-150	24.5	564	18.7	564	23.0
-45	3640	25	-27	6	-7	-30	29	27	-26	4.4	174	32.2	174	39.2
	4000	27	-30	3	-4	-31	30	30	-29	4.9	183	30.6	183	37.4
	5000	36	-40	-3	3	-38	36	37	-36	6.1	206	27.5	206	33.7
	6000	46	-50	-7	7	-46	44	44	-44	7.3	228	25.7	228	31.3
	7000	55	-61	-11	10	-55	53	51	-50	8.5	251	24.4	251	29.6
	8000	65	-72	-13	12	-65	63	58	-57	9.6	272	23.5	272	28.3
	9000	75	-82	-14	14	-76	73	64	-63	10.8	294	22.9	294	27.3
	10000	84	-93	-16	16	-87	84	70	-70	11.9	315	22.3	315	26.5
	11000	94	-103	-17	17	-99	95	76	-76	13.0	335	21.9	335	25.8
	12000	104	-113	-18	18	-111	107	82	-82	14.1	355	21.6	355	25.3
	15000	131	-143	-20	19	-148	143	99	-99	17.3	414	20.8	413	23.9
	20000	174	-189	-21	21	-214	207	127	-126	22.5	505	19.9	505	22.4
-60	4556	19	-21	-1	1	-22	23	27	-26	5.0	168	30.9	168	33.8
	5000	21	-23	-2	2	-25	25	30	-29	5.5	178	29.8	178	32.6
	6000	26	-29	-4	4	-30	31	36	-35	6.5	199	27.9	199	30.4
	7000	32	-35	-6	5	-37	37	41	-40	7.6	220	26.6	220	28.9
	8000	37	-42	-7	7	-45	45	47	-46	8.7	241	25.6	241	27.7
	9000	43	-48	-8	8	-53	53	52	-52	9.7	261	24.8	261	26.8
	10000	49	-54	-9	8	-61	61	58	-57	10.8	281	24.1	281	26.0
	11000	55	-61	-9	9	-71	70	63	-63	11.8	300	23.6	300	25.4
	12000	61	-67	-10	10	-80	80	69	-68	12.9	320	23.1	320	24.8
	13000	67	-74	-10	10	-90	89	74	-74	13.9	339	22.7	339	24.3
	15000	78	-87	-11	11	-111	110	85	-84	16.0	376	22.1	376	23.5
	20000	107	-118	-12	12	-168	167	111	-111	21.1	465	20.9	465	22.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-35)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 35 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	3040	69	-70	765	-725	104	-36	58	-58	5.9	321	27.6	321	53.9
	3500	138	-140	113	-153	-74	64	102	-104	8.5	350	16.9	350	41.1
	4000	173	-175	1	-15	-170	146	124	-126	10.0	370	14.7	370	36.9
	5000	216	-220	-66	61	-272	238	147	-149	12.2	402	13.5	402	32.9
	6000	246	-251	-85	82	-328	291	160	-162	13.9	431	13.4	430	30.9
	7000	270	-275	-90	88	-365	328	168	-170	15.4	457	13.5	457	29.6
	8000	291	-296	-90	89	-393	356	175	-177	16.8	483	13.7	482	28.7
	9000	309	-315	-89	88	-416	380	180	-182	18.1	507	13.9	507	28.0
	10000	326	-332	-87	86	-436	401	185	-188	19.3	531	14.2	530	27.4
	12000	358	-365	-82	81	-472	438	195	-197	21.7	576	14.6	575	26.5
	15000	403	-411	-74	74	-520	489	209	-211	25.1	639	15.2	639	25.4
	20000	476	-485	-65	64	-596	568	233	-235	30.6	738	15.7	737	24.1
-10	3210	51	-52	190	-222	-71	72	50	-50	5.7	279	27.6	278	48.9
	3500	66	-68	113	-132	-69	68	62	-62	6.6	290	23.2	290	43.8
	4000	91	-93	42	-52	-91	85	78	-78	7.9	308	19.6	307	38.8
	5000	131	-134	-19	14	-142	129	100	-100	10.0	338	16.8	338	33.7
	6000	162	-166	-43	40	-185	168	114	-115	11.8	366	15.9	365	31.1
	7000	188	-191	-54	52	-219	200	125	-126	13.3	392	15.5	391	29.4
	8000	209	-214	-59	58	-248	227	134	-135	14.7	417	15.4	416	28.3
	9000	229	-233	-61	60	-273	252	142	-143	16.0	441	15.4	440	27.4
	10000	247	-252	-62	61	-295	274	149	-150	17.3	464	15.5	464	26.8
	12000	279	-285	-61	61	-336	313	162	-163	19.8	508	15.6	508	25.7
	15000	324	-330	-59	58	-389	367	179	-180	23.2	572	15.9	571	24.6
	20000	394	-401	-53	53	-472	449	206	-207	28.7	669	16.2	669	23.3
-20	3370	42	-43	68	-74	-66	64	43	-42	5.4	240	28.0	240	44.6
	4000	57	-59	29	-33	-70	66	55	-55	6.7	258	23.4	258	38.8
	4500	70	-71	10	-13	-78	74	63	-63	7.6	272	21.4	272	35.9
	5000	82	-84	-4	1	-89	83	71	-71	8.4	286	20.1	286	33.8
	6000	105	-108	-21	19	-112	104	83	-83	10.0	312	18.6	311	31.0
	7000	126	-129	-31	29	-135	126	94	-94	11.5	336	17.8	336	29.2
	8000	146	-149	-36	35	-157	146	103	-103	12.9	360	17.4	360	28.0
	9000	163	-167	-40	39	-177	166	111	-111	14.2	384	17.2	383	27.0
	10000	180	-184	-42	41	-197	185	119	-119	15.4	406	17.0	406	26.3
	12000	211	-216	-44	44	-234	221	132	-133	17.9	450	16.9	450	25.2
	15000	253	-259	-44	44	-286	271	151	-151	21.3	512	16.9	512	24.0
	18000	293	-300	-43	43	-335	320	168	-169	24.7	571	16.9	570	23.1
	20000	320	-326	-42	42	-367	351	179	-180	26.8	608	16.9	608	22.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-36)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 36 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	3520	34	-35	26	-28	-49	47	36	-35	5.0	207	28.7	207	41.1
	4000	40	-41	15	-16	-51	49	42	-41	5.8	219	26.0	219	37.8
	5000	55	-56	-2	0	-61	58	53	-53	7.3	244	22.8	244	33.3
	6000	71	-72	-12	11	-74	70	63	-63	8.7	268	21.1	268	30.7
	7000	86	-88	-18	18	-88	83	72	-72	10.1	292	20.1	291	28.9
	8000	101	-103	-23	22	-103	98	80	-80	11.4	314	19.4	314	27.6
	9000	115	-118	-26	25	-118	113	88	-88	12.6	337	19.0	336	26.6
	10000	129	-132	-28	27	-134	127	95	-95	13.8	358	18.7	358	25.9
	11000	143	-146	-30	29	-150	142	102	-102	15.0	380	18.5	380	25.2
	12000	156	-159	-31	30	-165	157	109	-109	16.2	401	18.3	401	24.7
	15000	194	-198	-32	32	-211	202	128	-128	19.6	461	18.0	461	23.5
	18000	230	-235	-33	32	-256	247	145	-145	22.9	519	17.8	519	22.6
	20000	254	-259	-33	32	-286	276	157	-157	25.1	556	17.7	556	22.2
-45	3720	23	-23	6	-6	-29	28	28	-27	4.6	170	30.0	170	37.0
	4000	24	-25	4	-4	-30	29	30	-30	4.9	176	28.8	176	35.6
	5000	32	-33	-2	2	-36	34	38	-37	6.2	198	25.9	198	32.1
	6000	41	-42	-6	6	-43	41	45	-45	7.4	220	24.1	220	29.8
	7000	50	-51	-9	9	-51	50	52	-52	8.6	242	23.0	242	28.2
	8000	59	-61	-12	11	-61	59	59	-59	9.7	263	22.1	263	27.0
	9000	68	-70	-14	13	-71	68	66	-65	10.9	284	21.5	284	26.0
	10000	78	-80	-15	15	-82	79	72	-72	12.0	304	21.0	304	25.3
	11000	87	-90	-16	16	-93	89	78	-78	13.1	324	20.6	324	24.7
	12000	97	-99	-17	17	-104	100	84	-84	14.3	344	20.3	344	24.1
	15000	125	-128	-19	19	-141	135	102	-102	17.5	402	19.7	402	23.0
	18000	154	-157	-20	20	-178	172	119	-119	20.7	458	19.2	458	22.1
	20000	173	-176	-20	20	-204	197	130	-130	22.8	493	18.9	493	21.6
-60	5291	20	-21	-2	2	-24	24	32	-31	5.8	175	27.5	175	30.2
	6000	24	-24	-4	3	-27	28	36	-35	6.6	190	26.3	190	28.9
	7000	29	-30	-5	5	-33	34	42	-41	7.7	210	25.1	210	27.4
	8000	34	-35	-6	6	-40	40	47	-47	8.7	230	24.2	230	26.3
	9000	40	-41	-7	7	-48	47	53	-52	9.8	249	23.4	249	25.5
	10000	46	-48	-8	8	-55	55	59	-58	10.8	269	22.9	269	24.8
	11000	53	-54	-9	9	-64	63	64	-63	11.9	288	22.4	288	24.2
	12000	59	-60	-9	9	-73	72	70	-69	12.9	307	22.0	307	23.7
	13000	66	-67	-10	10	-82	81	75	-74	14.0	326	21.6	326	23.3
	15000	79	-81	-11	10	-102	101	86	-85	16.1	362	21.0	362	22.5
	18000	100	-102	-11	11	-133	132	102	-101	19.2	416	20.4	416	21.7
	20000	115	-117	-12	12	-156	154	112	-112	21.2	451	20.0	451	21.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-37)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 37 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	3040	75	-75	852	-808	153	-62	62	-62	6.2	323	25.9	323	52.4
	3500	147	-149	130	-175	-65	54	114	-116	9.0	354	15.4	354	39.4
	4000	182	-185	6	-21	-180	151	139	-142	10.6	374	13.3	374	35.2
	5000	224	-228	-69	63	-300	258	165	-168	12.9	407	12.2	406	31.4
	6000	252	-256	-90	87	-363	319	179	-182	14.7	435	12.0	435	29.5
	7000	273	-277	-96	94	-404	360	188	-191	16.3	462	12.2	462	28.3
	8000	290	-295	-96	95	-434	390	195	-198	17.7	487	12.4	487	27.4
	9000	305	-311	-95	94	-458	415	201	-203	19.1	512	12.6	512	26.8
	10000	319	-325	-93	91	-479	436	206	-208	20.4	535	12.9	535	26.3
	11000	330	-337	-90	89	-497	455	210	-213	21.6	558	13.2	558	25.8
	12000	340	-347	-87	87	-514	474	215	-218	22.8	581	13.4	580	25.4
	15000	369	-377	-79	79	-562	523	229	-231	26.3	645	14.0	644	24.5
	20000	412	-420	-68	68	-636	600	252	-254	31.8	743	14.7	743	23.3
-10	3220	55	-56	199	-228	-73	74	53	-53	5.9	279	26.1	278	47.4
	3500	69	-70	126	-144	-69	68	66	-66	6.8	290	21.9	289	42.6
	4000	94	-95	52	-62	-90	84	83	-84	8.2	307	18.3	307	37.4
	5000	133	-136	-15	10	-146	132	108	-109	10.4	338	15.5	338	32.4
	6000	163	-166	-42	39	-194	174	124	-125	12.3	366	14.6	365	29.8
	7000	187	-190	-54	53	-231	209	136	-138	13.9	392	14.2	391	28.2
	8000	207	-211	-60	59	-263	239	146	-148	15.4	417	14.1	416	27.1
	9000	224	-228	-63	62	-289	264	154	-156	16.7	441	14.2	440	26.3
	10000	240	-244	-65	63	-313	288	162	-163	18.1	464	14.2	464	25.7
	11000	252	-258	-65	64	-335	309	168	-170	19.3	486	14.3	486	25.2
	12000	264	-270	-64	64	-355	329	175	-176	20.6	509	14.4	508	24.7
	15000	295	-301	-61	61	-410	384	192	-194	24.1	572	14.8	572	23.7
	20000	338	-345	-56	55	-492	467	219	-221	29.7	670	15.2	670	22.6
-20	3400	45	-46	68	-74	-68	65	45	-45	5.6	239	26.3	238	42.9
	3500	48	-48	61	-66	-68	65	47	-47	5.8	242	25.4	241	41.8
	4000	59	-60	34	-37	-71	67	57	-57	6.8	256	22.1	256	37.6
	5000	82	-84	0	-2	-89	83	75	-75	8.7	283	18.8	283	32.6
	6000	104	-106	-19	17	-113	104	88	-88	10.3	308	17.4	308	29.9
	7000	124	-126	-29	28	-137	126	100	-100	11.8	333	16.6	333	28.1
	8000	142	-145	-36	35	-159	147	109	-110	13.3	357	16.2	357	26.9
	9000	158	-161	-40	39	-181	168	118	-119	14.6	380	16.0	380	26.0
	10000	173	-176	-43	41	-202	187	126	-127	15.9	403	15.9	402	25.3
	11000	185	-189	-44	44	-221	206	134	-134	17.2	425	15.8	424	24.7
	12000	197	-202	-45	44	-240	225	140	-141	18.4	446	15.8	446	24.2
	15000	228	-234	-45	45	-293	276	160	-160	21.9	508	15.8	508	23.2
	20000	272	-278	-43	43	-375	357	189	-190	27.5	605	15.9	605	22.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-38)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 38 of 39)

AV-8B RELEASE ERROR SENSITIVITIES
MK 20 ROCKEYE II : CBU-99/100 : FMU-140/B FUZE *
3000 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	3560	36	-37	26	-27	-50	48	38	-37	5.2	204	27.0	204	39.3
	4000	42	-42	16	-17	-52	49	43	-43	5.9	215	24.7	215	36.4
	5000	55	-57	0	-1	-60	57	55	-55	7.5	239	21.5	239	32.1
	6000	70	-71	-10	9	-72	68	66	-65	8.9	263	19.9	263	29.5
	7000	84	-86	-17	16	-86	82	75	-75	10.3	286	18.9	286	27.8
	8000	98	-100	-21	21	-102	96	84	-84	11.6	308	18.3	308	26.5
	9000	111	-114	-25	24	-117	110	92	-92	12.9	330	17.9	330	25.6
	10000	124	-126	-28	27	-133	125	100	-100	14.2	352	17.6	352	24.9
	11000	135	-138	-29	29	-148	140	107	-107	15.4	373	17.4	373	24.3
	12000	145	-149	-31	30	-164	155	114	-114	16.6	394	17.2	394	23.8
	13000	155	-159	-31	31	-179	170	120	-120	17.7	414	17.1	414	23.4
	15000	173	-177	-32	32	-210	200	133	-133	20.0	454	17.0	454	22.7
	20000	213	-218	-33	33	-285	274	163	-163	25.6	549	16.8	549	21.5
-45	3950	26	-26	4	-5	-29	28	31	-30	4.9	169	27.5	169	34.3
	5000	33	-34	-2	1	-34	33	39	-38	6.2	192	24.6	192	30.7
	6000	41	-42	-5	5	-41	39	46	-46	7.5	213	22.9	213	28.5
	7000	50	-51	-8	8	-49	47	54	-53	8.7	234	21.7	234	26.9
	8000	58	-60	-11	11	-58	55	61	-60	9.9	255	21.0	255	25.8
	9000	67	-68	-13	12	-67	64	67	-67	11.0	275	20.4	275	24.9
	10000	75	-77	-14	14	-77	74	74	-73	12.2	295	19.9	295	24.3
	11000	83	-85	-16	16	-88	84	80	-80	13.3	315	19.6	315	23.7
	12000	90	-93	-17	17	-99	95	86	-86	14.4	335	19.3	335	23.2
	13000	98	-100	-18	17	-111	106	92	-92	15.5	354	19.1	354	22.8
	15000	111	-114	-19	19	-134	129	104	-104	17.7	392	18.7	392	22.1
	18000	131	-133	-20	20	-171	164	122	-121	20.9	447	18.3	447	21.4
	20000	143	-146	-20	20	-196	188	133	-133	23.1	483	18.1	483	20.9
-60	6024	26	-26	-3	3	-25	25	36	-36	6.6	182	25.0	182	27.5
	6500	28	-29	-4	4	-28	28	39	-38	7.1	191	24.4	191	26.8
	7000	31	-31	-4	4	-30	31	42	-41	7.7	201	23.8	201	26.2
	7500	33	-34	-5	5	-33	33	45	-44	8.2	211	23.4	211	25.6
	8000	36	-37	-6	5	-37	37	48	-47	8.8	220	23.0	220	25.1
	9000	41	-42	-6	6	-43	43	54	-53	9.8	239	22.3	239	24.4
	10000	47	-48	-7	7	-51	50	59	-59	10.9	258	21.8	258	23.7
	11000	52	-53	-8	8	-59	58	65	-64	12.0	277	21.3	277	23.2
	12000	56	-58	-9	9	-67	66	70	-70	13.0	296	21.0	296	22.7
	13000	61	-63	-9	9	-76	75	76	-75	14.1	314	20.7	314	22.3
	15000	70	-71	-10	10	-94	93	87	-86	16.2	351	20.2	351	21.7
	18000	83	-84	-11	11	-124	122	103	-102	19.3	404	19.6	404	21.0
	20000	90	-93	-11	11	-146	143	113	-113	21.3	438	19.3	438	20.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.1 ft/sec. Stores code : 37.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(85-39)10

Figure 2-63. Release Error Sensitivities, Mk 20 Rockeye, CBU-99/100, FMU-140/B Fuze (Sheet 39 of 39)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
500 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-AGL)	WEAPON APOGEE FROM RELEASE DRT (FT)	TOF (SEC)	ALT (FT-AGL)	PULLUP TO TARGET DRT (FT)	TOF (SEC)	PATTERN SIZE WIDTH (FT)	LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	IMPACT ANGLE (DEG)
0	10	450	15	339	2611	4	554	8385	14	119	291	7.42	29.2
		500	14	370	3123	4	631	10062	15	115	298	7.50	27.4
		550	13	400	3588	4	705	11545	16	113	301	7.60	26.4
5000	10	450	16	339	2624	4	554	8496	14	122	318	6.62	27.2
		500	15	370	3148	4	632	10200	15	118	325	6.72	25.5
		550	14	400	3627	4	706	11716	16	115	328	6.83	24.7
10000	10	450	17	339	2610	4	551	8547	14	125	346	5.94	25.5
		500	16	370	3169	4	632	10325	15	120	353	6.05	23.9
		550	15	396	3674	4	705	11860	16	118	356	6.14	23.2

BF 12110-R1-B88-1

Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 1 of 20)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
700 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	20	450	26	749	4695	7	1606	14329	24	97	190	13.97	37.3
		500	25	865	5486	8	1882	16711	25	95	186	14.57	37.4
5000	20	450	27	740	4711	7	1593	14423	23	99	202	12.95	35.5
		500	25	857	5554	8	1878	16935	25	97	197	13.52	35.7
10000	20	450	28	731	4677	7	1571	14413	23	100	213	12.08	34.1

BF 12110-R1-B88-2

Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 2 of 20)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
900 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	20	450	26	749	4695	7	1606	14209	24	111	201	11.52	41.3
		500	25	865	5486	8	1882	16618	26	109	198	11.98	40.9
		550	24	975	6129	8	2125	18692	27	107	194	12.43	40.9
	30	450	36	1368	5846	10	3108	17885	33	92	144	19.36	49.7
5000	20	450	27	740	4711	7	1593	14310	24	114	215	10.53	39.0
		500	25	857	5554	8	1878	16848	26	111	211	10.98	38.7
		550	24	966	6246	8	2128	19020	27	109	207	11.41	38.8
10000	20	450	28	731	4677	7	1571	14308	24	116	229	9.68	37.1
		500	26	848	5607	8	1870	17028	26	113	225	10.11	36.8
		550	25	956	6349	8	2128	19321	27	111	220	10.52	36.9

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 3 of 20)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
1200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-AGL)	WEAPON APOGEE FROM RELEASE DRT (FT)	TOF (SEC)	ALT (FT-AGL)	PULLUP TO TARGET DRT (FT)	TOF (SEC)	PATTERN SIZE WIDTH (FT)	LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	IMPACT ANGLE (DEG)
0	20	450	26	749	4695	7	1606	13856	25	134	211	9.13	48.8
		500	25	865	5486	8	1882	16357	27	129	209	9.53	47.4
		550	24	975	6129	8	2125	18481	28	126	206	9.88	46.8
	30	450	36	1368	5846	10	3108	17825	33	107	161	14.94	52.7
		500	35	1616	6779	11	3660	20772	36	106	157	15.48	53.1
		550	34	1836	7528	11	4130	23273	38	105	155	15.94	53.6
	38	450	44	1985	6135	12	4478	19372	39	99	137	18.97	59.3
		500	43	2349	7119	13	5276	22564	43	98	135	19.49	60.0
		550	43	2680	7867	14	5944	25241	45	97	133	19.89	60.7
5000	20	450	27	740	4711	7	1593	13971	24	137	228	8.23	45.9
		500	25	857	5554	8	1878	16601	26	133	225	8.62	44.5
		550	24	966	6246	8	2128	18821	28	130	222	8.95	44.0
	30	450	37	1353	5860	10	3079	17953	33	109	168	14.02	50.5
		500	36	1601	6885	11	3656	21117	36	107	165	14.55	50.9
		550	35	1820	7677	12	4134	23717	38	106	162	14.99	51.3
	38	450	46	1939	6117	12	4395	19383	39	100	142	18.18	57.3
		500	44	2314	7202	13	5241	22844	42	99	139	18.69	58.0
		550	43	2645	8044	14	5944	25733	45	98	137	19.08	58.7
10000	20	450	28	731	4677	7	1571	13982	24	141	245	7.43	43.3
		500	26	848	5607	8	1870	16796	26	136	242	7.81	41.9
		550	25	956	6349	8	2128	19135	28	133	239	8.12	41.4
	30	450	39	1317	5780	10	3002	17832	32	111	177	13.15	48.5
		500	37	1574	6921	11	3619	21279	35	109	173	13.67	48.8
		550	36	1804	7803	12	4133	24112	38	108	169	14.13	49.3
	38	450	48	1878	5992	12	4257	19141	38	101	146	17.41	55.5
		500	46	2265	7202	13	5160	22923	42	100	144	17.90	56.2

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 4 of 20)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
1500 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	20	450	26	749	4695	7	1606	13045	25	159	224	7.21	57.8
		500	25	865	5486	8	1882	15874	27	151	219	7.81	54.8
		550	24	975	6129	8	2125	18112	29	146	216	8.16	53.5
	30	450	36	1368	5846	10	3108	17721	34	122	175	12.03	56.4
		500	35	1616	6779	11	3660	20690	36	120	172	12.47	56.4
		550	34	1836	7528	11	4130	23202	38	119	169	12.83	56.6
	38	450	44	1985	6135	12	4478	19329	40	112	152	15.19	61.4
		500	43	2349	7119	13	5276	22528	43	111	149	15.60	61.9
		550	43	2680	7867	14	5944	25210	46	110	147	15.92	62.5
5000	20	450	27	740	4711	7	1593	13157	25	165	242	6.45	54.6
		500	25	857	5554	8	1878	16134	27	155	236	7.02	51.4
		550	24	966	6246	8	2128	18468	29	150	233	7.34	50.1
	30	450	37	1353	5860	10	3079	17857	33	125	184	11.21	53.8
		500	36	1601	6885	11	3656	21040	36	122	181	11.64	53.7
		550	35	1820	7677	12	4134	23652	38	121	178	11.99	54.0
	38	450	46	1939	6117	12	4395	19344	39	113	157	14.48	59.2
		500	44	2314	7202	13	5241	22812	43	112	154	14.90	59.7
		550	43	2645	8044	14	5944	25705	45	111	152	15.21	60.2
10000	20	450	28	731	4677	7	1571	13142	25	172	261	5.72	51.7
		500	26	848	5607	8	1870	16348	27	160	256	6.30	48.3
		550	25	956	6349	8	2128	18800	28	155	252	6.60	47.0
	30	450	39	1317	5780	10	3002	17740	33	127	194	10.43	51.4
		500	37	1574	6921	11	3619	21207	36	125	190	10.86	51.4
		550	36	1804	7803	12	4133	24052	38	123	187	11.23	51.6
	38	450	48	1878	5992	12	4257	19105	38	115	163	13.81	57.3
		500	46	2265	7202	13	5160	22893	42	113	160	14.21	57.7
		550	44	2607	8142	14	5910	26039	45	112	158	14.53	58.2

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 5 of 20)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
1800 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY (BOMBLETS/ 100 M^2)	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH		
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	20	500	25	865	5486	8	1882	14837	28	176	236	6.19	63.0
		550	24	975	6129	8	2125	17486	29	167	229	6.75	60.3
	30	450	36	1368	5846	10	3108	17564	34	137	188	9.96	60.4
		500	35	1616	6779	11	3660	20565	37	135	185	10.34	60.0
		550	34	1836	7528	11	4130	23096	39	133	183	10.63	59.9
	38	450	44	1985	6135	12	4478	19265	40	125	165	12.50	63.9
		500	43	2349	7119	13	5276	22475	43	123	163	12.84	64.2
		550	43	2680	7867	14	5944	25164	46	122	161	13.10	64.5
5000	20	500	25	857	5554	8	1878	15105	27	183	253	5.56	59.5
		550	24	966	6246	8	2128	17861	29	173	246	6.08	56.7
	30	450	37	1353	5860	10	3079	17708	34	141	198	9.24	57.5
		500	36	1601	6885	11	3656	20924	37	137	195	9.61	57.0
		550	35	1820	7677	12	4134	23553	39	135	192	9.90	56.9
	38	450	46	1939	6117	12	4395	19284	40	127	171	11.88	61.5
		500	44	2314	7202	13	5241	22763	43	125	169	12.22	61.7
		550	43	2645	8044	14	5944	25662	46	124	167	12.48	62.0
10000	20	500	26	848	5607	8	1870	15324	27	190	273	4.97	56.2
		550	25	956	6349	8	2128	18214	29	178	265	5.45	53.2
	30	450	39	1317	5780	10	3002	17597	33	144	210	8.54	54.8
		500	37	1574	6921	11	3619	21098	36	140	206	8.92	54.3
		550	36	1804	7803	12	4133	23960	39	138	202	9.22	54.3
	38	450	48	1878	5992	12	4257	19049	39	128	178	11.27	59.2
		500	46	2265	7202	13	5160	22848	43	127	175	11.61	59.4
		550	44	2607	8142	14	5910	26000	45	125	173	11.88	59.8

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 6 of 20)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
2200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	30	450	36	1368	5846	10	3108	17245	35	158	206	7.89	65.7
		500	35	1616	6779	11	3660	20322	38	154	202	8.27	64.8
		550	34	1836	7528	11	4130	22893	40	151	200	8.53	64.4
	38	450	44	1985	6135	12	4478	19140	41	142	183	9.94	67.4
		500	43	2349	7119	13	5276	22373	44	140	180	10.22	67.3
		550	43	2680	7867	14	5944	25074	47	138	178	10.43	67.4
5000	30	450	37	1353	5860	10	3079	17400	35	162	218	7.30	62.6
		500	36	1601	6885	11	3656	20693	37	158	213	7.67	61.6
		550	35	1820	7677	12	4134	23361	39	155	210	7.92	61.2
	38	450	46	1939	6117	12	4395	19167	40	144	190	9.41	64.7
		500	44	2314	7202	13	5241	22668	44	142	187	9.70	64.6
		550	43	2645	8044	14	5944	25579	46	141	185	9.91	64.7
10000	30	450	39	1317	5780	10	3002	17295	34	167	230	6.71	59.6
		500	37	1574	6921	11	3619	20878	37	161	225	7.09	58.5
		550	36	1804	7803	12	4133	23780	39	158	222	7.35	58.1
	38	450	48	1878	5992	12	4257	18938	39	147	198	8.89	62.2
		500	46	2265	7202	13	5160	22760	43	144	194	9.18	62.0
		550	44	2607	8142	14	5910	25924	46	143	192	9.40	62.2

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 7 of 20)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
2600 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY (BOMBLETS/ 100 M^2)	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH		
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	30	450	36	1368	5846	10	3108	16739	36	180	228	6.27	70.7
		500	35	1616	6779	11	3660	19970	39	174	221	6.71	69.4
		550	34	1836	7528	11	4130	22606	41	170	217	6.97	68.7
	38	450	44	1985	6135	12	4478	18964	42	159	200	8.08	70.7
		500	43	2349	7119	13	5276	22230	45	156	198	8.34	70.5
		550	43	2680	7867	14	5944	24950	48	155	195	8.52	70.4
5000	30	450	37	1353	5860	10	3079	16899	35	186	239	5.80	67.7
		500	36	1601	6885	11	3656	20353	38	178	232	6.23	66.1
		550	35	1820	7677	12	4134	23086	40	174	228	6.48	65.4
	38	450	46	1939	6117	12	4395	18999	41	162	208	7.64	67.9
		500	44	2314	7202	13	5241	22534	44	159	205	7.91	67.6
		550	43	2645	8044	14	5944	25463	47	157	203	8.08	67.5
10000	30	450	39	1317	5780	10	3002	16778	35	192	253	5.29	64.8
		500	37	1574	6921	11	3619	20549	38	183	245	5.75	62.9
		550	36	1804	7803	12	4133	23519	40	179	240	6.00	62.1
	38	450	48	1878	5992	12	4257	18777	40	165	217	7.19	65.3
		500	46	2265	7202	13	5160	22633	44	162	213	7.47	64.8
		550	44	2607	8142	14	5910	25815	47	160	210	7.65	64.8

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 8 of 20)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
3000 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	30	450	36	1368	5846	10	3108	15745	36	209	257	4.80	75.7
		500	35	1616	6779	11	3660	19460	39	195	242	5.46	73.4
		550	34	1836	7528	11	4130	22216	41	189	236	5.75	72.6
	38	450	44	1985	6135	12	4478	18728	43	177	219	6.67	73.9
		500	43	2349	7119	13	5276	22043	46	173	215	6.92	73.4
		550	43	2680	7867	14	5944	24789	48	171	213	7.09	73.2
5000	30	450	37	1353	5860	10	3079	15845	36	217	270	4.40	73.0
		500	36	1601	6885	11	3656	19854	39	200	253	5.08	70.3
		550	35	1820	7677	12	4134	22707	41	194	247	5.36	69.3
	38	450	46	1939	6117	12	4395	18769	42	180	227	6.30	71.1
		500	44	2314	7202	13	5241	22356	45	176	223	6.56	70.5
		550	43	2645	8044	14	5944	25310	48	174	220	6.73	70.3
10000		500	37	1574	6921	11	3619	20054	38	206	267	4.68	67.2
		550	36	1804	7803	12	4133	23155	41	200	260	4.96	66.0
	38	450	48	1878	5992	12	4257	18550	41	184	236	5.91	68.4
		500	46	2265	7202	13	5160	22464	44	180	232	6.19	67.6
		550	44	2607	8142	14	5910	25672	47	177	229	6.36	67.4

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 9 of 20)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
1200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	16	5139	2623	4	5354	16203	27	104	155	15.99	53.1
		500	15	5170	3146	4	5432	18014	28	105	159	15.38	51.9
		550	14	5200	3625	4	5506	19603	29	106	162	14.99	51.2
	20	450	27	5540	4707	7	6393	19464	35	99	140	18.54	57.7
		500	25	5657	5548	8	6677	21986	36	100	142	18.22	57.0
		550	24	5766	6239	8	6927	24111	38	100	142	18.08	56.7
5000	10	450	17	5139	2609	4	5351	16434	27	105	161	15.21	51.2
		500	16	5170	3167	4	5432	18372	28	107	166	14.52	49.9
		550	15	5200	3672	4	5509	20050	29	108	170	14.08	49.1
10000	10	450	20	5135	2592	4	5345	16598	27	106	167	14.52	49.5
		500	17	5166	3171	4	5427	18643	28	108	173	13.76	48.1
		550	16	5196	3689	4	5505	20386	29	109	177	13.28	47.2

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 10 of 20)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
1500 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	16	5139	2623	4	5354	16144	28	118	170	12.86	55.7
		500	15	5170	3146	4	5432	17949	29	119	174	12.40	54.7
		550	14	5200	3625	4	5506	19534	30	120	177	12.10	54.1
	20	450	27	5540	4707	7	6393	19427	35	112	155	14.85	59.7
		500	25	5657	5548	8	6677	21949	37	113	157	14.60	59.0
		550	24	5766	6239	8	6927	24073	38	113	157	14.49	58.7
	30	450	37	6153	5854	10	7878	21510	42	107	142	16.94	64.6
		500	36	6401	6877	11	8454	24621	45	108	142	16.85	64.3
		550	35	6621	7689	12	8941	27201	47	108	142	16.84	64.2
	38	450	45	6740	6110	12	9194	22083	47	105	134	18.35	68.6
		500	44	7115	7192	13	10039	25487	51	105	134	18.34	68.5
		550	43	7445	8032	14	10741	28322	53	105	134	18.36	68.5
5000	10	450	17	5139	2609	4	5351	16380	28	120	177	12.17	53.5
		500	16	5170	3167	4	5432	18313	29	121	183	11.63	52.3
		550	15	5200	3672	4	5509	19987	29	123	186	11.29	51.6
	20	450	28	5531	4692	7	6374	19665	35	114	160	14.18	57.6
		500	26	5648	5602	8	6670	22365	36	114	163	13.86	56.8
		550	25	5756	6343	8	6927	24626	38	115	164	13.72	56.4
	30	450	39	6117	5798	10	7808	21615	42	108	145	16.37	62.7
		500	37	6375	6937	11	8425	25027	44	109	146	16.22	62.3
		550	36	6604	7794	12	8931	27762	46	109	146	16.19	62.1
	38	450	48	6679	5986	12	9056	21993	47	105	136	17.92	67.0
		500	46	7065	7219	13	9968	25782	50	106	137	17.84	66.7
		550	44	7408	8132	14	10708	28831	53	106	137	17.84	66.6
10000	10	450	20	5135	2592	4	5345	16550	27	121	184	11.54	51.5
		500	17	5166	3171	4	5427	18590	28	123	191	10.95	50.2
		550	16	5196	3689	4	5505	20329	29	125	196	10.57	49.4
	20	450	31	5515	4606	7	6336	19687	34	115	165	13.60	55.8
		500	27	5638	5603	8	6652	22649	36	116	169	13.20	54.8
		550	26	5754	6414	8	6929	25112	38	116	170	13.01	54.3
	30	450	43	6070	5620	10	7692	21401	41	109	148	15.88	61.2
		500	39	6336	6873	11	8347	25123	44	110	150	15.65	60.5
		550	37	6575	7846	12	8895	28157	46	110	151	15.58	60.2
	38	450	53	6592	5699	12	8829	21481	46	106	139	17.54	65.7
		500	49	6999	7079	13	9814	25682	49	106	139	17.38	65.1

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 11 of 20)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
1800 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY (BOMBLETS/ 100 M^2)	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH		
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	16	5139	2623	4	5354	16056	29	132	183	10.69	58.8
		500	15	5170	3146	4	5432	17854	29	133	187	10.32	57.9
		550	14	5200	3625	4	5506	19433	30	134	190	10.09	57.4
	20	450	27	5540	4707	7	6393	19373	36	125	168	12.25	62.0
		500	25	5657	5548	8	6677	21893	37	126	170	12.05	61.4
		550	24	5766	6239	8	6927	24017	39	126	171	11.96	61.0
	30	450	37	6153	5854	10	7878	21478	43	119	155	13.92	66.2
		500	36	6401	6877	11	8454	24589	45	119	156	13.85	65.9
		550	35	6621	7689	12	8941	27169	47	119	156	13.84	65.8
	38	450	45	6740	6110	12	9194	22061	48	116	147	15.06	69.9
		500	44	7115	7192	13	10039	25466	51	116	147	15.05	69.7
		550	43	7445	8032	14	10741	28302	53	116	147	15.06	69.7
5000	10	450	17	5139	2609	4	5351	16300	28	134	192	10.06	56.2
		500	16	5170	3167	4	5432	18225	29	136	197	9.64	55.1
		550	15	5200	3672	4	5509	19894	30	137	201	9.37	54.5
	20	450	28	5531	4692	7	6374	19616	35	127	175	11.65	59.6
		500	26	5648	5602	8	6670	22314	37	127	177	11.40	58.8
		550	25	5756	6343	8	6927	24574	38	128	179	11.28	58.4
	30	450	39	6117	5798	10	7808	21586	42	120	159	13.42	64.2
		500	37	6375	6937	11	8425	24998	45	121	160	13.30	63.7
		550	36	6604	7794	12	8931	27734	47	121	161	13.27	63.5
	38	450	48	6679	5986	12	9056	21973	47	117	150	14.68	68.1
		500	46	7065	7219	13	9968	25763	50	117	151	14.61	67.7
		550	44	7408	8132	14	10708	28812	53	117	151	14.61	67.7
10000	10	450	20	5135	2592	4	5345	16478	28	136	200	9.49	53.8
		500	17	5166	3171	4	5427	18510	29	138	207	9.02	52.6
		550	16	5196	3689	4	5505	20244	29	140	211	8.72	51.9
	20	450	31	5515	4606	7	6336	19642	35	128	181	11.13	57.5
		500	27	5638	5603	8	6652	22603	36	129	184	10.81	56.6
		550	26	5754	6414	8	6929	25065	38	130	186	10.66	56.1
	30	450	43	6070	5620	10	7692	21375	41	122	163	12.98	62.4
		500	39	6336	6873	11	8347	25097	44	122	165	12.79	61.7
		550	37	6575	7846	12	8895	28131	46	122	166	12.73	61.4
	38	450	53	6592	5699	12	8829	21463	46	118	153	14.34	66.6
		500	49	6999	7079	13	9814	25665	50	118	154	14.21	66.0
		550	46	7354	8144	14	10623	29082	52	118	154	14.18	65.8

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 12 of 20)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
2200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	16	5139	2623	4	5354	15888	29	150	200	8.62	63.0
		500	15	5170	3146	4	5432	17673	30	151	204	8.35	62.4
		550	14	5200	3625	4	5506	19243	31	153	206	8.18	61.9
	20	450	27	5540	4707	7	6393	19268	36	142	186	9.80	65.3
		500	25	5657	5548	8	6677	21785	38	142	187	9.65	64.7
		550	24	5766	6239	8	6927	23909	39	143	188	9.59	64.4
	30	450	37	6153	5854	10	7878	21415	43	135	173	11.06	68.6
		500	36	6401	6877	11	8454	24527	46	135	173	11.01	68.3
		550	35	6621	7689	12	8941	27109	48	135	173	11.00	68.1
	38	450	45	6740	6110	12	9194	22018	49	131	165	11.93	71.7
		500	44	7115	7192	13	10039	25424	52	131	165	11.92	71.5
		550	43	7445	8032	14	10741	28261	54	131	165	11.94	71.4
5000	10	450	17	5139	2609	4	5351	16146	29	152	209	8.08	60.0
		500	16	5170	3167	4	5432	18057	30	155	214	7.77	59.2
		550	15	5200	3672	4	5509	19716	31	156	218	7.58	58.7
	20	450	28	5531	4692	7	6374	19520	36	144	193	9.29	62.6
		500	26	5648	5602	8	6670	22215	38	145	195	9.10	61.9
		550	25	5756	6343	8	6927	24475	39	145	197	9.02	61.5
	30	450	39	6117	5798	10	7808	21529	43	137	177	10.64	66.3
		500	37	6375	6937	11	8425	24941	45	137	179	10.55	65.8
		550	36	6604	7794	12	8931	27678	47	137	179	10.53	65.6
	38	450	48	6679	5986	12	9056	21934	48	132	168	11.61	69.7
		500	46	7065	7219	13	9968	25725	51	132	168	11.56	69.3
		550	44	7408	8132	14	10708	28776	54	132	168	11.56	69.2
10000	10	450	20	5135	2592	4	5345	16338	28	155	219	7.58	57.3
		500	17	5166	3171	4	5427	18355	29	158	226	7.24	56.3
		550	16	5196	3689	4	5505	20079	30	160	230	7.02	55.7
	20	450	31	5515	4606	7	6336	19556	35	146	200	8.83	60.2
		500	27	5638	5603	8	6652	22512	37	147	204	8.59	59.3
		550	26	5754	6414	8	6929	24974	39	148	206	8.48	58.8
	30	450	43	6070	5620	10	7692	21323	42	138	182	10.26	64.3
		500	39	6336	6873	11	8347	25046	45	138	184	10.11	63.6
		550	37	6575	7846	12	8895	28081	47	139	185	10.07	63.3
	38	450	53	6592	5699	12	8829	21429	46	133	171	11.32	68.0
		500	49	6999	7079	13	9814	25631	50	133	172	11.22	67.4
		550	46	7354	8144	14	10623	29049	53	134	172	11.19	67.2

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 13 of 20)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
2600 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	16	5139	2623	4	5354	15659	30	167	216	7.12	67.1
		500	15	5170	3146	4	5432	17426	31	169	220	6.92	66.6
		550	14	5200	3625	4	5506	18986	32	171	222	6.79	66.3
	20	450	27	5540	4707	7	6393	19123	37	158	202	8.04	68.6
		500	25	5657	5548	8	6677	21638	39	159	204	7.94	68.1
		550	24	5766	6239	8	6927	23762	40	159	205	7.89	67.8
	30	450	37	6153	5854	10	7878	21327	44	151	189	9.03	71.2
		500	36	6401	6877	11	8454	24441	47	151	190	9.00	70.8
		550	35	6621	7689	12	8941	27024	49	151	190	8.99	70.6
	38	450	45	6740	6110	12	9194	21957	49	146	181	9.72	73.6
		500	44	7115	7192	13	10039	25366	52	146	182	9.71	73.4
		550	43	7445	8032	14	10741	28205	55	146	181	9.72	73.4
5000	10	450	17	5139	2609	4	5351	15933	30	171	226	6.67	63.9
		500	16	5170	3167	4	5432	17825	31	173	231	6.44	63.3
		550	15	5200	3672	4	5509	19471	31	175	234	6.29	62.9
	20	450	28	5531	4692	7	6374	19386	37	161	210	7.62	65.7
		500	26	5648	5602	8	6670	22077	38	162	213	7.48	65.0
		550	25	5756	6343	8	6927	24336	40	162	214	7.41	64.7
	30	450	39	6117	5798	10	7808	21449	43	152	195	8.67	68.6
		500	37	6375	6937	11	8425	24862	46	153	196	8.61	68.1
		550	36	6604	7794	12	8931	27600	48	153	196	8.60	67.9
	38	450	48	6679	5986	12	9056	21880	48	147	185	9.44	71.5
		500	46	7065	7219	13	9968	25672	52	148	186	9.40	71.1
		550	44	7408	8132	14	10708	28724	54	148	186	9.40	71.0
10000	10	450	20	5135	2592	4	5345	16142	29	174	237	6.24	60.8
		500	17	5166	3171	4	5427	18139	30	177	243	5.98	60.0
		550	16	5196	3689	4	5505	19850	31	179	247	5.81	59.5
	20	450	31	5515	4606	7	6336	19434	36	163	218	7.22	63.0
		500	27	5638	5603	8	6652	22385	38	165	222	7.04	62.2
		550	26	5754	6414	8	6929	24845	39	165	224	6.96	61.7
	30	450	43	6070	5620	10	7692	21251	42	154	200	8.34	66.3
		500	39	6336	6873	11	8347	24973	45	155	202	8.24	65.7
		550	37	6575	7846	12	8895	28009	47	155	203	8.20	65.3
	38	450	53	6592	5699	12	8829	21380	47	149	189	9.18	69.6
		500	49	6999	7079	13	9814	25583	51	149	190	9.11	69.0
		550	46	7354	8144	14	10623	29003	53	149	190	9.09	68.8

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 14 of 20)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
3000 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY (BOMBLETS/ 100 M^2)	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH		
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	16	5139	2623	4	5354	15365	31	185	233	5.96	70.9
		500	15	5170	3146	4	5432	17111	32	187	237	5.80	70.5
		550	14	5200	3625	4	5506	18657	33	189	239	5.71	70.2
	20	450	27	5540	4707	7	6393	18938	38	175	219	6.72	71.7
		500	25	5657	5548	8	6677	21449	40	176	221	6.65	71.3
		550	24	5766	6239	8	6927	23573	41	176	221	6.61	71.0
	30	450	37	6153	5854	10	7878	21214	45	166	206	7.53	73.6
		500	36	6401	6877	11	8454	24329	47	166	207	7.50	73.3
		550	35	6621	7689	12	8941	26915	49	166	207	7.50	73.1
	38	450	45	6740	6110	12	9194	21879	50	161	198	8.07	75.6
		500	44	7115	7192	13	10039	25290	53	161	198	8.07	75.4
		550	43	7445	8032	14	10741	28131	56	161	198	8.08	75.3
5000	10	450	17	5139	2609	4	5351	15655	31	189	244	5.59	67.6
		500	16	5170	3167	4	5432	17524	31	192	248	5.41	67.1
		550	15	5200	3672	4	5509	19155	32	194	251	5.30	66.8
	20	450	28	5531	4692	7	6374	19212	37	178	227	6.37	68.7
		500	26	5648	5602	8	6670	21898	39	179	230	6.26	68.1
		550	25	5756	6343	8	6927	24157	41	180	231	6.22	67.8
	30	450	39	6117	5798	10	7808	21344	44	168	212	7.22	70.9
		500	37	6375	6937	11	8425	24758	47	169	213	7.18	70.4
		550	36	6604	7794	12	8931	27498	49	169	213	7.17	70.2
	38	450	48	6679	5986	12	9056	21808	49	163	202	7.84	73.3
		500	46	7065	7219	13	9968	25602	52	163	203	7.81	72.9
		550	44	7408	8132	14	10708	28656	55	163	203	7.82	72.8
10000	10	450	20	5135	2592	4	5345	15883	30	193	255	5.23	64.4
		500	17	5166	3171	4	5427	17856	31	196	261	5.03	63.7
		550	16	5196	3689	4	5505	19551	32	199	265	4.90	63.3
	20	450	31	5515	4606	7	6336	19274	37	181	236	6.03	65.8
		500	27	5638	5603	8	6652	22219	38	182	240	5.89	65.1
		550	26	5754	6414	8	6929	24678	40	183	241	5.83	64.6
	30	450	43	6070	5620	10	7692	21155	43	170	218	6.94	68.4
		500	39	6336	6873	11	8347	24878	46	171	220	6.86	67.8
		550	37	6575	7846	12	8895	27916	48	171	220	6.84	67.5
	38	450	53	6592	5699	12	8829	21315	48	164	206	7.62	71.2
		500	49	6999	7079	13	9814	25520	51	164	207	7.56	70.7
		550	46	7354	8144	14	10623	28941	54	164	208	7.55	70.4

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 15 of 20)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
1500 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	17	10139	2609	4	10351	20089	36	108	144	16.57	63.3
		500	16	10170	3167	4	10432	22227	37	109	146	16.16	62.2
		550	15	10200	3672	4	10509	24039	38	109	148	15.88	61.5
	20	450	28	10531	4692	7	11374	22754	43	106	138	17.67	66.3
		500	26	10648	5602	8	11670	25569	44	106	139	17.40	65.5
		550	25	10756	6343	8	11927	27889	46	107	140	17.25	65.1
	30	450	39	11117	5798	10	12808	24083	49	104	132	18.82	69.9
		500	37	11375	6937	11	13425	27557	52	104	133	18.65	69.3
		550	36	11604	7794	12	13931	30313	54	104	133	18.58	69.1
5000	10	450	20	10135	2592	4	10345	20423	35	109	148	16.00	61.4
		500	17	10166	3171	4	10427	22693	36	110	151	15.52	60.2
		550	16	10196	3689	4	10505	24586	37	111	153	15.21	59.4
	20	450	31	10515	4606	7	11336	22923	42	107	141	17.18	64.6
		500	27	10638	5603	8	11652	26030	44	107	143	16.84	63.6
		550	26	10754	6414	8	11929	28568	45	108	144	16.65	63.1
10000	10	450	24	10135	2548	4	10340	20648	35	110	151	15.51	59.8
		500	20	10166	3147	4	10424	23051	36	111	155	14.95	58.4
		550	18	10196	3701	4	10504	25102	37	112	158	14.58	57.5

BF 12110-R1-B88-16

Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 16 of 20)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
1800 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY (BOMBLETS/ 100 M^2)	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH		
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	17	10139	2609	4	10351	20058	36	120	158	13.62	64.9
		500	16	10170	3167	4	10432	22193	37	121	160	13.29	63.9
		550	15	10200	3672	4	10509	24003	38	122	162	13.07	63.2
	20	450	28	10531	4692	7	11374	22731	43	117	151	14.51	67.6
		500	26	10648	5602	8	11670	25544	45	118	153	14.29	66.9
		550	25	10756	6343	8	11927	27864	46	118	154	14.17	66.4
	30	450	39	11117	5798	10	12808	24066	50	115	145	15.44	70.9
		500	37	11375	6937	11	13425	27540	52	115	146	15.30	70.4
		550	36	11604	7794	12	13931	30296	54	116	146	15.24	70.1
	38	450	48	11679	5986	12	14056	24002	54	114	141	16.10	73.7
		500	46	12065	7219	13	14968	27831	57	114	141	16.01	73.2
		550	44	12408	8132	14	15708	30890	60	114	142	15.97	73.1
5000	10	450	20	10135	2592	4	10345	20395	36	121	162	13.12	62.8
		500	17	10166	3171	4	10427	22663	37	122	165	12.73	61.6
		550	16	10196	3689	4	10505	24554	37	123	168	12.48	60.9
	20	450	31	10515	4606	7	11336	22902	42	118	155	14.08	65.7
		500	27	10638	5603	8	11652	26008	44	119	157	13.79	64.8
		550	26	10754	6414	8	11929	28545	46	120	158	13.64	64.3
	30	450	43	11070	5620	10	12692	23981	49	116	147	15.10	69.3
		500	39	11336	6873	11	13347	27792	51	116	149	14.91	68.5
		550	37	11575	7846	12	13895	30861	53	116	149	14.81	68.1
	38	450	53	11592	5699	12	13829	23595	53	114	143	15.85	72.3
		500	49	11999	7079	13	14814	27863	56	114	143	15.71	71.6
		550	46	12354	8144	14	15623	31304	59	114	144	15.64	71.3
10000	10	450	24	10135	2548	4	10340	20623	35	122	166	12.67	61.0
		500	20	10166	3147	4	10424	23024	36	124	171	12.22	59.7
		550	18	10196	3701	4	10504	25073	37	125	173	11.92	58.8
	20	450	37	10499	4445	7	11285	22834	42	119	158	13.71	64.2
		500	32	10620	5505	8	11608	26171	43	120	161	13.35	63.0
		550	31	10744	6408	8	11908	28994	45	121	162	13.14	62.3
	30	450	49	11028	5267	10	12532	23446	47	116	149	14.84	68.0
		500	45	11283	6649	11	13208	27613	50	117	151	14.56	66.9
		550	41	11533	7791	12	13814	31127	53	117	152	14.41	66.4
	38	450	58	11569	5223	11	13594	22825	52	114	144	15.68	71.4
		500	57	11900	6702	13	14533	27269	55	115	145	15.45	70.3
		550	52	12280	7975	14	15446	31266	58	115	146	15.33	69.8

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 17 of 20)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
2200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	100 M^2)	(DEG)
0	10	450	17	10139	2609	4	10351	19998	37	136	175	10.84	67.3
		500	16	10170	3167	4	10432	22128	38	137	178	10.59	66.4
		550	15	10200	3672	4	10509	23934	39	138	180	10.43	65.8
	20	450	28	10531	4692	7	11374	22684	44	133	169	11.51	69.6
		500	26	10648	5602	8	11670	25495	45	133	170	11.35	68.9
		550	25	10756	6343	8	11927	27814	47	134	171	11.26	68.5
	30	450	39	11117	5798	10	12808	24032	50	130	162	12.22	72.5
		500	37	11375	6937	11	13425	27505	53	130	163	12.12	72.0
		550	36	11604	7794	12	13931	30261	55	130	164	12.07	71.7
	38	450	48	11679	5986	12	14056	23976	55	128	158	12.73	74.9
		500	46	12065	7219	13	14968	27805	58	128	159	12.66	74.5
		550	44	12408	8132	14	15708	30864	60	128	159	12.63	74.3
5000	10	450	20	10135	2592	4	10345	20341	36	137	180	10.41	64.9
		500	17	10166	3171	4	10427	22604	37	139	184	10.12	63.9
		550	16	10196	3689	4	10505	24491	38	140	186	9.92	63.2
	20	450	31	10515	4606	7	11336	22861	43	134	173	11.15	67.5
		500	27	10638	5603	8	11652	25965	45	135	175	10.93	66.6
		550	26	10754	6414	8	11929	28500	46	135	176	10.81	66.1
	30	450	43	11070	5620	10	12692	23951	49	131	165	11.94	70.6
		500	39	11336	6873	11	13347	27761	52	131	166	11.78	69.9
		550	37	11575	7846	12	13895	30830	54	132	167	11.71	69.6
	38	450	53	11592	5699	12	13829	23573	53	129	160	12.52	73.4
		500	49	11999	7079	13	14814	27841	57	129	161	12.41	72.8
		550	46	12354	8144	14	15623	31281	60	129	161	12.35	72.4
10000	10	450	24	10135	2548	4	10340	20576	36	139	185	10.02	62.8
		500	20	10166	3147	4	10424	22972	37	140	190	9.68	61.6
		550	18	10196	3701	4	10504	25017	38	141	193	9.44	60.8
	20	450	37	10499	4445	7	11285	22798	42	135	176	10.83	65.7
		500	32	10620	5505	8	11608	26133	44	136	179	10.55	64.5
		550	31	10744	6408	8	11908	28954	46	137	181	10.38	63.9
	30	450	49	11028	5267	10	12532	23421	48	131	167	11.71	69.2
		500	45	11283	6649	11	13208	27586	51	132	170	11.48	68.2
		550	41	11533	7791	12	13814	31100	53	133	171	11.37	67.6
	38	450	58	11569	5223	11	13594	22806	52	129	161	12.37	72.3
		500	57	11900	6702	13	14533	27249	55	130	163	12.18	71.3
		550	52	12280	7975	14	15446	31246	59	130	164	12.09	70.8

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 18 of 20)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
2600 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-AGL)	WEAPON APOGEE FROM RELEASE DRT (FT)	WEAPON APOGEE FROM RELEASE TOF (SEC)	WEAPON APOGEE FROM RELEASE ALT (FT-AGL)	PULLUP TO TARGET DRT (FT)	PULLUP TO TARGET TOF (SEC)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 100 M^2)	IMPACT ANGLE (DEG)
0	10	450	17	10139	2609	4	10351	19914	38	151	192	8.88	69.8
		500	16	10170	3167	4	10432	22037	39	153	194	8.68	69.1
		550	15	10200	3672	4	10509	23839	40	153	196	8.56	68.6
	20	450	28	10531	4692	7	11374	22620	45	148	185	9.39	71.7
		500	26	10648	5602	8	11670	25428	46	149	187	9.27	71.1
		550	25	10756	6343	8	11927	27745	47	149	188	9.20	70.8
	30	450	39	11117	5798	10	12808	23985	51	145	179	9.94	74.2
		500	37	11375	6937	11	13425	27457	53	145	180	9.86	73.7
		550	36	11604	7794	12	13931	30212	55	145	180	9.83	73.5
	38	450	48	11679	5986	12	14056	23940	56	143	175	10.34	76.3
		500	46	12065	7219	13	14968	27768	59	143	175	10.29	75.9
		550	44	12408	8132	14	15708	30827	61	143	176	10.27	75.8
5000	10	450	20	10135	2592	4	10345	20265	37	153	198	8.51	67.2
		500	17	10166	3171	4	10427	22521	38	155	201	8.28	66.3
		550	16	10196	3689	4	10505	24404	39	156	203	8.13	65.7
	20	450	31	10515	4606	7	11336	22803	44	149	190	9.08	69.4
		500	27	10638	5603	8	11652	25903	45	150	192	8.91	68.6
		550	26	10754	6414	8	11929	28437	47	151	194	8.82	68.2
	30	450	43	11070	5620	10	12692	23909	50	146	182	9.70	72.2
		500	39	11336	6873	11	13347	27718	52	146	184	9.58	71.5
		550	37	11575	7846	12	13895	30786	55	147	184	9.53	71.2
	38	450	53	11592	5699	12	13829	23541	54	143	177	10.16	74.6
		500	49	11999	7079	13	14814	27808	58	144	178	10.07	74.0
		550	46	12354	8144	14	15623	31248	60	144	179	10.03	73.7
10000	10	450	24	10135	2548	4	10340	20509	36	155	204	8.17	64.8
		500	20	10166	3147	4	10424	22898	37	157	208	7.90	63.8
		550	18	10196	3701	4	10504	24938	38	158	211	7.72	63.0
	20	450	37	10499	4445	7	11285	22747	43	151	194	8.80	67.3
		500	32	10620	5505	8	11608	26078	45	152	198	8.58	66.3
		550	31	10744	6408	8	11908	28897	46	153	200	8.45	65.7
	30	450	49	11028	5267	10	12532	23384	48	147	185	9.50	70.5
		500	45	11283	6649	11	13208	27548	51	147	187	9.32	69.5
		550	41	11533	7791	12	13814	31061	54	148	189	9.23	69.0
	38	450	58	11569	5223	11	13594	22779	53	144	179	10.03	73.3
		500	57	11900	6702	13	14533	27221	56	145	181	9.88	72.4
		550	52	12280	7975	14	15446	31217	59	145	181	9.80	71.9

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 19 of 20)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
MK 20 ROCKEYE II : FMU 140 FUZE
3000 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 100 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	17	10139	2609	4	10351	19806	39	167	208	7.42	72.3
		500	16	10170	3167	4	10432	21920	40	168	211	7.27	71.7
		550	15	10200	3672	4	10509	23716	40	169	213	7.17	71.3
	20	450	28	10531	4692	7	11374	22536	45	163	202	7.83	73.9
		500	26	10648	5602	8	11670	25340	47	164	204	7.73	73.4
		550	25	10756	6343	8	11927	27655	48	164	204	7.67	73.1
	30	450	39	11117	5798	10	12808	23923	52	159	196	8.26	75.9
		500	37	11375	6937	11	13425	27393	54	160	197	8.20	75.5
		550	36	11604	7794	12	13931	30148	56	160	197	8.17	75.3
	38	450	48	11679	5986	12	14056	23892	56	157	191	8.58	77.8
		500	46	12065	7219	13	14968	27720	59	157	192	8.53	77.4
		550	44	12408	8132	14	15708	30779	62	157	192	8.52	77.2
5000	10	450	20	10135	2592	4	10345	20167	38	169	215	7.11	69.5
		500	17	10166	3171	4	10427	22414	39	171	218	6.93	68.8
		550	16	10196	3689	4	10505	24290	40	172	220	6.81	68.3
	20	450	31	10515	4606	7	11336	22728	44	165	207	7.56	71.4
		500	27	10638	5603	8	11652	25823	46	166	209	7.43	70.7
		550	26	10754	6414	8	11929	28354	48	166	210	7.35	70.3
	30	450	43	11070	5620	10	12692	23854	50	161	199	8.05	73.8
		500	39	11336	6873	11	13347	27660	53	161	201	7.96	73.1
		550	37	11575	7846	12	13895	30728	55	162	201	7.92	72.8
	38	450	53	11592	5699	12	13829	23498	55	158	194	8.42	75.9
		500	49	11999	7079	13	14814	27764	58	158	195	8.35	75.4
		550	46	12354	8144	14	15623	31205	61	159	195	8.32	75.1
10000	10	450	24	10135	2548	4	10340	20421	37	171	221	6.81	67.0
		500	20	10166	3147	4	10424	22801	38	173	226	6.60	66.0
		550	18	10196	3701	4	10504	24835	39	175	229	6.45	65.4
	20	450	37	10499	4445	7	11285	22680	43	166	212	7.32	69.1
		500	32	10620	5505	8	11608	26006	45	168	215	7.14	68.2
		550	31	10744	6408	8	11908	28822	47	169	217	7.04	67.6
	30	450	49	11028	5267	10	12532	23336	49	162	202	7.88	71.9
		500	45	11283	6649	11	13208	27497	52	163	205	7.74	71.0
		550	41	11533	7791	12	13814	31009	54	163	206	7.66	70.5
	38	450	58	11569	5223	11	13594	22743	53	158	196	8.30	74.5
		500	57	11900	6702	13	14533	27182	57	159	198	8.18	73.6
		550	52	12280	7975	14	15446	31178	60	160	199	8.12	73.1

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Figure 2-64. Loft Delivery Data, Mk 20 Rockeye II, FMU-140 Fuze (Sheet 20 of 20)

2.7 CBU-78 CLUSTER BOMB (GATOR)

2.7.1 Description. The CBU-78 Gator (see Figure 2-65) is a freefall dispenser/cluster mine weapon that provides the means for rapidly planting a minefield. The mines are extremely effective against armored vehicles and personnel in close-air-support (CAS) roles or interdiction missions for area denial and enemy support element harassment. The ability to preflight select a mine self-destruct time allows tactical counter-attack of friendly troops in terrain previously sown with mines. The dispenser is similar to the Rockeye and is readily identified by the large stenciled Gator on the dispenser side. The dispenser contains a total of 60 mines; 45 BLU-91/B anti-tank (AT) and 15 BLU-92/B anti-personnel (AP) (see Figure 2-66).

The CBU-78 Gator is received and loaded in an all-up-round (AUR) configuration consisting of a SUU-58/B dispenser, Mk 339 Mod 1 mechanical time fuze or a FMU-140/B dispenser proximity fuze (DPF) for dispenser opening, payload of the 45 BLU-91/B AT mines and 15 BLU-92/B AP mines, a tether-kit, and a KMU-428/B (kit modification unit) which adapts the mines to the dispenser and provides the appropriate electrical interface for mine activation/self destruct (SD) time selection. The tether-kit consists of a lanyard/cable that retains the Mk 339 fuze impeller sealing band and fin release band with the dispenser at weapon release to alleviate possible aircraft damage from loose hardware. Two yellow bands located immediately behind the nose fairing denote the high explosive contents. For Gator configuration variants, see Figure 2-67.

2.7.2 SUU-58/B Dispenser. The SUU-58/B dispenser is a one-piece container enclosing the mine payload which is pressurized with nitrogen to prevent mine oxidation and rusting. A linear shaped-charge, attached to the container inner wall, severs the container longitudinally when the Mk 339/FMU-140/B fuze functions, allowing the mines to dispense. With the exception of the KMU-428/B installation, the dispenser and arming wires are essentially the same as the Mk 7 Rockeye dispenser.

The Mk 339 Mod 1 mechanical fuze is factory preset to provide an option of either 1.2 second (primary mode) or 4.0 second (option mode) functioning time. The 1.2 second functioning time is used for low altitude releases to ensure that the mines have adequate time of fall for effective dispersal pattern prior to impact. The 4.0 second functioning time is used for higher releases to delay dispenser opening, thus minimizing cross-wind effects on the free-fall dispenser and subsequently dispersed mines. To change the preset Mk 339 fuze functioning time (primary/option), use the two fuze time setting holes on the nose fairing. The fuze sealing band tether lanyard is also routed through the fuze time setting holes. In-flight selection of either primary or option mode is available with ZRF configured racks.

The FMU-140/B DPF provides two in-flight selectable functioning modes, proximity (primary) and 1.2 second arm and fire (option). The proximity mode is normally used for loft/high altitude deliveries and the 1.2 second arm and fire mode is used for low altitude dive and level deliveries.

Two fuze arming wires (primary/option) are installed in conduits that are slotted at various intervals to allow positioning of the arming wire/lanyard extractor to correspond with placement of the arming units on different suspension equipment. The tail fin actuating release wire is ALWAYS POSITIVE ARMED to the suspension equipment at a designated point. Fin extension after release provides weapon stabilization until dispenser opening.

NOTE

Pilot option delivery mode is reliable only when the zero retention force (ZRF) arming unit is incorporated in the bomb rack. Bomb racks not using ZRF arming units (arming solenoids) are not reliable and delivery mode (primary/option) must be preflight selected.

Placement of the extractor for the primary and option wires is labeled on the dispenser for

most aircraft. This placement/positioning of the extractors was determined by the aircraft suspension equipment arming unit location and circuitry. For the primary mode, ONLY the primary wire/lanyard is withdrawn at weapon release. To select the option mode, BOTH fuze arming wires/lanyards must be withdrawn. Failure to withdraw the primary wire during any normal delivery will cause the weapons to dud since it prevents the Mk 339 fuze impeller from turning and prevents the FMU-140/B thermal battery initiation. Withdrawal of the primary wire/lanyard is also required to activate the weapon thermal battery firing device (BFD) which provides the required electrical energy for mine activation and self-destruct functioning.

2.7.3 KMU-428/B Kit Modification Unit. The KMU-428/B physically and electrically adapts the mines to the dispenser. The kit consists of a thermal battery firing device (BFD) and battery, capacitor packs for energy storage, an event switch to trigger energy transfer, appropriate electrical assembly with interface harness, dunnage, and a self-destruct (SD) selector switch. The thermal (BFD) is located on the upper rear of the dispenser and is initiated by withdrawal of the primary fuze arming wire. The SD selector switch is located on the bottom rear of the dispenser and allows preflight selection of one of three mine self-destruct times

NOTE

Failure to preselect a self-destruct time prevents arming of the mines after dispenser opening. The three self-destruct times are:

T1 = 3.2 to 4 hours
T2 = 38.2 to 48 hours
T3 = 288.0 to 360 hours

Activation of the thermal battery at weapon release charges the capacitor packs. Firing of the linear-shaped charge at Mk 339/FMU-140 functioning, fractures a break in the events switch which triggers the transfer of energy from the capacitor packs to the individual mine lithium reserve cells. Mine arming/activation is initiated and the preflight selected self-destruct time is programmed (set) into each mine. Mine air travel/ground impact and elapsed time are required to complete the arming/activation cycle (approximately 2 minutes).

2.7.4 Mk 339 Mechanical Time Fuze. The Safe/Armed status of the CBU-78 Gator can be checked by viewing the Mk 339 fuze through the nose fairing observation window. The fuze is armed if the red Safe/Arm indicator pin has penetrated upward into the indicator bubble through the green foil disk. The fuze function time setting can be checked by viewing the primary and option time dials through the fuze setting dial observation window. The primary dial is black and the option dial is white. Refer to the Mk 339 Mechanical Time Fuze description for additional details. Arming requirements of the submunitions (mines) do not govern the minimum release speed required for Gator. MINIMUM release speed to ensure proper Mk 339 fuze functioning is 200 KIAS.

2.7.5 FMU-140/B Dispenser Proximity Fuze (DPF). The SAFE/ARM status of the CBU-78 Gator is readily apparent as protrusion of the red tipped indicator pitot tube through the radome which indicates the DPF is armed. The preflight selectable ARM TIME and HOF (height-of-function) switches are located on the right side of the DPF. Refer to the FMU-140/B description for additional details. Arming requirements of the submunitions (mines) do not govern the minimum release speed required for Gator. Minimum release speed to ensure proper FMU-140/B DPF functioning is 225 KCAS.

2.7.6 BLU-91/B and BLU-92/B Mines . The primary differences between the BLU-91/B and BLU-92/B mines are the warheads and target sensor. The BLU-91/B anti-tank (AT) unit detonates through a magnetic sensor which detects a vehicle overpass. The BLU-92/B anti-personnel (AP) mine uses tripwires expelled from the mine for target detection and firing/detonation. Mine arming is initiated at dispenser opening when the event switch triggers the capacitor packs to charge the mine lithium reserve cells. A safe and arm (S/A) in each mine provides an out-of-line firing train until unlocked. Removal of the bore-rider clip during free-fall frees the spring loaded

borerider which allows firing of an explosive actuated micro-piston, approximately 2 minutes after mine initiation (dispenser opening), and unlocks the spring loaded slider allowing alignment of the firing train. Mine detonation is initiated by either target detection, mine disturbance, premature low lithium reserve cells voltage or preset self-destruct mode. Mine dispersion after dispenser opening is accomplished by a shape adapter attached to each mine.

The BLU-91/B AT uses a bidirectional mass focus warhead designed primarily for use against tanks. The warhead contains RDX/Esthane explosive which will penetrate 2.5 inches of 300 BHJ armorplate at an 18-inch standoff. The magnetic sensor will only detonate the mine if the target passes over the mine. Elapsed time between target sensing and warhead detonation is approximately 30 milliseconds.

The BLU-92/B AP uses a fragmentation case and ground burst omnidirectional warhead with pressure sensitive tripwires sensors. The warhead contains Composition B explosive and is designed to inhibit minefield clearing efforts. The warhead has an effective Pk within a radius of 16 feet. Each mine has a total of eight tripwires (four per face) available. Only the four from the up-face (exposed side) are deployed by a bidirectional explosive pressure cartridge and spring mechanism simultaneously with completion of mine arming. Maximum tripwire deployment length is 40 feet.

2.7.7 Preflight Checks. Refer to NWP 55-3-AV8B PG, Pocket Guide for current Preflight Checks.

2.7.8 Delivery Data Tables. Delivery data tables and release error sensitivities tables are given for fuze function altitudes. Data are provided for minimum safe release altitudes which ensure aircraft terrain avoidance and sufficient weapon time of fall to allow the dispenser to open and the bomblets to arm. The terrain avoidance minimum altitude computations and assumptions are identical to that used for GP bomb delivery data tables (see Figure 2-68 and Figure 2-69).

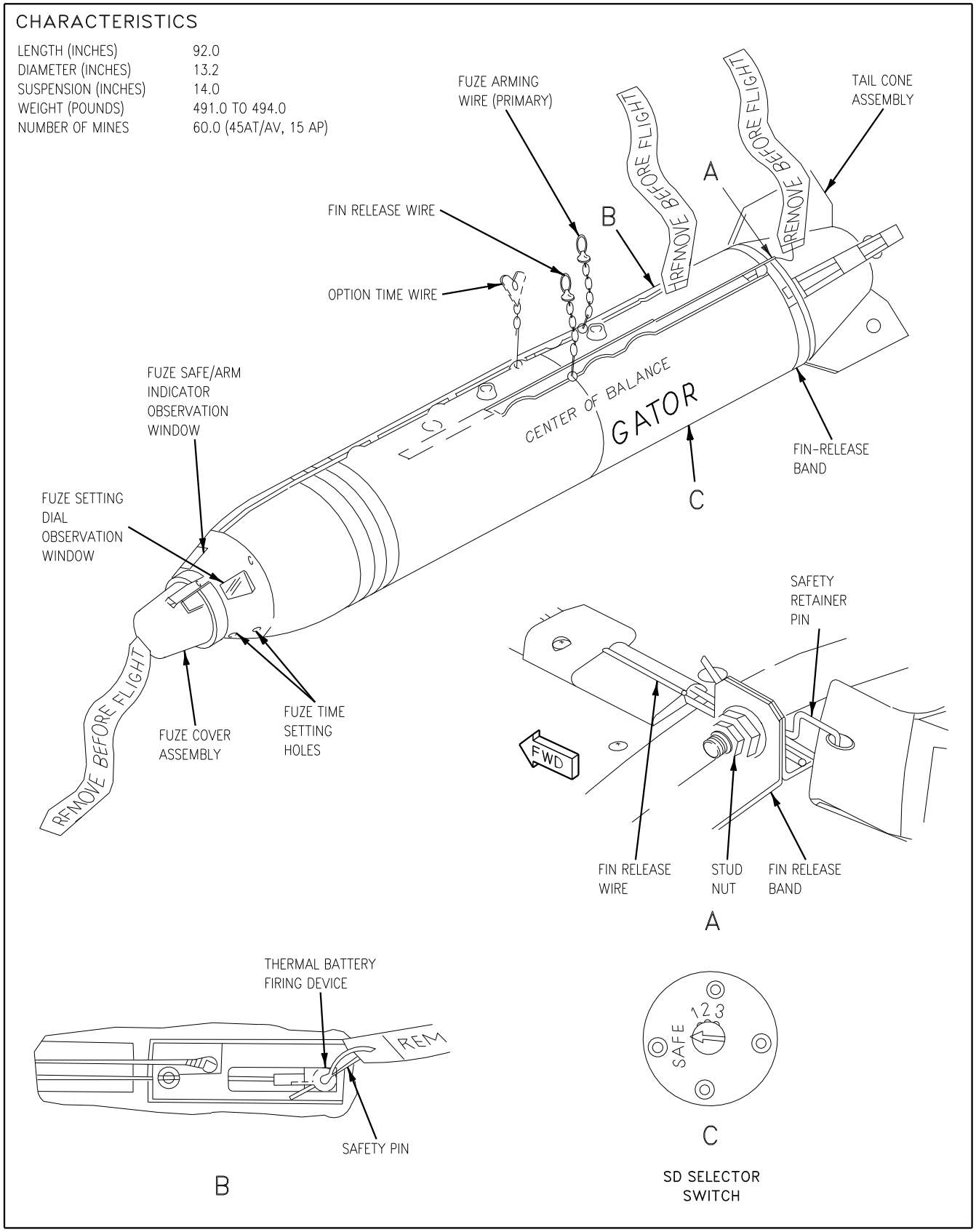
Cluster bomb delivery data place the heaviest bomblet concentration on target. Heaviest concentration occurs at 0.41 pattern lengths from the rear of the pattern, rather than at the center of the pattern.

Cluster bomb pattern data provide length and width of the effective elliptical pattern of the bomblets at impact. The effective pattern includes 95 percent of the bomblets. The pattern data also provide information on the average bomblet density for the effective pattern. The numbers in the tables represent as an average, the number of bomblets found per 10,000 square meters in the pattern.

Delivery Data were generated for FMU-140 fuze HOF settings. Care should be taken when applying these data to canister with a Mk 339 fuze.

2.7.9 Loft Delivery Data Tables. Loft delivery data tables are provided for CBU-78 Gator. A loft delivery with a wing-over escape maneuver was used. A 3g load factor (or the maximum attainable within the angle-of-attack limits) is maintained at the weapon's release. Immediately after release, the aircraft is rolled 135É in 2.0 seconds and recovery is initiated. Release and impact data are provided for various flight path angles, run-in velocities, run-in altitudes, and target altitudes (see Figure 2-70).

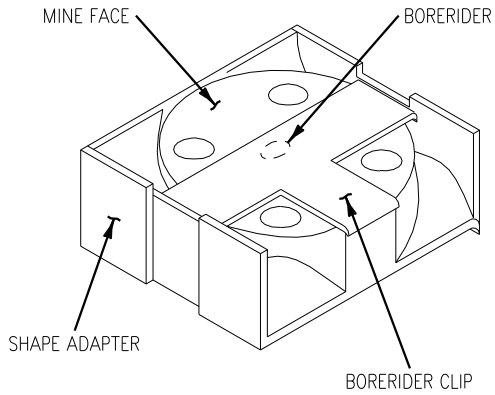
Aircraft pitch attitude, which is the flight path angle plus angle of attack, is provided at the indicated release altitude (REL ALT). It should be noted that the release altitude is higher than the run-in altitude. Also, the run-in altitude is the same as the pullup altitude. At apogee (the point of maximum altitude), weapon downrange travel (DRT) from release, time of flight (TOF) from release, and altitude (ALT) are provided. Weapon downrange travel and time of flight are then provided from the aircraft initial pullup point (prior to release) to impact.



AV8BB-TAC-05-(54-1)09-CATI

Figure 2-65. CBU-78 Gator Dispenser and Mine Cluster

CHARACTERISTICS	BLU-91/B	BLU-92/B
LENGTH (INCHES)	5.75	5.75
WIDTH (INCHES)	5.0	5.0
HEIGHT (INCHES)	2.6	2.6
WEIGHT (POUNDS)	4.3	3.7
EXPLOSIVE	RDX/ESTHANE	COMP B
WEIGHT (POUNDS)	1.3	0.905



AV8BB-TAC-05-(55-1)09-CATI

Figure 2-66. BLU-91/B Anti-Tank (AT) and BLU-92/B Anti-Personnel Mines

CBU-78 (GATOR) CONFIGURATIONS			
COMPONENTS	NOMENCLATURE		REMARKS
	CBU-78/B	CBU-78/B	
SUU-58/B Dispenser	•	•	With exception of KMU-428/B installation, dispenser/arming wires are essentially same as MK 7 Dispenser
MK 339 Mod 1 Mechanical Fuze	•		Preflight selectable arm times
FMU-140/B Proximity Fuze		•	Preflight selectable arm time and height of function
KMU-428/B Kit	•	•	Physically/electrically adapts mines to dispenser
BLU-91/B AT Mines (45 mines)	•	•	Detonates through activated magnetic sensor
BLU-92/B AP Mines (15 mines)	•	•	Detonates through activated trip wire
REMARKS	with AWC-372 becomes CBU-78B/B	with AWC-372 & 373 becomes CBU-78A/B	AWC-372: new fin band retention system (backing plate); AWC-373: incorporates FMU-140/B Fuze

Figure 2-67. CBU-78 Gator Configurations

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
300 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	340	1.2	6.1	2016	2044	207	702	817	13.63	167
	400	2.1	6.6	2616	2647	191	623	773	16.21	152
	500	3.2	7.1	3284	3322	190	541	723	19.99	151
	600	4.0	7.5	3787	3834	196	482	681	23.79	157
	700	4.7	7.9	4205	4263	203	437	643	27.83	165

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

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Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 1 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
300 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	340	1.2	6.2	2188	2214	186	785	919	10.83	154
	400	2.2	6.7	2856	2883	170	696	868	12.93	139
	500	3.2	7.2	3596	3631	169	603	812	15.96	138
	600	4.0	7.6	4153	4197	174	537	766	18.98	143
	700	4.7	8.0	4616	4668	181	486	725	22.17	151
	800	5.3	8.4	5017	5081	189	445	686	25.63	158

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

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Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 2 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
300 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	340	1.2	6.3	2355	2380	167	869	1021	8.80	143
	400	2.2	6.7	3087	3113	152	768	961	10.58	129
	500	3.2	7.3	3897	3929	150	663	897	13.14	128
	600	4.0	7.7	4504	4544	155	590	847	15.65	132
	700	4.7	8.1	5007	5056	161	533	802	18.28	139
	800	5.4	8.5	5444	5502	168	487	760	21.13	146

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

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Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 3 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
500 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN WIDTH (FT)	SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	540	1.2	8.2	2153	2220	286	966	908	8.91	246
	600	2.1	8.7	2769	2833	253	890	853	10.29	213
	800	4.0	9.7	3974	4054	237	752	756	13.74	199
	1000	5.3	10.4	4779	4883	245	667	697	16.82	206
	1200	6.4	11.0	5420	5551	257	604	651	19.88	218
	1400	7.3	11.6	5964	6126	269	554	612	23.04	231
	1600	8.2	12.1	6443	6639	282	513	578	26.35	243
	1800	9.0	12.6	6876	7107	295	479	547	29.83	256
	2000	9.7	13.1	7272	7542	308	450	519	33.48	268
	2200	10.4	13.6	7640	7951	320	424	493	37.32	280
	2400	11.0	14.0	7985	8338	331	403	470	41.32	292
-10	700	1.2	6.3	1983	2103	204	728	769	13.96	165
	800	1.8	6.6	2336	2470	195	692	742	15.22	155
	900	2.3	6.9	2660	2808	191	659	719	16.49	152
	1000	2.7	7.2	2960	3125	190	631	696	17.78	151
	1100	3.2	7.5	3241	3422	191	605	676	19.11	153
	1200	3.6	7.7	3505	3704	194	581	657	20.47	155
	1300	4.0	8.0	3754	3973	197	559	638	21.88	159
	1400	4.4	8.3	3991	4230	201	540	621	23.32	163
	1500	4.8	8.5	4218	4477	206	521	604	24.81	167
	1600	5.1	8.7	4435	4714	210	504	588	26.33	172
	1800	5.8	9.2	4844	5167	220	474	558	29.53	181
	2000	6.5	9.7	5224	5594	230	447	531	32.89	191
	2200	7.1	10.2	5582	6000	240	424	505	36.44	201
-20	1035	1.8	5.1	2101	2342	147	483	583	27.77	109
	1100	2.0	5.2	2227	2484	147	474	574	28.75	110
	1200	2.3	5.5	2417	2699	149	461	559	30.30	112
	1300	2.6	5.7	2602	2909	152	449	546	31.89	114

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

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Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 4 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
500 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	540	1.2	8.3	2327	2389	260	1081	1018	7.10	228
	600	2.1	8.8	3010	3069	228	993	953	8.26	197
	700	3.2	9.3	3770	3834	215	900	886	9.79	184
	800	4.0	9.8	4343	4416	213	834	840	11.16	182
	900	4.7	10.2	4818	4901	215	781	802	12.46	185
	1000	5.3	10.5	5231	5325	220	737	771	13.74	189
	1100	5.9	10.9	5600	5707	225	699	744	15.01	194
	1200	6.4	11.2	5935	6055	230	666	720	16.30	199
	1300	6.9	11.4	6245	6378	236	636	697	17.60	205
	1400	7.4	11.7	6533	6681	242*	610	677	18.94	211
	1500	7.8	12.0	6803	6966	248	586	657	20.30	217
	1600	8.2	12.3	7058	7237	254	563	639	21.70	223
	1700	8.6	12.5	7300	7496	260	543	622	23.14	229
	1800	9.0	12.8	7531	7743	266	524	605	24.62	235
	2000	9.7	13.3	7964	8212	277	491	574	27.71	246
	2100	10.1	13.5	8169	8434	283	476	559	29.32	252
	2300	10.7	14.0	8556	8860	294	450	532	32.66	263
	2500	11.4	14.4	8920	9264	305	426	507	36.17	273
-10	710	1.2	6.2	2115	2231	181	798	858	11.41	149
	800	1.7	6.5	2449	2576	173	763	831	12.32	141
	900	2.1	6.8	2793	2934	168	728	805	13.34	137
	1000	2.6	7.1	3114	3271	167	696	780	14.39	136
	1100	3.0	7.3	3415	3588	168	667	757	15.46	137
	1200	3.4	7.6	3699	3889	170	641	736	16.57	139
	1300	3.8	7.9	3969	4176	173	617	715	17.71	142
	1400	4.2	8.1	4226	4452	176	595	696	18.88	145
	1500	4.6	8.4	4471	4716	180	574	677	20.10	149
	1600	4.9	8.6	4707	4971	184	555	659	21.35	153
	1700	5.3	8.9	4933	5218	188	537	642	22.64	157
	1800	5.6	9.1	5151	5457	192	521	626	23.97	162
	1900	5.9	9.3	5362	5689	197	505	610	25.34	166
	2000	6.3	9.6	5566	5914	201	491	595	26.76	170
	2100	6.6	9.8	5763	6134	206	477	580	28.21	175
	2200	6.9	10.0	5955	6348	210	465	566	29.70	179
	2300	7.2	10.2	6141	6558	215	453	552	31.24	184
-20	1139	2.0	5.1	2386	2644	126	499	627	24.98	96
	1200	2.2	5.2	2506	2779	128	491	618	25.77	97
	1250	2.3	5.3	2604	2888	129	484	610	26.42	99

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

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Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 5 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
500 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	540	1.2	8.4	2495	2553	237	1199	1129	5.77	213
	600	2.2	8.9	3243	3298	206	1095	1051	6.79	183
	700	3.2	9.4	4072	4132	193	988	973	8.13	170
	800	4.0	9.9	4695	4763	191	912	919	9.32	169
	900	4.7	10.3	5211	5288	194	853	876	10.46	171
	1000	5.4	10.7	5659	5747	197	803	841	11.57	175
	1100	5.9	11.0	6059	6158	202	761	810	12.67	180
	1200	6.5	11.3	6422	6533	207	724	783	13.79	185
	1300	6.9	11.6	6757	6880	213	691	758	14.92	190
	1400	7.4	11.9	7068	7205	218	661	735	16.08	196
	1500	7.8	12.2	7359	7511	224	634	714	17.26	201
	1600	8.3	12.4	7634	7800	229	609	694	18.48	207
	1700	8.7	12.7	7895	8076	235	587	675	19.72	212
	1800	9.0	12.9	8144	8341	240	566	657	21.01	218
	1900	9.4	13.2	8382	8594	245	547	640	22.33	223
	2000	9.8	13.4	8610	8839	251	529	623	23.70	228
	2100	10.1	13.7	8829	9075	256	513	607	25.10	234
	2200	10.5	13.9	9041	9304	261	497	592	26.54	239
	2400	11.1	14.4	9443	9743	272	469	563	29.55	249
	2600	11.7	14.8	9822	10160	281	445	537	32.72	259
	2700	12.0	15.0	10003	10361	286	434	524	34.36	264
-10	720	1.2	6.2	2241	2353	160	866	947	9.52	136
	800	1.6	6.4	2549	2672	153	832	921	10.19	130
	900	2.0	6.7	2911	3047	148	794	891	11.05	125
	1000	2.4	7.0	3249	3400	147	759	863	11.93	124
	1100	2.9	7.2	3569	3734	147	727	837	12.83	124
	1200	3.3	7.5	3871	4053	149	698	813	13.76	126
	1300	3.7	7.7	4158	4357	151	672	790	14.72	128
	1400	4.0	8.0	4433	4648	154	647	768	15.72	131
	1500	4.4	8.2	4695	4929	157	624	747	16.74	135
	1600	4.7	8.5	4947	5199	161	603	728	17.80	138
	1700	5.1	8.7	5190	5461	164	584	709	18.89	142
	1800	5.4	9.0	5424	5715	168	565	690	20.02	146
	1900	5.8	9.2	5650	5961	172	548	673	21.18	150
	2000	6.1	9.4	5868	6200	176	532	656	22.39	154
	2100	6.4	9.6	6081	6433	180	517	640	23.63	158
	2200	6.7	9.9	6286	6660	184	503	624	24.90	162
	2300	7.0	10.1	6487	6882	189	489	609	26.22	166
	2400	7.3	10.3	6681	7099	193	477	594	27.57	170

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

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Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 6 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	740	1.2	10.0	2231	2351	361	1182	1043	6.33	320
	900	3.2	11.1	3550	3662	288	1027	921	8.25	248
	1000	4.0	11.5	4075	4196	280	970	877	9.18	241
	1100	4.7	11.9	4512	4644	278	925	843	10.02	239
	1200	5.3	12.3	4892	5037	279	887	814	10.83	241
	1300	5.9	12.6	5233	5392	282	854	789	11.60	244
	1400	6.4	12.9	5542	5717	286	825	767	12.35	247
	1500	6.9	13.2	5828	6018	291	799	747	13.10	252
	2000	9.0	14.4	7019	7299	317	698	670	16.71	278
	3000	12.2	16.6	8777	9275	369	574	569	23.96	329
	4000	14.8	18.6	10135	10896	417	498	500	31.41	376
	5000	17.1	20.4	11278	12336	459	447	449	38.95	417
	5800	18.7	21.8	12090	13409	490	418	417	44.90	447
-10	885	1.2	8.1	2041	2225	275	977	899	8.90	235
	1000	1.8	8.5	2456	2652	251	934	866	9.65	212
	1200	2.7	9.1	3089	3314	235	873	819	10.93	196
	1300	3.2	9.4	3373	3615	232	846	798	11.56	193
	1400	3.6	9.6	3640	3900	231	822	780	12.19	193
	1500	4.0	9.9	3893	4172	232	799	762	12.82	193
	1600	4.4	10.1	4134	4432	234	778	746	13.45	195
	1700	4.8	10.4	4363	4682	236	759	731	14.08	197
	1800	5.1	10.6	4582	4923	239	741	717	14.71	200
	1900	5.5	10.8	4793	5156	242	724	704	15.34	203
	2000	5.8	11.0	4995	5381	245	708	691	15.98	206
	2100	6.2	11.3	5191	5600	249	693	679	16.62	210
	2200	6.5	11.5	5380	5812	253	678	667	17.27	214
	2300	6.8	11.7	5563	6019	257	665	656	17.92	218
	2400	7.1	11.9	5740	6222	261	652	645	18.57	221
	2500	7.4	12.1	5912	6419	265	640	635	19.23	226
	3000	8.8	13.1	6709	7349	286	587	590	22.58	246
	4000	11.3	15.0	8066	9003	326	510	518	29.58	286
	5000	13.5	16.8	9216	10485	364	458	464	36.80	323
	5700	15.0	18.0	9936	11455	388	430	434	41.87	346

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-7)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 7 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
-20	1035	1.2	6.5	1849	2119	200	765	750	13.62	161
	1100	1.4	6.6	1985	2270	195	754	741	13.99	157
	1200	1.7	6.8	2190	2497	190	737	728	14.57	152
	1300	2.0	7.0	2387	2718	188	721	715	15.15	150
	1400	2.3	7.3	2578	2934	186	707	702	15.74	148
	1500	2.6	7.5	2764	3145	186	692	691	16.33	148
	1800	3.5	8.1	3291	3751	189	654	658	18.15	151
	2000	4.1	8.5	3621	4136	193	631	638	19.39	156
	2200	4.6	8.9	3935	4508	199	610	620	20.66	161
	2300	4.9	9.1	4087	4689	201	601	611	21.30	164
	2400	5.1	9.3	4235	4868	204	591	602	21.95	166
	2500	5.4	9.4	4381	5044	207	582	594	22.60	169
	2600	5.6	9.6	4524	5218	211	574	586	23.25	173
	2700	5.9	9.8	4664	5389	214	565	578	23.91	176
	2800	6.1	10.0	4801	5558	217	557	570	24.58	179
	2900	6.4	10.2	4936	5725	220	550	563	25.25	182
	3000	6.6	10.4	5069	5890	224	542	556	25.93	185
	4000	8.8	12.2	6284	7449	257	482	494	32.86	218
	4900	10.7	13.7	7242	8744	285	442	450	39.26	246
-30	1805	2.6	6.2	2440	3035	149	533	552	26.56	113
	1900	2.9	6.4	2559	3188	151	527	545	27.20	115
	2000	3.1	6.6	2683	3347	152	520	538	27.88	117
	2100	3.3	6.8	2806	3505	154	514	532	28.56	119
	2200	3.5	6.9	2926	3661	157	508	526	29.24	121
	2300	3.7	7.1	3045	3816	159	502	520	29.92	123
	2400	3.9	7.3	3162	3969	161	497	514	30.61	126
	2500	4.2	7.5	3277	4122	164	491	508	31.31	128
	2600	4.4	7.6	3391	4273	166	486	502	32.00	131
	2700	4.6	7.8	3503	4423	169	481	496	32.70	133
	2800	4.8	8.0	3614	4572	171	476	491	33.40	136
	2900	5.0	8.1	3723	4719	174	472	486	34.10	138
	3000	5.2	8.3	3831	4866	177	467	481	34.81	141
	3100	5.4	8.5	3938	5011	179	462	476	35.51	143
	3200	5.6	8.7	4043	5156	182	458	471	36.22	146
	3300	5.8	8.8	4147	5300	185	454	466	36.93	149
	3400	6.0	9.0	4250	5442	187	450	461	37.64	151

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-8)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 8 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	740	1.2	10.1	2406	2517	331	1326	1171	5.03	298
	900	3.2	11.2	3864	3968	260	1141	1024	6.69	229
	1000	4.0	11.7	4444	4555	252	1075	972	7.48	221
	1100	4.7	12.1	4926	5047	251	1022	931	8.21	220
	1200	5.3	12.4	5345	5478	252	978	897	8.91	221
	1300	5.9	12.7	5719	5865	254	940	868	9.58	224
	1400	6.4	13.0	6059	6219	258	906	842	10.24	227
	1500	6.9	13.3	6373	6547	262	876	819	10.88	231
	2000	9.0	14.6	7678	7934	286	761	731	14.05	255
	3000	12.2	16.8	9594	10052	335	619	617	20.48	303
	4000	14.9	18.8	11068	11768	379	532	539	27.27	347
	5000	17.2	20.6	12304	13281	419	474	481	34.30	386
	6000	19.3	22.3	13388	14671	455	432	437	41.38	421
-10	905	1.2	8.1	2216	2393	245	1076	996	7.29	213
	1000	1.7	8.4	2573	2761	228	1037	965	7.81	196
	1100	2.1	8.7	2922	3122	217	1000	937	8.34	186
	1200	2.6	9.0	3247	3461	211	967	911	8.87	180
	1300	3.0	9.3	3551	3782	207	936	887	9.40	176
	1400	3.4	9.5	3839	4087	206	909	866	9.93	175
	1500	3.8	9.8	4112	4377	206	883	846	10.46	175
	1600	4.2	10.0	4372	4656	207	859	827	10.99	176
	1700	4.6	10.2	4621	4923	209	837	810	11.53	178
	1800	4.9	10.5	4859	5181	211	816	793	12.07	180
	1900	5.3	10.7	5088	5431	214	796	778	12.61	183
	2000	5.6	10.9	5308	5672	217	778	763	13.16	186
	2100	5.9	11.2	5521	5907	220	761	749	13.71	189
	2200	6.3	11.4	5726	6135	223	744	736	14.26	192
	2300	6.6	11.6	5926	6356	227	729	723	14.82	196
	2400	6.9	11.8	6119	6573	230	714	711	15.39	199
	2500	7.2	12.0	6307	6784	234	700	699	15.96	203
	3000	8.6	13.0	7175	7777	253	639	647	18.89	221
	4000	11.1	14.9	8653	9533	290	550	565	25.14	258
	5000	13.3	16.7	9904	11094	325	489	503	31.77	293
	6000	15.3	18.3	11002	12532	358	445	455	38.59	325

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-9)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 9 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
-20	1139	1.4	6.5	2145	2429	170	808	810	11.93	139
	1200	1.6	6.6	2273	2571	167	797	801	12.22	137
	1400	2.2	7.0	2679	3022	163	765	774	13.21	133
	1600	2.7	7.4	3063	3456	162	735	748	14.22	132
	1800	3.3	7.8	3429	3872	164	707	724	15.26	134
	2000	3.8	8.2	3778	4274	168	682	702	16.32	138
	2200	4.3	8.6	4112	4663	172	659	681	17.41	142
	2300	4.6	8.8	4274	4853	175	648	671	17.96	145
	2400	4.8	9.0	4433	5041	177	638	661	18.52	147
	2500	5.1	9.1	4588	5225	180	628	652	19.09	150
	2600	5.3	9.3	4741	5407	183	619	642	19.66	153
	2700	5.6	9.5	4891	5587	186	609	634	20.24	155
	2800	5.8	9.7	5038	5764	188	600	625	20.82	158
	2900	6.0	9.9	5183	5939	191	592	616	21.41	161
	3000	6.3	10.1	5326	6112	194	584	608	22.01	164
	4000	8.5	11.8	6634	7746	224	515	538	28.21	194
	5000	10.5	13.5	7778	9246	254	466	483	34.75	222
-30	2005	2.9	6.2	2777	3426	130	545	580	24.71	102
	2100	3.0	6.4	2899	3579	132	539	573	25.28	103
	2200	3.3	6.6	3025	3740	134	533	566	25.88	105
	2300	3.5	6.7	3149	3899	136	527	559	26.49	107
	2400	3.7	6.9	3272	4058	138	521	553	27.11	109
	2500	3.9	7.1	3393	4214	140	516	546	27.72	111
	2600	4.1	7.2	3513	4370	142	510	540	28.34	114
	2700	4.3	7.4	3631	4525	144	505	534	28.97	116
	2800	4.5	7.6	3748	4678	146	500	528	29.59	118
	2900	4.6	7.7	3863	4830	149	495	522	30.23	120
	3000	4.8	7.9	3977	4982	151	490	517	30.86	123
	3100	5.0	8.1	4090	5132	153	485	511	31.50	125

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-10)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 10 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	740	1.2	10.2	2575	2679	304	1474	1302	4.07	280
	900	3.2	11.3	4167	4263	236	1253	1124	5.55	213
	1000	4.0	11.8	4797	4900	228	1175	1062	6.26	206
	1100	4.7	12.2	5320	5432	227	1114	1014	6.92	204
	1200	5.4	12.5	5774	5897	228	1063	975	7.54	205
	1300	5.9	12.9	6179	6314	230	1020	941	8.14	207
	1400	6.5	13.2	6547	6695	233	982	912	8.73	211
	1500	6.9	13.5	6886	7047	237	948	886	9.31	214
	2000	9.0	14.8	8292	8530	259	818	786	12.16	237
	3000	12.3	17.0	10349	10775	305	659	659	18.00	282
	4000	15.0	19.0	11923	12576	347	562	573	24.26	324
	5000	17.3	20.8	13240	14153	385	497	509	30.88	361
	6000	19.4	22.5	14393	15594	419	451	460	37.66	395
-10	920	1.2	8.1	2366	2538	220	1176	1095	6.07	196
	1000	1.6	8.3	2678	2858	206	1139	1066	6.44	183
	1100	2.0	8.6	3043	3236	195	1097	1032	6.90	172
	1200	2.4	8.9	3386	3592	189	1059	1002	7.36	166
	1300	2.9	9.2	3709	3930	185	1025	975	7.82	163
	1400	3.3	9.4	4015	4252	184	993	950	8.28	161
	1500	3.7	9.7	4305	4559	183	964	927	8.74	161
	1600	4.0	9.9	4583	4854	184	937	906	9.21	161
	1700	4.4	10.1	4848	5138	185	912	886	9.68	163
	1800	4.7	10.4	5103	5411	187	888	867	10.15	165
	1900	5.1	10.6	5348	5676	189	866	849	10.62	167
	2000	5.4	10.8	5584	5932	192	845	832	11.10	169
	2100	5.7	11.1	5813	6180	195	825	817	11.59	172
	2200	6.1	11.3	6033	6422	198	807	801	12.08	175
	2300	6.4	11.5	6247	6657	201	789	787	12.58	178
	2400	6.7	11.7	6455	6887	204	773	773	13.08	181
	2500	7.0	11.9	6657	7111	207	757	760	13.59	185
	3000	8.4	12.9	7590	8161	224	688	701	16.20	202
	4000	10.9	14.8	9177	10011	259	587	609	21.86	237
	5000	13.1	16.6	10517	11645	292	518	539	27.99	269
	6000	15.2	18.2	11692	13141	323	468	485	34.42	300

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-11)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 11 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
-20	1265	1.6	6.5	2485	2789	144	842	864	10.73	122
	1300	1.7	6.6	2559	2870	143	836	859	10.88	121
	1500	2.3	7.0	2968	3325	141	802	829	11.75	119
	1700	2.8	7.4	3358	3763	141	771	801	12.65	120
	1900	3.3	7.8	3731	4187	144	743	775	13.57	122
	2200	4.1	8.3	4263	4797	149	704	739	15.00	127
	2300	4.3	8.5	4434	4995	151	693	728	15.49	129
	2400	4.6	8.7	4601	5189	153	681	717	15.99	132
	2500	4.8	8.9	4765	5381	156	670	707	16.49	134
	2600	5.0	9.1	4927	5571	158	660	696	17.00	137
	2700	5.3	9.2	5085	5758	161	650	686	17.51	139
	2800	5.5	9.4	5241	5942	163	640	677	18.03	142
	2900	5.7	9.6	5395	6125	166	631	667	18.56	144
	3000	6.0	9.8	5545	6305	169	622	658	19.09	147
	4000	8.1	11.5	6936	8007	196	546	579	24.70	174
	5000	10.1	13.2	8155	9565	223	491	518	30.74	201
-30	2249	3.1	6.3	3170	3887	114	551	599	23.66	93
	2300	3.2	6.4	3236	3970	115	548	596	23.94	94
	2400	3.4	6.5	3363	4132	116	542	589	24.49	96
	2500	3.6	6.7	3489	4292	118	536	582	25.05	98
	2600	3.8	6.9	3614	4452	120	530	575	25.61	100
	2700	4.0	7.0	3737	4610	122	525	568	26.18	102

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-12)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 12 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	940	1.2	11.7	2282	2468	432	1373	1185	4.80	391
	1000	2.1	12.2	2909	3076	371	1296	1122	5.37	331
	1100	3.2	12.8	3609	3773	335	1216	1057	6.08	296
	1200	4.0	13.2	4138	4309	321	1160	1011	6.67	282
	1300	4.7	13.6	4579	4760	316	1115	974	7.19	277
	1400	5.3	14.0	4962	5156	314	1077	944	7.68	275
	1500	5.9	14.3	5305	5513	315	1045	918	8.14	276
	2000	8.2	15.7	6666	6960	331	928	825	10.20	291
	4000	14.3	19.8	9994	10765	421	708	649	17.00	381
	6000	18.7	23.2	12206	13601	500	608	563	22.83	457
	8000	22.4	26.3	13976	16104	565	549	508	27.99	520
	10000	25.7	29.1	15500	18446	620	511	470	32.55	573
	12000	28.7	31.8	16865	20698	668	484	442	36.57	618
	13000	30.1	33.1	17503	21802	690	473	430	38.39	639
-10	1100	1.2	9.9	2168	2431	335	1182	1037	6.37	295
	1200	1.8	10.2	2529	2800	308	1145	1008	6.77	268
	1300	2.3	10.5	2860	3142	291	1113	981	7.15	252
	1400	2.7	10.8	3167	3462	281	1084	958	7.53	242
	1500	3.2	11.1	3453	3765	274	1057	937	7.89	235
	1600	3.6	11.4	3723	4052	270	1033	917	8.25	231
	1700	4.0	11.6	3978	4326	268	1010	899	8.60	229
	1800	4.4	11.9	4220	4588	268	990	883	8.94	229
	1900	4.8	12.1	4451	4840	268	970	867	9.28	229
	2000	5.1	12.3	4672	5082	269	952	853	9.62	230
	2100	5.5	12.6	4884	5317	271	935	839	9.95	232
	2200	5.8	12.8	5089	5544	273	919	827	10.28	234
	2300	6.2	13.0	5286	5764	275	904	815	10.61	236
	2400	6.5	13.2	5476	5979	278	890	803	10.93	239
	2500	6.8	13.4	5660	6188	281	876	792	11.25	241
	3000	8.3	14.4	6506	7164	297	817	745	12.83	258
	4000	10.9	16.3	7925	8878	333	730	674	15.86	293
	6000	15.2	19.6	10150	11791	401	623	581	21.57	359
	8000	18.8	22.6	11928	14363	460	560	521	26.78	416
	10000	22.0	25.4	13449	16760	511	518	479	31.46	465
	12000	25.0	28.1	14801	19054	556	489	448	35.62	507
	13000	26.4	29.4	15429	20176	576	477	436	37.52	526

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-13)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 13 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
-20	1240	1.2	8.2	1953	2314	255	991	893	8.83	217
	2000	3.5	9.8	3395	3940	221	878	802	11.10	183
	2200	4.1	10.2	3726	4327	222	854	782	11.69	184
	2300	4.3	10.4	3886	4516	223	843	773	11.99	185
	2400	4.6	10.6	4042	4701	225	832	764	12.28	187
	2500	4.9	10.7	4195	4883	226	822	756	12.57	188
	2600	5.1	10.9	4344	5063	228	812	748	12.87	190
	2700	5.4	11.1	4491	5240	230	802	740	13.16	192
	2800	5.6	11.3	4634	5414	233	793	732	13.45	194
	2900	5.9	11.5	4775	5586	235	784	725	13.74	197
	3000	6.1	11.7	4913	5756	237	776	718	14.03	199
	4000	8.4	13.4	6170	7353	265	704	656	16.91	226
	6000	12.4	16.6	8221	10178	322	609	571	22.45	281
	8000	15.8	19.5	9898	12727	373	551	514	27.59	331
	10000	18.9	22.3	11341	15120	418	512	473	32.23	374
	12000	21.8	24.9	12625	17418	458	484	444	36.38	411
-30	1805	2.2	7.5	2297	2921	178	771	719	14.08	143
	2000	2.6	7.8	2549	3240	177	756	706	14.64	142
	2200	3.1	8.2	2799	3560	178	741	693	15.21	142
	2400	3.5	8.5	3042	3875	180	727	681	15.78	144
	2500	3.7	8.7	3161	4030	181	721	675	16.06	146
	3000	4.8	9.5	3730	4787	190	690	648	17.48	154
	4000	6.8	11.1	4764	6221	211	640	602	20.28	175
	5000	8.6	12.6	5689	7574	234	601	565	23.01	197
	6000	10.3	14.1	6528	8867	258	570	534	25.66	220
	7000	12.0	15.5	7300	10114	280	545	508	28.19	241
	8000	13.5	16.9	8015	11324	300	524	487	30.60	261
	9000	15.0	18.3	8684	12507	320	507	469	32.88	280
	10000	16.5	19.6	9314	13666	339	492	453	35.04	297
-45	3027	3.7	7.3	2460	3900	134	550	513	27.69	103
	3100	3.8	7.4	2514	3991	135	548	511	27.88	104
	3200	4.0	7.6	2587	4115	136	546	509	28.14	106
	3300	4.1	7.7	2660	4239	138	543	506	28.41	107
	3400	4.3	7.9	2732	4362	139	541	504	28.67	108
	3500	4.5	8.0	2804	4485	141	539	502	28.92	110
	4000	5.3	8.7	3154	5094	149	528	490	30.20	118
	5000	6.8	10.1	3815	6289	165	509	470	32.64	134
	6000	8.3	11.5	4431	7459	181	493	453	34.95	149
	7000	9.8	12.8	5008	8607	197	480	439	37.12	164

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-14)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 14 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	940	1.2	11.8	2457	2631	398	1544	1333	3.80	365
	1000	2.1	12.3	3151	3306	339	1449	1255	4.30	307
	1100	3.2	12.9	3924	4076	305	1352	1175	4.92	273
	1200	4.0	13.4	4508	4665	291	1284	1119	5.44	260
	1300	4.7	13.8	4993	5160	286	1231	1076	5.90	255
	1400	5.3	14.1	5415	5593	284	1187	1040	6.33	253
	1500	5.9	14.5	5792	5983	285	1148	1009	6.74	253
	2000	8.2	15.9	7284	7554	299	1011	899	8.60	268
	4000	14.4	20.0	10910	11620	384	755	694	14.91	351
	6000	18.8	23.4	13302	14593	457	639	595	20.55	424
	8000	22.6	26.5	15211	17186	519	571	532	25.69	484
	10000	25.9	29.4	16850	19594	572	527	489	30.33	536
	12000	28.9	32.1	18317	21898	619	496	457	34.47	580
	13500	31.0	34.0	19335	23581	650	479	438	37.27	610
-10	1115	1.2	9.9	2328	2581	304	1312	1153	5.16	272
	1200	1.7	10.2	2649	2908	283	1276	1124	5.45	251
	1300	2.1	10.5	2999	3269	266	1237	1093	5.78	234
	1400	2.6	10.7	3326	3609	255	1203	1065	6.10	224
	1500	3.0	11.0	3634	3931	248	1172	1040	6.41	217
	1600	3.4	11.3	3923	4237	244	1143	1017	6.72	213
	1700	3.8	11.5	4198	4530	241	1117	996	7.02	210
	1800	4.2	11.8	4460	4810	240	1092	976	7.33	209
	1900	4.6	12.0	4711	5079	240	1070	958	7.63	209
	2000	4.9	12.2	4951	5339	240	1048	940	7.92	209
	2100	5.3	12.5	5181	5591	242	1028	924	8.22	211
	2200	5.6	12.7	5403	5834	243	1009	909	8.51	212
	2300	5.9	12.9	5618	6070	245	992	895	8.80	214
	2400	6.3	13.1	5825	6300	247	975	881	9.09	216
	2500	6.6	13.3	6025	6524	250	959	869	9.38	219
	4000	10.6	16.2	8494	9389	297	787	729	13.62	266
	6000	14.9	19.5	10913	12454	361	661	620	19.06	328
	8000	18.6	22.5	12839	15128	418	587	550	24.21	383
	10000	21.9	25.4	14482	17599	466	538	501	28.96	430
	12000	24.8	28.0	15938	19951	509	504	466	33.25	471
	13500	26.9	30.0	16942	21663	538	485	445	36.16	498

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-15)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 15 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
-20	1265	1.2	8.1	2087	2441	227	1079	980	7.39	196
	1500	1.9	8.6	2582	2987	208	1035	944	7.99	177
	1800	2.7	9.2	3170	3645	198	986	903	8.77	167
	2200	3.8	9.9	3889	4468	196	929	857	9.81	166
	2300	4.1	10.1	4058	4665	197	916	846	10.07	167
	2400	4.3	10.3	4225	4859	198	904	836	10.33	168
	2500	4.6	10.5	4387	5050	199	892	826	10.60	169
	2600	4.8	10.7	4547	5238	201	881	817	10.86	170
	2700	5.1	10.8	4703	5423	202	870	808	11.12	172
	2800	5.3	11.0	4857	5606	204	859	799	11.38	174
	2900	5.6	11.2	5007	5786	206	849	790	11.65	176
	3000	5.8	11.4	5155	5965	208	839	782	11.91	178
	4000	8.0	13.1	6508	7639	233	756	710	14.56	202
	6000	12.0	16.2	8725	10589	285	646	610	19.83	253
	8000	15.4	19.2	10538	13231	334	577	543	24.90	342
	10000	18.6	21.9	12098	15696	377	532	496	29.61	300
	12000	21.4	24.5	13482	18049	415	499	462	33.88	378
	12600	22.3	25.3	13871	18739	426	491	453	35.08	388
-30	2005	2.4	7.5	2642	3317	154	805	762	12.73	126
	3000	4.5	9.1	3873	4899	164	733	697	15.29	135
	4000	6.3	10.7	4969	6379	183	677	645	17.90	154
	5000	8.1	12.2	5955	7776	204	633	602	20.51	175
	6000	9.8	13.6	6855	9110	225	598	567	23.07	195
	7000	11.5	15.0	7683	10394	246	569	537	25.57	215
	8000	13.0	16.4	8453	11639	265	545	512	27.98	234
	9000	14.5	17.8	9174	12851	284	525	491	30.29	252
	10000	16.0	19.1	9852	14038	302	509	473	32.50	269
	10800	17.1	20.1	10368	14971	315	497	460	34.18	282
-45	3468	4.1	7.4	2865	4498	119	553	523	27.05	95
	3600	4.3	7.6	2963	4663	121	550	519	27.37	97
	3700	4.4	7.8	3037	4787	122	547	517	27.62	98
	3800	4.6	7.9	3110	4910	124	545	514	27.86	100
	3900	4.7	8.0	3183	5034	125	543	512	28.11	101
	4000	4.9	8.2	3255	5157	127	541	510	28.35	102
	4500	5.6	8.9	3608	5768	134	531	498	29.55	110
	5000	6.4	9.5	3950	6372	141	521	488	30.72	117
	5500	7.1	10.2	4281	6970	149	512	478	31.88	124
	6000	7.8	10.9	4602	7561	156	504	469	33.00	131

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-16)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 16 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
0	940	1.2	11.9	2627	2790	368	1721	1486	3.06	344
	1000	2.2	12.4	3385	3530	311	1604	1388	3.51	287
	1100	3.2	13.0	4227	4368	278	1486	1291	4.07	255
	1200	4.0	13.5	4861	5007	265	1405	1224	4.54	242
	1300	4.7	13.9	5387	5542	260	1342	1172	4.97	237
	1400	5.4	14.3	5844	6010	258	1290	1130	5.36	235
	1500	5.9	14.6	6252	6430	258	1245	1093	5.74	235
	2000	8.3	16.1	7862	8113	272	1087	966	7.44	249
	4000	14.5	20.2	11750	12412	351	796	733	13.38	328
	6000	19.0	23.7	14299	15507	421	666	623	18.84	397
	8000	22.7	26.7	16326	18181	481	590	553	23.94	456
	10000	26.1	29.6	18065	20648	532	541	504	28.61	506
	12000	29.1	32.3	19619	22998	576	507	469	32.83	549
	13900	31.8	34.8	20975	25162	614	483	444	36.42	585
-10	1125	1.2	9.8	2462	2707	278	1445	1273	4.25	254
	1200	1.6	10.1	2755	3005	260	1408	1242	4.47	236
	1300	2.0	10.4	3123	3383	243	1363	1206	4.75	220
	1400	2.4	10.6	3468	3740	232	1322	1173	5.04	209
	1500	2.9	10.9	3793	4079	225	1286	1143	5.32	202
	1600	3.3	11.2	4101	4402	220	1252	1115	5.59	197
	1700	3.7	11.4	4393	4711	217	1221	1090	5.87	195
	1800	4.0	11.7	4673	5007	216	1193	1067	6.14	193
	1900	4.4	11.9	4940	5293	215	1166	1045	6.41	193
	2000	4.7	12.1	5196	5568	215	1141	1025	6.68	193
	2100	5.1	12.4	5443	5834	216	1118	1006	6.94	194
	2200	5.4	12.6	5681	6092	217	1096	989	7.21	195
	2300	5.7	12.8	5911	6343	219	1076	972	7.47	197
	2400	6.1	13.0	6133	6586	221	1056	956	7.74	198
	2500	6.4	13.2	6349	6823	223	1037	941	8.00	201
	4000	10.4	16.1	9001	9850	267	840	779	11.94	244
	6000	14.8	19.4	11593	13053	327	695	655	17.14	303
	8000	18.5	22.5	13650	15821	380	611	576	22.20	356
	10000	21.7	25.3	15399	18361	427	556	521	26.96	401
	12000	24.7	28.0	16947	20766	469	518	482	31.32	442
	13900	27.4	30.4	18286	22969	504	491	453	35.08	475

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-17)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 17 of 18)

AV-8B DELIVERY DATA
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	CANISTER TIME TO FUNCTION (SEC)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	PATTERN SIZE WIDTH (FT)	PATTERN SIZE LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	TRAJECTORY DROP (MIL)
-20	1295	1.2	7.9	2226	2576	200	1164	1065	6.30	178
	2000	3.1	9.3	3661	4172	173	1032	955	7.93	151
	2200	3.6	9.7	4028	4590	173	1001	929	8.40	151
	2300	3.8	9.9	4206	4794	173	986	917	8.64	151
	2400	4.1	10.0	4381	4995	174	972	905	8.88	152
	2500	4.3	10.2	4552	5194	175	959	894	9.11	153
	2600	4.6	10.4	4720	5389	176	946	883	9.35	154
	2700	4.8	10.6	4885	5582	178	934	872	9.59	156
	2800	5.0	10.8	5047	5772	179	922	862	9.83	157
	2900	5.3	10.9	5207	5960	181	910	852	10.07	159
	3000	5.5	11.1	5363	6145	183	899	843	10.31	161
	4000	7.7	12.8	6799	7888	205	804	761	12.77	183
	6000	11.6	16.0	9163	10952	253	679	647	17.78	231
	8000	15.1	18.9	11097	13680	299	602	571	22.75	276
	10000	18.2	21.6	12759	16211	340	550	517	27.46	316
	12000	21.1	24.3	14233	18616	377	513	478	31.80	351
	13000	22.5	25.5	14915	19786	394	499	463	33.82	368
-30	2249	2.7	7.6	3043	3784	133	828	797	11.84	113
	2400	3.0	7.8	3241	4033	134	816	785	12.19	114
	3000	4.2	8.7	3992	4994	141	771	743	13.63	121
	4000	6.0	10.3	5140	6513	158	710	684	16.07	138
	5000	7.7	11.8	6180	7950	177	662	637	18.55	157
	6000	9.4	13.2	7132	9320	197	623	597	21.02	176
	7000	11.0	14.6	8010	10638	216	591	564	23.46	195
	8000	12.6	16.0	8828	11913	234	564	536	25.84	213
	9000	14.0	17.3	9593	13154	252	542	512	28.15	230
	10000	15.5	18.6	10314	14366	269	524	491	30.37	246
-45	3950	4.5	7.6	3300	5147	106	552	528	26.81	89
	4000	4.6	7.7	3337	5209	107	551	526	26.93	90
	4100	4.7	7.8	3412	5334	108	549	524	27.16	91
	4200	4.8	8.0	3486	5458	109	547	522	27.38	93
	4300	5.0	8.1	3559	5582	111	545	519	27.62	94
	4400	5.1	8.2	3632	5706	112	543	517	27.84	95
	4500	5.3	8.4	3705	5829	113	541	515	28.08	97
	4600	5.4	8.5	3777	5952	115	539	512	28.31	98
	4700	5.6	8.6	3849	6075	116	537	510	28.53	99
	4800	5.7	8.8	3920	6197	117	535	508	28.75	101
	4900	5.8	8.9	3991	6320	119	533	506	28.98	102
	5000	6.0	9.0	4061	6442	120	531	504	29.21	103

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. Canister time to function provides the time of fall from release to fuze functioning.
5. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(86-18)10

Figure 2-68. Delivery Data, CBU-78/B Gator, FMU-140/B Fuze (Sheet 18 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
300 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	340	54	-59	303	-299	20	-2	60	-62	2.0	104	8.5	104	50.8
	400	76	-83	12	-784	-78	48	85	-90	2.6	111	6.3	111	41.9
	500	98	-107	-156	-9	-169	108	107	-113	3.3	120	5.4	120	36.0
	600	113	-123	-216	130	-218	144	119	-125	3.8	127	5.2	127	33.1
	700	124	-136	-239	185	-246	169	126	-133	4.3	134	5.1	133	31.3

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-1)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 1 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
300 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	340	53	-53	352	-345	37	-9	70	-74	2.2	105	7.3	105	47.4
	400	74	-75	25	-886	-88	50	100	-107	2.9	113	5.4	113	39.0
	500	95	-97	-164	-20	-203	122	127	-136	3.6	122	4.6	121	33.5
	600	110	-111	-232	137	-264	167	142	-151	4.2	129	4.4	129	30.7
	700	121	-122	-260	199	-300	197	151	-160	4.7	136	4.3	135	29.0
	800	130	-131	-270	227	-323	218	156	-166	5.1	142	4.4	141	27.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-2)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 2 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
300 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	340	66	-67	399	-391	57	-18	80	-85	2.4	107	6.4	106	44.6
	400	94	-96	37	-988	-98	51	117	-125	3.1	114	4.7	114	36.6
	500	121	-123	-174	-29	-240	136	149	-160	3.9	123	4.0	123	31.3
	600	137	-140	-250	145	-315	190	166	-178	4.5	131	3.8	130	28.7
	700	150	-152	-281	214	-359	226	176	-188	5.1	137	3.8	137	27.1
	800	159	-162	-292	245	-386	251	183	-195	5.5	143	3.8	143	26.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-3)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 3 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
500 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	540	49	-53	522	-486	87	-45	45	-46	2.2	139	15.2	139	62.4
	600	70	-75	224	-1011	11	-7	65	-67	2.8	147	11.0	146	51.7
	800	107	-116	-68	-20	-130	90	100	-104	4.1	163	7.9	163	40.2
	1000	130	-140	-145	105	-198	144	116	-121	4.9	176	7.4	175	35.9
	1200	146	-158	-173	149	-235	177	126	-130	5.6	186	7.2	186	33.4
	1400	159	-171	-182	166	-259	200	131	-136	6.1	196	7.3	195	31.9
	1600	170	-183	-184	172	-274	216	135	-140	6.6	204	7.4	204	30.8
	1800	179	-193	-182	173	-285	229	138	-142	7.1	213	7.6	213	29.9
	2000	188	-201	-179	172	-294	239	140	-144	7.5	221	7.8	221	29.3
	2200	196	-209	-175	169	-300	247	141	-145	8.0	229	8.0	229	28.8
	2400	203	-217	-171	166	-306	254	142	-146	8.3	237	8.2	237	28.4
-10	700	29	-32	70	-108	-31	29	31	-31	2.1	107	16.9	106	50.6
	800	35	-39	31	-61	-36	33	38	-38	2.5	112	14.7	112	45.2
	900	41	-46	4	-28	-43	37	43	-43	2.8	117	13.3	117	41.5
	1000	47	-52	-17	-3	-50	43	48	-49	3.1	122	12.5	121	38.9
	1100	53	-59	-32	15	-57	48	52	-53	3.4	126	11.9	126	36.9
	1200	59	-65	-44	29	-64	54	56	-57	3.7	131	11.4	131	35.3
	1300	64	-71	-53	40	-70	59	60	-61	4.0	135	11.1	135	34.0
	1400	69	-76	-60	49	-77	64	63	-64	4.2	139	10.9	139	32.9
	1500	74	-81	-66	56	-83	69	66	-67	4.5	144	10.8	144	32.1
	1600	79	-86	-70	61	-88	74	69	-69	4.7	148	10.6	148	31.3
	1800	88	-96	-77	70	-99	83	73	-74	5.2	156	10.5	156	30.1
	2000	97	-105	-81	75	-108	92	77	-78	5.6	164	10.5	164	29.2
	2200	104	-113	-84	79	-117	100	81	-82	6.0	171	10.5	171	28.6
-20	1035	24	-26	-10	3	-21	20	26	-26	2.3	86	16.2	86	36.7
	1100	26	-28	-13	7	-23	21	28	-27	2.5	88	15.8	88	35.6
	1200	28	-31	-18	12	-24	22	30	-30	2.7	92	15.2	92	34.2
	1300	31	-34	-21	16	-26	24	32	-32	2.9	96	14.8	96	33.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-4)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 4 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
500 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	540	48	-48	589	-549	120	-61	52	-53	2.4	141	13.3	140	58.6
	600	68	-68	257	-1133	24	-18	77	-80	3.1	149	9.5	148	48.3
	700	89	-90	33	-220	-82	50	102	-107	3.8	158	7.5	158	41.1
	800	104	-105	-69	-28	-152	100	119	-124	4.4	166	6.8	165	37.4
	900	116	-117	-124	62	-201	137	130	-136	4.9	172	6.4	172	35.0
	1000	126	-127	-156	112	-236	165	138	-145	5.3	178	6.3	178	33.4
	1100	134	-136	-176	142	-262	187	144	-151	5.7	183	6.2	183	32.1
	1200	141	-143	-187	161	-282	205	149	-156	6.1	189	6.2	188	31.1
	1300	148	-150	-195	173	-298	220	153	-159	6.4	193	6.2	193	30.3
	1400	154	-155	-199	181	-310	233	156	-162	6.7	198	6.2	198	29.6
	1500	159	-161	-201	185	-320	243	158	-165	7.0	203	6.3	203	29.1
	1600	164	-166	-201	188	-329	252	160	-166	7.2	207	6.3	207	28.6
	1700	169	-171	-201	189	-336	260	162	-168	7.5	212	6.4	211	28.2
	1800	173	-175	-200	190	-342	267	163	-169	7.7	216	6.5	216	27.8
	2000	181	-183	-196	188	-351	278	165	-171	8.2	224	6.6	224	27.3
	2100	184	-187	-194	187	-355	283	166	-172	8.4	228	6.7	228	27.0
	2300	191	-194	-190	184	-362	292	168	-173	8.9	236	6.9	236	26.6
	2500	198	-200	-185	180	-367	299	169	-174	9.3	244	7.1	244	26.3
-10	710	27	-28	71	-106	-35	32	35	-35	2.2	105	15.0	105	47.1
	800	32	-33	37	-66	-39	35	41	-41	2.6	110	13.3	110	42.6
	900	38	-38	10	-33	-46	39	47	-48	2.9	115	12.0	115	39.1
	1000	43	-44	-11	-9	-53	45	53	-53	3.3	120	11.2	119	36.5
	1100	48	-49	-27	10	-60	50	58	-58	3.6	124	10.6	124	34.6
	1200	53	-54	-39	25	-67	56	62	-63	3.9	129	10.2	129	33.0
	1300	58	-59	-49	36	-75	62	66	-67	4.2	133	9.9	133	31.8
	1400	63	-64	-57	46	-81	67	70	-71	4.5	137	9.7	137	30.8
	1500	68	-69	-64	53	-88	73	73	-74	4.7	141	9.5	141	30.0
	1600	72	-73	-69	60	-94	78	76	-77	5.0	146	9.4	145	29.2
	1700	76	-78	-73	65	-100	83	79	-80	5.2	150	9.3	149	28.6
	1800	80	-82	-77	69	-106	88	82	-83	5.5	154	9.3	153	28.1
	1900	84	-86	-80	73	-112	93	84	-85	5.7	157	9.2	157	27.7
	2000	88	-90	-82	76	-117	97	86	-88	5.9	161	9.2	161	27.3
	2100	92	-94	-84	78	-122	102	88	-90	6.1	165	9.2	165	26.9
	2200	96	-98	-86	80	-127	106	90	-92	6.3	169	9.2	169	26.6
	2300	99	-101	-87	82	-131	110	92	-94	6.6	173	9.2	173	26.3
-20	1139	23	-24	-13	8	-23	21	30	-30	2.6	86	13.9	86	32.3
	1200	25	-25	-16	11	-24	22	32	-32	2.8	88	13.6	88	31.6
	1250	26	-26	-18	13	-25	23	33	-33	2.9	90	13.4	90	31.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-5)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 5 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
500 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	540	57	-58	654	-613	158	-79	59	-61	2.6	142	11.7	141	55.3
	600	82	-83	288	-1253	39	-29	88	-92	3.3	150	8.3	150	45.4
	700	108	-110	40	-247	-91	50	118	-125	4.1	160	6.5	159	38.6
	800	126	-128	-72	-35	-176	109	138	-145	4.8	168	5.9	167	35.1
	900	139	-141	-132	64	-234	153	151	-159	5.3	174	5.6	174	32.9
	1000	150	-152	-168	119	-276	187	161	-169	5.7	180	5.5	180	31.3
	1100	159	-161	-189	152	-308	213	168	-176	6.2	186	5.4	185	30.1
	1200	166	-169	-202	173	-332	234	173	-182	6.5	191	5.4	191	29.2
	1300	173	-175	-210	187	-350	252	177	-186	6.9	196	5.4	196	28.4
	1400	178	-181	-215	195	-365	266	181	-189	7.2	201	5.4	200	27.8
	1500	184	-187	-217	200	-377	279	184	-192	7.5	205	5.5	205	27.3
	1600	188	-191	-218	203	-387	289	186	-194	7.8	210	5.5	210	26.9
	1700	193	-196	-217	205	-394	298	187	-195	8.1	214	5.6	214	26.5
	1800	197	-200	-216	205	-401	306	189	-197	8.3	218	5.6	218	26.2
	1900	200	-203	-215	205	-407	313	190	-198	8.6	223	5.7	222	25.9
	2000	204	-207	-213	204	-412	319	191	-199	8.8	227	5.8	226	25.6
	2100	207	-210	-211	203	-416	325	192	-199	9.1	231	5.9	231	25.4
	2200	210	-213	-208	201	-419	330	193	-200	9.3	235	6.0	235	25.2
	2400	216	-219	-203	197	-425	339	194	-201	9.7	243	6.1	242	24.9
	2600	221	-224	-198	193	-430	346	195	-201	10.2	250	6.3	250	24.6
	2700	223	-227	-195	190	-432	350	195	-202	10.4	254	6.4	254	24.5
-10	720	32	-32	71	-103	-39	35	38	-38	2.4	104	13.5	104	44.1
	800	36	-37	42	-70	-42	37	44	-44	2.7	108	12.1	108	40.4
	900	42	-43	15	-38	-48	42	51	-51	3.0	113	10.9	113	37.0
	1000	48	-49	-6	-13	-56	47	57	-58	3.4	118	10.2	117	34.6
	1100	54	-55	-23	6	-63	52	62	-63	3.7	122	9.6	122	32.7
	1200	60	-61	-36	21	-71	58	67	-69	4.1	127	9.2	126	31.2
	1300	65	-66	-46	33	-79	64	72	-73	4.4	131	9.0	131	30.0
	1400	70	-71	-55	43	-86	70	76	-77	4.6	135	8.8	135	29.0
	1500	74	-76	-62	51	-93	76	80	-81	4.9	139	8.6	139	28.2
	1600	79	-81	-67	58	-100	81	83	-85	5.2	143	8.5	143	27.6
	1700	83	-85	-72	63	-107	87	86	-88	5.5	147	8.4	147	27.0
	1800	88	-89	-76	68	-113	92	89	-91	5.7	151	8.3	151	26.5
	1900	92	-93	-79	72	-119	97	92	-94	6.0	155	8.3	155	26.0
	2000	96	-97	-82	75	-125	102	95	-97	6.2	159	8.3	159	25.6
	2100	99	-101	-84	78	-130	107	97	-99	6.4	163	8.3	163	25.3
	2200	103	-105	-86	81	-136	112	99	-101	6.7	167	8.3	167	25.0
	2300	107	-109	-88	83	-141	116	102	-103	6.9	170	8.3	170	24.8
	2400	110	-112	-89	84	-146	121	104	-105	7.1	174	8.3	174	24.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-6)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 6 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	740	47	-50	630	-581	120	-69	37	-37	2.4	170	22.8	169	72.0
	900	87	-94	130	-300	-15	7	73	-75	3.7	187	12.6	187	51.0
	1000	103	-111	28	-117	-69	48	86	-89	4.2	195	11.1	194	46.3
	1100	115	-124	-32	-25	-110	79	96	-99	4.6	201	10.3	201	43.3
	1200	126	-135	-70	29	-141	105	104	-107	5.0	207	9.8	207	41.1
	1300	135	-145	-95	64	-166	126	110	-113	5.4	213	9.5	212	39.4
	1400	143	-153	-112	88	-186	143	114	-118	5.7	218	9.3	217	38.0
	1500	150	-161	-124	105	-203	158	118	-122	6.0	222	9.2	222	36.9
	2000	178	-191	-149	139	-256	208	131	-135	7.3	244	9.2	244	33.4
	3000	216	-230	-146	142	-301	256	141	-145	9.3	281	9.8	280	30.2
	4000	243	-258	-134	132	-325	283	147	-149	10.9	314	10.6	313	28.8
	5000	265	-282	-123	121	-342	304	150	-153	12.3	344	11.3	344	27.9
	5800	281	-298	-115	114	-354	318	153	-156	13.4	367	11.8	367	27.4
-10	885	28	-31	132	-173	-24	24	28	-27	2.2	138	24.6	137	61.7
	1000	35	-39	82	-112	-27	27	35	-35	2.7	144	20.5	144	54.1
	1200	47	-52	26	-46	-40	36	45	-45	3.3	154	16.8	153	46.3
	1300	53	-58	7	-24	-47	42	50	-50	3.6	158	15.7	158	43.7
	1400	59	-65	-8	-6	-54	47	54	-54	3.9	163	15.0	162	41.6
	1500	64	-70	-20	8	-61	53	57	-58	4.2	167	14.4	167	39.9
	1600	70	-76	-30	19	-68	59	61	-61	4.4	171	13.9	171	38.5
	1700	75	-81	-38	29	-75	64	64	-64	4.7	175	13.6	175	37.3
	1800	80	-87	-45	36	-81	70	66	-67	4.9	179	13.3	179	36.3
	1900	84	-92	-51	43	-87	75	69	-70	5.2	183	13.1	183	35.4
	2000	89	-97	-56	48	-93	80	71	-72	5.4	187	12.9	186	34.6
	2100	93	-101	-60	53	-98	84	74	-75	5.6	190	12.7	190	33.9
	2200	97	-106	-63	57	-103	89	76	-77	5.8	194	12.6	194	33.3
	2300	101	-110	-66	60	-108	93	78	-79	6.0	198	12.5	197	32.8
	2400	105	-114	-68	63	-113	98	80	-81	6.2	201	12.5	201	32.3
	2500	109	-118	-70	66	-118	102	81	-82	6.4	205	12.4	204	31.8
	3000	127	-137	-77	74	-138	120	89	-90	7.3	222	12.3	221	30.1
	4000	157	-168	-81	79	-170	151	100	-101	9.0	254	12.5	253	28.1
	5000	181	-194	-80	78	-196	177	109	-110	10.5	284	12.9	283	27.0
	5700	197	-210	-79	77	-212	192	114	-115	11.5	304	13.2	303	26.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-7)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 7 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-20	1035	22	-24	30	-37	-23	22	21	-21	2.1	109	25.2	109	51.5
	1100	23	-25	23	-31	-23	22	23	-23	2.3	112	23.9	112	49.1
	1200	26	-28	15	-21	-25	23	26	-25	2.5	115	22.2	115	46.1
	1300	28	-31	7	-13	-26	25	28	-28	2.7	119	20.9	119	43.7
	1400	31	-34	1	-7	-28	26	30	-30	2.9	123	19.9	122	41.7
	1500	33	-36	-4	-1	-30	28	33	-32	3.1	126	19.1	126	40.0
	1800	41	-45	-17	12	-36	33	39	-38	3.8	136	17.5	136	36.3
	2000	47	-51	-23	19	-41	37	42	-42	4.1	143	16.7	143	34.6
	2200	52	-57	-28	24	-45	41	46	-46	4.5	150	16.2	150	33.2
	2300	55	-60	-30	27	-48	44	47	-47	4.7	153	16.0	153	32.6
	2400	57	-63	-32	29	-50	46	49	-49	4.9	156	15.8	156	32.1
	2500	60	-66	-33	30	-53	48	50	-50	5.0	159	15.7	159	31.6
	2600	63	-68	-35	32	-55	50	52	-52	5.2	163	15.5	163	31.2
	2700	65	-71	-36	34	-57	52	53	-53	5.4	166	15.4	166	30.7
	2800	68	-74	-37	35	-60	54	55	-55	5.6	169	15.3	169	30.4
	2900	70	-77	-39	36	-62	57	56	-56	5.7	172	15.2	172	30.0
	3000	73	-79	-40	37	-65	59	57	-57	5.9	175	15.1	175	29.7
	4000	97	-105	-46	45	-88	80	69	-69	7.4	205	14.8	205	27.5
	4900	116	-125	-49	48	-107	98	77	-78	8.7	231	14.8	231	26.4
-30	1805	24	-26	-10	8	-18	18	25	-25	3.0	105	20.6	105	34.7
	1900	25	-28	-11	9	-19	18	27	-26	3.2	108	20.2	108	33.9
	2000	27	-30	-12	11	-20	19	28	-27	3.3	111	19.9	111	33.2
	2100	29	-31	-14	12	-21	21	29	-28	3.5	114	19.5	114	32.6
	2200	30	-33	-15	13	-23	22	30	-30	3.7	117	19.2	117	32.0
	2300	32	-35	-16	14	-24	23	31	-31	3.8	120	19.0	120	31.5
	2400	33	-37	-17	15	-25	24	33	-32	4.0	123	18.7	123	31.0
	2500	35	-38	-18	16	-26	25	34	-33	4.1	126	18.5	126	30.6
	2600	37	-40	-19	17	-28	26	35	-34	4.3	129	18.4	129	30.2
	2700	38	-42	-20	18	-29	27	36	-35	4.4	132	18.2	132	29.8
	2800	40	-44	-20	19	-30	29	37	-37	4.6	135	18.0	135	29.5
	2900	42	-46	-21	20	-32	30	38	-38	4.7	138	17.9	138	29.1
	3000	43	-47	-22	20	-33	31	39	-39	4.9	140	17.8	140	28.9
	3100	45	-49	-22	21	-34	32	40	-40	5.0	143	17.7	143	28.6
	3200	46	-51	-23	22	-36	34	41	-41	5.2	146	17.6	146	28.3
	3300	48	-53	-24	22	-37	35	42	-42	5.3	149	17.5	149	28.1
	3400	50	-55	-24	23	-39	36	43	-43	5.4	152	17.4	152	27.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-8)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 8 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	740	46	-46	706	-653	161	-90	42	-43	2.5	171	20.0	171	67.8
	900	85	-86	149	-338	-8	0	86	-88	4.0	189	10.8	189	47.6
	1000	100	-101	36	-134	-75	47	102	-105	4.6	197	9.5	197	43.2
	1100	112	-113	-31	-32	-125	86	113	-117	5.0	204	8.8	203	40.3
	1200	122	-123	-73	28	-164	117	122	-127	5.5	210	8.4	209	38.2
	1300	130	-132	-101	67	-195	142	129	-134	5.9	215	8.1	215	36.7
	1400	138	-139	-121	94	-220	163	135	-140	6.2	221	8.0	220	35.4
	1500	145	-146	-135	113	-240	181	140	-145	6.5	225	7.9	225	34.4
	2000	171	-173	-162	152	-303	240	154	-159	7.9	247	7.9	247	31.1
	3000	206	-209	-160	156	-355	296	166	-170	10.1	284	8.4	284	28.2
	4000	232	-235	-147	144	-379	325	171	-175	11.8	317	9.1	317	26.9
	5000	253	-257	-135	133	-396	346	174	-178	13.3	347	9.8	347	26.1
	6000	271	-276	-124	123	-410	364	177	-180	14.7	376	10.5	376	25.6
-10	905	27	-28	130	-166	-26	27	31	-31	2.4	137	21.7	137	57.2
	1000	32	-33	91	-119	-29	29	38	-38	2.8	142	18.7	142	51.4
	1100	38	-38	59	-82	-35	32	44	-44	3.1	147	16.6	147	47.1
	1200	43	-44	34	-54	-41	37	49	-50	3.5	152	15.2	152	43.8
	1300	48	-49	14	-31	-49	43	54	-55	3.8	156	14.2	156	41.3
	1400	53	-54	-2	-13	-56	49	59	-59	4.1	161	13.5	161	39.3
	1500	58	-59	-15	2	-64	55	63	-64	4.4	165	12.9	165	37.7
	1600	63	-64	-26	14	-71	61	67	-68	4.7	169	12.5	169	36.3
	1700	68	-69	-35	24	-79	67	70	-71	4.9	173	12.1	173	35.1
	1800	72	-74	-42	33	-85	72	74	-75	5.2	177	11.9	177	34.1
	1900	77	-78	-48	40	-92	78	77	-78	5.4	181	11.7	181	33.3
	2000	81	-83	-54	46	-99	83	79	-81	5.7	185	11.5	185	32.5
	2100	85	-87	-58	51	-105	89	82	-83	5.9	188	11.3	188	31.9
	2200	89	-91	-62	56	-110	94	84	-86	6.1	192	11.2	192	31.3
	2300	93	-95	-66	60	-116	98	87	-88	6.4	196	11.1	196	30.8
	2400	97	-99	-68	63	-121	103	89	-90	6.6	199	11.1	199	30.3
	2500	100	-102	-71	66	-127	108	91	-92	6.8	203	11.0	203	29.9
	3000	117	-119	-79	75	-149	128	100	-101	7.8	220	10.9	220	28.2
	4000	145	-148	-84	82	-186	162	112	-114	9.5	252	11.1	251	26.4
	5000	169	-172	-84	82	-214	190	122	-123	11.1	281	11.4	281	25.3
	6000	190	-193	-82	81	-238	214	130	-131	12.5	310	11.8	310	24.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-9)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 9 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-20	1139	22	-22	20	-27	-25	24	26	-25	2.4	109	21.1	109	44.9
	1200	23	-23	16	-22	-26	24	27	-27	2.6	111	20.2	111	43.3
	1400	27	-28	3	-8	-29	27	32	-32	3.0	118	18.1	118	39.1
	1600	32	-32	-7	2	-32	30	37	-37	3.5	125	16.8	125	36.2
	1800	36	-37	-15	10	-37	33	41	-41	3.9	132	15.8	132	34.0
	2000	41	-42	-21	17	-41	37	45	-45	4.3	138	15.2	138	32.4
	2200	46	-47	-26	22	-46	41	49	-49	4.7	145	14.7	145	31.1
	2300	48	-49	-28	24	-48	43	51	-51	4.9	148	14.5	148	30.5
	2400	51	-52	-30	27	-51	45	52	-52	5.0	151	14.3	151	30.0
	2500	53	-54	-31	28	-53	48	54	-54	5.2	154	14.1	154	29.5
	2600	55	-57	-33	30	-55	50	56	-56	5.4	158	14.0	158	29.1
	2700	58	-59	-35	32	-58	52	57	-57	5.6	161	13.9	161	28.7
	2800	60	-61	-36	33	-60	54	59	-59	5.8	164	13.8	164	28.4
	2900	62	-64	-37	35	-63	56	60	-60	5.9	167	13.7	167	28.1
	3000	65	-66	-38	36	-65	59	62	-62	6.1	170	13.6	170	27.8
	4000	87	-89	-46	44	-89	81	74	-75	7.7	200	13.3	200	25.8
	5000	107	-110	-50	48	-112	102	85	-85	9.2	228	13.3	228	24.6
-30	2005	23	-24	-11	10	-19	19	29	-28	3.4	105	18.0	105	30.7
	2100	25	-25	-12	11	-20	19	30	-30	3.6	108	17.7	108	30.1
	2200	26	-27	-14	12	-22	20	32	-31	3.7	111	17.4	111	29.6
	2300	27	-28	-15	13	-23	21	33	-32	3.9	114	17.2	114	29.1
	2400	29	-29	-16	14	-24	22	34	-34	4.1	117	17.0	116	28.7
	2500	30	-31	-16	15	-25	24	35	-35	4.2	119	16.8	119	28.3
	2600	32	-32	-17	16	-26	25	36	-36	4.4	122	16.6	122	27.9
	2700	33	-34	-18	17	-27	26	38	-37	4.5	125	16.5	125	27.6
	2800	34	-35	-19	17	-29	27	39	-38	4.7	128	16.4	128	27.3
	2900	36	-37	-20	18	-30	28	40	-39	4.8	131	16.2	131	27.0
	3000	37	-38	-20	19	-31	29	41	-41	5.0	133	16.1	133	26.8
	3100	39	-40	-21	20	-33	31	42	-42	5.1	136	16.0	136	26.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-10)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 10 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	740	52	-53	779	-725	206	-113	48	-48	2.7	173	17.8	172	64.1
	900	100	-101	166	-374	-1	-9	99	-102	4.3	191	9.5	191	44.7
	1000	117	-119	42	-150	-82	47	117	-122	4.9	199	8.3	199	40.6
	1100	131	-133	-31	-38	-142	92	131	-136	5.4	206	7.7	206	37.9
	1200	142	-144	-77	28	-189	129	141	-147	5.9	212	7.3	212	35.9
	1300	151	-153	-108	71	-226	158	150	-156	6.3	218	7.1	217	34.4
	1400	159	-162	-130	101	-255	183	156	-163	6.7	223	7.0	223	33.3
	1500	166	-169	-145	121	-279	204	162	-168	7.0	228	6.9	228	32.3
	2000	192	-195	-175	164	-353	273	178	-185	8.5	250	6.9	250	29.3
	3000	224	-228	-173	168	-410	336	190	-196	10.8	287	7.4	287	26.6
	4000	245	-249	-158	156	-435	368	195	-200	12.6	320	8.1	320	25.4
	5000	262	-267	-145	143	-450	390	198	-202	14.2	351	8.8	350	24.8
	6000	277	-282	-134	132	-463	407	200	-204	15.6	380	9.4	379	24.3
-10	920	31	-32	130	-161	-29	29	35	-34	2.5	137	19.5	136	53.7
	1000	36	-36	97	-125	-31	30	40	-40	2.9	141	17.2	140	49.1
	1100	42	-42	66	-89	-36	34	47	-47	3.2	146	15.3	145	44.9
	1200	48	-48	40	-60	-43	39	53	-54	3.6	150	14.0	150	41.7
	1300	53	-54	20	-37	-51	44	59	-59	3.9	155	13.0	154	39.3
	1400	59	-60	3	-19	-58	50	64	-65	4.3	159	12.3	159	37.4
	1500	64	-65	-10	-3	-66	56	68	-69	4.6	163	11.8	163	35.8
	1600	69	-70	-22	10	-74	63	73	-74	4.9	167	11.4	167	34.4
	1700	74	-75	-31	20	-82	69	77	-78	5.1	171	11.0	171	33.3
	1800	79	-80	-39	29	-90	75	80	-82	5.4	175	10.8	175	32.4
	1900	83	-85	-46	37	-97	81	84	-85	5.7	179	10.6	179	31.5
	2000	87	-89	-52	44	-104	86	87	-88	5.9	183	10.4	183	30.8
	2100	92	-93	-57	49	-110	92	90	-91	6.2	187	10.3	187	30.2
	2200	96	-97	-61	54	-117	98	92	-94	6.4	190	10.2	190	29.6
	2300	99	-101	-65	58	-123	103	95	-97	6.7	194	10.1	194	29.1
	2400	103	-105	-68	62	-129	108	97	-99	6.9	198	10.0	197	28.7
	2500	107	-109	-71	65	-135	113	100	-101	7.1	201	9.9	201	28.3
	3000	123	-126	-80	76	-160	136	110	-111	8.2	218	9.8	218	26.7
	4000	151	-153	-87	85	-201	173	124	-126	10.0	250	10.0	250	24.9
	5000	173	-176	-88	86	-232	203	134	-136	11.6	280	10.3	280	24.0
	6000	191	-195	-86	85	-258	229	143	-144	13.1	308	10.7	308	23.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-11)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 11 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
700 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-20	1265	27	-27	12	-17	-28	26	30	-30	2.8	110	17.9	110	39.4
	1300	27	-28	10	-15	-28	26	31	-31	2.9	111	17.5	111	38.7
	1500	32	-33	-1	-4	-31	28	36	-36	3.3	118	16.0	118	35.4
	1700	37	-38	-9	5	-35	32	41	-41	3.8	124	14.9	124	33.0
	1900	42	-42	-16	12	-39	35	46	-46	4.2	131	14.2	131	31.2
	2200	49	-50	-24	20	-46	41	52	-52	4.8	141	13.4	140	29.3
	2300	51	-52	-26	23	-48	43	54	-54	5.0	144	13.2	144	28.7
	2400	54	-55	-28	25	-51	45	56	-56	5.2	147	13.1	147	28.3
	2500	56	-57	-30	27	-53	47	57	-57	5.4	150	12.9	150	27.8
	2600	58	-59	-31	29	-56	50	59	-59	5.6	153	12.8	153	27.5
	2700	61	-62	-33	30	-58	52	61	-61	5.8	156	12.7	156	27.1
	2800	63	-64	-34	32	-61	54	62	-63	5.9	159	12.6	159	26.8
	2900	65	-66	-36	33	-63	56	64	-64	6.1	162	12.5	162	26.5
	3000	67	-69	-37	34	-66	58	66	-66	6.3	165	12.5	165	26.2
	4000	89	-90	-45	44	-91	81	79	-80	8.0	195	12.1	195	24.3
	5000	108	-110	-50	48	-114	103	91	-91	9.6	223	12.2	223	23.3
-30	2249	28	-29	-13	11	-21	20	33	-33	3.9	106	15.8	106	27.4
	2300	29	-30	-13	12	-22	20	34	-34	4.0	108	15.7	108	27.1
	2400	30	-31	-14	13	-23	21	35	-35	4.1	111	15.5	111	26.8
	2500	32	-32	-15	14	-24	22	37	-36	4.3	113	15.4	113	26.4
	2600	33	-34	-16	15	-25	23	38	-37	4.5	116	15.2	116	26.1
	2700	35	-35	-17	15	-26	24	39	-39	4.6	119	15.1	119	25.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-12)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 12 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	940	46	-48	695	-639	139	-83	32	-32	2.5	199	30.7	198	80.1
	1000	64	-68	409	-1206	90	-65	47	-47	3.1	207	21.9	206	67.0
	1100	85	-90	200	-371	24	-21	64	-65	3.8	217	16.7	216	57.2
	1200	100	-107	94	-183	-26	15	76	-78	4.3	224	14.5	224	51.9
	1300	112	-120	30	-87	-65	46	86	-88	4.8	231	13.2	230	48.4
	1400	123	-131	-13	-27	-97	72	93	-96	5.2	237	12.5	236	45.8
	1500	132	-141	-43	12	-123	94	100	-102	5.5	242	11.9	242	43.8
	2000	166	-177	-109	97	-206	166	119	-122	7.0	265	10.9	265	38.1
	4000	238	-253	-125	123	-310	270	143	-146	10.8	335	11.6	334	31.1
	6000	282	-299	-110	109	-351	316	153	-155	13.6	392	12.7	392	28.8
	8000	317	-337	-97	97	-383	351	161	-163	16.1	444	13.7	443	27.5
	10000	348	-369	-88	87	-412	383	169	-170	18.4	492	14.5	491	26.6
	12000	377	-401	-80	80	-442	415	177	-179	20.7	537	15.0	537	25.9
	13000	391	-416	-77	77	-457	430	182	-183	21.8	559	15.3	558	25.6
-10	1100	29	-32	163	-202	-18	20	27	-26	2.4	168	31.3	168	68.9
	1200	35	-38	119	-150	-19	21	32	-32	2.8	173	26.6	173	61.8
	1300	41	-45	86	-110	-24	24	38	-37	3.1	179	23.5	178	56.7
	1400	47	-51	59	-80	-30	29	42	-42	3.5	183	21.4	183	52.8
	1500	53	-58	38	-55	-37	34	47	-47	3.8	188	19.9	187	49.8
	1600	58	-64	21	-36	-44	39	51	-51	4.1	192	18.7	192	47.4
	1700	64	-70	7	-20	-51	45	54	-55	4.3	196	17.8	196	45.3
	1800	69	-75	-4	-7	-58	51	58	-58	4.6	201	17.2	200	43.7
	1900	74	-81	-14	4	-65	57	61	-61	4.8	205	16.6	204	42.2
	2000	79	-86	-23	14	-71	62	64	-64	5.1	209	16.1	208	41.0
	2100	84	-91	-30	21	-77	68	67	-67	5.3	212	15.8	212	39.9
	2200	88	-96	-36	28	-84	73	69	-70	5.5	216	15.5	216	38.9
	2300	93	-101	-41	34	-89	78	71	-72	5.8	220	15.2	219	38.1
	2400	97	-105	-45	39	-95	83	74	-74	6.0	223	15.0	223	37.3
	2500	101	-110	-49	43	-100	88	76	-76	6.2	227	14.8	227	36.6
	3000	120	-130	-62	58	-124	109	85	-85	7.2	244	14.2	243	34.0
	4000	152	-163	-73	70	-161	143	98	-99	8.9	275	13.9	275	30.9
	6000	200	-214	-74	73	-214	195	115	-116	11.8	331	14.3	331	28.1
	8000	238	-255	-71	70	-256	236	128	-129	14.4	382	14.8	382	26.6
	10000	270	-290	-67	66	-293	273	140	-140	16.8	430	15.3	429	25.6
	12000	301	-321	-63	63	-327	307	150	-151	19.1	474	15.7	474	24.9
	13000	315	-337	-62	61	-343	324	156	-156	20.2	496	15.8	496	24.6

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-13)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 13 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-20	1240	23	-25	52	-60	-24	23	21	-21	2.3	139	32.2	139	60.0
	2000	42	-46	-3	-2	-36	34	38	-38	3.9	166	21.3	165	42.0
	2200	48	-52	-10	6	-41	38	42	-42	4.3	172	20.2	172	39.7
	2300	51	-55	-14	10	-43	40	44	-44	4.5	175	19.8	175	38.8
	2400	53	-58	-17	13	-46	42	46	-45	4.7	178	19.4	178	37.9
	2500	56	-61	-19	16	-48	45	47	-47	4.9	182	19.0	181	37.2
	2600	59	-64	-22	18	-51	47	49	-49	5.1	185	18.7	185	36.5
	2700	61	-67	-24	21	-53	49	50	-50	5.2	188	18.5	188	35.8
	2800	64	-70	-26	23	-56	51	52	-52	5.4	191	18.2	191	35.2
	2900	67	-72	-28	25	-58	53	53	-53	5.6	194	18.0	194	34.7
	3000	69	-75	-29	27	-61	56	55	-55	5.8	197	17.8	197	34.2
	4000	94	-101	-40	38	-85	77	67	-67	7.4	226	16.7	226	30.7
	6000	136	-146	-48	47	-128	118	86	-86	10.2	280	16.2	280	27.5
	8000	171	-184	-49	48	-166	155	101	-101	12.7	329	16.3	329	25.9
	10000	203	-217	-49	48	-202	190	114	-114	15.1	376	16.4	376	24.8
	12000	231	-248	-48	47	-236	223	126	-126	17.4	420	16.6	420	24.1
-30	1805	23	-26	3	-5	-20	19	23	-23	2.9	127	26.8	127	43.4
	2000	26	-29	-2	0	-22	21	26	-25	3.2	133	25.3	132	40.9
	2200	29	-32	-5	3	-24	23	29	-28	3.6	138	24.0	138	38.8
	2400	32	-35	-9	7	-26	25	31	-30	3.9	144	23.0	144	37.1
	2500	34	-37	-10	8	-27	26	32	-32	4.0	147	22.6	147	36.4
	3000	42	-46	-16	14	-33	32	38	-37	4.8	161	21.0	161	33.5
	4000	58	-64	-23	22	-48	45	48	-48	6.2	188	19.4	187	30.1
	5000	75	-81	-27	26	-62	59	57	-57	7.6	213	18.6	213	28.2
	6000	90	-98	-30	29	-78	74	65	-65	8.9	238	18.2	238	26.9
	7000	105	-114	-32	31	-93	88	73	-72	10.1	262	18.0	262	25.9
	8000	120	-130	-33	32	-109	103	80	-80	11.3	286	17.8	286	25.2
	9000	134	-144	-34	33	-124	118	86	-86	12.5	309	17.8	309	24.7
	10000	147	-159	-34	34	-140	133	93	-93	13.7	331	17.7	331	24.2
-45	3027	22	-24	-8	7	-16	16	25	-24	3.9	123	24.6	123	31.6
	3100	22	-25	-8	7	-16	16	26	-25	4.0	125	24.4	125	31.4
	3200	23	-26	-8	8	-17	17	26	-26	4.1	128	24.1	128	31.0
	3300	24	-27	-9	8	-18	18	27	-26	4.2	130	23.9	130	30.7
	3400	25	-28	-9	8	-19	18	28	-27	4.4	133	23.7	133	30.4
	3500	26	-29	-9	9	-19	19	29	-28	4.5	135	23.5	135	30.1
	4000	30	-34	-11	10	-23	23	32	-32	5.1	147	22.7	147	28.8
	5000	40	-44	-13	13	-32	31	39	-39	6.3	171	21.6	171	27.1
	6000	49	-54	-15	15	-42	40	46	-46	7.5	194	20.9	194	25.9
	7000	59	-65	-17	16	-52	50	53	-52	8.6	216	20.4	216	25.1

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-14)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 14 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	940	45	-45	776	-715	184	-108	36	-36	2.6	200	27.2	199	75.7
	1000	62	-63	458	-1343	122	-88	54	-55	3.3	209	19.1	208	62.9
	1100	82	-83	226	-416	40	-36	74	-76	4.1	219	14.5	218	53.5
	1200	97	-98	108	-207	-21	8	89	-91	4.7	226	12.5	226	48.4
	1300	109	-110	36	-100	-70	46	100	-103	5.2	233	11.4	233	45.1
	1400	119	-120	-11	-34	-109	77	110	-113	5.6	239	10.7	239	42.7
	1500	127	-129	-45	11	-141	103	117	-121	6.0	245	10.3	244	40.8
	2000	159	-161	-119	105	-241	190	140	-144	7.6	268	9.4	268	35.5
	4000	227	-231	-137	135	-361	309	167	-170	11.6	338	10.0	338	29.1
	6000	269	-273	-120	119	-402	357	176	-178	14.6	396	11.2	396	27.1
	8000	303	-308	-106	105	-432	392	183	-185	17.2	448	12.1	447	26.0
	10000	333	-339	-96	94	-460	423	190	-193	19.6	496	12.9	496	25.3
	12000	362	-369	-87	87	-488	453	198	-200	21.9	541	13.5	541	24.7
	13500	384	-391	-82	81	-509	475	204	-206	23.6	574	13.9	574	24.3
-10	1115	28	-28	166	-200	-19	21	30	-29	2.6	168	28.0	167	64.7
	1200	32	-33	130	-158	-20	22	35	-35	2.9	172	24.4	171	59.0
	1300	37	-38	96	-120	-24	24	41	-41	3.3	177	21.5	177	54.0
	1400	43	-43	69	-89	-30	29	46	-46	3.6	182	19.5	181	50.2
	1500	48	-49	47	-64	-37	34	51	-51	3.9	186	18.1	186	47.3
	1600	53	-54	29	-44	-44	40	55	-56	4.2	191	17.0	190	44.9
	1700	58	-59	14	-27	-51	46	60	-60	4.5	195	16.1	195	42.9
	1800	63	-64	2	-13	-59	52	63	-64	4.8	199	15.5	199	41.3
	1900	67	-69	-9	-2	-66	58	67	-68	5.1	203	14.9	203	39.9
	2000	72	-73	-18	9	-74	64	70	-71	5.3	207	14.5	207	38.7
	2100	76	-78	-26	17	-81	69	74	-74	5.6	211	14.2	210	37.6
	2200	81	-82	-32	25	-87	75	76	-77	5.8	214	13.9	214	36.7
	2300	85	-86	-38	31	-94	81	79	-80	6.1	218	13.6	218	35.9
	2400	89	-91	-43	37	-100	86	82	-83	6.3	222	13.4	221	35.1
	2500	93	-95	-48	41	-106	91	84	-85	6.5	225	13.2	225	34.5
	4000	141	-144	-75	73	-175	153	109	-110	9.4	273	12.4	273	29.1
	6000	187	-191	-79	77	-233	209	128	-129	12.5	329	12.7	329	26.4
	8000	224	-228	-75	74	-277	253	142	-143	15.1	381	13.3	380	25.1
	10000	256	-261	-71	70	-314	291	154	-155	17.6	428	13.8	428	24.3
	12000	285	-291	-67	67	-349	326	165	-166	20.0	473	14.3	473	23.7
	13500	307	-313	-64	64	-374	351	173	-174	21.7	506	14.5	506	23.3

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-15)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 15 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-20	1265	21	-22	50	-56	-26	25	23	-23	2.4	137	29.0	136	55.8
	1500	26	-27	28	-34	-28	27	29	-29	3.0	145	24.3	144	48.4
	1800	33	-33	9	-14	-33	31	37	-36	3.6	155	21.0	155	42.4
	2200	42	-43	-8	4	-41	38	45	-45	4.5	168	18.5	168	37.5
	2300	44	-46	-11	7	-44	40	47	-47	4.7	171	18.1	171	36.6
	2400	47	-48	-14	10	-46	42	49	-49	4.9	174	17.7	174	35.8
	2500	49	-50	-17	13	-49	44	51	-50	5.0	177	17.4	177	35.0
	2600	52	-53	-19	16	-51	47	52	-52	5.2	180	17.1	180	34.4
	2700	54	-55	-21	18	-54	49	54	-54	5.4	183	16.8	183	33.7
	2800	56	-58	-24	21	-56	51	56	-56	5.6	186	16.6	186	33.2
	2900	59	-60	-25	23	-59	53	57	-57	5.8	189	16.4	189	32.7
	3000	61	-63	-27	25	-61	55	59	-59	6.0	192	16.2	192	32.2
	4000	84	-86	-39	37	-86	78	72	-73	7.6	221	15.1	221	28.9
	6000	124	-127	-48	47	-131	120	93	-93	10.6	274	14.7	274	25.9
	8000	158	-162	-50	50	-171	159	109	-109	13.2	324	14.8	323	24.4
	10000	189	-193	-50	50	-208	194	122	-123	15.7	370	15.0	370	23.6
	12000	217	-222	-49	49	-243	228	135	-136	18.0	414	15.3	414	23.0
	12600	225	-230	-49	49	-253	238	139	-139	18.7	427	15.3	427	22.8
-30	2005	23	-23	-1	-1	-22	21	27	-27	3.3	127	23.1	127	38.2
	3000	37	-37	-14	13	-32	31	40	-39	4.9	154	19.2	154	31.4
	4000	51	-53	-22	21	-46	43	51	-50	6.4	180	17.7	180	28.2
	5000	66	-68	-26	25	-61	57	60	-60	7.8	205	17.0	205	26.4
	6000	81	-83	-29	29	-76	71	69	-69	9.1	230	16.6	230	25.2
	7000	95	-98	-31	31	-92	86	77	-77	10.4	254	16.5	254	24.4
	8000	109	-112	-33	32	-107	101	84	-84	11.6	277	16.4	277	23.8
	9000	123	-125	-34	33	-123	116	91	-91	12.9	300	16.3	300	23.3
	10000	135	-139	-35	34	-138	131	98	-98	14.0	322	16.4	322	22.9
	10800	146	-149	-35	34	-150	142	103	-103	15.0	340	16.4	340	22.7
-45	3468	22	-23	-8	8	-17	17	29	-28	4.5	126	21.5	126	27.9
	3600	23	-24	-9	8	-18	18	30	-29	4.7	129	21.3	129	27.6
	3700	24	-25	-9	9	-19	18	31	-30	4.8	131	21.2	131	27.4
	3800	25	-25	-9	9	-20	19	32	-31	4.9	133	21.0	133	27.1
	3900	25	-26	-10	9	-20	20	32	-32	5.0	136	20.9	136	26.9
	4000	26	-27	-10	9	-21	20	33	-32	5.2	138	20.8	138	26.7
	4500	31	-31	-11	11	-25	24	37	-36	5.8	149	20.2	149	25.9
	5000	35	-36	-12	12	-29	28	40	-40	6.4	161	19.8	161	25.2
	5500	39	-40	-13	13	-33	32	44	-43	7.0	172	19.5	172	24.7
	6000	44	-45	-14	14	-38	36	47	-47	7.6	183	19.2	183	24.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-16)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 16 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	940	50	-50	853	-792	234	-134	41	-41	2.8	201	24.3	201	71.9
	1000	71	-72	503	-1479	157	-112	61	-62	3.5	210	16.9	209	59.3
	1100	94	-96	249	-457	57	-51	85	-87	4.4	220	12.7	220	50.3
	1200	111	-113	120	-228	-17	1	102	-106	5.0	228	10.9	228	45.5
	1300	125	-126	42	-111	-75	45	116	-120	5.5	235	10.0	235	42.4
	1400	136	-138	-11	-39	-122	82	126	-131	6.0	242	9.4	241	40.1
	1500	145	-147	-47	10	-161	112	135	-140	6.4	247	9.0	247	38.4
	2000	179	-181	-128	113	-279	214	161	-167	8.1	271	8.2	271	33.4
	4000	240	-244	-148	145	-412	349	190	-194	12.4	342	8.9	342	27.5
	6000	275	-279	-130	128	-453	398	198	-202	15.5	400	10.0	399	25.8
	8000	302	-307	-114	113	-481	432	204	-208	18.2	452	10.9	451	24.8
	10000	326	-332	-102	101	-507	462	211	-214	20.6	500	11.7	500	24.2
	12000	344	-351	-93	92	-533	491	219	-221	23.0	546	12.4	545	23.7
	13900	361	-369	-86	85	-558	518	226	-228	25.2	587	12.9	587	23.3
-10	1125	31	-31	169	-200	-21	23	32	-32	2.7	167	25.6	166	61.4
	1200	35	-36	138	-165	-21	23	37	-37	3.0	170	22.6	170	56.6
	1300	41	-41	104	-127	-24	25	43	-44	3.4	175	19.9	175	51.7
	1400	46	-47	77	-97	-30	29	49	-50	3.7	180	18.0	180	48.1
	1500	52	-53	54	-72	-37	34	55	-55	4.1	185	16.6	184	45.2
	1600	58	-59	36	-51	-44	40	60	-60	4.4	189	15.6	189	42.9
	1700	63	-64	20	-34	-52	46	64	-65	4.7	193	14.8	193	41.0
	1800	68	-69	7	-19	-60	52	69	-70	5.0	197	14.2	197	39.4
	1900	73	-74	-4	-7	-68	58	73	-74	5.3	201	13.7	201	38.0
	2000	77	-79	-14	4	-76	65	77	-78	5.6	205	13.2	205	36.8
	2100	82	-83	-22	13	-83	71	80	-81	5.8	209	12.9	209	35.8
	2200	86	-88	-29	21	-91	77	83	-84	6.1	213	12.6	213	34.9
	2300	91	-92	-35	28	-98	83	86	-88	6.3	217	12.4	216	34.1
	2400	95	-96	-41	34	-105	89	89	-91	6.6	220	12.2	220	33.4
	2500	99	-100	-46	39	-111	94	92	-93	6.8	224	12.0	223	32.8
	4000	146	-148	-77	74	-188	162	120	-122	9.8	272	11.2	272	27.6
	6000	189	-192	-82	81	-251	223	141	-142	13.1	328	11.6	328	25.1
	8000	221	-225	-79	78	-297	269	155	-157	15.8	380	12.1	379	24.0
	10000	249	-254	-75	74	-336	308	167	-169	18.4	427	12.7	427	23.3
	12000	270	-276	-71	70	-371	344	178	-180	20.8	473	13.2	473	22.8
	13900	288	-294	-67	67	-402	376	189	-190	23.0	514	13.5	514	22.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-17)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 17 of 18)

AV-8B RELEASE ERROR SENSITIVITIES
CBU-78/B GATOR : FMU-140/B FUZE *
900 FT-AGL FUZE FUNCTION ALTITUDE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-20	1295	24	-24	47	-52	-27	26	25	-25	2.6	134	26.2	134	52.0
	2000	40	-41	2	-6	-37	35	43	-43	4.2	157	18.1	157	37.7
	2200	45	-46	-5	2	-42	38	47	-47	4.6	164	17.1	163	35.6
	2300	47	-48	-9	5	-44	40	50	-49	4.8	167	16.7	167	34.7
	2400	50	-51	-12	8	-46	42	52	-51	5.0	170	16.3	170	34.0
	2500	52	-53	-14	11	-49	44	53	-53	5.2	173	16.0	173	33.2
	2600	54	-56	-17	14	-51	47	55	-55	5.4	176	15.7	176	32.6
	2700	57	-58	-19	16	-54	49	57	-57	5.6	179	15.5	179	32.0
	2800	59	-60	-21	19	-56	51	59	-59	5.8	182	15.3	182	31.5
	2900	61	-63	-24	21	-59	53	61	-61	6.0	185	15.1	185	31.0
	3000	64	-65	-25	23	-61	55	62	-63	6.1	188	14.9	188	30.5
	4000	86	-87	-38	36	-87	78	77	-77	7.9	216	13.9	216	27.4
	6000	123	-125	-48	47	-134	122	99	-100	11.0	269	13.5	269	24.6
	8000	154	-157	-51	50	-176	162	116	-117	13.7	319	13.6	319	23.3
	10000	181	-185	-52	51	-215	199	131	-131	16.2	365	13.9	365	22.5
	12000	203	-208	-51	50	-250	233	144	-144	18.6	410	14.2	410	22.0
	13000	213	-218	-50	50	-267	250	150	-150	19.8	431	14.3	431	21.8
-30	2249	28	-28	-4	3	-23	22	32	-31	3.8	128	20.1	128	33.7
	2400	30	-30	-6	5	-25	24	34	-33	4.0	132	19.4	132	32.7
	3000	38	-39	-13	12	-31	30	41	-41	5.0	148	17.8	148	29.6
	4000	52	-53	-20	19	-44	41	53	-52	6.5	174	16.4	173	26.6
	5000	66	-68	-25	24	-59	55	63	-63	7.9	199	15.7	198	25.0
	6000	80	-82	-29	28	-74	69	72	-72	9.3	223	15.4	223	23.9
	7000	93	-95	-31	30	-90	84	80	-80	10.6	247	15.3	247	23.2
	8000	106	-108	-32	32	-106	99	88	-88	11.9	270	15.2	270	22.6
	9000	118	-121	-33	33	-121	114	96	-96	13.2	293	15.2	292	22.2
	10000	130	-133	-35	34	-137	129	103	-103	14.4	315	15.2	315	21.9
-45	3950	27	-28	-9	9	-19	18	33	-33	5.1	129	19.2	129	25.1
	4000	27	-28	-9	9	-19	19	34	-33	5.2	130	19.2	130	25.0
	4100	28	-29	-9	9	-20	19	35	-34	5.3	132	19.1	132	24.8
	4200	29	-30	-10	9	-20	20	35	-35	5.5	135	19.0	135	24.7
	4300	30	-30	-10	9	-21	21	36	-35	5.6	137	18.9	137	24.5
	4400	31	-31	-10	10	-22	21	37	-36	5.7	139	18.8	139	24.4
	4500	31	-32	-10	10	-23	22	38	-37	5.8	141	18.7	141	24.2
	4600	32	-33	-11	10	-23	23	38	-38	6.0	144	18.6	144	24.1
	4700	33	-34	-11	10	-24	23	39	-38	6.1	146	18.6	146	24.0
	4800	34	-35	-11	11	-25	24	40	-39	6.2	148	18.5	148	23.9
	4900	35	-36	-11	11	-26	25	41	-40	6.3	150	18.4	150	23.8
	5000	36	-36	-11	11	-27	26	41	-41	6.4	152	18.4	152	23.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each flight path angle is the minimum safe release altitude to ensure terrain avoidance and canister fuze functioning.
   Straight path dive deliveries based on a 5 g wings level pullup.
3. Highest altitude for each release angle is 20,000 ft-MSL or the maximum release altitude to ensure the bomblets will arm and the impact pattern will develop.
   A DUD may result if this altitude is exceeded.
4. PARENT release. Ejection velocity : 13.2 ft/sec. Stores code : NONE.

* ALSO APPLICABLE TO : MK 339 FUZE

AV8BB-TAC-05-(87-18)10

Figure 2-69. Release Error Sensitivities, CBU-78 Gator, FMU-140/B Fuze (Sheet 18 of 18)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
300 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY (BOMBLETS/ 10000 M^2)	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH		
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	15	339	2605	4	553	8658	15	456	621	27.60	38.6
		500	14	370	3114	4	630	10207	15	453	645	26.75	36.7
		550	13	400	3576	4	704	11632	16	446	658	26.64	35.2
5000	10	450	16	339	2618	4	553	8765	14	442	669	26.43	34.1
		500	15	370	3140	4	631	10350	15	438	698	25.57	32.2
		550	14	400	3617	4	705	11812	16	430	713	25.48	30.9
10000	10	450	17	339	2605	4	551	8815	14	425	718	25.59	30.2

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 1 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
500 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	15	339	2605	4	553	7532	16	851	802	11.46	64.4
		500	14	370	3114	4	630	9317	17	836	807	11.58	61.7
		550	13	400	3576	4	704	10866	18	826	813	11.63	59.7
	20	450	26	749	4678	7	1604	14216	25	413	453	41.77	50.8
		500	25	865	5465	8	1878	16596	26	400	448	43.53	49.4
		550	24	975	6103	8	2120	18651	28	388	440	45.79	48.6
5000	10	450	16	339	2618	4	553	7673	15	841	829	11.19	59.6
		500	15	370	3140	4	631	9495	16	825	843	11.22	56.3
		550	14	400	3617	4	705	11081	17	816	856	11.20	54.1
	20	450	27	740	4697	7	1591	14329	24	397	468	42.04	46.2
		500	25	857	5534	8	1874	16838	26	384	463	43.96	44.8
10000	10	450	17	339	2605	4	551	7762	15	829	866	10.87	54.5
		500	16	370	3161	4	632	9669	16	812	892	10.79	50.7
		550	15	396	3664	4	704	11273	17	804	915	10.62	48.3
	20	450	28	731	4664	7	1569	14338	24	380	482	42.66	42.1

BF 12109-R1-B91-2

Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 2 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
700 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	20	450	26	749	4678	7	1604	13959	26	628	588	21.17	65.1
		500	25	865	5465	8	1878	16375	28	619	588	21.47	63.5
		550	24	975	6103	8	2120	18455	29	608	584	22.01	62.2
	30	450	36	1368	5822	10	3102	17751	34	429	411	44.30	62.4
		500	35	1616	6747	11	3652	20682	37	419	405	45.97	61.6
		550	34	1836	7490	11	4120	23168	39	411	398	47.72	61.2
	38	450	44	1985	6108	12	4469	19294	40	355	333	66.23	64.9
5000	20	450	27	740	4697	7	1591	14088	25	610	600	21.33	59.8
		500	25	857	5534	8	1874	16635	27	600	602	21.60	57.9
		550	24	966	6221	8	2124	18814	29	588	599	22.17	56.6
	30	450	37	1353	5839	10	3074	17895	33	406	407	47.35	58.0
		500	36	1601	6856	11	3649	21042	36	395	400	49.43	57.2
		550	35	1820	7642	11	4126	23628	38	386	392	51.64	56.9
10000	20	450	28	731	4664	7	1569	14117	25	590	615	21.54	54.5
		500	26	848	5589	8	1868	16849	27	578	621	21.75	52.4
		550	25	956	6326	8	2124	19148	28	565	618	22.36	51.0
	30	450	39	1317	5762	10	2997	17789	33	384	403	50.49	54.0

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 3 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
900 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY (BOMBLETS/ 10000 M^2)	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH		
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	20	450	26	749	4678	7	1604	13593	27	824	726	13.05	74.9
		500	25	865	5465	8	1878	16059	29	821	727	13.08	73.6
		550	24	975	6103	8	2120	18173	30	813	725	13.25	72.6
	30	450	36	1368	5822	10	3102	17627	35	597	536	24.41	71.1
		500	35	1616	6747	11	3652	20576	38	593	536	24.61	70.1
		550	34	1836	7490	11	4120	23074	40	587	533	24.98	69.5
	38	450	44	1985	6108	12	4469	19232	41	510	457	33.53	71.4
		500	43	2349	7083	13	5265	22416	44	506	455	33.94	70.9
		550	43	2680	7825	14	5930	25085	47	501	452	34.47	70.6
5000	20	450	27	740	4697	7	1591	13730	27	809	730	13.23	70.5
		500	25	857	5534	8	1874	16330	28	805	734	13.23	68.8
		550	24	966	6221	8	2124	18544	30	796	733	13.39	67.5
	30	450	37	1353	5839	10	3074	17783	35	569	528	26.04	66.3
		500	36	1601	6856	11	3649	20948	37	562	527	26.37	65.1
		550	35	1820	7642	11	4126	23546	39	555	523	26.93	64.4
	38	450	46	1939	6093	12	4388	19265	40	475	437	37.65	67.3
		500	44	2314	7170	13	5231	22717	44	469	434	38.42	66.7
		550	43	2645	8005	14	5932	25596	46	463	430	39.28	66.4
10000	20	450	28	731	4664	7	1569	13772	26	789	737	13.44	65.6
		500	26	848	5589	8	1868	16561	28	784	745	13.37	63.4
		550	25	956	6326	8	2124	18896	30	774	746	13.52	61.8
	30	450	39	1317	5762	10	2997	17689	34	539	521	27.79	61.6
		500	37	1574	6895	11	3612	21137	37	531	520	28.30	60.2
		550	36	1804	7771	12	4125	23968	39	521	515	29.13	59.4
	38	450	48	1878	5972	12	4251	19044	39	442	420	42.16	63.5
		500	46	2265	7175	13	5151	22817	43	434	415	43.32	62.8
		550	44	2607	8108	14	5899	25948	46	427	409	44.67	62.5

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 4 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 10000 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	20	450	26	749	4678	7	1604	12827	29	1096	939	7.59	82.9
		500	25	865	5465	8	1878	15428	31	1094	939	7.60	82.1
		550	24	975	6103	8	2120	17617	32	1090	937	7.65	81.5
	30	450	36	1368	5822	10	3102	17367	37	827	714	13.23	80.0
		500	35	1616	6747	11	3652	20346	40	835	722	12.95	79.3
		550	34	1836	7490	11	4120	22865	42	838	726	12.83	78.8
	38	450	44	1985	6108	12	4469	19087	43	737	638	16.61	79.5
		500	43	2349	7083	13	5265	22289	46	746	646	16.21	78.9
		550	43	2680	7825	14	5930	24969	48	750	650	16.01	78.5
5000	20	450	27	740	4697	7	1591	12960	28	1084	935	7.71	80.1
		500	25	857	5534	8	1874	15702	30	1082	938	7.70	78.9
		550	24	966	6221	8	2124	17994	32	1079	938	7.72	78.0
	30	450	37	1353	5839	10	3074	17535	36	798	698	14.02	76.2
		500	36	1601	6856	11	3649	20732	39	804	707	13.75	75.2
		550	35	1820	7642	11	4126	23352	41	804	710	13.69	74.4
	38	450	46	1939	6093	12	4388	19132	42	694	609	18.50	75.6
		500	44	2314	7170	13	5231	22603	45	699	616	18.15	74.8
		550	43	2645	8005	14	5932	25495	48	701	619	18.02	74.3
10000	20	450	28	731	4664	7	1569	13001	27	1067	932	7.85	76.6
		500	26	848	5589	8	1868	15944	29	1066	939	7.80	74.9
		550	25	956	6326	8	2124	18361	31	1062	941	7.82	73.7
	30	450	39	1317	5762	10	2997	17455	35	764	684	14.95	71.9
		500	37	1574	6895	11	3612	20939	38	768	693	14.68	70.4
		550	36	1804	7771	12	4125	23793	40	765	695	14.69	69.4
	38	450	48	1878	5972	12	4251	18925	41	649	581	20.71	71.5
		500	46	2265	7175	13	5151	22718	44	651	588	20.42	70.4
		550	44	2607	8108	14	5899	25862	47	649	589	20.44	69.7

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 5 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1500 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-AGL)	WEAPON APOGEE FROM RELEASE DRT (FT)	TOF (SEC)	ALT (FT-AGL)	PULLUP TO TARGET DRT (FT)	TOF (SEC)	PATTERN SIZE WIDTH (FT)	LENGTH (FT)	PATTERN DENSITY (BOMBLETS/ 10000 M^2)	IMPACT ANGLE (DEG)
0	20	450	26	749	4678	7	1604	11531	30	1381	1176	4.81	86.9
		500	25	865	5465	8	1878	14555	32	1349	1150	5.04	86.2
		550	24	975	6103	8	2120	16894	34	1341	1143	5.09	85.8
	30	450	36	1368	5822	10	3102	17038	39	1025	875	8.71	84.8
		500	35	1616	6747	11	3652	20054	41	1045	893	8.37	84.4
		550	34	1836	7490	11	4120	22598	43	1058	905	8.16	84.0
	38	450	44	1985	6108	12	4469	18896	45	939	802	10.38	84.3
		500	43	2349	7083	13	5265	22117	48	963	823	9.86	83.9
		550	43	2680	7825	14	5930	24811	50	979	837	9.54	83.7
5000	20	450	27	740	4697	7	1591	11609	29	1374	1172	4.85	85.3
		500	25	857	5534	8	1874	14818	31	1342	1146	5.08	84.2
		550	24	966	6221	8	2124	17265	33	1335	1142	5.12	83.6
	30	450	37	1353	5839	10	3074	17208	38	997	856	9.15	82.2
		500	36	1601	6856	11	3649	20445	41	1017	874	8.78	81.5
		550	35	1820	7642	11	4126	23091	43	1028	885	8.58	80.9
	38	450	46	1939	6093	12	4388	18948	43	893	767	11.40	81.5
		500	44	2314	7170	13	5231	22440	47	915	787	10.85	80.8
		550	43	2645	8005	14	5932	25346	49	928	800	10.52	80.4
10000	20	450	28	731	4664	7	1569	11561	28	1366	1170	4.89	83.2
		500	26	848	5589	8	1868	15054	31	1330	1143	5.14	81.6
		550	25	956	6326	8	2124	17633	32	1324	1140	5.17	80.6
	30	450	39	1317	5762	10	2997	17133	37	964	835	9.71	78.9
		500	37	1574	6895	11	3612	20662	40	983	855	9.30	77.7
		550	36	1804	7771	12	4125	23545	42	991	865	9.11	76.9
	38	450	48	1878	5972	12	4251	18751	42	842	732	12.67	78.0
		500	46	2265	7175	13	5151	22567	46	862	752	12.06	77.0
		550	44	2607	8108	14	5899	25727	48	871	762	11.77	76.3

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 6 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1800 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 10000 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	20	500	25	865	5465	8	1878	13051	33	1639	1394	3.42	88.3
		550	24	975	6103	8	2120	15901	35	1585	1348	3.65	88.0
	30	450	36	1368	5822	10	3102	16647	40	1191	1014	6.47	87.3
		500	35	1616	6747	11	3652	19714	43	1223	1041	6.13	87.0
		550	34	1836	7490	11	4120	22289	45	1246	1061	5.91	86.8
	38	450	44	1985	6108	12	4469	18671	46	1109	944	7.46	86.9
		500	43	2349	7083	13	5265	21915	50	1149	978	6.95	86.7
		550	43	2680	7825	14	5930	24624	52	1177	1002	6.62	86.6
5000	20	500	25	857	5534	8	1874	13273	32	1636	1392	3.43	87.2
		550	24	966	6221	8	2124	16258	34	1585	1349	3.65	86.6
	30	450	37	1353	5839	10	3074	16812	39	1167	995	6.72	85.6
		500	36	1601	6856	11	3649	20103	42	1201	1024	6.35	85.1
		550	35	1820	7642	11	4126	22780	44	1222	1043	6.13	84.8
	38	450	46	1939	6093	12	4388	18724	45	1064	908	8.09	85.0
		500	44	2314	7170	13	5231	22240	48	1103	942	7.51	84.6
		550	43	2645	8005	14	5932	25161	51	1130	966	7.16	84.3
10000	20	500	26	848	5589	8	1868	13459	31	1631	1390	3.45	85.6
		550	25	956	6326	8	2124	16616	34	1579	1348	3.67	84.7
	30	450	39	1317	5762	10	2997	16732	38	1136	972	7.08	83.2
		500	37	1574	6895	11	3612	20322	41	1170	1003	6.66	82.4
		550	36	1804	7771	12	4125	23240	43	1190	1022	6.42	81.9
	38	450	48	1878	5972	12	4251	18531	44	1012	868	8.89	82.4
		500	46	2265	7175	13	5151	22374	47	1051	903	8.24	81.6
		550	44	2607	8108	14	5899	25551	50	1074	924	7.87	81.1

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 7 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
2200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	30	450	36	1368	5822	10	3102	16015	43	1370	1165	4.90	88.9
		500	35	1616	6747	11	3652	19188	45	1414	1202	4.59	88.7
		550	34	1836	7490	11	4120	21817	48	1449	1232	4.38	88.6
	38	450	44	1985	6108	12	4469	18331	49	1288	1095	5.54	88.7
		500	43	2349	7083	13	5265	21611	52	1348	1146	5.06	88.6
		550	43	2680	7825	14	5930	24343	55	1392	1184	4.74	88.5
5000	30	450	37	1353	5839	10	3074	16163	41	1353	1151	5.01	88.0
		500	36	1601	6856	11	3649	19565	44	1401	1192	4.68	87.7
		550	35	1820	7642	11	4126	22299	46	1436	1222	4.45	87.5
	38	450	46	1939	6093	12	4388	18376	47	1248	1062	5.89	87.5
		500	44	2314	7170	13	5231	21932	51	1311	1115	5.34	87.3
		550	43	2645	8005	14	5932	24877	53	1356	1154	4.99	87.2
10000	30	450	39	1317	5762	10	2997	16058	40	1327	1130	5.21	86.6
		500	37	1574	6895	11	3612	19776	43	1378	1174	4.83	86.0
		550	36	1804	7771	12	4125	22757	45	1414	1205	4.59	85.7
	38	450	48	1878	5972	12	4251	18179	46	1198	1021	6.39	85.9
		500	46	2265	7175	13	5151	22066	49	1263	1077	5.75	85.4
		550	44	2607	8108	14	5899	25270	52	1307	1115	5.36	85.1

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 8 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
2600 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 10000 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	30	450	36	1368	5822	10	3102	15185	45	1506	1280	4.05	89.6
		500	35	1616	6747	11	3652	18558	48	1555	1322	3.80	89.5
		550	34	1836	7490	11	4120	21273	50	1599	1359	3.60	89.4
	38	450	44	1985	6108	12	4469	17943	51	1416	1204	4.58	89.4
		500	43	2349	7083	13	5265	21273	54	1493	1269	4.12	89.4
		550	43	2680	7825	14	5930	24033	57	1553	1320	3.81	89.3
5000	30	450	37	1353	5839	10	3074	15297	43	1500	1275	4.08	89.1
		500	36	1601	6856	11	3649	18917	46	1555	1322	3.80	88.9
		550	35	1820	7642	11	4126	21740	49	1601	1361	3.58	88.8
	38	450	46	1939	6093	12	4388	17975	49	1384	1177	4.79	88.8
		500	44	2314	7170	13	5231	21584	53	1468	1248	4.26	88.7
		550	43	2645	8005	14	5932	24558	56	1531	1302	3.92	88.6
10000	30	450	39	1317	5762	10	2997	15127	42	1484	1262	4.17	88.3
		500	37	1574	6895	11	3612	19109	45	1543	1312	3.86	87.9
		550	36	1804	7771	12	4125	22188	47	1592	1354	3.62	87.7
	38	450	48	1878	5972	12	4251	17764	47	1340	1139	5.12	87.8
		500	46	2265	7175	13	5151	21711	51	1429	1215	4.50	87.5
		550	44	2607	8108	14	5899	24947	54	1493	1271	4.12	87.3

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 9 of 25)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
3000 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	30	500	35	1616	6747	11	3652	17766	50	1650	1403	3.37	89.8
		550	34	1836	7490	11	4120	20633	52	1699	1444	3.18	89.8
	38	450	44	1985	6108	12	4469	17501	53	1496	1272	4.11	89.8
		500	43	2349	7083	13	5265	20898	57	1587	1349	3.65	89.7
		550	43	2680	7825	14	5930	23695	59	1661	1412	3.33	89.7
5000	30	450	37	1353	5839	10	3074	13755	44	1636	1390	3.43	89.6
		500	36	1601	6856	11	3649	18100	48	1668	1417	3.30	89.5
		550	35	1820	7642	11	4126	21080	51	1721	1463	3.10	89.4
	38	450	46	1939	6093	12	4388	17512	51	1476	1255	4.22	89.4
		500	44	2314	7170	13	5231	21196	55	1577	1341	3.70	89.4
		550	43	2645	8005	14	5932	24208	58	1657	1409	3.35	89.3

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 10 of 25)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
700 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	16	5139	2616	4	5353	16151	28	412	407	46.60	59.3
		500	15	5170	3138	4	5431	17952	29	426	425	43.16	58.4
		550	14	5200	3614	4	5505	19532	30	436	438	40.97	57.8

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 11 of 25)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
900 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	16	5139	2616	4	5353	16069	29	602	555	23.38	67.4
		500	15	5170	3138	4	5431	17865	30	624	577	21.71	66.8
		550	14	5200	3614	4	5505	19441	31	639	592	20.64	66.5
	20	450	27	5540	4692	7	6390	19340	36	536	490	29.76	68.5
		500	25	5657	5528	8	6674	21847	38	545	500	28.62	67.9
		550	24	5766	6214	8	6923	23959	39	550	506	28.05	67.5
	30	450	37	6153	5832	10	7872	21418	43	482	434	37.41	70.7
		500	36	6401	6848	11	8447	24511	46	485	438	36.82	70.2
		550	35	6621	7654	11	8932	27075	48	485	439	36.65	69.9
	38	450	45	6740	6086	12	9187	21993	48	450	400	43.35	73.0
		500	44	7115	7160	13	10029	25377	51	451	401	43.19	72.6
		550	43	7445	7994	14	10728	28196	54	450	401	43.29	72.4
5000	10	450	17	5139	2604	4	5351	16327	29	558	536	26.13	62.3
		500	16	5170	3159	4	5432	18251	29	580	562	23.96	61.4
		550	15	5200	3661	4	5508	19917	30	596	580	22.61	60.9
	20	450	28	5531	4679	7	6372	19597	36	492	465	34.12	64.0
		500	26	5648	5584	8	6667	22283	37	502	478	32.58	63.2
		550	25	5756	6320	8	6923	24532	39	506	484	31.84	62.7
	30	450	39	6117	5779	10	7804	21540	42	437	403	44.33	67.0
		500	37	6375	6911	11	8419	24934	45	440	408	43.55	66.3
		550	36	6604	7762	12	8923	27654	47	440	409	43.43	66.0
10000	10	450	20	5135	2587	4	5344	16515	28	513	517	29.43	57.6
		500	17	5166	3164	4	5427	18547	29	536	547	26.68	56.4
		550	16	5196	3680	4	5504	20280	30	551	567	25.00	55.7
	20	450	31	5515	4594	7	6334	19636	35	450	441	39.42	60.1
		500	27	5638	5587	8	6649	22585	37	460	456	37.30	59.0
		550	26	5754	6393	8	6926	25035	38	464	463	36.33	58.4

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 12 of 25)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 10000 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	16	5139	2616	4	5353	15881	31	885	771	11.44	77.3
		500	15	5170	3138	4	5431	17665	32	917	800	10.65	77.1
		550	14	5200	3614	4	5505	19233	33	940	820	10.14	76.9
	20	450	27	5540	4692	7	6390	19208	38	807	703	13.76	77.4
		500	25	5657	5528	8	6674	21713	40	825	720	13.15	77.0
		550	24	5766	6214	8	6923	23824	41	836	730	12.81	76.7
	30	450	37	6153	5832	10	7872	21332	45	745	647	16.19	78.0
		500	36	6401	6848	11	8447	24426	47	756	658	15.72	77.6
		550	35	6621	7654	11	8932	26992	49	761	663	15.46	77.3
	38	450	45	6740	6086	12	9187	21933	50	709	614	17.92	79.0
		500	44	7115	7160	13	10029	25319	53	717	621	17.54	78.6
		550	43	7445	7994	14	10728	28140	55	721	625	17.34	78.4
5000	10	450	17	5139	2604	4	5351	16158	30	834	743	12.60	72.5
		500	16	5170	3159	4	5432	18070	31	869	776	11.59	72.1
		550	15	5200	3661	4	5508	19728	32	893	799	10.95	71.9
	20	450	28	5531	4679	7	6372	19482	37	751	669	15.55	72.8
		500	26	5648	5584	8	6667	22166	39	770	687	14.76	72.2
		550	25	5756	6320	8	6923	24414	40	780	698	14.33	71.8
	30	450	39	6117	5779	10	7804	21468	44	681	603	19.04	73.8
		500	37	6375	6911	11	8419	24863	46	691	613	18.44	73.2
		550	36	6604	7762	12	8923	27585	48	695	618	18.18	72.8
	38	450	48	6679	5966	12	9050	21870	49	639	561	21.80	75.4
		500	46	7065	7192	13	9959	25641	52	645	568	21.34	74.7
		550	44	7408	8098	14	10697	28676	54	646	571	21.18	74.4
10000	10	450	20	5135	2587	4	5344	16371	29	777	716	14.04	67.2
		500	17	5166	3164	4	5427	18392	30	813	753	12.76	66.5
		550	16	5196	3680	4	5504	20116	31	838	779	11.98	66.1
	20	450	31	5515	4594	7	6334	19541	36	690	633	17.87	67.9
		500	27	5638	5587	8	6649	22488	38	710	656	16.79	67.0
		550	26	5754	6393	8	6926	24938	39	720	668	16.24	66.4
	30	450	43	6070	5604	10	7689	21285	43	616	558	22.70	69.7
		500	39	6336	6851	11	8342	24991	45	625	570	21.89	68.7
		550	37	6575	7818	12	8888	28011	47	629	576	21.59	68.2
	38	450	53	6592	5683	12	8823	21385	47	571	511	26.77	71.9
		500	49	6999	7056	13	9806	25569	51	576	518	26.19	71.0
		550	46	7354	8114	14	10613	28970	53	577	520	26.05	70.5

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 13 of 25)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1500 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	16	5139	2616	4	5353	15636	33	1141	977	7.01	83.2
		500	15	5170	3138	4	5431	17406	34	1183	1013	6.52	83.1
		550	14	5200	3614	4	5505	18965	35	1213	1039	6.20	83.0
	20	450	27	5540	4692	7	6390	19028	40	1059	907	8.14	83.1
		500	25	5657	5528	8	6674	21529	42	1086	930	7.73	82.8
		550	24	5766	6214	8	6923	23640	43	1103	945	7.49	82.7
	30	450	37	6153	5832	10	7872	21207	47	1000	856	9.13	83.2
		500	36	6401	6848	11	8447	24302	49	1021	874	8.76	82.9
		550	35	6621	7654	11	8932	26870	51	1034	886	8.53	82.8
	38	450	45	6740	6086	12	9187	21840	52	969	828	9.73	83.6
		500	44	7115	7160	13	10029	25229	55	987	845	9.37	83.4
		550	43	7445	7994	14	10728	28052	57	999	855	9.14	83.2
5000	10	450	17	5139	2604	4	5351	15926	32	1091	943	7.59	79.7
		500	16	5170	3159	4	5432	17823	33	1137	983	6.98	79.5
		550	15	5200	3661	4	5508	19470	34	1170	1012	6.59	79.3
	20	450	28	5531	4679	7	6372	19315	39	1001	865	9.02	79.5
		500	26	5648	5584	8	6667	21994	41	1030	892	8.50	79.1
		550	25	5756	6320	8	6923	24241	42	1048	908	8.21	78.9
	30	450	39	6117	5779	10	7804	21355	45	928	802	10.50	79.8
		500	37	6375	6911	11	8419	24751	48	949	821	10.03	79.3
		550	36	6604	7762	12	8923	27475	50	960	831	9.79	79.0
	38	450	48	6679	5966	12	9050	21789	50	885	763	11.57	80.5
		500	46	7065	7192	13	9959	25562	53	902	779	11.12	80.0
		550	44	7408	8098	14	10697	28599	56	911	787	10.89	79.6
10000	10	450	20	5135	2587	4	5344	16159	31	1032	907	8.35	75.2
		500	17	5166	3164	4	5427	18164	32	1081	952	7.59	74.8
		550	16	5196	3680	4	5504	19878	33	1115	983	7.12	74.6
	20	450	31	5515	4594	7	6334	19393	38	933	821	10.20	75.1
		500	27	5638	5587	8	6649	22334	39	964	851	9.52	74.5
		550	26	5754	6393	8	6926	24783	41	982	868	9.16	74.1
	30	450	43	6070	5604	10	7689	21188	44	849	745	12.35	75.7
		500	39	6336	6851	11	8342	24895	47	869	765	11.74	74.9
		550	37	6575	7818	12	8888	27917	49	880	776	11.44	74.4
	38	450	53	6592	5683	12	8823	21317	48	797	696	14.07	76.9
		500	49	6999	7056	13	9806	25503	52	813	712	13.51	76.0
		550	46	7354	8114	14	10613	28907	55	820	720	13.25	75.5

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 14 of 25)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1800 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 10000 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	16	5139	2616	4	5353	15353	35	1365	1163	4.92	86.3
		500	15	5170	3138	4	5431	17108	36	1417	1207	4.57	86.3
		550	14	5200	3614	4	5505	18657	37	1455	1240	4.33	86.2
	20	450	27	5540	4692	7	6390	18817	42	1280	1091	5.59	86.2
		500	25	5657	5528	8	6674	21313	43	1317	1122	5.29	86.1
		550	24	5766	6214	8	6923	23422	45	1341	1143	5.09	86.0
	30	450	37	6153	5832	10	7872	21056	49	1228	1046	6.08	86.3
		500	36	6401	6848	11	8447	24151	51	1260	1074	5.78	86.1
		550	35	6621	7654	11	8932	26721	53	1282	1092	5.58	86.0
	38	450	45	6740	6086	12	9187	21725	54	1205	1027	6.31	86.5
		500	44	7115	7160	13	10029	25115	57	1237	1054	5.99	86.3
		550	43	7445	7994	14	10728	27941	59	1259	1072	5.79	86.2
5000	10	450	17	5139	2604	4	5351	15649	34	1320	1128	5.24	84.0
		500	16	5170	3159	4	5432	17529	35	1378	1178	4.81	83.9
		550	15	5200	3661	4	5508	19165	35	1420	1214	4.53	83.8
	20	450	28	5531	4679	7	6372	19109	41	1226	1049	6.07	83.8
		500	26	5648	5584	8	6667	21783	42	1267	1083	5.69	83.5
		550	25	5756	6320	8	6923	24029	44	1292	1106	5.47	83.4
	30	450	39	6117	5779	10	7804	21210	47	1157	989	6.83	83.8
		500	37	6375	6911	11	8419	24607	50	1190	1018	6.45	83.5
		550	36	6604	7762	12	8923	27332	52	1210	1036	6.23	83.3
	38	450	48	6679	5966	12	9050	21681	52	1119	956	7.31	84.1
		500	46	7065	7192	13	9959	25455	55	1150	983	6.91	83.8
		550	44	7408	8098	14	10697	28495	58	1169	1000	6.68	83.6
10000	10	450	20	5135	2587	4	5344	15894	33	1263	1088	5.68	80.6
		500	17	5166	3164	4	5427	17881	34	1326	1143	5.15	80.4
		550	16	5196	3680	4	5504	19583	34	1370	1182	4.82	80.3
	20	450	31	5515	4594	7	6334	19200	39	1158	999	6.76	80.4
		500	27	5638	5587	8	6649	22135	41	1202	1038	6.26	80.0
		550	26	5754	6393	8	6926	24583	43	1229	1062	5.99	79.7
	30	450	43	6070	5604	10	7689	21056	46	1073	925	7.87	80.5
		500	39	6336	6851	11	8342	24762	48	1107	955	7.39	79.9
		550	37	6575	7818	12	8888	27786	50	1126	973	7.13	79.6
	38	450	53	6592	5683	12	8823	21221	50	1021	878	8.71	81.1
		500	49	6999	7056	13	9806	25409	53	1051	906	8.21	80.4
		550	46	7354	8114	14	10613	28816	56	1068	921	7.94	80.0

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 15 of 25)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
2200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	16	5139	2616	4	5353	14931	37	1616	1374	3.52	88.4
		500	15	5170	3138	4	5431	16664	38	1683	1431	3.24	88.4
		550	14	5200	3614	4	5505	18199	39	1733	1473	3.06	88.4
	20	450	27	5540	4692	7	6390	18501	44	1527	1299	3.94	88.3
		500	25	5657	5528	8	6674	20991	46	1577	1341	3.69	88.3
		550	24	5766	6214	8	6923	23099	47	1611	1370	3.54	88.2
	30	450	37	6153	5832	10	7872	20828	51	1484	1262	4.17	88.3
		500	36	6401	6848	11	8447	23924	54	1533	1303	3.91	88.3
		550	35	6621	7654	11	8932	26496	56	1566	1332	3.74	88.2
	38	450	45	6740	6086	12	9187	21550	56	1475	1255	4.22	88.4
		500	44	7115	7160	13	10029	24943	59	1526	1297	3.95	88.3
		550	43	7445	7994	14	10728	27771	62	1562	1328	3.77	88.3
5000	10	450	17	5139	2604	4	5351	15226	36	1581	1346	3.67	87.0
		500	16	5170	3159	4	5432	17082	37	1657	1410	3.34	87.0
		550	15	5200	3661	4	5508	18702	38	1712	1457	3.13	87.0
	20	450	28	5531	4679	7	6372	18793	43	1483	1262	4.17	86.9
		500	26	5648	5584	8	6667	21459	45	1539	1310	3.88	86.8
		550	25	5756	6320	8	6923	23703	46	1575	1341	3.70	86.7
	30	450	39	6117	5779	10	7804	20984	49	1421	1209	4.55	86.9
		500	37	6375	6911	11	8419	24380	52	1472	1254	4.23	86.7
		550	36	6604	7762	12	8923	27108	54	1505	1282	4.05	86.6
	38	450	48	6679	5966	12	9050	21508	54	1393	1185	4.73	87.0
		500	46	7065	7192	13	9959	25285	58	1445	1230	4.39	86.8
		550	44	7408	8098	14	10697	28327	60	1480	1260	4.19	86.7
10000	10	450	20	5135	2587	4	5344	15480	35	1532	1308	3.90	84.9
		500	17	5166	3164	4	5427	17439	36	1614	1377	3.51	84.8
		550	16	5196	3680	4	5504	19124	36	1672	1427	3.27	84.7
	20	450	31	5515	4594	7	6334	18893	41	1420	1212	4.54	84.7
		500	27	5638	5587	8	6649	21819	43	1482	1266	4.16	84.5
		550	26	5754	6393	8	6926	24263	45	1522	1300	3.95	84.3
	30	450	43	6070	5604	10	7689	20839	48	1338	1143	5.11	84.7
		500	39	6336	6851	11	8342	24544	50	1392	1189	4.72	84.3
		550	37	6575	7818	12	8888	27570	53	1426	1219	4.49	84.1
	38	450	53	6592	5683	12	8823	21059	52	1291	1102	5.49	84.9
		500	49	6999	7056	13	9806	25248	56	1345	1148	5.06	84.5
		550	46	7354	8114	14	10613	28657	58	1378	1177	4.81	84.2

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 16 of 25)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
2600 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	16	5139	2616	4	5353	14463	40	1814	1542	2.79	89.3
		500	15	5170	3138	4	5431	16174	41	1897	1613	2.55	89.3
		550	14	5200	3614	4	5505	17693	41	1960	1666	2.39	89.3
	20	450	27	5540	4692	7	6390	18155	47	1719	1461	3.11	89.3
		500	25	5657	5528	8	6674	20639	48	1783	1516	2.89	89.2
		550	24	5766	6214	8	6923	22746	50	1828	1554	2.75	89.2
	30	450	37	6153	5832	10	7872	20580	54	1686	1433	3.23	89.3
		500	36	6401	6848	11	8447	23676	56	1751	1488	3.00	89.2
		550	35	6621	7654	11	8932	26250	58	1797	1528	2.85	89.2
	38	450	45	6740	6086	12	9187	21359	59	1691	1437	3.22	89.3
		500	44	7115	7160	13	10029	24754	62	1761	1497	2.96	89.3
		550	43	7445	7994	14	10728	27585	64	1812	1540	2.80	89.2
5000	10	450	17	5139	2604	4	5351	14752	38	1794	1526	2.85	88.5
		500	16	5170	3159	4	5432	16581	39	1888	1606	2.58	88.5
		550	15	5200	3661	4	5508	18185	40	1958	1665	2.40	88.5
	20	450	28	5531	4679	7	6372	18441	45	1689	1437	3.22	88.5
		500	26	5648	5584	8	6667	21099	47	1761	1498	2.96	88.4
		550	25	5756	6320	8	6923	23341	48	1810	1539	2.80	88.4
	30	450	39	6117	5779	10	7804	20731	52	1635	1390	3.44	88.4
		500	37	6375	6911	11	8419	24127	54	1706	1451	3.16	88.3
		550	36	6604	7762	12	8923	26857	56	1753	1491	2.99	88.3
	38	450	48	6679	5966	12	9050	21315	57	1618	1376	3.51	88.5
		500	46	7065	7192	13	9959	25092	60	1694	1440	3.20	88.4
		550	44	7408	8098	14	10697	28138	62	1745	1484	3.02	88.3
10000	10	450	20	5135	2587	4	5344	15006	37	1756	1495	2.98	87.2
		500	17	5166	3164	4	5427	16937	38	1859	1582	2.66	87.2
		550	16	5196	3680	4	5504	18603	38	1933	1645	2.46	87.1
	20	450	31	5515	4594	7	6334	18542	43	1637	1393	3.43	87.1
		500	27	5638	5587	8	6649	21458	45	1718	1462	3.11	86.9
		550	26	5754	6393	8	6926	23900	47	1771	1508	2.93	86.9
	30	450	43	6070	5604	10	7689	20589	50	1560	1328	3.77	87.0
		500	39	6336	6851	11	8342	24293	52	1636	1393	3.43	86.8
		550	37	6575	7818	12	8888	27321	55	1686	1435	3.23	86.7
	38	450	53	6592	5683	12	8823	20869	54	1520	1294	3.97	87.1
		500	49	6999	7056	13	9806	25058	58	1599	1362	3.59	86.9
		550	46	7354	8114	14	10613	28471	60	1652	1406	3.36	86.7

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 17 of 25)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
3000 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	16	5139	2616	4	5353	13946	42	1960	1666	2.39	89.7
		500	15	5170	3138	4	5431	15632	43	2062	1753	2.16	89.7
		550	14	5200	3614	4	5505	17136	44	2139	1818	2.01	89.7
	20	450	27	5540	4692	7	6390	17780	49	1857	1578	2.67	89.7
		500	25	5657	5528	8	6674	20260	51	1935	1645	2.45	89.7
		550	24	5766	6214	8	6923	22366	52	1991	1692	2.32	89.7
	30	450	37	6153	5832	10	7872	20314	56	1833	1558	2.74	89.7
		500	36	6401	6848	11	8447	23413	59	1914	1627	2.51	89.7
		550	35	6621	7654	11	8932	25990	61	1974	1678	2.36	89.7
	38	450	45	6740	6086	12	9187	21155	61	1851	1573	2.68	89.7
		500	44	7115	7160	13	10029	24554	64	1941	1650	2.44	89.7
		550	43	7445	7994	14	10728	27388	67	2009	1708	2.28	89.7
5000	10	450	17	5139	2604	4	5351	14226	40	1960	1666	2.39	89.3
		500	16	5170	3159	4	5432	16027	41	2075	1764	2.13	89.3
		550	15	5200	3661	4	5508	17613	42	2161	1837	1.97	89.3
	20	450	28	5531	4679	7	6372	18056	47	1847	1570	2.69	89.2
		500	26	5648	5584	8	6667	20708	49	1935	1645	2.45	89.2
		550	25	5756	6320	8	6923	22948	50	1997	1697	2.31	89.2
	30	450	39	6117	5779	10	7804	20458	54	1800	1530	2.84	89.2
		500	37	6375	6911	11	8419	23854	57	1890	1607	2.57	89.2
		550	36	6604	7762	12	8923	26587	59	1952	1659	2.41	89.1
	38	450	48	6679	5966	12	9050	21106	59	1794	1525	2.85	89.2
		500	46	7065	7192	13	9959	24885	62	1893	1610	2.56	89.2
		550	44	7408	8098	14	10697	27934	65	1962	1668	2.39	89.2

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 18 of 25)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
900 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	17	10139	2604	4	10351	20013	37	492	449	35.33	68.6
		500	16	10170	3159	4	10432	22137	38	503	462	33.63	67.8
		550	15	10200	3661	4	10508	23937	38	511	471	32.51	67.3
	20	450	28	10531	4679	7	11372	22664	43	465	419	40.14	70.5
		500	26	10648	5584	8	11667	25462	45	471	426	38.97	69.8
		550	25	10756	6320	8	11923	27768	46	474	430	38.33	69.4

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 19 of 25)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 10000 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	17	10139	2604	4	10351	19932	38	784	686	14.52	76.3
		500	16	10170	3159	4	10432	22050	39	802	703	13.87	75.8
		550	15	10200	3661	4	10508	23846	40	814	714	13.44	75.6
	20	450	28	10531	4679	7	11372	22601	45	748	652	16.00	77.1
		500	26	10648	5584	8	11667	25396	47	759	663	15.51	76.7
		550	25	10756	6320	8	11923	27701	48	766	670	15.22	76.4
	30	450	39	11117	5779	10	12804	23942	51	715	620	17.63	78.4
		500	37	11375	6911	11	13419	27395	54	722	627	17.25	77.9
		550	36	11604	7762	12	13923	30134	56	725	631	17.07	77.7
	38	450	48	11679	5966	12	14050	23890	56	692	598	18.88	79.7
		500	46	12065	7192	13	14959	27696	59	697	603	18.59	79.2
		550	44	12408	8098	14	15697	30738	61	699	605	18.45	79.0
5000	10	450	20	10135	2587	4	10344	20296	37	708	634	17.41	71.6
		500	17	10166	3164	4	10427	22549	38	726	653	16.48	70.9
		550	16	10196	3680	4	10504	24426	39	739	666	15.88	70.5
	20	450	31	10515	4594	7	11334	22800	44	669	594	19.66	72.9
		500	27	10638	5587	8	11649	25888	46	680	607	18.90	72.2
		550	26	10754	6393	8	11926	28409	47	687	615	18.48	71.8
	30	450	43	11070	5604	10	12689	23883	50	631	556	22.26	74.8
		500	39	11336	6851	11	13342	27674	53	638	564	21.70	74.1
		550	37	11575	7818	12	13888	30726	55	641	568	21.45	73.7
	38	450	53	11592	5683	12	13823	23507	54	606	529	24.36	76.6
		500	49	11999	7056	13	14806	27754	58	610	535	23.96	75.9
		550	46	12354	8114	14	15613	31177	60	612	537	23.80	75.5
10000	10	450	24	10135	2543	4	10340	20549	36	631	583	21.23	67.1
		500	20	10166	3141	4	10424	22936	37	650	604	19.89	66.1
		550	18	10196	3693	4	10503	24972	38	664	620	18.99	65.5
	20	450	37	10499	4436	7	11284	22756	43	592	539	24.50	69.0
		500	32	10620	5492	8	11606	26077	44	604	554	23.35	68.0
		550	31	10744	6390	8	11906	28883	46	611	563	22.69	67.4
	30	450	49	11028	5255	9	12529	23373	48	554	496	28.44	71.6
		500	45	11283	6631	11	13204	27520	51	561	506	27.51	70.6
		550	41	11533	7767	12	13808	31016	53	565	511	27.05	70.0
	38	450	58	11569	5211	11	13590	22761	52	528	467	31.67	74.1
		500	57	11900	6684	13	14527	27184	56	533	474	30.94	73.1
		550	52	12280	7950	14	15438	31162	59	535	477	30.61	72.5

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 20 of 25)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1500 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	17	10139	2604	4	10351	19809	40	1078	925	7.83	82.1
		500	16	10170	3159	4	10432	21920	41	1102	946	7.50	81.9
		550	15	10200	3661	4	10508	23710	42	1118	960	7.28	81.8
	20	450	28	10531	4679	7	11372	22502	47	1041	893	8.40	82.5
		500	26	10648	5584	8	11667	25293	48	1058	908	8.13	82.2
		550	25	10756	6320	8	11923	27596	50	1069	918	7.96	82.1
	30	450	39	11117	5779	10	12804	23867	53	1009	864	8.97	83.1
		500	37	11375	6911	11	13419	27318	56	1023	876	8.72	82.8
		550	36	11604	7762	12	13923	30057	58	1031	884	8.58	82.6
	38	450	48	11679	5966	12	14050	23830	58	987	844	9.37	83.7
		500	46	12065	7192	13	14959	27636	61	1000	855	9.13	83.4
		550	44	12408	8098	14	15697	30678	63	1007	862	9.00	83.3
5000	10	450	20	10135	2587	4	10344	20189	39	992	862	9.14	78.1
		500	17	10166	3164	4	10427	22434	40	1017	885	8.68	77.7
		550	16	10196	3680	4	10504	24306	41	1035	901	8.38	77.5
	20	450	31	10515	4594	7	11334	22716	45	947	821	10.05	78.7
		500	27	10638	5587	8	11649	25799	47	966	839	9.65	78.2
		550	26	10754	6393	8	11926	28318	49	977	849	9.41	78.0
	30	450	43	11070	5604	10	12689	23820	51	905	782	11.04	79.6
		500	39	11336	6851	11	13342	27609	54	919	795	10.69	79.1
		550	37	11575	7818	12	13888	30661	56	926	803	10.51	78.8
	38	450	53	11592	5683	12	13823	23459	56	876	754	11.82	80.7
		500	49	11999	7056	13	14806	27705	59	887	765	11.51	80.1
		550	46	12354	8114	14	15613	31128	62	893	771	11.35	79.7
10000	10	450	24	10135	2543	4	10340	20462	38	896	795	10.96	73.3
		500	20	10166	3141	4	10424	22841	39	923	822	10.30	72.7
		550	18	10196	3693	4	10503	24872	40	943	841	9.85	72.3
	20	450	37	10499	4436	7	11284	22689	44	846	747	12.37	74.4
		500	32	10620	5492	8	11606	26005	46	866	767	11.76	73.6
		550	31	10744	6390	8	11906	28810	47	878	780	11.41	73.2
	30	450	49	11028	5255	9	12529	23324	50	797	699	14.02	75.9
		500	45	11283	6631	11	13204	27469	52	812	714	13.47	75.1
		550	41	11533	7767	12	13808	30965	55	820	723	13.18	74.6
	38	450	58	11569	5211	11	13590	22725	54	765	665	15.36	77.6
		500	57	11900	6684	13	14527	27147	57	775	677	14.88	76.7
		550	52	12280	7950	14	15438	31125	60	781	684	14.62	76.1

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 21 of 25)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
1800 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 10000 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	17	10139	2604	4	10351	19658	42	1351	1152	5.02	85.6
		500	16	10170	3159	4	10432	21760	43	1380	1177	4.81	85.5
		550	15	10200	3661	4	10508	23544	44	1401	1195	4.67	85.5
	20	450	28	10531	4679	7	11372	22378	49	1316	1122	5.29	85.8
		500	26	10648	5584	8	11667	25164	50	1340	1142	5.10	85.7
		550	25	10756	6320	8	11923	27464	52	1355	1156	4.99	85.6
	30	450	39	11117	5779	10	12804	23769	55	1290	1099	5.51	86.1
		500	37	11375	6911	11	13419	27218	58	1312	1118	5.33	85.9
		550	36	11604	7762	12	13923	29956	59	1326	1130	5.22	85.8
	38	450	48	11679	5966	12	14050	23752	60	1274	1085	5.65	86.4
		500	46	12065	7192	13	14959	27556	63	1296	1104	5.46	86.3
		550	44	12408	8098	14	15697	30598	65	1310	1116	5.34	86.2
5000	10	450	20	10135	2587	4	10344	20048	41	1265	1084	5.69	82.7
		500	17	10166	3164	4	10427	22283	42	1298	1113	5.41	82.5
		550	16	10196	3680	4	10504	24149	42	1320	1132	5.23	82.4
	20	450	31	10515	4594	7	11334	22601	47	1220	1045	6.13	83.0
		500	27	10638	5587	8	11649	25679	49	1246	1068	5.87	82.7
		550	26	10754	6393	8	11926	28195	50	1263	1082	5.72	82.5
	30	450	43	11070	5604	10	12689	23732	53	1179	1009	6.57	83.5
		500	39	11336	6851	11	13342	27518	56	1202	1029	6.32	83.1
		550	37	11575	7818	12	13888	30569	58	1215	1041	6.17	82.9
	38	450	53	11592	5683	12	13823	23389	57	1152	984	6.89	84.0
		500	49	11999	7056	13	14806	27634	61	1173	1003	6.64	83.7
		550	46	12354	8114	14	15613	31056	63	1186	1014	6.50	83.5
10000	10	450	24	10135	2543	4	10340	20338	39	1163	1008	6.66	78.7
		500	20	10166	3141	4	10424	22707	40	1198	1040	6.27	78.3
		550	18	10196	3693	4	10503	24731	41	1224	1063	6.01	78.1
	20	450	37	10499	4436	7	11284	22590	45	1108	958	7.36	79.2
		500	32	10620	5492	8	11606	25901	47	1136	985	6.99	78.7
		550	31	10744	6390	8	11906	28702	49	1154	1001	6.76	78.4
	30	450	49	11028	5255	9	12529	23251	51	1055	910	8.13	80.1
		500	45	11283	6631	11	13204	27393	54	1078	932	7.77	79.4
		550	41	11533	7767	12	13808	30887	56	1093	946	7.56	79.1
	38	450	58	11569	5211	11	13590	22668	55	1019	877	8.74	81.1
		500	57	11900	6684	13	14527	27089	58	1039	896	8.40	80.4
		550	52	12280	7950	14	15438	31066	61	1052	908	8.18	80.0

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 22 of 25)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
2200 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	17	10139	2604	4	10351	19430	45	1673	1422	3.28	88.0
		500	16	10170	3159	4	10432	21519	46	1710	1454	3.14	88.0
		550	15	10200	3661	4	10508	23295	46	1736	1477	3.05	88.0
	20	450	28	10531	4679	7	11372	22188	51	1642	1396	3.41	88.1
		500	26	10648	5584	8	11667	24966	53	1674	1424	3.28	88.0
		550	25	10756	6320	8	11923	27262	54	1697	1443	3.19	88.0
	30	450	39	11117	5779	10	12804	23618	58	1625	1382	3.48	88.2
		500	37	11375	6911	11	13419	27063	60	1660	1411	3.33	88.2
		550	36	11604	7762	12	13923	29800	62	1682	1431	3.25	88.1
	38	450	48	11679	5966	12	14050	23629	62	1620	1378	3.50	88.4
		500	46	12065	7192	13	14959	27431	65	1657	1409	3.35	88.3
		550	44	12408	8098	14	15697	30472	68	1681	1429	3.25	88.2
5000	10	450	20	10135	2587	4	10344	19824	43	1596	1359	3.60	86.3
		500	17	10166	3164	4	10427	22045	44	1638	1395	3.42	86.2
		550	16	10196	3680	4	10504	23902	45	1667	1420	3.30	86.1
	20	450	31	10515	4594	7	11334	22417	49	1552	1322	3.81	86.4
		500	27	10638	5587	8	11649	25485	51	1589	1354	3.63	86.3
		550	26	10754	6393	8	11926	27997	53	1613	1374	3.52	86.2
	30	450	43	11070	5604	10	12689	23587	55	1519	1293	3.98	86.6
		500	39	11336	6851	11	13342	27368	58	1555	1324	3.79	86.4
		550	37	11575	7818	12	13888	30417	60	1578	1344	3.68	86.3
	38	450	53	11592	5683	12	13823	23273	60	1498	1275	4.09	86.9
		500	49	11999	7056	13	14806	27514	63	1535	1307	3.89	86.7
		550	46	12354	8114	14	15613	30936	66	1559	1327	3.78	86.6
10000	10	450	24	10135	2543	4	10340	20129	41	1496	1280	4.08	83.6
		500	20	10166	3141	4	10424	22483	42	1542	1320	3.84	83.4
		550	18	10196	3693	4	10503	24496	43	1575	1348	3.68	83.3
	20	450	37	10499	4436	7	11284	22421	48	1439	1230	4.41	83.8
		500	32	10620	5492	8	11606	25721	49	1479	1266	4.17	83.5
		550	31	10744	6390	8	11906	28517	51	1506	1289	4.02	83.3
	30	450	49	11028	5255	9	12529	23120	53	1387	1185	4.75	84.2
		500	45	11283	6631	11	13204	27256	56	1425	1219	4.50	83.8
		550	41	11533	7767	12	13808	30748	58	1450	1241	4.34	83.6
	38	450	58	11569	5211	11	13590	22566	57	1353	1155	5.00	84.7
		500	57	11900	6684	13	14527	26981	60	1389	1186	4.74	84.3
		550	52	12280	7950	14	15438	30958	63	1414	1208	4.57	84.0

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 23 of 25)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
2600 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/ 10000 M^2)	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)		(DEG)
0	10	450	17	10139	2604	4	10351	19182	47	1942	1651	2.44	89.1
		500	16	10170	3159	4	10432	21257	48	1989	1691	2.32	89.1
		550	15	10200	3661	4	10508	23024	49	2022	1719	2.25	89.1
	20	450	28	10531	4679	7	11372	21981	54	1916	1629	2.50	89.2
		500	26	10648	5584	8	11667	24751	56	1959	1665	2.39	89.1
		550	25	10756	6320	8	11923	27043	57	1988	1690	2.32	89.1
	30	450	39	11117	5779	10	12804	23453	60	1911	1625	2.52	89.2
		500	37	11375	6911	11	13419	26893	63	1959	1665	2.39	89.2
		550	36	11604	7762	12	13923	29628	65	1991	1692	2.32	89.2
	38	450	48	11679	5966	12	14050	23493	65	1918	1630	2.50	89.3
		500	46	12065	7192	13	14959	27293	68	1970	1675	2.37	89.2
		550	44	12408	8098	14	15697	30333	70	2006	1705	2.28	89.2
5000	10	450	20	10135	2587	4	10344	19575	45	1882	1601	2.59	88.1
		500	17	10166	3164	4	10427	21780	46	1934	1645	2.46	88.1
		550	16	10196	3680	4	10504	23626	47	1971	1676	2.37	88.1
	20	450	31	10515	4594	7	11334	22209	52	1841	1565	2.71	88.2
		500	27	10638	5587	8	11649	25268	54	1890	1607	2.57	88.1
		550	26	10754	6393	8	11926	27774	55	1922	1635	2.49	88.1
	30	450	43	11070	5604	10	12689	23422	58	1816	1544	2.78	88.3
		500	39	11336	6851	11	13342	27197	60	1867	1588	2.63	88.2
		550	37	11575	7818	12	13888	30243	63	1901	1617	2.54	88.1
	38	450	53	11592	5683	12	13823	23138	62	1804	1534	2.82	88.4
		500	49	11999	7056	13	14806	27375	65	1859	1581	2.66	88.3
		550	46	12354	8114	14	15613	30796	68	1896	1613	2.55	88.2
10000	10	450	24	10135	2543	4	10340	19886	44	1793	1527	2.85	86.4
		500	20	10166	3141	4	10424	22223	45	1850	1576	2.68	86.3
		550	18	10196	3693	4	10503	24225	45	1892	1612	2.56	86.2
	20	450	37	10499	4436	7	11284	22220	50	1735	1478	3.05	86.5
		500	32	10620	5492	8	11606	25509	52	1789	1524	2.87	86.3
		550	31	10744	6390	8	11906	28299	53	1826	1555	2.75	86.2
	30	450	49	11028	5255	9	12529	22964	55	1688	1438	3.22	86.7
		500	45	11283	6631	11	13204	27091	58	1743	1484	3.02	86.5
		550	41	11533	7767	12	13808	30580	60	1780	1516	2.89	86.3
	38	450	58	11569	5211	11	13590	22440	59	1660	1413	3.33	86.9
		500	57	11900	6684	13	14527	26850	63	1714	1459	3.12	86.7
		550	52	12280	7950	14	15438	30824	66	1753	1493	2.98	86.5

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 24 of 25)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
CBU-78/B (GATOR) : FMU-140 FUZE
3000 FT-MSL FUZE FUNCTION ALTITUDE

TARGET ALTITUDE	FLIGHT PATH	RUN-IN VEL	PITCH ATTITUDE	REL ALT	WEAPON APOGEE FROM RELEASE			PULLUP TO TARGET		PATTERN SIZE		PATTERN DENSITY	IMPACT ANGLE
					DRT	TOF	ALT	DRT	TOF	WIDTH	LENGTH	(BOMBLETS/	
(FT-MSL)	(DEG)	(KTAS)	(DEG)	(FT-AGL)	(FT)	(SEC)	(FT-AGL)	(FT)	(SEC)	(FT)	(FT)	10000 M^2)	(DEG)
0	10	450	17	10139	2604	4	10351	18920	50	2161	1837	1.97	89.6
		500	16	10170	3159	4	10432	20980	51	2217	1885	1.87	89.6
		550	15	10200	3661	4	10508	22737	52	2258	1920	1.80	89.6
	20	450	28	10531	4679	7	11372	21762	56	2139	1818	2.01	89.6
		500	26	10648	5584	8	11667	24524	58	2193	1864	1.91	89.6
		550	25	10756	6320	8	11923	26811	59	2231	1896	1.85	89.6
	30	450	39	11117	5779	10	12804	23278	63	2146	1824	2.00	89.7
		500	37	11375	6911	11	13419	26713	65	2208	1877	1.88	89.6
		550	36	11604	7762	12	13923	29447	67	2251	1913	1.81	89.6
	38	450	48	11679	5966	12	14050	23350	67	2164	1840	1.96	89.7
		500	46	12065	7192	13	14959	27147	70	2235	1899	1.84	89.7
		550	44	12408	8098	14	15697	30187	73	2283	1941	1.76	89.7
5000	10	450	20	10135	2587	4	10344	19307	48	2123	1804	2.04	89.1
		500	17	10166	3164	4	10427	21496	49	2186	1858	1.92	89.0
		550	16	10196	3680	4	10504	23332	49	2231	1897	1.85	89.0
	20	450	31	10515	4594	7	11334	21985	54	2084	1771	2.12	89.1
		500	27	10638	5587	8	11649	25034	56	2146	1824	2.00	89.0
		550	26	10754	6393	8	11926	27535	57	2188	1860	1.92	89.0
	30	450	43	11070	5604	10	12689	23243	60	2069	1759	2.15	89.1
		500	39	11336	6851	11	13342	27012	63	2136	1816	2.01	89.1
		550	37	11575	7818	12	13888	30056	65	2183	1855	1.93	89.1
	38	450	53	11592	5683	12	13823	22993	64	2065	1756	2.15	89.2
		500	49	11999	7056	13	14806	27226	68	2141	1820	2.00	89.1
		550	46	12354	8114	14	15613	30645	70	2193	1864	1.91	89.1

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Figure 2-70. Loft Delivery Data, CBU-78/B (Gator), FMU-140 Fuze (Sheet 25 of 25)

2.8 ROCKETS

2.8.1 Introduction. The 2.75-inch and 5.00-inch aircraft rockets, with the selection of warheads available provide an effective attack capability against a variety of targets. JMEM's provide the applicable data for selecting the rocket/warhead fuze to best satisfy operational requirements.

An aircraft rocket system consists of a multitube jettisonable launcher loaded with assembled rockets mated to the aircraft station and armament circuitry.

Conventional aircraft rockets have an unguided boost phase and a ballistic flight phase. The motor provides a high impulse over a short period of time and consists of a high strength tube closed at the forward end, a propellant grain, an igniter assembly, and a fin and nozzle assembly. Folding or wrap-around fins allow multiple rockets (4 to 19), dependent on launcher used, to be carried on each authorized station. The launcher tube locking detent prevents forward motion of the rocket until a predetermined force level of the initiated motor is achieved. Departure of the first rocket removes the frangible fairings, if installed.

2.8.2 Rocket Warheads. The following is a summary of the operational characteristics of warheads used on 2.75-inch and 5.00-inch rockets. For a more detailed description, refer to NAVAIR 11-85-5.

Rocket warheads are classified according to tactical requirements and functioning as follows:

1. HE-FRAG (High Explosive Fragmentation)

2. AT/APERS (High Explosive Antitank/ Antipersonnel)

3. GP (High Explosive General Purpose)

4. SMOKE

   (a) WP - White Phosphorous

   (b) PWP - Plasticized White Phosphorous

   (c) RP - Red Phosphorous

5. FLARE

6. CHAFF

7. PRACTICE (Inert)

2.8.2.1 Rocket Warheads (2.75-inch). The following paragraphs describe the operational characteristics of warheads used on 2.75-inch rockets. See Figure 2-73 for Warhead/Fuze combinations.

2.8.2.1.1 M151 (HE-FRAG). The warhead contains approximately 2.3 pounds of Composition B-4 explosive. Construction is of soft steel or cast iron and total weight is approximately 9.4 pounds.

2.8.2.1.2 Mk 67 (Smoke). This warhead is used to provide smoke for target marking and is available in two Mods, 0/1. The Mod 0 filler is white phosphorous (WP) which requires special handling. The Mod 1 contains red phosphorous which has improved cook-off characteristics and does not require special handling. The warhead casing is constructed of aluminum alloy. An explosive burster charge of Composition B disperses the 2.6 pounds of white/red phosphorous. Total weight is approximately 5.2 pounds.

2.8.2.1.3 M156 (Smoke). This warhead is identical in function to the Mk 67 but uses a soft steel casing. An explosive burster charge of composition B-4 disperses the 2.0 pounds of white phosphorous (WP). Total weight is approximately 9.7 pounds.

2.8.2.1.4 M257 (Flare). The M257 flare warhead is used to provide delivery aircraft with a stand-off capability for battlefield illumination. This enables the delivery aircraft to attack the target area using the illumination the flare provides. The permanently installed base fuze (M442) functions at motor burn-out (1.5 seconds after launch) which provides a 9.0-second delay prior to drogue parachute deployment and subsequent main parachute deployment and flare ignition. Total elapsed time from motor ignition

to flare illumination is approximately 13.5 seconds. The warhead produces one million candlepower for a minimum of 100 seconds and illuminates approximately one square mile of area. Average descent of the deployed flare is 13 feet/second. The warhead is launched to attain an altitude of 2,000 to 4,000 feet at a range of 3,472 meters prior to functioning when using the Mk 66 MOD 2 motor. Total weight of the warhead is 10.7 pounds.

2.8.2.2 Practice Warheads (2.75-Inch). Practice warheads (see Figure 2-71) are either dummy configurations or inert-loaded service warheads in which the weight and placement of an inert filler gives the practice warhead and the explosive loaded service warhead the same ballistic characteristics and MUST BE DELIVERED within the same parameters as service warheads.

PRACTICE	SERVICE
Mk 1, Mk 61, WTU-14/B	Mk 1
Mk 5	Mk 5
M151 M230 WTU-1/B	M151

Figure 2-71. Practice Warheads Used to Simulate Service Warheads (2.75 Inch)

WARNING

In some cases, the same Mk and Mod numbers have been assigned to both service and practice warhead. Personnel should verify that warhead markings are correct and that practice and service warheads are NOT interchanged.

2.8.2.3 Rocket Warheads (5.00-Inch). The following paragraphs describe the operational characteristics of warheads used on 5.00-inch rockets. See Figure 2-74 for Warhead/Fuze combinations.

2.8.2.3.1 Mk 24 (GP). This high explosive general purpose warhead can be used against a variety of targets including concrete buildings or bunkers, surface vessels, etc. Tactical use is dependent on fuzing configuration. The Mod 0 has a permanently installed base fuze. Mods 1/2 do not have a base fuze. It contains approximately 9.5 pounds of Composition B explosive. Total weight is approximately 45.0 pounds.

2.8.2.3.2 Mk 32 (AT/APERS). This warhead is effective against heavy or light armored targets. Against heavily armored targets, a point detonating fuze is used to initiate the shaped charge. For light targets, a proximity fuze is used. It contains approximately 15.0 pounds of Composition B explosive. Total weight is approximately 43.5 pounds.

2.8.2.3.3 Mk 33 (Flare). This warhead is designed for illuminating surface areas at a distance ahead of high-performance aircraft so that the launching aircraft may avail itself of the parachute suspended flare in attacking the target. The permanently installed mechanical time fuze functions approximately 15 seconds after launch and initiates the expulsion and ignition of the flare from the warhead casing. Flare burn time is approximately 90 seconds. Total weight is approximately 46.0 pounds.

2.8.2.3.4 Mk 34 (Smoke). The warhead is designed for target marking or incendiary use when a Mk 93 proximity fuze is installed. This warhead is available in Mods, 0/2. The Mod 0 filler is plasticized white phosphorous (PWP) which requires special handling and provides a smoke screen duration of approximately 4 to 5 minutes. The Mod 2 contains red phosphorous (RP) which has improved cook off characteristics and does not require special handling. The Mod 2 smoke cloud size is the same as the Mod 0; however, duration is ONLY 2 minutes. Both warheads contain approximately 19.3 pounds of phosphorous with total weight approximately 51.0 pounds.

2.8.2.3.5 Mk 63 (HE-FRAG). This warhead is designed to produce large quantities of fragments in an effective air burst pattern. The warhead is proximity fuzed to take advantage of the designed uniform fragment distribution. Some Mods also contain zirconium cubes or rings to give the warhead an incendiary effect in addition to its fragmentation capability. It contains approximately 15.0 pounds of Composition B explosive. Total weight is approximately 56.5 pounds.

2.8.2.3.6 MK 84 Mod 4 (Chaff). This warhead provides a stand-off method of chaff deployment along a selected flight corridor in advance of strike aircraft. The warhead consists of a permanently installed mechanical time fuze (FMU-136/B), a main burster charge, and 12 macro cassettes filled with multi-frequency chaff dipoles. The fuze is preflight selectable (3 to 80 seconds) and functions at completion of the required motor acceleration. The macro cassettes are expelled by the main burster charge, and after a short delay, each cassette bursts expelling the chaff dipoles. Total weight is approximately 47.0 pounds.

2.8.2.4 Practice Warheads (5.00-Inch). Practice warheads (see Figure 2-72) are either dummy configurations or inert-loaded service warheads in which the weight and placement of an inert filler give the practice warhead and the explosive-loaded service warhead the same ballistic characteristics and MUST BE DELIVERED within the same parameters as service warheads.

PRACTICE	SERVICE
Mk 6 Mod 7 Mk 24	Mk 24
Mk 32	Mk 32
WTU-11/B	Mk 63

Figure 2-72. Practice Warheads Used to Simulate Service Warheads (5.00 Inch)

WARNING

In some cases, the same Mk and Mod numbers have been assigned to both service and practice warhead. Personnel should verify that warhead markings are correct and that practice and service warheads are NOT interchanged.

2.8.3 Rocket Motors. All airborne rocket motors (see Figure 2-75 and 2-76) include the following components: an igniter, propellant grain with a stabilizing rod, nozzle, fin assembly, and firing contact disc/band. The motor is ignited by 28 vdc aircraft power distributed by the launcher intervalometer to each tube firing contact. Gas pressure resulting from the burning igniter charge ruptures the igniter case and ignites the propellant grain. Propellant gases rupture the nozzle seal/seals and exerts forward pressure (motor movement) which overcomes the launcher tube locking detent. The salt coated stabilizing rod, located in the center of the propellant grain, prevents unstable burning of the grain and reduces flash and after burning which contribute to compressor stalls and flame out of jet engines. The wraparound (WAFFAR) fins on the Mk 66 2.75-inch and Mk 71 5.00-inch motors are spring actuated to open and seat in the nozzle body fin slots as the motor exits the launcher tube.

2.8.3.1 Mk 66 Mod 2 WAFFAR Rocket Motor (2.75-inch). The Mk 66 Mod 2 WAFFAR motor is designed to replace the Mk 4/40 FFAR motors and can be carried and launched from both fixed/rotary wing aircraft. The motor is considered HERO safe and does not require the use of an RF barrier on the aft end of the rocket launcher. The Mk 66 Mod 2 CAN ONLY BE USED in LAU-61C/A and LAU-68D/A rocket launchers. The three spring loaded wraparound fins in conjunction with the fluted exhaust nozzle provides controlled spin and stabilized flight. The motor produces an average thrust of 1,360 pounds for a duration of 1.1 seconds. Approximate motor weight is 13.4 pounds.

2.8.3.2 Mk 71 Mod 0 Rocket Motor (5.00-Inch). The Mk 71 Mod 0 motor produces an average thrust of 7,780 pounds for approximately 1.17 seconds. These motors have the same propellant grain and motor tube as the obsolete Mk 16 motor. The Mk 71 Mod 0 motor has spring loaded folding wraparound fins which provide controlled spin and improves the ballistic dispersion of the rocket. Approximate motor weight is 66.85 pounds.

2.8.3.3 Mk 71 Mod 1 Rocket Motor (5.00-Inch). The Mk 71 Mod 1 differs from the Mod 0 by having a different propellant grain and is 6 inches longer. It produces an average thrust of 8,100 pounds for approximately 1.8 seconds. The fin and nozzle assembly incorporates spring loaded wraparound fins which provide controlled spin and improves the ballistic dispersion of the rocket. Approximate motor weight is 79.5 pounds.

2.8.4 Rocket Launchers. The rocket launchers currently in service are described in the following paragraphs.

2.8.4.1 LAU-61C/A Rocket Launcher. The LAU-61C/A (see Figure 2-77) is an all metal reusable launcher with a capacity for nineteen 2.75-inch Mk 66 motor rockets. The launcher has a preflight selectable fire-mode selector switch (RIPPLE/SINGLE) located on the aft bulkhead. When ripple is selected, one aircraft firing pulse fires all rockets with a 40-millisecond interval between departing rockets. The SINGLE position allows only one rocket to be fired for each aircraft firing pulse. The 21 position rotary stepper-switch intervalometer, located on the aft bulkhead, is an electro-mechanical unit which distributes a firing pulse to each launcher tube motor contact. Each launcher tube has a motor detent retainer which retains the rocket motor until ignition. A frangible nose fairing can be installed to reduce aerodynamic drag and will depart the launcher when the first rocket is fired. The aft fairing is aluminum and is designed to remain intact and direct debris away from the aircraft. The LAU-61C/A has a thermal protective coating on the exterior surface and requires the use of thermal barriers for all shipboard operations. Ground safety is provided by a safe-arm device (switch with safety pin) which opens the circuit from the launcher receptacle and grounds the intervalometer.

WARNING

MIXING of rocket motors is PROHIBITED.

2.8.4.2 LAU-68D/A Rocket Launcher. The LAU-68D/A (see Figure 2-78) is an all metal reusable launcher with a capacity for seven 2.75-inch Mk 66 motor rockets. The launcher has a preflight selectable fire-mode selector switch (RIPPLE/SINGLE) located on the aft bulkhead. When RIPPLE is selected, one aircraft firing pulse fires all rockets with a 40-millisecond interval between departing rockets. The SINGLE position allows only one rocket to be fired for each aircraft firing pulse. The nine position rotary stepper-switch intervalometer, located on the aft bulkhead, is a electromechanical unit which distributes a firing pulse to each launcher tube motor contact. Each launcher tube has a motor detent retainer which retains the rocket motor until ignition. A frangible nose fairing can be installed to reduce aerodynamic drag and will depart the launcher when the first rocket is fired. The aft fairing is aluminum and is designed to remain intact and direct debris away from the aircraft. The LAU-68D/A has a thermal protective coating on the exterior surface and REQUIRES the use of thermal barriers for all shipboard operations. Ground safety is provided by a safe-arm device (switch with safety pin) which opens the circuit from the launcher receptacle and grounds the intervalometer.

WARNING

MIXING of rocket motors is PROHIBITED.

2.8.4.3 LAU-10 Series Rocket Launcher. The LAU-10 (see Figure 2-79) is an all metal reusable rocket launcher with a capacity for four 5.00-inch rockets. The launcher has a preflight selectable fire-mode selector switch (RIPPLE/SINGLE)

located on the aft bulkhead. When RIPPLE is selected, one aircraft firing pulse, fires all rockets with a 95-millisecond interval between departing rockets. The firing pulse must exceed a 0.5-second duration to insure a complete fire out when RIPPLE is selected. The SINGLE position allows only one rocket to be fired for each aircraft firing pulse. The internal non-selectable rotary stepper-switch intervalometer, is a electromechanical unit which distributes a firing pulse to each launcher tube motor contact. Each launcher tube has a motor detent which retains the rocket motor until ignition. Frangible fairings can be installed to reduce aerodynamic drag and will depart the launcher when the first rocket is fired. Thermal coated forward fairings are required for all shipboard operations. The LAU-10D/A has a thermal protective coating on the exterior surface and REQUIRES the installation of a thermal shield over the aft end of the launcher for all shipboard operations. The thermal shield and fairing provide increased cook-off time in the event of a fire. Ground safety is provided by a safe-arm device (switch with safety pin) which opens the circuit from the launcher receptacle and grounds the intervalometer.

2.8.5 Limitations. Refer to ''External Stores Limitations,'' chapter 5 for carriage and firing/jettison restrictions.

2.8.6 Preflight Checks. Refer to NWP 3-22.5-AV8B PG, Pocket Guide for current Preflight checks.

2.8.7 Delivery Data. Safe escape tables, fragmentation envelope plots, sight angle charts, delivery data tables, and release error sensitivities tables are presented for the 2.75- and 5.00-inch rockets in Figures 2-80 through 2-130.

Because the rocket CCIP symbology is generated by the same ballistic algorithm (different stores codes merely account for mass differences) one delivery data table and one release error sensitivity table is provided for all rockets, 2.75-inch and 5.00-inch. Safe escape tables are provided for each warhead/motor configuration.

2.8.7.1 Rocket Loft Delivery Data Tables. Tabular loft data for 5.00-inch rocket deliveries are provided for a sea level target and a straight path delivery at +10É, +30É and +38É FPA's. Altitudes range from 1,000 to 15,000 ft-AGL for airspeeds of 450, 500, and 550 KTAS. These tables provide sight angle settings, down range travel, and time of fall.

NOTE

These tables were based on constant velocity, angle, and g at release. Any change in these parameters will significantly affect the results obtained.

2.8.7.2 Safe Escape (Terrain, Fragmentation, Ricochet, Avoidance). The aircraft maneuver requiired to satisfy escape for straight and level break away is a straight path dive release followed by the specified G (as per safe escape table) to minimum of 60É heading change.

Authorized Warhead/Fuze Combinations For Use With Mk 66 Mod 2 Motors				
TYPE	**WARHEAD**	**FUZE**	**Overall Rocket Length (inches)**	**Nominal Rocket Weight (pounds)**
HE-FRAG	M151	M423	54.39	22.95
		M427	54.39	22.95
		Mk 352	54.39	22.95
FLECHETTE (Helicopter use only)	WDU-4A/A	Model 113A	59.75	22.95
SMOKE	Mk 67 Mod 0 (WP)	M423	55.13	18.75
		M427	55.13	18.75
		Mk 352	55.13	18.75
	Mk 67 Mod 1 (RP)	M427	57.79	22.52
		Mk 352	57.79	22.52
	M156 (WP)	M423	55.13	23.25
		M427	55.13	23.25
		Mk 352	55.13	23.25
PRACTICE	WTU-1/B		55.13	22.95
ILLUMINATION	M257	M442	73.25	24.45

Figure 2-73. Authorized Warhead/Fuze Combination For Use With MK 66 Mod 2 Motors

Authorized Warhead/Fuze Combinations For Use With Mk 71 Mod 0 Motors				
TYPE	**WARHEAD**	**FUZE**	**Overall Rocket Length (inches)**	**Nominal Rocket Weight (pounds)**
HE-FRAG	Mk 63 Mod 0	Mk 93 Mod 0 / M414A1 Mk 352 with BBU-15/B FMU-90/B with BBU-15/B	102.79 102.79 102.79	125.65 125.65 125.65
HE-GP	Mk 24 Mod 0, 1, 2	Mk 93 Mod 0 / M414A1 Mk 188 Mod 0 Mk 191 Mod 0 * Mk 352 Mod 2 with BBU-15/B FMU-90/B with BBU-15/B *Permanently installed in Mk 24 Mod 0, used with nose ogive.	87.78 87.78 88.55 87.78 87.78	112.55 112.55 115.19 112.55 112.55
AT/APERS	Mk 32 Mod 0	Mk 93 Mod 0 / M414A1 Mk 188 Mod 0 Mk 352 Mod 2 with BBU-15/B FMU-90/B with BBU-15/B	99.01 99.01 99.01 99.01	111.48 111.48 111.48 111.48
SMOKE	Mk 34 Mod 0 (WP)	Mk 93 with special adapter Mk 188 Mod 0 Mk 352 Mod 2 with BBU-15/B FMU-90/B with BBU-15/B	108.0 108.0 108.0 108.0	114.71 114.71 114.71 114.71
	Mk 34 Mod 2 (RP)	Mk 93 Mod 0 Mk 188 Mod 0 Mk 352 Mod 2 with BBU-15/B	100.99 100.99 100.99	121.55 121.55 121.55
CHAFF / COUNTER-MEASURES	Mk 84 Mod 4 / RR-182/AL	FMU-136/B	87.78	112.55
FLARE	Mk 33 Mod 1	Mk193 Mod 0 (permanently installed)	101.42	112.75
PRACTICE	Mk6 Mod 7 Mk 24 Mod 0 Mk 32 Mod 1 WTU-11/B	Nose Plug Nose Pluf/ogive Nose Plug Mk 93 Mod 0 (inert)	86.88 86.16 102.589 111.193	115.68 115.23 113.45 126.00

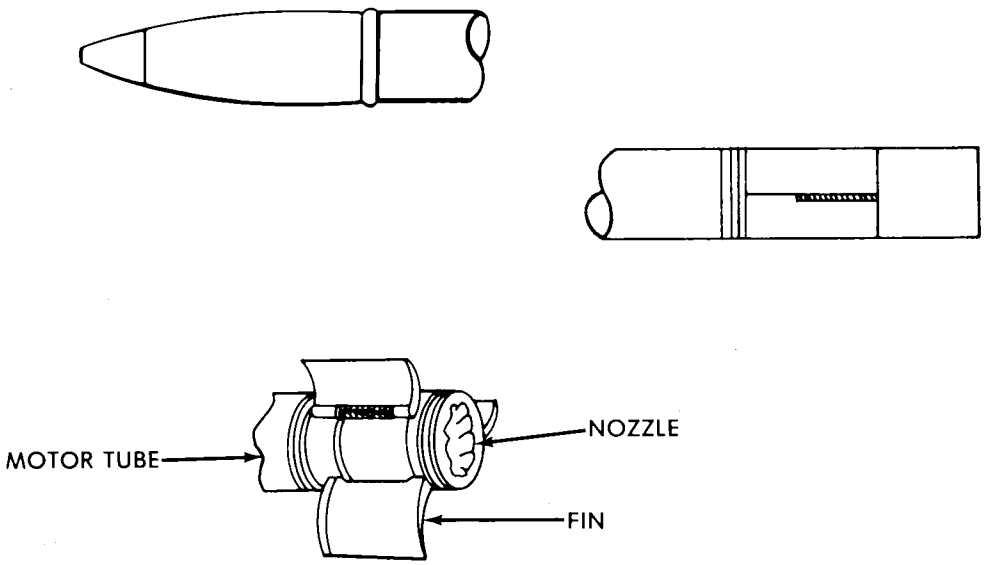
Figure 2-74. Authorized Warhead/Fuze Combinations For Use With Mk 71 Mod 0 and Mod 1 Motors (Sheet 1 of 2)

Authorized Warhead/Fuze Combinations For Use With Mk 71 Mod 1 Motors				
TYPE	**WARHEAD**	**FUZE**	**Overall Rocket Length (inches)**	**Nominal Rocket Weight (pounds)**
HE-FRAG	Mk 63 Mod 0	Mk 93 Mod 0 / M414A1 Mk 352 with BBU-15/B FMU-90/B with BBU-15/B	109.49 109.49 109.49	138.30 138.30 138.30
HE-GP	Mk 24 Mod 0, 1, 2	Mk 93 Mod 0 /M414A1 Mk 188 Mod 0 Mk 191 Mod 0 * Mk 352 Mod 2 with BBU-15/B FMU-90/B with BBU-15/B *Permanently installed in Mk 24 Mod 0, used with nose ogive.	94.48 94.48 95.25 94.48 94.48	125.2 125.2 127.84 125.2 125.2
AT/APERS	Mk 32 Mod 0	Mk 93 Mod 0 / M414A1 Mk 188 Mod 0 Mk 352 Mod 2 with BBU-15/B FMU-90/B with BBU-15/B	105.71 105.71 105.71 105.71	124.13 124.13 124.13 124.13
SMOKE	Mk 34 Mod 0 (WP)	Mk 93 with special adapter Mk 188 Mod 0 Mk 352 Mod 2 with BBU-15/B FMU-90/B with BBU-15/B	114.71 114.71 114.71 114.71	121.5 121.5 121.5 121.5
	Mk 34 Mod 2 (RP)	Mk 93 Mod 0 Mk 188 Mod 0 Mk 352 Mod 2 with BBU-15/B	107.69 107.69 107.69	134.20 134.20 134.20
CHAFF / COUNTER-MEASURES	Mk 84 Mod 4 / RR-182/AL	FMU-136/B	94.48	125.2
FLARE	Mk 33 Mod 1	Mk193 Mod 0 (permanently installed)	108.12	125.40
PRACTICE	Mk 6 Mod 7 Mk 24 Mod 0 Mk 32 Mod 1 WTU-11/B	Nose Plug Nose Pluf/ogive Nose Plug Mk 93 Mod 0 (inert)	93.58 92.86 109.289 117.893	128.33 127.88 134.20 138.64

Figure 2-74. Authorized Warhead/Fuze Combinations For Use With Mk 71 Mod 0 and Mod 1 Motors (Sheet 2 of 2)

Characteristics

Warhead (Mk 66 MTR)	M151	MK 67	M156	M257
Weight (Pounds).....	22.8.....	18.6.....	23.1.....	24.2



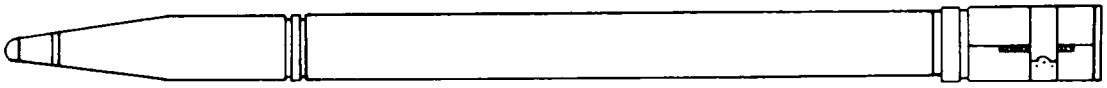
MK 66 MOD 2

AV8BB-TAC-05-(26-1)09

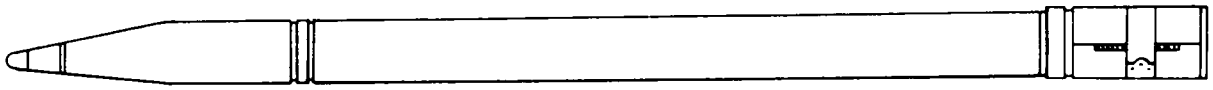
Figure 2-75. 2.75-Inch Rocket Motor Mk 66 Mods

Characteristics

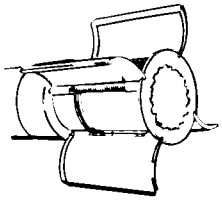
Warhead	MK 24	MK 32	MK 33	MK 34	MK 63	MK 84 MOD 4 (RR-182A/L)
MK 71 Mod 0 Weight (Pounds)	111.9	110.3	112.8	117.8	123.4	114.0
MK 71 Mod 1 Weight (Pounds)	124.5	122.9	125.4	130.4	136.0	126.6



MK 71 MOD 0 MOTOR



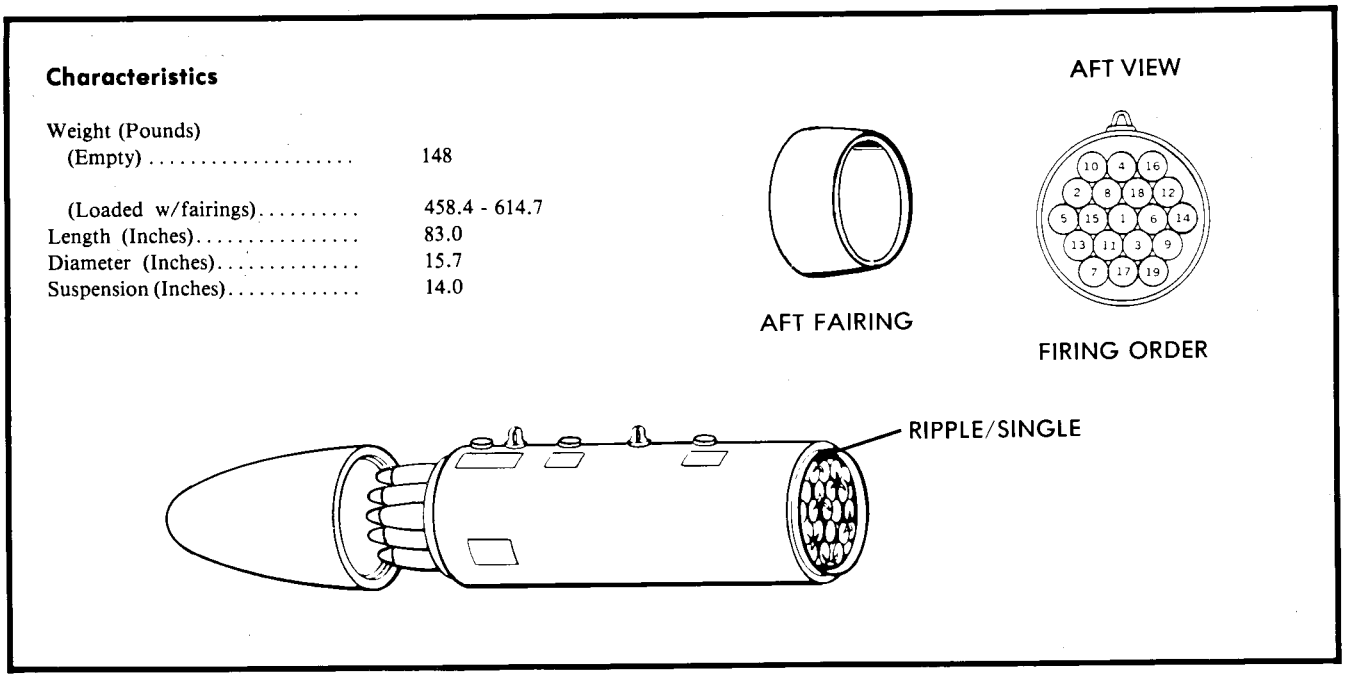
MK 71 MOD 1 MOTOR



MK 71 MOD 0 & 1

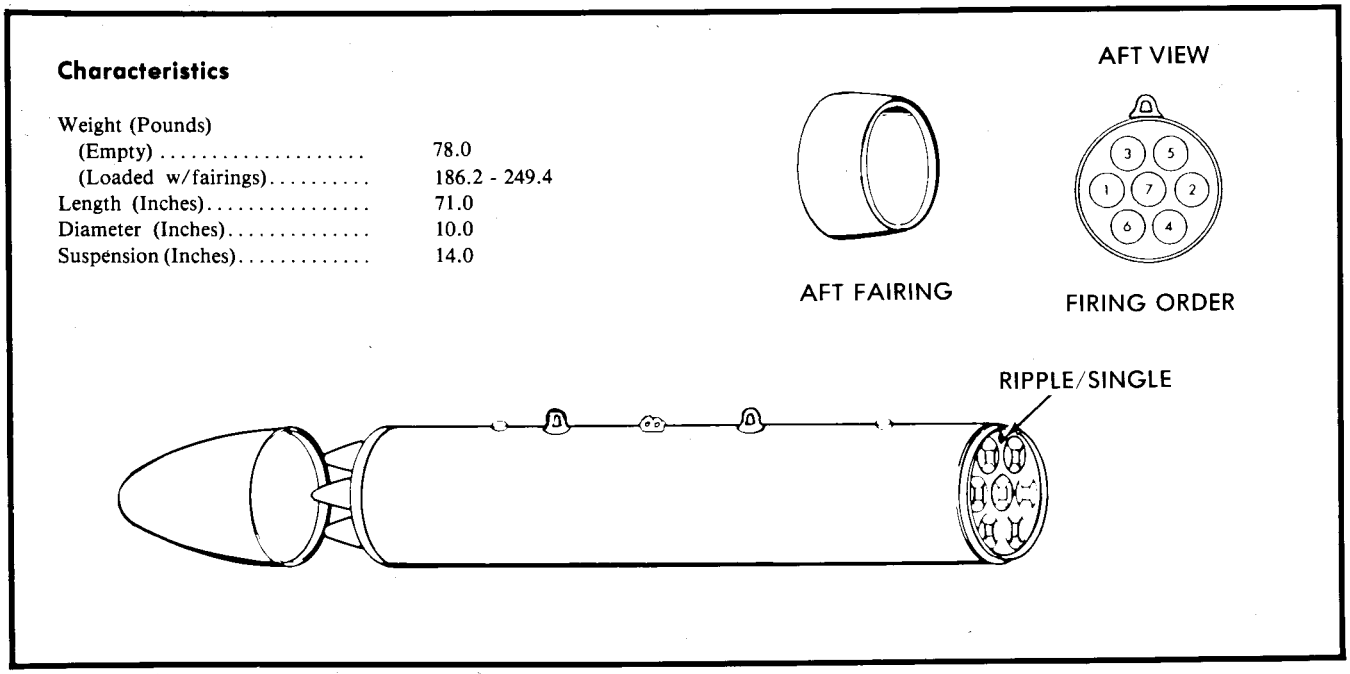
AV8BB-TAC-05-(27-1)09

Figure 2-76. 5.00-Inch Zuni Motors Mk 71 Mods 0/1



AV8BB-TAC-05-(28-1)09

Figure 2-77. Rocket Launcher (2.75-Inch LAU-61C/A)



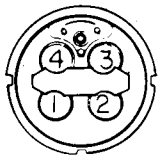
AV8BB-TAC-05-(29-1)09

Figure 2-78. Rocket Launcher (2.75-Inch LAU-68D/A)

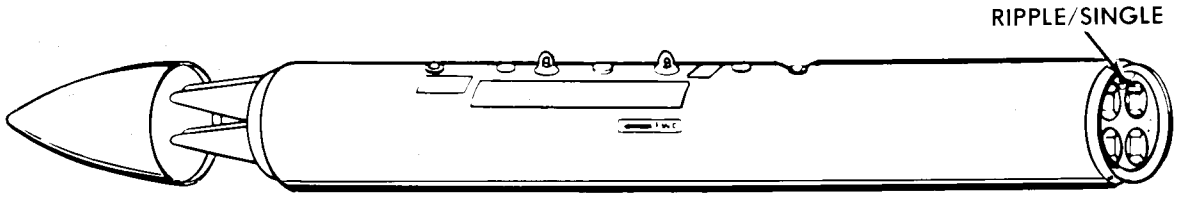
Characteristics

Weight (Pounds)	
(Empty)	107.0 (C/A) - 136.0 (D/A)
(Loaded w/fairings)	554.9 - 696.4
Length (Inches)	128.9
Diameter (Inches)	13.9
Suspension (Inches)	14.0 and 30.0

AFT VIEW



FIRING ORDER



AV8BB-TAC-05-(30-1)09

Figure 2-79. Rocket Launchers (5.00-Inch LAU-10 Series)

AV-8B SAFE ESCAPE TABLE
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	500	80	500	600	76	600	700	72	700
	5 G LEVEL BREAKAWAY	100*	57	100	100*	49	100	100*	41	100
	6 G LEVEL BREAKAWAY	100*	57	100	100*	49	100	100*	41	100
-10	5 G	490*	52	200	531*	45	200	575*	37	200
	6 G	485*	52	200	524*	45	200	568*	37	200
-20	5 G	1035*	55	300	1139*	49	300	1265*	41	300
	6 G	1025*	55	300	1117*	48	300	1246*	41	300
-30	5 G	1805*	58	500	2005*	52	500	2249*	45	500
	6 G	1788*	58	500	1944*	51	500	2208*	44	500
-45	5 G	3027*	57	700	3468*	51	700	3950*	45	700
	6 G	3001*	57	700	3279*	51	700	3811*	44	700
-60	5 G	4556*	53	1000	5291*	49	1000	6024*	43	1000
	6 G	4416*	53	1000	4864*	48	1000	5615*	42	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.
* Terrain avoidance

BF 31310-R2-B93-1

Figure 2-80. Safe Escape Table, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze

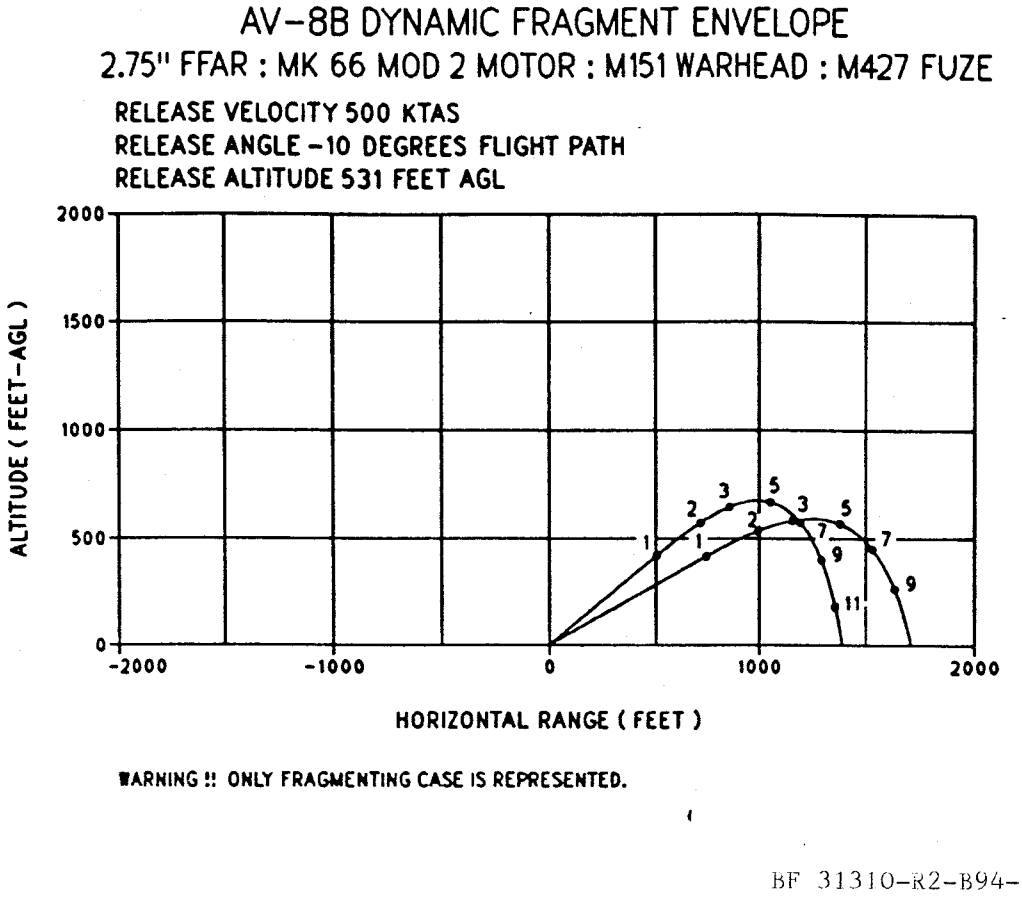
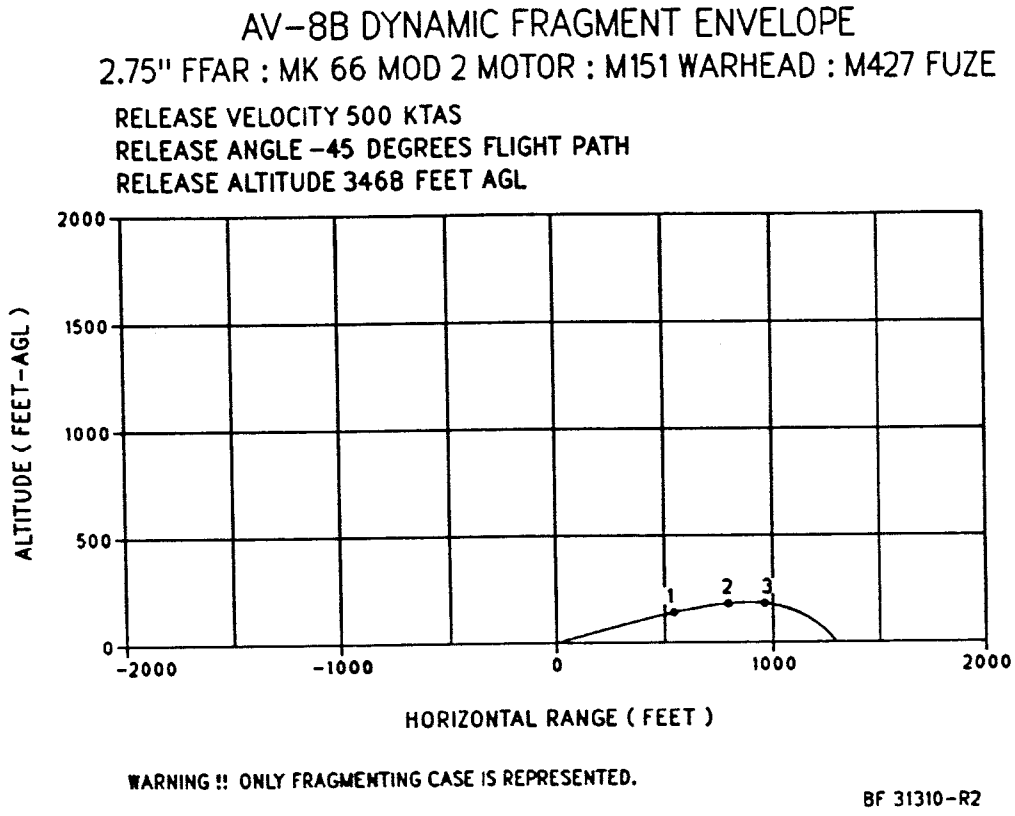


Figure 2-81. Dynamic Fragment Envelope, 2.75 inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 1 of 2)

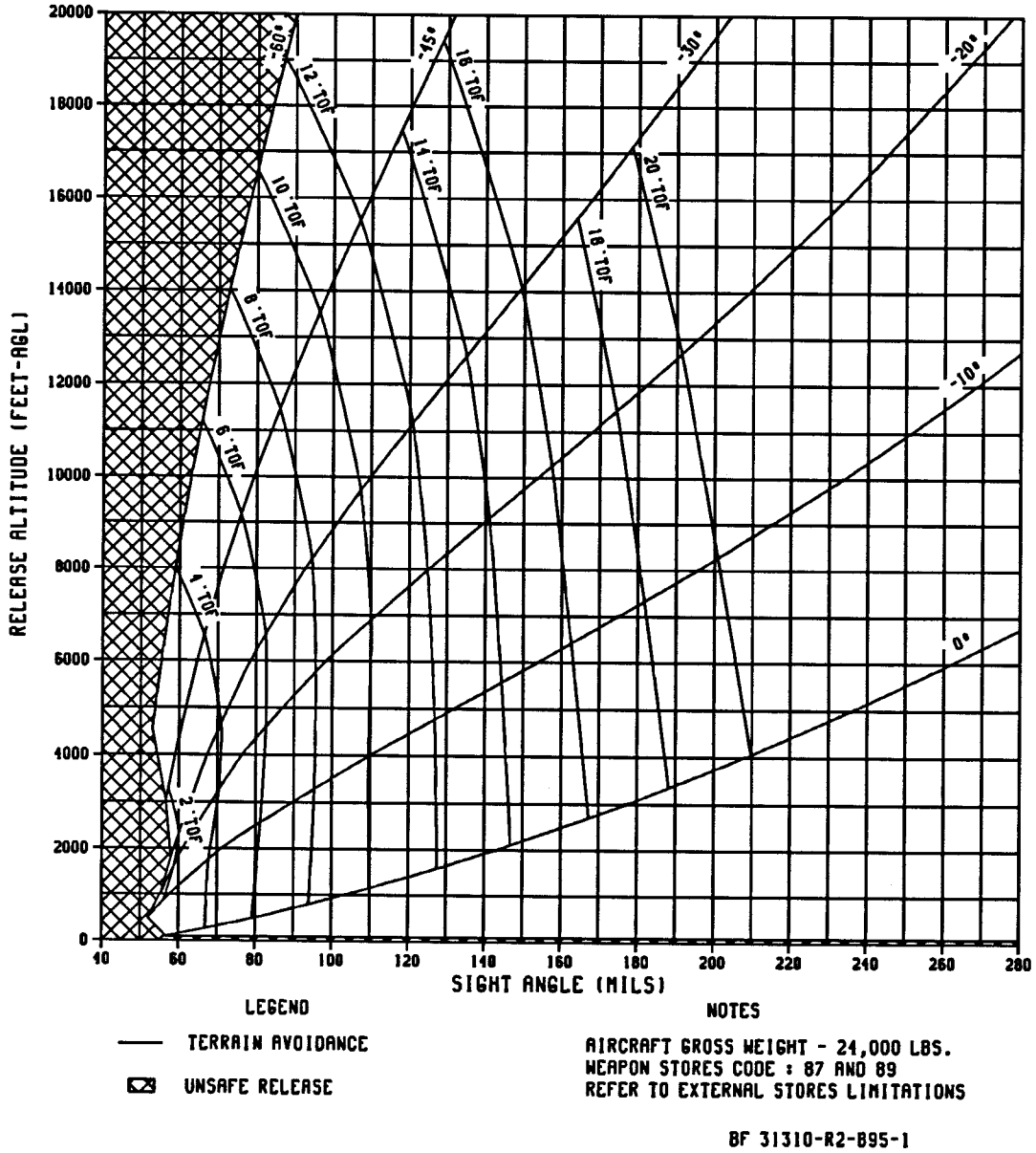


BF 31310-R2-B94-2

Figure 2-82. Dynamic Fragment Envelope, 2.75 inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 2 of 2)

AV-8B SIGHT ANGLE CHART[1]
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE[2]

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]

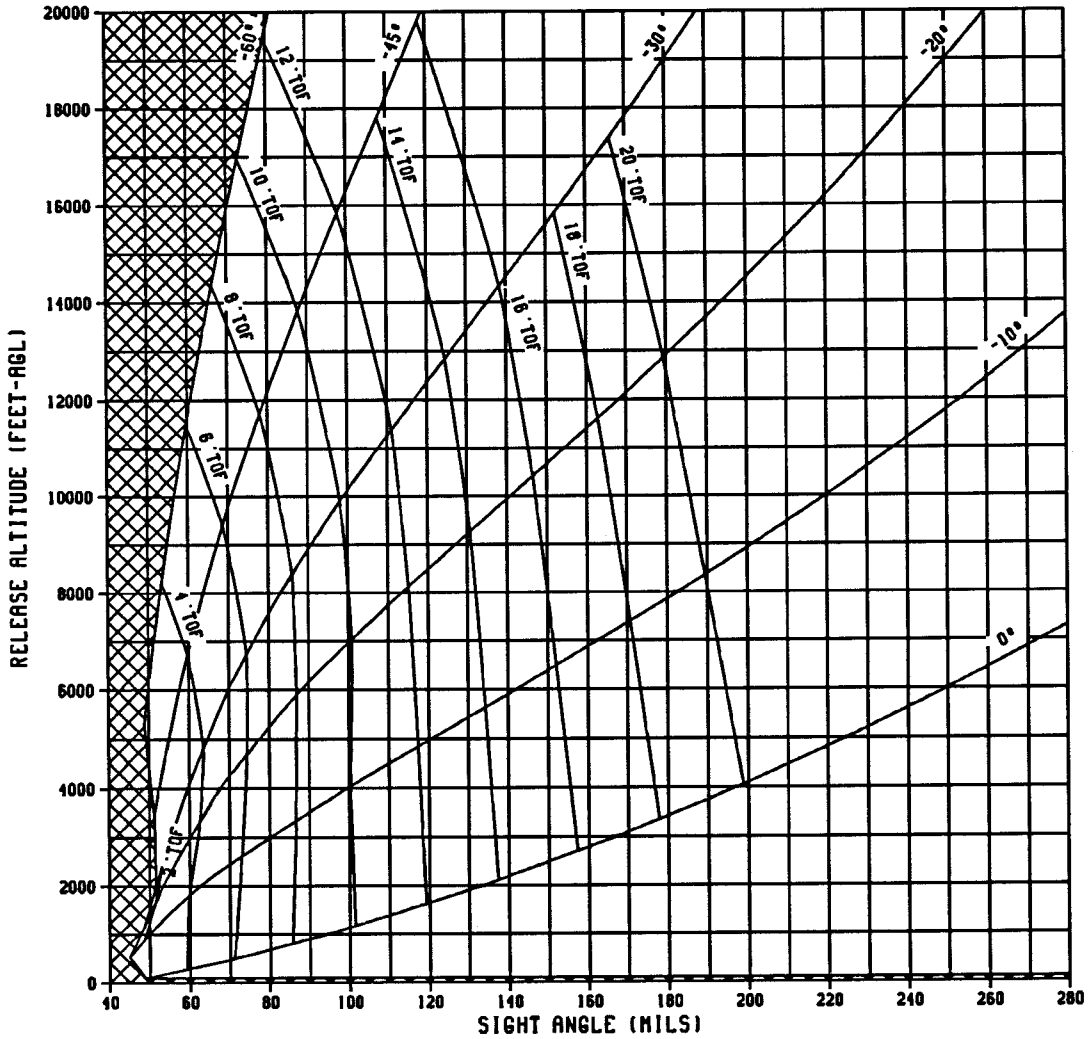


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-83. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE[2]

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 87 AND 89
REFER TO EXTERNAL STORES LIMITATIONS

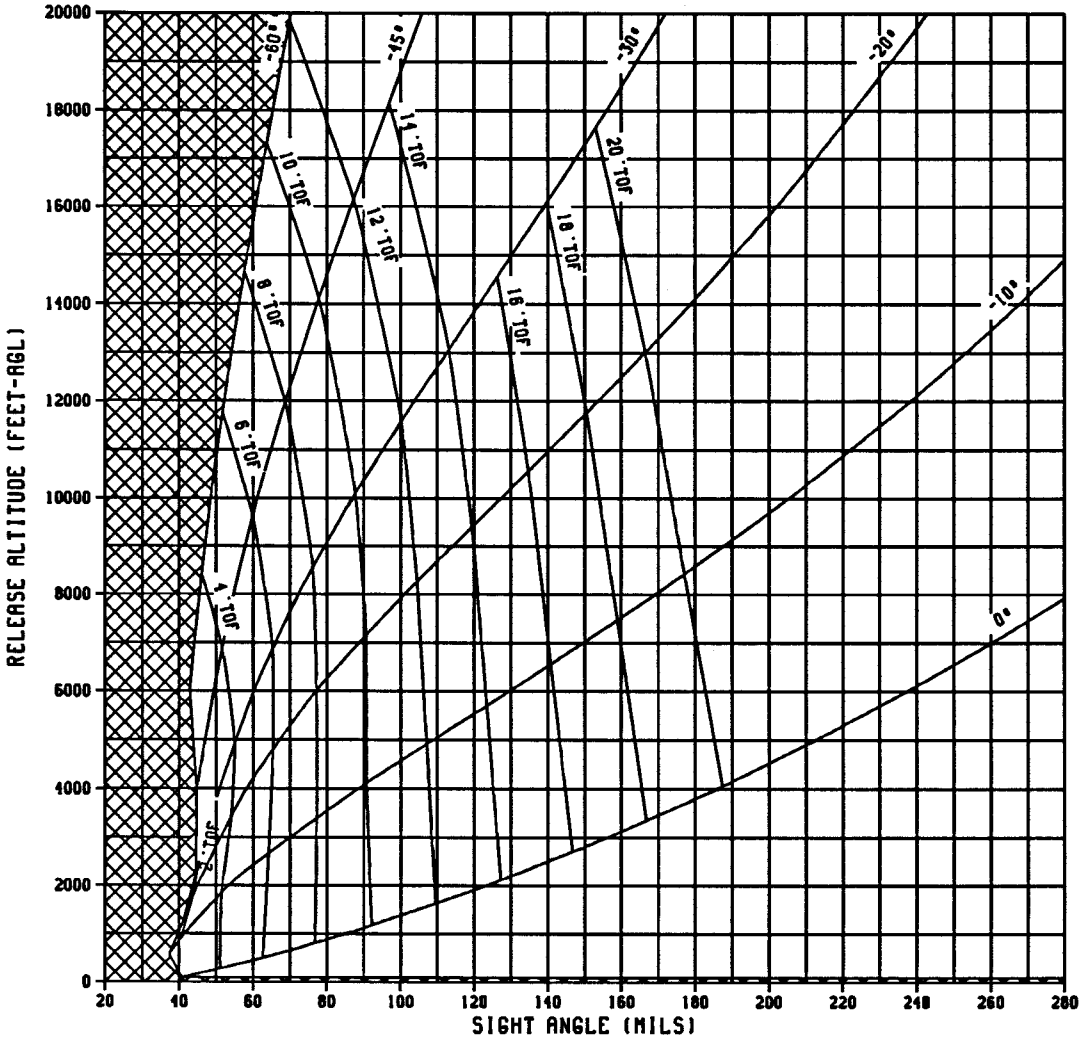
BF 31310-R2-895-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-83. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE[2]

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 87 AND 89
REFER TO EXTERNAL STORES LIMITATIONS

BF 31310-R2-895-3

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-83. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
2.75" FFAR : MK 66 MOD 2 MOTOR : MK 67 SMOKE WARHEAD : M427 FUZE

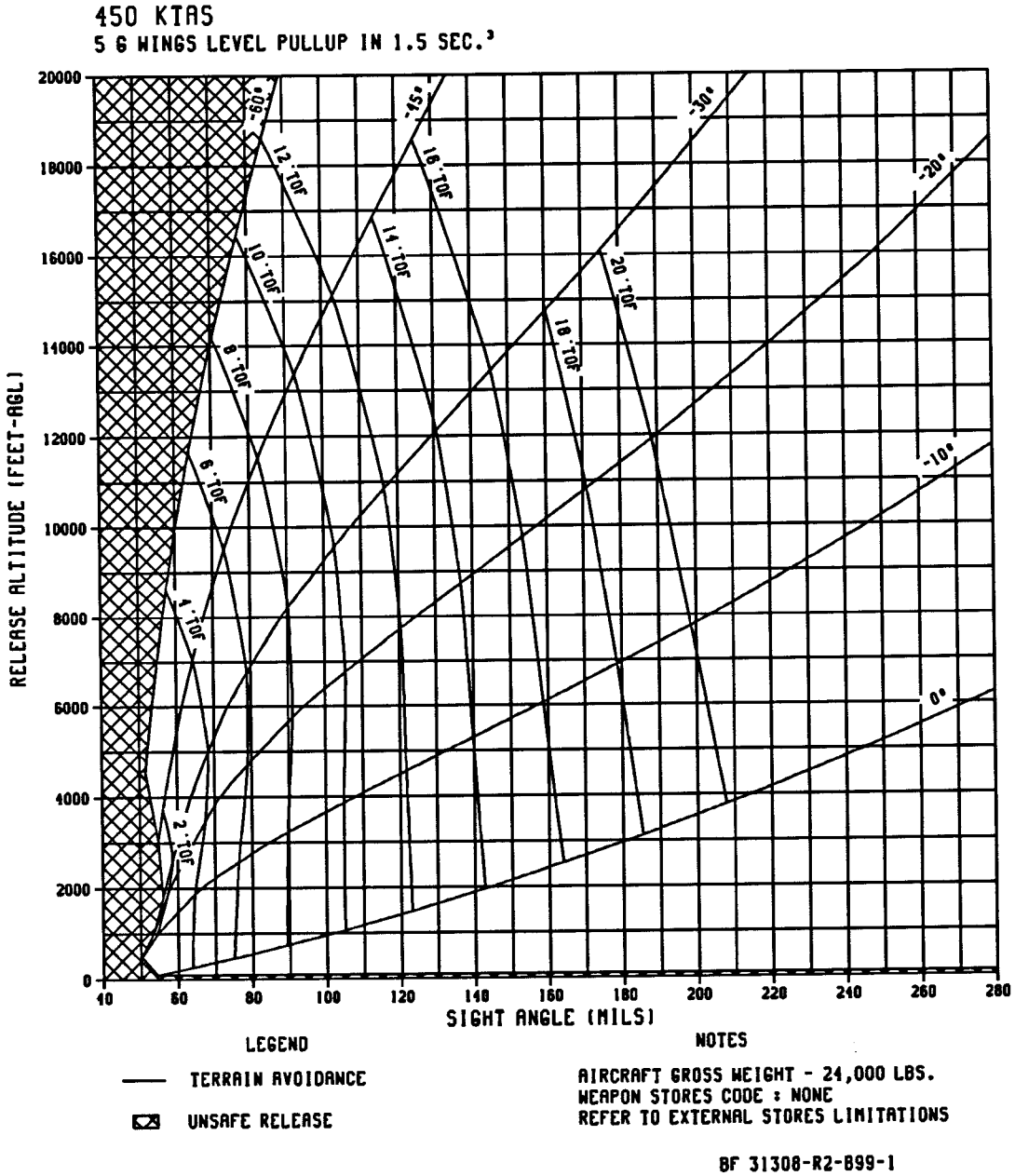
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	500	77	500	600	74	600	700	71	700
	5 G LEVEL BREAKAWAY	100*	54	100	100*	47	100	100*	39	100
	6 G LEVEL BREAKAWAY	100*	54	100	100*	47	100	100*	39	100
-10	5 G	490*	50	200	531*	43	200	575*	36	200
	6 G	485*	50	200	524*	43	200	568*	36	200
-20	5 G	1035*	54	300	1139*	47	300	1265*	40	300
	6 G	1025*	54	300	1117*	47	300	1246*	39	300
-30	5 G	1805*	56	500	2005*	50	500	2249*	43	500
	6 G	1788*	56	500	1944*	50	500	2208*	43	500
-45	5 G	3027*	55	700	3468*	49	700	3950*	43	700
	6 G	3001*	55	700	3279*	49	700	3811*	43	700
-60	5 G	4556*	52	1000	5291*	47	1000	6024*	41	1000
	6 G	4416*	51	1000	4864*	47	1000	5615*	41	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.
* Terrain avoidance

BF 31308-R2-B98-1

Figure 2-84. Safe Escape Table, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, Mk 67 Smoke Warhead, M427 Fuze

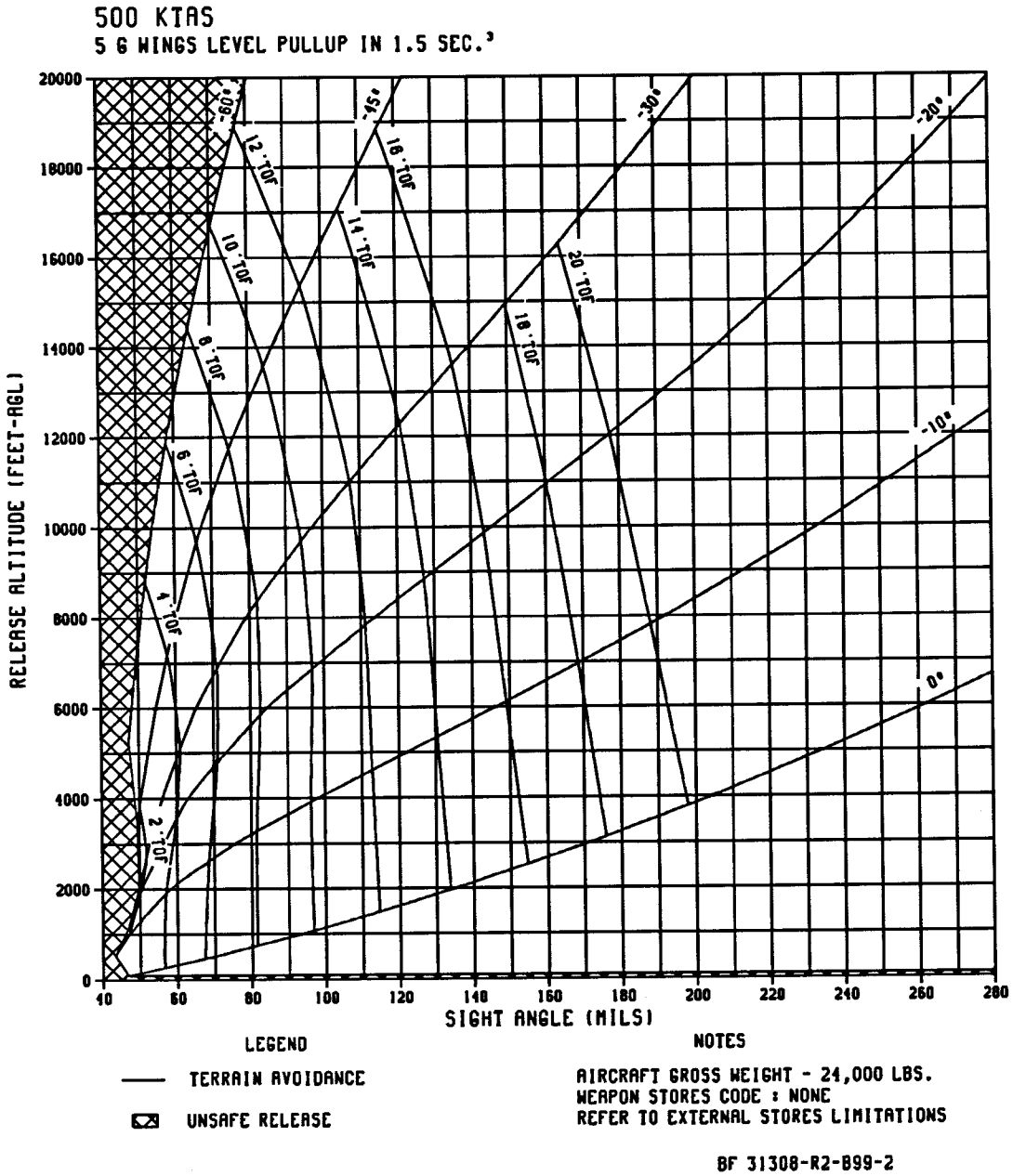
AV-8B SIGHT ANGLE CHART[1]
2.75" FFAR : MK 66 MOD 2 MOTOR : MK 67 SMOKE WARHEAD : M427 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-85. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, Mk 67 Smoke Warhead, M427 Fuze (Sheet 1 of 3)

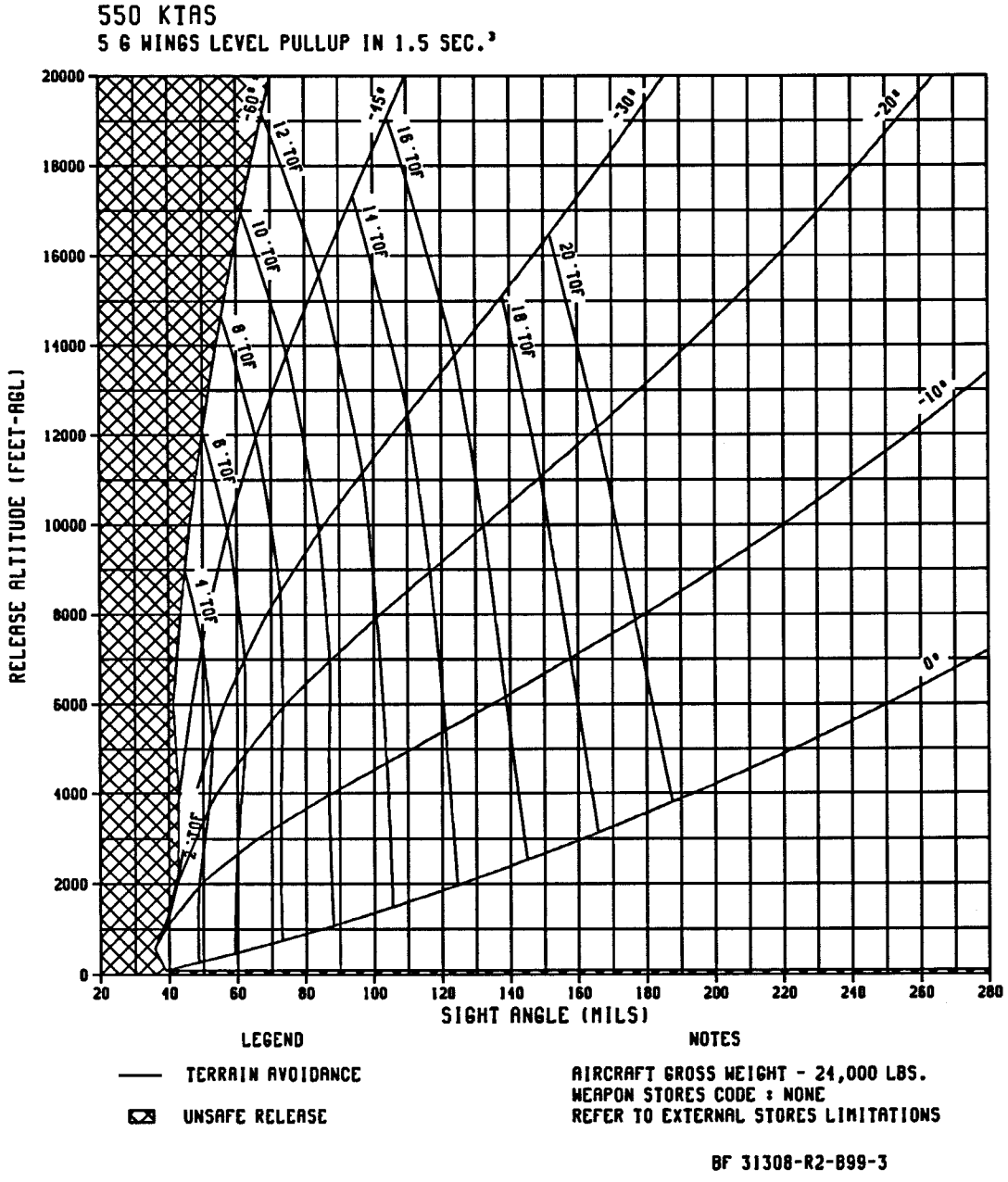
AV-8B SIGHT ANGLE CHART[1]
2.75" FFAR : MK 66 MOD 2 MOTOR : MK 67 SMOKE WARHEAD : M427 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-85. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, Mk 67 Smoke Warhead, M427 Fuze (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
2.75' FFAR : MK 66 MOD 2 MOTOR : MK 67 SMOKE WARHEAD : M427 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-85. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, Mk 67 Smoke Warhead, M427 Fuze (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
2.75" FFAR : MK 66 MOD 2 MOTOR : WTU-1/B PRACTICE WARHEAD

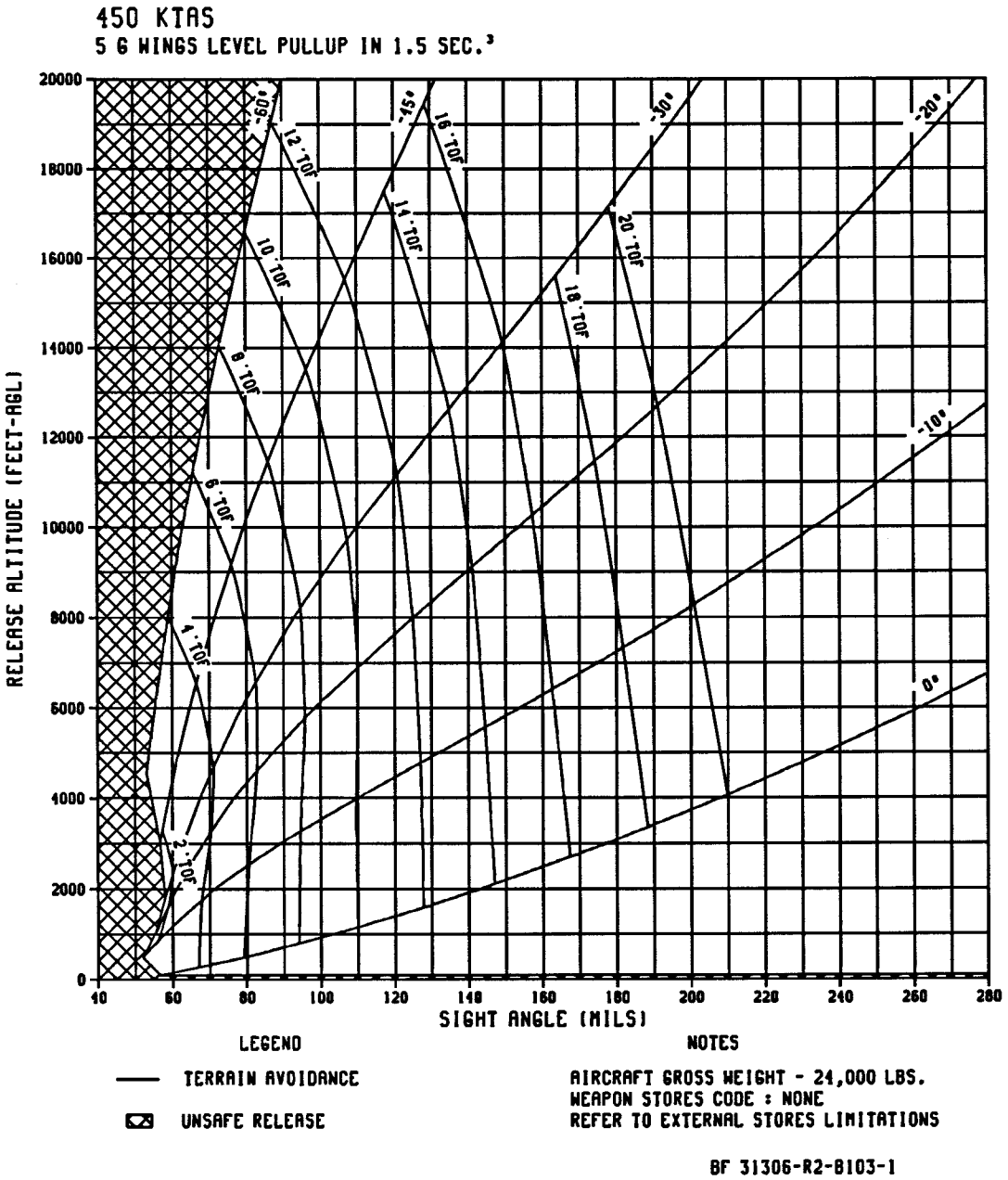
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	500	80	500	600	76	600	700	72	700
	5 G LEVEL BREAKAWAY	100	57	100	100	49	100	100	41	100
	6 G LEVEL BREAKAWAY	100	57	100	100	49	100	100	41	100
-10	5 G	490	52	200	531	45	200	575	37	200
	6 G	485	52	200	524	45	200	568	37	200
-20	5 G	1035	55	300	1139	49	300	1265	41	300
	6 G	1025	55	300	1117	48	300	1246	41	300
-30	5 G	1805	58	500	2005	52	500	2249	45	500
	6 G	1788	58	500	1944	51	500	2208	44	500
-45	5 G	3027	57	700	3468	51	700	3950	45	700
	6 G	3001	57	700	3279	51	700	3811	45	700
-60	5 G	4556	53	1000	5291	49	1000	6024	43	1000
	6 G	4416	53	1000	4864	48	1000	5615	42	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross weight = 24,000 lbs.

BF 31306-R2-B102-1

Figure 2-86. Safe Escape Table, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, WTU-1/B Practice Warhead

AV-8B SIGHT ANGLE CHART[1]
2.75' FFAR : MK 66 MOD 2 MOTOR : WTU-1/B PRACTICE WARHEAD[2]

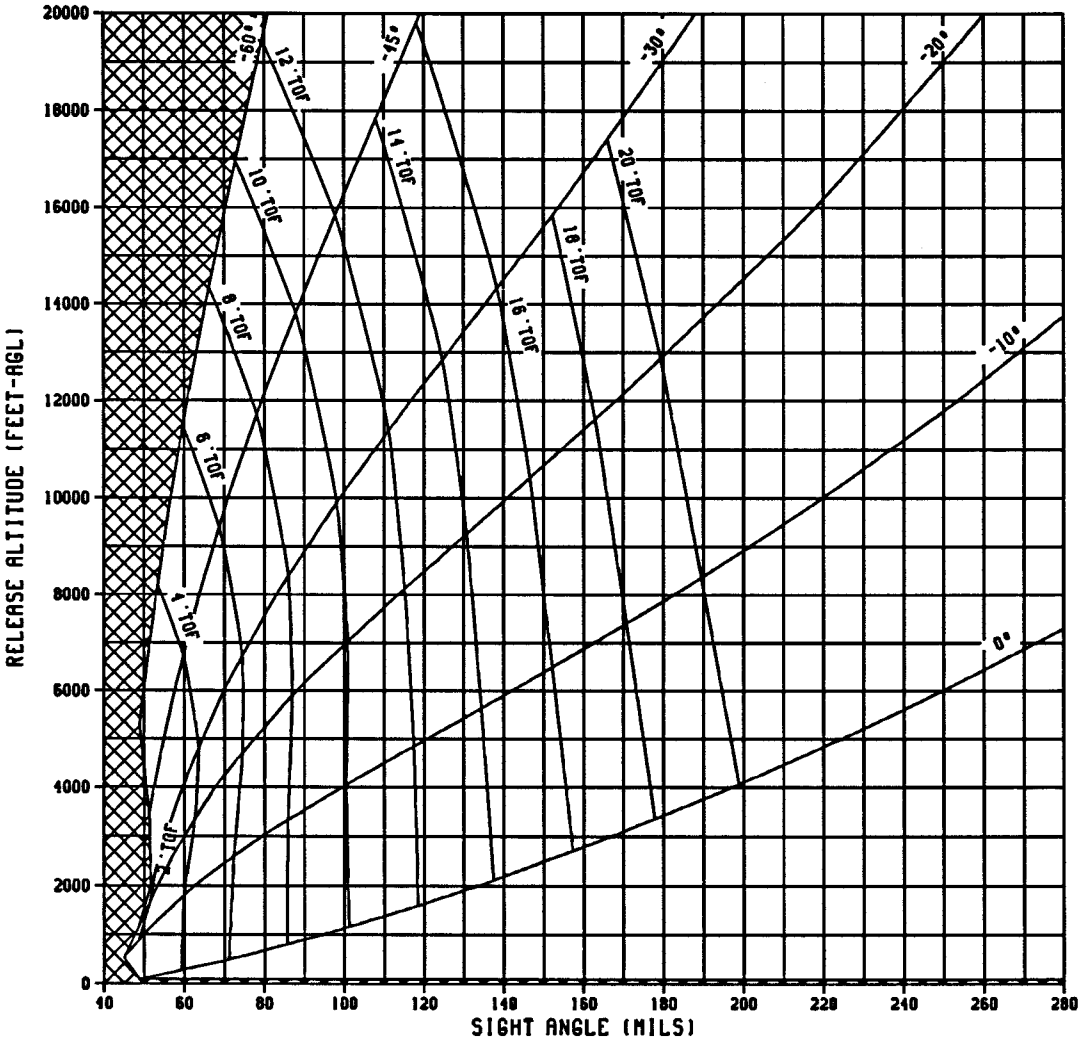


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-87. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, WTU-1/B Practice Warhead (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
2.75" FFAR : MK 66 MOD 2 MOTOR : WTU-1/B PRACTICE WARHEAD[2]

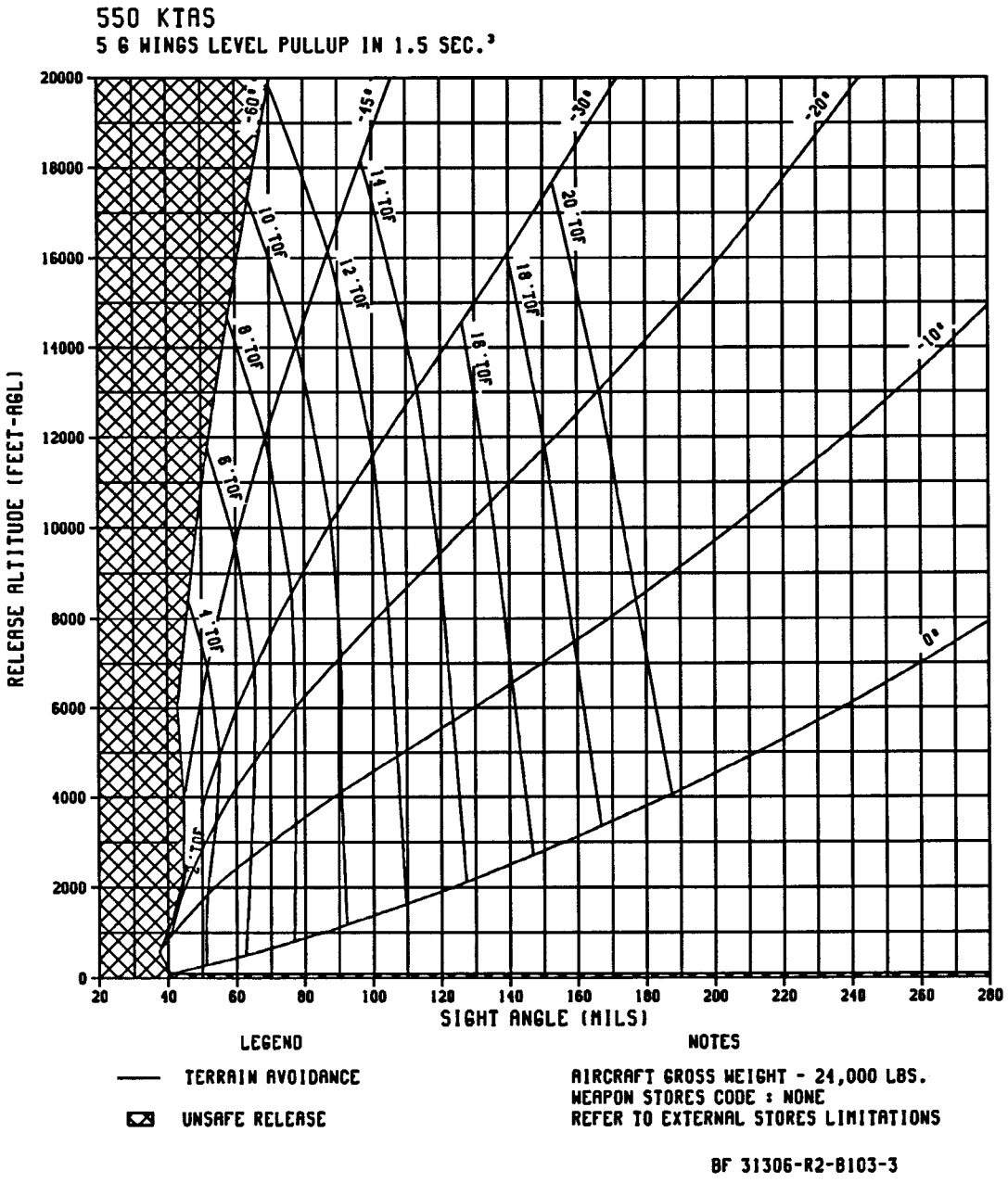
500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-87. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, WTU-1/B Practice Warhead (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
2.75" FFAR : MK 66 MOD 2 MOTOR : WTU-1/B PRACTICE WARHEAD[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-87. Sight Angle Chart, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, WTU-1/B Practice Warhead (Sheet 3 of 3)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
0	100	2.3	5188	5189	57	20	36	1
	500	6.1	11731	11742	80	43	37	0
	1000	9.2	15197	15230	103	66	37	0
	1500	11.6	17382	17447	124	87	38	0
	2000	13.6	19042	19147	143	105	38	0
	3000	17.0	21596	21804	177	139	39	0
	4000	19.8	23613	23949	208	169	40	0
	5000	22.4	25334	25823	236	196	41	0
	6000	24.7	26872	27534	262	221	42	0
	6800	26.5	28011	28825	281	240	43	0
-10	490	1.3	2568	2614	52	14	36	2
	500	1.3	2618	2666	52	14	36	2
	1000	2.3	5075	5172	58	20	37	1
	2000	4.6	9492	9701	71	34	38	1
	4000	10.0	16017	16509	110	71	39	0
	6000	15.1	20348	21214	154	113	41	0
	8000	19.5	23637	24954	196	153	44	0
	10000	23.3	26394	28225	234	190	46	0
	12000	26.9	28857	31252	268	222	48	0
	13000	28.6	30017	32711	284	237	50	0
-20	1035	1.4	2689	2881	55	18	35	2
	2000	2.4	5109	5486	61	24	36	1
	4000	5.0	9807	10591	77	39	38	0
	6000	8.4	13907	15146	98	59	40	0
	8000	12.0	17346	19102	125	84	42	0
	10000	15.6	20258	22592	154	111	44	0
	12000	18.9	22806	25770	182	137	46	0
	14000	22.0	25107	28747	209	162	49	0
	16000	25.0	27242	31594	234	185	51	0
	20000	30.5	31225	37081	277	224	57	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B96-1-10

Figure 2-88. Delivery Data, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 1 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
-30	1805	1.6	2966	3472	58	23	34	1
	2000	1.7	3282	3843	59	24	34	1
	4000	3.3	6451	7590	67	32	35	1
	6000	5.3	9470	11211	79	42	37	0
	8000	7.7	12285	14660	93	54	39	0
	10000	10.4	14861	17912	110	70	41	0
	12000	13.2	17206	20977	129	87	43	0
	14000	15.9	19353	23886	148	105	46	0
	16000	18.5	21345	26676	168	122	48	0
	20000	23.6	25005	32019	204	154	53	0
-45	3027	1.9	2871	4172	57	25	29	1
	4000	2.4	3779	5503	59	28	30	1
	6000	3.6	5616	8219	65	32	31	1
	8000	5.0	7408	10903	71	38	33	0
	10000	6.7	9141	13549	79	45	34	0
	12000	8.5	10808	16149	89	52	36	0
	14000	10.5	12400	18702	99	61	38	0
	16000	12.5	13919	21207	109	70	40	0
	18000	14.5	15370	23669	121	80	42	0
	20000	16.6	16763	26096	132	89	44	0
-60	4556	2.2	2455	5176	53	27	23	1
	6000	2.9	3220	6809	55	29	24	1
	7000	3.4	3745	7939	57	30	24	1
	8000	4.0	4266	9066	59	32	25	1
	10000	5.2	5293	11314	63	35	26	0
	12000	6.5	6298	13553	68	39	27	0
	14000	8.0	7280	15779	73	43	28	0
	16000	9.5	8234	17994	78	47	30	0
	18000	11.1	9161	20197	84	52	31	0
	20000	12.8	10062	22389	90	57	32	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B96-2-10

Figure 2-88. Delivery Data, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 2 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
0	100	2.3	5229	5230	49	18	29	1
	500	6.0	11934	11945	71	41	29	0
	1000	9.2	15468	15501	94	64	29	0
	2000	13.6	19363	19466	133	102	30	0
	3000	17.0	21942	22146	167	135	31	0
	4000	19.8	23977	24308	197	165	31	0
	5000	22.4	25714	26195	224	192	32	0
	6000	24.7	27264	27917	250	216	33	0
	7000	26.9	28693	29534	273	239	34	0
	7300	27.5	29102	30004	280	246	34	0
-10	531	1.3	2774	2825	45	14	29	2
	1000	2.2	5080	5177	50	19	29	1
	1500	3.3	7392	7543	56	25	29	1
	2000	4.5	9530	9738	63	32	30	0
	4000	9.9	16166	16653	99	67	31	0
	6000	14.9	20574	21431	142	109	33	0
	8000	19.3	23912	25214	183	148	34	0
	10000	23.2	26704	28515	220	184	36	0
	12000	26.8	29195	31565	254	216	38	0
	14000	30.1	31509	34479	284	244	40	0
-20	1139	1.5	2953	3165	49	18	28	1
	2000	2.3	5111	5489	53	23	29	1
	4000	4.9	9831	10613	68	37	30	0
	6000	8.2	13975	15209	88	56	31	0
	8000	11.8	17466	19211	114	80	33	0
	10000	15.3	20422	22739	141	106	34	0
	12000	18.6	23007	25948	168	132	36	0
	14000	21.8	25338	28948	194	156	38	0
	16000	24.8	27499	31815	218	179	40	0
	20000	30.2	31526	37335	260	218	44	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B96-3-10

Figure 2-88. Delivery Data, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 3 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
-30	2005	1.7	3290	3853	52	22	27	1
	4000	3.2	6455	7594	60	30	28	1
	6000	5.2	9486	11224	70	39	29	0
	8000	7.5	12322	14691	83	52	30	0
	10000	10.1	14925	17966	99	66	32	0
	12000	12.9	17298	21053	117	83	34	0
	14000	15.6	19473	23983	135	100	35	0
	16000	18.2	21489	26792	154	117	37	0
	18000	20.8	23384	29510	171	133	39	0
	20000	23.2	25190	32164	188	148	41	0
-45	3468	2.0	3284	4776	51	25	23	1
	4000	2.3	3780	5503	52	26	23	1
	6000	3.5	5620	8221	58	31	24	1
	8000	4.9	7416	10908	64	36	25	0
	10000	6.5	9156	13559	71	43	27	0
	12000	8.3	10832	16166	79	50	28	0
	14000	10.2	12436	18725	89	58	29	0
	16000	12.2	13967	21239	99	67	31	0
	18000	14.2	15432	23709	109	76	32	0
	20000	16.2	16837	26143	119	85	33	0
-60	5291	2.5	2847	6008	49	27	18	1
	6000	2.9	3221	6810	50	28	18	1
	7000	3.4	3747	7940	51	30	19	1
	8000	3.9	4268	9067	53	31	19	1
	10000	5.0	5297	11316	57	34	20	0
	12000	6.3	6306	13556	61	38	21	0
	14000	7.7	7291	15785	65	41	22	0
	16000	9.2	8250	18002	70	46	23	0
	18000	10.8	9182	20207	76	50	23	0
	20000	12.5	10089	22400	81	55	24	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B96-4-10

Figure 2-88. Delivery Data, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 4 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
0	100	2.2	5274	5274	41	17	21	1
	500	6.0	12137	12147	63	39	21	0
	1000	9.2	15738	15769	85	62	21	0
	2000	13.6	19680	19781	123	99	22	0
	3000	17.0	22284	22485	156	132	22	0
	4000	19.8	24336	24662	186	161	23	0
	5000	22.4	26087	26562	213	188	23	0
	6000	24.7	27652	28295	237	212	23	0
	7000	26.9	29092	29922	260	235	24	0
	8000	28.9	30445	31479	282	255	24	0
-10	575	1.4	2996	3050	37	13	21	1
	1000	2.2	5085	5182	42	18	21	1
	2000	4.3	9566	9772	53	30	21	0
	4000	9.7	16309	16793	88	64	22	0
	6000	14.8	20794	21642	130	105	23	0
	8000	19.1	24180	25469	169	143	24	0
	10000	23.1	27009	28801	205	179	25	0
	12000	26.6	29530	31875	238	210	27	0
	14000	29.9	31870	34809	268	238	28	0
	15000	31.5	32997	36247	281	251	29	0
-20	1265	1.5	3273	3509	41	18	20	1
	2000	2.3	5114	5491	45	22	20	1
	4000	4.8	9853	10634	58	35	21	0
	6000	8.0	14039	15267	77	53	22	0
	8000	11.5	17580	19315	101	76	23	0
	10000	15.1	20581	22882	127	102	24	0
	12000	18.4	23203	26122	154	127	25	0
	14000	21.5	25565	29148	179	151	27	0
	16000	24.5	27754	32035	202	173	28	0
	20000	30.0	31827	37589	243	211	31	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B96-5-10

Figure 2-88. Delivery Data, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 5 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
-30	2249	1.8	3683	4315	45	22	19	1
	4000	3.2	6459	7597	51	29	19	1
	6000	5.0	9500	11236	60	38	20	0
	8000	7.3	12355	14719	72	49	21	0
	10000	9.9	14984	18015	87	63	22	0
	12000	12.6	17386	21125	104	79	23	0
	14000	15.3	19588	24077	121	95	24	0
	16000	17.9	21630	26904	139	112	26	0
	18000	20.4	23548	29640	156	128	27	0
	20000	22.9	25374	32309	172	143	28	0
-45	3950	2.2	3733	5435	45	25	16	1
	4000	2.3	3780	5503	45	26	16	1
	6000	3.4	5621	8222	49	30	16	1
	8000	4.8	7421	10912	55	35	17	0
	10000	6.3	9167	13566	61	41	17	0
	12000	8.0	10852	16179	69	48	18	0
	14000	9.9	12467	18746	77	56	19	0
	16000	11.9	14011	21268	87	64	20	0
	18000	13.8	15489	23747	96	73	21	0
	20000	15.8	16908	26189	106	82	22	0
-60	6024	2.8	3234	6837	43	28	11	1
	7000	3.3	3747	7940	44	29	11	1
	8000	3.8	4268	9067	46	30	12	0
	9000	4.3	4786	10193	47	32	12	0
	10000	4.9	5299	11317	49	33	12	0
	12000	6.2	6309	13558	52	36	12	0
	14000	7.5	7297	15788	56	40	13	0
	16000	9.0	8260	18006	61	44	13	0
	18000	10.5	9197	20214	65	48	14	0
	20000	12.1	10109	22410	70	53	15	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B96-6-10

Figure 2-88. Delivery Data, 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 6 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	392	-570	-2765	0	-45315	437	1069	-1817	5.2	42	.1	39	7.5
	500	456	-594	-1491	1311	-6407	1494	1234	-1561	11.7	104	.4	103	8.8
	1000	413	-519	-1042	993	-4306	1824	1078	-1254	15.2	157	.7	156	10.2
	1500	380	-470	-815	793	-3464	1841	959	-1076	17.4	197	1.0	196	11.2
	2000	358	-438	-677	664	-2991	1792	875	-961	19.1	230	1.3	230	12.0
	3000	330	-399	-515	508	-2465	1677	765	-821	21.8	287	1.8	287	13.1
	4000	315	-378	-421	417	-2173	1583	696	-738	23.9	335	2.3	335	14.0
	5000	307	-366	-361	356	-1987	1512	650	-683	25.8	378	2.8	378	14.6
	6000	304	-360	-316	314	-1859	1459	618	-645	27.5	417	3.3	417	15.1
	6800	304	-358	-288	286	-1784	1425	599	-623	28.8	447	3.7	446	15.5
-10	490	21	-26	-23	17	-6	5	68	-71	2.6	22	1.6	22	8.4
	500	21	-26	-23	17	-6	5	69	-72	2.7	22	1.6	22	8.4
	1000	42	-52	-37	30	-29	18	130	-136	5.2	39	1.4	38	7.4
	2000	82	-100	-79	71	-148	90	230	-240	9.7	77	1.6	77	8.0
	4000	144	-171	-151	145	-504	360	334	-347	16.5	170	2.5	170	10.3
	6000	177	-209	-164	161	-703	554	369	-381	21.2	255	3.4	255	12.0
	8000	199	-234	-156	155	-800	662	384	-394	25.0	328	4.2	328	13.2
	10000	217	-255	-146	143	-856	730	393	-403	28.2	394	4.9	394	14.0
	12000	236	-276	-134	133	-896	780	402	-411	31.3	454	5.6	454	14.5
	13000	246	-286	-128	128	-913	802	407	-415	32.7	483	5.9	482	14.7
-20	1035	12	-14	-6	5	0	1	40	-40	2.9	24	2.9	24	8.2
	2000	24	-28	-11	10	-5	6	74	-75	5.5	41	2.7	41	7.4
	4000	50	-60	-27	25	-47	37	139	-141	10.6	85	3.0	85	8.0
	6000	78	-93	-49	47	-136	108	189	-192	15.1	142	3.7	142	9.4
	8000	106	-124	-65	64	-241	199	226	-230	19.1	203	4.5	203	10.6
	10000	129	-151	-74	72	-333	284	253	-257	22.6	263	5.1	263	11.6
	12000	151	-175	-77	76	-409	356	274	-278	25.8	319	5.8	319	12.4
	14000	171	-198	-77	76	-472	417	293	-297	28.7	372	6.3	372	12.9
	16000	190	-220	-75	74	-526	469	309	-314	31.6	422	6.8	422	13.4
	20000	228	-264	-68	68	-615	558	341	-345	37.1	515	7.5	515	13.9

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B97-1-10

Figure 2-89. Release Error Sensitivities 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 1 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	1805	10	-12	-3	3	0	2	33	-33	3.5	27	4.1	27	7.8
	2000	11	-13	-3	3	-1	2	37	-36	3.8	29	4.0	29	7.7
	4000	23	-27	-7	7	-8	9	71	-72	7.6	56	3.9	56	7.4
	6000	36	-44	-14	13	-27	25	104	-105	11.2	90	4.3	90	8.0
	8000	52	-62	-22	21	-59	52	133	-134	14.7	130	4.9	130	8.9
	10000	69	-82	-30	29	-103	91	159	-161	17.9	175	5.5	175	9.8
	12000	87	-102	-36	35	-152	135	182	-184	21.0	222	6.1	222	10.6
	14000	104	-121	-40	40	-201	180	202	-204	23.9	268	6.6	268	11.2
	16000	121	-140	-42	42	-248	224	221	-223	26.7	313	7.0	313	11.7
	20000	155	-178	-44	43	-332	306	255	-257	32.0	398	7.8	398	12.4
-45	3027	7	-9	-2	2	-2	3	29	-28	4.2	31	5.5	31	7.5
	4000	10	-12	-2	2	-3	4	38	-37	5.5	40	5.3	40	7.3
	6000	16	-19	-4	4	-8	8	56	-56	8.2	61	5.4	61	7.4
	8000	22	-27	-6	5	-16	15	74	-74	10.9	85	5.7	85	7.8
	10000	30	-36	-8	8	-27	25	91	-91	13.5	113	6.1	113	8.3
	12000	39	-46	-11	11	-41	38	108	-108	16.1	143	6.6	143	8.9
	14000	49	-57	-13	13	-60	55	124	-124	18.7	176	7.1	176	9.4
	16000	59	-69	-16	15	-81	74	140	-140	21.2	211	7.5	211	9.9
	18000	70	-81	-17	17	-104	95	155	-155	23.7	245	7.9	245	10.4
	20000	81	-93	-19	19	-128	117	170	-170	26.1	280	8.2	280	10.7
-60	4556	6	-8	-1	1	-1	2	29	-28	5.2	38	6.5	38	7.3
	6000	8	-10	-1	1	-2	3	39	-38	6.8	50	6.4	50	7.3
	7000	10	-12	-2	2	-3	4	45	-44	7.9	58	6.5	58	7.3
	8000	12	-15	-2	2	-5	6	51	-51	9.1	67	6.6	67	7.4
	10000	15	-19	-3	3	-9	9	64	-63	11.3	88	6.8	88	7.7
	12000	20	-24	-4	4	-14	14	76	-76	13.6	110	7.2	110	8.1
	14000	25	-30	-5	5	-21	21	89	-88	15.8	135	7.6	135	8.5
	16000	30	-36	-6	6	-30	29	101	-100	18.0	161	7.9	161	8.9
	18000	35	-42	-7	7	-40	39	113	-113	20.2	188	8.3	188	9.3
	20000	41	-49	-8	8	-51	50	125	-125	22.4	216	8.6	216	9.6

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B97-2-10

Figure 2-89. Release Error Sensitivities 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 2 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	344	-392	-2734	0	-50208	427	1084	-1851	5.2	41	.1	38	7.3
	500	408	-432	-1505	1322	-6731	1515	1275	-1619	11.9	103	.4	102	8.5
	1000	375	-389	-1056	1007	-4505	1874	1115	-1301	15.5	156	.6	155	10.0
	2000	332	-340	-686	673	-3114	1848	904	-995	19.5	230	1.2	230	11.8
	3000	313	-318	-520	515	-2557	1729	789	-847	22.1	287	1.8	286	12.9
	4000	304	-308	-425	422	-2250	1631	717	-760	24.3	335	2.3	335	13.8
	5000	300	-305	-364	359	-2054	1556	669	-703	26.2	378	2.8	378	14.4
	6000	302	-306	-318	316	-1919	1499	635	-664	27.9	417	3.2	417	14.9
	7000	306	-310	-283	282	-1823	1455	611	-635	29.5	454	3.6	454	15.4
	7300	307	-311	-274	273	-1799	1445	605	-628	30.0	464	3.8	464	15.5
-10	531	20	-20	-22	17	-7	5	73	-76	2.8	23	1.5	23	8.0
	1000	38	-38	-35	28	-27	17	131	-137	5.2	38	1.4	37	7.2
	1500	57	-58	-53	46	-72	43	185	-193	7.5	55	1.5	55	7.3
	2000	76	-77	-75	67	-142	85	232	-242	9.7	75	1.6	75	7.7
	4000	139	-140	-148	142	-504	355	340	-353	16.7	167	2.4	167	10.0
	6000	177	-179	-163	160	-712	557	376	-388	21.4	252	3.3	252	11.7
	8000	204	-206	-156	154	-813	670	392	-402	25.2	326	4.1	326	12.9
	10000	227	-229	-145	143	-871	741	401	-411	28.5	392	4.8	392	13.7
	12000	251	-253	-132	132	-911	791	410	-419	31.6	452	5.4	452	14.3
	14000	276	-278	-121	121	-945	832	420	-428	34.5	507	6.0	507	14.7
-20	1139	12	-12	-6	5	0	1	43	-44	3.2	25	2.8	25	7.8
	2000	21	-22	-10	9	-4	5	74	-75	5.5	39	2.6	39	7.2
	4000	48	-48	-25	24	-43	34	139	-142	10.6	83	2.9	83	7.8
	6000	78	-79	-46	44	-130	102	191	-194	15.2	138	3.6	138	9.1
	8000	108	-109	-63	61	-237	193	228	-232	19.2	199	4.3	199	10.4
	10000	135	-136	-72	70	-331	279	256	-260	22.7	258	5.0	258	11.4
	12000	161	-162	-75	75	-408	352	278	-282	25.9	315	5.6	315	12.1
	14000	186	-187	-75	75	-472	414	297	-301	28.9	368	6.1	368	12.7
	16000	210	-211	-73	73	-526	467	314	-318	31.8	418	6.6	418	13.1
	20000	260	-261	-67	67	-615	557	346	-350	37.3	511	7.3	510	13.7

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B97-3-10

Figure 2-89. Release Error Sensitivities 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 3 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2005	10	-10	-3	3	0	1	37	-36	3.9	29	3.9	29	7.5
	4000	22	-22	-7	6	-7	8	72	-72	7.6	55	3.8	55	7.2
	6000	37	-37	-13	12	-24	22	104	-105	11.2	88	4.2	88	7.8
	8000	54	-55	-20	19	-55	48	134	-135	14.7	127	4.7	127	8.6
	10000	74	-74	-28	27	-98	85	160	-162	18.0	171	5.3	171	9.5
	12000	94	-95	-34	34	-146	129	183	-185	21.1	217	5.9	217	10.3
	14000	115	-116	-38	38	-195	174	204	-206	24.0	263	6.4	263	11.0
	16000	137	-137	-41	41	-242	217	223	-225	26.8	307	6.9	307	11.5
	18000	158	-159	-42	42	-285	259	240	-242	29.5	351	7.2	351	11.9
	20000	180	-180	-42	42	-326	298	257	-259	32.2	392	7.6	392	12.2
-45	3468	8	-8	-2	2	-2	3	33	-32	4.8	34	5.2	34	7.2
	4000	10	-10	-2	2	-3	3	38	-37	5.5	39	5.2	39	7.1
	6000	16	-17	-3	3	-7	7	56	-56	8.2	59	5.3	59	7.2
	8000	24	-25	-5	5	-14	13	74	-74	10.9	83	5.6	83	7.6
	10000	34	-34	-7	7	-24	22	91	-91	13.6	109	6.0	109	8.1
	12000	44	-45	-10	10	-38	35	108	-108	16.2	139	6.4	139	8.6
	14000	56	-57	-12	12	-55	50	125	-125	18.7	172	6.9	172	9.2
	16000	69	-70	-14	14	-75	69	140	-141	21.2	205	7.3	205	9.7
	18000	83	-83	-16	16	-97	89	155	-156	23.7	239	7.7	239	10.1
	20000	97	-98	-18	18	-120	110	170	-171	26.1	274	8.0	274	10.5
-60	5291	8	-8	-1	1	-1	1	34	-33	6.0	43	6.2	43	7.1
	6000	9	-9	-1	1	-1	2	39	-38	6.8	48	6.2	48	7.1
	7000	11	-11	-2	1	-2	3	45	-44	7.9	57	6.3	57	7.1
	8000	13	-14	-2	2	-4	4	51	-51	9.1	66	6.4	66	7.2
	10000	19	-19	-3	2	-7	7	64	-63	11.3	85	6.6	85	7.5
	12000	25	-25	-3	3	-12	12	76	-76	13.6	107	7.0	107	7.9
	14000	32	-32	-4	4	-18	18	89	-88	15.8	131	7.3	131	8.3
	16000	40	-40	-5	5	-26	25	101	-101	18.0	156	7.7	156	8.7
	18000	49	-49	-6	6	-35	34	113	-113	20.2	183	8.1	183	9.0
	20000	59	-59	-7	7	-46	44	125	-125	22.4	210	8.4	210	9.4

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B97-4-10

Figure 2-89. Release Error Sensitivities 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 4 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	508	-631	-2705	0	-56307	418	1101	-1888	5.3	40	.1	37	7.1
	500	606	-666	-1517	1332	-7065	1538	1316	-1678	12.1	103	.3	101	8.3
	1000	543	-576	-1069	1019	-4707	1925	1153	-1349	15.8	156	.6	155	9.8
	2000	458	-475	-693	681	-3235	1906	932	-1028	19.8	230	1.2	229	11.6
	3000	414	-425	-526	520	-2649	1782	812	-874	22.5	287	1.7	286	12.7
	4000	389	-397	-428	425	-2325	1679	738	-783	24.7	335	2.2	335	13.6
	5000	373	-380	-366	362	-2119	1600	688	-723	26.6	378	2.7	378	14.2
	6000	364	-370	-319	317	-1978	1540	652	-682	28.3	417	3.1	417	14.7
	7000	359	-365	-284	283	-1876	1494	627	-652	29.9	454	3.5	454	15.2
	8000	358	-363	-255	255	-1801	1459	608	-630	31.5	488	3.9	488	15.5
-10	575	31	-32	-22	17	-7	5	79	-82	3.1	23	1.4	23	7.7
	1000	54	-55	-32	27	-26	15	131	-137	5.2	37	1.4	37	7.0
	2000	102	-104	-71	63	-136	81	233	-244	9.8	73	1.5	73	7.5
	4000	174	-177	-145	139	-504	351	345	-359	16.8	164	2.3	164	9.7
	6000	211	-214	-162	159	-722	561	384	-396	21.6	249	3.2	249	11.5
	8000	234	-237	-155	153	-827	678	399	-411	25.5	323	4.0	323	12.7
	10000	251	-254	-144	142	-887	751	409	-419	28.8	389	4.7	389	13.5
	12000	260	-263	-132	131	-928	802	418	-428	31.9	449	5.3	449	14.1
	14000	269	-271	-120	120	-960	843	428	-437	34.8	505	5.8	505	14.5
	15000	273	-275	-115	115	-976	862	433	-442	36.2	532	6.1	531	14.7
-20	1265	19	-19	-6	5	0	1	48	-48	3.5	26	2.7	26	7.4
	2000	30	-31	-9	8	-3	4	74	-75	5.5	38	2.6	38	7.0
	4000	62	-62	-23	22	-40	31	140	-142	10.6	80	2.8	80	7.6
	6000	94	-95	-44	42	-124	97	192	-196	15.3	135	3.5	135	8.8
	8000	123	-124	-60	59	-231	188	231	-235	19.3	195	4.2	195	10.1
	10000	148	-149	-71	68	-328	275	259	-264	22.9	254	4.9	254	11.1
	12000	166	-167	-74	73	-407	349	282	-286	26.1	310	5.5	310	11.9
	14000	180	-182	-74	73	-473	413	301	-305	29.1	363	6.0	363	12.5
	16000	193	-195	-72	72	-528	467	318	-323	32.0	414	6.4	414	12.9
	20000	217	-218	-66	65	-619	557	350	-355	37.6	506	7.2	506	13.5

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B97-5-10

Figure 2-89. Release Error Sensitivities 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 5 of 6)

NOTE: APPLICABLE TO ALL 2.75 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
2.75" FFAR : MK 66 MOD 2 MOTOR : M151 WARHEAD : M427 FUZE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2249	16	-16	-3	3	0	1	41	-41	4.3	31	3.7	31	7.1
	4000	29	-29	-6	6	-6	7	72	-72	7.6	53	3.7	53	7.0
	6000	45	-46	-12	11	-22	20	104	-105	11.2	85	4.0	85	7.6
	8000	63	-64	-19	18	-51	44	134	-135	14.7	123	4.6	123	8.4
	10000	82	-83	-26	25	-93	80	161	-162	18.0	167	5.1	167	9.2
	12000	98	-99	-33	32	-141	123	185	-186	21.1	212	5.7	212	10.0
	14000	112	-113	-37	37	-190	168	206	-207	24.1	258	6.2	258	10.7
	16000	125	-126	-39	39	-237	211	225	-227	26.9	302	6.7	302	11.2
	18000	137	-138	-41	40	-281	253	242	-245	29.6	345	7.1	345	11.6
	20000	148	-149	-41	41	-322	292	259	-262	32.3	387	7.4	387	12.0
-45	3950	14	-14	-2	2	-2	3	37	-37	5.4	38	5.0	38	6.9
	4000	14	-14	-2	2	-2	3	38	-37	5.5	38	5.0	38	6.9
	6000	22	-22	-3	3	-6	6	56	-56	8.2	58	5.1	58	7.0
	8000	30	-30	-5	4	-12	12	74	-74	10.9	80	5.4	80	7.4
	10000	39	-39	-7	6	-22	20	92	-91	13.6	106	5.8	106	7.8
	12000	47	-48	-9	9	-34	32	109	-109	16.2	135	6.2	135	8.4
	14000	56	-56	-11	11	-51	47	125	-125	18.7	167	6.6	167	8.9
	16000	64	-65	-13	13	-70	64	141	-141	21.3	200	7.1	200	9.4
	18000	73	-73	-15	15	-91	83	156	-156	23.7	234	7.5	234	9.8
	20000	81	-81	-17	17	-114	104	171	-171	26.2	267	7.8	267	10.2
-60	6024	13	-13	-1	1	-1	1	39	-38	6.8	47	6.1	47	6.9
	7000	16	-16	-1	1	-1	2	45	-44	7.9	55	6.1	55	6.9
	8000	18	-18	-2	1	-3	3	51	-51	9.1	64	6.2	64	7.0
	9000	21	-21	-2	2	-4	5	58	-57	10.2	73	6.3	73	7.2
	10000	23	-24	-2	2	-6	6	64	-63	11.3	83	6.5	83	7.3
	12000	28	-28	-3	3	-10	10	76	-76	13.6	104	6.8	104	7.7
	14000	32	-33	-4	4	-16	15	89	-88	15.8	127	7.1	127	8.0
	16000	37	-37	-5	5	-23	22	101	-101	18.0	152	7.5	152	8.4
	18000	41	-41	-6	5	-32	30	113	-113	20.2	178	7.8	178	8.8
	20000	45	-46	-6	6	-42	40	125	-125	22.4	205	8.1	205	9.1

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 31310-R2-B97-6-10

Figure 2-89. Release Error Sensitivities 2.75-Inch FFAR, Mk 66 Mod 2 Motor, M151 Warhead, M427 Fuze (Sheet 6 of 6)

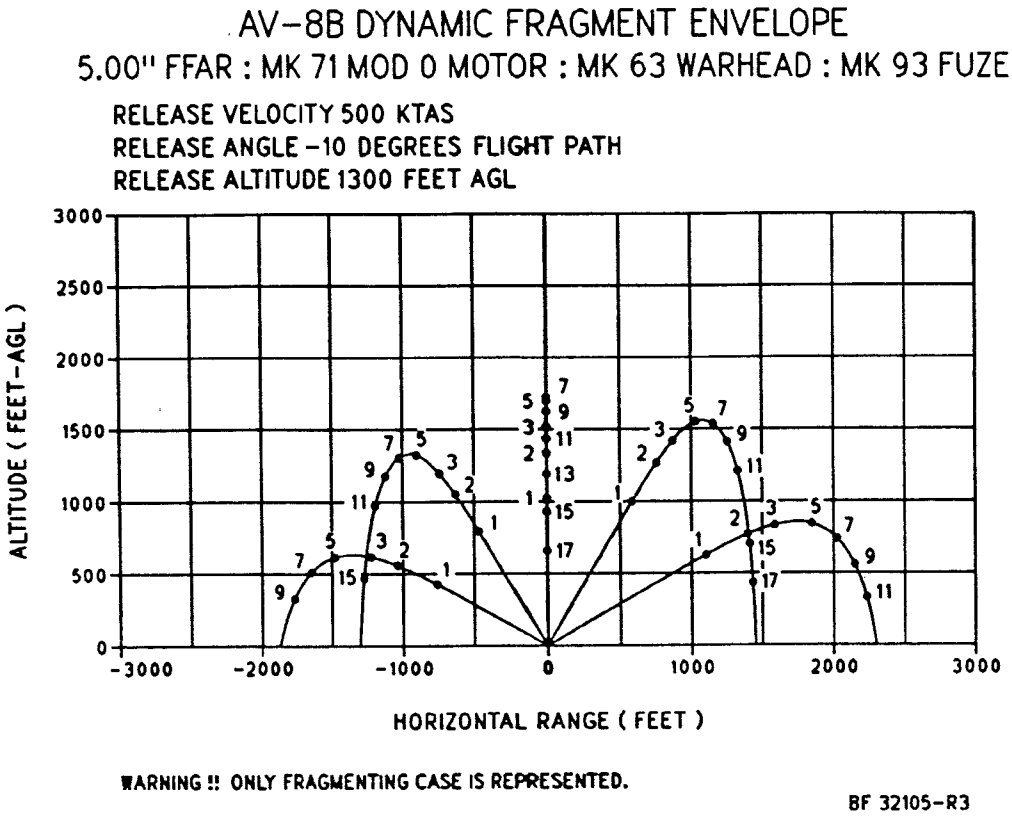
AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 63 WARHEAD : MK 93 FUZE

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	70	300	600	75	600	800	73	800
	5 G LEVEL BREAKAWAY	100*	58	100	200	57	200	200	49	200
	6 G LEVEL BREAKAWAY	100*	58	100	200	57	200	200	49	200
-10	5 G	1200	62	911	1300	56	970	1300	47	926
	6 G	1200	62	916	1200	55	876	1300	47	932
-20	5 G	1900	60	1165	2100	54	1261	2200	46	1236
	6 G	1900	60	1176	2100	54	1283	2200	46	1254
-30	5 G	2700	58	1396	3000	52	1496	3200	45	1452
	6 G	2700	58	1412	2900	52	1457	3200	45	1493
-45	5 G	3700	52	1373	4200	47	1432	4500	41	1251
	6 G	3700	52	1399	4000	47	1421	4500	41	1389
-60	5 G	4600	45	1044	5291*	41	1000	6024*	35	1000
	6 G	4500	45	1085	4900	40	1037	5615*	35	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.
* Terrain Avoidance

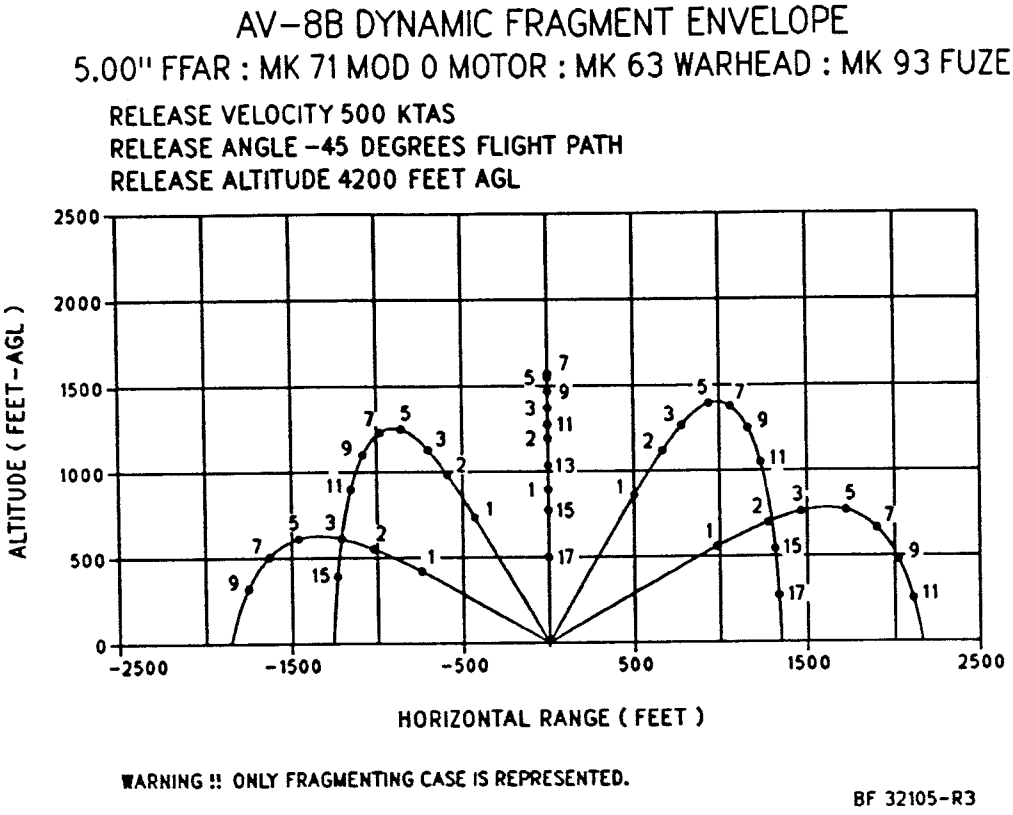
BF 32105-R3-B106-1

Figure 2-90. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 63 Warhead, Mk 93 Fuze



BF 32105-R3-B107-1

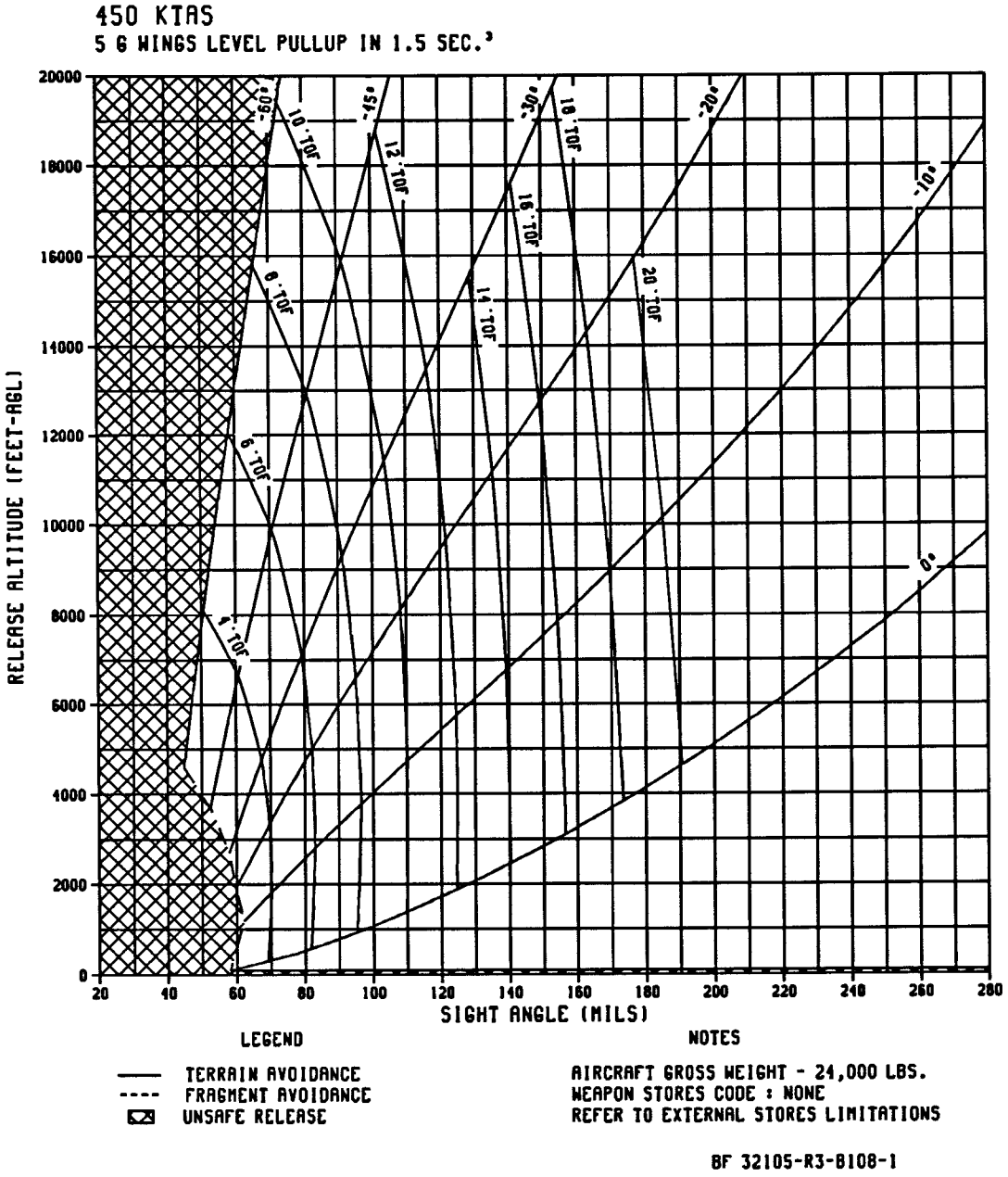
Figure 2-91. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 1 of 2)



BF 32105-R3-B107-2

Figure 2-91. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 2 of 2)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 63 WARHEAD : MK 93 FUZE[2]

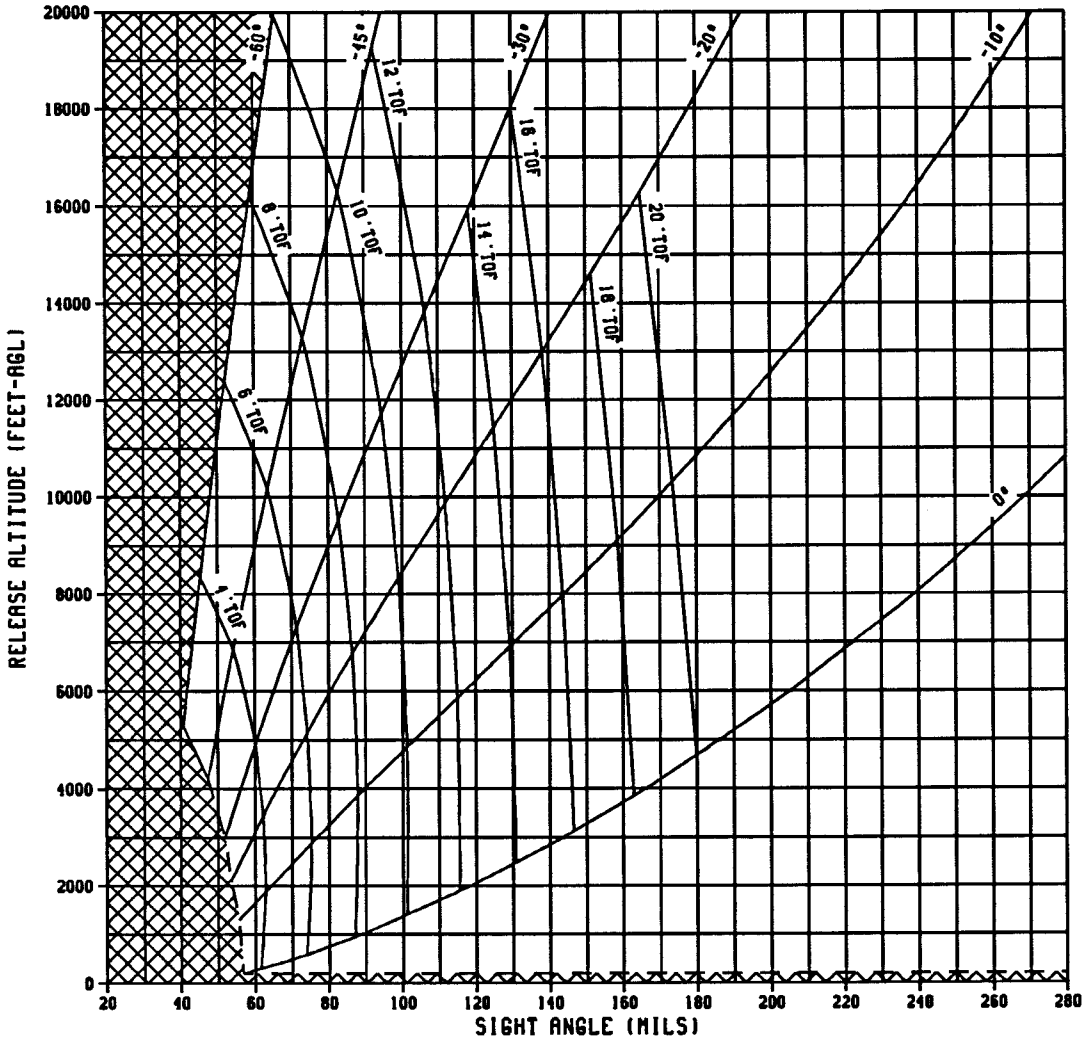


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-92. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 63 Warhead Mk 93 Fuze (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 63 WARHEAD : MK 93 FUZE[2]

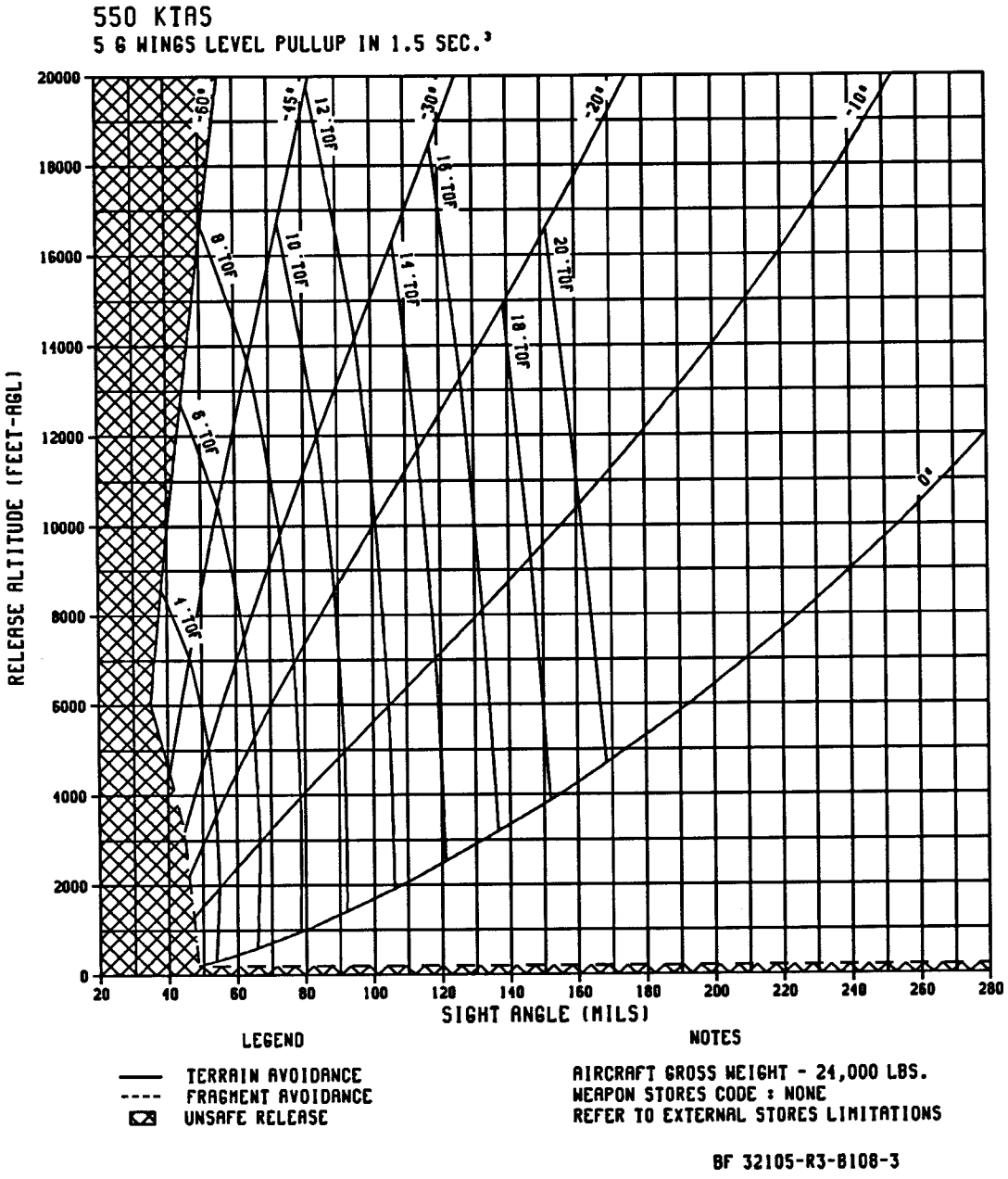
500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-92. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 63 WARHEAD : MK 93 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-92. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 24 WARHEAD : MK 93 & M414A1 FUZES

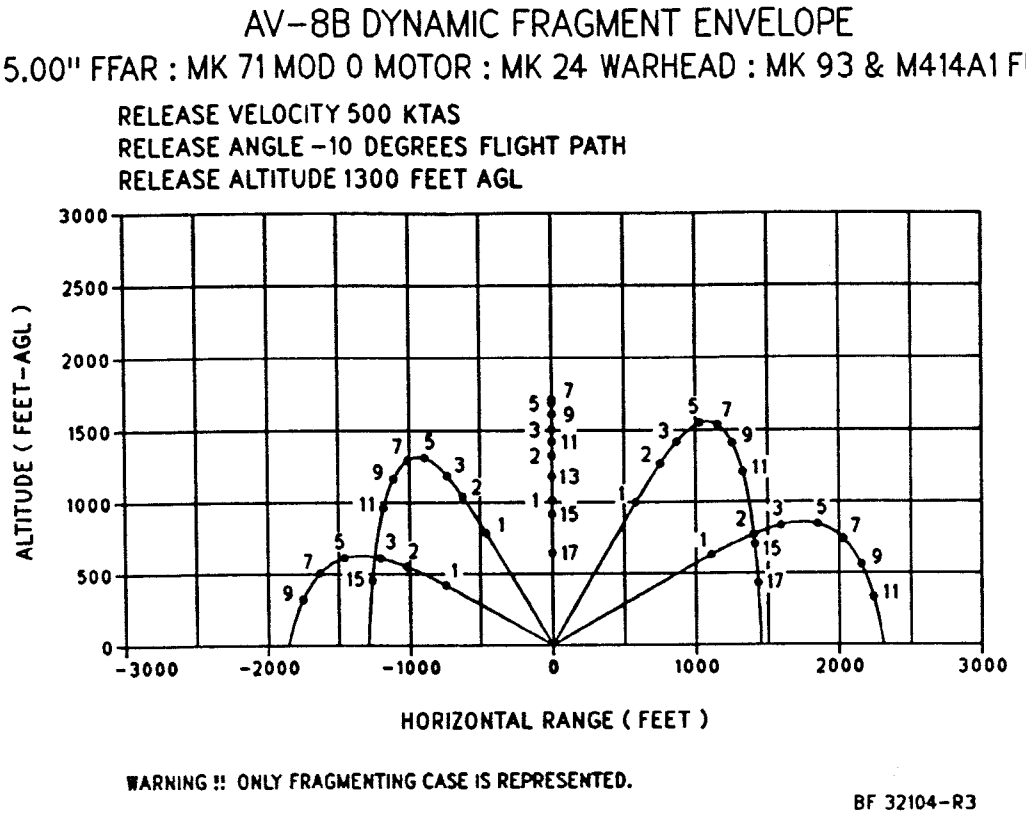
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	68	300	600	73	600	600	64	600
	5 G LEVEL BREAKAWAY	100*	57	100	100*	50	100	200	47	200
	6 G LEVEL BREAKAWAY	100*	57	100	100*	50	100	200	47	200
-10	5 G	1200	60	911	1300	54	970	1400	47	1026
	6 G	1200	60	916	1300	54	976	1400	47	1032
-20	5 G	2000	59	1265	2100	52	1261	2300	45	1336
	6 G	1900	58	1176	2100	52	1283	2300	45	1354
-30	5 G	2800	57	1496	3000	51	1496	3300	44	1552
	6 G	2800	57	712	2900	50	1457	3200	43	1493
-45	5 G	3700	51	1373	4200	46	1432	4500	39	1251
	6 G	3700	51	1399	4000	46	1421	4400	39	1289
-60	5 G	4600	44	1044	5291*	40	1000	6024*	34	1000
	6 G	4500	44	1085	4864*	39	1000	5615*	34	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

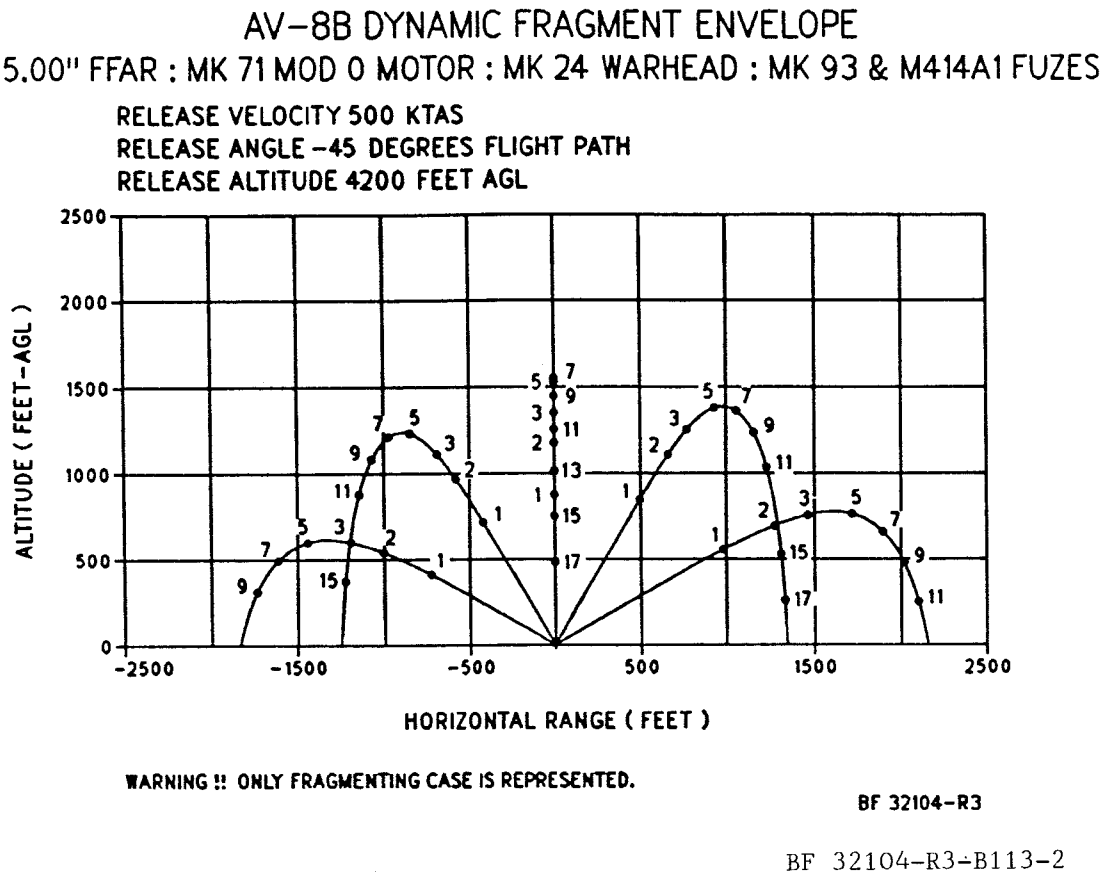
BF 32104-R3-B112-1

Figure 2-93. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuzes



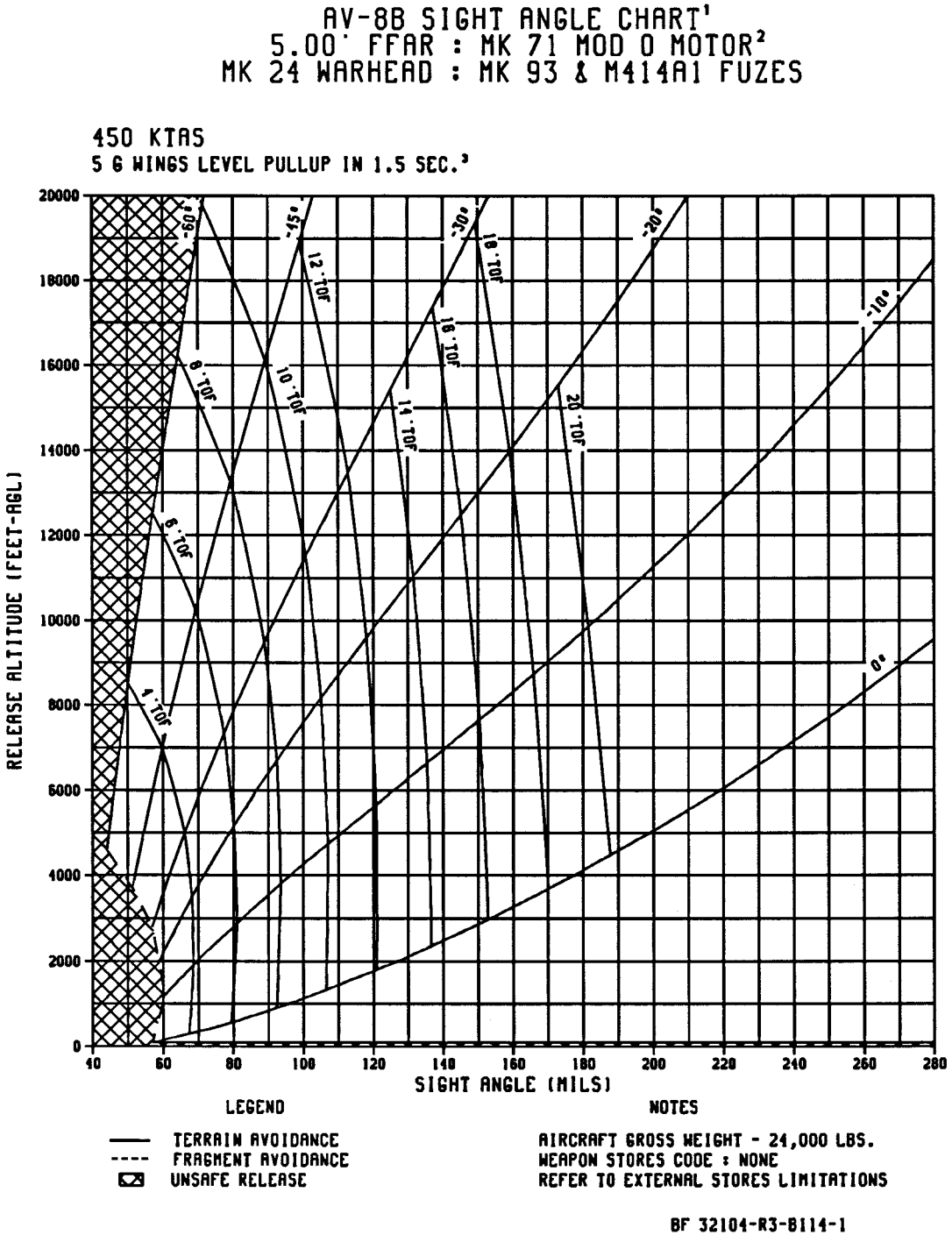
BF 32014-R3-B113-1

Figure 2-94. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuzes (Sheet 1 of 2)



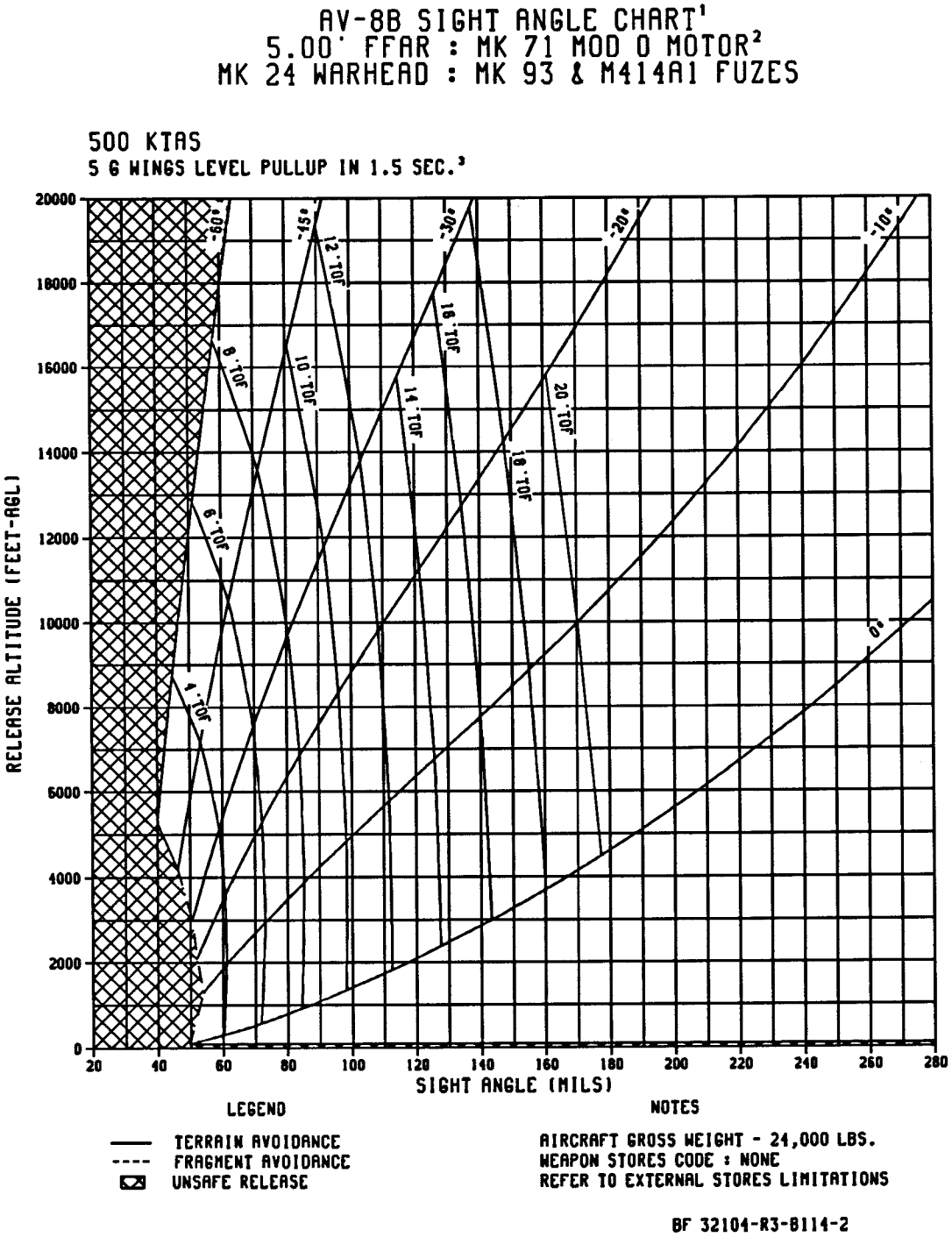
BF 32104-R3-B113-2

Figure 2-94. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuzes (Sheet 2 of 2)



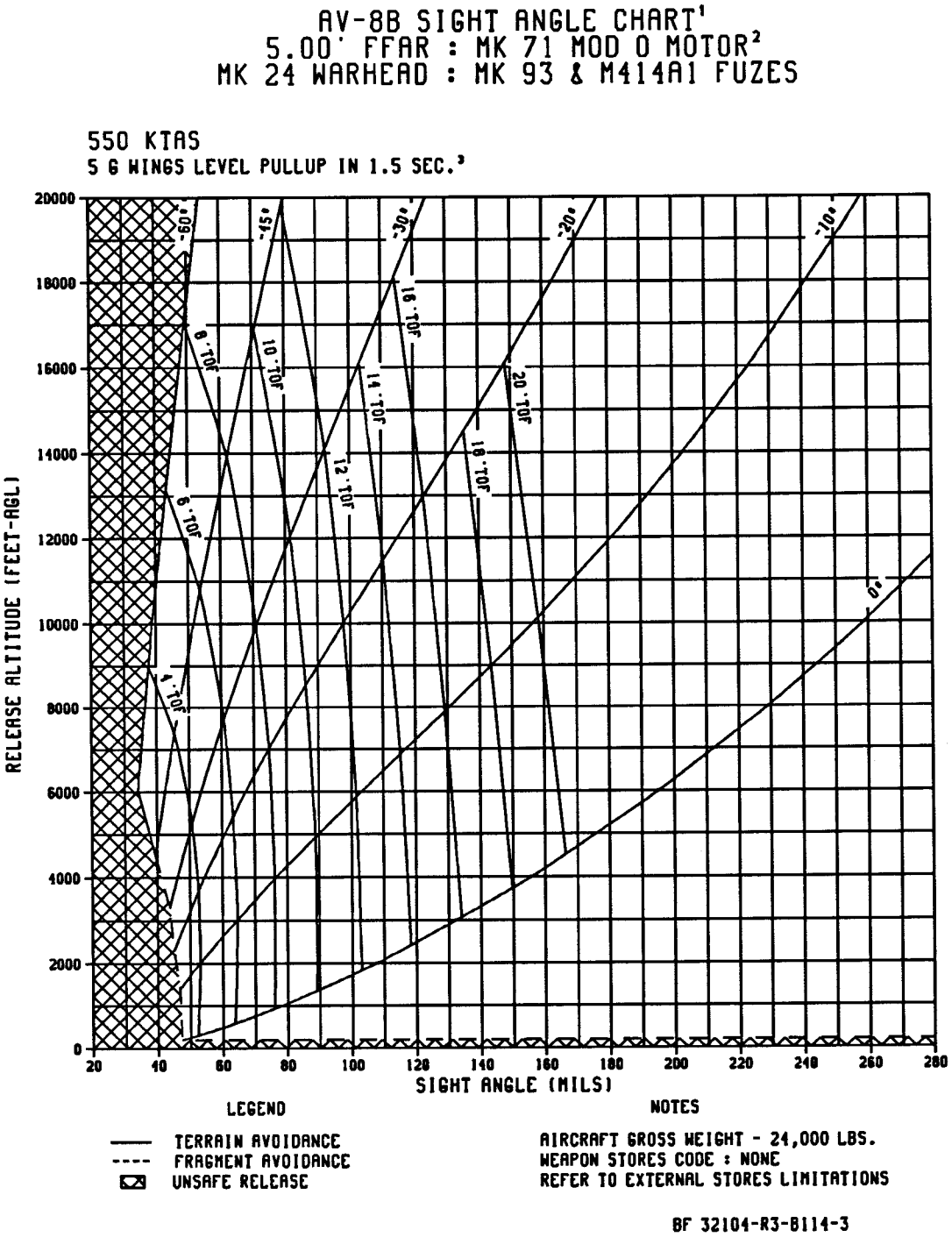
1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-95. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuzes (Sheet 1 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-95. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuzes (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-95. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuzes (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 24 WARHEAD : MK 188 FUZE

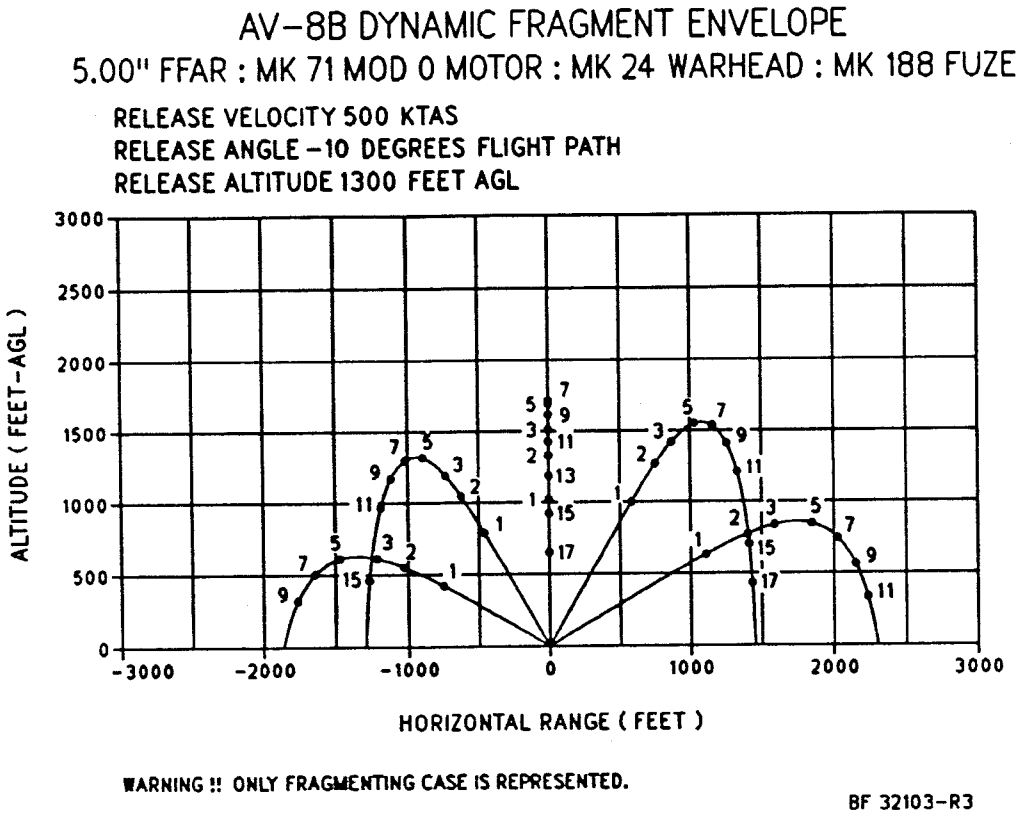
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	68	300	600	73	600	600	65	600
	5 G LEVEL BREAKAWAY	100*	57	100	100*	50	100	200	47	200
	6 G LEVEL BREAKAWAY	100*	57	100	100*	50	100	200	47	200
-10	5 G	1200	60	911	1300	54	970	1400	47	1026
	6 G	1200	60	916	1300	54	976	1400	47	1032
-20	5 G	2000	59	1265	2100	52	1261	2300	45	1336
	6 G	1900	58	1176	2100	52	1283	2300	45	1354
-30	5 G	2800	57	1496	3000	50	1496	3200	43	1452
	6 G	2800	57	1512	2900	50	1457	3200	43	1493
-45	5 G	3700	51	1373	4200	46	1432	4500	39	1251
	6 G	3700	51	1399	4000	46	1421	4400	39	1289
-60	5 G	4600	44	1044	5291*	40	1000	6024*	34	1000
	6 G	4500	44	1085	4900	39	1037	5615*	34	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

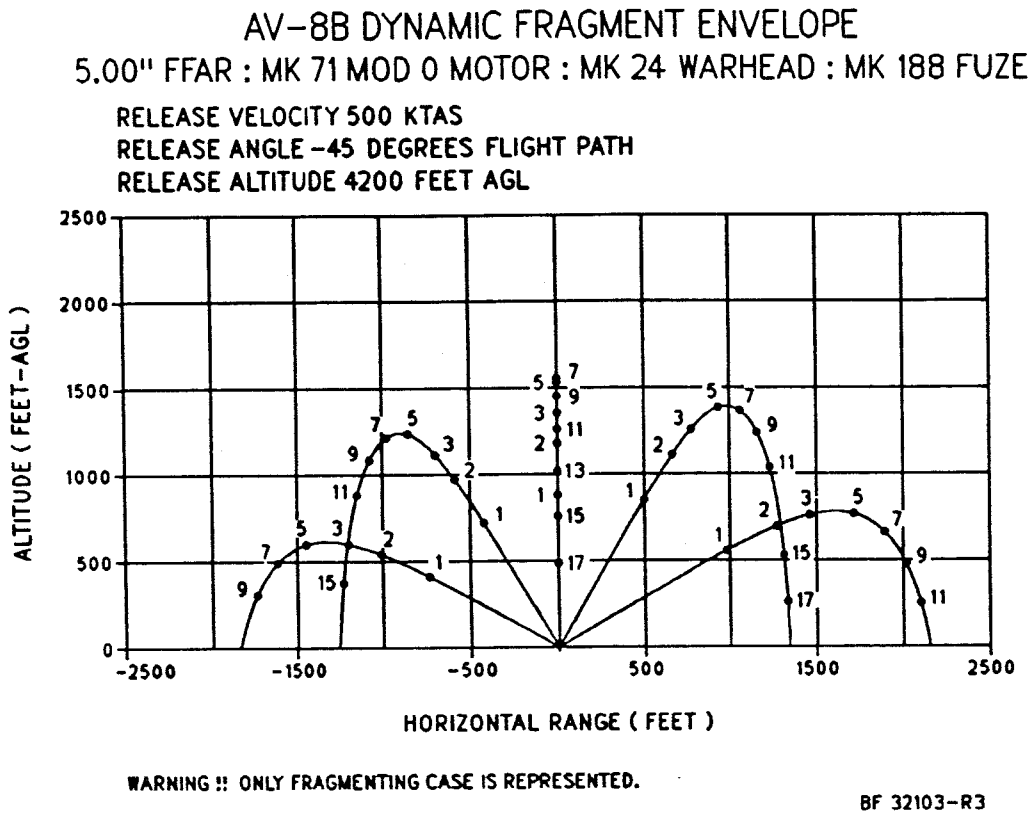
BF 32103-R3-B118-1

Figure 2-96. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead Mk 188 Fuze



BF 32103-R3-B119-1

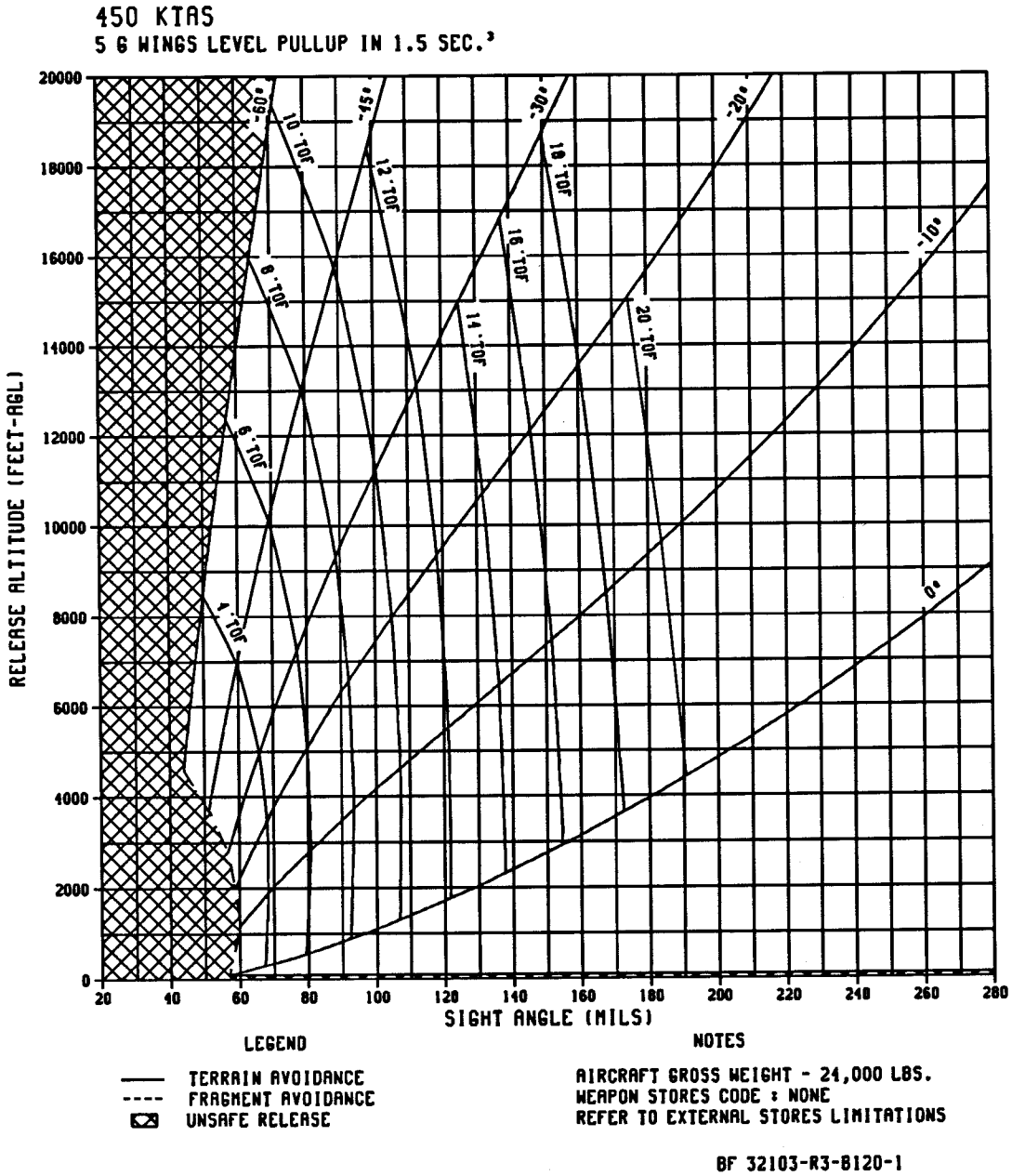
Figure 2-97. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 1 of 2)



BF 32103-R3-B119-2

Figure 2-97. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 2 of 2)

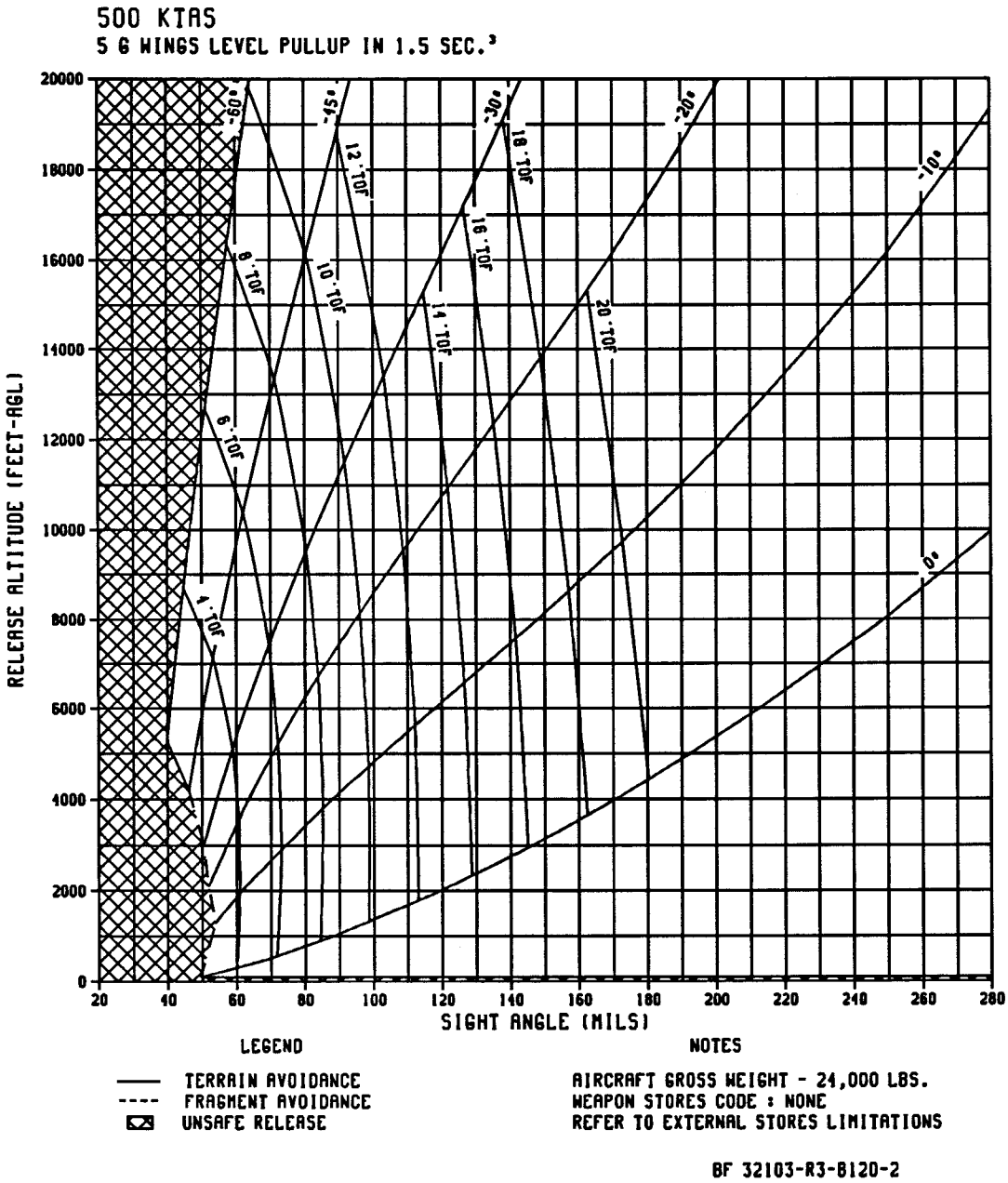
AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 24 WARHEAD : MK 188 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-98. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 1 of 3)

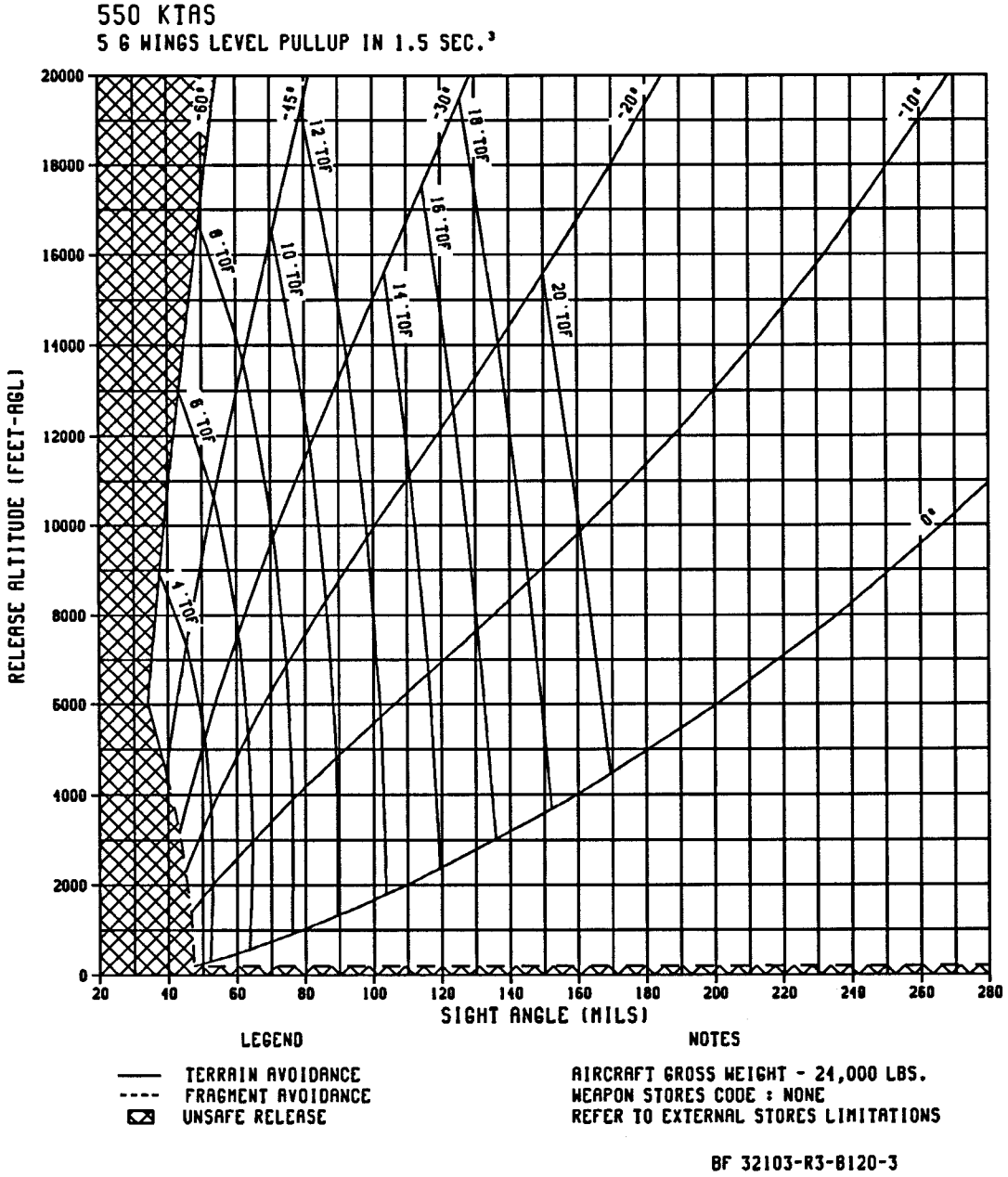
AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 24 WARHEAD : MK 188 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-98. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 24 WARHEAD : MK 188 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-98. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 32 WARHEAD : MK 93 & M414A1 FUZES

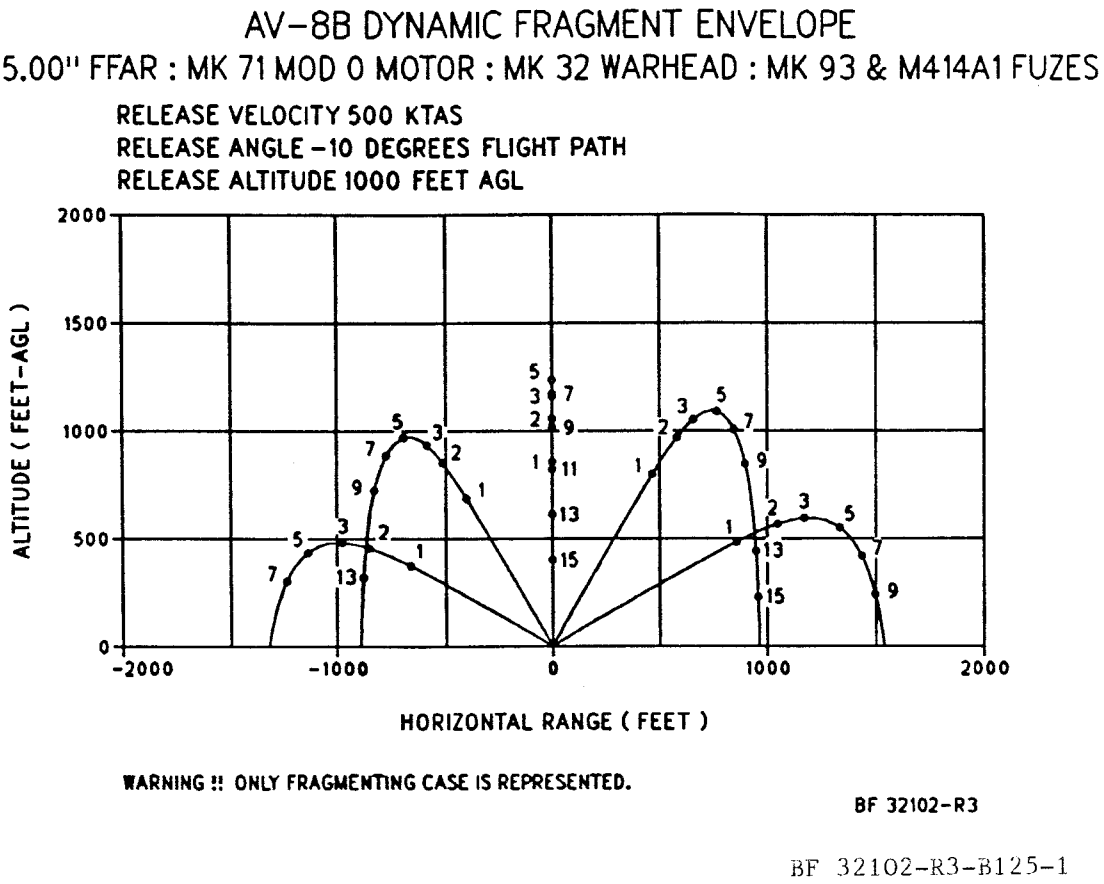
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	400	73	400	400	65	400	600	65	600
	5 G LEVEL BREAKAWAY	100*	57	100	100*	50	100	100*	42	100
	6 G LEVEL BREAKAWAY	100*	57	100	100*	50	100	100*	42	100
-10	5 G	900	57	611	1000	51	670	1000	43	626
	6 G	900	57	616	900	50	576	1000	43	632
-20	5 G	1600	57	865	1700	50	861	1800	43	836
	6 G	1600	57	876	1700	50	883	1800	43	854
-30	5 G	2200	55	896	2300	48	796	2600	41	852
	6 G	2200	55	912	2300	48	857	2600	41	893
-45	5 G	3100	50	773	3468*	45	700	3950*	38	700
	6 G	3001*	50	700	3300	44	721	3811*	38	700
-60	5 G	4556*	44	1000	5291*	40	1000	6024*	34	1000
	6 G	4416*	44	1000	4864*	39	1000	5615*	34	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

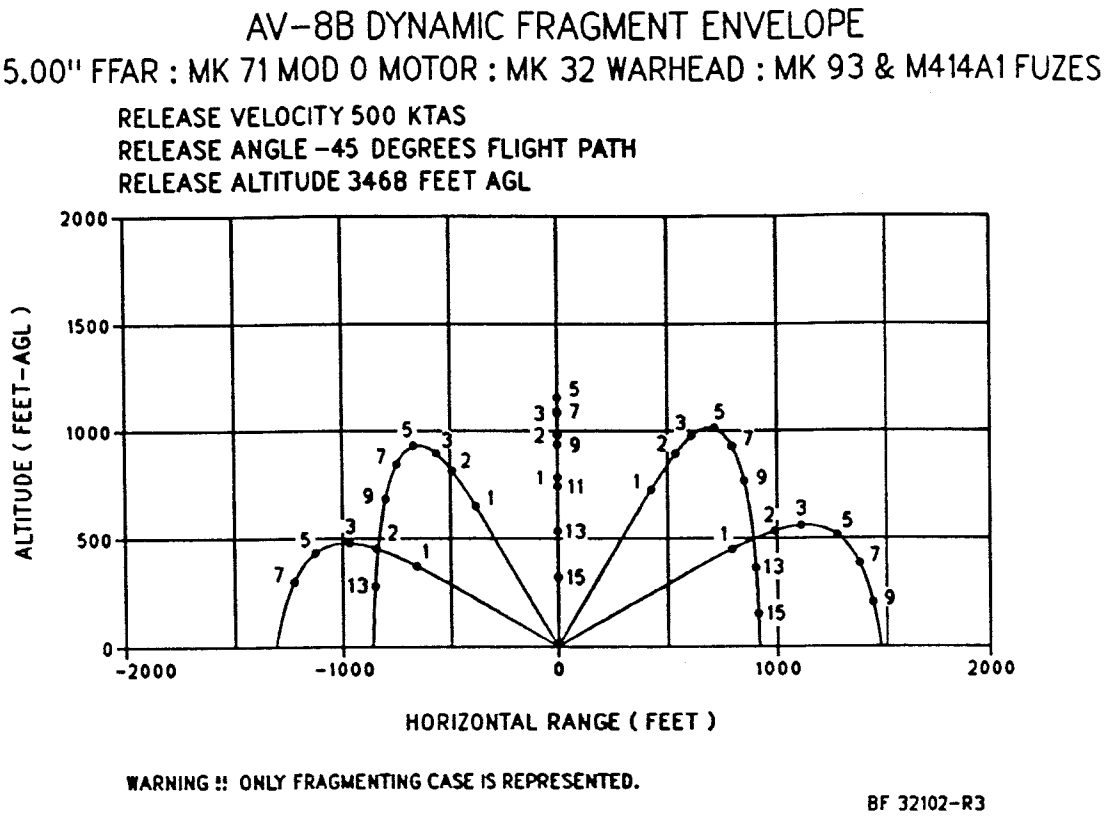
BF 32102-R3-B124-1

Figure 2-99. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead, Mk 93 and M414A1 Fuzes



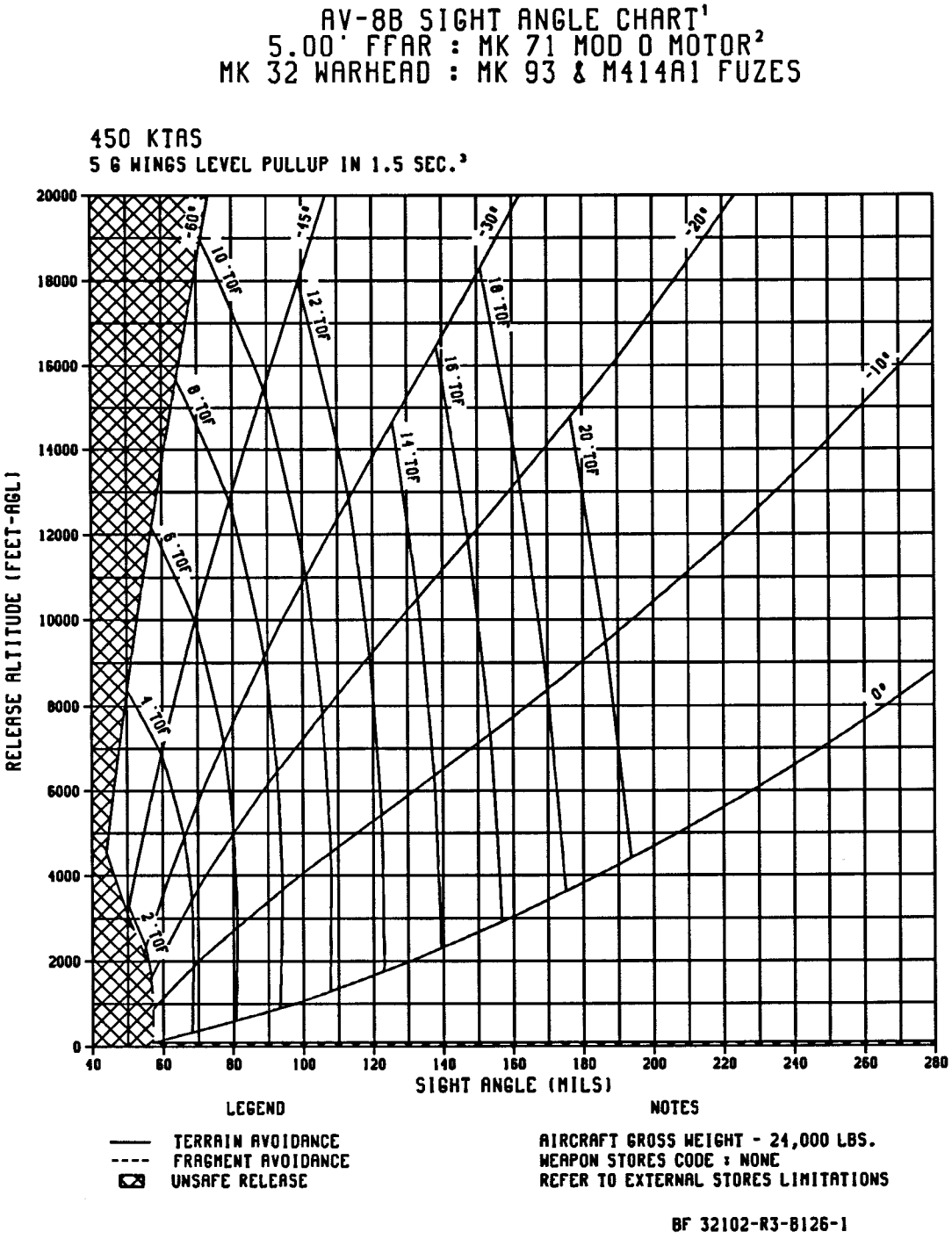
BF 32102-R3-B125-1

Figure 2-100. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead Mk 93 and M414A1 Fuzes (Sheet 1 of 2)



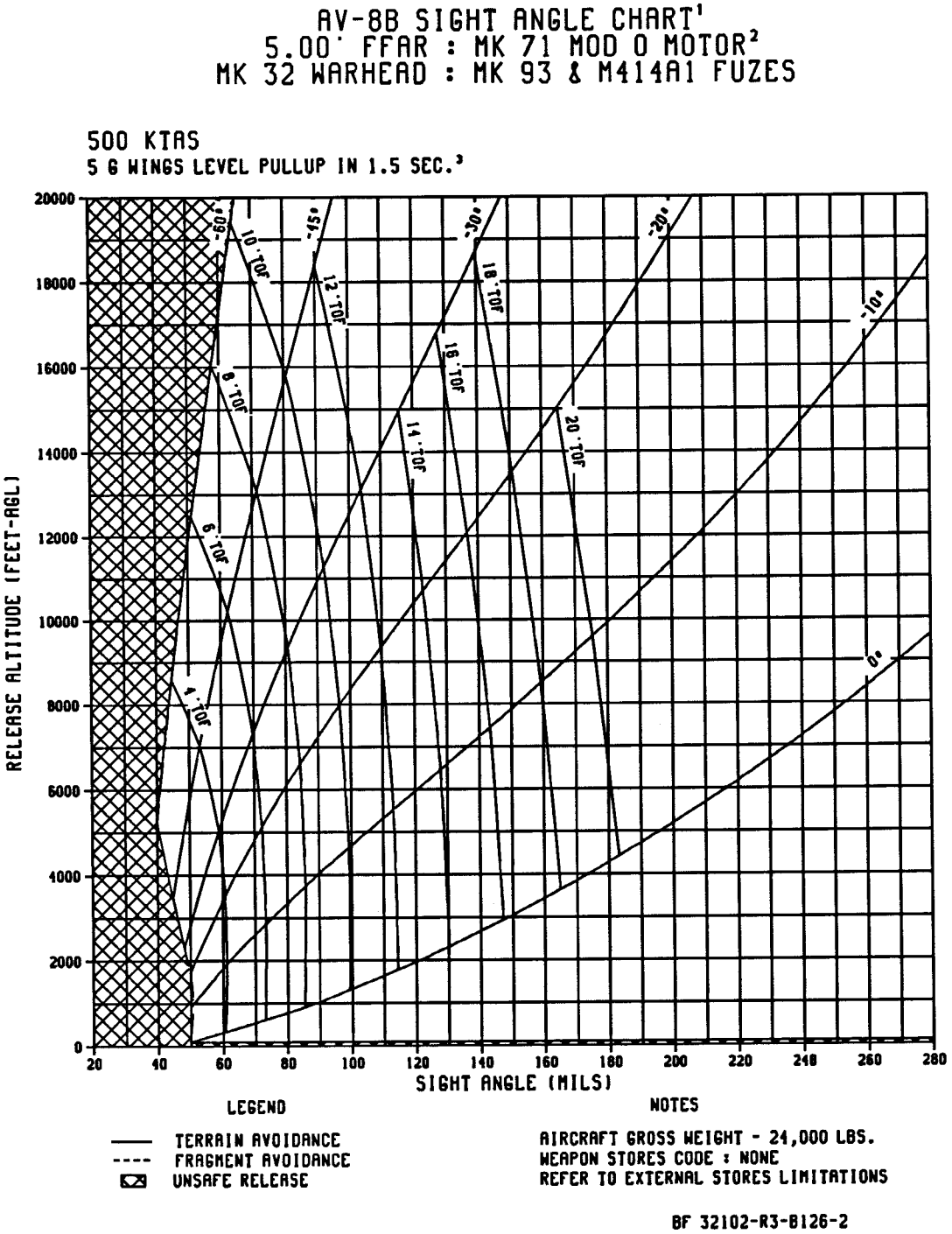
BF 32102-R3-B125-2

Figure 2-100. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead Mk 93 and M414A1 Fuzes (Sheet 2 of 2)



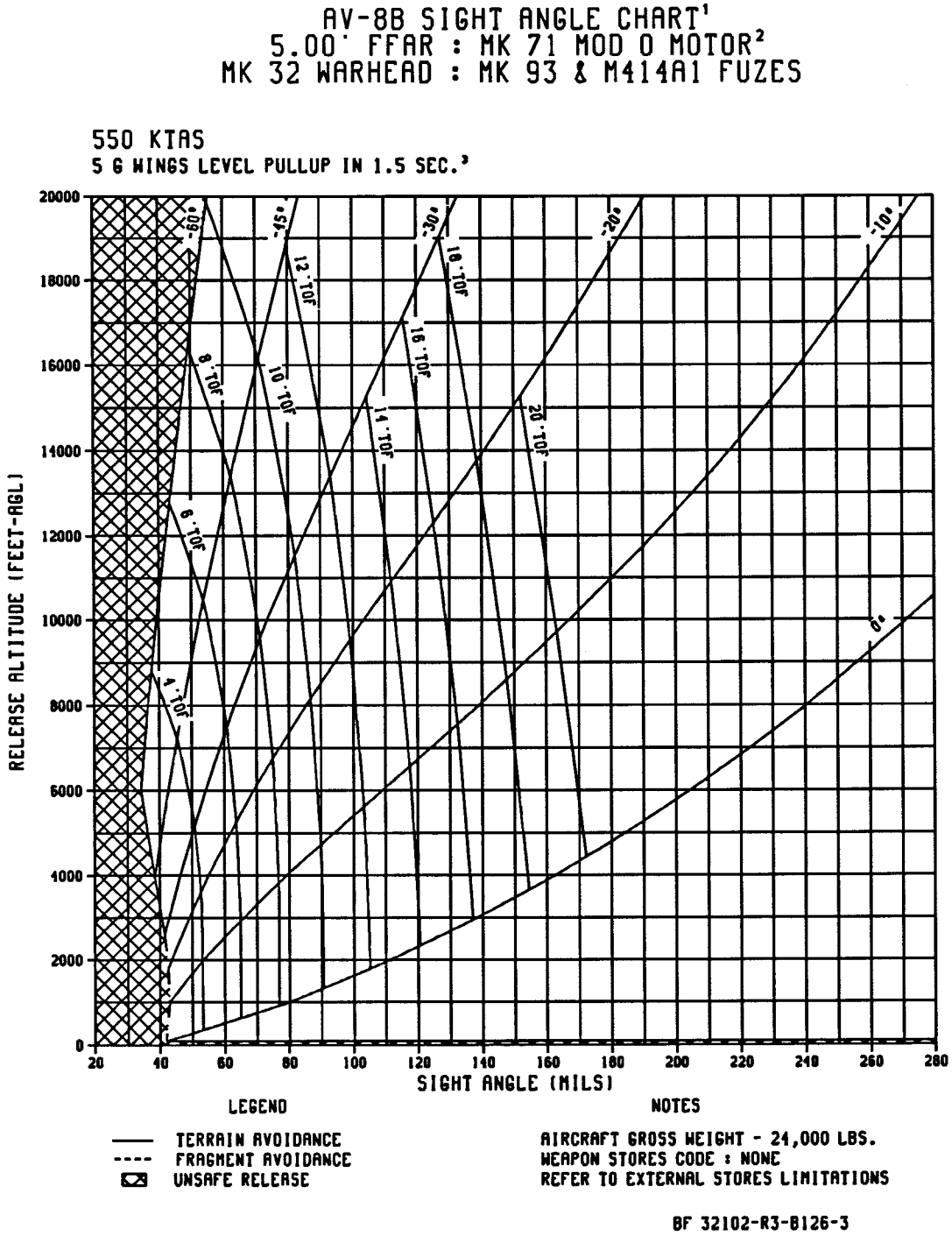
1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-101. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead Mk 93 and M414A1 Fuzes (Sheet 1 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-101. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead. Mk 93 and M414A1 Fuzes (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-101. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead, Mk 93 and M414A1 Fuzes (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 32 WARHEAD : MK 188 FUZE

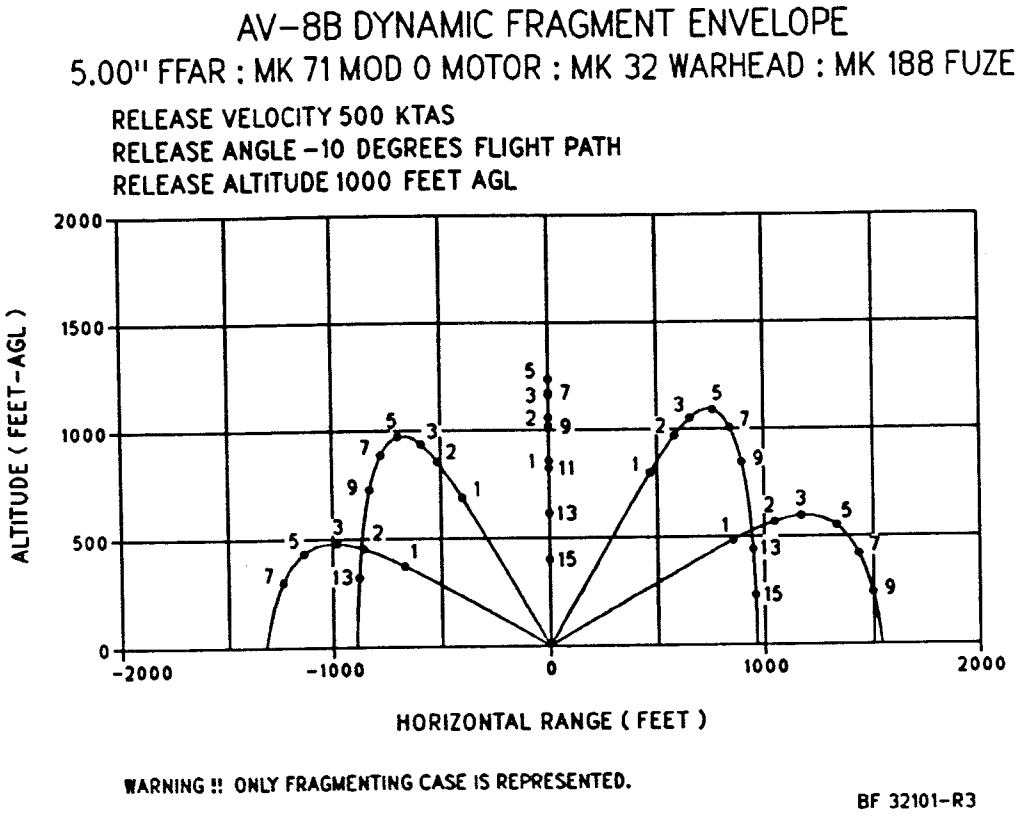
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	69	300	400	66	400	600	66	600
	5 G LEVEL BREAKAWAY	100*	57	100	100	50	100	100	42	100
	6 G LEVEL BREAKAWAY	100*	57	100	100	50	100	100	42	100
-10	5 G	900	57	611	1000	51	670	1000	43	626
	6 G	900	57	616	1000	51	676	1000	43	632
-20	5 G	1600	56	865	1700	50	861	1800	42	836
	6 G	1600	56	876	1700	50	883	1800	42	854
-30	5 G	2200	54	896	2300	48	796	2600	41	852
	6 G	2200	54	912	2300	48	657	2500	41	793
-45	5 G	3027*	50	700	3468*	45	700	3950*	38	700
	6 G	3001*	50	700	3300	44	721	3811*	38	700
-60	5 G	4556*	44	1000	5291*	40	1000	6024*	34	1000
	6 G	4416*	44	1000	4864*	39	1000	5615*	34	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain Avoidance

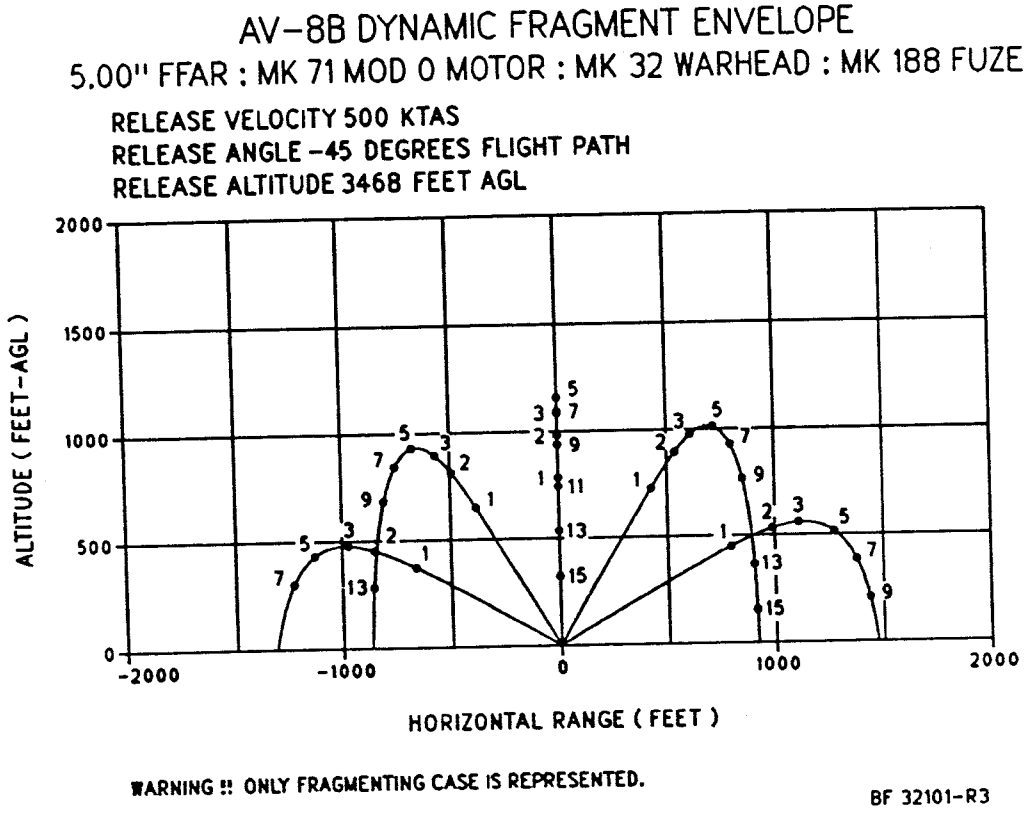
BF 32101-R3-B130-1

Figure 2-102. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead, Mk 188 Fuze



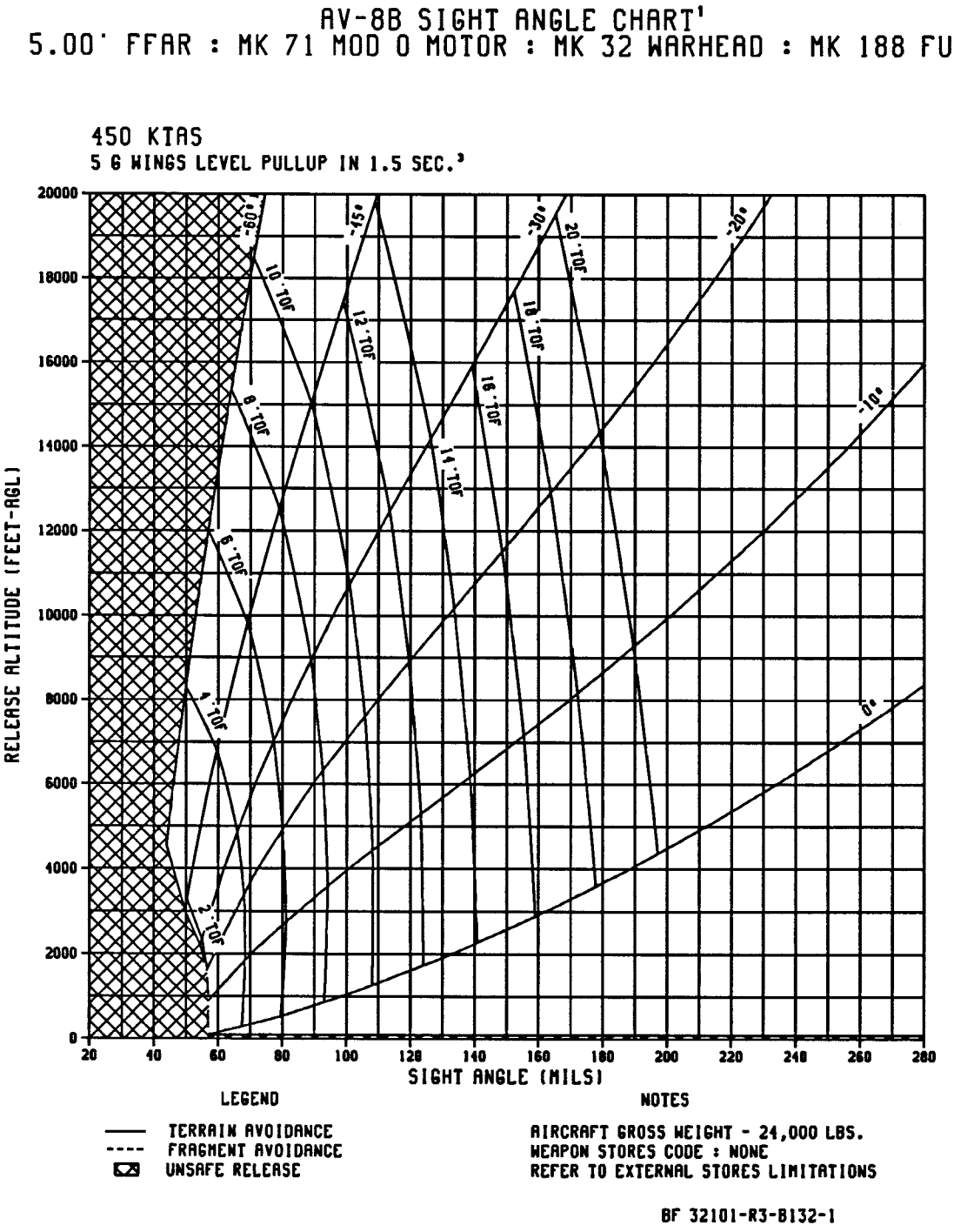
BF 32101-R3-B131-1

Figure 2-103. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 1 of 2)



BF 32101-R3-B131-2

Figure 2-103. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 2 of 2)

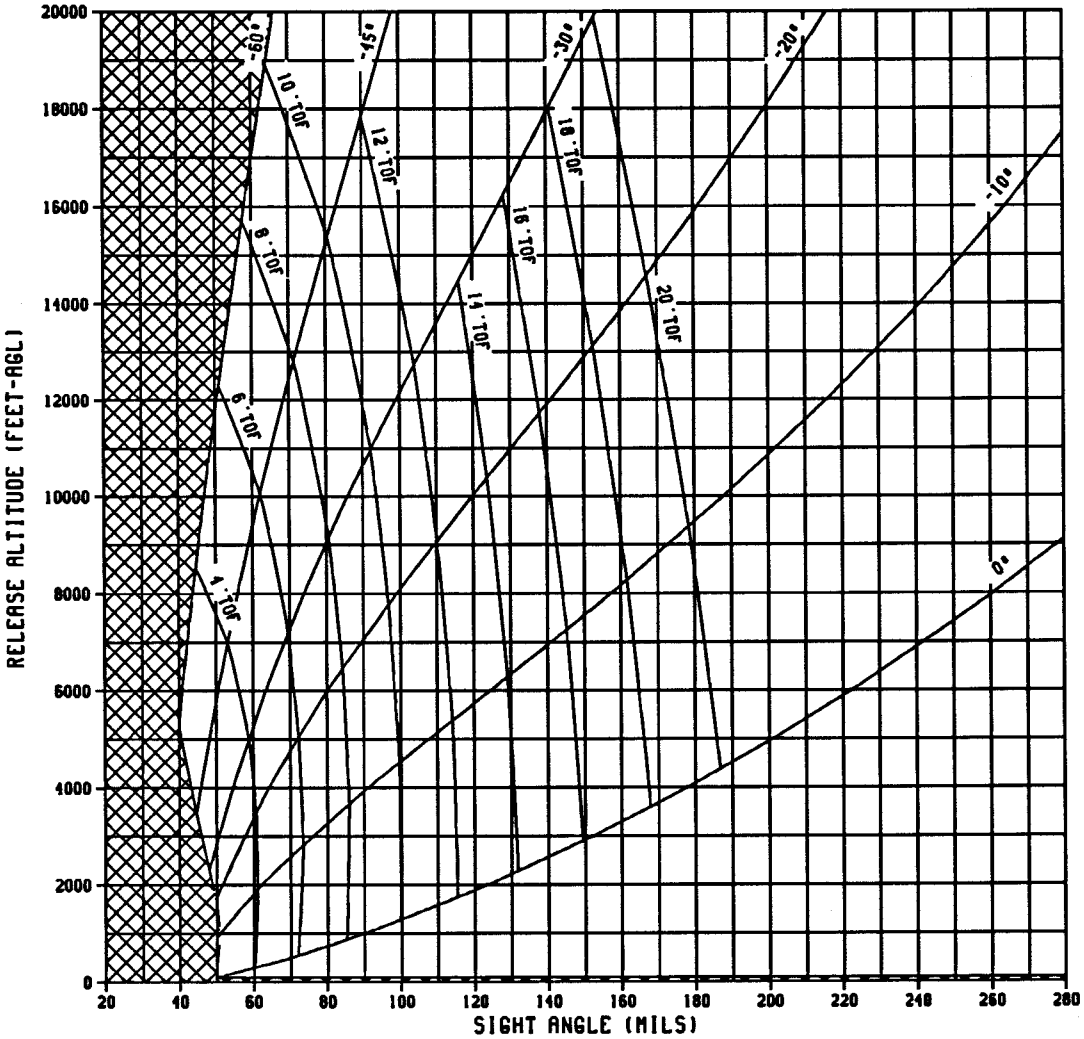


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-104. Sight Angle Chart, 5.00-Inch, Mk 71 Mod 0 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 0 MOTOR MK 32 WARHEAD : MK 188 FUZE[2]

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE
FRAGMENT AVOIDANCE
UNSAFE RELEASE

NOTES

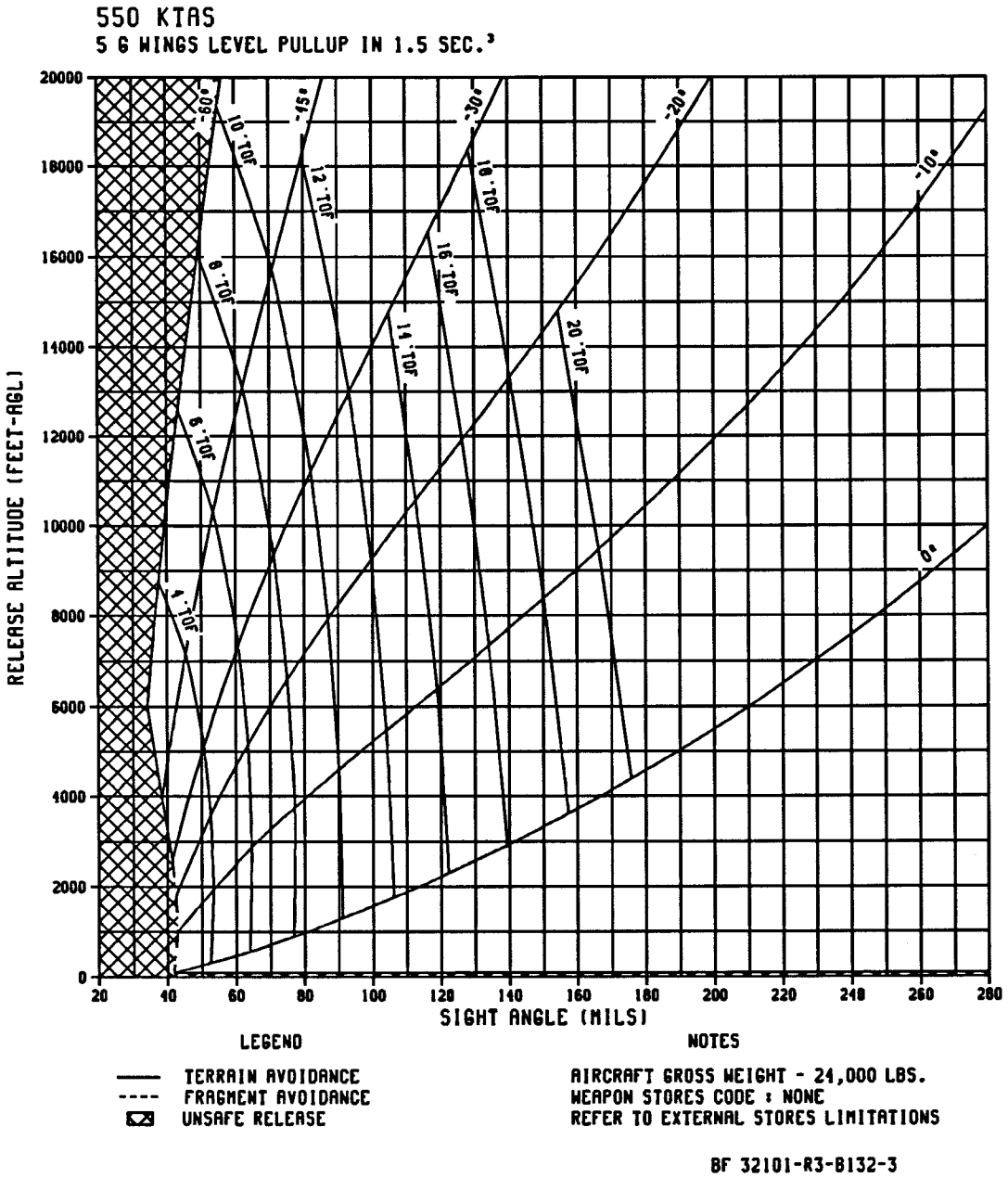
AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : NONE
REFER TO EXTERNAL STORES LIMITATIONS

BF 32101-R3-B132-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-104. Sight Angle Chart, 5.00-Inch, Mk 71 Mod 0 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 32 WARHEAD : MK 188 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-104. Sight Angle Chart, 5.00-Inch, Mk 71 Mod 0 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 3 of 3)

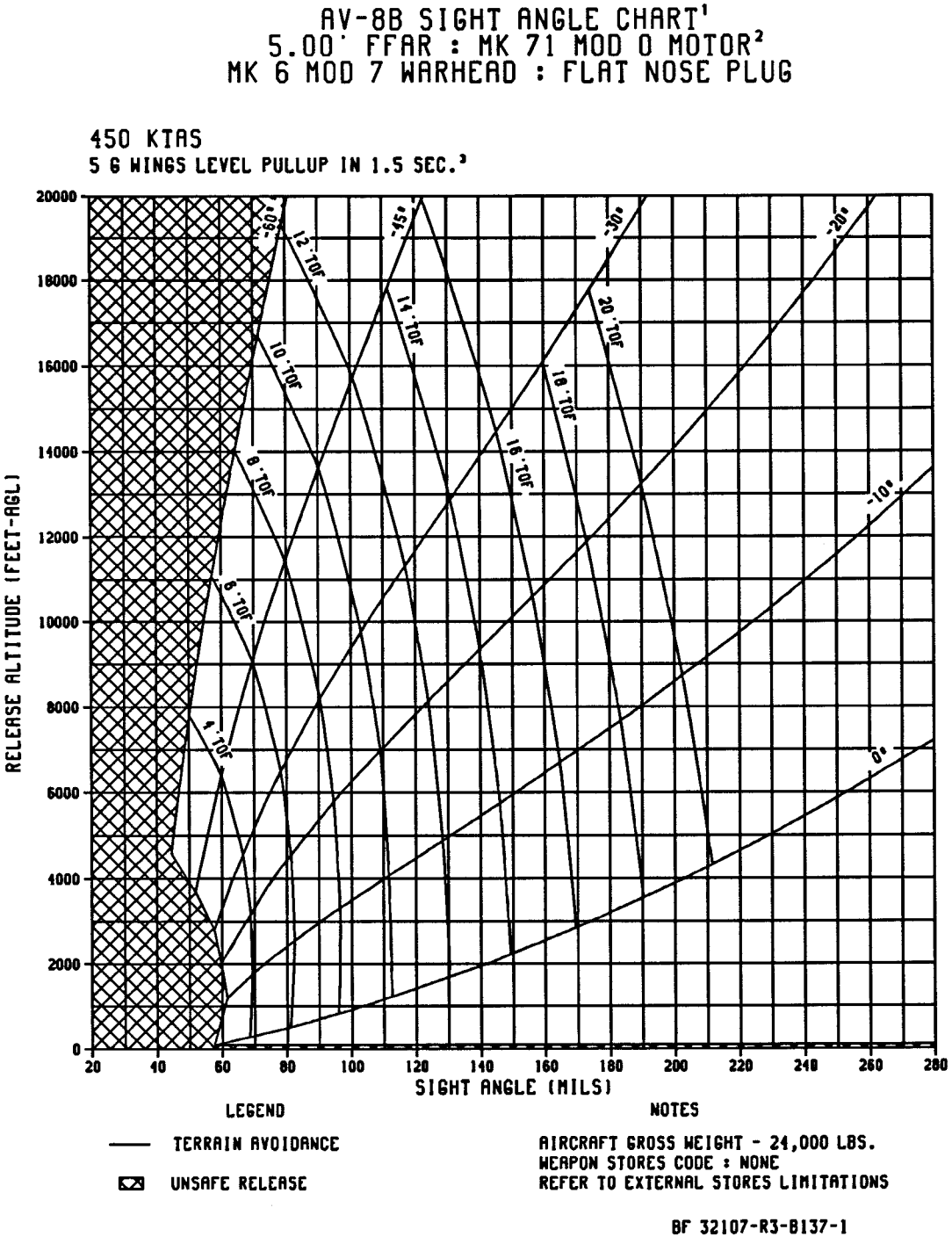
AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 0 MOTOR : MK 6 MOD 7 WARHEAD : FLAT NOSE PLUG

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	70	300	600	77	600	600	69	600
	5 G LEVEL BREAKAWAY	100	58	100	100	50	100	200	49	200
	6 G LEVEL BREAKAWAY	100	58	100	100	50	100	200	49	200
-10	5 G	1200	62	911	1300	55	970	1400	48	1026
	6 G	1200	62	916	1300	55	976	1400	48	1032
-20	5 G	2000	60	1265	2100	53	1261	2300	46	1336
	6 G	1900	59	1176	2100	53	1283	2300	46	1354
-30	5 G	2800	58	1496	3000	51	1496	3300	44	1552
	6 G	2800	58	712	2900	51	1457	3200	44	1493
-45	5 G	3700	52	1373	4200	47	1432	4500	40	1251
	6 G	3700	52	1399	4000	46	1421	4400	40	1289
-60	5 G	4600	44	1044	5291	40	1000	6024	35	1000
	6 G	4500	44	1085	4864	40	1000	5615	34	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross weight = 24,000 lbs.

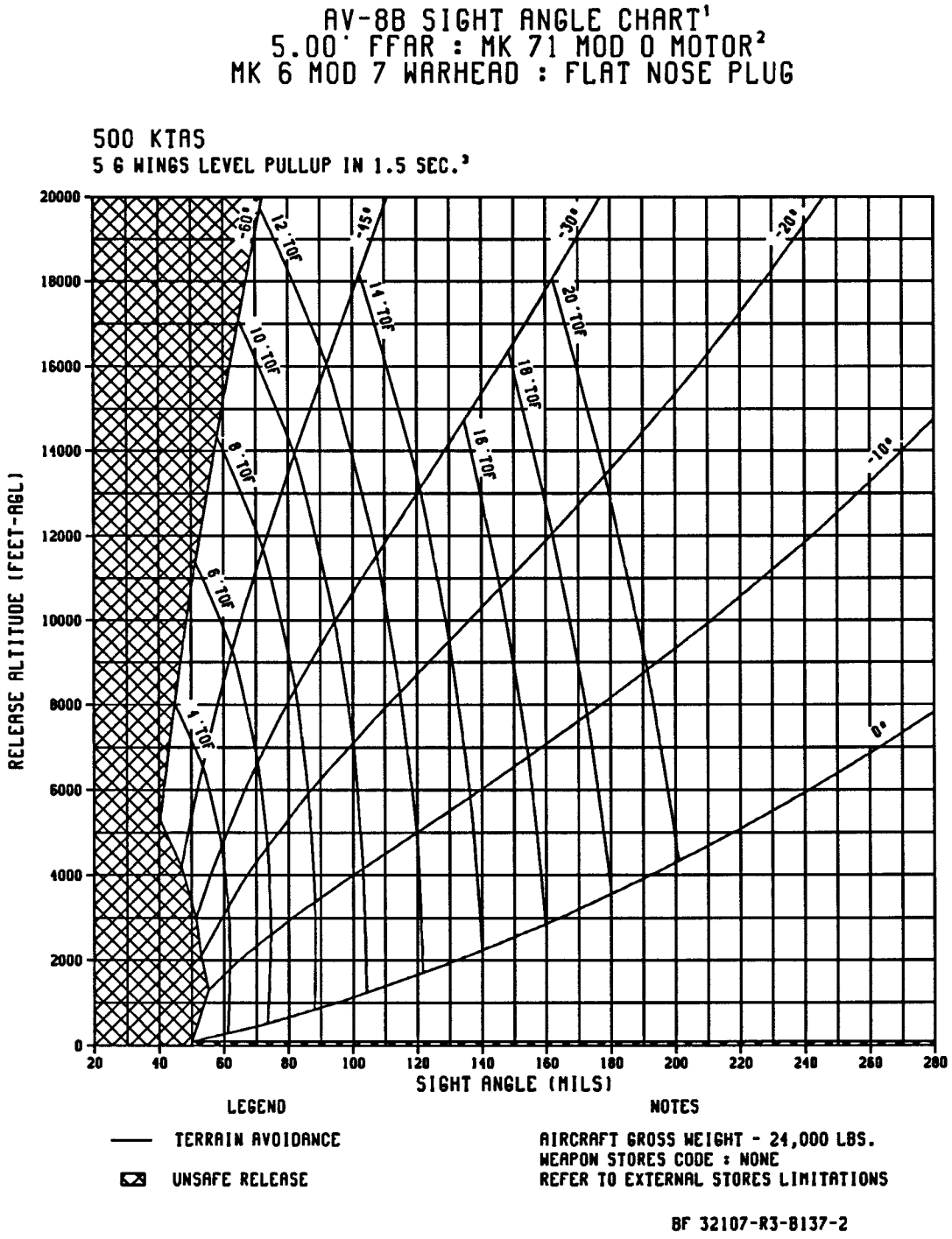
BF 32107-R3-B136-1

Figure 2-105. Safe Escape Table, 5.00-Inch, Mk 71 Mod 0 Motor, Mk 6 Mod 7 Warhead, Flat Nose Plug



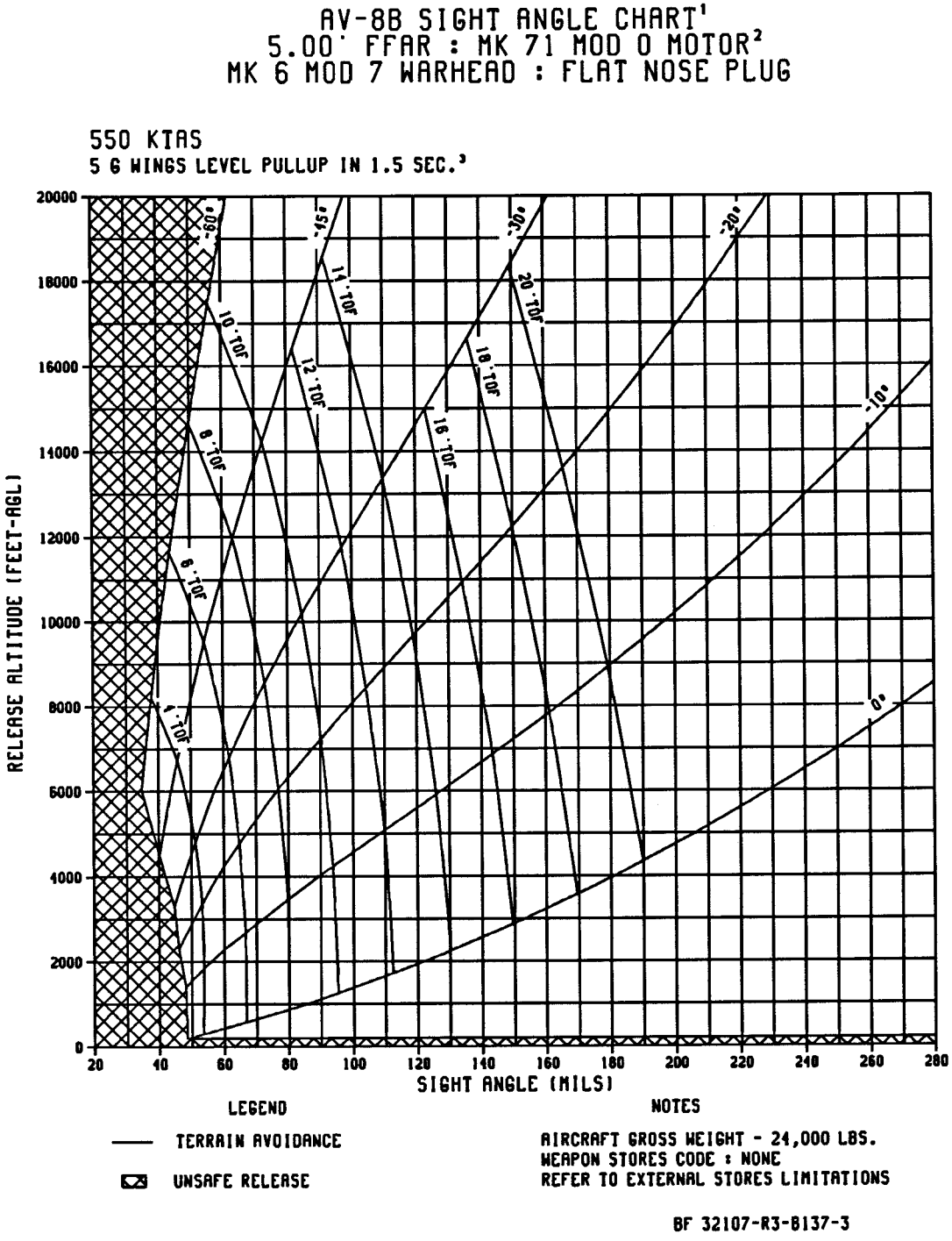
1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-106. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk6 Mod 7 Warhead, Flat Nose Plug (Sheet 1 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-106. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 6 Mod 7 Warhead, Flat Nose Plug (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-106. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 0 Motor, Mk 6 Mod 7 Warhead, Flat Nose Plug (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

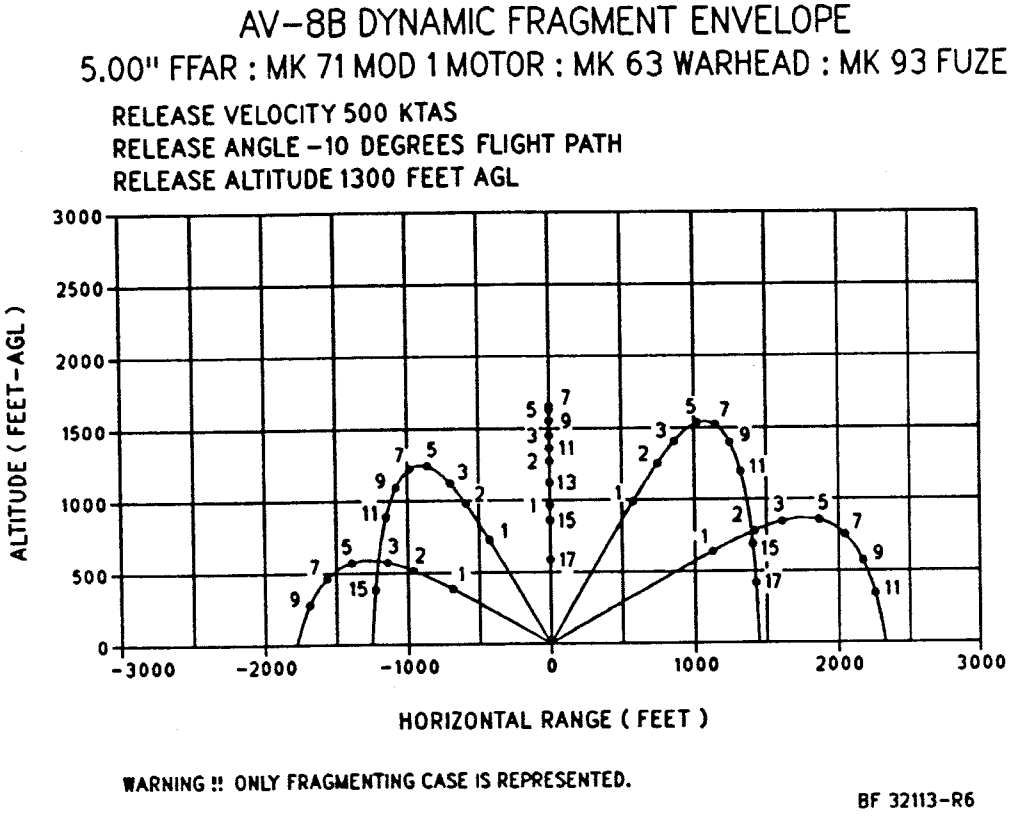
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	76	300	700	80	700	800	74	800
	5 G LEVEL BREAKAWAY	200	72	200	200	64	200	200	56	200
	6 G LEVEL BREAKAWAY	200	72	200	200	64	200	200	56	200
-10	5 G	1200	70	911	1300	63	970	1400	55	1026
	6 G	1200	70	916	1300	63	976	1400	55	1032
-20	5 G	2000	66	1265	2000	58	1161	2300	51	1336
	6 G	1800	65	1076	2000	58	1183	2200	51	1254
-30	5 G	2700	61	1396	2900	54	1396	3200	47	1452
	6 G	2700	61	1412	2700	53	1257	3200	47	1493
-45	5 G	3700	51	1373	4100	45	1332	4500	38	1251
	6 G	3600	51	1299	3900	45	1321	4400	38	1289
-60	5 G	4600	39	1044	5291*	34	1000	6024*	28	1000
	6 G	4500	39	1085	4864*	34	1000	5615*	28	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

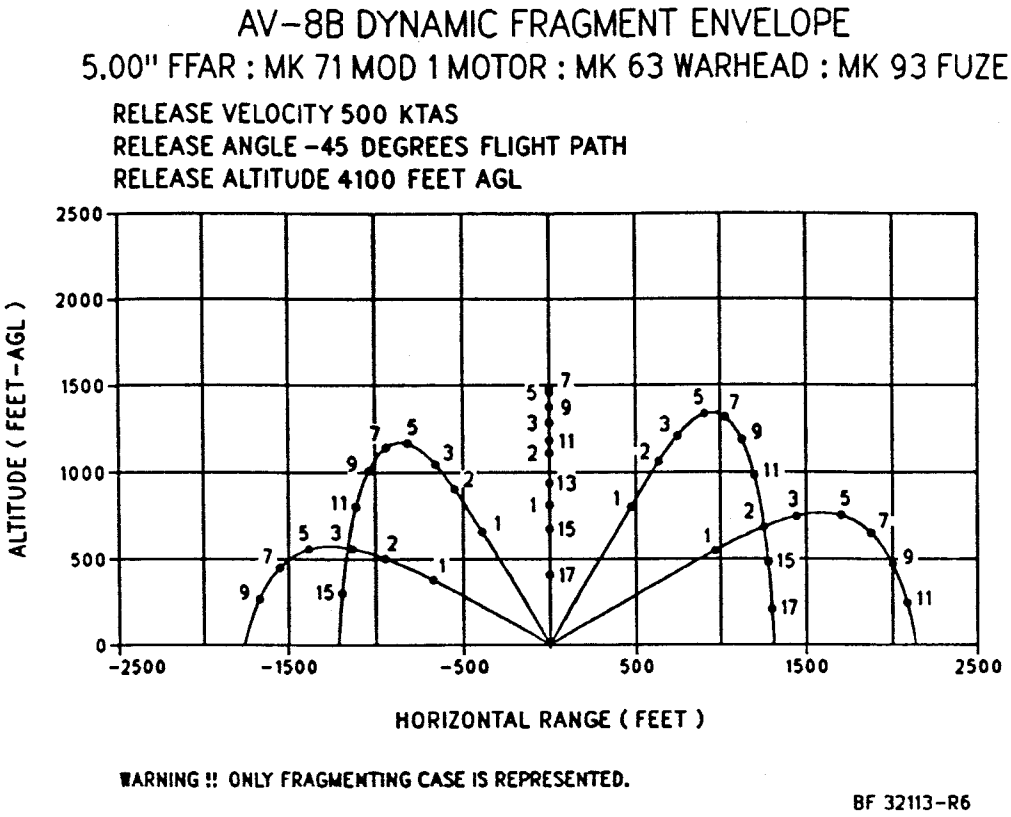
BF 32113-R6-B141-1

Figure 2-107. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze



BF 32113-R6-B142-1

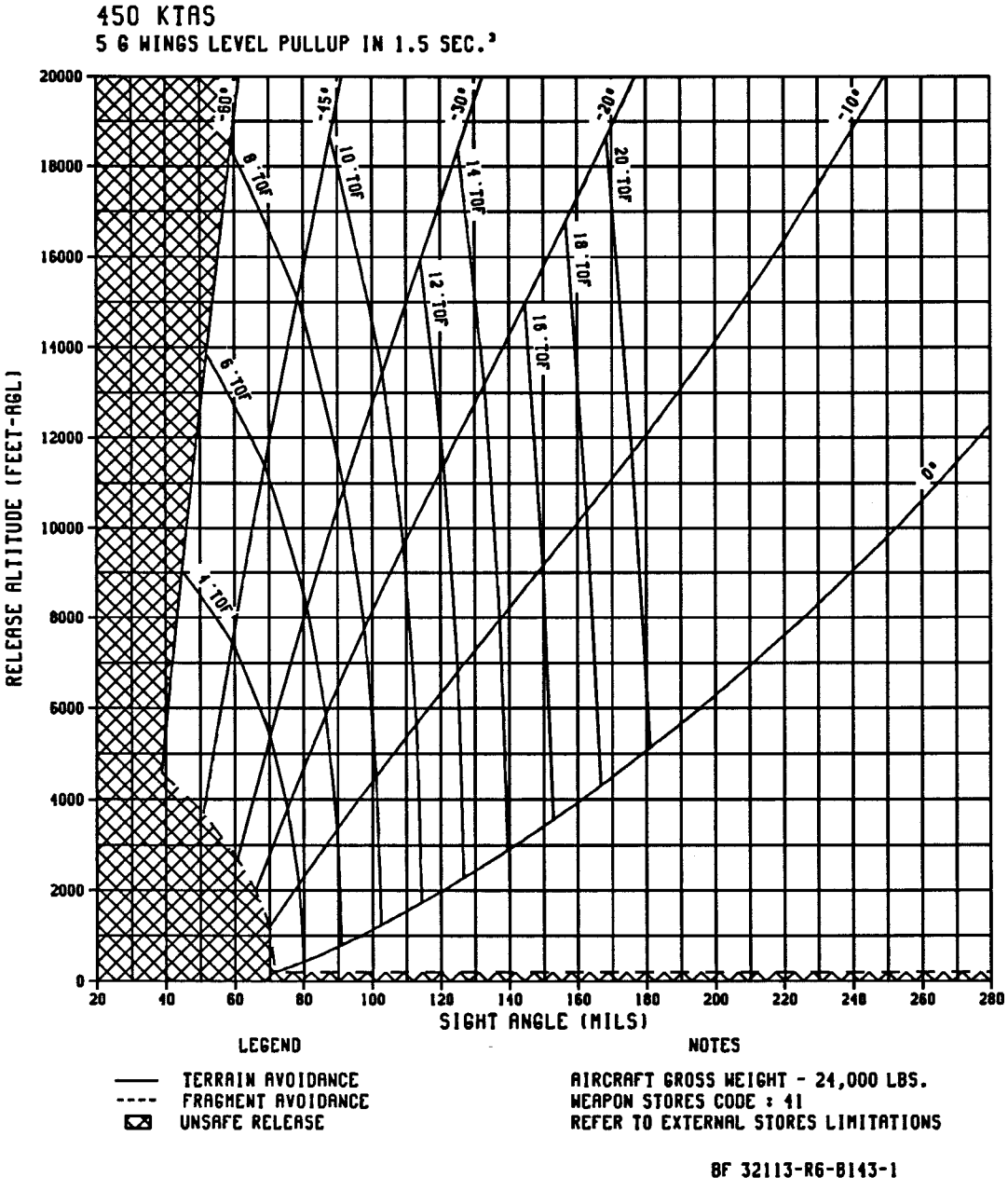
Figure 2-108. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 1 of 2)



BF 32113-R6-B142-2

Figure 2-108. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 2 of 2)

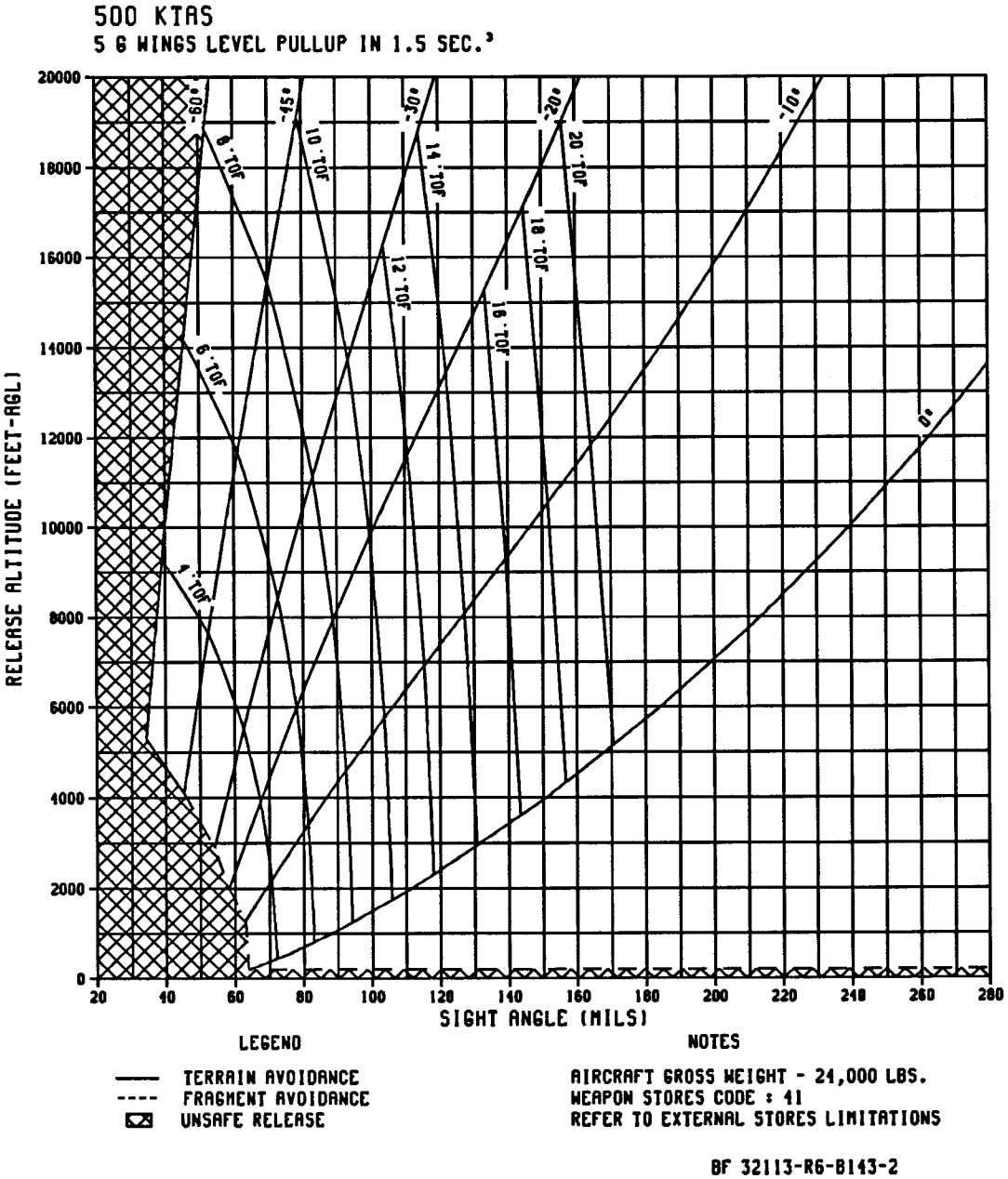
AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-109. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE[2]

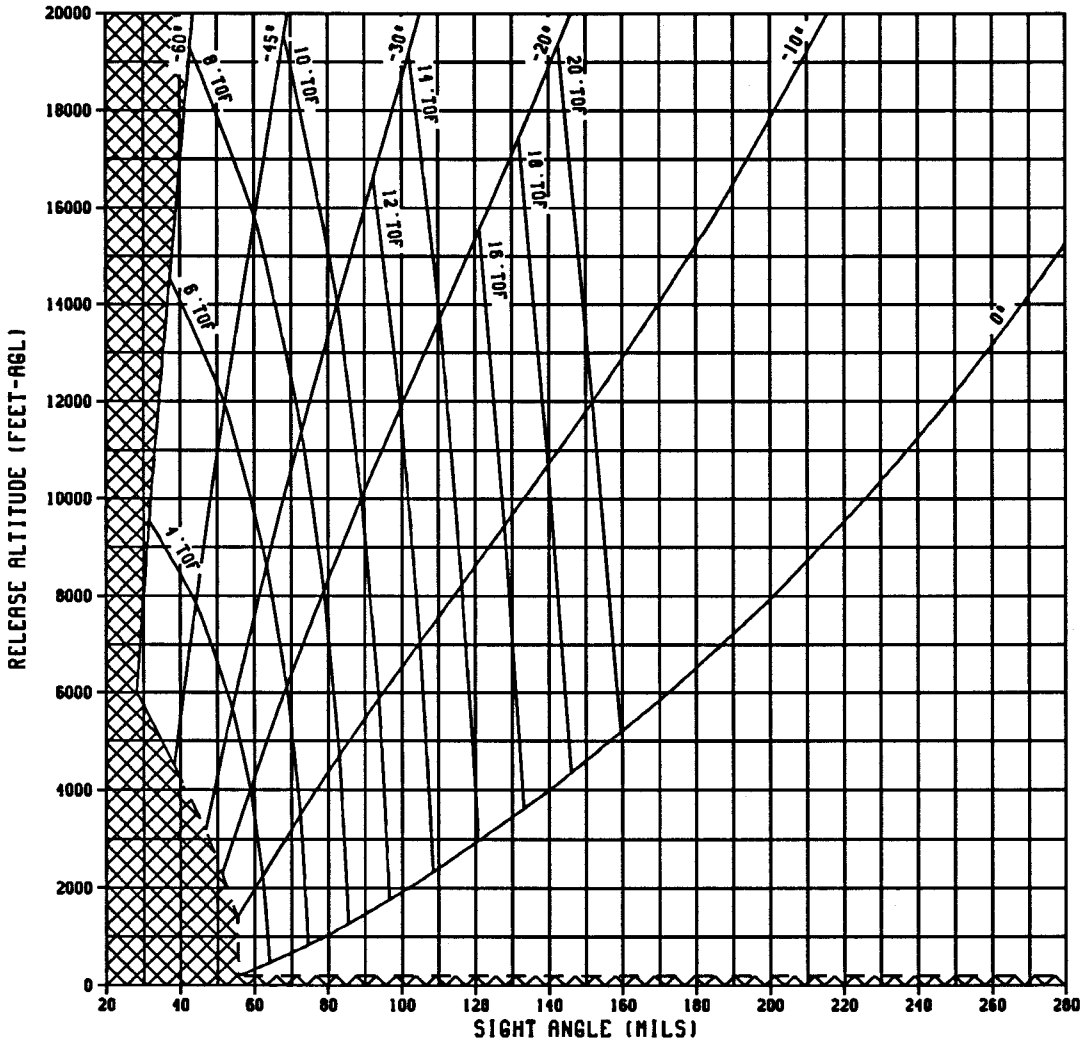


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-109. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE[2]

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-109. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 24 WARHEAD : MK 93 & M414A1 FUZES

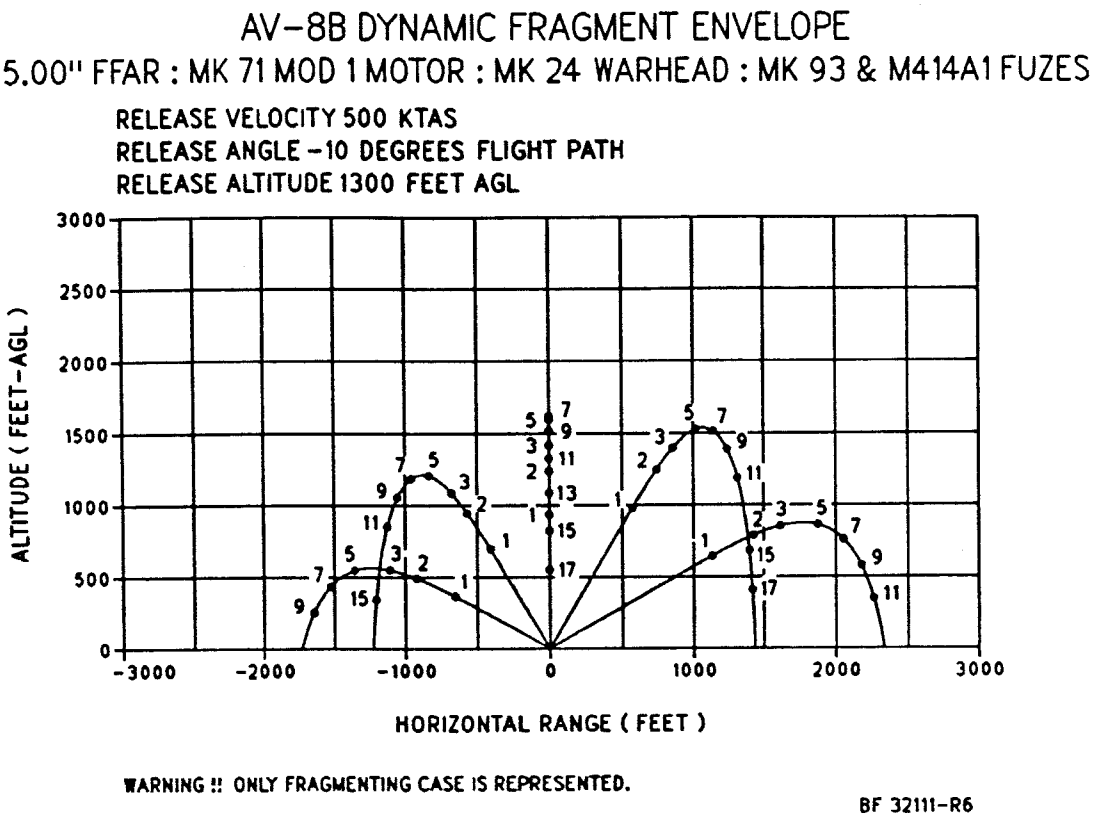
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	74	300	500	72	500	500	64	500
	5 G LEVEL BREAKAWAY	200	70	200	200	63	200	200	55	200
	6 G LEVEL BREAKAWAY	200	70	200	200	63	200	200	55	200
-10	5 G	1200	68	911	1300	62	970	1300	53	926
	6 G	1100	68	816	1300	62	976	1300	53	932
-20	5 G	1900	64	1165	2000	57	1161	2200	50	1236
	6 G	1800	64	876	2000	57	1183	2200	50	1254
-30	5 G	2700	60	1396	2900	53	1396	3200	46	1452
	6 G	2700	60	1412	2800	53	1357	3000	45	1293
-45	5 G	3600	50	1273	4100	44	1332	4400	37	1151
	6 G	3600	50	1299	3900	44	1321	4200	37	1089
-60	5 G	4556*	38	1000	5291*	34	1000	6024*	27	1000
	6 G	4416*	38	1000	4864*	33	1000	5615*	27	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain avoidance

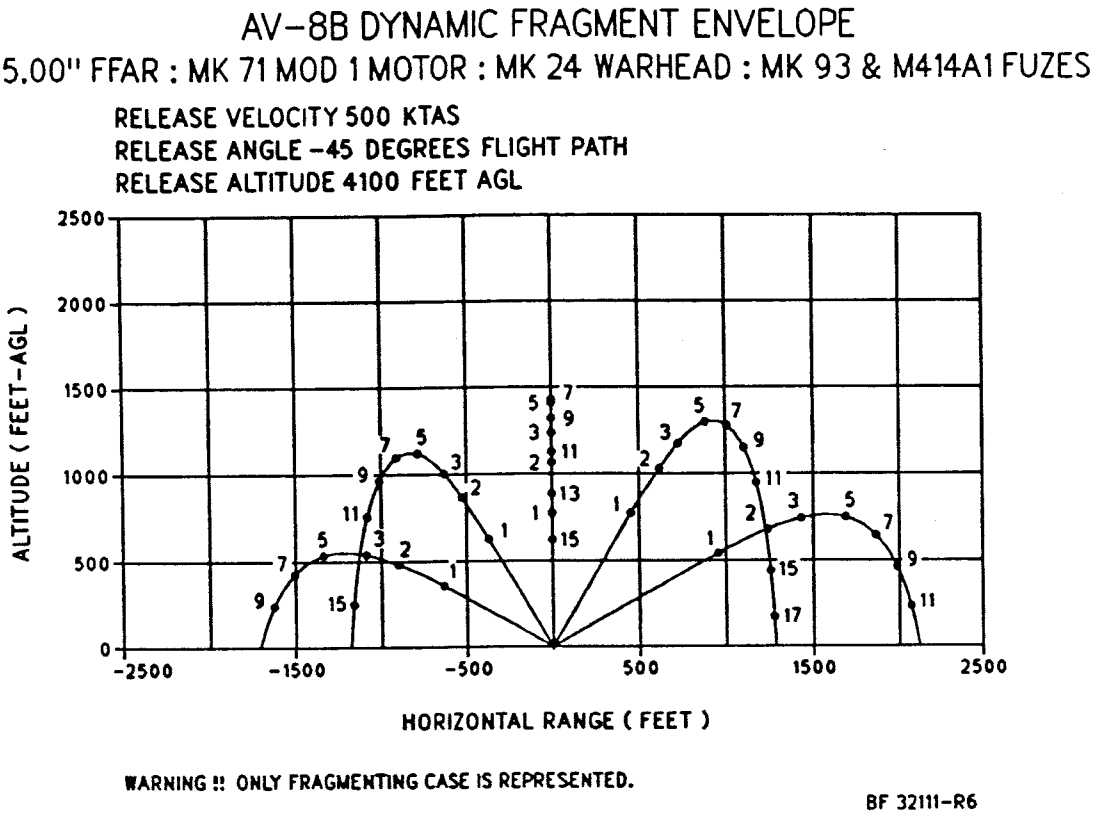
BF 32111-R6-B147-1

Figure 2-110. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuze



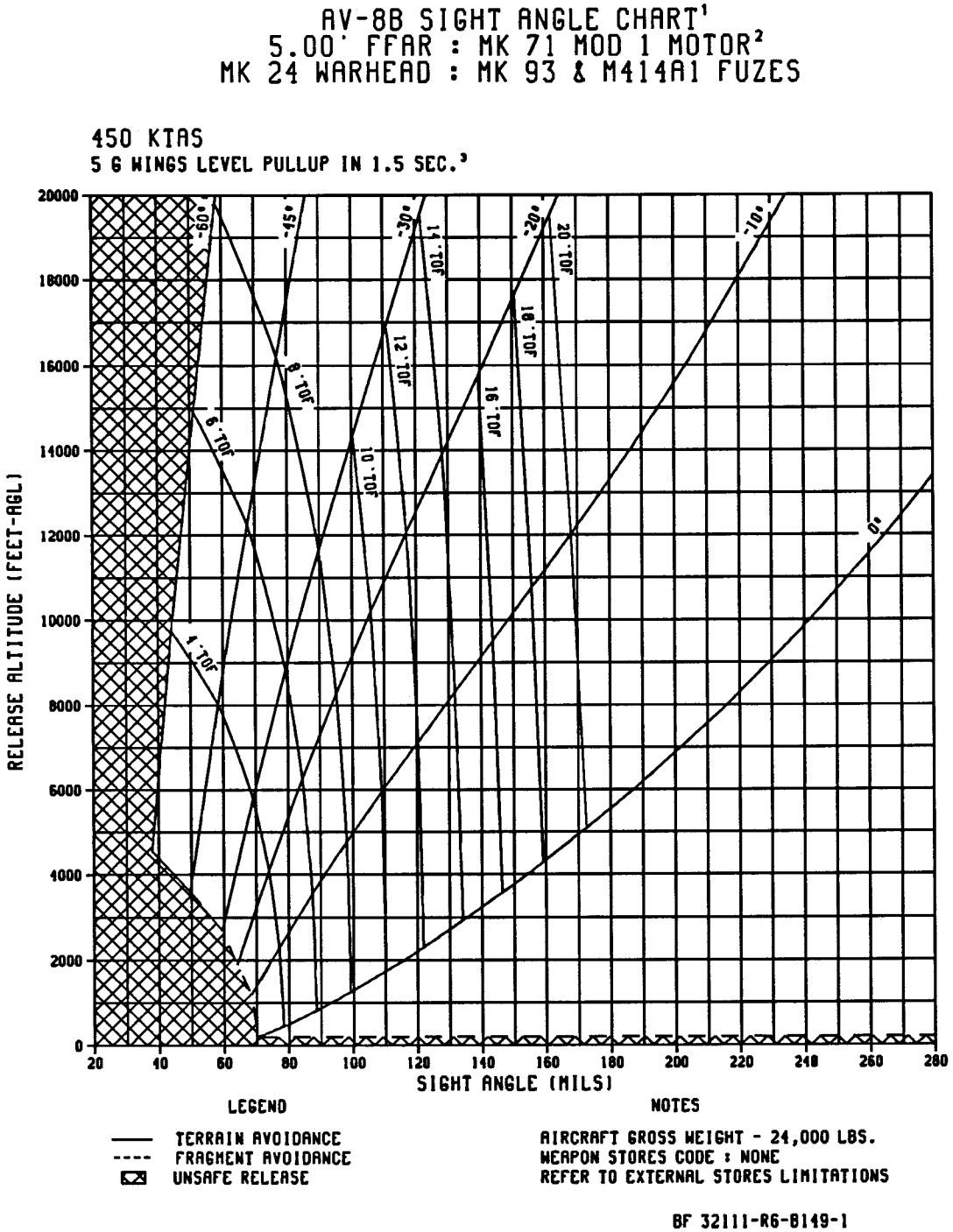
BF 32111-R6-B148-1

Figure 2-111. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuze (Sheet 1 of 2)



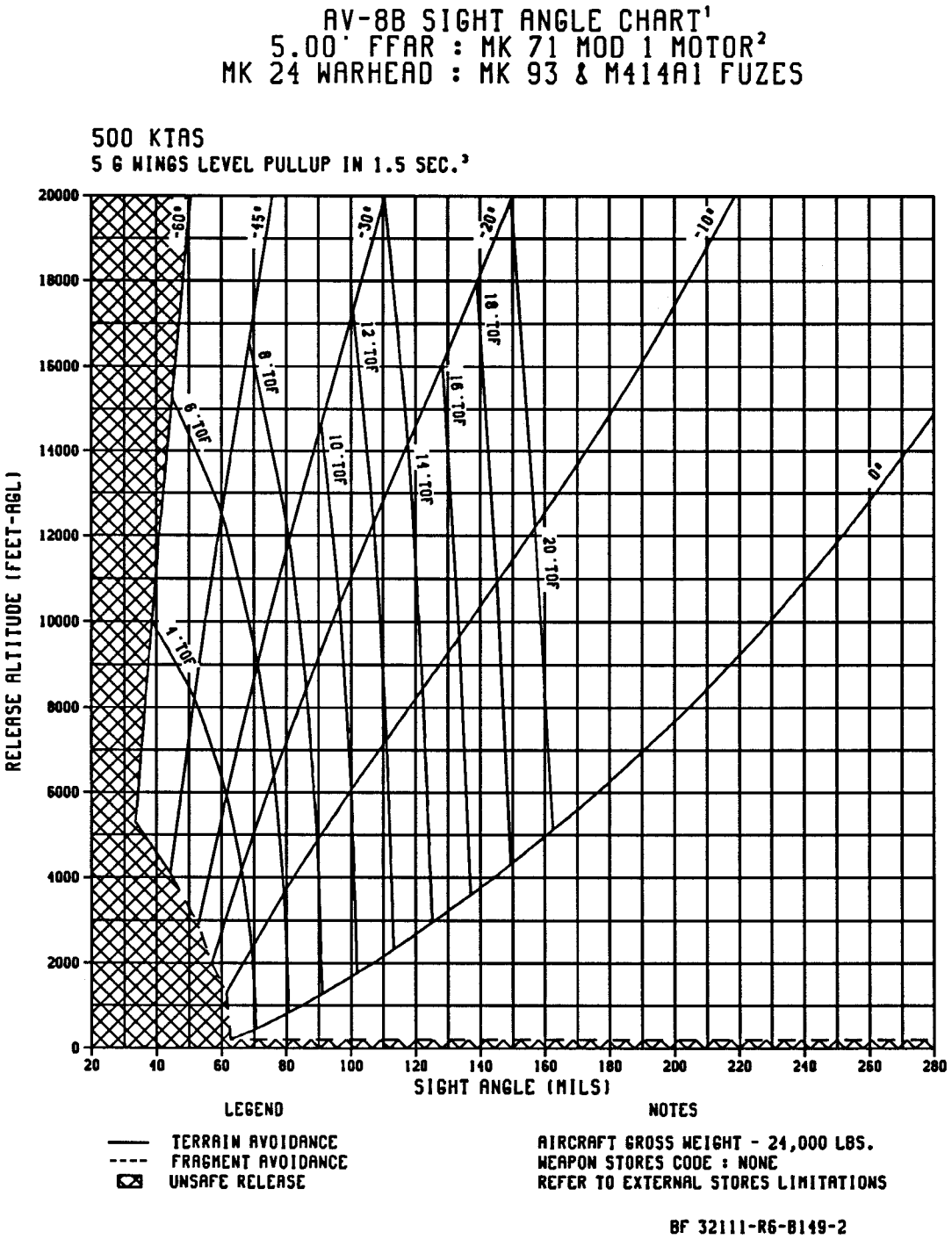
BF 32111-R6-B148-2

Figure 2-111. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuze (Sheet 2 of 2)



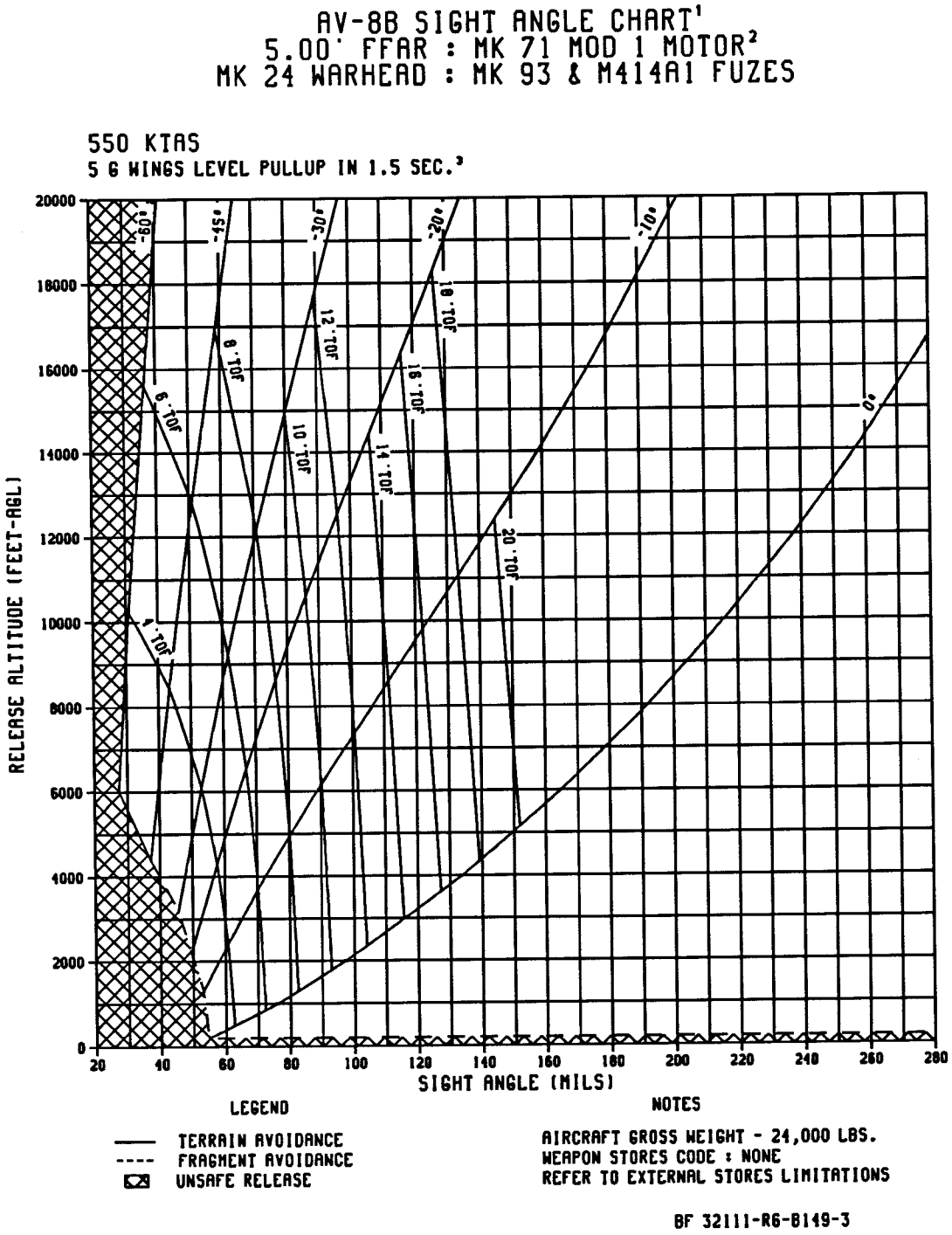
1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-112. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuze (Sheet 1 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-112. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuze (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-112. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 93 and M414A1 Fuze (Sheet 3 of 3)

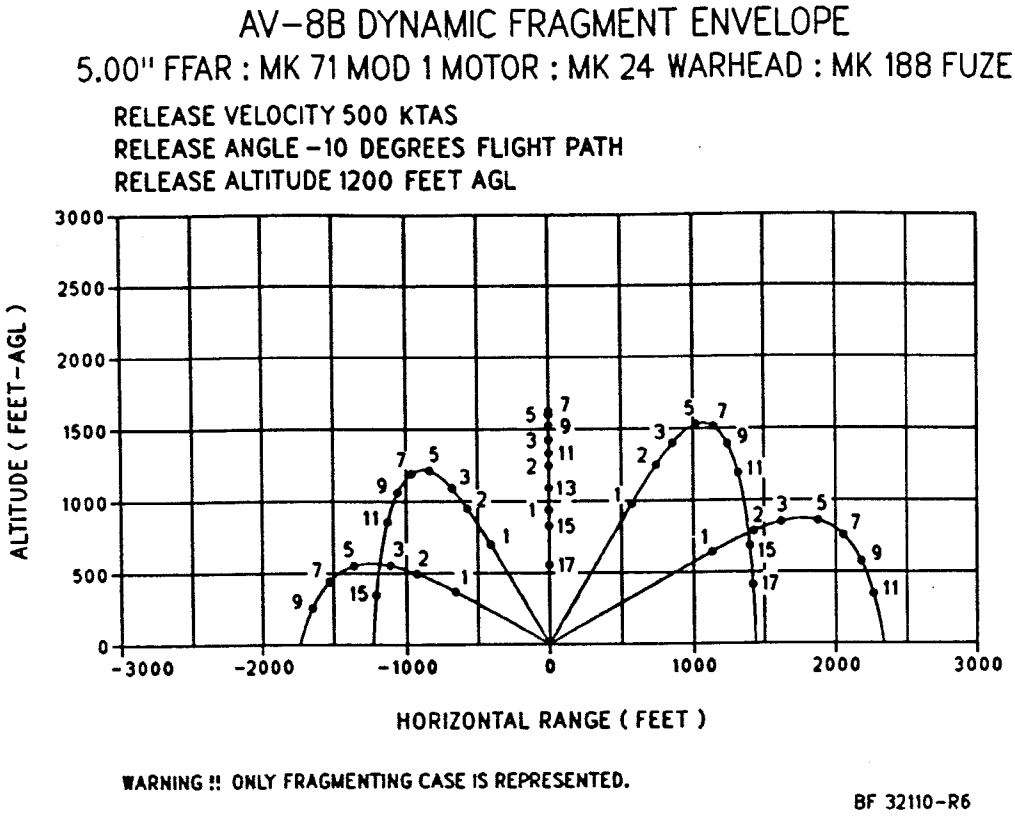
AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 24 WARHEAD : MK 188 FUZE

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	74	300	500	72	500	500	64	500
	5 G LEVEL BREAKAWAY	200	70	200	200	63	200	200	55	200
	6 G LEVEL BREAKAWAY	200	70	200	200	63	200	200	55	200
-10	5 G	1200	68	911	1200	61	870	1400	54	1026
	6 G	1100	68	816	1200	61	876	1300	53	932
-20	5 G	2000	65	1265	2000	57	1161	2200	50	1236
	6 G	2000	65	1276	2000	57	1183	2200	50	1254
-30	5 G	2700	59	1396	2900	53	1396	3200	46	1452
	6 G	2700	59	1412	2800	53	1357	3000	45	1293
-45	5 G	3700	50	1373	4100	44	1332	4400	37	1151
	6 G	3600	50	1299	3900	44	1321	4300	37	1189
-60	5 G	4556*	38	1000	5291*	34	1000	6024*	28	1000
	6 G	4416*	38	1000	4864*	33	1000	5615*	27	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.
* Terrain avoidance

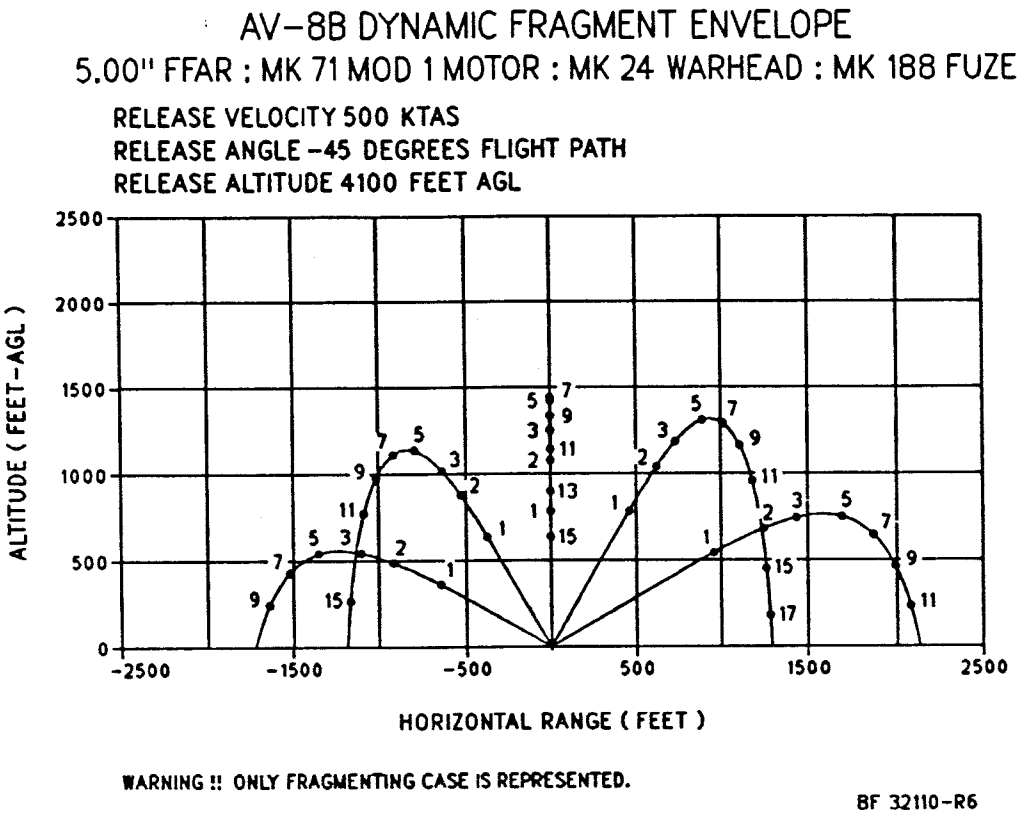
BF 32110-R6-B153-1

Figure 2-113. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 188 Fuze



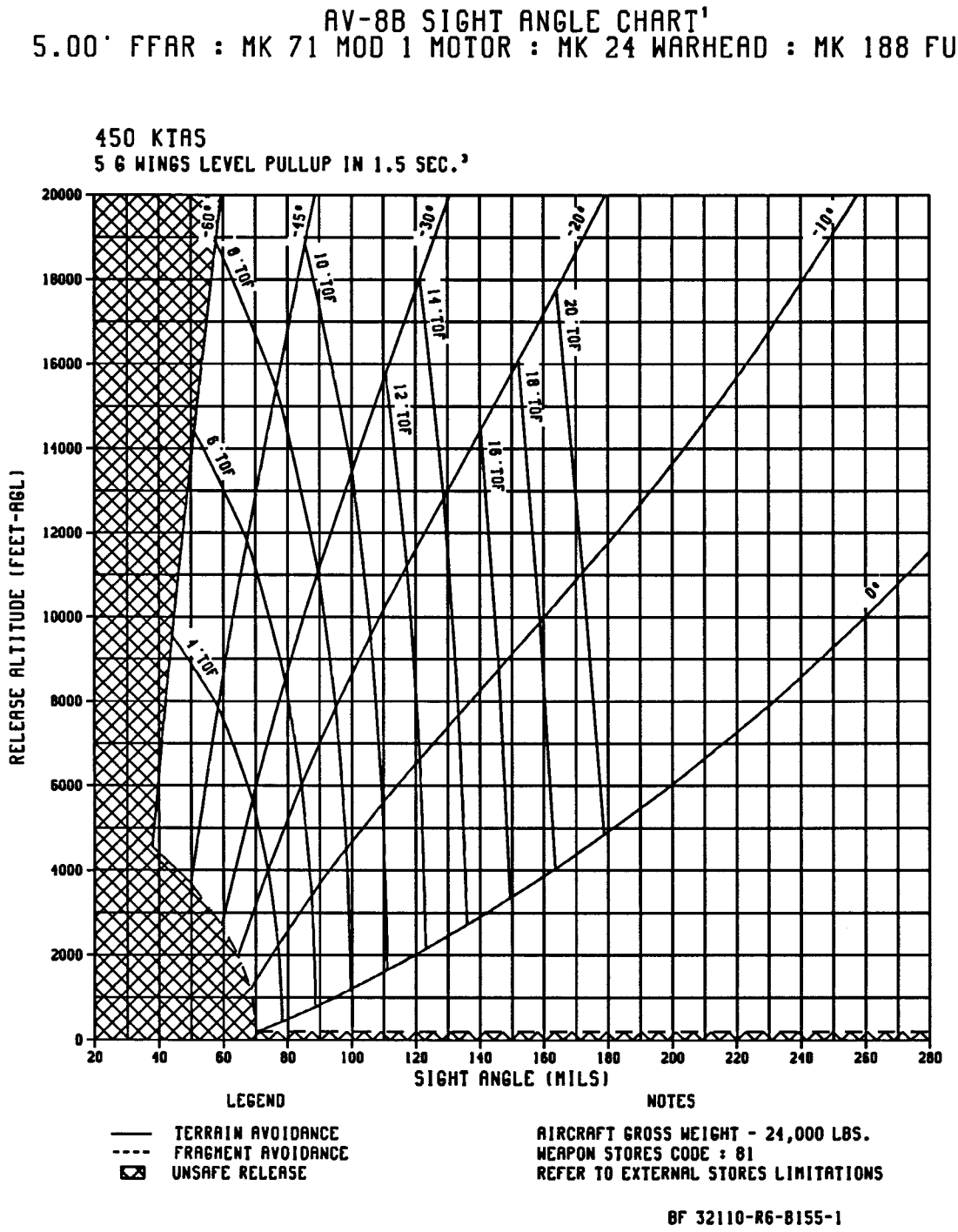
BF 32110-R6-B154-1

Figure 2-114. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 1 of 2)



BF 32110-R6-B154-2

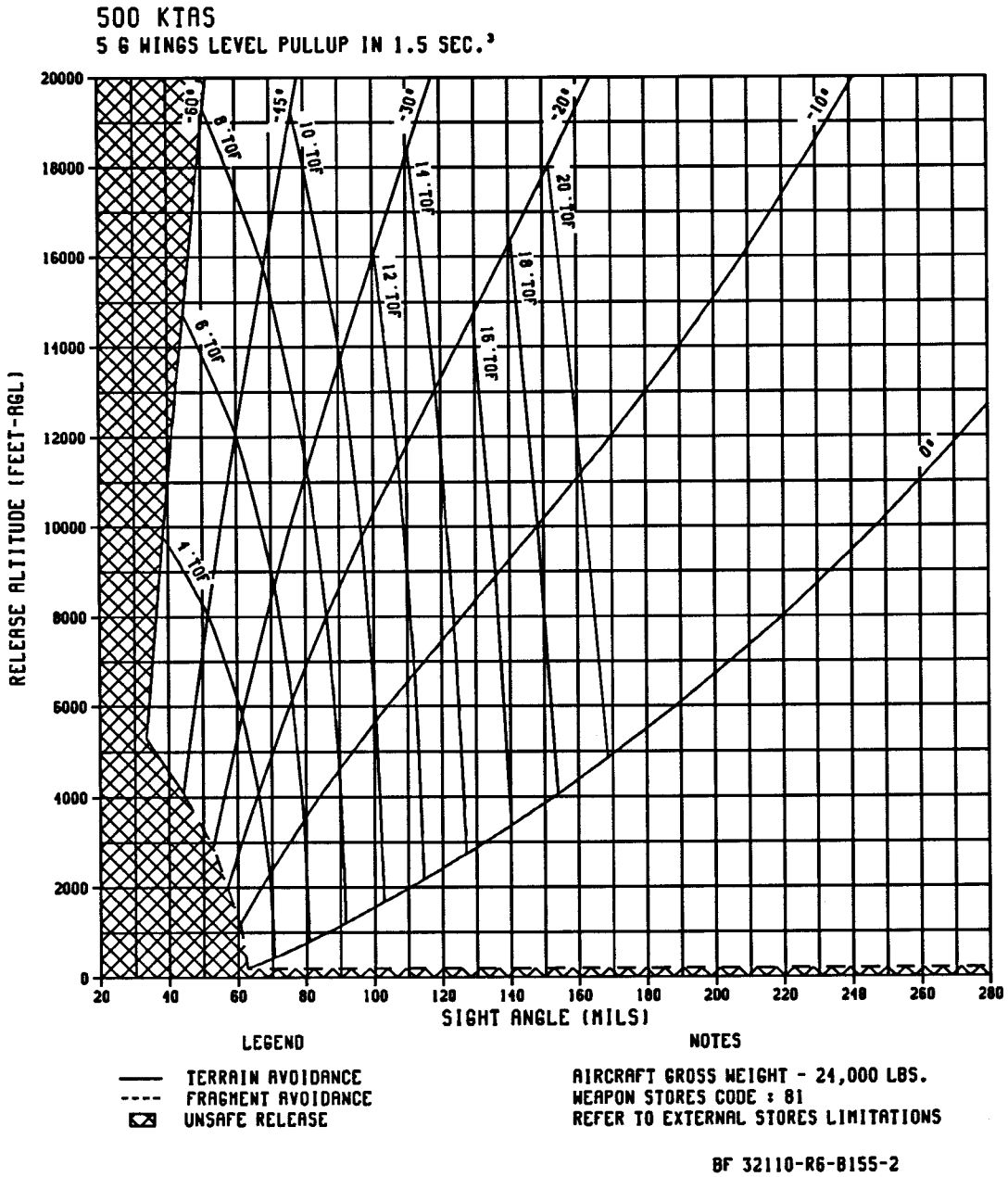
Figure 2-114. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 2 of 2)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

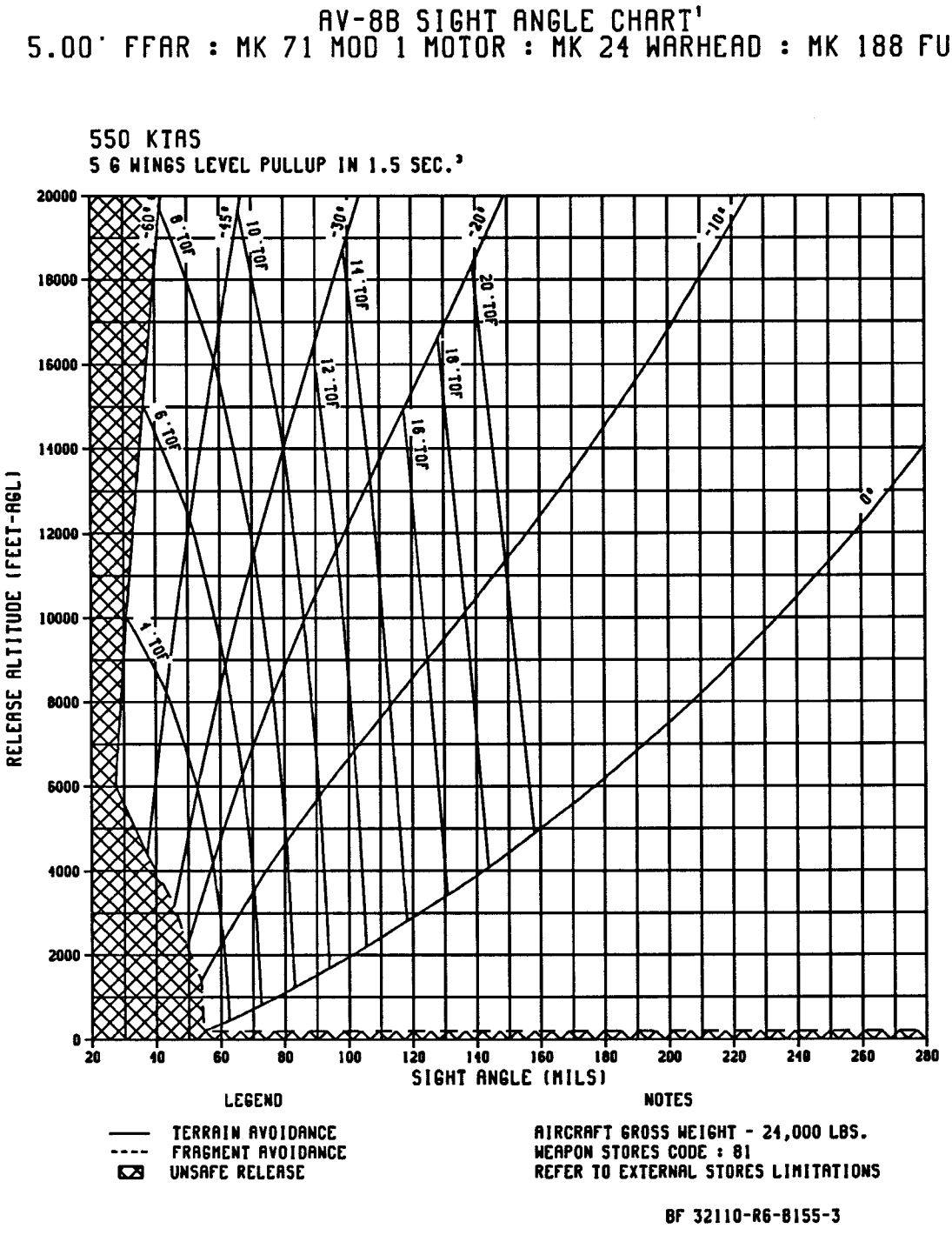
Figure 2-115. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 24 WARHEAD : MK 188 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-115. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-115. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Mk 188 Fuze (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 32 WARHEAD : MK 93 & M414A1 FUZES

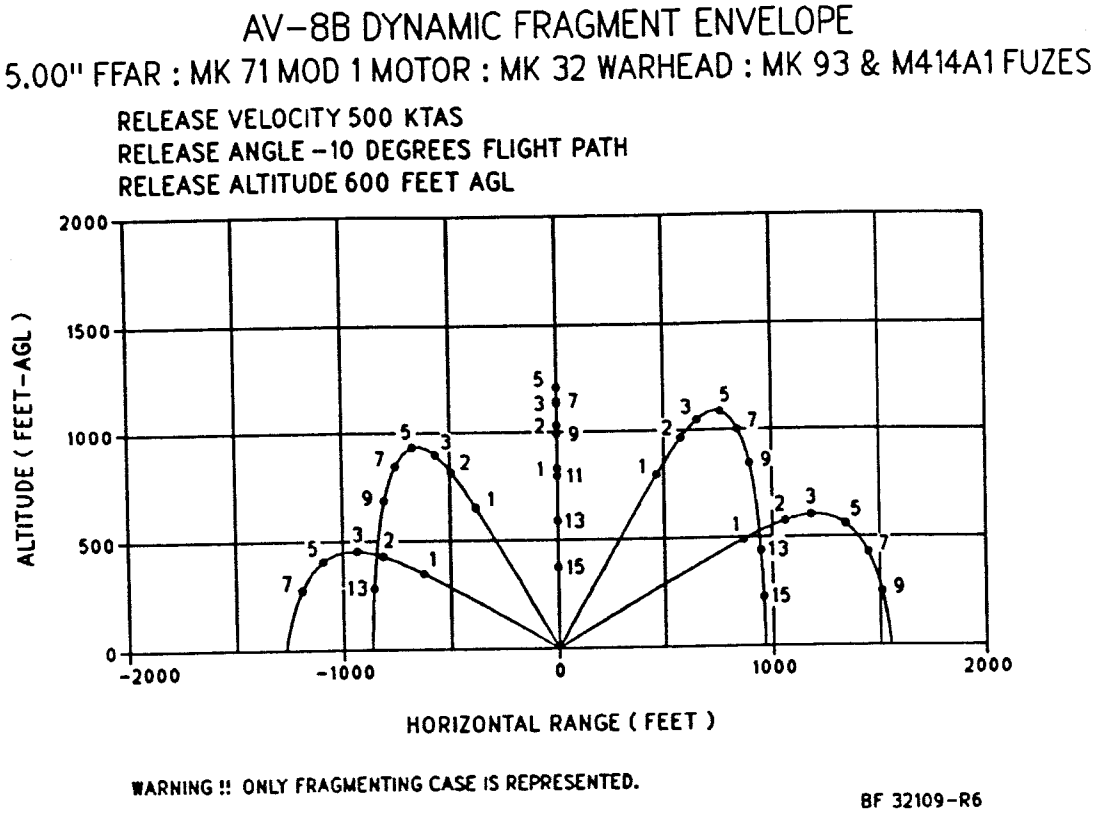
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	500	81	500	600	76	600	600	67	600
	5 G LEVEL BREAKAWAY	100*	66	100	100*	58	100	100*	50	100
	6 G LEVEL BREAKAWAY	100*	66	100	100*	58	100	100*	50	100
-10	5 G	600	63	311	600	55	270	600	47	226
	6 G	600	63	316	600	55	276	600	47	232
-20	5 G	1100	60	365	1139*	53	300	1265*	45	300
	6 G	1100	60	376	1117*	53	300	1246*	45	300
-30	5 G	1805*	56	500	2005*	50	500	2249*	43	500
	6 G	1788*	56	500	1944*	50	500	2208*	43	500
-45	5 G	3027*	49	700	3468*	43	700	3950*	37	700
	6 G	3001*	49	700	3279*	43	700	3811*	36	700
-60	5 G	4556*	38	1000	5291*	34	1000	6024*	28	1000
	6 G	4416*	38	1000	4864*	33	1000	5615*	27	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

* Terrain Avoidance

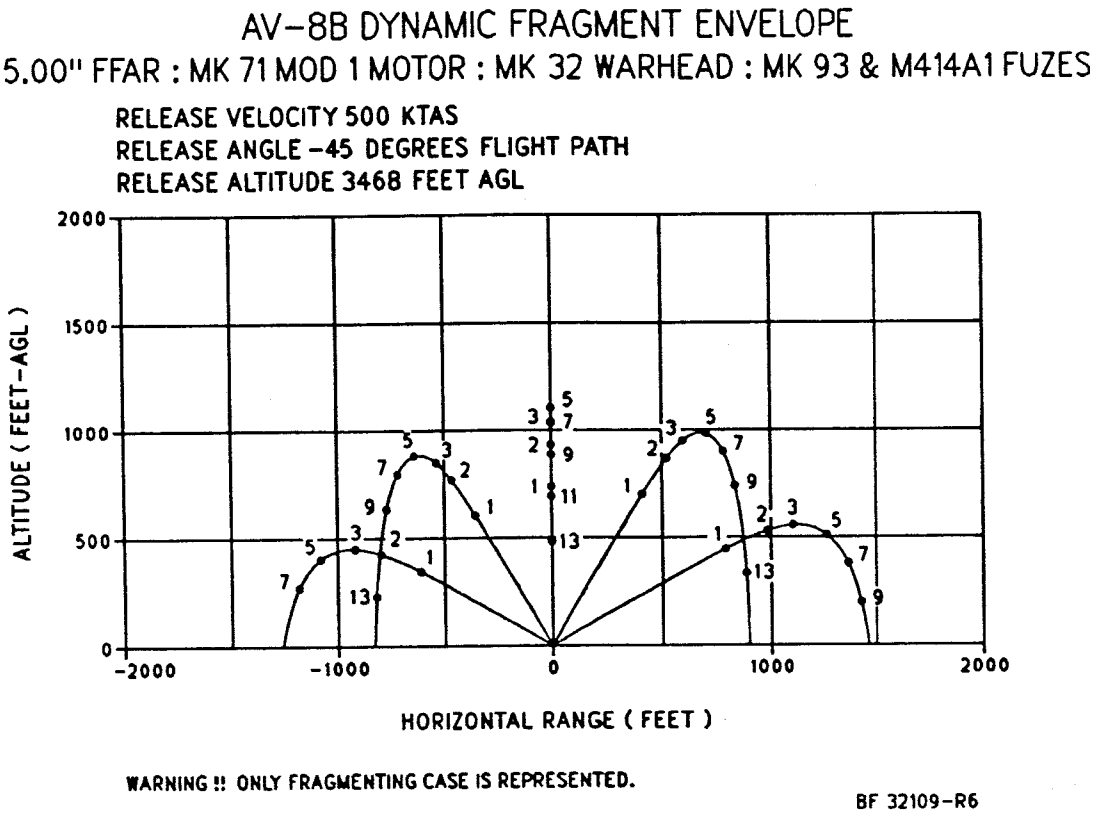
BF 32109-R6-B159-1

Figure 2-116. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 93 and M414A1 Fuze



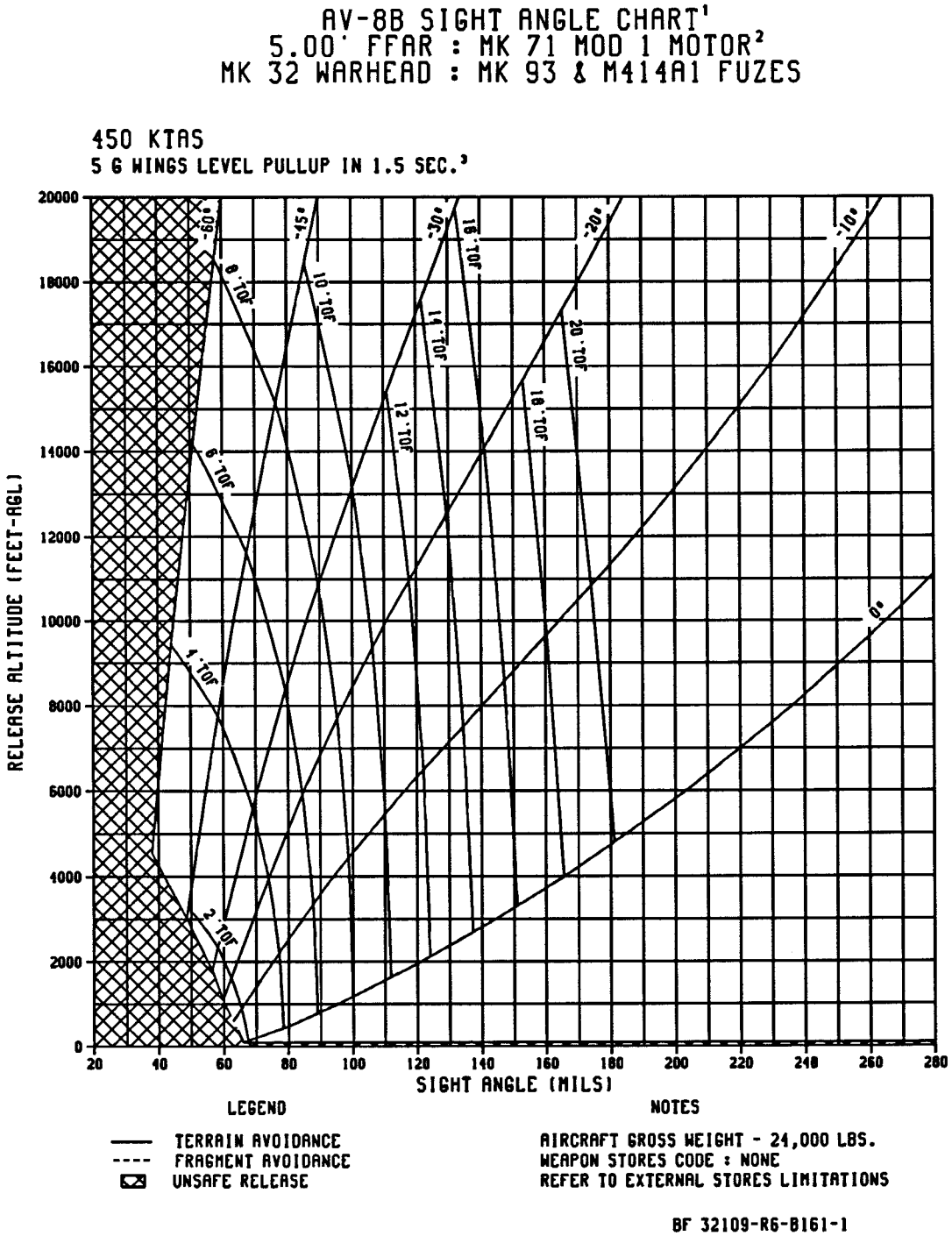
BF 32109-R6-B160-1

Figure 2-117. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 93 and M414A1 Fuze (Sheet 1 of 2)



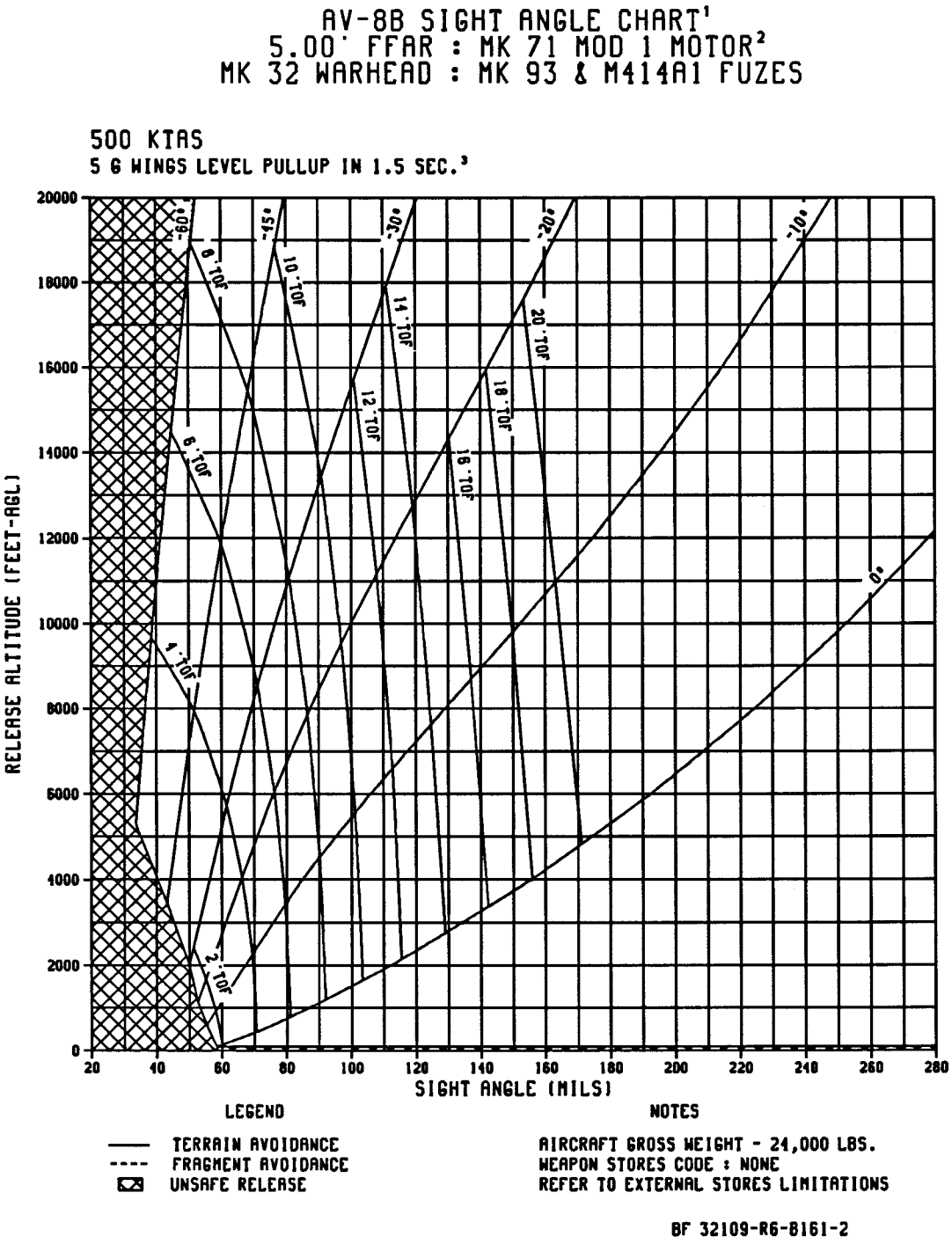
BF 32109-R6-B160-2

Figure 2-117. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 93 and M414A1 Fuze (Sheet 2 of 2)



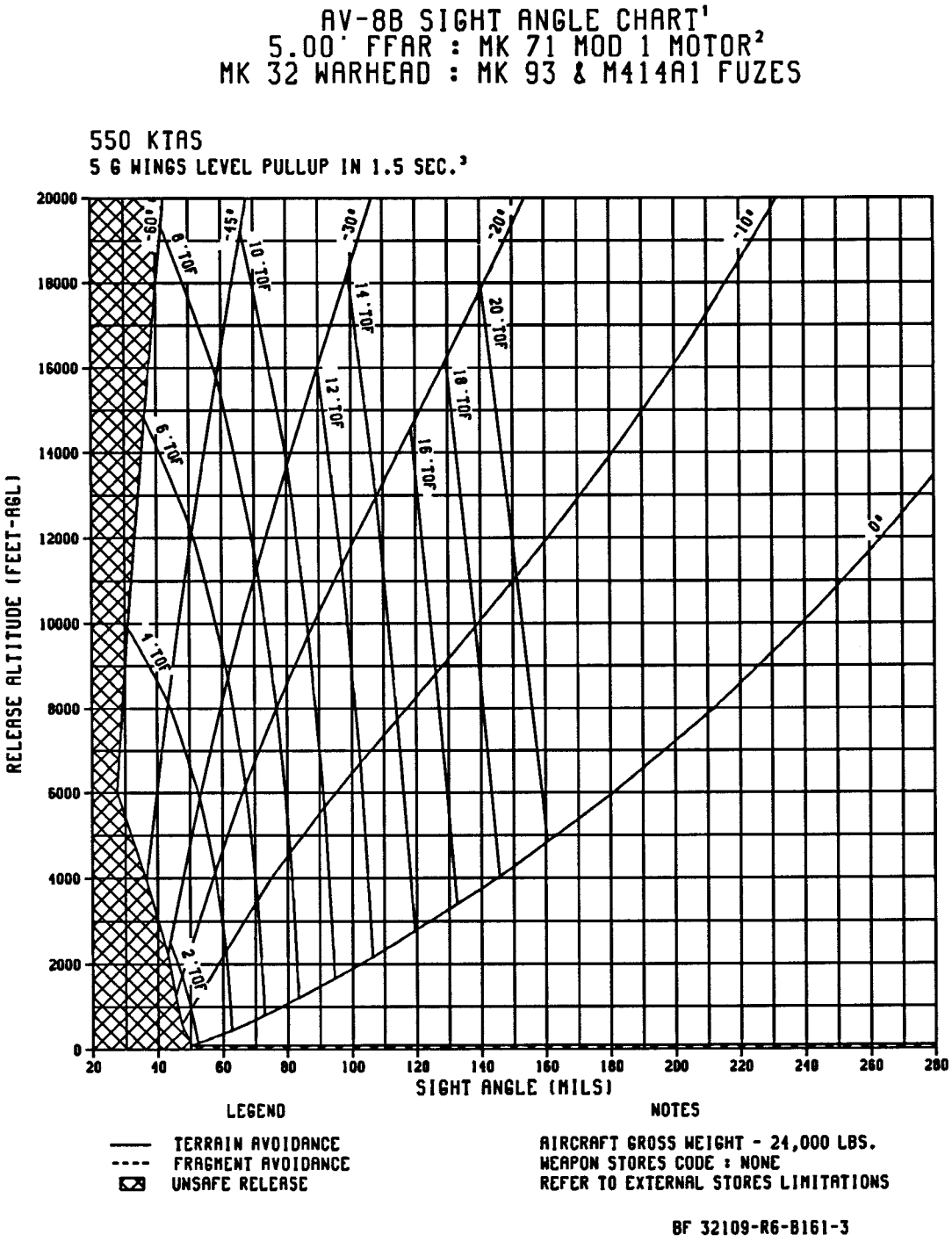
1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-118. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 93 and M414A1 Fuze (Sheet 1 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-118. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 93 and M414A1 Fuze (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-118. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 93 and M414A1 Fuze (Sheet 3 of 3)

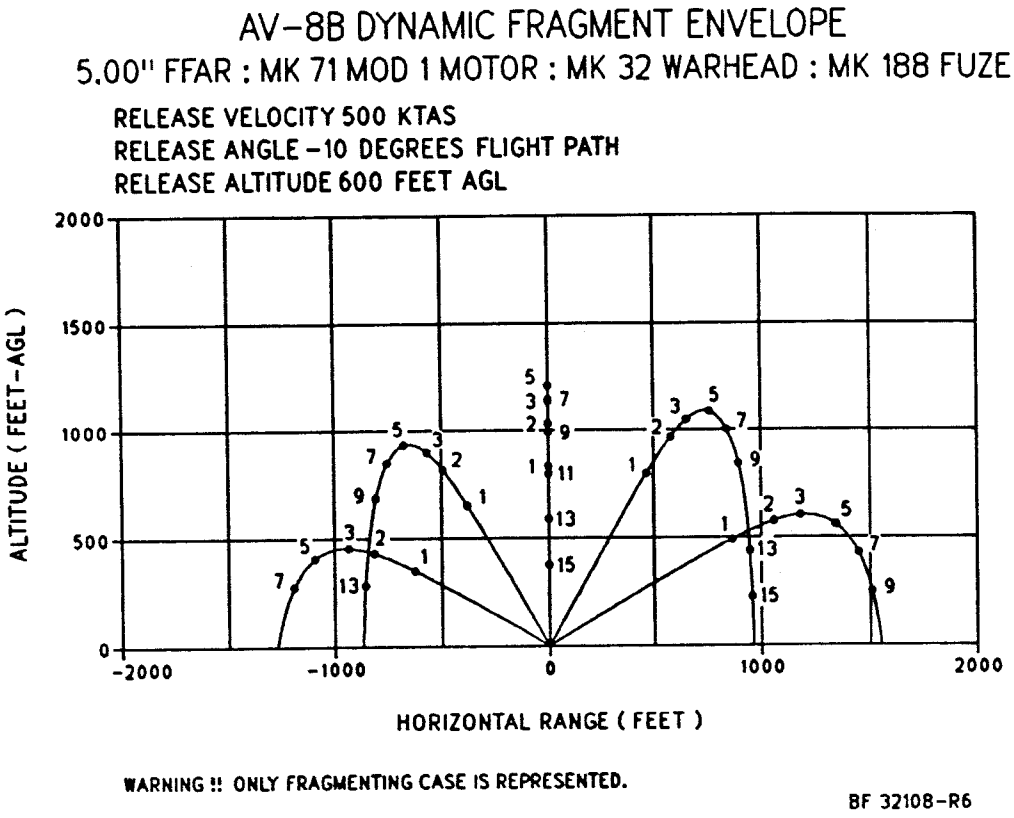
AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 32 WARHEAD : MK 188 FUZE

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	400	78	400	600	76	600	600	67	600
	5 G LEVEL BREAKAWAY	100*	66	100	100*	58	100	100*	50	100
	6 G LEVEL BREAKAWAY	100*	66	100	100*	58	100	100*	50	100
-10	5 G	600	63	311	600	55	270	600	47	226
	6 G	600	63	316	600	55	276	600	47	232
-20	5 G	1035*	59	300	1139*	53	300	1265*	45	300
	6 G	1025*	59	300	1117*	52	300	1246*	45	300
-30	5 G	1805*	56	500	2005*	50	500	2249*	43	500
	6 G	1788*	56	500	1944*	50	500	2208*	43	500
-45	5 G	3027*	49	700	3468*	43	700	3950*	37	700
	6 G	3001*	48	700	3279*	43	700	3811*	36	700
-60	5 G	4556*	38	1000	5291*	34	1000	6024*	28	1000
	6 G	4416*	39	1000	4864*	33	1000	5615*	27	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.
* Terrain Avoidance

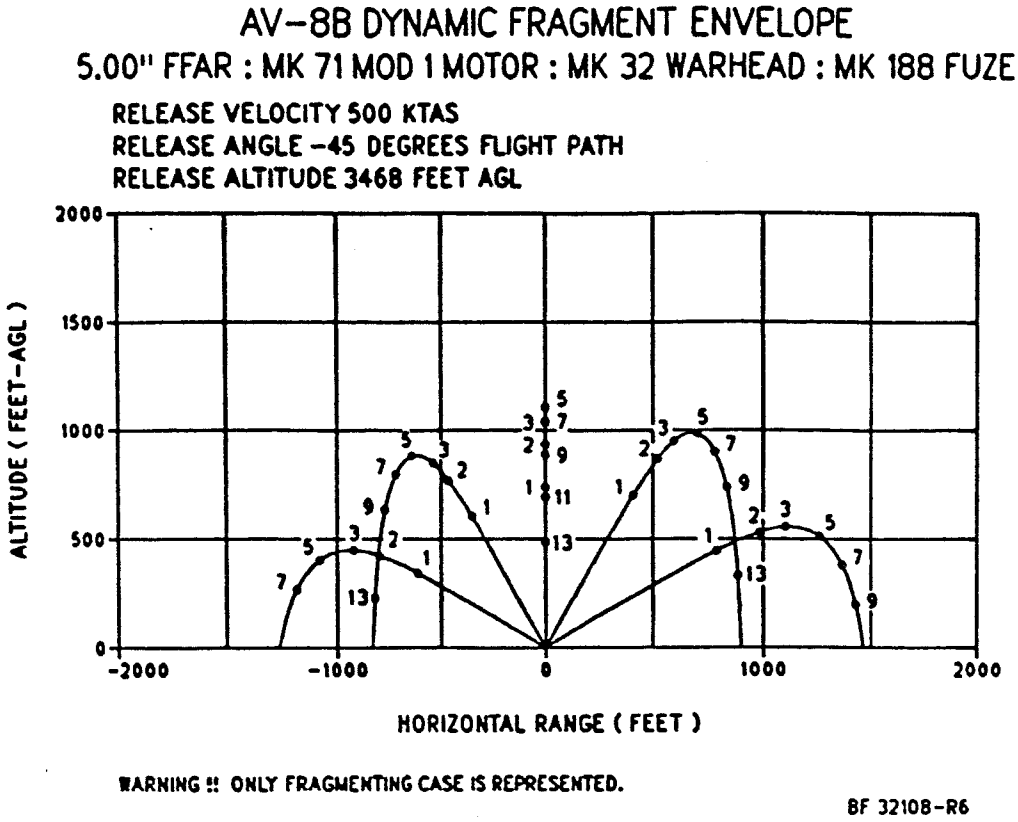
BF 32108-R6-B165-1

Figure 2-119. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 188 Fuze



BF 32108-R6-B166-1

Figure 2-120. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 1 of 2)

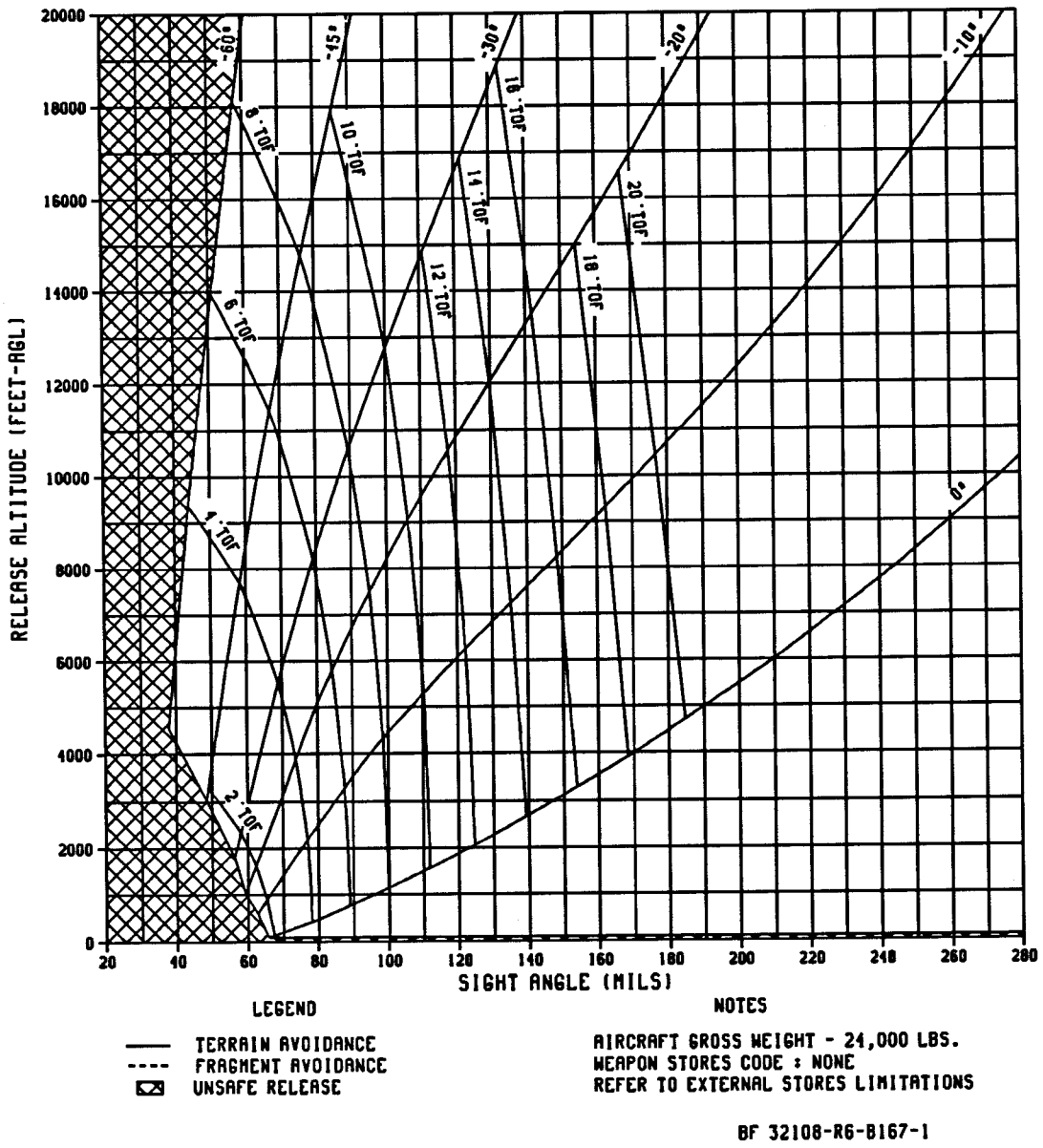


BF 32108-R6-B166-2

Figure 2-120. Dynamic Fragment Envelope, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 2 of 2)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 32 WARHEAD : MK 188 FUZE[2]

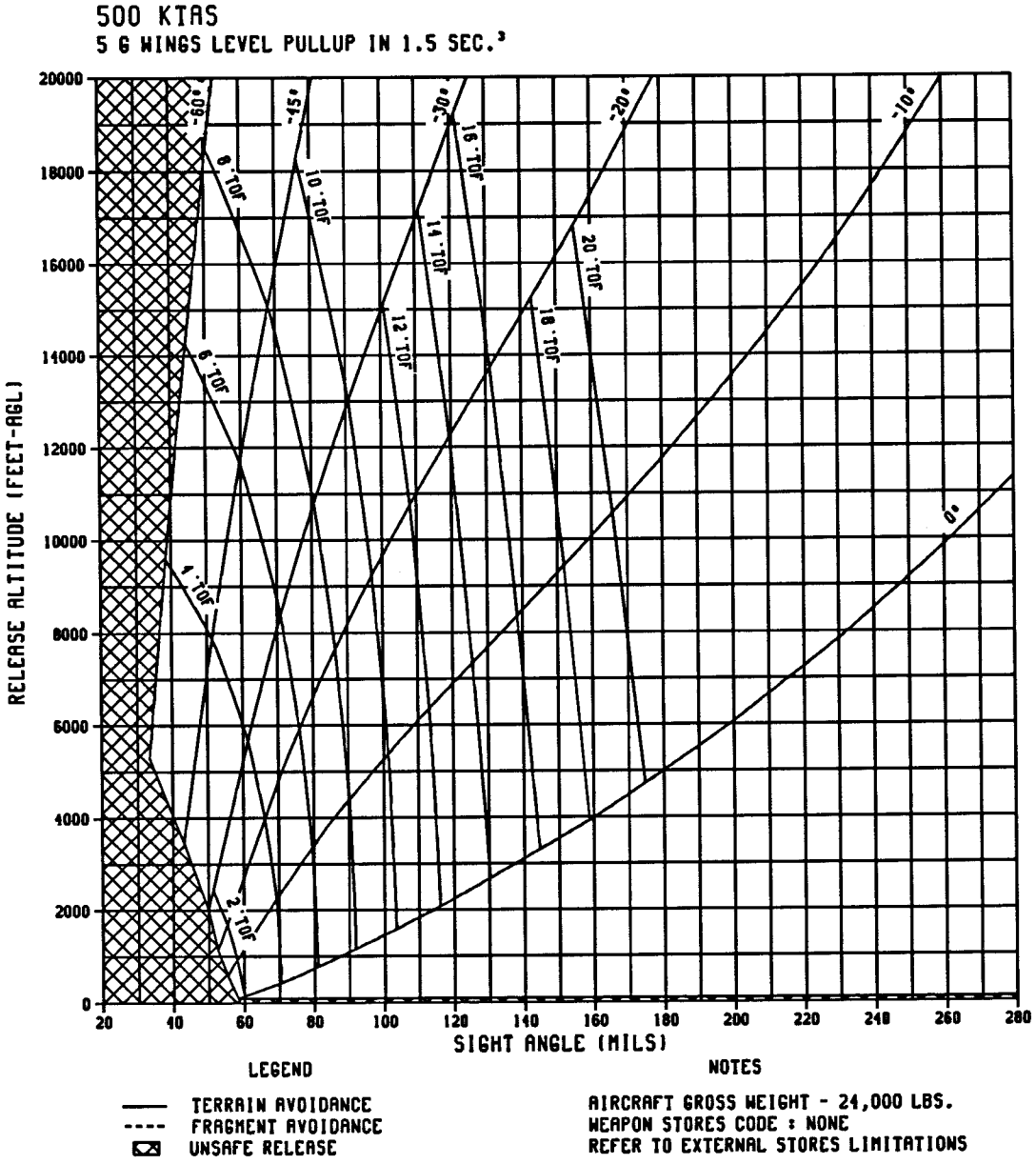
450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-121. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 1 of 3)

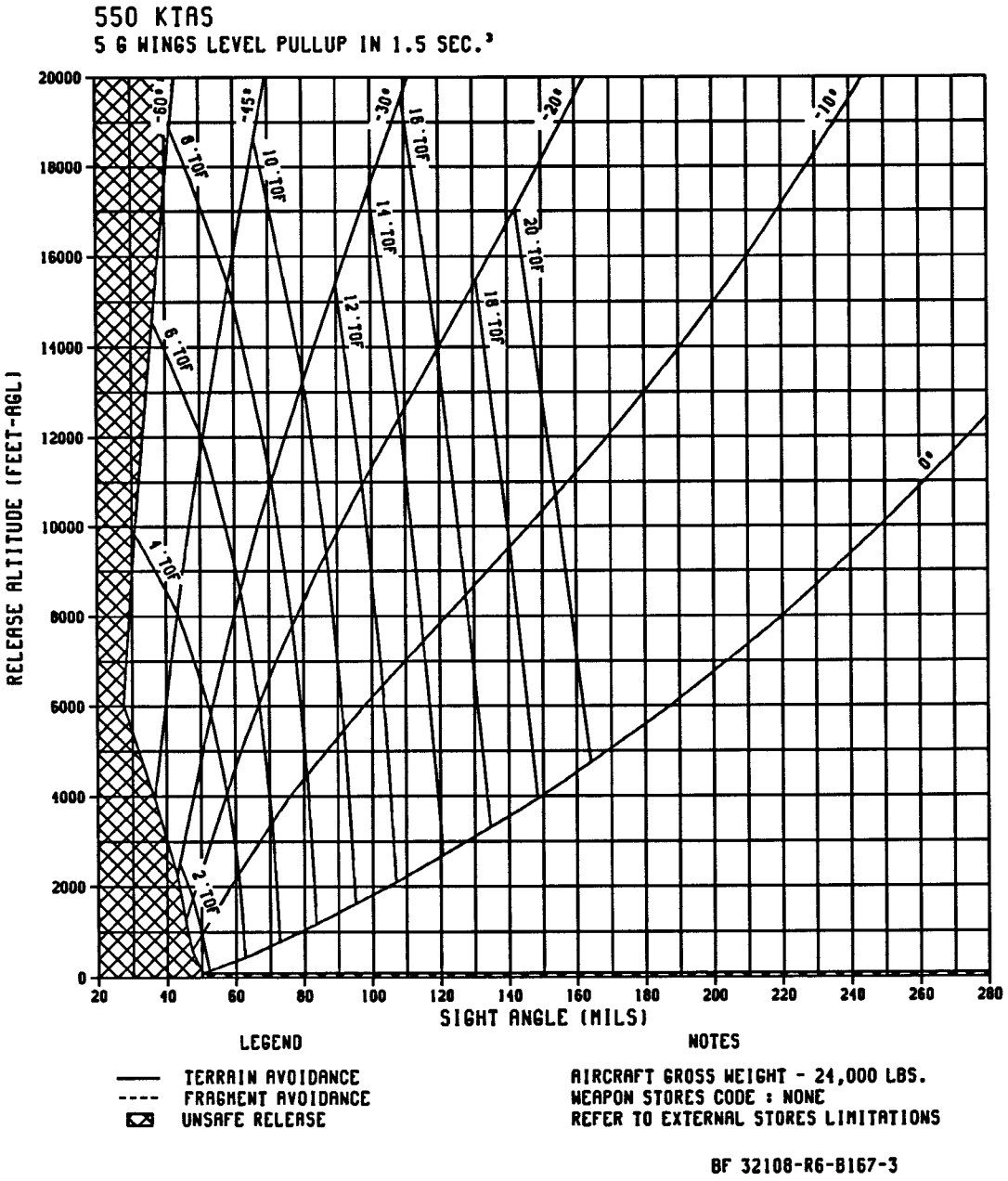
AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 32 WARHEAD : MK 188 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-121. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 32 WARHEAD : MK 188 FUZE[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-121. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 32 Warhead, Mk 188 Fuze (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 34 SMOKE WARHEAD : MK 188 FUZE

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	500	82	500	600	77	600	600	68	600
	5 G LEVEL BREAKAWAY	100	66	100	100	59	100	100	51	100
	6 G LEVEL BREAKAWAY	100	66	100	100	59	100	100	51	100
-10	5 G	600	63	311	600	56	270	600	48	226
	6 G	600	63	316	600	56	276	600	48	232
-20	5 G	1100	60	365	1139*	53	300	1265*	46	300
	6 G	1100	60	376	1117*	53	300	1246*	46	300
-30	5 G	1805*	57	500	2005*	50	500	2249*	46	300
	6 G	1788*	57	500	1944*	50	500	2208*	43	500
-45	5 G	3027*	49	700	3468*	44	700	3950*	37	700
	6 G	3001*	49	700	3279*	43	700	3811*	37	700
-60	5 G	4556*	38	1000	5291*	34	1000	6024*	28	1000
	6 G	4416*	38	1000	4864*	33	1000	5615*	28	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude resulting in no penetration of fragment envelope unless otherwise specified.
3. Gross weight = 24,000 lbs.

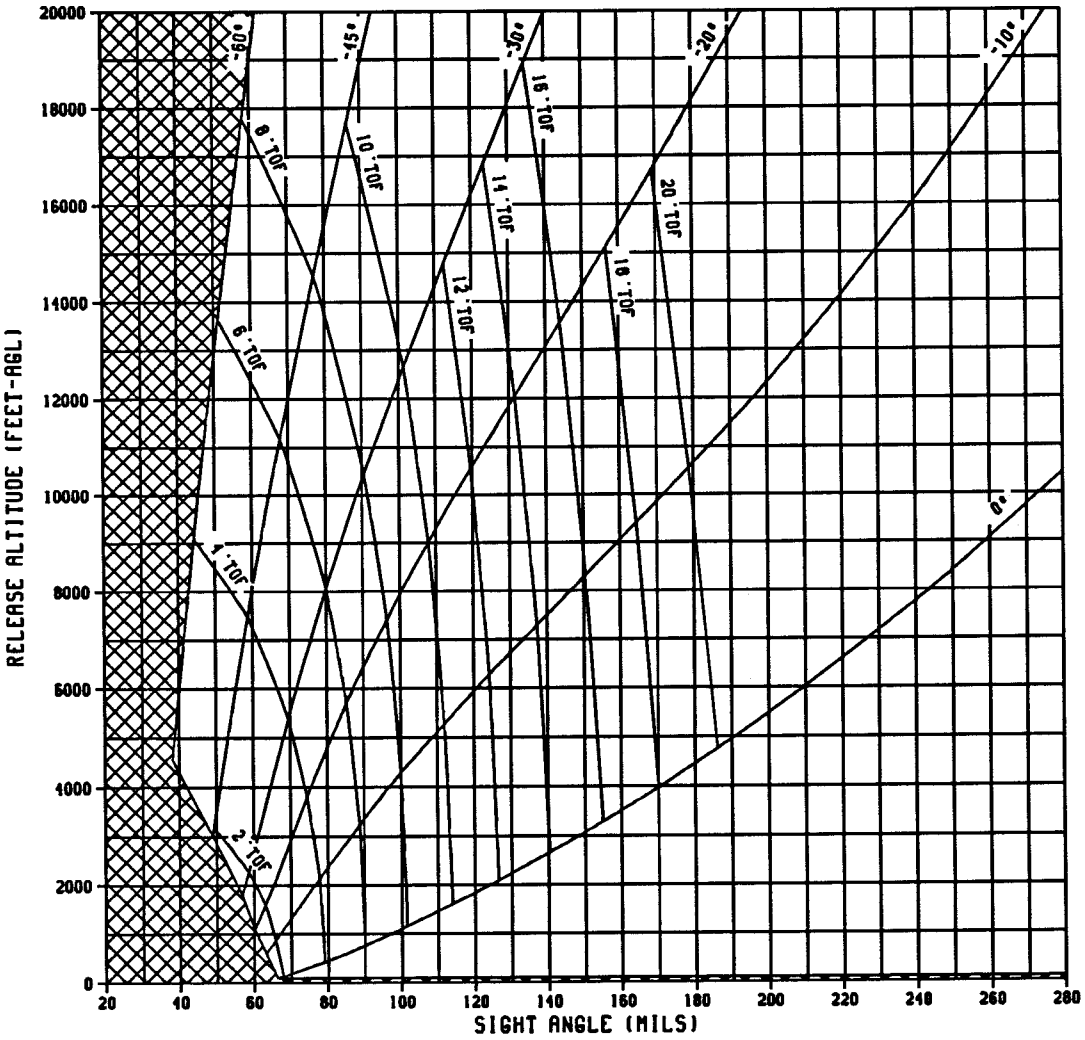
* Terrain avoidance

BF 32117-R6-B171-1

Figure 2-122. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 34 Smoke Warhead, Mk 188 Fuze

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR[2]
MK 34 SMOKE WARHEAD : MK 188 FUZE

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : NONE
REFER TO EXTERNAL STORES LIMITATIONS

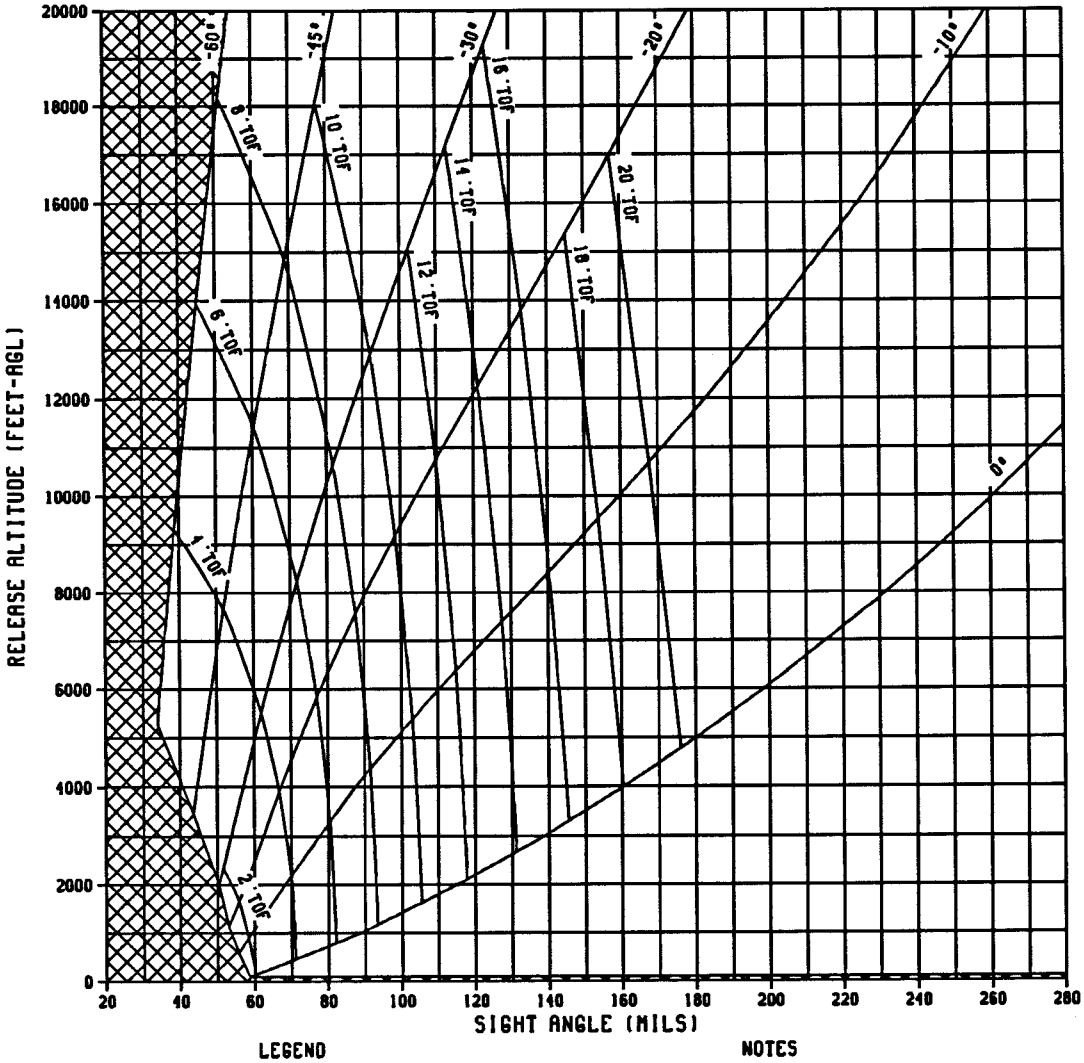
BF 32117-R6-8172-1

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-123. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 34 Smoke Warhead, Mk 188 Fuze (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR[2]
MK 34 SMOKE WARHEAD : MK 188 FUZE

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

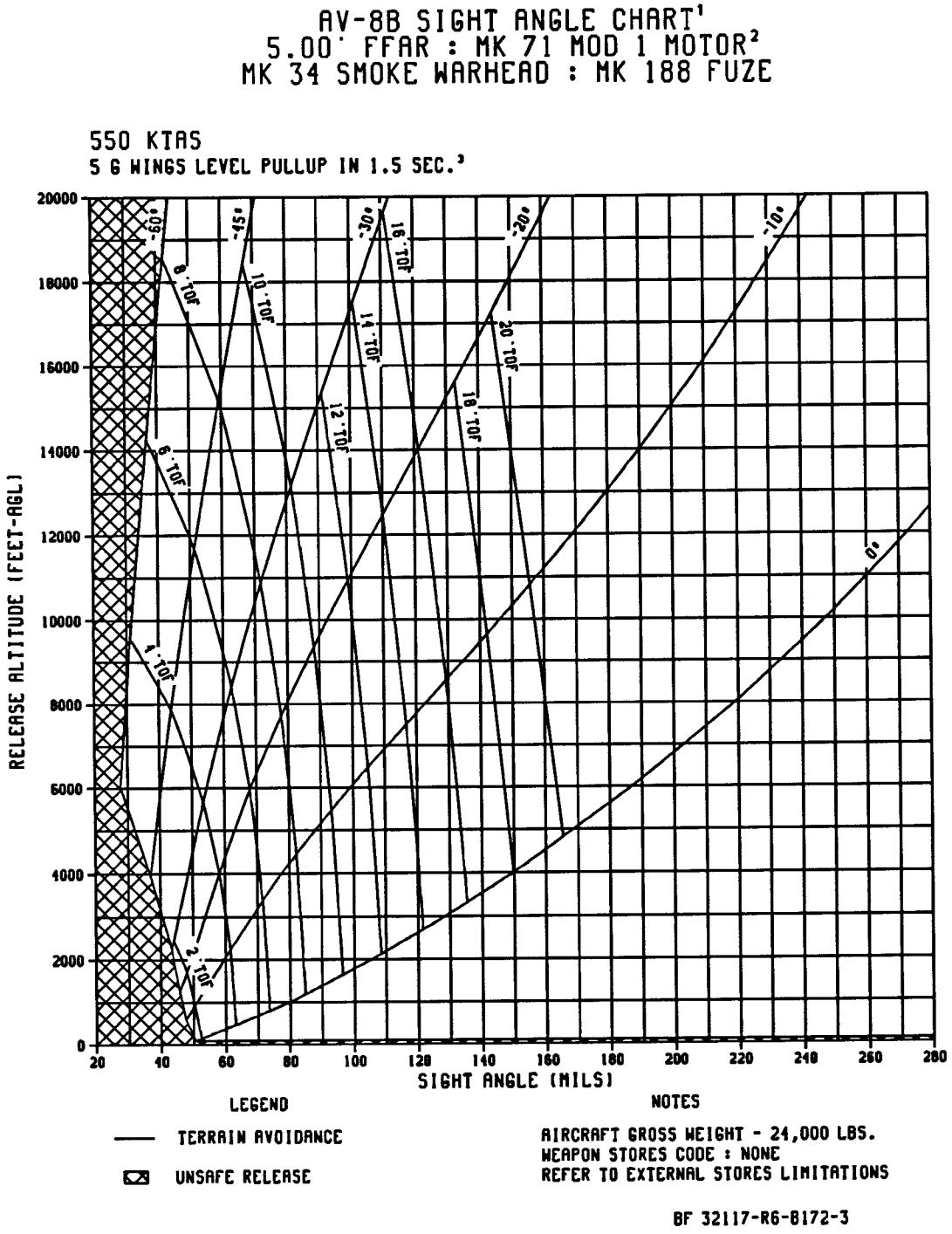
NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : NONE
REFER TO EXTERNAL STORES LIMITATIONS

BF 32117-R6-8172-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-123. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 34 Smoke Warhead, Mk 188 Fuze (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-123. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 34 Smoke Warhead, Mk 188 Fuze (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 6 MOD 7 WARHEAD : FLAT NOSE PLUG

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	75	300	500	74	500	500	66	500
	5 G LEVEL BREAKAWAY	200	71	200	200	63	200	200	55	200
	6 G LEVEL BREAKAWAY	200	71	200	200	63	200	200	55	200
-10	5 G	1200	69	911	1300	62	970	1300	54	926
	6 G	1100	68	816	1300	62	976	1300	54	932
-20	5 G	1900	65	1165	2000	58	1161	2200	50	1236
	6 G	1800	64	876	2000	58	1183	2200	50	1254
-30	5 G	2700	60	1396	2900	53	1396	3200	46	1452
	6 G	2700	60	1412	2800	53	1357	3000	46	1293
-45	5 G	3600	50	1273	4100	45	1332	4400	38	1151
	6 G	3600	50	1299	3900	44	1321	4200	37	1089
-60	5 G	4556	38	1000	5291	34	1000	6024	28	1000
	6 G	4416	38	1000	4864	33	1000	5615	27	1000

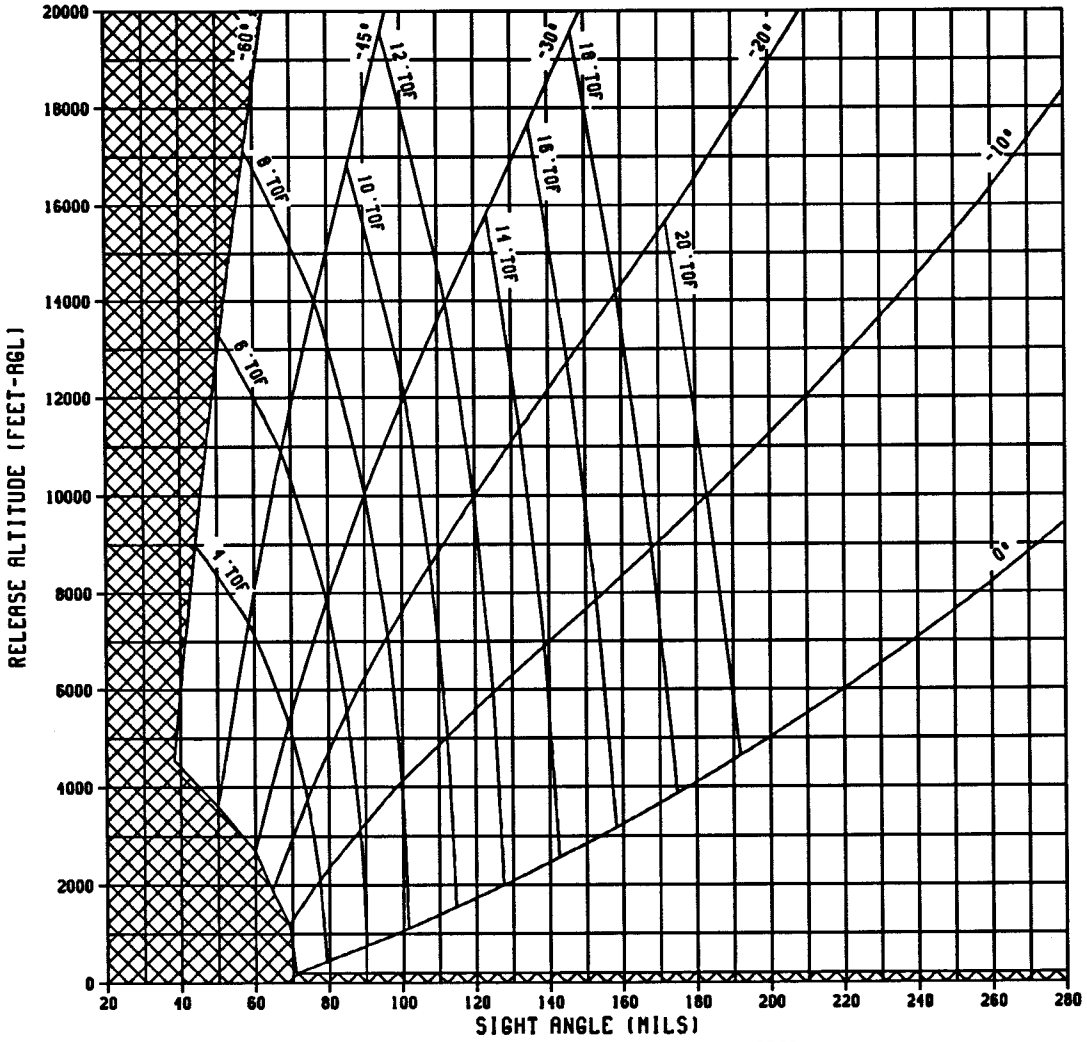
1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude terrain avoidance.
3. Gross weight = 24,000 lbs.

BF 32115-R6-B176-1

Figure 2-124. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 6 Mod 7 Warhead, Flat Nose Plug

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR[2]
MK 6 MOD 7 WARHEAD : FLAT NOSE PLUG

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

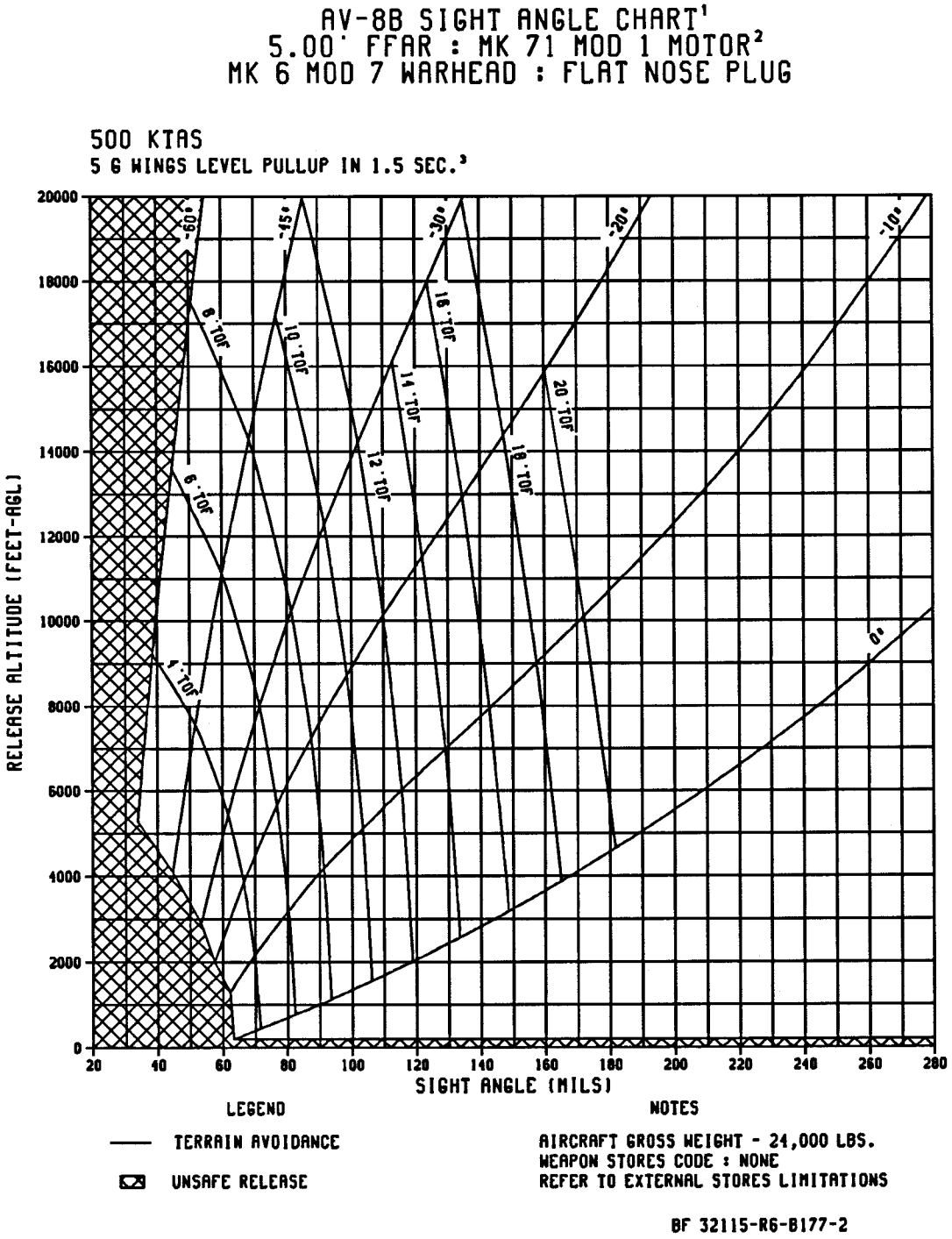
NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : NONE
REFER TO EXTERNAL STORES LIMITATIONS

BF 32115-R6-8177-1

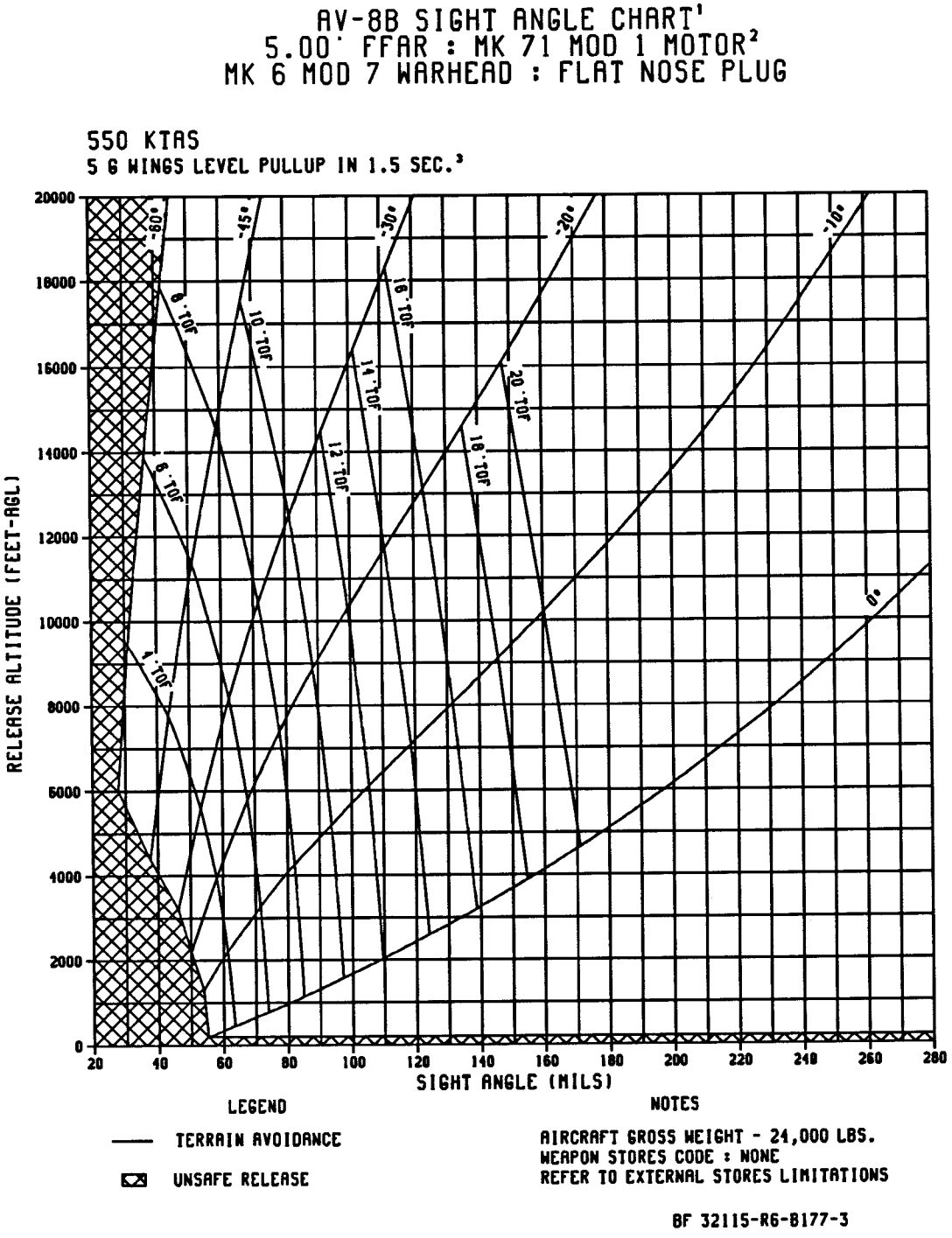
1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-125. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 6 Mod 7 Warhead, Flat Nose Plug (Sheet 1 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-125. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 6 Mod 7 Warhead, Flat Nose Plug (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-125. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 6 Mod 7 Warhead, Flat Nose Plug (Sheet 3 of 3)

AV-8B SAFE ESCAPE TABLE
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 24 WARHEAD : FLAT NOSE PLUG

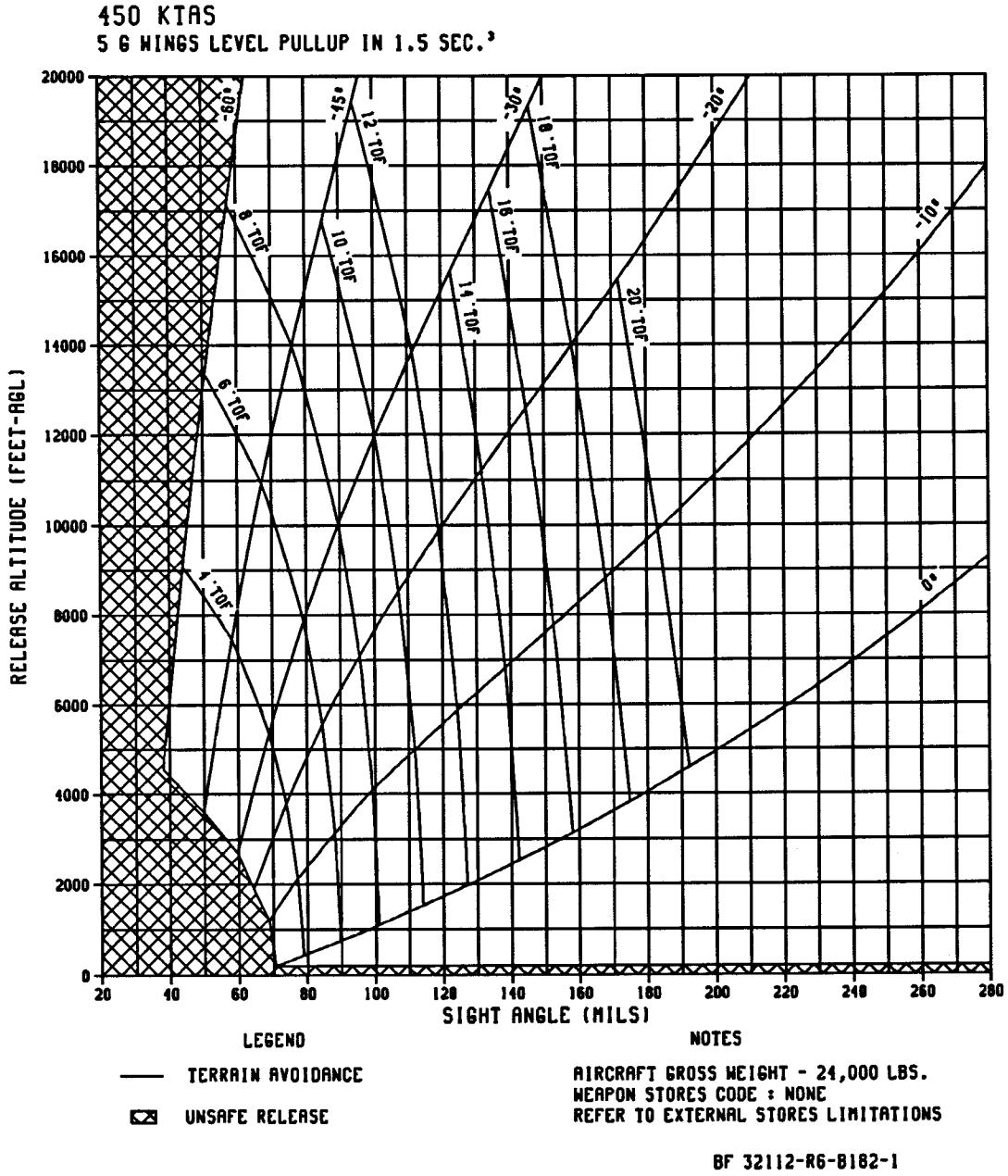
RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	300	75	300	500	74	500	500	65	500
	5 G LEVEL BREAKAWAY	200	71	200	200	63	200	200	55	200
	6 G LEVEL BREAKAWAY	200	71	200	200	63	200	200	55	200
-10	5 G	1200	69	911	1300	62	970	1300	54	926
	6 G	1100	68	816	1300	62	976	1300	54	932
-20	5 G	1900	64	1165	2000	57	1161	2200	50	1236
	6 G	1800	64	876	2000	58	1183	2200	50	1254
-30	5 G	2700	60	1396	2900	53	1396	3200	46	1452
	6 G	2700	60	1412	2800	53	1357	3000	45	1293
-45	5 G	3600	50	1273	4100	44	1332	4400	37	1151
	6 G	3600	50	1299	3900	44	1321	4200	37	1089
-60	5 G	4556	38	1000	5291	34	1000	6024	28	1000
	6 G	4416	38	1000	4864	33	1000	5615	27	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross weight = 24,000 lbs.

BF 32112-R6-B181-1

Figure 2-126. Safe Escape Table, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Flat Nose Plug

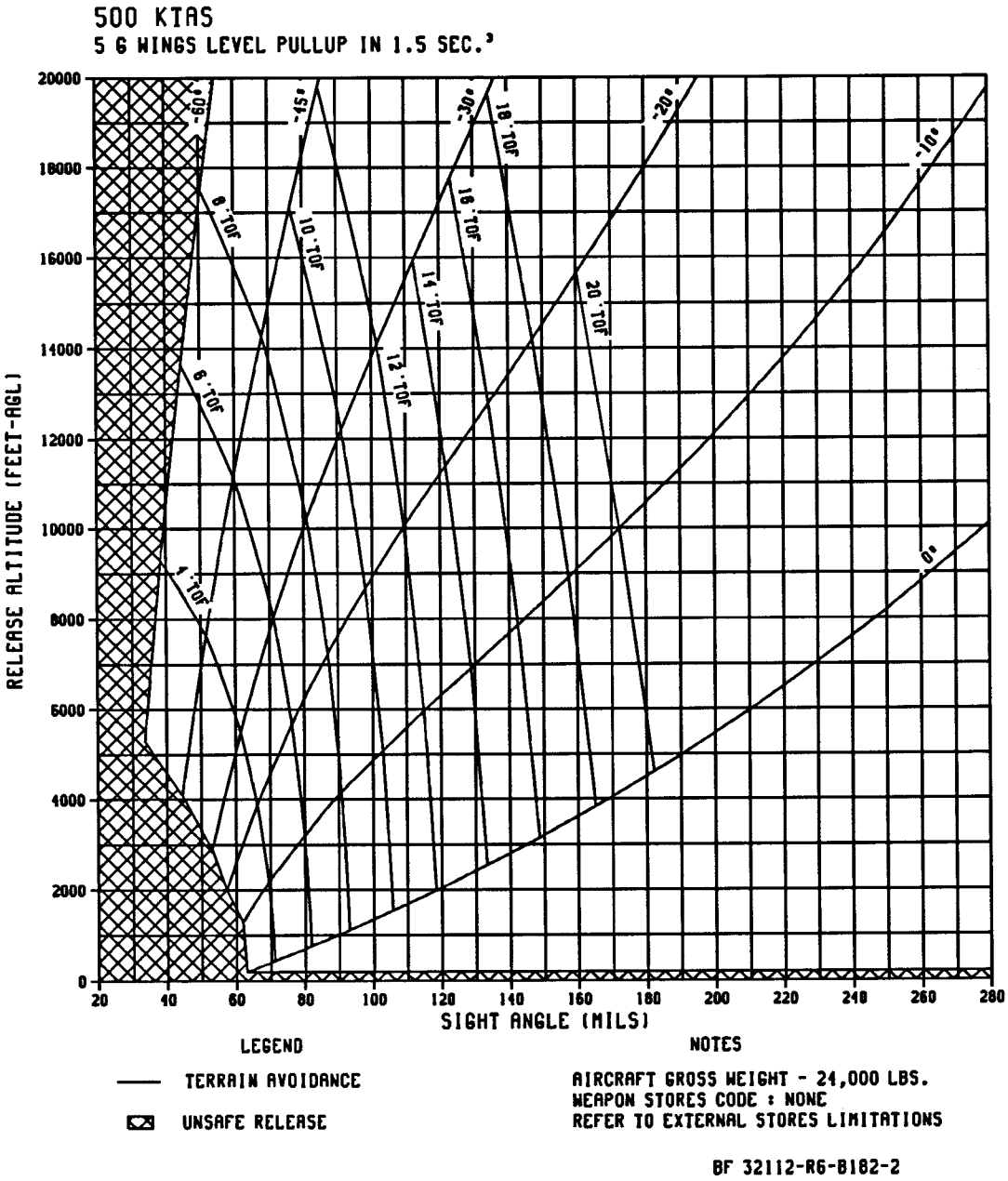
AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 24 WARHEAD : FLAT NOSE PLUG[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-127. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Flat Nose Plug (Sheet 1 of 3)

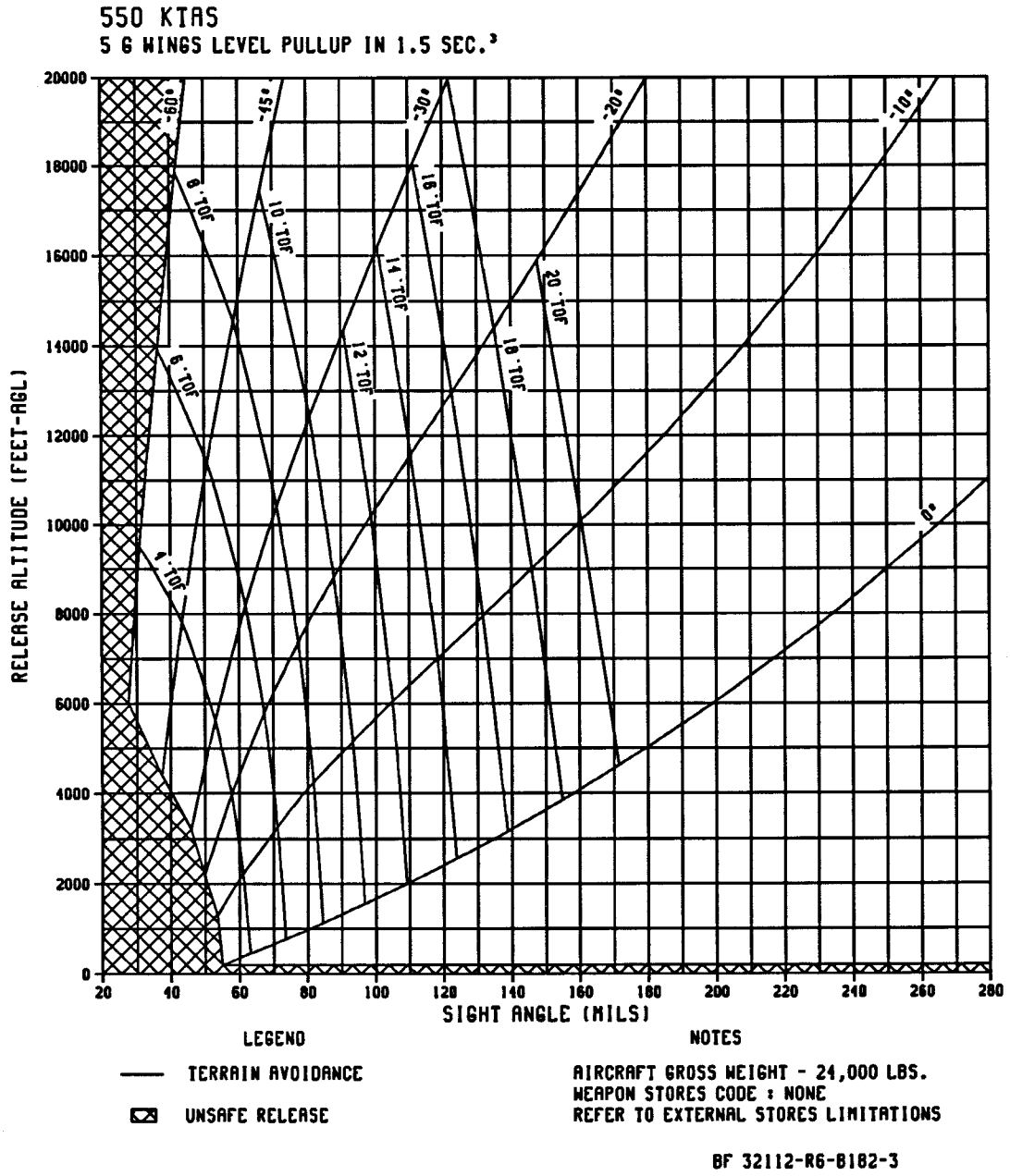
AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 24 WARHEAD : FLAT NOSE PLUG[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-127. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Flat Nose Plug (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 24 WARHEAD : FLAT NOSE PLUG[2]



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. MOTOR, FIN AND CASE FRAGMENTS AND RICOCHET NOT REPRESENTED.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-127. Sight Angle Chart, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 24 Warhead, Flat Nose Plug (Sheet 3 of 3)

NOTE: APPLICABLE TO ALL 5.OO INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
0	200	2.5	5799	5802	72	35	36	1
	500	4.4	11061	11072	82	46	37	0
	1000	7.0	16897	16926	97	60	37	0
	2000	11.1	24211	24294	121	83	38	0
	3000	14.4	29101	29255	142	104	39	0
	4000	17.2	32869	33111	161	122	40	0
	6000	22.0	38769	39231	196	155	42	0
	8000	26.1	43588	44316	226	183	44	0
	10000	29.6	47863	48896	253	208	46	0
	12300	33.3	52420	53844	280	234	49	0
-10	1200	2.5	5716	5840	70	33	37	1
	2000	3.8	9214	9429	77	40	38	1
	4000	7.1	17012	17476	96	57	39	0
	6000	10.6	23551	24303	117	76	41	0
	8000	14.1	29068	30149	138	96	44	0
	10000	17.4	33829	35276	159	115	46	0
	12000	20.5	38069	39916	179	134	48	0
	14000	23.5	41947	44222	199	151	51	0
	16000	26.2	45580	48307	217	167	54	0
	20000	31.2	52404	56091	249	195	59	0
-20	2000	2.4	5036	5418	66	29	36	1
	4000	4.2	9811	10596	76	39	38	0
	6000	6.2	14337	15542	87	48	40	0
	8000	8.3	18598	20245	99	59	42	0
	10000	10.4	22593	24707	112	70	44	0
	12000	12.7	26343	28947	125	81	46	0
	14000	14.9	29870	32988	138	92	49	0
	16000	17.1	33206	36859	152	103	51	0
	18000	19.3	36383	40592	164	114	54	0
	20000	21.4	39433	44215	177	125	57	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B144-1-10

Figure 2-128. Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 1 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
-30	2700	2.3	4412	5172	61	25	34	1
	4000	3.1	6480	7615	65	30	35	1
	6000	4.4	9597	11318	73	36	37	0
	8000	5.8	12632	14952	80	42	39	0
	10000	7.3	15577	18511	88	48	41	0
	12000	8.9	18435	21997	97	55	43	0
	14000	10.5	21204	25409	106	62	46	0
	16000	12.1	23887	28751	115	69	48	0
	18000	13.7	26491	32028	124	76	50	0
	20000	15.3	29022	35246	133	84	53	0
-45	3700	2.3	3551	5129	51	19	30	1
	4000	2.4	3835	5541	52	20	30	1
	6000	3.3	5714	8286	56	24	31	1
	8000	4.3	7571	11014	61	27	33	0
	10000	5.3	9402	13726	65	31	34	0
	12000	6.3	11209	16421	70	34	36	0
	14000	7.4	12990	19098	76	38	38	0
	16000	8.5	14744	21757	81	42	40	0
	18000	9.6	16472	24399	86	46	42	0
	20000	10.8	18175	27024	92	50	44	0
-60	4600	2.3	2565	5267	39	12	23	1
	5000	2.4	2785	5723	39	13	23	1
	6000	2.8	3335	6864	41	14	24	1
	8000	3.6	4427	9143	43	16	25	0
	10000	4.4	5510	11418	46	18	26	0
	12000	5.2	6585	13688	49	20	27	0
	14000	6.1	7650	15954	52	22	28	0
	16000	6.9	8705	18215	55	24	30	0
	18000	7.8	9750	20471	58	26	31	0
	20000	8.7	10786	22723	62	28	32	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B144-2-10

Figure 2-128. Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 2 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
0	200	2.5	5838	5842	64	33	29	1
	500	4.4	11185	11196	74	44	29	0
	1000	6.9	17134	17163	88	57	29	0
	2000	11.0	24592	24673	112	80	30	0
	4000	17.2	33398	33637	151	119	31	0
	6000	22.0	39381	39836	184	151	33	0
	8000	26.0	44259	44977	214	179	35	0
	10000	29.6	48585	49604	239	203	36	0
	12000	32.8	52609	53960	263	225	38	0
	13700	35.4	55886	57540	281	241	40	0
-10	1300	2.6	6172	6308	63	32	29	1
	2000	3.7	9233	9448	69	38	30	1
	4000	7.0	17090	17552	87	55	31	0
	6000	10.4	23708	24456	106	73	33	0
	8000	13.8	29306	30379	126	92	34	0
	10000	17.1	34141	35576	146	111	36	0
	12000	20.3	38442	40272	166	129	38	0
	14000	23.2	42373	44625	185	146	40	0
	16000	25.9	46050	48751	202	161	42	0
	20000	30.9	52951	56602	232	189	46	0
-20	2000	2.3	5038	5420	58	28	29	1
	4000	4.1	9823	10606	68	37	30	0
	6000	6.0	14365	15568	78	46	31	0
	8000	8.1	18649	20293	89	56	33	0
	10000	10.2	22673	24781	101	66	34	0
	12000	12.4	26455	29050	113	77	36	0
	14000	14.6	30016	33120	126	88	38	0
	16000	16.8	33385	37021	138	99	40	0
	18000	18.9	36595	40783	150	109	42	0
	20000	21.0	39676	44432	162	120	44	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B144-3-10

Figure 2-128. Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 3 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
-30	2900	2.3	4733	5551	54	25	27	1
	4000	3.0	6482	7617	58	28	28	1
	6000	4.3	9604	11324	64	34	29	0
	8000	5.7	12645	14963	71	40	30	0
	10000	7.1	15599	18529	79	46	32	0
	12000	8.7	18467	22023	87	52	34	0
	14000	10.2	21247	25445	95	59	35	0
	16000	11.8	23943	28797	103	66	37	0
	18000	13.4	26561	32085	111	73	39	0
	20000	15.0	29106	35315	119	80	41	0
-45	4100	2.4	3930	5680	45	19	23	1
	5000	2.8	4779	6916	47	21	24	1
	6000	3.2	5716	8287	49	22	24	1
	8000	4.2	7574	11016	53	26	25	0
	10000	5.1	9407	13729	57	29	27	0
	12000	6.2	11215	16425	62	32	28	0
	14000	7.2	12998	19103	67	36	29	0
	16000	8.3	14754	21764	71	40	31	0
	18000	9.4	16485	24408	76	43	32	0
	20000	10.5	18190	27035	81	47	33	0
-60	5291	2.5	2946	6056	34	12	18	1
	6000	2.8	3335	6865	35	13	18	1
	7000	3.1	3883	8005	36	14	19	1
	8000	3.5	4428	9144	38	15	19	0
	10000	4.3	5512	11419	40	17	20	0
	12000	5.1	6587	13689	43	19	21	0
	14000	5.9	7652	15955	45	21	22	0
	16000	6.8	8707	18216	48	23	23	0
	18000	7.6	9753	20472	51	25	23	0
	20000	8.5	10789	22724	53	27	24	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B144-4-10

Figure 2-128. Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 4 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
0	200	2.4	5884	5887	56	32	21	1
	1000	6.9	17377	17406	79	55	21	0
	2000	10.9	24976	25056	102	78	22	0
	4000	17.1	33928	34163	140	115	23	0
	6000	21.9	39992	40439	172	147	23	0
	8000	26.0	44928	45635	201	174	24	0
	10000	29.5	49304	50308	226	199	25	0
	12000	32.8	53375	54707	248	220	27	0
	14000	35.8	57268	58954	268	239	28	0
	15300	37.6	59742	61670	280	250	29	0
-10	1400	2.7	6629	6775	55	31	21	1
	2000	3.6	9254	9467	60	36	21	0
	4000	6.8	17167	17627	77	52	22	0
	6000	10.2	23861	24604	95	70	23	0
	8000	13.6	29539	30603	114	88	24	0
	10000	16.9	34446	35868	133	106	25	0
	12000	20.0	38812	40625	152	124	27	0
	14000	22.9	42798	45030	170	140	28	0
	16000	25.6	46526	49200	186	156	29	0
	20000	30.6	53512	57128	216	183	32	0
-20	2300	2.5	5773	6215	51	28	21	1
	4000	4.0	9834	10616	59	35	21	0
	6000	5.9	14392	15593	68	44	22	0
	8000	7.9	18699	20338	78	53	23	0
	10000	10.0	22751	24852	89	63	24	0
	12000	12.1	26566	29150	101	74	25	0
	14000	14.3	30161	33252	112	84	27	0
	16000	16.5	33566	37185	124	95	28	0
	18000	18.6	36811	40976	135	105	29	0
	20000	20.7	39925	44654	146	115	31	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B144-5-10

Figure 2-128. Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 5 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
-30	3200	2.5	5214	6117	47	24	19	1
	4000	2.9	6484	7619	49	26	19	1
	6000	4.2	9610	11329	55	32	20	0
	8000	5.6	12657	14973	61	38	21	0
	10000	7.0	15619	18546	68	44	22	0
	12000	8.5	18497	22048	75	50	23	0
	14000	10.0	21290	25480	83	56	24	0
	16000	11.5	24000	28844	90	63	26	0
	18000	13.1	26633	32145	98	69	27	0
	20000	14.6	29194	35388	105	76	28	0
-45	4500	2.5	4308	6230	38	19	16	1
	5000	2.7	4779	6916	39	19	16	1
	6000	3.2	5716	8287	41	21	16	1
	8000	4.1	7575	11017	45	24	17	0
	10000	5.0	9409	13730	48	27	17	0
	12000	6.0	11219	16428	52	31	18	0
	14000	7.1	13004	19108	56	34	19	0
	16000	8.1	14763	21770	61	38	20	0
	18000	9.2	16497	24416	65	41	21	0
	20000	10.3	18206	27046	69	45	22	0
-60	6024	2.7	3348	6892	28	12	11	1
	7000	3.0	3882	8005	29	13	11	1
	8000	3.4	4427	9143	30	14	12	0
	9000	3.8	4970	10281	31	15	12	0
	10000	4.2	5511	11418	32	16	12	0
	12000	5.0	6585	13688	34	18	12	0
	14000	5.8	7650	15954	37	20	13	0
	16000	6.6	8706	18215	39	22	13	0
	18000	7.5	9751	20472	41	24	14	0
	20000	8.3	10787	22724	44	25	15	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B144-6-10

Figure 2-128. Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 6 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B LOFT DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
10	1000	27.5	42329	42340	235	199	37	0
	5000	36.3	51892	52133	311	272	40	0
	10000	44.9	62069	62870	380	337	46	0
	15000	52.5	72022	73567	432	384	52	0
	20000	59.5	82451	84842	472	418	59	0
20	1000	44.2	55419	55428	403	367	35	0
	5000	51.6	63670	63866	466	428	39	0
	10000	60.0	74036	74709	527	485	44	0
	15000	68.2	85234	86544	574	526	50	0
	20000	76.0	97955	99976	607	555	57	0
30	1000	59.4	64617	64625	572	539	33	0
	5000	66.8	73092	73262	628	592	36	0
	10000	76.0	84464	85054	682	643	41	0
	15000	85.2	97966	99108	722	678	47	0
	20000	94.2	115174	116897	748	699	53	0
38	1000	71.2	69710	69718	708	677	30	0
	5000	79.1	78682	78840	760	726	33	0
	10000	89.3	91328	91873	810	773	38	0
	15000	99.6	108413	109446	844	802	43	0
	20000	109.6	130688	132210	863	818	48	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Aircraft at 1 g at release.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B145-1-10

Figure 2-129. Loft Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 1 of 3)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B LOFT DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
10	1000	27.8	43277	43289	227	197	29	0
	5000	36.5	52889	53125	301	268	32	0
	10000	45.2	63187	63974	367	332	36	0
	15000	52.7	73289	74809	417	378	41	0
	20000	59.7	83905	86256	454	411	46	0
20	1000	44.7	56601	56610	395	365	28	0
	5000	52.1	64967	65159	457	425	31	0
	10000	60.6	75537	76196	515	481	34	0
	15000	68.7	87018	88301	559	521	39	0
	20000	76.5	100112	102090	590	548	44	0
30	1000	60.2	66037	66045	565	537	26	0
	5000	67.6	74708	74875	619	589	28	0
	10000	76.9	86445	87021	671	638	32	0
	15000	86.2	100504	101617	708	672	36	0
	20000	95.3	118591	120266	731	692	41	0
38	1000	72.2	71340	71347	701	675	24	0
	5000	80.2	80568	80723	751	724	26	0
	10000	90.6	93841	94373	799	768	29	0
	15000	101.1	111991	112991	830	796	33	0
	20000	111.0	135578	137045	847	810	37	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Aircraft at 1 g at release.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B145-2-10

Figure 2-129. Loft Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 2 of 3)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B LOFT DELIVERY DATA
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)
10	1000	28.1	44222	44233	218	195	21	0
	5000	36.8	53881	54113	290	265	23	0
	10000	45.4	64298	65071	354	327	25	0
	15000	53.0	74563	76057	402	372	29	0
	20000	59.9	85377	87688	437	404	32	0
20	1000	45.2	57777	57786	387	364	20	0
	5000	52.6	66260	66448	446	422	22	0
	10000	61.1	77036	77682	502	476	24	0
	15000	69.3	88813	90071	544	515	27	0
	20000	77.1	102295	104231	573	541	31	0
30	1000	61.0	67456	67464	557	536	19	0
	5000	68.4	76319	76483	609	586	20	0
	10000	77.8	88440	89003	658	634	22	0
	15000	87.2	103084	104170	693	666	25	0
	20000	96.3	122095	123722	714	685	28	0
38	1000	73.2	72978	72984	694	674	17	0
	5000	81.4	82475	82626	742	721	18	0
	10000	91.9	96444	96961	786	764	20	0
	15000	102.5	115668	116636	815	790	22	0
	20000	112.5	140617	142032	830	803	25	0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Aircraft at 1 g at release.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B145-3-10

Figure 2-129. Loft Delivery Data, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 3 of 3)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	200	256	-340	-929	552	-509	306	735	-983	5.8	43	.3	42	7.3
	500	394	-507	-859	694	-1551	716	1104	-1377	11.1	76	.3	75	6.8
	1000	488	-616	-795	725	-2296	1289	1321	-1564	16.9	119	.4	118	7.0
	2000	546	-674	-674	649	-2696	1933	1391	-1570	24.3	188	.6	187	7.7
	3000	561	-685	-581	568	-2735	2224	1360	-1498	29.3	243	.9	243	8.3
	4000	567	-687	-510	503	-2681	2359	1316	-1428	33.1	291	1.1	291	8.8
	6000	578	-693	-415	412	-2526	2447	1242	-1324	39.2	372	1.4	372	9.5
	8000	595	-707	-349	347	-2395	2461	1195	-1261	44.3	440	1.8	440	9.9
	10000	618	-728	-306	300	-2299	2462	1167	-1224	48.9	500	2.1	500	10.2
	12300	652	-770	-266	265	-2225	2467	1154	-1203	53.8	563	2.4	562	10.4
-10	1200	45	-55	-30	26	-41	29	139	-145	5.8	42	1.5	42	7.3
	2000	74	-90	-43	39	-91	63	217	-226	9.4	64	1.4	64	6.7
	4000	143	-171	-77	74	-292	202	374	-389	17.5	120	1.6	120	6.9
	6000	204	-243	-105	103	-539	387	483	-501	24.3	179	1.8	179	7.4
	8000	257	-306	-122	120	-772	578	558	-578	30.1	238	2.1	238	7.9
	10000	303	-361	-132	128	-966	749	612	-632	35.3	294	2.4	294	8.3
	12000	349	-411	-134	133	-1120	895	653	-674	39.9	347	2.6	347	8.7
	14000	392	-457	-132	131	-1242	1016	688	-708	44.2	396	2.8	396	9.0
	16000	433	-502	-128	127	-1342	1118	719	-739	48.3	442	3.0	442	9.2
	20000	516	-591	-117	117	-1501	1285	776	-796	56.1	527	3.3	526	9.4
-20	2000	23	-28	-9	8	-13	12	72	-73	5.4	40	2.7	40	7.4
	4000	47	-57	-15	15	-40	34	139	-141	10.6	71	2.5	71	6.7
	6000	73	-88	-24	23	-82	69	199	-203	15.5	104	2.6	104	6.7
	8000	102	-121	-32	31	-139	116	253	-258	20.2	139	2.7	139	6.9
	10000	131	-155	-40	39	-208	174	302	-308	24.7	176	2.9	176	7.1
	12000	162	-190	-47	46	-285	239	345	-352	28.9	214	3.1	214	7.4
	14000	193	-226	-52	52	-365	308	385	-392	33.0	252	3.2	252	7.6
	16000	225	-262	-56	55	-445	378	420	-428	36.9	289	3.4	289	7.8
	18000	256	-298	-58	58	-523	447	453	-461	40.6	326	3.6	326	8.0
	20000	288	-334	-60	59	-596	513	484	-493	44.2	362	3.7	361	8.2

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B146-1-10

Figure 2-130. Release Error Sensitivities, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 1 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2700	15	-18	-4	4	-8	8	49	-49	5.2	39	3.9	39	7.5
	4000	22	-27	-5	5	-14	14	72	-72	7.6	52	3.6	52	6.9
	6000	35	-42	-8	8	-26	25	106	-107	11.3	75	3.5	75	6.6
	8000	49	-59	-11	11	-44	41	139	-140	15.0	98	3.5	98	6.6
	10000	64	-77	-15	14	-65	60	170	-172	18.5	124	3.6	124	6.7
	12000	81	-96	-18	18	-91	83	200	-202	22.0	150	3.7	150	6.8
	14000	99	-117	-21	20	-121	110	229	-231	25.4	176	3.8	176	6.9
	16000	118	-139	-23	23	-154	140	256	-259	28.8	204	3.9	204	7.1
	18000	139	-161	-26	25	-190	172	283	-286	32.0	231	4.1	231	7.2
	20000	160	-185	-28	27	-227	207	308	-312	35.2	259	4.2	259	7.3
-45	3700	9	-11	-2	2	-6	6	35	-35	5.1	38	5.4	38	7.4
	4000	10	-12	-2	2	-6	7	38	-38	5.5	40	5.3	40	7.3
	6000	16	-19	-3	3	-11	11	57	-56	8.3	56	4.9	56	6.7
	8000	22	-27	-4	4	-18	17	75	-75	11.0	72	4.8	72	6.5
	10000	29	-35	-5	4	-25	24	94	-94	13.7	89	4.7	89	6.5
	12000	36	-44	-6	6	-34	33	112	-112	16.4	107	4.7	107	6.5
	14000	45	-53	-7	7	-45	42	130	-130	19.1	125	4.8	125	6.5
	16000	54	-64	-8	8	-56	53	147	-148	21.8	144	4.9	144	6.6
	18000	63	-75	-9	9	-69	65	165	-165	24.4	163	4.9	162	6.7
	20000	74	-86	-10	10	-83	77	182	-182	27.0	182	5.0	182	6.7
-60	4600	6	-8	-1	1	-5	6	30	-29	5.3	39	6.4	39	7.4
	5000	7	-9	-1	1	-5	6	33	-32	5.7	41	6.3	41	7.2
	6000	8	-10	-1	1	-7	8	39	-38	6.9	48	6.1	48	6.9
	8000	12	-14	-1	1	-11	12	52	-51	9.1	61	5.8	61	6.6
	10000	15	-19	-2	2	-15	16	65	-64	11.4	74	5.7	74	6.5
	12000	19	-23	-2	2	-21	21	78	-77	13.7	88	5.6	88	6.4
	14000	23	-28	-3	3	-26	27	91	-90	16.0	102	5.6	102	6.4
	16000	28	-34	-3	3	-33	34	103	-103	18.2	117	5.6	117	6.4
	18000	33	-39	-4	4	-40	41	116	-116	20.5	132	5.7	132	6.4
	20000	38	-45	-4	4	-48	48	129	-128	22.7	147	5.7	147	6.5

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B146-2-10

Figure 2-130. Release Error Sensitivities, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 2 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	200	227	-243	-914	545	-466	303	744	-998	5.8	42	.2	42	7.1
	500	353	-372	-851	687	-1568	712	1127	-1410	11.2	75	.3	74	6.6
	1000	444	-462	-793	723	-2367	1299	1357	-1610	17.2	118	.4	117	6.8
	2000	508	-523	-676	651	-2799	1970	1434	-1621	24.7	186	.6	186	7.5
	4000	549	-560	-512	505	-2787	2420	1358	-1475	33.6	290	1.0	290	8.6
	6000	578	-588	-415	412	-2624	2514	1280	-1366	39.8	371	1.4	371	9.3
	8000	612	-622	-348	346	-2485	2527	1230	-1299	45.0	440	1.7	439	9.8
	10000	650	-660	-304	299	-2382	2525	1201	-1260	49.6	500	2.0	499	10.1
	12000	697	-707	-268	267	-2308	2529	1187	-1239	54.0	554	2.3	554	10.3
	13700	740	-751	-243	242	-2262	2538	1184	-1233	57.5	597	2.5	597	10.4
-10	1300	45	-45	-30	26	-45	31	149	-156	6.3	44	1.4	44	7.0
	2000	69	-69	-41	37	-88	60	218	-227	9.4	62	1.4	62	6.6
	4000	138	-139	-74	70	-285	195	377	-393	17.6	118	1.5	118	6.7
	6000	204	-206	-101	99	-531	379	489	-507	24.5	176	1.8	176	7.2
	8000	264	-267	-118	116	-767	571	566	-587	30.4	234	2.0	234	7.7
	10000	320	-323	-128	124	-966	745	622	-643	35.6	290	2.3	289	8.1
	12000	373	-377	-130	129	-1125	894	665	-686	40.3	342	2.5	342	8.5
	14000	424	-428	-128	127	-1252	1017	701	-721	44.6	391	2.8	391	8.8
	16000	474	-479	-124	123	-1355	1121	732	-753	48.8	437	2.9	437	9.0
	20000	576	-582	-113	113	-1520	1288	791	-811	56.6	522	3.3	521	9.2
-20	2000	21	-21	-8	8	-12	12	73	-73	5.4	39	2.7	39	7.2
	4000	46	-46	-14	14	-38	32	139	-141	10.6	69	2.4	69	6.5
	6000	74	-74	-22	21	-78	66	200	-203	15.6	101	2.5	101	6.5
	8000	105	-106	-30	29	-134	111	254	-259	20.3	136	2.6	136	6.7
	10000	138	-139	-38	36	-201	166	304	-310	24.8	172	2.8	172	7.0
	12000	174	-176	-44	43	-276	229	348	-355	29.0	209	3.0	209	7.2
	14000	212	-213	-49	49	-355	297	388	-395	33.1	247	3.1	247	7.4
	16000	250	-252	-53	52	-434	366	424	-432	37.0	284	3.3	284	7.7
	18000	290	-292	-55	55	-510	434	457	-466	40.8	320	3.5	320	7.8
	20000	330	-333	-57	56	-583	500	489	-498	44.4	355	3.6	355	8.0

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B146-3-10

Figure 2-130. Release Error Sensitivities, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 3 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2900	15	-15	-4	4	-8	8	53	-53	5.6	40	3.7	40	7.1
	4000	22	-22	-5	5	-13	13	72	-72	7.6	51	3.5	51	6.7
	6000	36	-36	-8	7	-25	24	106	-107	11.3	73	3.4	73	6.4
	8000	52	-52	-10	10	-41	38	139	-140	15.0	96	3.4	96	6.4
	10000	69	-69	-14	13	-61	56	170	-172	18.5	121	3.5	121	6.5
	12000	90	-90	-16	16	-86	78	201	-203	22.0	146	3.6	146	6.6
	14000	112	-112	-19	19	-115	103	229	-232	25.4	172	3.7	172	6.8
	16000	136	-136	-21	21	-146	132	257	-260	28.8	199	3.8	199	6.9
	18000	161	-162	-24	23	-180	163	284	-287	32.1	226	3.9	226	7.0
	20000	188	-189	-25	25	-216	195	310	-313	35.3	253	4.1	253	7.2
-45	4100	10	-10	-2	2	-6	6	39	-39	5.7	40	5.1	40	7.1
	5000	13	-13	-2	2	-8	8	48	-47	6.9	47	4.9	47	6.8
	6000	16	-16	-2	2	-10	10	57	-57	8.3	54	4.8	54	6.6
	8000	24	-24	-3	3	-16	16	75	-75	11.0	70	4.6	70	6.4
	10000	33	-33	-4	4	-23	22	94	-94	13.7	87	4.6	87	6.3
	12000	42	-42	-5	5	-32	30	112	-112	16.4	104	4.6	104	6.3
	14000	53	-53	-6	6	-41	39	130	-130	19.1	122	4.7	122	6.4
	16000	65	-65	-7	7	-52	49	147	-148	21.8	140	4.7	140	6.4
	18000	78	-78	-8	8	-64	59	165	-165	24.4	159	4.8	159	6.5
	20000	91	-92	-9	9	-77	71	182	-183	27.0	177	4.9	177	6.6
-60	5291	8	-8	-1	1	-5	6	35	-34	6.1	42	6.1	42	7.0
	6000	9	-9	-1	1	-6	7	39	-38	6.9	46	5.9	46	6.8
	7000	11	-11	-1	1	-8	9	46	-45	8.0	53	5.8	53	6.6
	8000	13	-13	-1	1	-10	11	52	-51	9.1	59	5.7	59	6.5
	10000	18	-19	-2	2	-14	15	65	-64	11.4	72	5.5	72	6.3
	12000	24	-24	-2	2	-19	19	78	-77	13.7	86	5.5	86	6.3
	14000	31	-31	-3	2	-24	25	91	-90	16.0	100	5.5	100	6.3
	16000	38	-38	-3	3	-30	30	103	-103	18.2	114	5.5	114	6.3
	18000	47	-47	-3	3	-36	37	116	-116	20.5	129	5.5	129	6.3
	20000	56	-55	-4	4	-43	44	129	-128	22.7	144	5.6	144	6.3

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B146-4-10

Figure 2-130. Release Error Sensitivities, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 4 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	200	334	-375	-902	541	-432	301	755	-1015	5.9	42	.2	41	6.9
	1000	640	-682	-791	721	-2444	1311	1394	-1658	17.4	117	.4	116	6.7
	2000	705	-737	-676	652	-2905	2009	1477	-1673	25.1	185	.6	185	7.4
	4000	711	-732	-513	506	-2893	2485	1400	-1522	34.2	289	1.0	289	8.5
	6000	707	-723	-414	411	-2721	2584	1319	-1409	40.4	371	1.4	370	9.2
	8000	712	-726	-346	344	-2573	2596	1266	-1338	45.6	439	1.7	438	9.6
	10000	725	-738	-303	296	-2463	2593	1235	-1296	50.3	499	2.0	499	9.9
	12000	726	-737	-266	265	-2385	2593	1220	-1274	54.7	553	2.2	553	10.1
	14000	732	-743	-236	236	-2328	2602	1216	-1266	59.0	604	2.4	603	10.2
	15300	739	-749	-220	220	-2300	2611	1219	-1267	61.7	635	2.6	634	10.3
-10	1400	67	-68	-30	26	-48	33	160	-167	6.8	45	1.4	45	6.7
	2000	94	-95	-38	35	-86	58	219	-228	9.5	61	1.4	61	6.4
	4000	176	-179	-70	67	-279	189	380	-396	17.6	115	1.5	115	6.5
	6000	247	-250	-97	94	-525	370	495	-514	24.6	173	1.7	173	7.0
	8000	307	-310	-114	112	-764	563	575	-595	30.6	230	2.0	230	7.5
	10000	357	-361	-124	120	-967	740	632	-654	35.9	285	2.2	285	8.0
	12000	389	-393	-127	125	-1131	893	677	-698	40.6	338	2.5	338	8.3
	14000	416	-420	-125	124	-1261	1019	713	-734	45.0	387	2.7	387	8.6
	16000	440	-444	-121	120	-1367	1126	746	-767	49.2	433	2.9	433	8.8
	20000	481	-485	-110	110	-1534	1298	805	-826	57.1	517	3.2	517	9.0
-20	2300	34	-34	-8	8	-14	13	83	-84	6.2	42	2.5	42	6.8
	4000	60	-60	-13	13	-36	31	139	-142	10.6	67	2.4	67	6.3
	6000	90	-91	-20	20	-75	62	200	-204	15.6	99	2.4	99	6.4
	8000	122	-123	-28	27	-128	106	256	-261	20.3	133	2.6	133	6.5
	10000	154	-155	-36	34	-194	159	305	-311	24.9	169	2.7	169	6.8
	12000	181	-182	-42	41	-268	221	350	-357	29.2	205	2.9	205	7.0
	14000	206	-208	-46	46	-346	287	391	-398	33.3	242	3.1	242	7.3
	16000	230	-232	-50	50	-424	356	428	-436	37.2	278	3.2	278	7.5
	18000	253	-255	-52	52	-501	424	462	-470	41.0	314	3.4	314	7.7
	20000	274	-276	-54	53	-574	490	494	-503	44.7	349	3.5	349	7.8

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B146-5-10

Figure 2-130. Release Error Sensitivities, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 5 of 6)

NOTE: APPLICABLE TO ALL 5.00 INCH FFAR COMBINATIONS

AV-8B RELEASE ERROR SENSITIVITIES
5.00" FFAR : MK 71 MOD 1 MOTOR : MK 63 WARHEAD : MK 93 FUZE

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	3200	23	-23	-4	4	-8	9	58	-58	6.1	42	3.6	42	6.8
	4000	29	-29	-5	4	-12	12	72	-72	7.6	50	3.4	50	6.5
	6000	45	-45	-7	7	-23	22	106	-107	11.3	71	3.3	71	6.3
	8000	62	-62	-9	9	-39	36	139	-140	15.0	94	3.3	94	6.3
	10000	79	-79	-12	12	-58	53	171	-172	18.5	118	3.4	118	6.4
	12000	95	-95	-15	15	-82	74	201	-203	22.0	143	3.5	143	6.5
	14000	110	-110	-18	17	-109	98	230	-233	25.5	168	3.6	168	6.6
	16000	125	-125	-20	20	-140	125	258	-261	28.8	194	3.7	194	6.7
	18000	139	-140	-22	22	-173	154	285	-288	32.1	221	3.8	221	6.9
	20000	154	-154	-24	23	-208	186	311	-314	35.4	247	3.9	247	7.0
-45	4500	16	-16	-2	2	-6	7	43	-42	6.2	42	4.9	42	6.8
	5000	18	-18	-2	2	-7	8	48	-47	6.9	46	4.8	46	6.6
	6000	22	-22	-2	2	-9	10	57	-57	8.3	53	4.6	53	6.4
	8000	30	-30	-3	3	-15	15	76	-75	11.0	69	4.5	69	6.2
	10000	39	-39	-4	4	-22	21	94	-94	13.7	85	4.5	85	6.2
	12000	46	-46	-5	5	-29	28	112	-112	16.4	102	4.5	102	6.2
	14000	54	-54	-6	5	-38	36	130	-130	19.1	119	4.6	119	6.2
	16000	61	-61	-6	6	-48	45	147	-148	21.8	137	4.6	137	6.3
	18000	69	-68	-7	7	-59	55	165	-165	24.4	155	4.7	155	6.3
	20000	76	-76	-8	8	-71	66	182	-183	27.0	173	4.7	173	6.4
-60	6024	14	-13	-1	1	-6	7	39	-39	6.9	45	5.8	45	6.6
	7000	16	-16	-1	1	-7	8	46	-45	8.0	51	5.6	51	6.4
	8000	18	-18	-1	1	-9	10	52	-51	9.1	58	5.5	58	6.3
	9000	21	-21	-1	1	-11	12	59	-58	10.3	64	5.5	64	6.2
	10000	24	-24	-2	1	-13	14	65	-64	11.4	71	5.4	71	6.2
	12000	28	-28	-2	2	-17	18	78	-77	13.7	84	5.4	84	6.1
	14000	32	-32	-2	2	-22	22	91	-90	16.0	98	5.4	98	6.1
	16000	36	-36	-2	2	-27	28	103	-103	18.2	112	5.4	112	6.1
	18000	40	-40	-3	3	-34	34	116	-116	20.5	126	5.4	126	6.1
	20000	43	-43	-3	3	-40	40	129	-128	22.7	140	5.4	140	6.2

1. Single weapon delivery at sea level target.
   Stores code: Refer to Figure 1-26 for appropriate stores code.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. Motor, fin and case fragments and ricochet not represented.

BF 32113-R6-B146-6-10

Figure 2-130. Release Error Sensitivities, 5.00-Inch FFAR, Mk 71 Mod 1 Motor, Mk 63 Warhead, Mk 93 Fuze (Sheet 6 of 6)

2.9 AGM-65E LASER MAVERICK MISSILE

2.9.1 Introduction. The AGM-65E Laser Maverick (see Figure 2-131) is designed to be used as an instant offensive threat against targets requiring instantaneous or delayed blast fuzing. The 300 pound kinetic energy blast fragmentation warhead can be effective against a wide variety of targets that might be attacked by the AV-8B. It is contact triggered and contains a selectable fuze time delay which permits a choice of surface detonation or a selected delay to allow for penetration. The Laser Maverick acquires, locks on, and guides to the target using laser energy reflected from the target by a ground or airborne designator.

The AGM-65E Laser Maverick (LMAV) missile contains a sensitive laser detector that converts laser energy into electrical signals. These electrical signals are processed to provide synthetic video to the cockpit, and missile guidance signals to the flight control surfaces. The Laser Maverick missile is divided into two major subcomponents, the Guidance Control Section, and the Center Aft Section.

The guidance and control section contains the seeker and all the electronics; the center aft section provides the aerodynamic lift as well as the warhead, battery, and the rocket motor; and the aft section provides the steerable flippers that are part of the Hydraulic Actuation System. Additional information on the AGM-65E can be found in Volume I, Chapter 2 of this TACMAN series.

2.9.2 Characteristics.

Length	8 ft. 2 in
Diameter	12 in
Wing span	2 ft. 4.5 in
Weight	634 lbs
LAU-117	130 lbs
Total System Weight	764 lbs
Warhead Weight	300 lbs
Speed	Avg 1000 fps
Range	1.5 to 15.0 nm

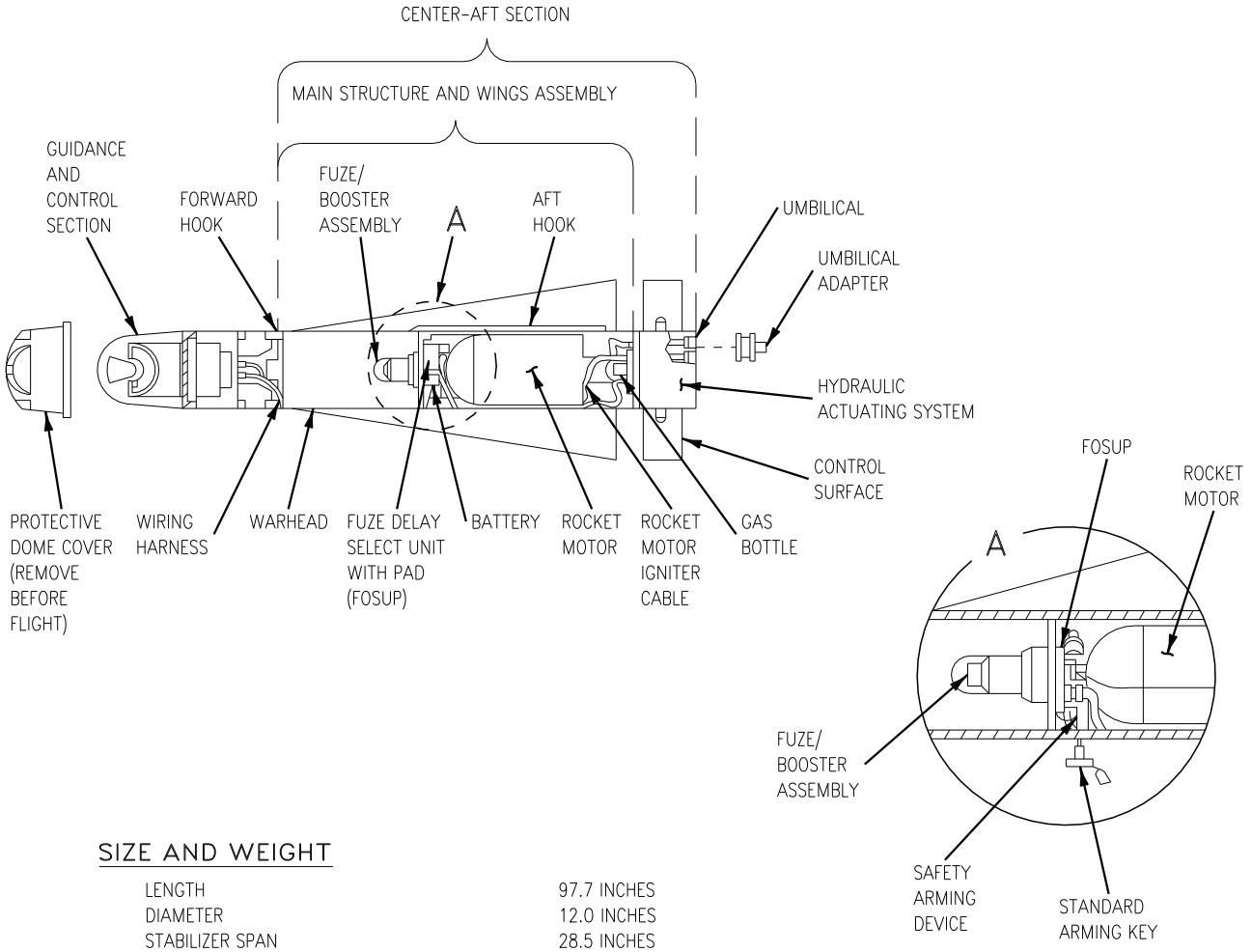
2.9.3 Guidance and Control Section. The Guidance Control Section (GCS) is a hermetically sealed unit that comprises the missile forward section and contains three functional assemblies: the Laser Seeker Assembly, the Interface Electronic Assembly, and the Sensor Assembly. The GCS includes the missile outer skin (forming the nose section of the missile, a transparent optical window, and the missile forward bulkhead on which the seeker assembly is mounted.

The Laser Seeker Assembly (LSA) is a gyro-stabilized electro-optical device capable of detecting and tracking reflected laser energy. The laser energy is supplied by a designator which may be ground based, airborne in another aircraft, or airborne in the same aircraft that is carrying the missile. The LSA consist of two major subassemblies; the head assembly, and the laser electronics assembly.

2.9.3.1 Head Assembly. The head assembly is a gimbaled gyro, electro-optical device which converts reflected laser energy into electrical signals. The head assembly consists of the following: optical assembly, gyro assembly, gimbal assembly, and the coil/impact sensor assembly.

The optical assembly consist of the GCS window, gold plated concave mirror, optical bypass filter, four quadrant photo detector, and four channel preamplifier (one for each quadrant). The concave mirror is physically part of the gyro rotor, and is gold plated to ensure high reflectance of laser energy. The photo detector (facing rearward) is divided to form four quadrants. Laser energy striking the mirror is reflected through the optical filter, forming a slightly defocused image on the detector in a quadrant which corresponds to the target location in the optical FOV (8É minimum tracking irradiance/ 13É full). A four channel preamplifier, mounted on the back of the detector, provides amplification for each quadrant of the detector. A thermistor controlled heated element connected to primary power provides temperature control for the detector.

The gyro assembly provides stabilization for the optical system. The gyro-rotor is unique,



SIZE AND WEIGHT

LENGTH	97.7 INCHES
DIAMETER	12.0 INCHES
STABILIZER SPAN	28.5 INCHES
WEIGHT	642 POUNDS

PROPULSION

TYPE	SOLID PROPELLANT DUAL THRUST (BOOST-SUSTAIN) ROCKET MOTOR

GUIDANCE SYSTEM

TYPE	BIASED-INTEGRAL PROPORTIONAL NAVIGATION
GUIDANCE HEAD	LASER GUIDED
ELECTRICAL POWER SOURCE	AIRCRAFT POWER WHILE CAPTIVE; THERMAL BATTERY DURING LAUNCH AND FREE FLIGHT

CONTROL SYSTEM

CONTROL SURFACES	FOUR: 1 PITCH-ROLL PAIR AND 1 YAW-ROLL PAIR
SERVO POSITIONERS	FOUR HYDRAULIC
HYDRAULIC POWER SOURCE	COMPRESSED GAS-DRIVEN FREE-PISTON HYDRAULIC PUMP

WEAPONS CONTROL SYSTEM

AIRCRAFT WEAPONS CONTROL SYSTEM OF CARRYING AIRCRAFT

AV8BB-TAC-05-(9-1)09-CATI

Figure 2-131. AGM-65E Laser Maverick Missile Characteristics and Component Locations

consisting of a two-pole permanent magnet, mechanical cager, nutation damper, and the mirror of the optical system. The permanent magnet in conjunction with the gyro drive coils and electronics forms a synchronous motor. A mechanical cager in the gyro, consisting of three spring-loaded arms, keeps the optical system aligned to the missile longitudinal axis when the gyro is at rest. This cager is released by centrifugal force when the gyro begins to spin. Electrical power application to spin up the seeker gyro begins with weapon selection. This feature prevents the missile from responding to any mode other than align until the seeker gyro attains its operating speed of 4200 rpm (30 seconds maximum following application of missile gyro power). The nutation damper eliminates cross axis oscillations when the gyro spins.

The gimbal assembly is a two axis system providing movement of the optical system pointing direction (left, right, up, down 28É). This allows the optical LOS to be changed in azimuth and elevation. A limit switch, located on the gimbal, prevents the optical system from being precessed beyond the gimbal's capability.

The coil/impact sensor assembly consists of four gyro drive coils, four reference coils, four saturable reactors, two precession coils, a cage coil, and a cage compensation coil. The gyro drive and reference coils (square in shape) are spaced at 90É intervals around the rotor. The cage and cage compensation coils are wound alongside each other, the inner precession coil is wound over the cage coil. The impact sensor is a crush switch molded into the coil housing.

The Laser Electronics Assembly (LEA) processes command signals from the cockpit and develops the necessary power forms to position the head assembly. It also processes electrical signals from the head assembly to develop various command and intelligence signals. The command signals consist of guidance commands for use by the flight control subsystems and gyro precession commands to cause the head assembly to track an acquired target. The intelligence signals consist of gimbal position, track status, and correlation status used by the Interface Electronics Assembly to generate synthetic video.

The LEA consist of four electronic modules arranged in a rectangular configuration along the longitudinal axis of the seeker. Each module has one forward connector for connection to the head assembly and one or more connectors aft for connection to the Interface Electronics Assembly. The four modules are the linear signal processor, seeker head control module, gyro-drive module, and the PRF decoder module.

The linear signal processor module generates the necessary command to move the seeker to obtain an equal amount of laser energy upon all four detectors.

The seeker head control module also furnishes guidance commands to the autopilot pitch and yaw channels to steer the missile to the laser spot.

The gyro-drive module controls the gyro-speed and maintains in at 4200 rpm.

The PRF decoder provides the LEA with a means of recognizing properly coded laser energy.

2.9.3.2 Interface Electronics Assembly. The Interface Electronics Assembly (IEA) provides liaison between the LSA and the cockpit (via the LAU-177), and between the LSA and the flight control function of the missile. The IEA processes signals from the cockpit and commands the seeker to begin the appropriate scan/acquisition process. The IEA also provides the power conversion that is required to convert battery primary power to various voltages and frequencies used by the electronics in both the LSA and IEA. The IEA has four main functional sections; the mode logic computer, code converter, autopilot interface, and the synthetic video generator. The IEA uses intelligence signals developed by the IEA generated synthetic video. These signals consists of gimbal position, track status, and correlation status.

The mode logic computer stores the laser code entered from the cockpit for use by the decoder in the laser electronic assembly. The mode logic

computer processes command signals from the cockpit to produce logic signals used by the head control of the LSA to drive and position the seeker head.

The code converter processes coding commands from the cockpit and stores them. Upon the seeker's detection of reflected laser energy, the pulse code of the reflected energy is compared to the stored code to determine if correlation exists.

The autopilot interface receives pitch and yaw guidance from the laser seeker rate sensor assembly during free flight. It modifies these commands with g-bias information to develop steering commands. The steering commands are transmitted to the autopilot where they are integrated with lateral acceleration and pitch, yaw, and roll rates to develop control surface drive signals.

The synthetic video generator receives coding information from the code converter from which it generates display symbology. It also receives gimbal position, track status, and correlation status information from the laser electronic assembly. From this information it generates a gimbal position indicator which is displayed as a steady X, flashing X, or a solid square on the DDI depending on the status of target acquisition.

The nonflashing X indicates only the direction in which the laser seeker head is pointing (line of sight) with respect to missile boresight. The Gimbal Position Indicator (GPI) is initially displayed as a solid X in the ready and activate modes.

The flashing X on the DDI indicates that reflected laser energy exhibiting the proper pulse code (correlation status = true) is being detected within the Field of View (FOV).

The seeker after centering the spot then goes into the track mode (lock-on = ■).

2.9.3.3 Sensor Assembly. Located at the extreme aft end of the GCS, the sensor assembly provides feedback on missile maneuvers to the autopilot. The rate gyros are not activated until missile video is present (uncage). Two rate gyros (paired with accelerometers) are mounted to provide both pitch and yaw damping to the autopilot. This damping provides the smooth flight path characteristic of the Maverick missile. A third rate gyro (mounted on the missile roll axis) provides roll stability as well as the vertical reference for the missile.

2.9.4 GCS Operation. Laser energy passes through the GCS window is reflected off the LSA gold plated mirror, passes through the optical filter, and forms a slightly defocused image on the detector quadrant corresponding to the target location in the instantaneous FOV.

The four quadrant detector converts the incoming laser energy into an electrical signal which varies with time according to the frequency of the received laser pulses, and varies in voltage according to the energy level of the pulses.

The electrical signal from each quadrant of the detector is amplified by one channel of the four channel pre-amplifier, and is sent to the signal processor. The signal processor compares the energy level received by each detector quadrant and furnishes commands to the seeker head controller to adjust the position of the seeker such that the energy level received by each detector quadrant is the same.

The seeker head controller positions the seeker by sending an electrical current to the precession coils surrounding the gyro. When the received laser pulses match those the LEA has been programmed to detect and a sufficient amount of energy is received to enable the missile to maintain track, a correlation signal is generated (flashing X), and a command is issued to the signal processor module. After determining that the reflected laser energy is centered on the detectors (to ensure that track can be maintained through the launch event), the seeker then goes into the track mode (lock-on). During missile flight the GCS autopilot provides commands to the flight control surfaces to fly the missile to the detected laser spot.

When launch is commanded, the autopilot roll channel sets the vertical reference for the missiles flight. The Laser Maverick assumes that the bank angle is 10Éor less at LAUNCH COMMAND.

2.9.5 Center Aft Section. The Center Aft Section (CAS) of the missile consists of the main structure and wings assembly, armament function, battery, rocket motor, attachment hooks, and the Hydraulic Actuation System (HAS).

The main structure and wings assembly consists of the missile body, wings, and forward and aft attachment hooks. The missile body is a stressed skin cylinder with internal bulkheads and four integral wings. The four wings provide lift and stability for the missile during flight. They are designed to fly in an ″X″ configuration so that each wing provides a portion of the total lift. Along the top of the missile are the forward and aft attachment hooks that secure the missile to the launcher and provide initial directional guidance. Located on the aft hook is a grounding pin that contacts a grounding strap on the launcher.

The armament function consists of the WDU-24B warhead, FMU-135/B fuze, Fuze Delay Select Unit (FDSU) and a contact sensor. The warhead provides the explosive force to destroy the target. The fuze maintains the armament function in a safe condition until it is supplied with arming power during the launch sequence and until after normal launch acceleration has occurred. After a time delay to allow for safe separation of the missile from the launching aircraft, the fuze attains the armed condition.

The WDU-24B warhead is located in the front end of the missile body. It is a forged steel case containing 80 pounds of PBX-108 explosive designed for penetration and blast effects. The total weight of the warhead is about 300 pounds. The warhead structure includes a ″well″ for installation of the fuze/booster assembly. The forged steel case is made with sharp corners and a central extension to enhance its anti-ricochet performance.

The FMU-135/B fuze is located in a recessed cavity at the rear of the WDU-24/B warhead. The fuze requires both battery power and sustained forward acceleration to arm. The fuze is equipped with four detonators. The composition of the detonators determines the burn rate and, therefore, the delay between activation of the contact trigger and warhead initiation. One detonator provides for near instantaneous detonation (IN = 1.2 ms), and one provides a short delay (D1 = 14 ms). The two remaining detonators have the slowest burn rate and provide for a long delay (D2 -> 30 ms). The long delay circuits will provide a backup for the instantaneous and short delay circuit. Upon activation of the missiles thermal battery (launch) a +28V enable signal initiates the fuze arming sequence. A spring-driven mechanical timer and a g-assisted mechanical timer prevent physical alignment of the pyrotechnic train until safe separation of the missile from the launch platform. (5.2 seconds/ decel to less than 8g.) A loss of battery power from the GCS or a loss of correlation from the LSA (> 1.5 seconds) causes the firing capacitors to discharge through a transistor thereby dudding the warhead.

The FDSU has a fuze delay select switch by which the IN, D1, or D2 may be selected. The manual setting of the FDSU may be overridden from the cockpit via the ODU (normal mode).

At target impact a voltage pulse from the closure of the contact sensor triggers silicon control rectifiers, allowing the firing capacitors to discharge through the detonators. The selected electro-explosive detonator(s) are initiated, which in turn ignite the booster and detonate the warhead. The power for the electrical detonation is provided by the missile's thermal battery.

The missile uses a thermal battery to provide electrical power once the missile has left the LAU-117. A thermal battery is used because it has an indefinite shelf-life, and when activated it rapidly provides the rated voltage. The battery is activated by the launch command. A squib ignites thermal paper causing the electrolyte crystals to melt allowing the current to flow. The

battery will maintain ±30V power for 105 seconds minimum (nominal 150 seconds) provided the missile completed its launch sequence.

The missile is propelled by a dual thrust (boost/sustain) solid propellant rocket motor fired by an igniter. The rocket motor is a two-piece aluminum alloy case with an integral blast tube designed to fit through the center of the hydraulic actuation system. The case is essentially a tubular pressure chamber that is open on one end. The shape of the container and the design of the motor propellant allows the motor to produce an initial thrust of 10,000 pounds for the first 0.5 second. After this thrust is reduced to about 2,000 pounds for the remaining 3.5 seconds of burn time. The 65 pounds of fill material (ammonium perchlorate) is notable for long term stability and a low smoke signature. The rocket motor is electrically isolated from the rest of the missile. The missile requires a launch command from the launcher (LAU-117) via the rocket motor igniter cable.

The rocket motor contains two safety features that prevent accidental activation. At the umbilical connector the umbilical cable is fitted with an electro-magnetic interference suppressor and the umbilical cable is attached to a Safety Arming Device. The SAD provides a mechanical block until the standard arming key is rotated to arm the rocket motor (preflight).

The Hydraulic Actuation System (HAS) contains a high pressure helium gas bottle and a hydraulic pump to power the four movable flippers used to control the missile in flight. Before launch, the flippers are locked in their neutral position (0É) by pins that retract when 85 percent of the operating pressure is reached (missile launch). The HAS gas bottle is squib activated at launch. When the missile umbilical connector separates as the missile starts down the rail, the squib is fired releasing gas pressure into a regulator. Regulated gas pressure drives a closed circuit hydraulic pump providing 3,000 PSI pressure to the four flippers (enough for about 4.5 minutes of flight). Shuttle valves that are electrically positioned by the autopilot route the hydraulic pressure to control the appropriate flippers. The input command signals, which position each flipper are generated by the servo-amplifiers in the flight control system. These signals are supplied to each of the four servo-actuators in the HAS. Each servo-actuator consists of a torque motor, servo-valve, actuator, and a position feedback potentiometer. Electrical autopilot commands are delayed for the initial 0.5 seconds of flight to allow safe separation from the launch platform.

2.9.6 Modes. The AGM-65E incorporates several modes of operation as follows.

2.9.6.1 Standby Mode. As soon as the pilot selects MAV on the DDI or ACP, the SMS selects the first Maverick missile in the priority sequence (2, 6, 3, 5). During the standby mode the GCS seeker gyro attains its operating speed of 4,200 rpm. The standby mode lasts at most 30 seconds and concludes when STBY is replaced by RDY in the DDI display.

2.9.6.2 Ready Mode. The missile is considered in the ready mode 30 seconds after operating power is applied (weapon select). After the missile seeker gyro attains its operating speed of 4,200 rpm the LSA needs to heat up to its operating temperature and environmental heating is provided to the rate gyro. Only when these conditions are meet is the missile ready for operation.

2.9.6.3 Align (Cage) Mode. After 30 seconds the missile is ready for operation and if still ″caged″ is considered in the align mode. The seeker remains electrically aligned to boresight but is active and capable of detecting properly coded laser energy. Lock-on can be accomplished immediately by pressing and releasing the uncage button.

2.9.6.4 Activate Mode. This is the full power mode. Upon selection, the GCS in the selected missile is activated and ready to SCAN, SLAVE, or TRACK the laser designated target. The activate mode starts with uncage and ends upon completion of a launch sequence or when the station is deselected. While in the activate mode the missile may also be in the SCAN, SLAVE, or TRACK mode. Active mode video is available upon uncage.

2.9.6.5 Scan Mode. If the LST is not selected and you uncaged the selected LMAV the scan mode will be entered. The LMAV will scan in the center of the HUD FOV in a bow tie pattern.

2.9.6.6 Slave Mode. If the LST is selected and you uncage the selected LMAV the seeker head scan pattern will be slaved to the LST scan pattern. If a target is designated the narrow or wide scan will center their scans on the designated point. If no target is designated then the narrow/wide scan will scan an aircraft heading and at 5.0 nm of ground range. The track mode will be entered automatically if correlation should occur.

2.9.6.7 Track Mode. The process of lock-on and track consists of pre-correlation, correlation and track. After lock-on, the missile is in the track mode and the GPI becomes a solid square (■). The process will begin automatically when a target, reflecting sufficient threshold of properly coded laser energy, enters the FOV of the laser seeker.

2.9.6.8 Launch Mode. Launch mode may be commanded any time after the missile has achieved the Track Mode (solid white box - GPI) by depressing the bomb pickle button. The launch sequence consists of missile battery initiation, start of the fuze arming sequence, rocket motor ignition (after 0.5 second delay to allow the battery to achieve rated power), build up of thrust to retract the Missile Restraint Device (MRD) pin of the LAU-117A(V)2/A launcher, and separation from the launcher.

2.9.7 Limitations. There are a number of limitations imposed by load factors, weapon carriage and release airspeeds and or altitude, as well as jettison restrictions. Not adhering to these limitations may endanger the pilot, result in damage to the aircraft, or an unsuccessful mission. Prior to any mission, chapter 5 ″External Stores Limitations″ should always be consulted for the latest information.

2.9.7.1 Cool Down Period. To prevent Laser Maverick seeker damage, after selection, Laser Maverick can be operated in the Ready Mode (partial missile video present) for no more than one hour and in the Active Mode (full missile video present) for no more than 30 minutes. The missile must be allowed to cool down for a period twice as long as it was operated.

2.9.7.2 Overcast. The g-bias algorithm in the MAV seeker causes the missile to perform a popup maneuver after launch to increase the aerodynamic range of the missile. At low altitude and long range to target the altitude gained by the missile is higher than at high altitude and short distance to the target. Consideration should be given to this factor when flying under overcast skies. In the worst case, the missile will climb approximately 2,900 feet above launch altitude.

2.9.7.3 Angle of Bank. The g-bias algorithm is based on the assumption that aircraft wings are level at launch for determining the vertical reference of the missile. Wings level at launch produces the best g-bias calculation hence the most popup altitude gained. Launching MAV with more than 30É roll produces minimal g-bias effect and the least popup altitude gained.

2.9.7.4 Release Considerations. Release at minimum release altitude in a dive should be avoided if you have fired one LMAV on station 2 or 6 and have one remaining on either 2 or 6, limited to 520 KCAS/0.88 IMN.

2.9.8 Training Guided Missile (TGM). The Laser Maverick TGM is a captive training device designed to train pilots in the use of the AGM-65E missile. It provides realistic training in systems operation, target acquisition, and tactics. Due to the similarity of the operational and training systems, only the difference data is discussed.

2.9.8.1 TGM Simulated Launch. Because the TGM has no rocket motor and will not leave the aircraft, launch is simulated by a black box inside the TGM which is called the Signal Processing Unit (SPU). The SPU will turn off video to the cockpit one second after launch is commanded (Weapon Release button pressed with Master arm - ARM). A subsequent uncage will

reactivate the TGM, thereby simulating activation of the next missile in the aircraft launch sequence.

2.9.8.2 TGM Ground Operation. Ground operation of the TGM preflight checkout and switchology training is encouraged; however, You must keep ground operation to a minimum to avoid overheating.

2.9.9 Preflight.

2.9.9.1 Cockpit

1. Master Arm switch - OFF

2. Visually check that the emergency jettison button has not been pressed in.

2.9.9.2 Weapon Loadout Panel. Panel should be set to the following codes:

1. Stores - 54

2. Fuzing - NOSE 0 AND TAIL 0

3. TER - 00

2.9.10 Rack/Launcher.

1. Visually ensure that LAU-117 launcher is properly attached to the parent rack, cartridges installed (breech caps tight), and sway-braces adjusted. (BRU-36 throttle settings 100/100.)

2. Check that the umbilical from parent rack to launcher receptacle is attached.

3. Verify that the launcher Missile Restraint Device (MRD) engaged marks on the bell crank bearing and on the bell crank shaft are aligned.

4. Verify that the MRD cover is in the USN position.

NOTE

Refer to chapter 4 for detailed discussion of the LAU-117 launcher.

2.9.10.1 Missile.

1. Check that the missile Safe Arming Device (SAD) key is installed and in the safe position.

2. Verify that the launcher umbilical adapter is fully mated with the missile umbilical connector and that the red band is not showing.

3. Verify that the missile rocket motor ignitor plug is not connected to the launcher. Igniter plug must be secured for captive flight.

2.10 AGM-65F INFRARED (IR) MAVERICK MISSILE

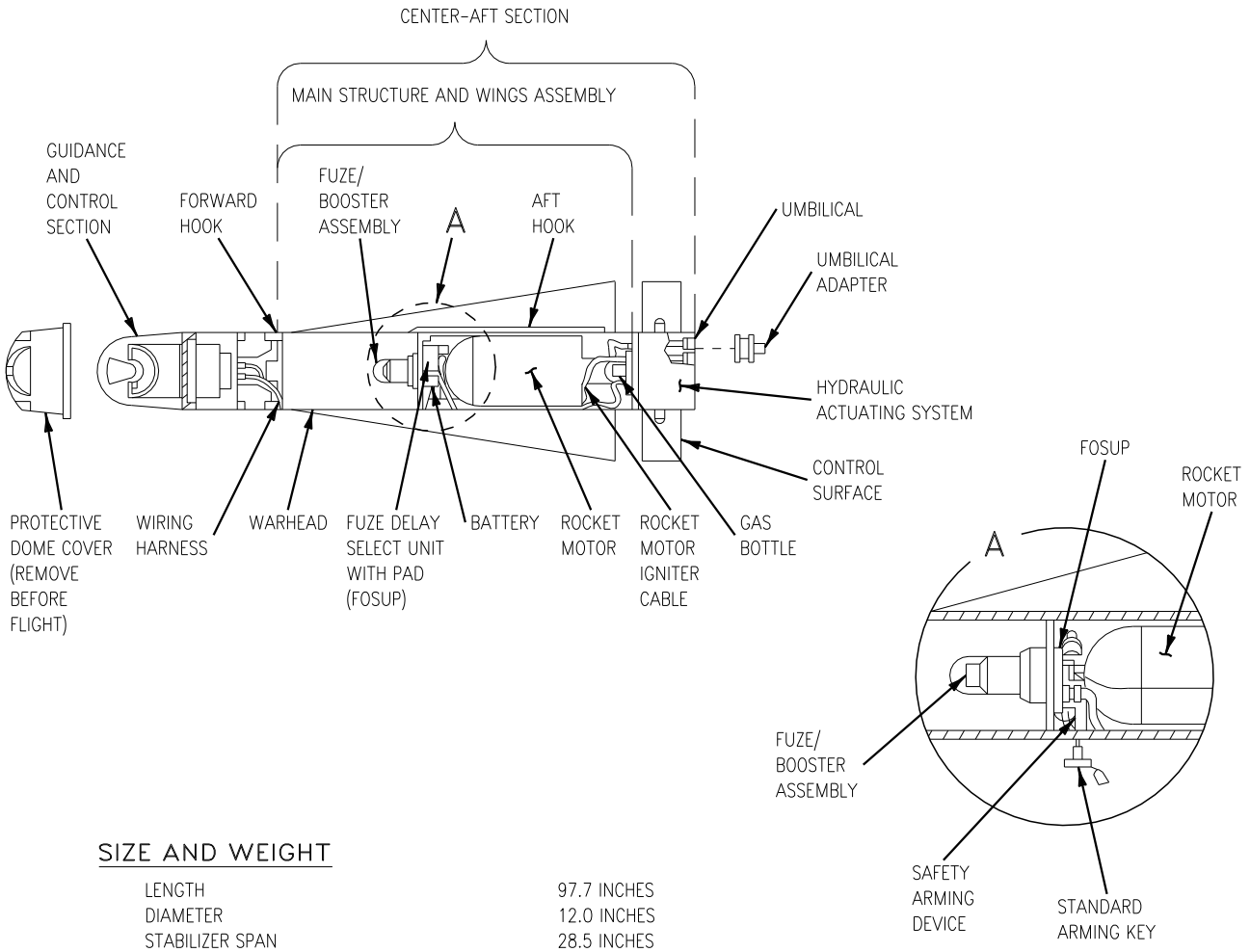
2.10.1 Introduction. This section describes the physical characteristics of the AGM-65F and the controlling modes which govern its function. Additional information on the AGM-65F can be found in Volume I, chapter 2 of this TACMAN series.

2.10.2 General Description. The IR Maverick missile consists of a WGU-13/B guidance and control section (GCS) and a WBU-2/B center-aft section (CAS). Figure 2-132 provides a cross-sectional view of the missile, illustrating the location of the major assemblies housed within each section. Figure 2-133 list and describes the major assemblies contained within each of the missile sections.

The GCS is a hermetically sealed unit consisting of the IR seeker assembly, interface electronics assembly, electrical conversion electronics and a rate sensor assembly. The GCS includes the missile outer skin which forms the nose section of the missile, an optical dome and the missile forward bulkhead on which the seeker assembly is mounted.

The CAS consists of the main structure and wings assembly, and the hydraulic actuation system (HAS). The main structure and wings assembly of the missile contains the warhead, the battery and the rocket motor. Also included are the FMU-135/B fuze, the BBU-40/B booster and the fuze delay select unit. The standard arming key extends down from the rocket motor through the bottom of the CAS. For more detailed discussion see AGM-65E LMAV paragraph 2.9.5.

The tactical missile exterior is painted gray except for narrow bands which may be yellow, brown or blue. The yellow band located just aft of the GCS hatch cover indicates that a live warhead is installed in the missile. The explosive type is identified in yellow letters. The brown band between the missile wings and control surfaces indicates that the missile contains a live rocket motor. Blue bands in both locations indicate that the missile is a Captive Air Training Missile (CATM) and is totally inert.



SIZE AND WEIGHT

LENGTH	97.7 INCHES
DIAMETER	12.0 INCHES
STABILIZER SPAN	28.5 INCHES
WEIGHT	669 POUNDS

PROPULSION

TYPE	SOLID PROPELLANT DUAL THRUST (BOOST-SUSTAIN) ROCKET MOTOR

GUIDANCE SYSTEM

TYPE	BIASED-INTEGRAL PROPORTIONAL NAVIGATION
GUIDANCE HEAD	IR GUIDED
ELECTRICAL POWER SOURCE	AIRCRAFT POWER WHILE CAPTIVE; THERMAL BATTERY DURING LAUNCH AND FREE FLIGHT

CONTROL SYSTEM

CONTROL SURFACES	FOUR: 1 PITCH-ROLL PAIR AND 1 YAW-ROLL PAIR
SERVO POSITIONERS	FOUR HYDRAULIC
HYDRAULIC POWER SOURCE	COMPRESSED GAS-DRIVEN FREE-PISTON HYDRAULIC PUMP

WEAPONS CONTROL SYSTEM

AIRCRAFT WEAPONS CONTROL SYSTEM OF CARRYING AIRCRAFT

AV8BB-TAC-05-(10-1)09-CATI

Figure 2-132. AGM-65F IR Maverick Missile Characteristics and Component Locations

Section/Component	Functional Description
Guidance and control section.	Consists of IR seeker, interface electronics and rate sensor assemblies. Provides for target detection, tracking and missile guidance.
Ground handling dome cover.	Protects GCS window.
Interface electronic assembly.	Provides electrical interface between the IR seeker and the operator's controls and indicators during captive flight and between the IR seeker and autopilot function during free flight.
IR seeker assembly.	Detects and tracks IR targets.
Rate sensor assembly.	Measures lateral acceleration and yaw, pitch and roll rates during launch and free flight.
Center-aft section.	Consists of main structure and wings assembly and hydraulic actutation system.
Main structure and wing assembly	Consists of the missile fuselage, wings, forward and aft suspension hooks and holdback pin bushing. This is the main structural assembly of the missile which either encloses, supports or connects all missile operational items.
Main wiring harness.	Provides electrical connection between the missile components and between the missile and the launcher.
Warhead assembly	The warhead is constructed of 220 pounds of steel, containing 80 pounds of solid explosive charge.
Fuze and booster assembly	Provides the safing, arming and fuzing functions for the warhead assembly.
Fuze delay select unit	Provides for cockpit selection of one of three fuze delay settings.
Rocket motor assembly	Provides missile propulsion (boost and sustain).
Battery	Supplies missile electrical power during missile launch and free flight.
Hydraulic actuation system	Deflects missile control surfaces to steer and stabilize the missile during launch and free flight.
Umbilical adapter	Connects the missile umbilical connector to the launcher umbilical connector, protects the launcher umbilical connector from rocket motor blast.
Standard arming key	Provides mechanical safing of rocket motor.

Figure 2-133. AGM-65F IR Maverick Missile Major Components

2.10.3 AGM-65F IR Maverick Captive Air Training Missile The captive air training missile (CATM) (See Figure 2-134) is an inert missile that allows aircraft crews to perform in-flight training procedures associated with operational usage of the tactical IR Maverick missile. The flight crews employ the same in-flight procedures used with the tactical missiles for target acquisition, target tracking and launch.

The CATM GCS and the tactical missile GCS are identical. The CATM CAS contains ballast weights in place of rocket motor and warhead. The CATM has an inert safety arming device with a standard arming key.

The CATM contains a video tape recorder assembly (VTRA) for aircrew training missions. The VTRA includes a video tape recorder (VTR) for recording missile video for later playback and evaluation. The CATM may be operated and flown with or without the video tape recorder installed. Refer to NWP 3-22.5-AV8B, Vol. I, Chapter 2 for additional detail on AGM-65F and CATM-65F.

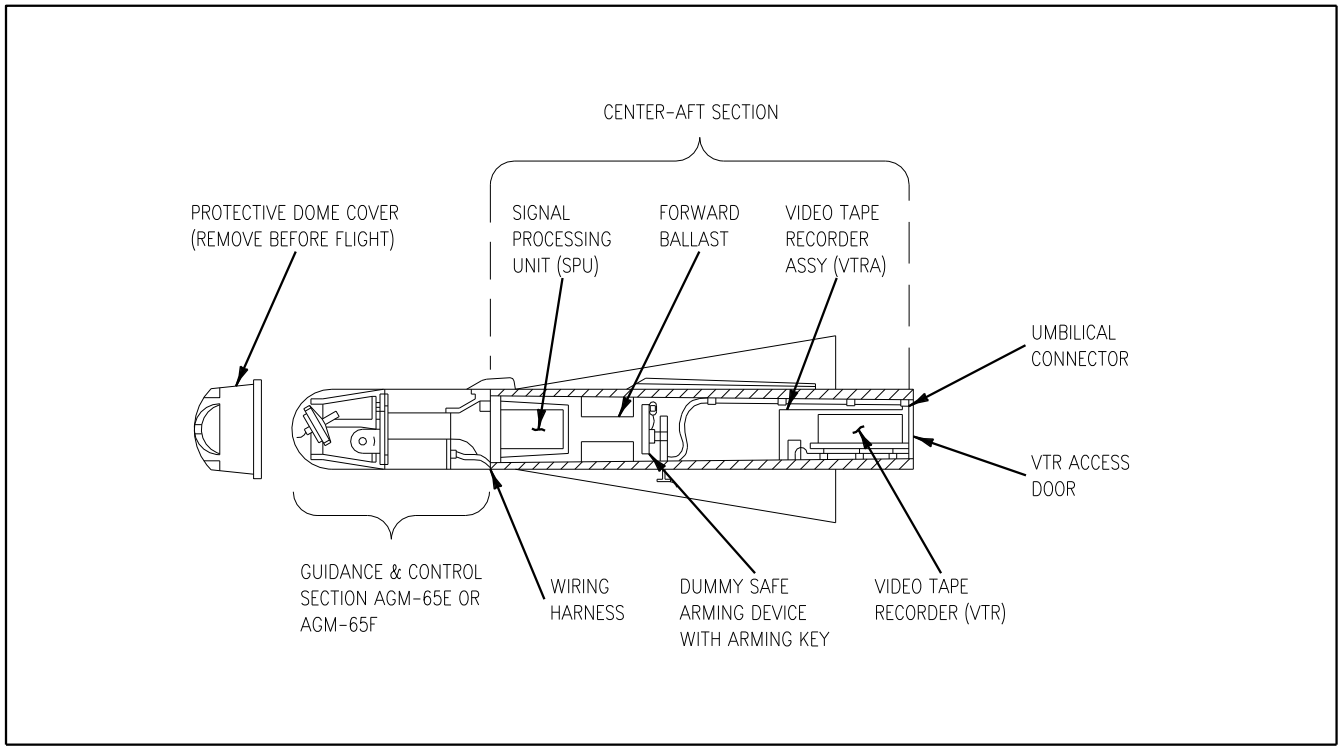


Figure 2-134. AGM-65F IR Maverick Missile Captive Air Training Missile

2.11 AGM 65E/F WARHEAD FUZE DELAY SELECTION.

The most effective warhead fuze delay setting to achieve the desired warhead penetration can be estimated based upon the type and composition of the target. A series of graphs (see Figure 2-135) are provided which reflect the expected warhead penetration against a variety of materials. They are the result of an analytical study, not actual warhead test. The graphs are plotted as penetration depth at increasing time intervals (milliseconds). The algorithm used to plot the graphs assumed an indefinite depth of the material, so there is no possibility of total penetration. Rather, as the plots level off, they represent the maximum depth of penetration possible. The initial period after penetration is accurate, but as the warhead slows, the plots become less accurate. Because it is impossible to determine the exact hardness of the target, or the thickness of the matter, this inaccuracy becomes irrelevant.

These penetration graphs, when used with the terminal velocity and impact angle graphs, provide a means to determine fuze delay settings for various targets. Fuze settings and the corresponding delay times are: instantaneous = 1.4 ms, delay 1 = 14 ms, delay 2 = 30 ms. To achieve a desired warhead penetration depth, it may be necessary to pick specific delivery parameters to achieve impact velocity and angle to maximize target damage. Each chart is for a different material; the hardness of each material is defined by the R value (R value is ?)

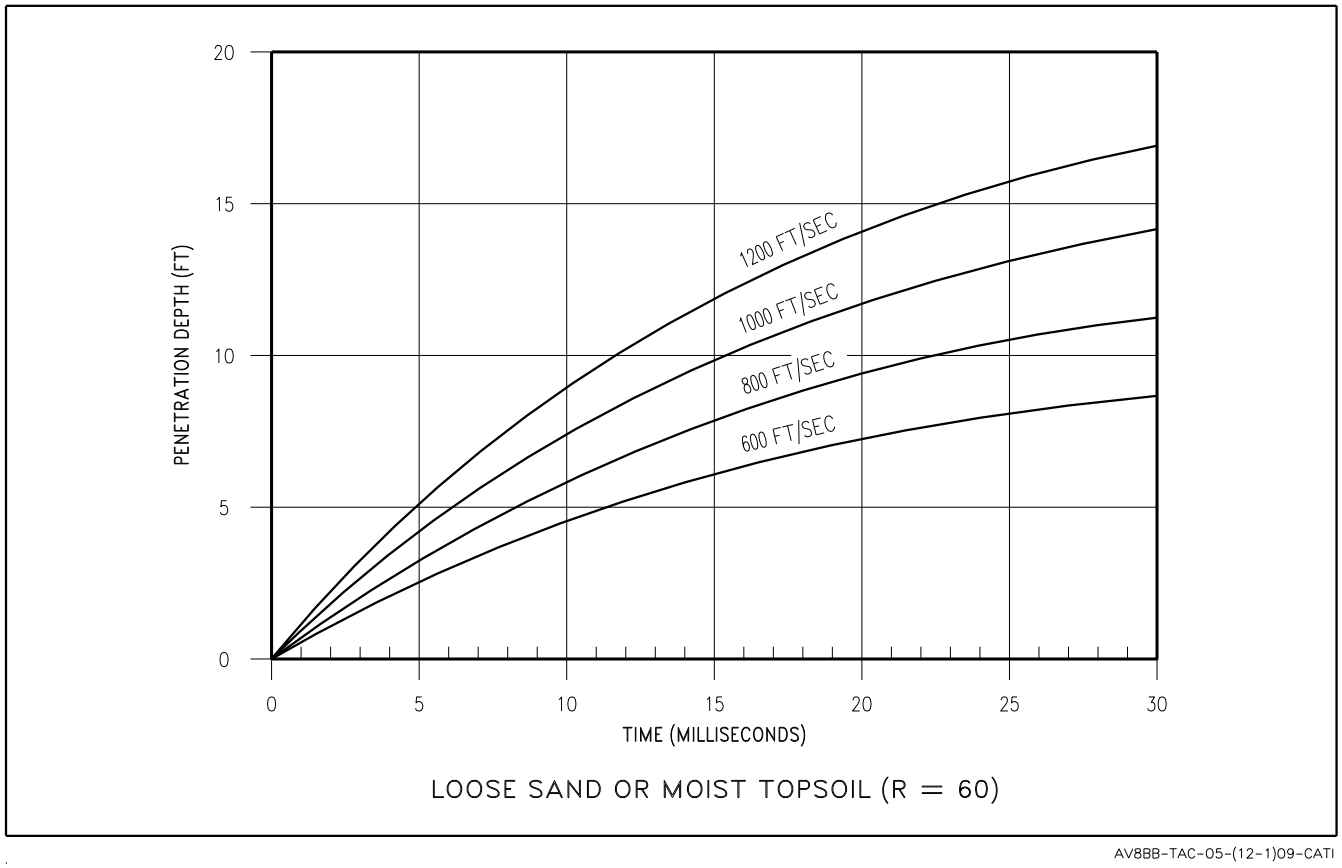
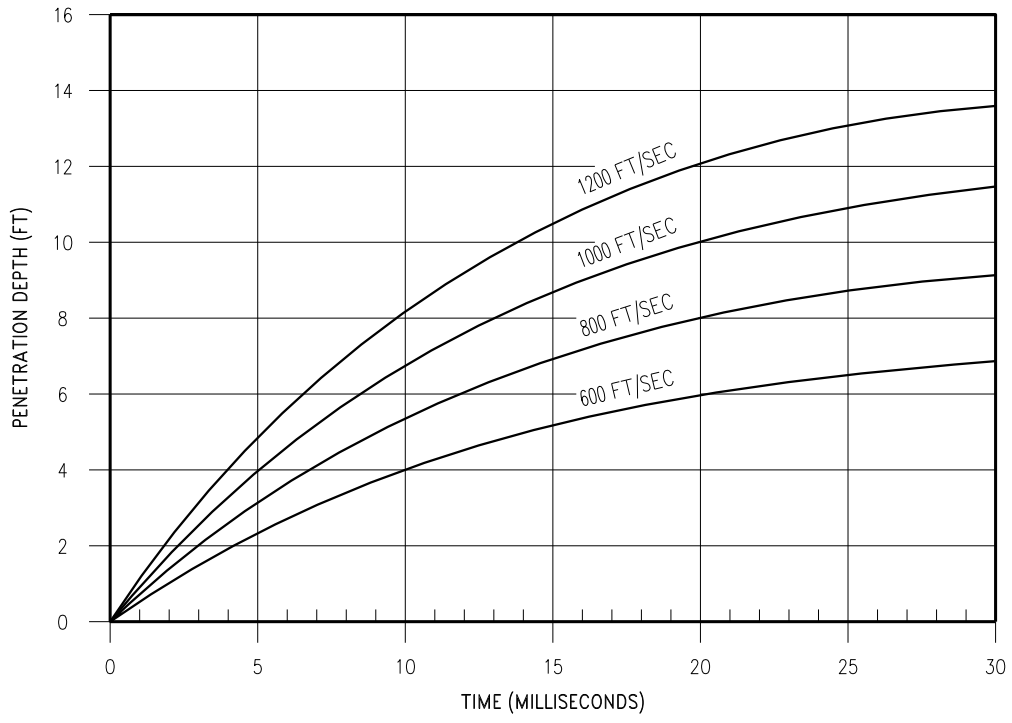
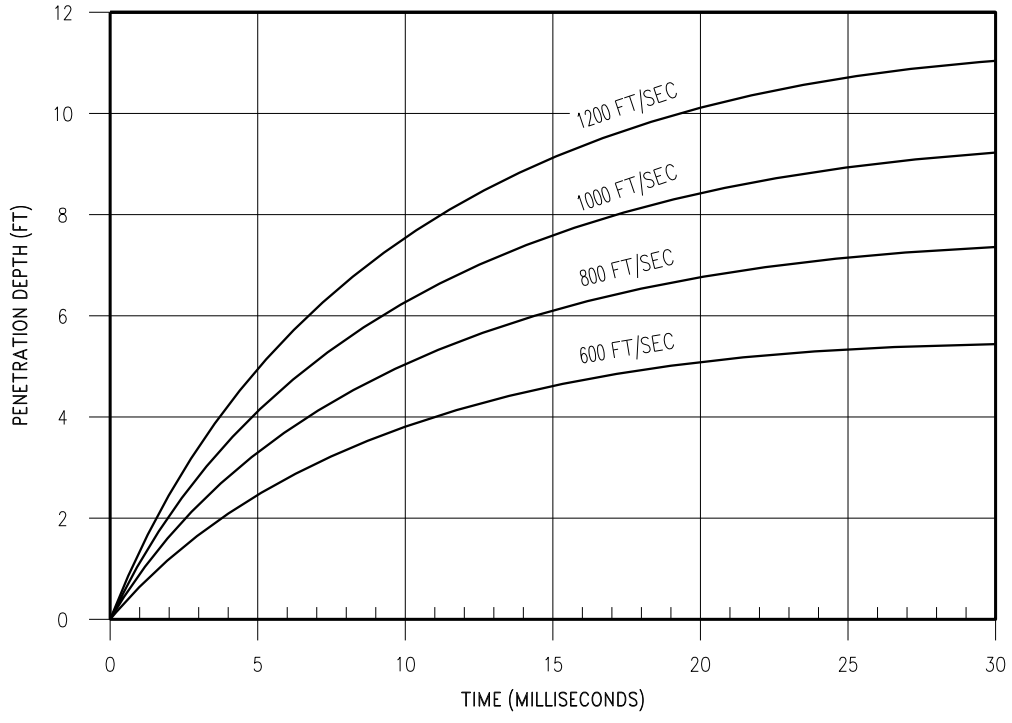


Figure 2-135. Warhead Penetration (Sheet 1 of 4)



HARD PACKED DIRT (R = 80)

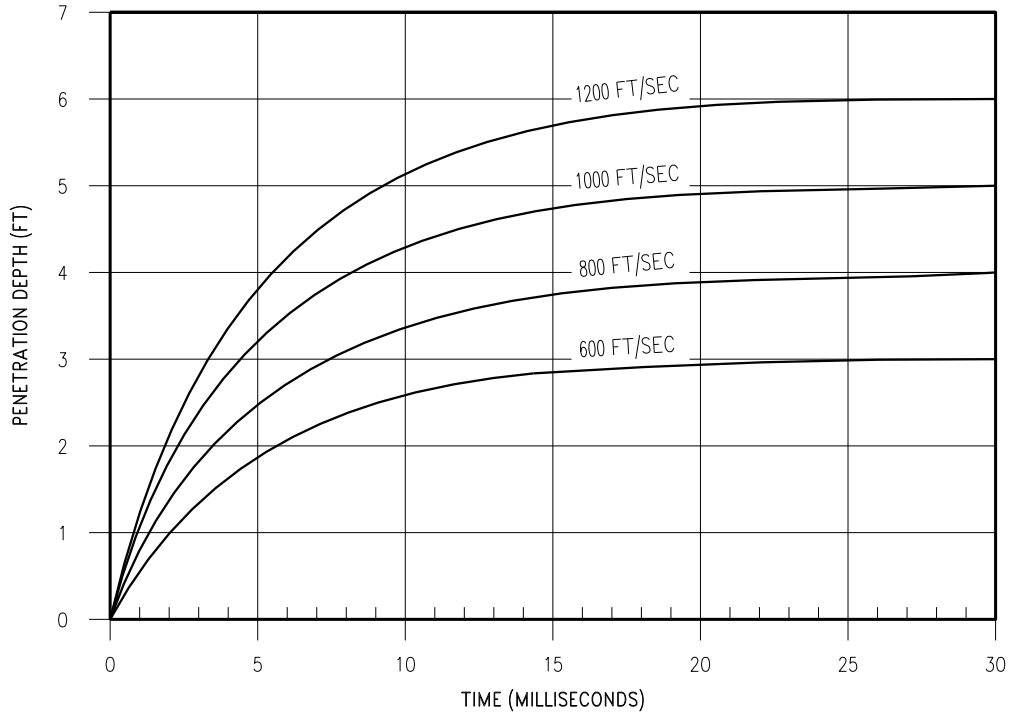


DESERT ALLUVIUM (R = 105)

AV8BB-TAC-05-(12-2)10-CATI

Figure 2-135. Warhead Penetration (Sheet 2 of 4)

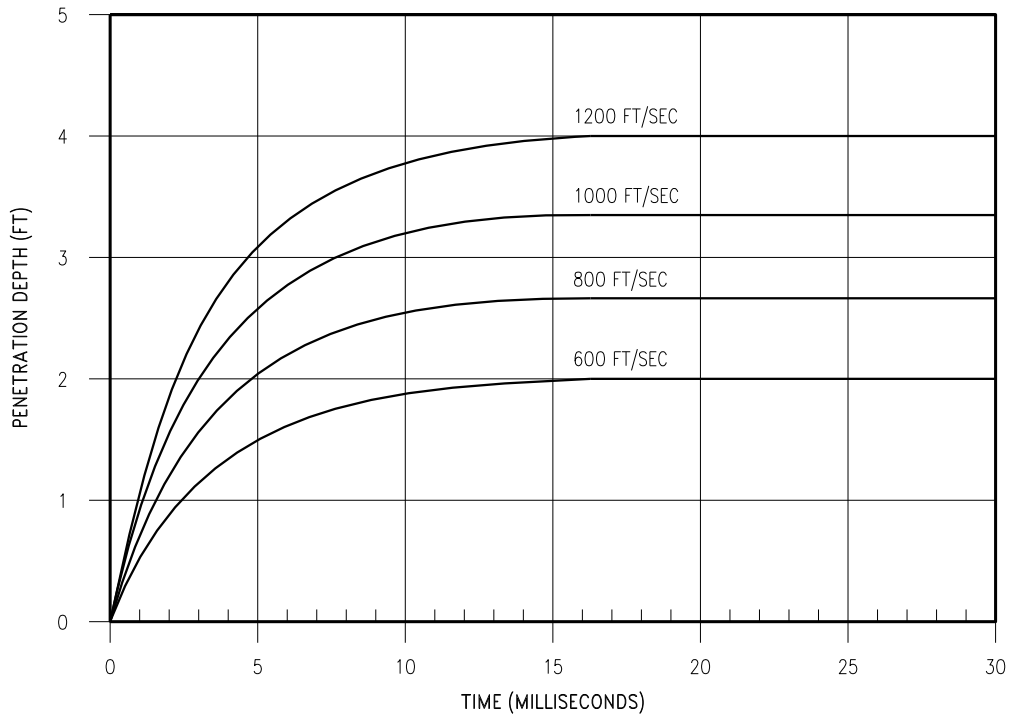
COURSE WELL-CEMENTED SAND (R = 135)



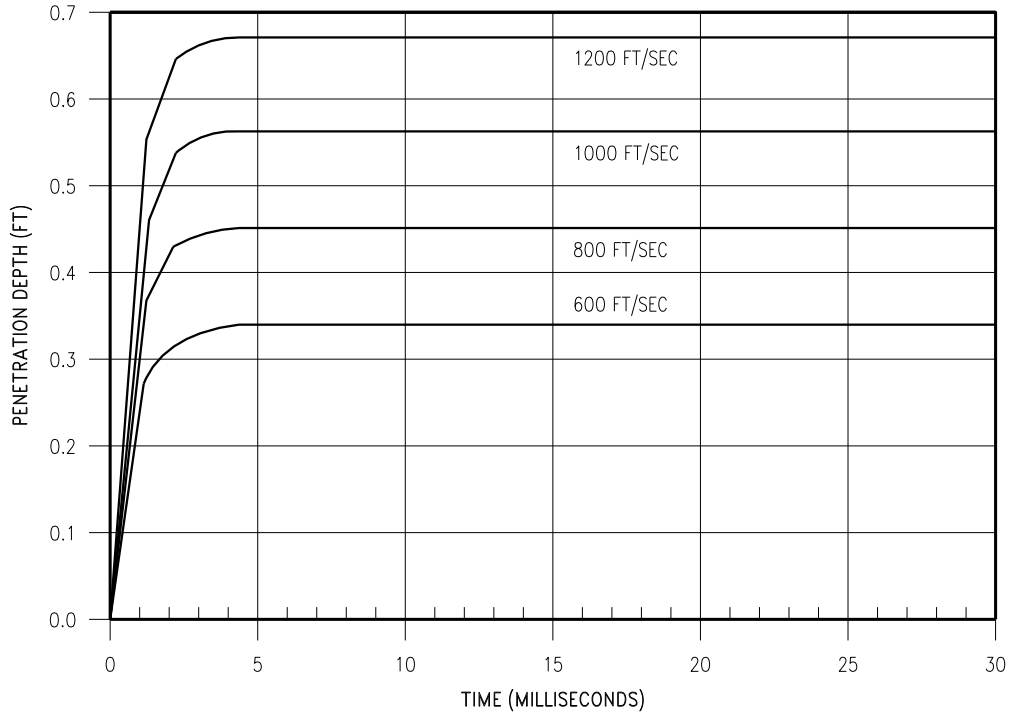
WEATHER FRACTURED GRANITE (R = 200)

AV8BB-TAC-05-(12-3)09-CATI

Figure 2-135. Warhead Penetration (Sheet 3 of 4)



5000 PSI CONCRETE (R = 300)



250 BHN ARMOR (R = 1800)

AV8BB-TAC-05-(12-4)09-CATI

Figure 2-135. Warhead Penetration (Sheet 4 of 4)

2.11.1 Aerodynamic Launch Range Envelope/Missile Freeflight Parameters.

Other factors must be weighed to insure successful missile flight to the target and desired warhead effects. These factors include: aerodynamic launch range envelopes, missile freeflight parameters (which include missile loft profile), time of flight, terminal dive angle, and terminal velocity. Figure 2-136 provides a listing of freeflight parameters.

Graphs are provided which define the missile freeflight parameters, based upon aircraft altitudes and airspeed at the time of launch. The graphs assume no aircraft roll at lock-on (IR Maverick) or launch (Laser Maverick) to achieve maximum range. Figure 2-137 is provided to show the effects of bank angle on maximum range. The graphs in Figures 2-138 through 2-141 present four launch airspeeds for comparison: Mach 0.3, Mach 0.5, Mach 0.7 and Mach 0.9.

Parameter	Description
Minimum Range	Provides both fuze arming time and safe separation from warhead blast. When launching at minimum range, a hard turn away from the target is required to avoid weapon fragmentation pattern.
Maximum Dive	60É
Maximum Altitude	33,000 feet
Minimum Altitude	Recommended 150 feet, lower launches possible.
Maximum Range	Lower portion of curve represents aerodynamic range while upper portion of curve represents minimum battery life (105 seconds).
Terminal Velocity	Expected terminal velocity of missile at impact. To achieve a specific terminal velocity for warhead effect, enter the graph with a desired velocity to determine altitude and ground range.
Terminal Angle	Expected terminal dive angle of missile at impact. To achieve a specific terminal impact angle enter the graph with the desired angle to determine altitude and ground range.
Time of Flight	Missile time of flight curves can be used to compute where the aircraft will be at missile impact.
Loft Profile	The loft profile graphs plot the normal altitude attained. All the graphs show maximum missile altitude attained for each launch condition. Using the Mach 0.3 graph, a launch at 26,000 feet horizontal range while at 150 feet altitude (AGL) will result in the missile climbing to 1000 feet (AGL), a gain of 850 feet above the launch point.

Figure 2- 136. Missile Freeflight Parameters

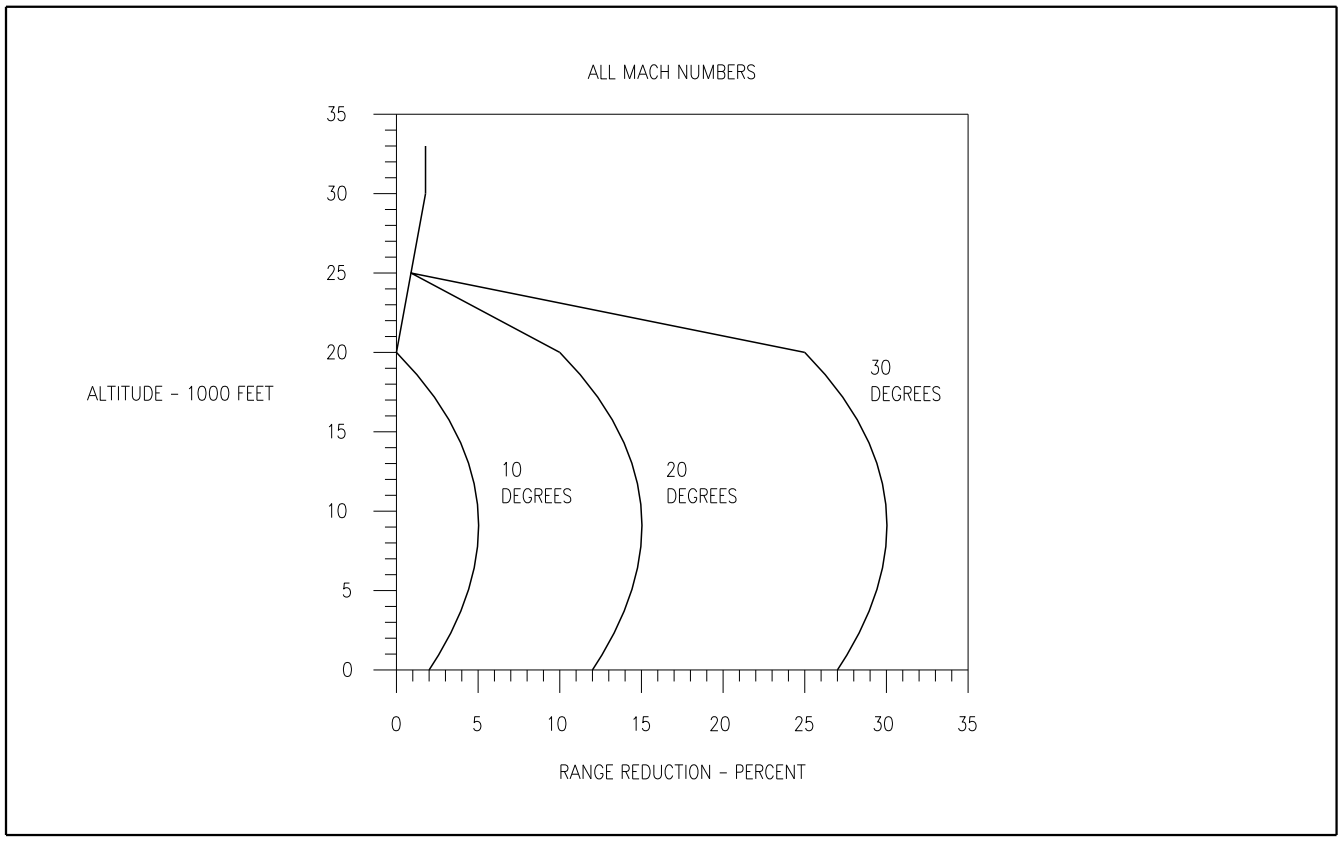
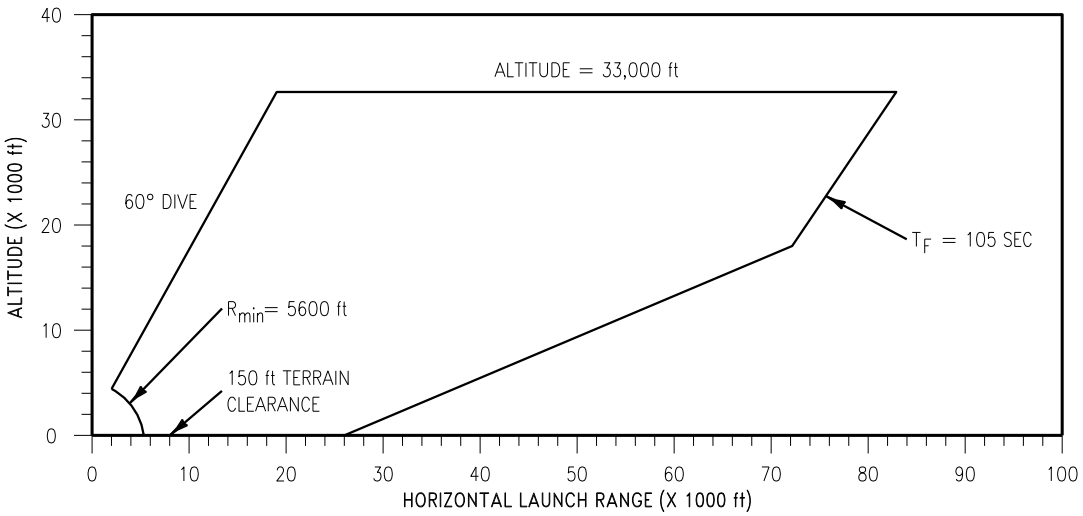
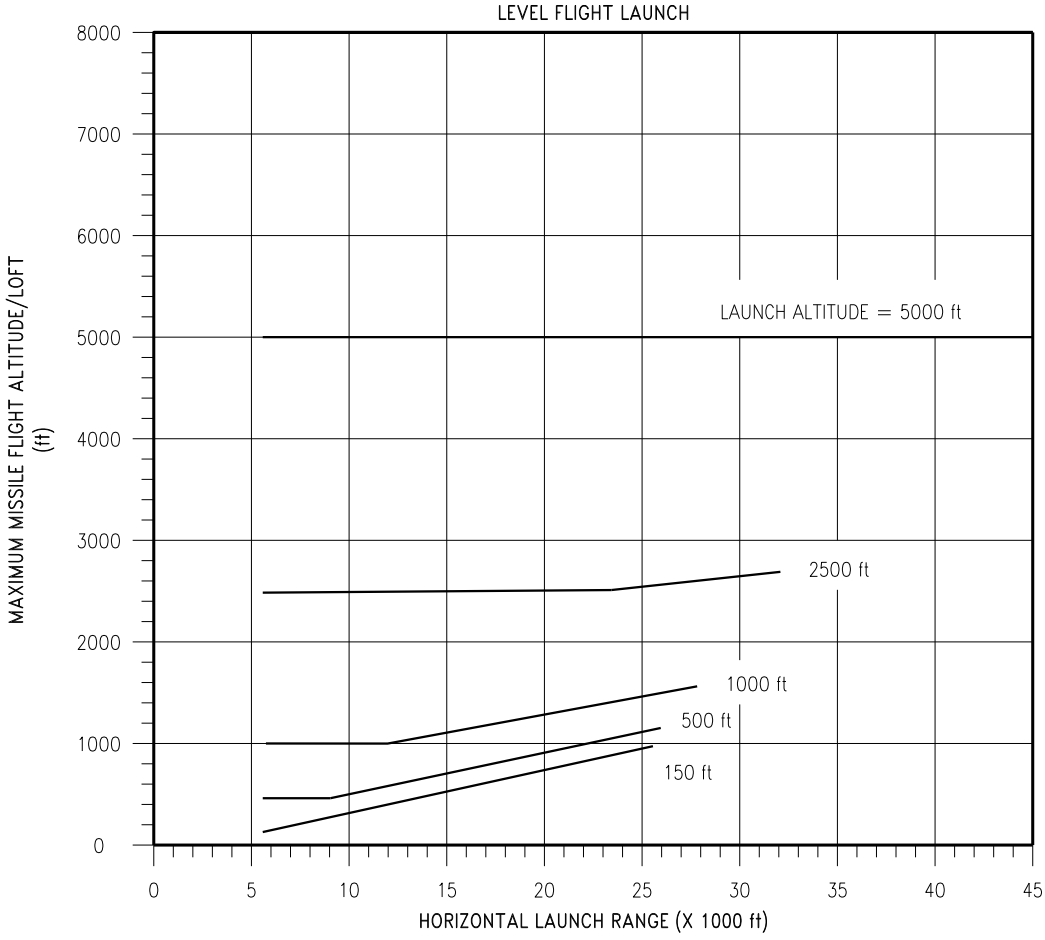


Figure 2-137. Range Reduction Due to Bank Angle



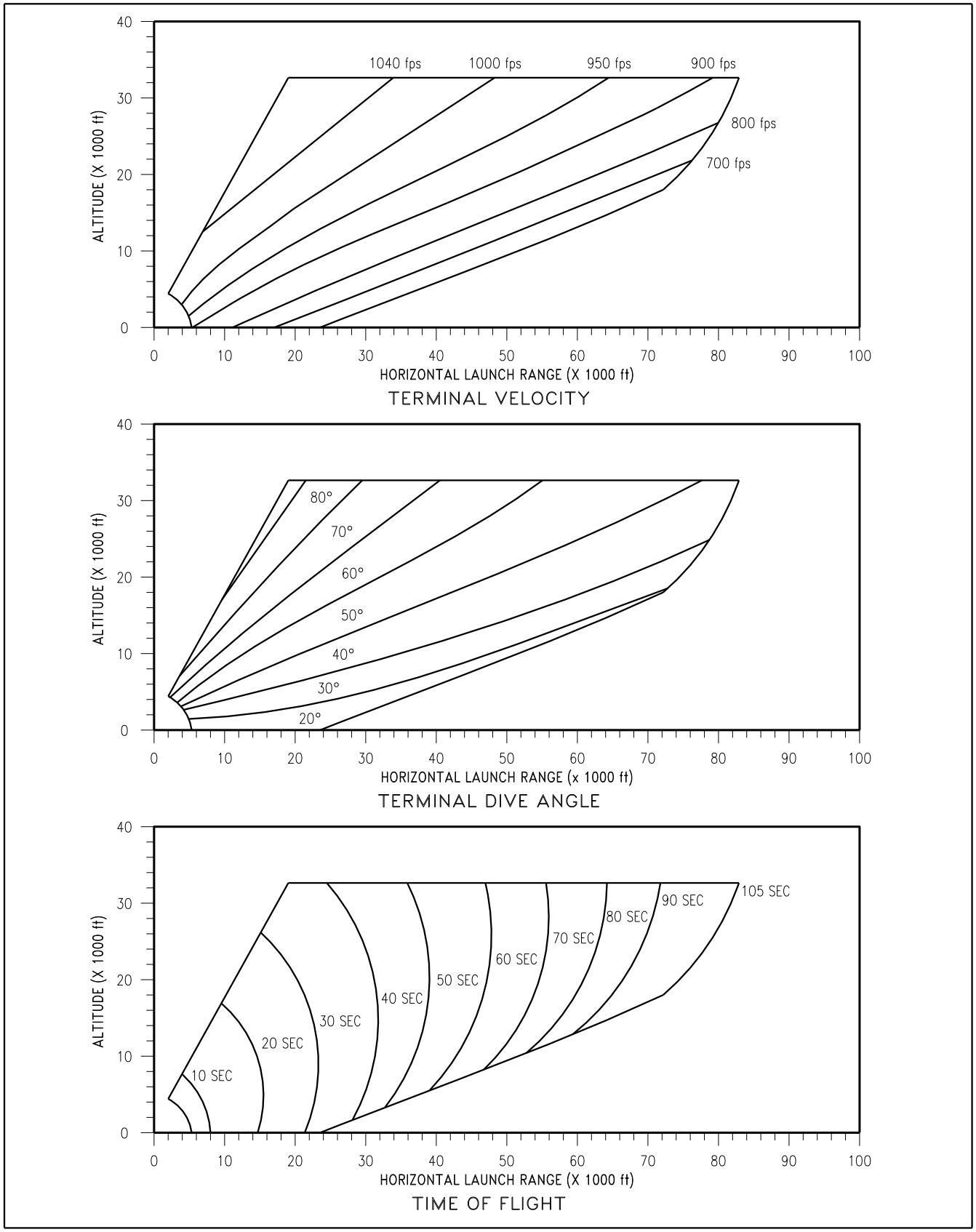
LAUNCH ENVELOPE



LOFT PROFILE

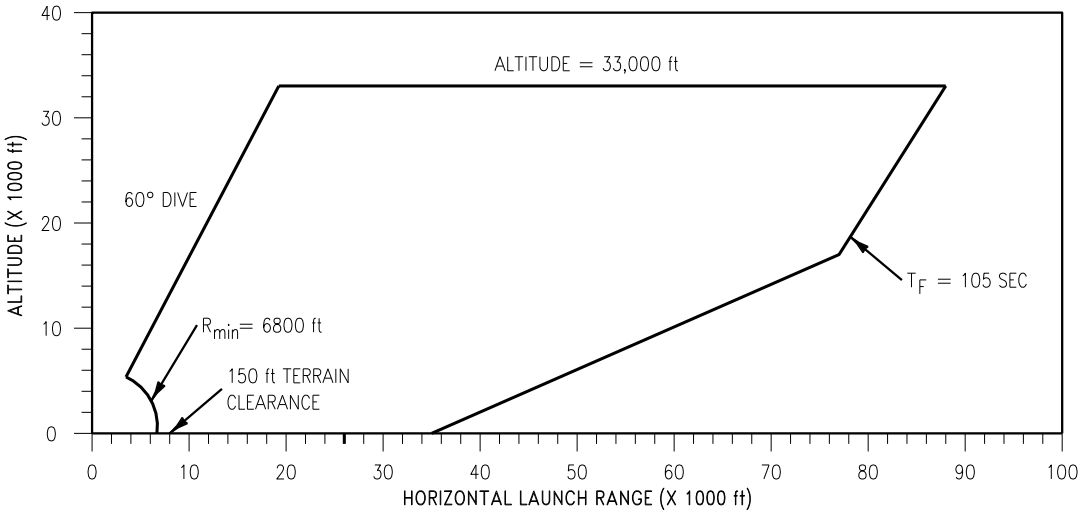
AV8B-TAC-05-(14-1)09-CATI

Figure 2-138. Missile Freeflight Parameters Mach 0.3 (Sheet 1 of 2)

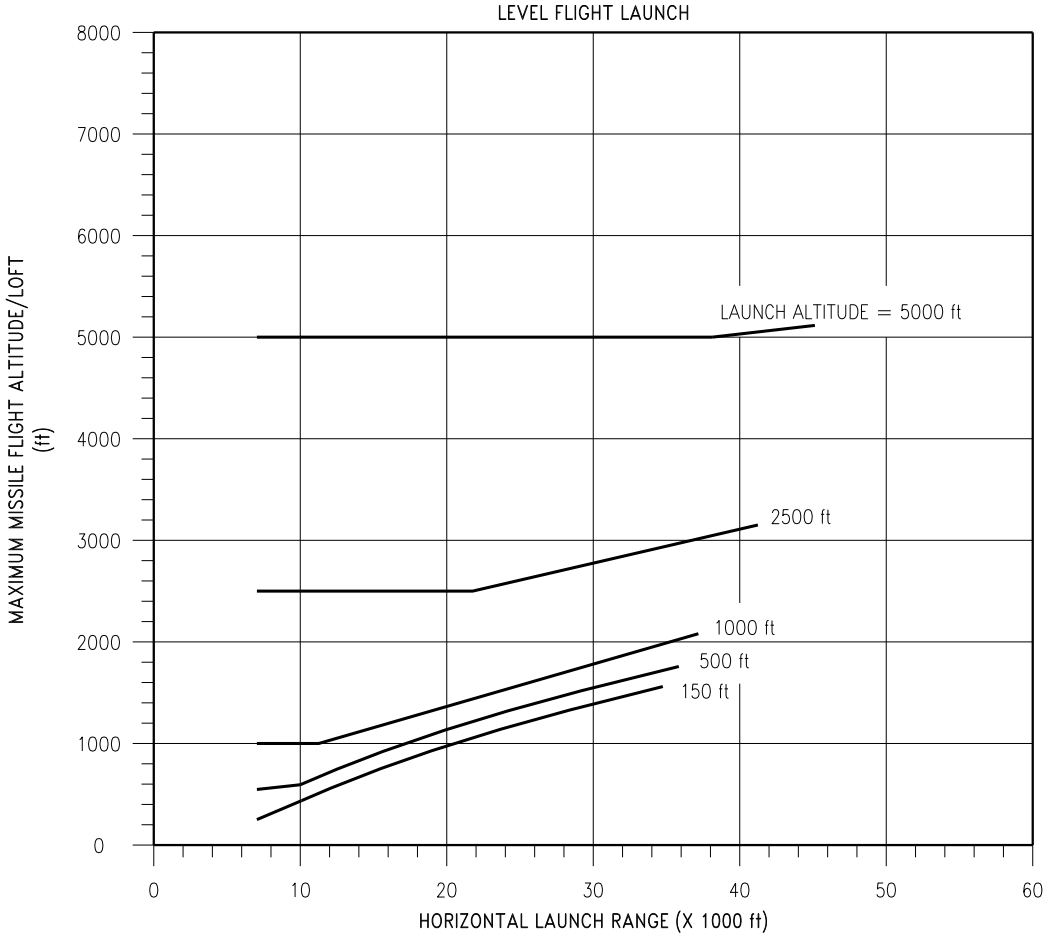


AV8BB-TAC-05-(14-2)09-CATI

Figure 2-138. Missile Freeflight Parameters Mach 0.3 (Sheet 2 of 2)



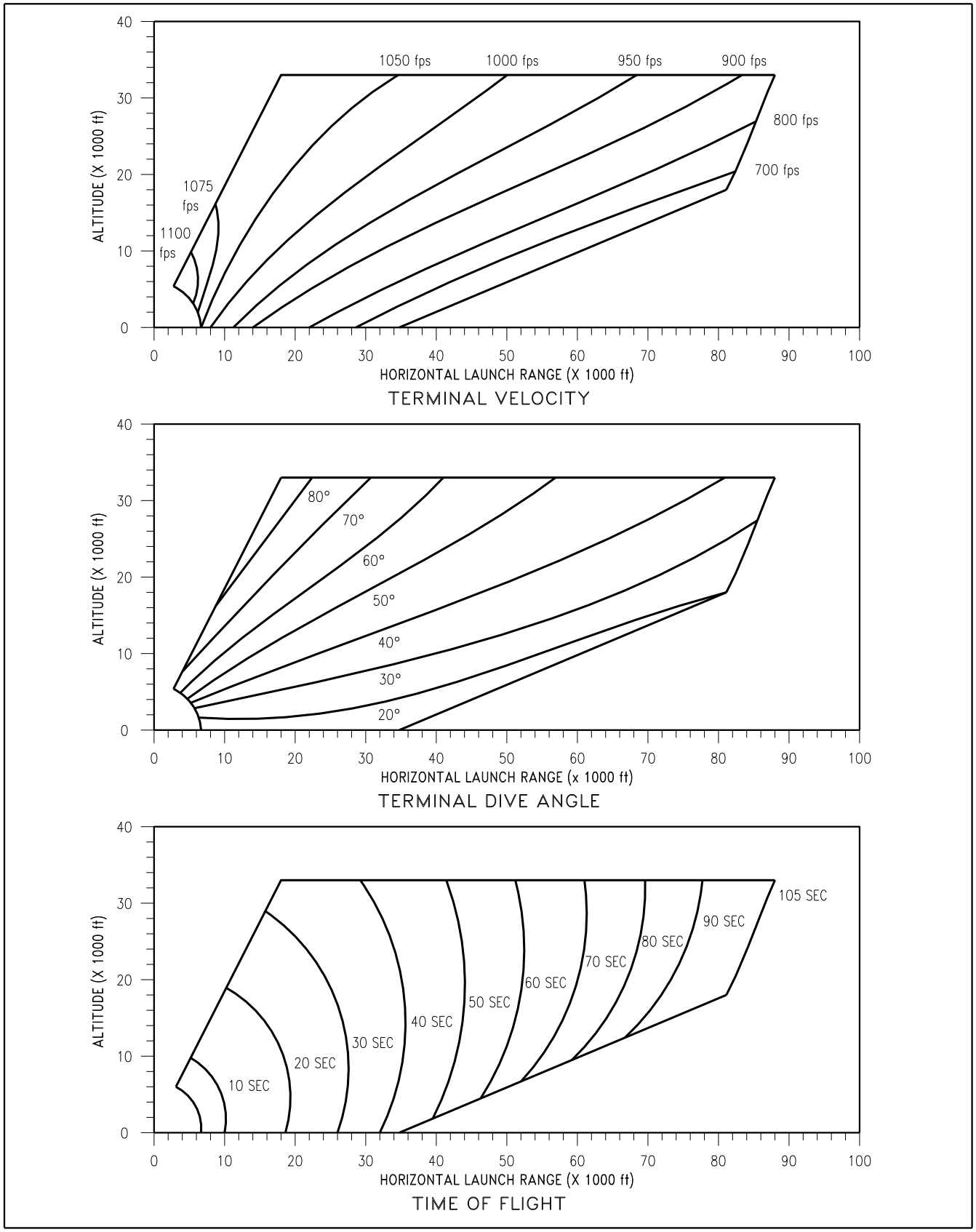
LAUNCH ENVELOPE



LOFT PROFILE

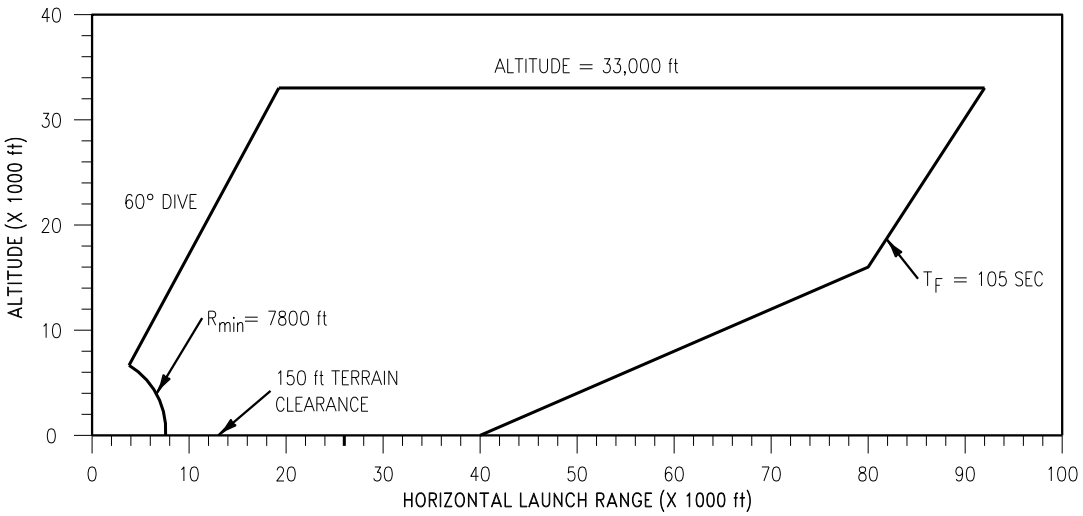
AV8B-TAC-05-(15-1)09-CATI

Figure 2-139. Missile Freeflight Parameters Mach 0.5 (Sheet 1 of 2)

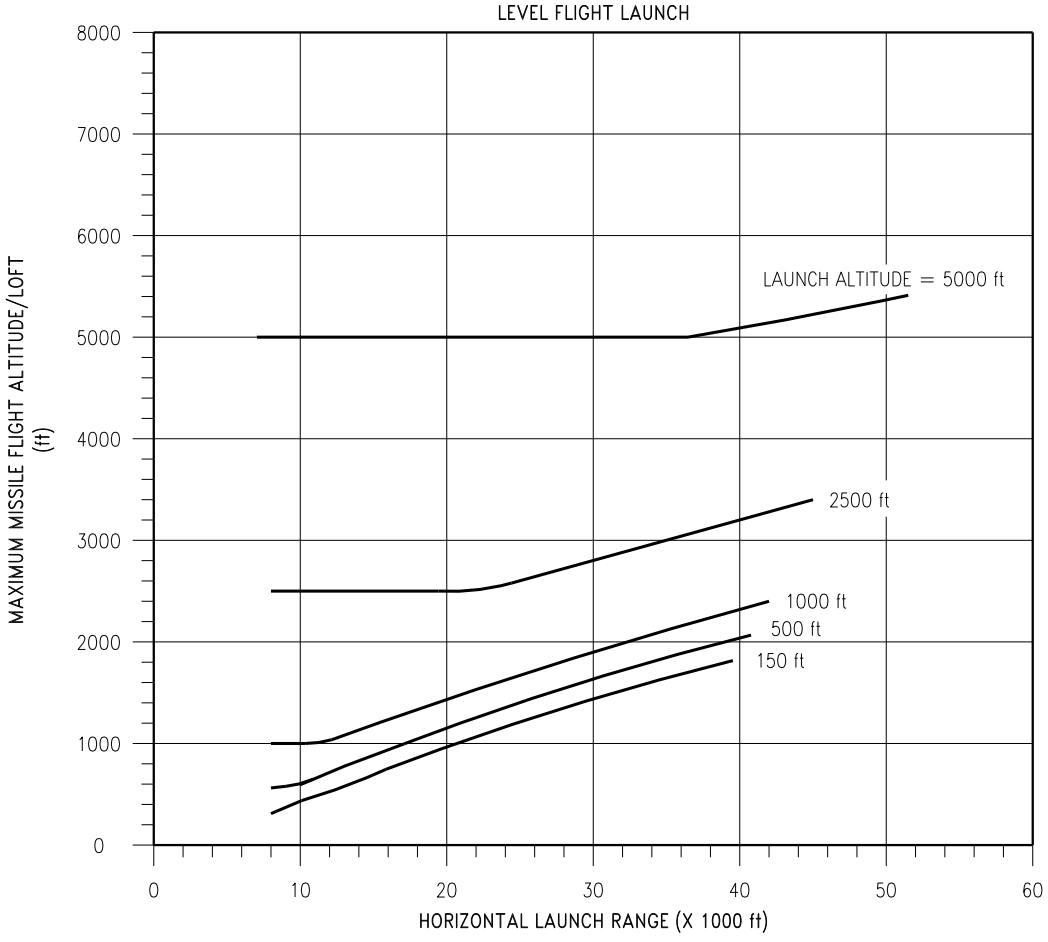


AV8BB-TAC-05-(15-2)09-CATI

Figure 2-139. Missile Freeflight Parameters Mach 0.5 (Sheet 2 of 2)



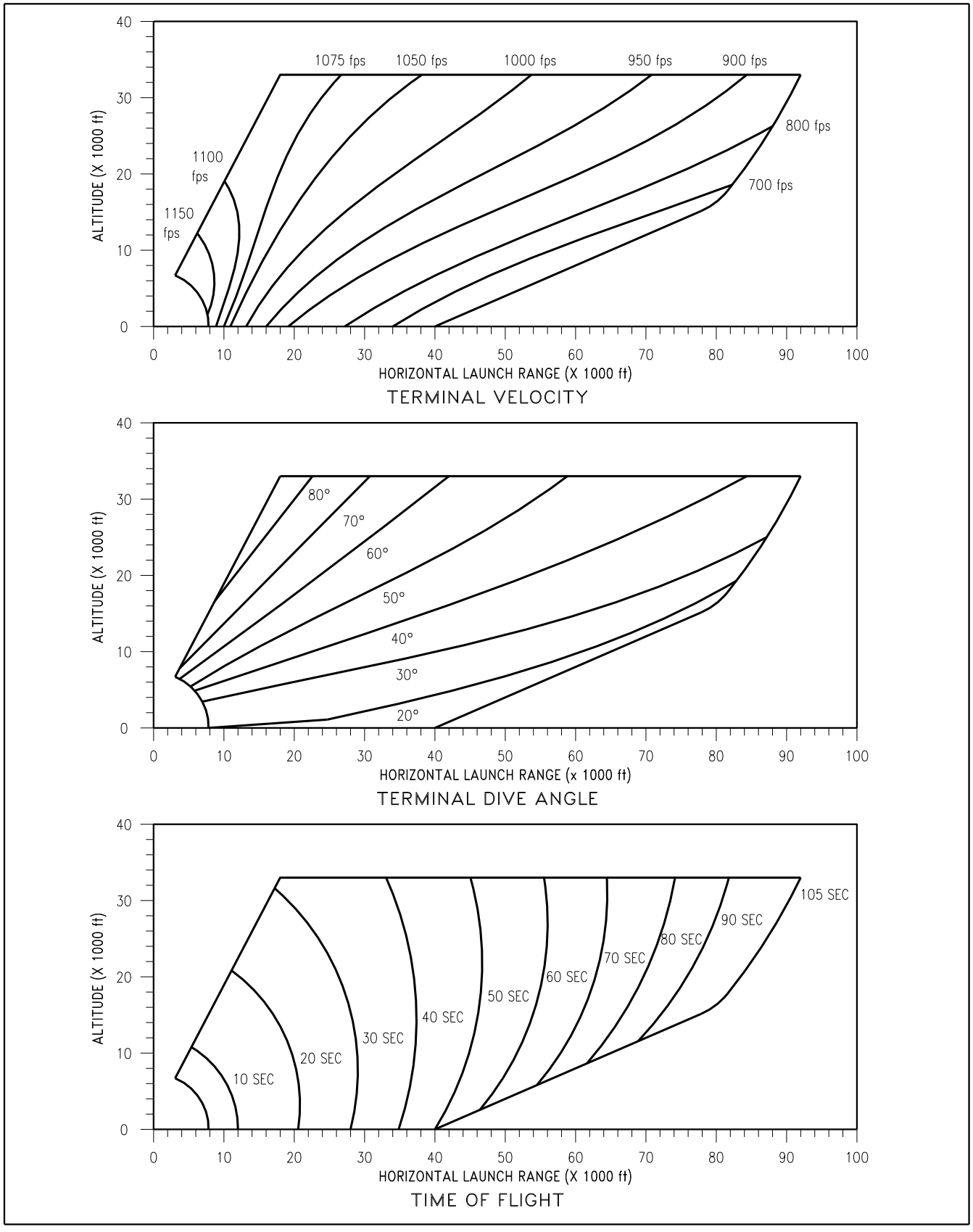
LAUNCH ENVELOPE



LOFT PROFILE

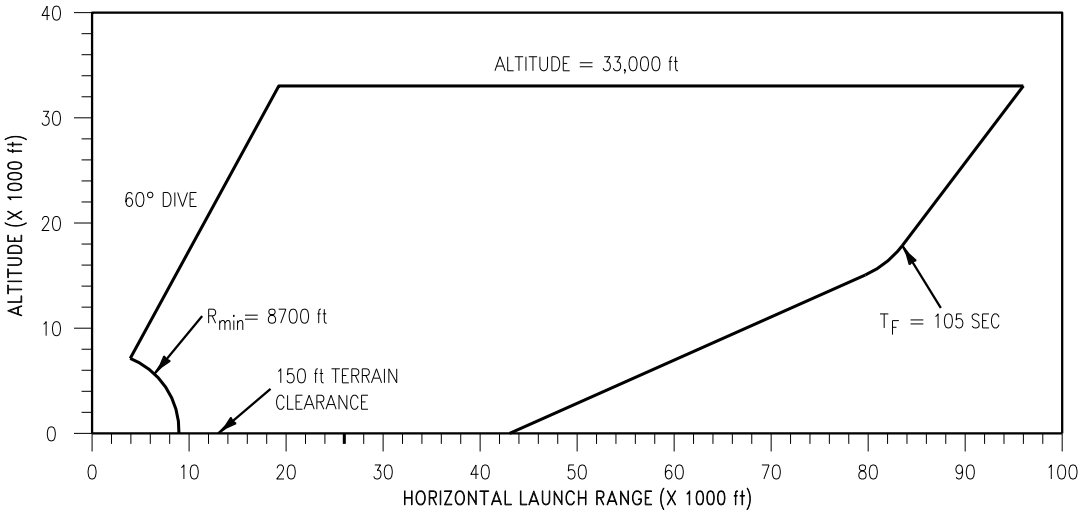
AV8B-TAC-05-(16-1)09-CATI

Figure 2-140. Missile Freeflight Parameters Mach 0.7 (Sheet 1 of 2)

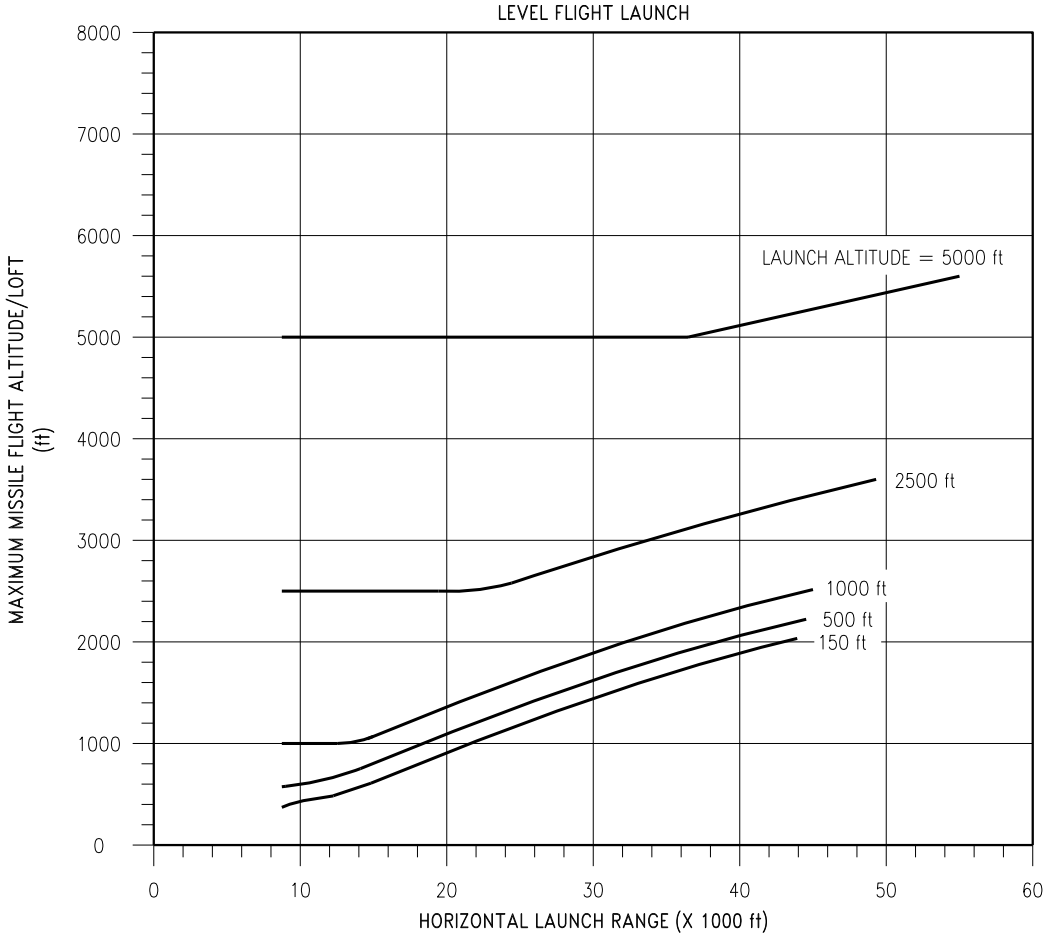


AV8BB-TAC-05-(16-2)09-CATI

Figure 2-140. Missile Freeflight Parameters Mach 0.7 (Sheet 2 of 2)



LAUNCH ENVELOPE



LOFT PROFILE

AV8BB-TAC-05-(17-1)09-CATI

Figure 2-141. Missile Freeflight Parameters Mach 0.9 (Sheet 1 of 2)

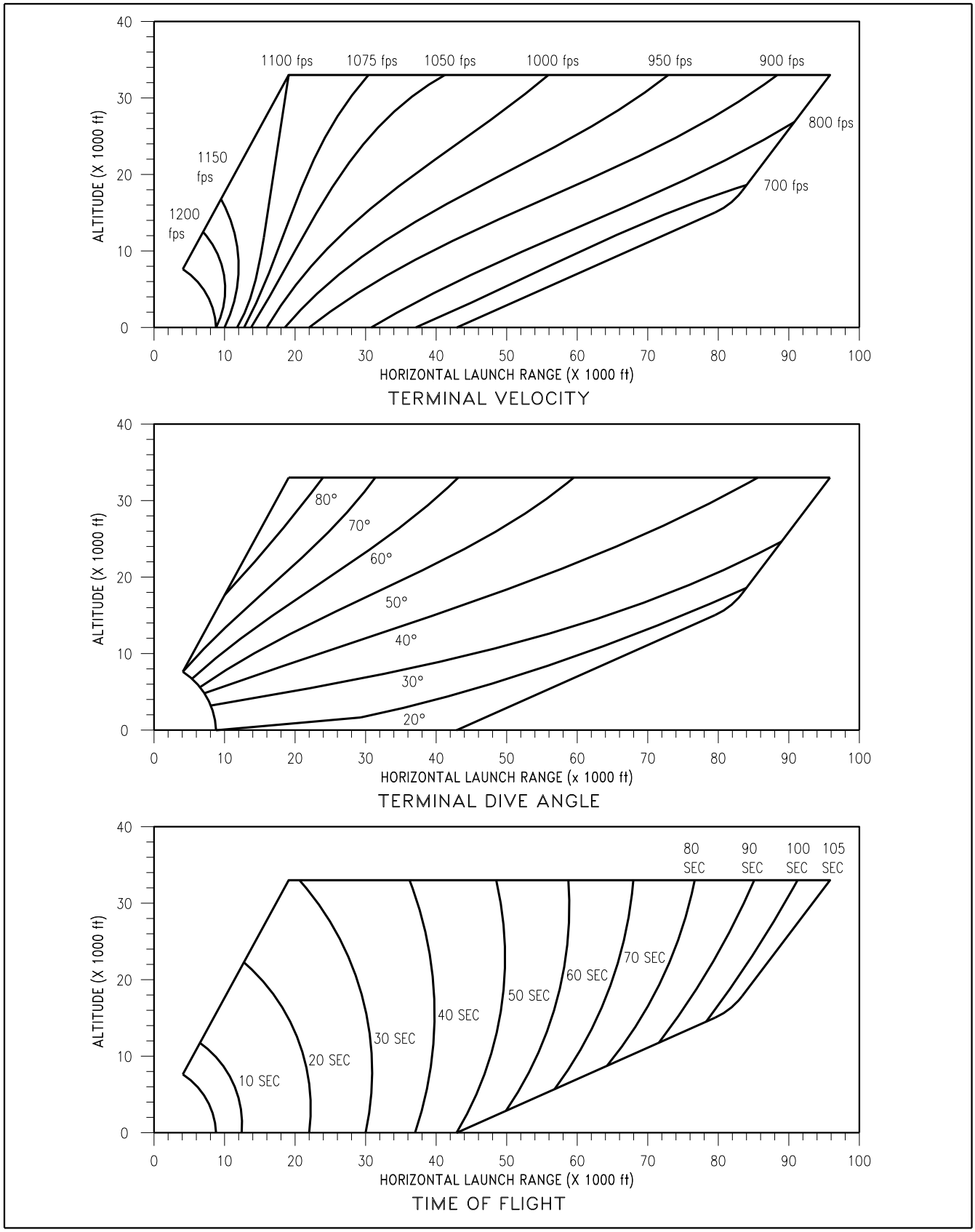


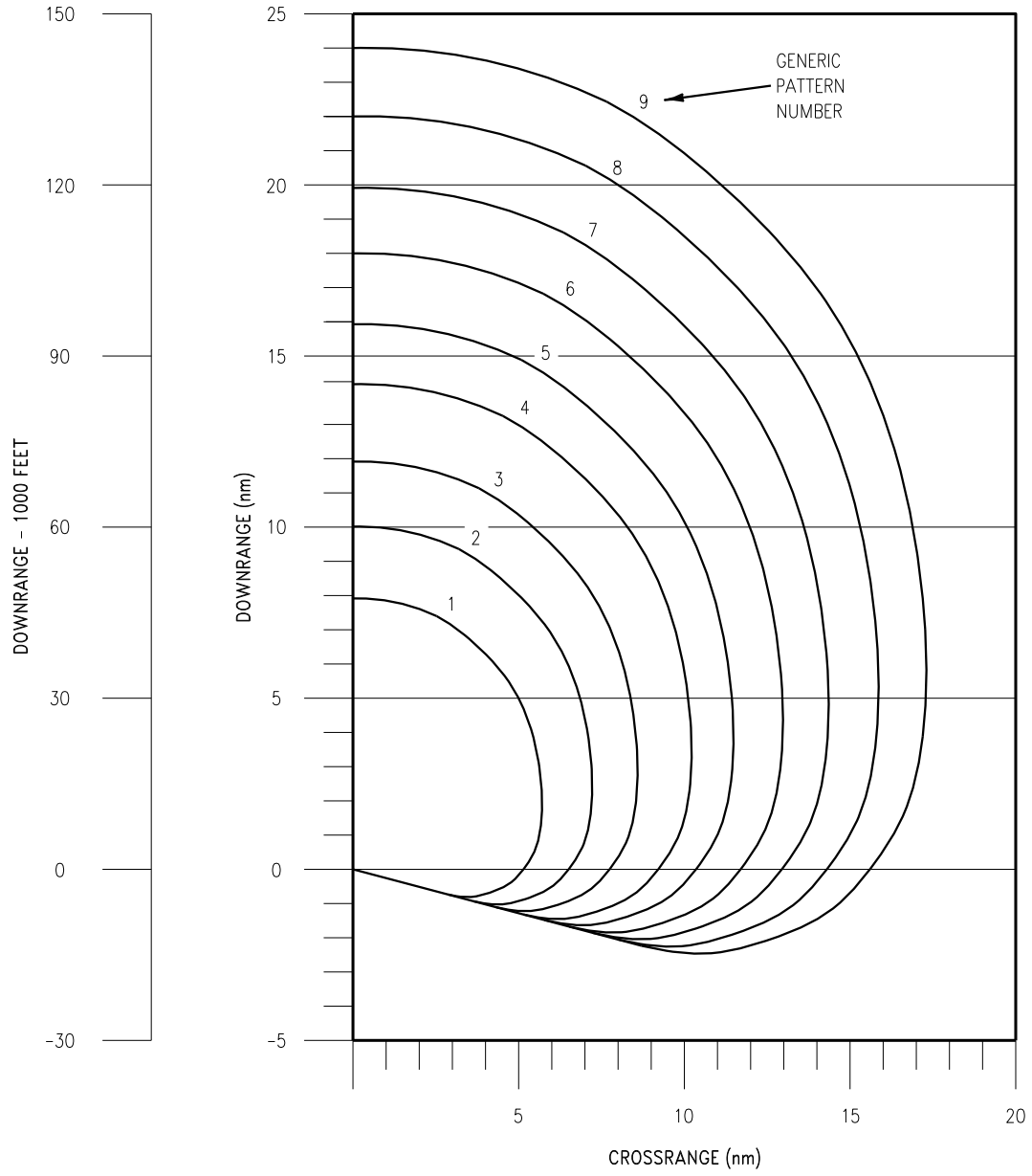
Figure 2-141. Missile Freeflight Parameters Mach 0.9 (Sheet 2 of 2)

2.11.2 Maverick Missile Splash Patterns. Enter Figure 2-142 with the launch speed, altitude (AGL) and dive angle to determine a generic pattern number. Figure 2-143 provides worst case impact boundaries that contain all missile impacts regardless of missile malfunction mode.

LAUNCH ALTITUDE ABOVE GROUND LEVEL (FEET)	LAUNCH MACH NUMBER LAUNCH DIVE ANGLE = 0° (LEVEL)			
	0.3	0.5	0.7	0.9
150	1	1	1	2
5000	1	2	2	3
10000	2	3	4	4
15000	3	4	5	5
20000	5	5	6	6
25000	6	6	7	8
30000	7	8	8	9
	LAUNCH DIVE ANGLE = -20°			
	0.3	0.5	0.7	0.9
150	-*	-	-	-
5000	1	1	2	2
10000	2	2	3	3
15000	3	3	4	4
20000	4	4	5	5
25000	5	5	6	6
30000	6	6	7	7
	LAUNCH DIVE ANGLE = -40°			
	0.3	0.5	0.7	0.9
150	-*	-	-	-
5000	1	1	1	1
10000	1	2	2	2
15000	2	3	3	3
20000	3	4	4	4
25000	4	4	5	5
30000	5	5	6	6

*-- Dashed line indicates ground clearance was not achieved for low altitude, dive launch.

Figure 2-142. Generic Pattern Numbers for Maverick AGM-65F



NOTE

PATTERNS ARE SYMMETRIC ABOUT DOWNWIND AXIS.

AV8BB-TAC-05-(18-1)09-CATI

Figure 2-143. Maverick Missile Splash Pattern

2.12 AIRCRAFT 25mm GUN SYSTEM.

2.12.1 Introduction. The aircraft 25mm gun system consists of two pod-like structures called paks mounted to the fuselage of the AV-8B. The gun pak contains a pneumatically powered, five barrel, air cooled gun. The ammunition pak contains a single ended, closed-loop ammunition handling system. When linked together by interfacing components, the gun system is capable of firing percussion primed M790 series ammunition at a normal rate of 3,600 rounds per minute and a muzzle velocity of 3,600 feet per second. See Figures 2-144 and 2-145 for gun system block diagram.

2.12.2 Components. The following paragraph describes components of the 25mm gun system. See Figure 2-146 for component locator.

2.12.2.1 Aircraft 25mm Gun Pak. The GAK-14 gun subsystem houses the gun, pneumatic drive unit and pneumatic tubing.

Engine 8th stage bleed air is delivered to the gun shut off valve and is the primary drive mechanism for the gun system. A series of valves and solenoids control the timing and the flow of the bleed air to control gun operation.

Opening and closing of the gun shut off valve is controlled by the gun electronic control unit. The gun shut off valve controls air flow to the regulator valve and is electrically controlled open and closed by the ECU. The gun shut off valve is open anytime the gun is selected in the A/A or A/G master mode or the master arm switch is placed to ″ARM″ with a gun pak installed onboard the aircraft.

The regulator valve (butterfly) and solenoid takes the 8th stage bleed air and controls the air flow to the air drive motor to maintain air pressure at 60 to 90 psi. It is energized open when both the gun is selected and the trigger is squeezed to the second detent and remains open until the gun has completed its clearing sequence.

The safe arm valve and solenoid uses bleed air to control the operation of the pneumatic safing actuator. It is energized open when both the gun is selected and there is a trigger signal present. The pneumatic safing actuator is spring loaded in the safe position and is pneumatically retracted in order to fire the gun. The safing cam will not allow the gun to fire when in the safe position. When armed, the safing cam provides a sear point for the cocking pin on the breech bolt allowing the firing pin to strike the cartridge primer.

The pneumatic drive unit converts pneumatic pressure (regulated engine bleed air), into mechanical power to start, drive and control the firing rate and clear the gun system as directed by electrical commands from the ECU. See figure 2-147. The drive unit consists of a gear type displacement air motor, gear box section, reverse actuator section, fluidic speed control assembly and brake system with interconnecting pneumatic tubing.

When open, the brake/forward drive valve and solenoids cause air pressure to release the brake and drive the air motor in the forward direction. They are energized open when the gun is selected and a trigger signal is present and will remain open until the gun has completed the clearing sequence. The rotary valve is spring loaded to the forward drive (normal) position. When actuated by the reverse actuator, the rotary valve rotates 90É reversing the air flow to the air motor causing reverse rotation. The fluidic speed control regulates and controls the air motor speed and maintains rpm at 3,850 in the forward direction and 1,925 rpm in the reverse direction.

The reversing valve and solenoid controls regulated air flow to the reverse actuator. It is energized open until the gun clearing count has been satisfied. Two sprocket sensors determine the direction of rotation and provide the rounds count.

The brake assembly consist of a spring loaded piston, pressure plate and brake plates interleaved with brake discs which mesh with the brake drive shaft that is connected to the air motor. The brake is applied when the brake/drive is deenergized. It is normally spring loaded off to allow manual rotation of the system for loading and unloading the gun.

The air motor develops 35 hp to drive the gun gear box and drive shaft (15 hp minimum required to drive the gun at 3600 rpm). The drive shaft provides the torque for the gun subsystem and the ammunition handling system.

2.12.2.2 GAU-12 Gun System. The GAU-12 gun system is a five barrel cluster gatling gun that rotates continuously while firing. See Figure 2-148.

The stationary gun housing supports the aft end of the gun on rollers. It provides mounting surfaces for the gun drive gear shaft, lock/unlock cam, load/unload guides and the safing cam. The track rotor is an elliptical cam and guides the breech bolt assemblies. A cam surface inside the housing causes the breech bolt assemblies to reciprocate with the barrels.

Five breech bolt assemblies provide the functions of loading, chambering, locking, firing, unlocking, extracting and unloading the 25 mm rounds. See Figure 2-149 and 2-150. The gun bolt roller engages the housing cam path and positions the breech bolt. The breech bolt is locked and unlocked by the linear-rotary motion roller on the cam follower. The cocking pin engages the safing/firing cam assembly to cock and uncock the firing pin. When released, the firing pin strikes the percussion primed ammunition.

The GAU-12/U recoil mechanism consists of two recoil adapters and gun supports. A stack of interacting ring springs provide recoil attenuation and economical and powerful friction damping of the gun recoil. The recoil mechanism will allow a maximum of one inch travel of the gun assembly. Peak impact loads of 7500 pounds are reached with an average steady load 7000 pounds. Mid barrel supports are provided on rollers that allow for gun recoil and support the gun mid span. The muzzle blast deflector prevents reingestion of exhaust gases down to 250 knots with the -406 engine and 150 knots with the - 408 engine.

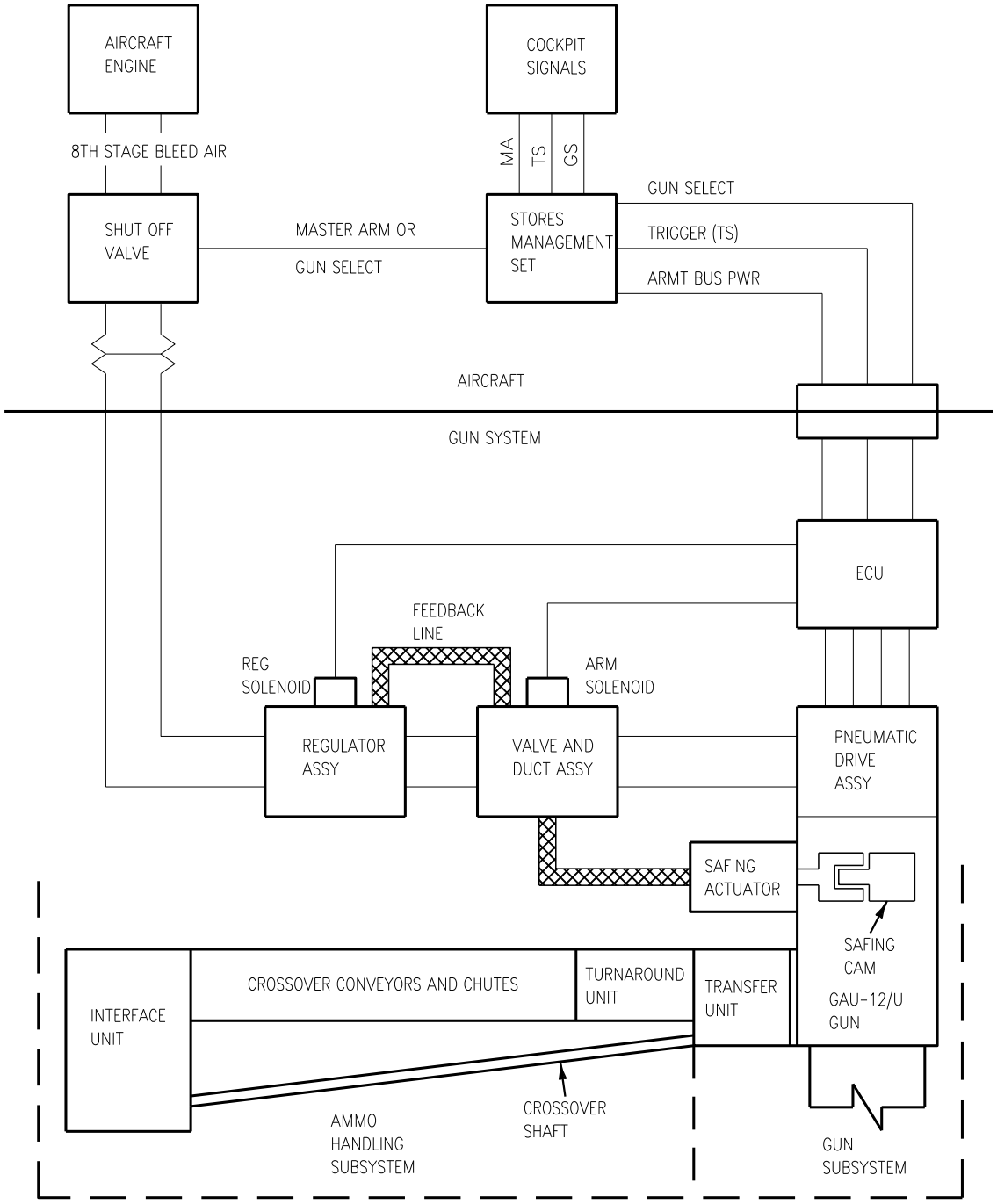
2.12.2.3 Crossover System. See Figure 2-146. Mechanical power is supplied to the ammunition handling subsystem by a crossover shaft connected between the transfer unit and interface unit. Figure 2-144. The crossover conveyors and a turn around unit provide the path for live rounds going to the gun and the empty cases exiting the gun. The transfer unit is bolted to the gun housing and feeds the live rounds to the gun as well as removes the spent cases. Within the transfer unit is a projectile sensor unit that is located in the unload cartridge guide and provides a rounds count for the reverse clearing sequence. Reverse rotation continues until the last unfired round is just outside the gun on the feed side. This occurs when two empty spaces are sensed during the clearing cycle. The projectile sensor unit monitors unfired rounds during gun firing and inhibits the gun after 8 unfired rounds are detected.

2.12.2.4 Aircraft 25mm Ammunition Pak GFK-11. The ammunition pak is a single ended, closed loop ammunition handling system. See Figure 2-146.

An Electronic Control Unit (ECU) is located in the aft outboard part of the ammunition pak. It requires 28vdc from the armament bus. The ECU receives electrical signals from the aircraft (initiated by the pilot), and processes them to control firing and clearing of the gun system. Inputs supplied to the ECU are the gun select and trigger signal. The ECU provides control signals to the pressure regulator and shut off valve (engine bleed air on and off), the pneumatic safing valve (gun safe/arm), and the pneumatic drive assembly (forward/reverse). The ECU monitors the direction of rotation, the projectile sensor for a not clear signal, and the rounds count.

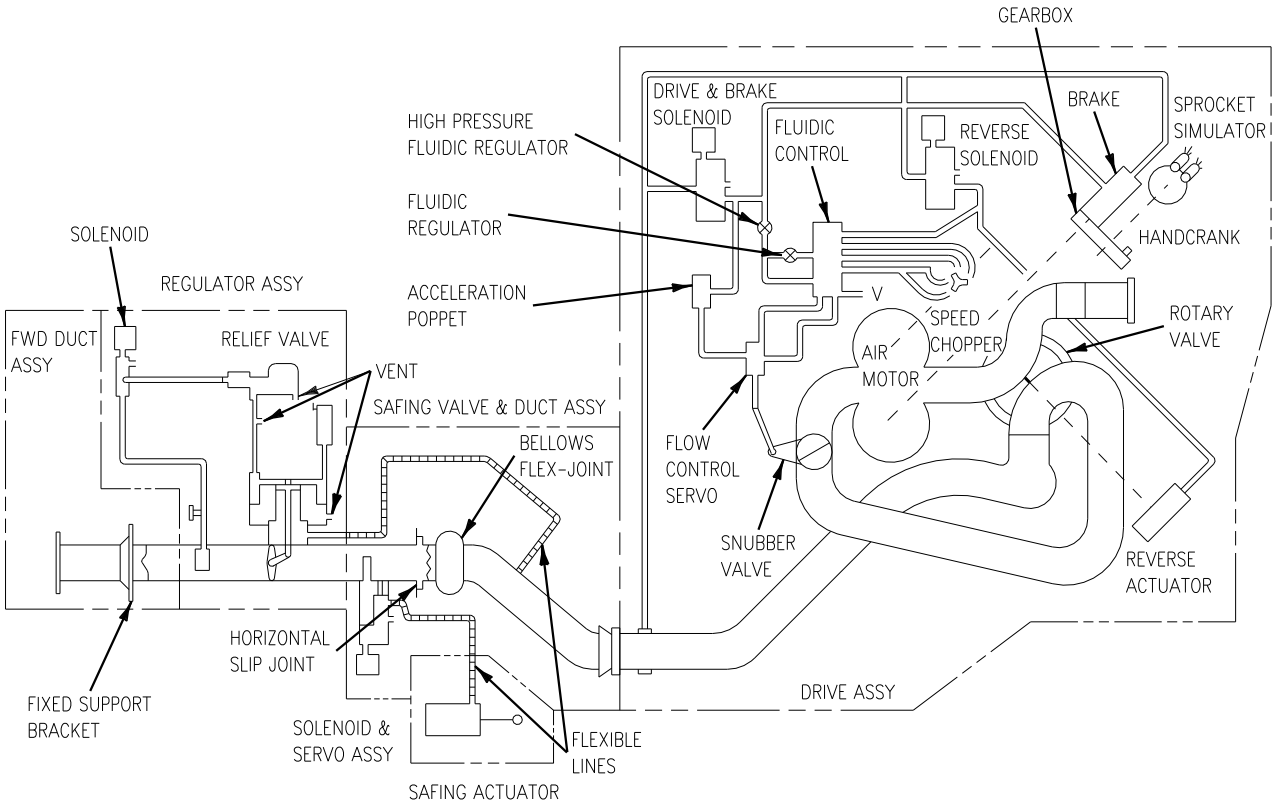
The ammunition handling system is a single ended, closed loop system. It consists of conveyors, chutes and a turnaround unit to provide a path for live rounds going to the gun and empty cases exiting the gun. The path that the 300th 25mm round takes begins at the outside of the gun on the exit side in the transfer unit. It is carried away from the gun toward the interface unit. The interface unit takes the round from the crossover conveyor and places it into the aft ammunition conveyor. The aft ammunition conveyor carries the round to the loading access unit. The round then cycles through the loading

access unit and is placed back into the interface unit. The interface unit places the round into the bottom rear of the ammunition conveyor. The round is then moved alternately through the bottom, middle and top ammunition conveyors until it is placed into the upper ammunition crossover conveyor chute. The round is carried by the crossover conveyor to the transfer unit load sprocket. The load sprocket places the round in the breech bolt. The round is cycled through the gun and fired, then the empty case is cycled out of the gun by the unload sprocket in the transfer unit.



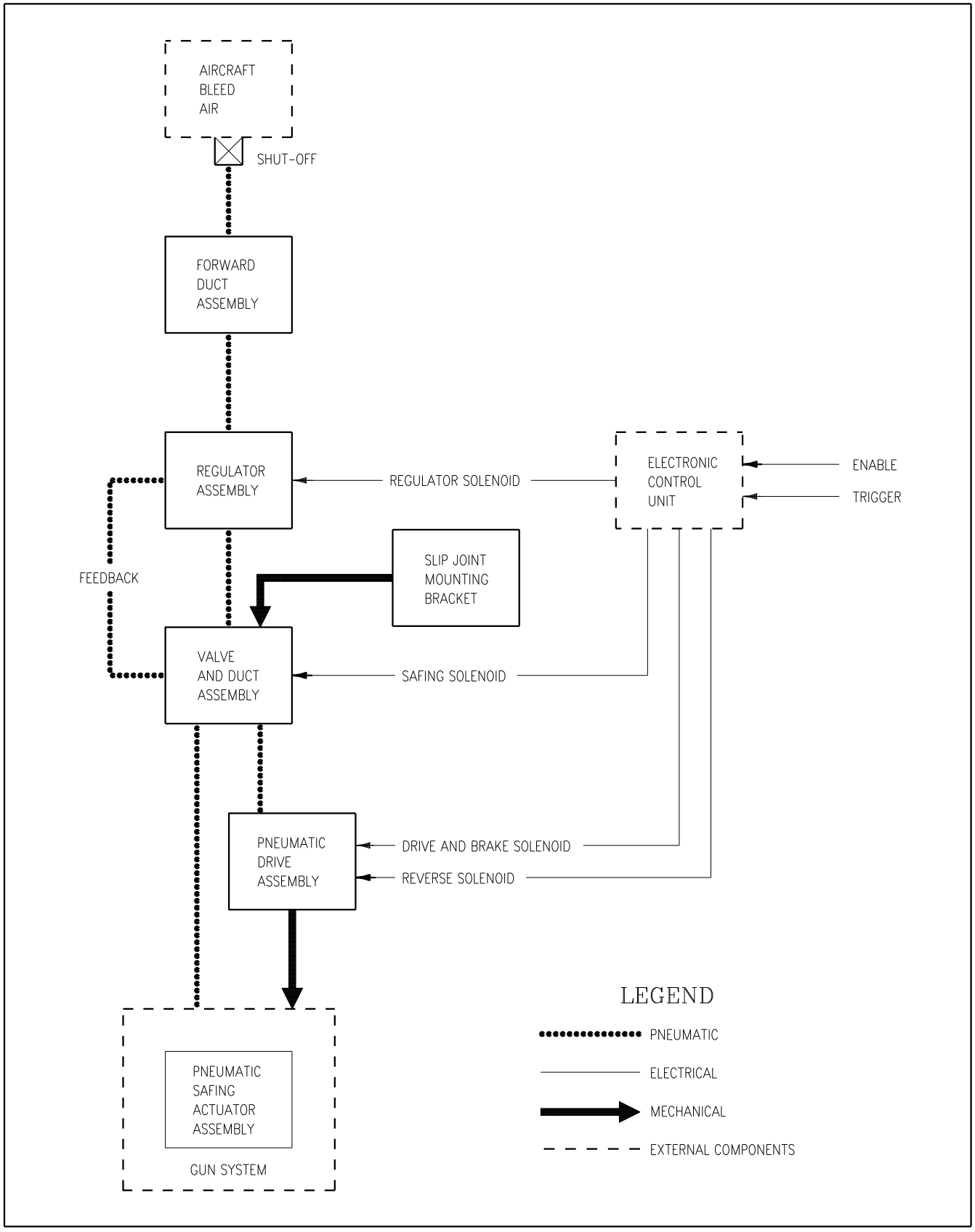
AV8BB-TAC-05-(66-1)09-CATI

Figure 2-144. Aircraft 25mm Gun System Block Diagram (Sheet 1 of 2)



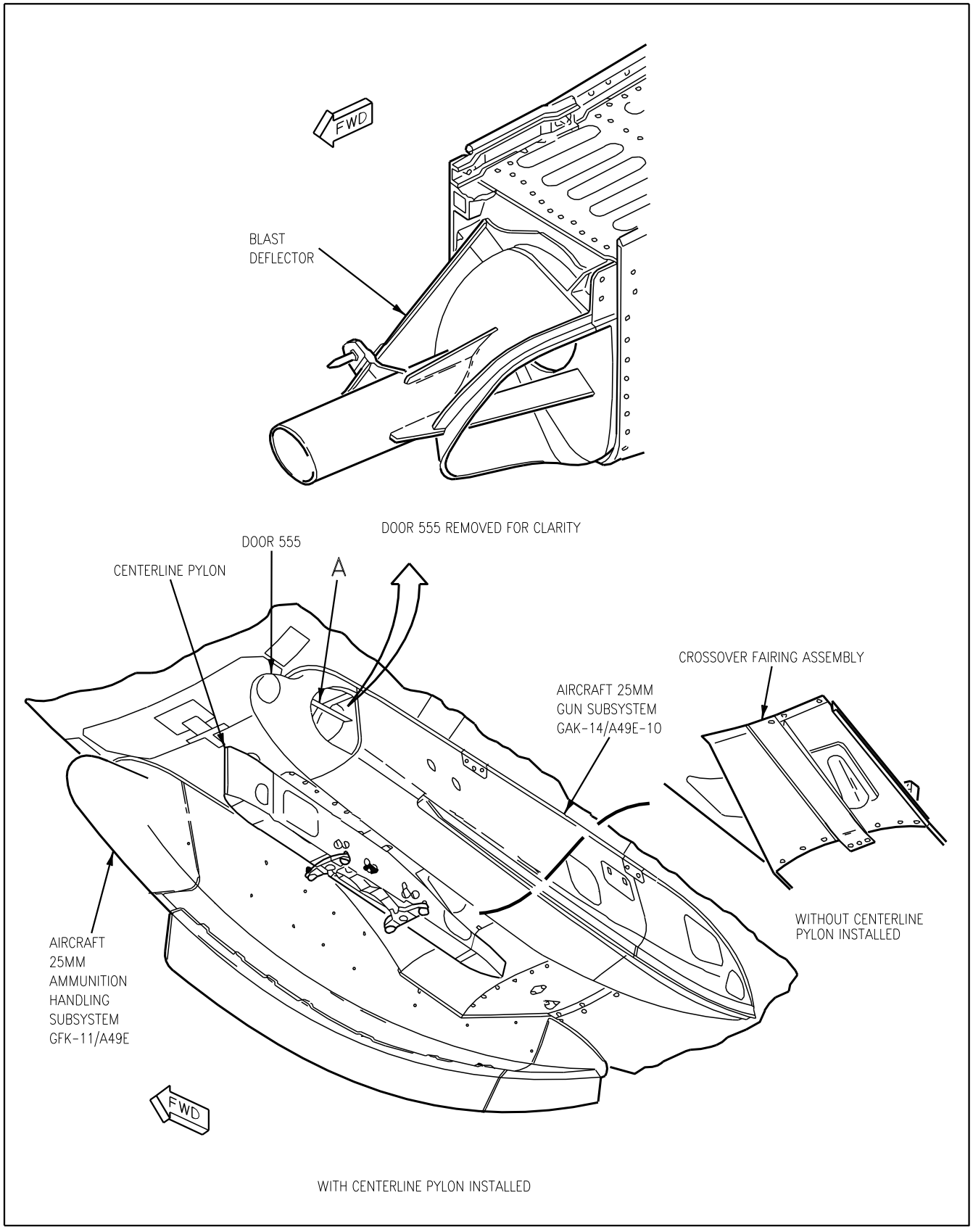
AV8BB-TAC-05-(66-2)10-CATI

Figure 2-144. Aircraft 25mm Gun System Block Diagram (Sheet 2 of 2)



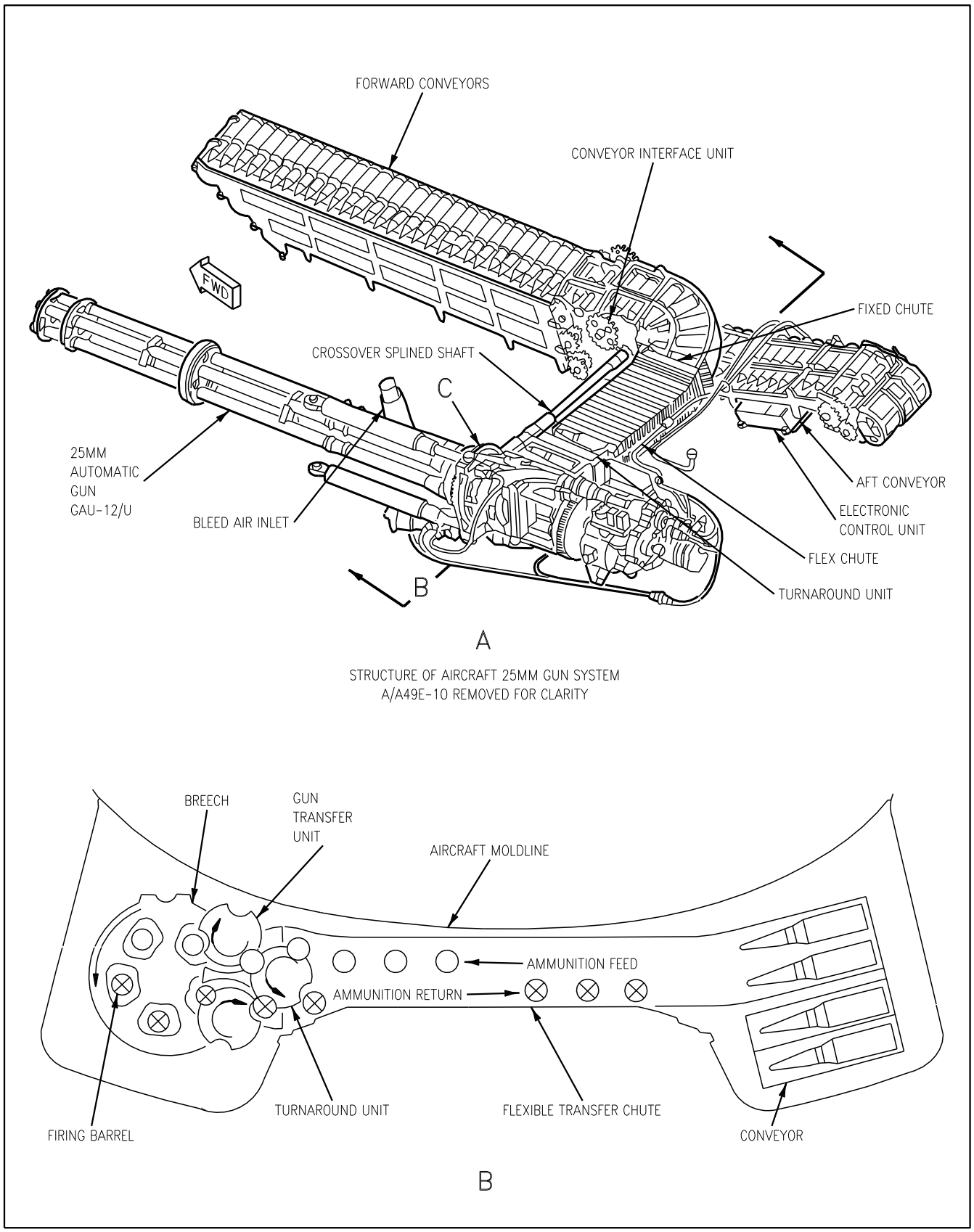
AV8BB-TAC-05-(67-1)09-CATI

Figure 2-145. Pneumatic Drive System Block Diagram



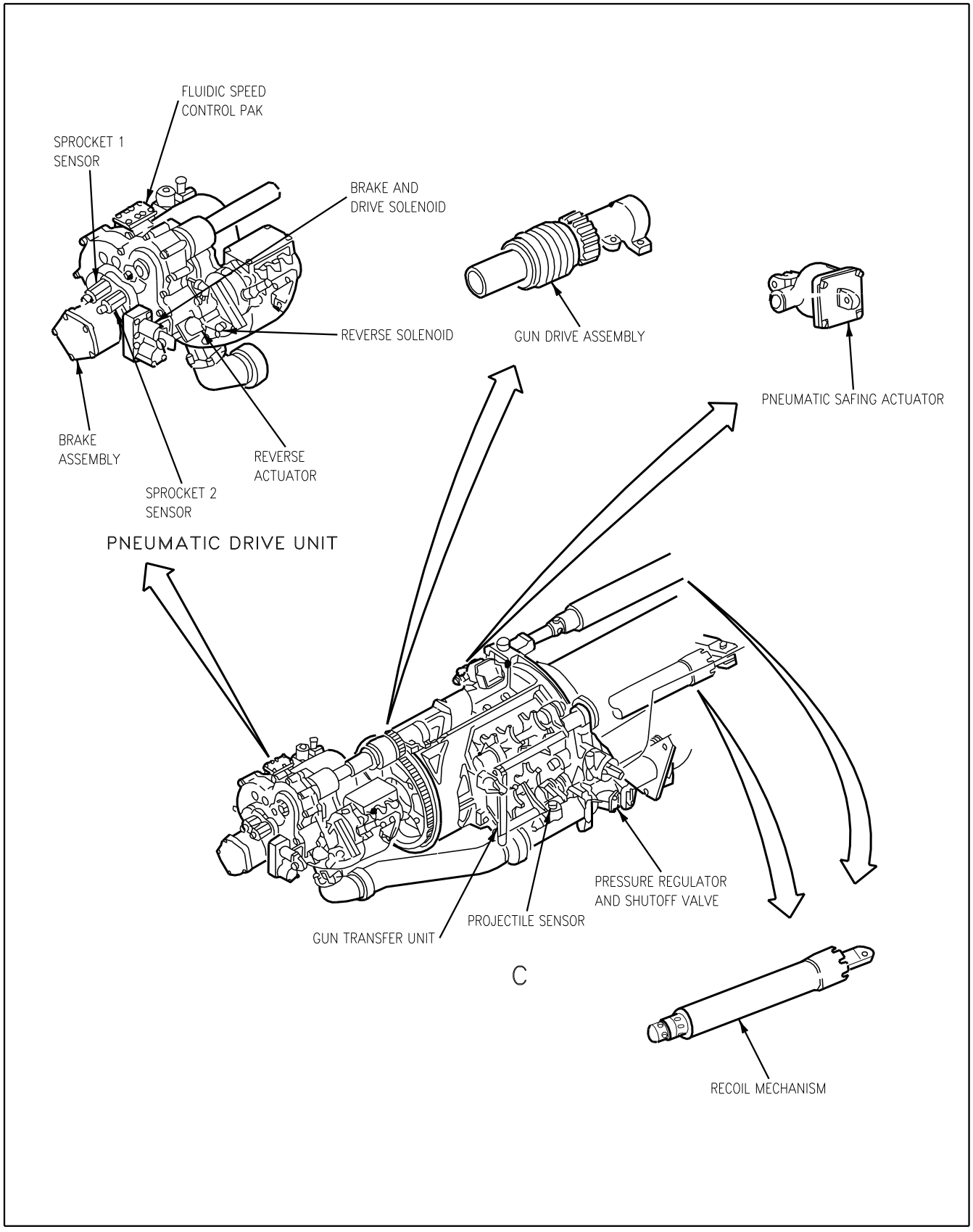
AV8BB-TAC-05-(68-1)10-CATI

Figure 2-146. Aircraft 25mm Gun System Component Locator (Sheet 1 of 3)



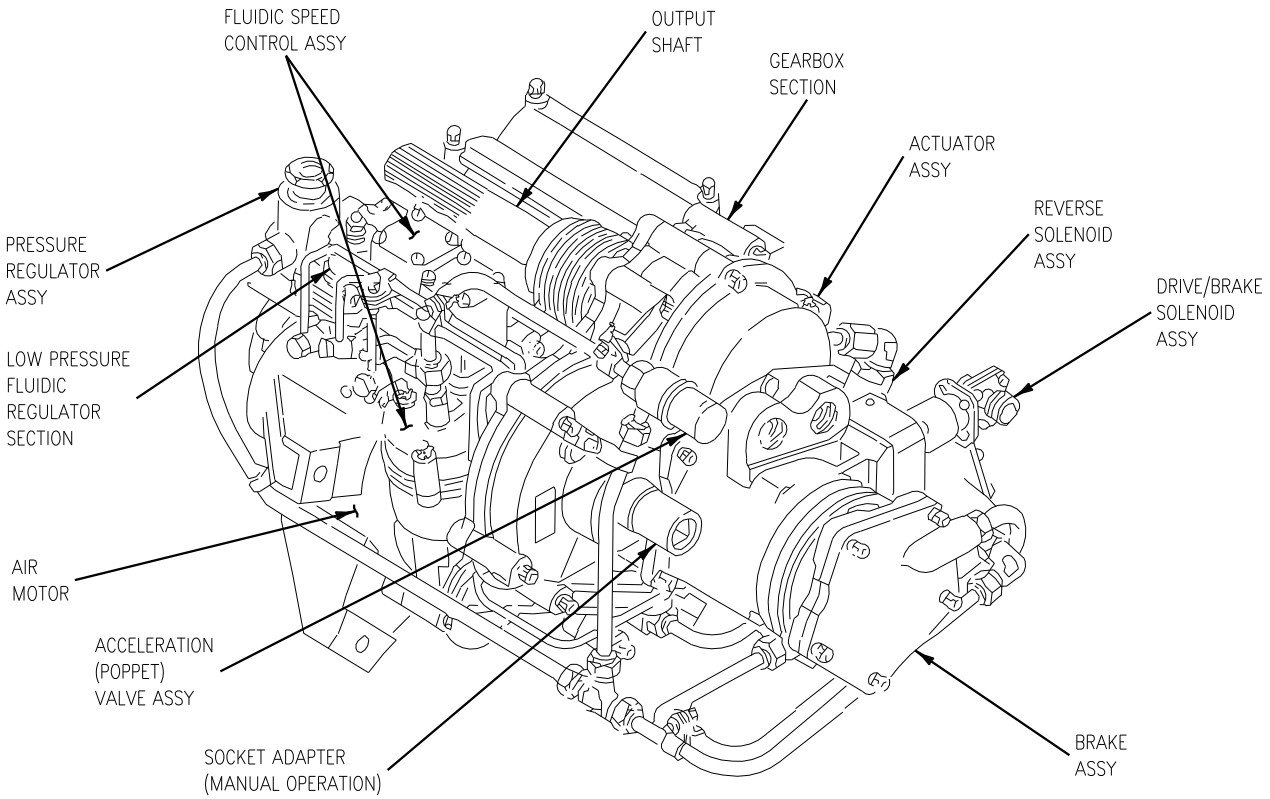
AV8BB-TAC-05-(68-2)10-CATI

Figure 2-146. Aircraft 25mm Gun System Component Locator (Sheet 2 of 3)



AV8BB-TAC-05-(68-3)10-CATI

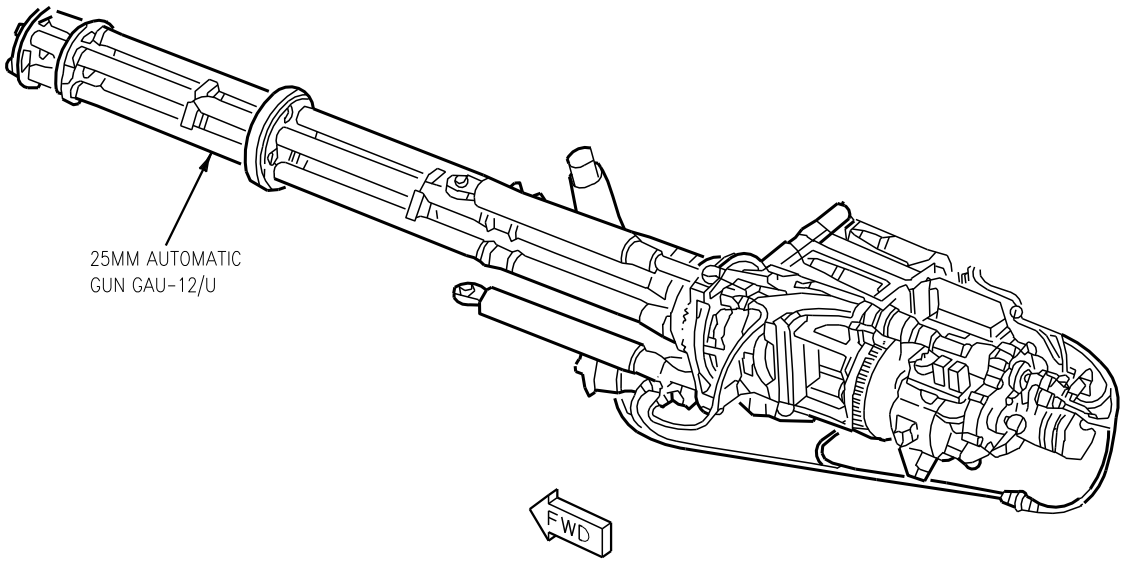
Figure 2-146. Aircraft 25mm Gun System Component Locator (Sheet 3 of 3)



INLET AIR PRESSURE	40 TO 90 psig (0.28 TO 0.62 kPa)
TEMPERATURE	
AMBIENT AIR TEMPERATURE	-65° TO 160°F (54° TO 71°C)
INLET TEMPERATURE	400° TO 700° (204° TO 371°C)
OPERATING ALTITUDE	SEA LEVEL TO 50,000 FT (15.24km)
OPERATION	
FORWARD	3600 TO 4100 rpm
REVERSE	1950 TO 2100 rpm
MOTOR DRIVE MANUAL CONNECTION	0.50 INCH MAX. STANDARD SQUARE SOCKET
DIMENSIONS	
HEIGHT	18.8 INCHES (477 mm) MAX.
LENGTH	14.8 INCHES (376 mm) MAX.
WIDTH	14.5 INCHES (368 mm) MAX.
WEIGHT	60.6 POUNDS (133.3 kg) MAX.

AV8BB-TAC-05-(69-1)09-SCAN

Figure 2-147. Pneumatic Drive Unit Assembly



STRUCTURE OF AIRCRAFT 25MM GUN SYSTEM
A/A49E-10 REMOVED FOR CLARITY

TECHNICAL CHARACTERISTICS

ITEM	CHARACTERISTICS
TYPE	5 BARREL GATLING
GUN LENGTH	84 INCHES
GUN WEIGHT	280 POUNDS
FIRING RATE	UP TO 4200 ROUNDS PER MINUTE
CLEARING METHOD	REVERSE ROTATION
REQUIRED POWER	15 HP AT 3600 ROUNDS PER MINUTE
NUMBER OF BARRELS	FIVE DISPERSION 7 MILS (80% CIRCLE)
RECOIL FORCES	
PEAK (STEADY RATE)	7500 POUNDS
AVERAGE (STEADY RATE)	7000 POUNDS
RECOIL TRAVEL	1.00 INCH (MAX)
COUNTER RECOIL TRAVEL	0.40 INCH (MAX) EXCLUDING THERMAL GROWTH OF BARREL CLUSTER
MUZZLE VELOCITY	3560 FEET PER SECOND
AMMUNITION	25-MM (HEI-T, TP-T, API, APDS-T, DUMMY)

AV8BB-TAC-05-(70-1)09-CATI

Figure 2-148. GAU-12/U 25mm Gun

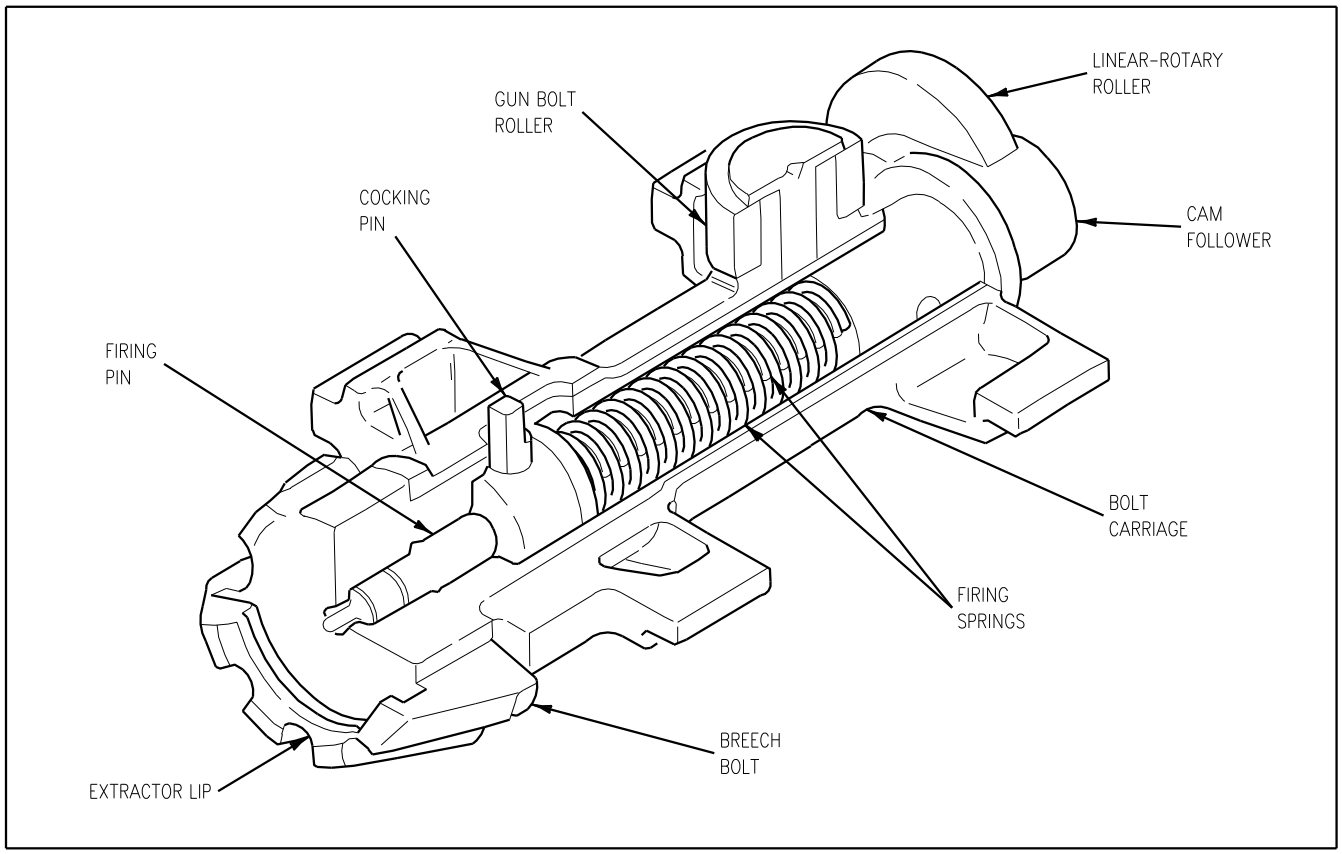


Figure 2-149. Breech Bolt Assembly In Uncocked Position

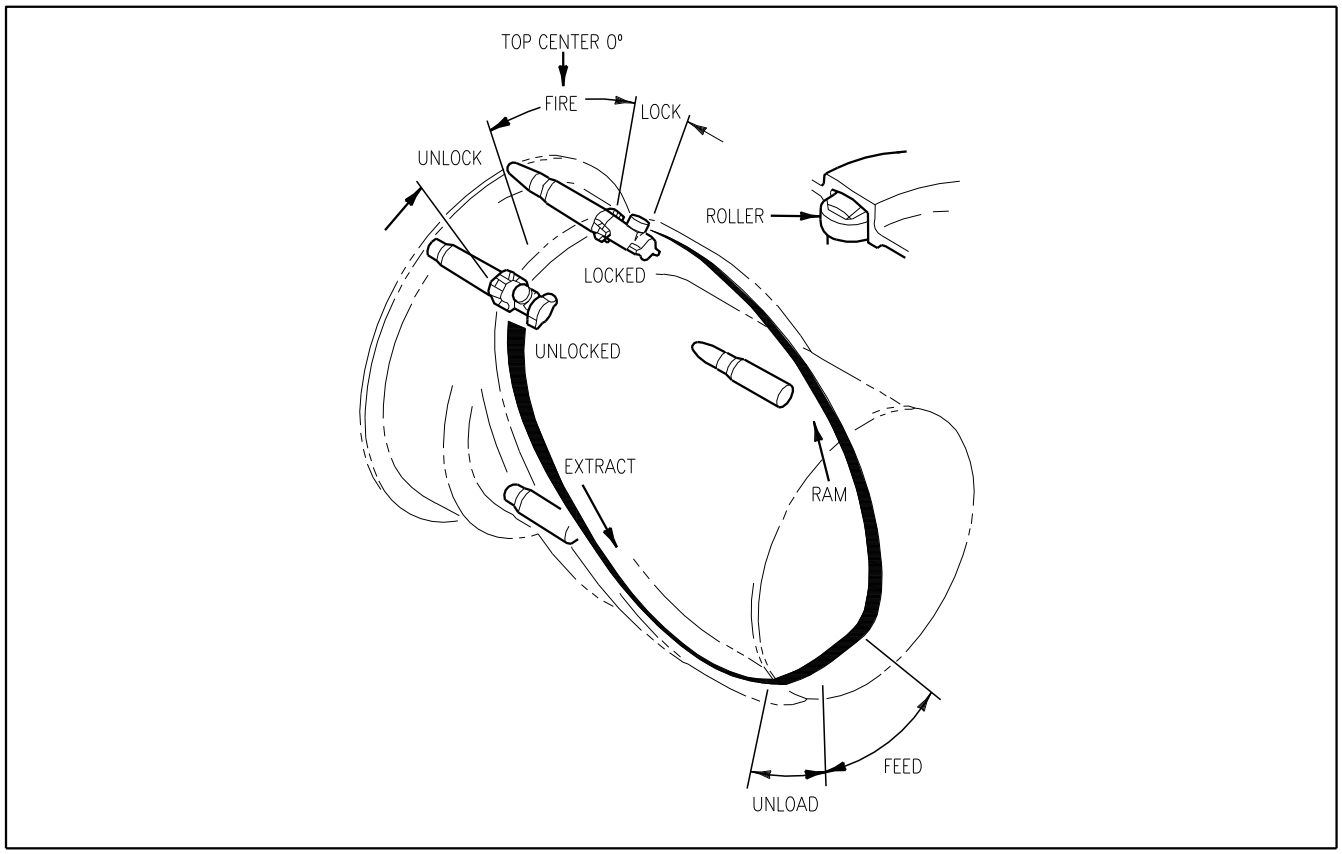


Figure 2-150. Firing Cycle Showing Breech Bolt Motion

2.12.2.5 M790 25mm Ammunition.

Percussion primed. All cartridges have matched ballistics. See Figure 2-151.

1. Classification of ammunition.

   (a) Armor Piercing Incendiary (API)

   (b) High Explosive Incendiary (HEI)

   (c) High Explosive Incendiary Self Destruct (HEI-SD)

   (d) Semi Armor Piercing High Explosive Incendiary - Tracer (SAPHEI-T)

   (e) Target Practice (TP)

   (f) Target Practice Frangible Tracer (TPF-T)

   (g) Dummy

2. Cartridge.

   (a) Case. Thin walled steel painted olive drab. Type of ammo and lot number stenciled in waterproof marking ink.

   (b) Propellant. 91 grams of WC890 propellant.

   (c) Percussion primer. M115 brass cup containing primer mix.

   (d) Ignition booster. Provides consistent ignition of propellant.

3. Projectiles description and color coding.

   (a) PGU-20/U API. Black, red hollow aluminum body contains a hardened depleted uranium penetrator.

   (b) PGU-22/U HEI-SD. Yellow, red, silver hollow steel body contains aluminized explosive mix. Uses M758 fuze armed by acceleration forces, spin effect and deceleration, graze impact or self destruct after 6.2 to 19 seconds.

   (c) PGU-23/U TP. Blue hollow steel body with aluminum or steel wind screen.

   (d) PGU-24/U Dummy. Gold threaded projectile screwed into case.

   (e) PGU-25/U HEI. Yellow, red, and silver hollow steel body contains aluminized explosive mix. Uses M505 fuse armed by acceleration forces. Functions under direct impact.

   (f) PGU-25 A/U HEI. Yellow, red and silver. Same as 25/U, but with zirconium pellets.

   (g) PGU-32/U SAPHEI-T. Yellow, black, red and silver with red T's. Hollow hardened steel body contains incendiary and explosive mix with a zerconlum pellet. Uses pyrotechnic fuze sensitized by acceleration forces and spin effect. Functions under direct impact and graze impact. Tracer functions for 5.0 seconds.

   (h) PGU-33/U TPF-T. Blue and silver with red T's. Hollow stainless steel body with aluminum wind screen. Tracer functions for 5.0 seconds.

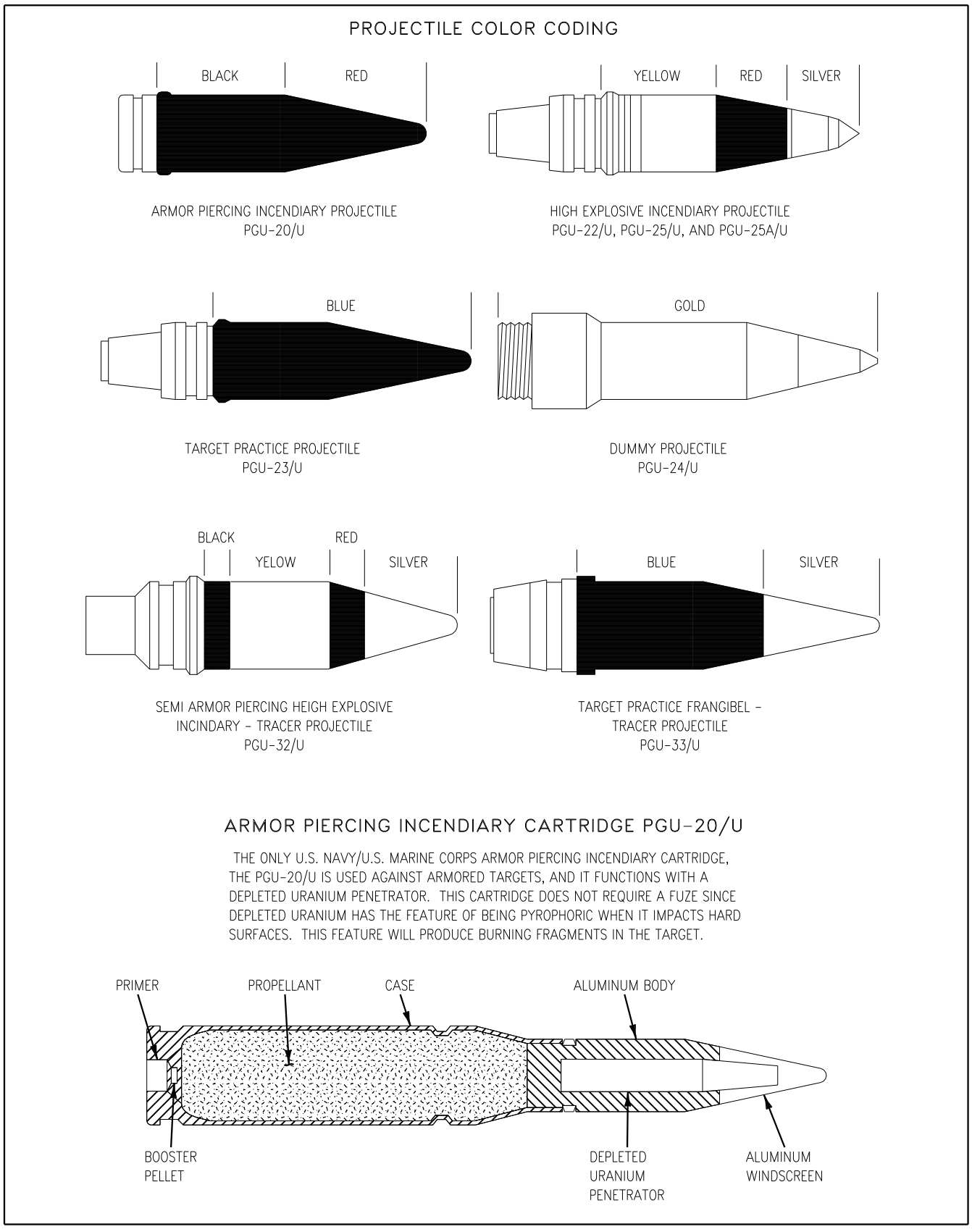
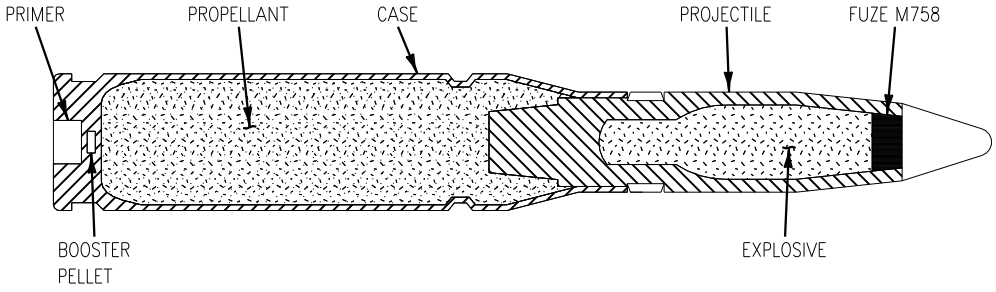


Figure 2-151. M790 25mm Ammunition (Sheet 1 of 3)

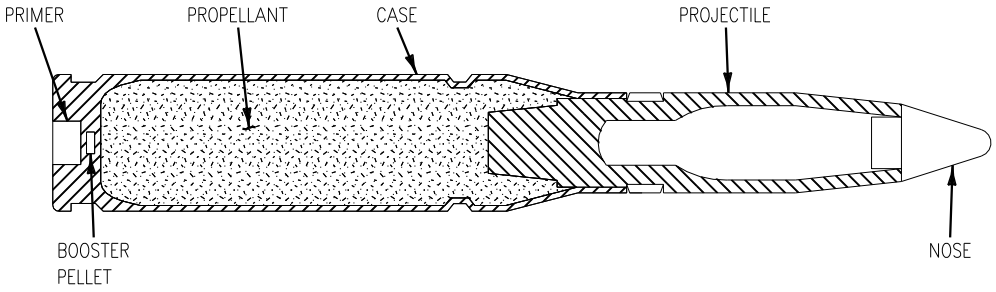
HIGH EXPLOSIVE INCENDIARY – SELF DESTRUCT PGU-22/U

THE HIGH EXPLOSIVE INCENDIARY SELF DESTRUCT CARTRIDGE, PGU-22/U IS FOR USE AGAINST AIRCRAFT AND LIGHT MATERIAL TARGETS, AND IT FUNCTIONS WITH BOTH DETONATING AND INCENDIARY EFFECTS. THE PROJECTILE BODY IS MANUFACTURED FROM STEEL STOCK AND HAS A RELATIVELY THIN-WALLED CASING. UPON IMPACT, THE M758 FUZE INITIATES THE HEI MIX (H761, RDX).



TARGET PRACTICE CARTRIDGE – SWAGED NOSE PGU-23/U

THE TARGET PRACTICE CARTRIDGE, PGU-23/U HAS NO EXPLOSIVE IN THE PROJECTILE. THE SOLID NOSE IS MADE OF ALUMINUM ALLOY. THE PROJECTILE SHAPE AND BALLISTIC PROPERTIES ARE SIMILAR TO THOSE OF THE OTHER 25MM AMMUNITION. THE CARTRIDGE IS USED IN TARGET PRACTICE FIRING, FOR BORESIGHTING OF WEAPONS, AND FOR TESTING NEW GUNS.



HIGH EXPLOSIVE INCENDIARY CARTRIDGE PGU-25/U

THE HEI CARTRIDGE, PGU-25/U IS FOR USE AGAINST AIRCRAFT AND LIGHT MATERIAL TARGETS, AND IT FUNCTIONS WITH BOTH DETONATING AND INCENDIARY EFFECTS. THE PROJECTILE IS MANUFACTURED FROM STEEL STOCK AND HAS A RELATIVELY THIN-WALLED CASING. UPON IMPACT, THE M505 FUZE INITIATES THE HEI MIX (PBXN-5/AL).

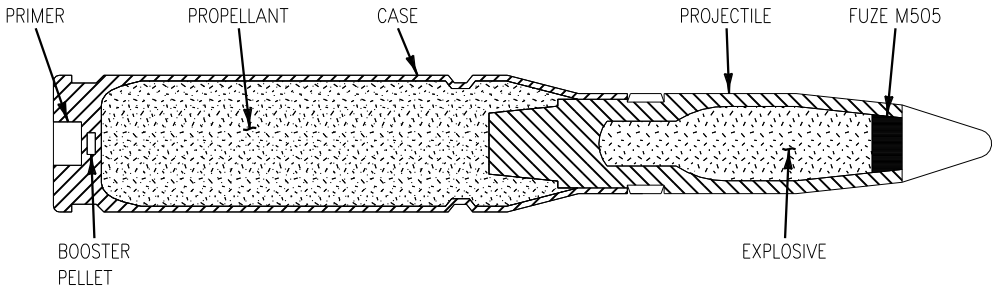


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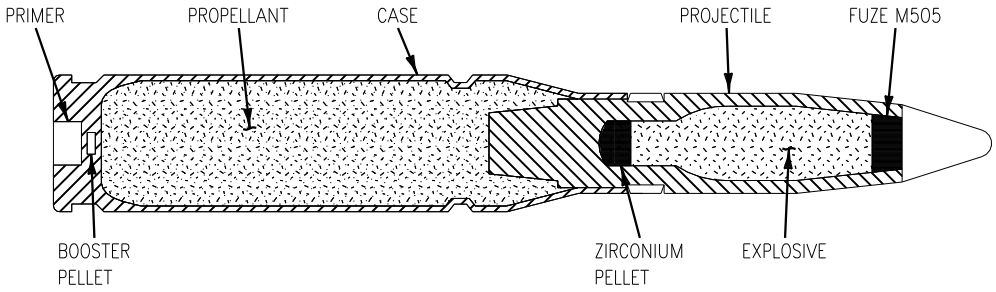
Figure 2-151. M790 25mm Ammunition (Sheet 2 of 3)

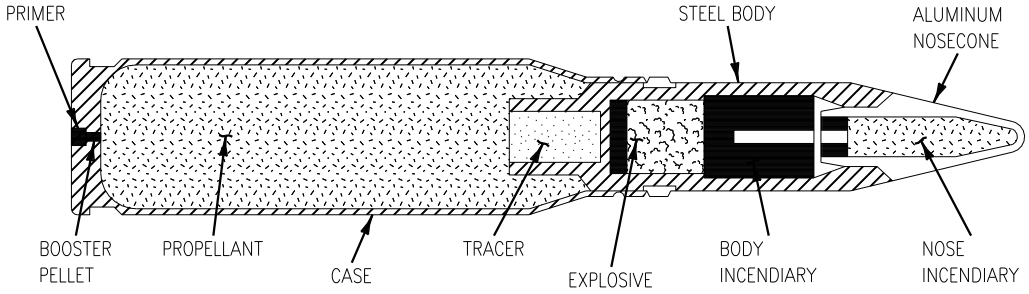
HIGH EXPLOSIVE INCENDIARY CARTRIDGE PGU-25A/U

THE HEI CARTRIDGE, PGU-25A/U IS FOR USE AGAINST AIRCRAFT AND LIGHT MATERIAL TARGETS, AND IT FUNCTIONS WITH BOTH DETONATING AND INCENDIARY EFFECTS. THE PROJECTILE IS MANUFACTURED FROM STEEL STOCK AND HAS A RELATIVELY THIN-WALLED CASING. UPON IMPACT, THE M505 FUZE INITIATES THE HEI MIX (PBXN-5 WITH A ZIRCONIUM PELLET).



SEMI ARMOR PIERCING HIGH EXPLOSIVE INCENDIARY - TRACER CARTRIDGE PGU-32/U

THE SEMI ARMOR PIERCING HIGH EXPLOSIVE INCENDIARY - TRACER CARTRIDGE, PGU-32/U IS FOR USE AGAINST AIRCRAFT, PERSONNEL AND LIGHT TO MEDIUM ARMORED MATERIAL TARGETS, THE PROJECTILE IS MADE OF A HARDENED STEEL SHELL THAT WILL AID IN PENETRATION AND A PYROTECHNIC FUZE THAT WILL DELAY FUNCTION UNTIL THE PROJECTILE HAS ENTERED THE TARGET. THE TRACER WILL FUNCTION FOR 5.0 SECONDS. THE BALLISTIC PERFORMANCE IS SIMILAR TO THE OTHER 25MM ROUNDS USED IN THE AV-8B AIRCRAFT.



TARGET PRACTICE FRANGIBLE - TRACER CARTRIDGE PGU-33/U

THE TARGET PRACTICE FRANGIBLE - TRACER CARTRIDGE, PGU-33/U HAS NO EXPLOSIVE IN THE PROJECTILE. THE NOSE IS A THIN ALUMINUM NOSE CONE PRESSED IN THE BODY. THE BODY OF THE PROJECTILE IS POWERED STAINLESS STEEL THAT WILL BREAK INTO SMALL FRAGMENTS WHEN THE PROJECTILE STRIKES THE TARGET. THE TRACER WILL FUNCTION FOR 5.0 SECONDS. THE BALLISTIC PERFORMANCE IS SIMILAR TO THE OTHER 25MM ROUNDS USED IN THE AV-8B AIRCRAFT.

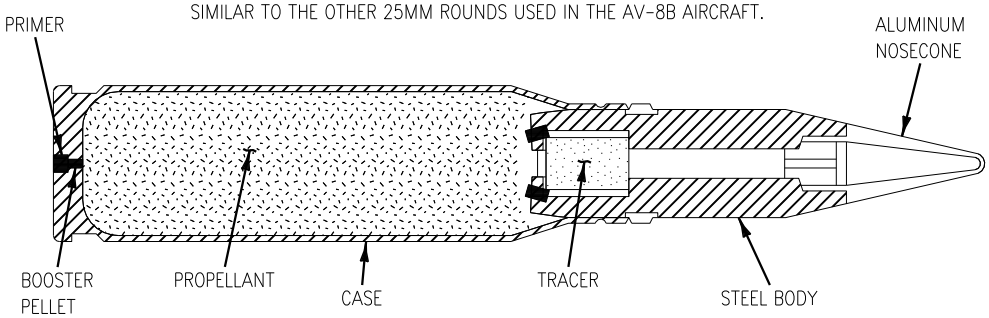


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Figure 2-151. M790 25mm Ammunition (Sheet 3 of 3)

2.12.3 Method of Operation. The following is a sequence of events during the gun system operation (see Figure 2-152). See Figure 2-153 for ECU timing sequence.

MECHANICAL/PHNEUMATIC	ELECTRICAL 28 VDC ARM BUS
Gun aboard.	
Gun select A/G, A/A, MA.	Gun select signal to ECU.
Gun shut-off valve open.	
Trigger squeeze (2nd detent).	Trigger signal to ECU. Regulator valve solenoid opens.
Regulator valve opens (60 to 90 PSI).	
	Safing valve solenoid open.
Safing valve opens.	
Pneumatic safing actuator.	
Safing cam.	
	Brake/Drive solenoid open.
Air Drive forward.	
Gun rotates (3600 to 4200).	
Firing begins (0.20 second).	
45 rounds first second, 60 rounds each second thereafter.	
Trigger release.	ECU commands safing valve to close.
Safing valve closed.	
Pneumatic safing actuator closed.	
Safing cam safe.	
	Unclear signal set. Reverse drive solenoid open.
Rotary valve turns 90É. Air flow reverses. Gun decelerates to zero rpm.	

Figure 2-152. Gun System Sequence of Operation (Sheet 1 of 2)

MECHANICAL/PHNEUMATIC	ELECTRICAL 28 VDC ARM BUS
Gun accelerates in reverse (1950 to 2100 rpm).	
Unfired rounds backed through gun.	
	Projectile sensor detects two empty cases.
Last live round passes through gun.	
	Brake/Drive solenoid closed.
Brake applied to stop reverse rotation.	
Reverse rotation stops (0.5 sec.).	
Brake vents to allow hand turning.	
	Regulator valve solenoid closes.
Regulator valve closes.	
	Unclear signal removed.
Gun cleared of live rounds and ready to fire again.	
Rapid trigger cycling is acceptable, but this loses 2 to 3 rounds to the return system on each trigger actuation.	
To safe gun: Pause one second Master arm OFF Gun deselect.	
	Gun deselect signal to ECU.
Gun shut-off valve closed.	

Figure 2-152. Gun System Sequence of Operation (Sheet 2 of 2)

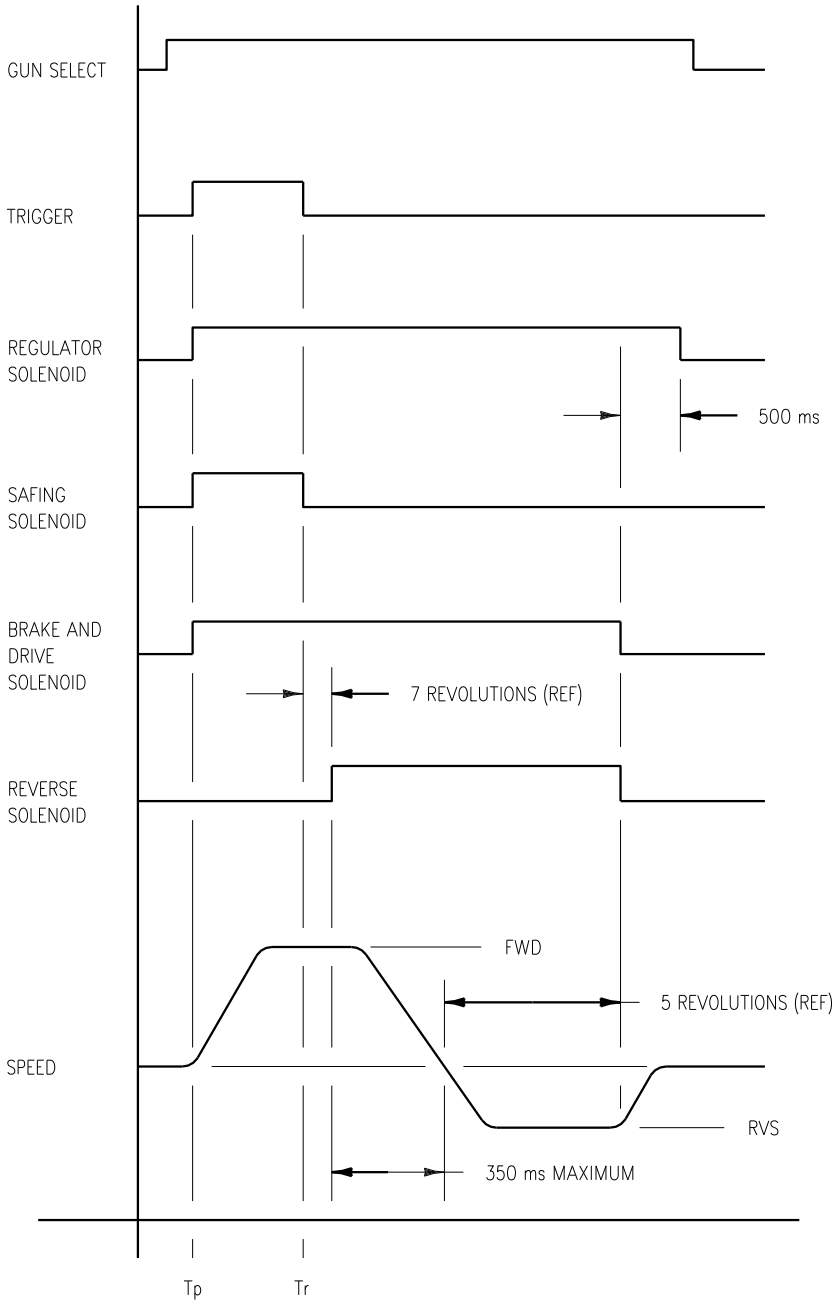

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Figure 2-153. ECU Timing Sequence

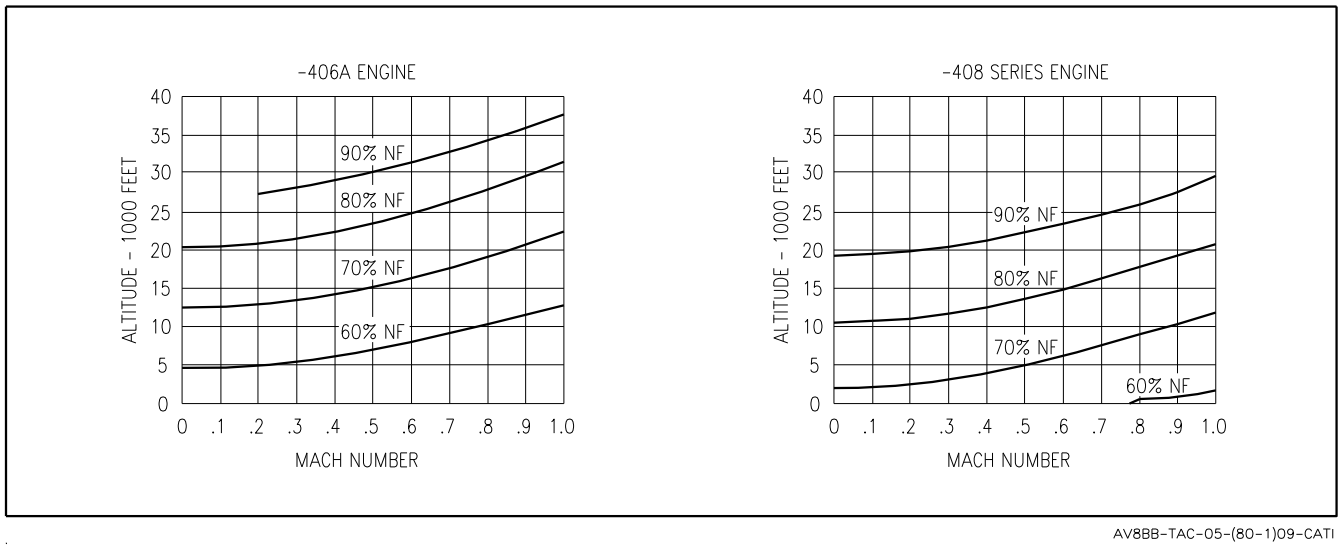

Figure 2-154. Power Setting Required to Provide 60 PSI Air Pressure to 25mm Gun

2.12.4 Limitations.

1. Firing Limitations:

   (a) Airspeed 150 knots with 408 engine. Airspeed 250 knots with 406 engine.

   (b) Nozzles less than 30É.

   (c) No firing above 20,000 feet MSL.

   (d) Sixty percent minimum rpm at sea level (see Figure 2-154).

2.12.5 Failures of the 25mm Gun. The MC software uses gun unclear and rounds count to determine exactly which failure has occurred and display the appropriate indication to the pilot. See Figure 2-155 for DDI/MPCD and HUD gun system fail indications.

All failures display a flashing weapon release inhibit cue on the HUD and flashing weapon FAIL on DDI/MPCD with a NOT CLEAR, MISFIRING, or LIMITED indication under the boxed gun legend.

2.12.5.1 Gun NOT CLEAR Failure. A gun malfunction should be assumed. Place master arm to OFF (SAFE) and deselect GUN.

CAUTION

Failure to safe gun could result in gun damage, gun pak overheat or cook off of rounds in breech area.

During war time attempt to fire through a gun NOT CLEAR indication.

2.12.5.2 Gun MISFIRING Failure. With this type failure the gun can fire only one 20 round burst. The projectile sensor sees eight rounds returning to feed system indicating a misfiring barrel. The misfiring barrel could be from barrel warping or a broken breech bolt. After the 20 round burst the gun will not fire again.

2.12.5.3 Gun LIMITED Failure. The ECU detects a projectile sensor failure and limits the gun to a 20 round burst with each subsequent trigger pull. The gun remains clear if no fire attempt is made. If a fire attempt is made assume the gun is not clear.

With a limited failure the ECU safes the gun (safe arm actuator) after the 20 round burst, but the gun still turns and unfired rounds travel through the gun and cycle through the feed system until the pilot releases the trigger to start the reverse sequence. In this case, the gun

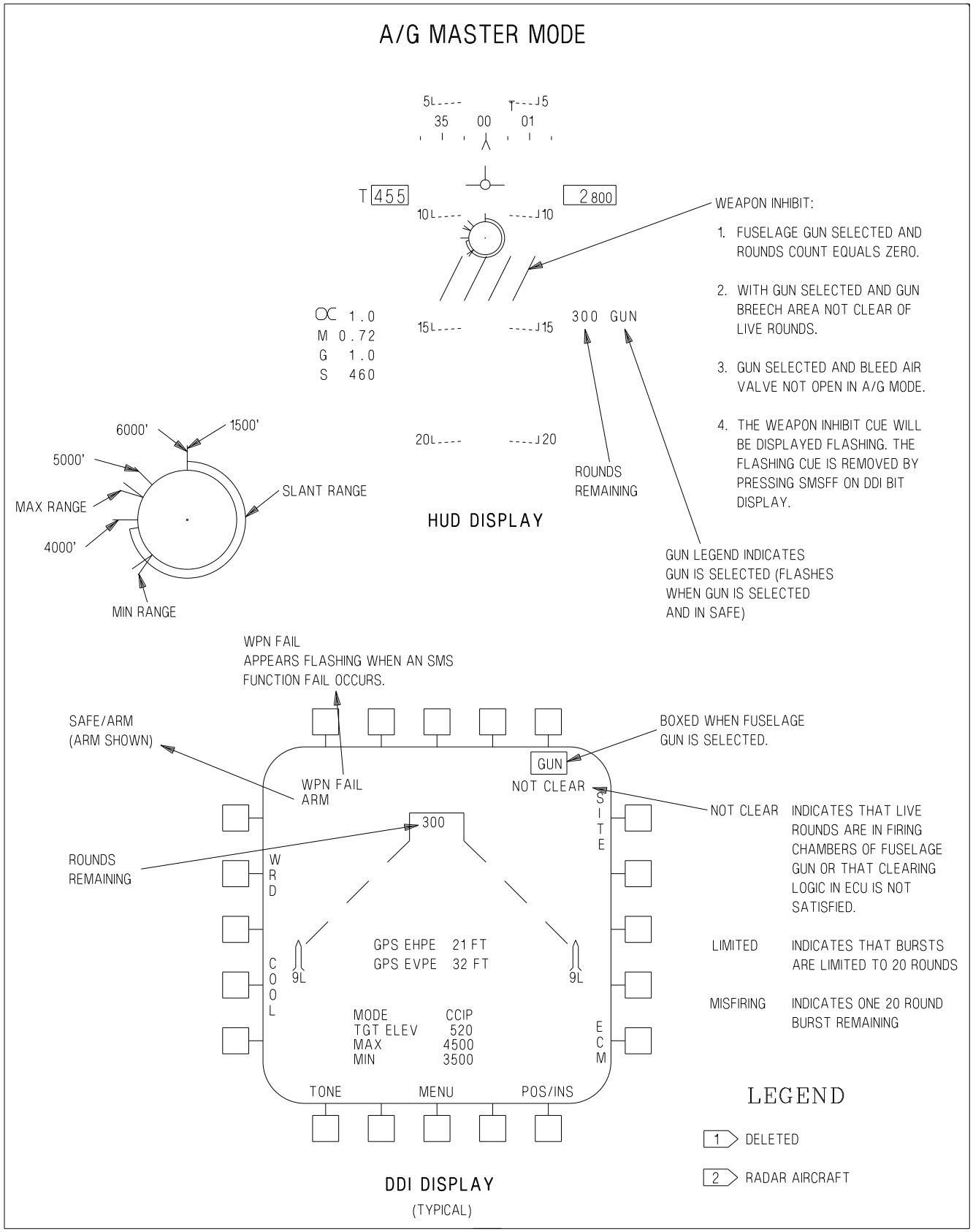

Figure 2-155. Gun System Fail Indications (Sheet 1 of 2)

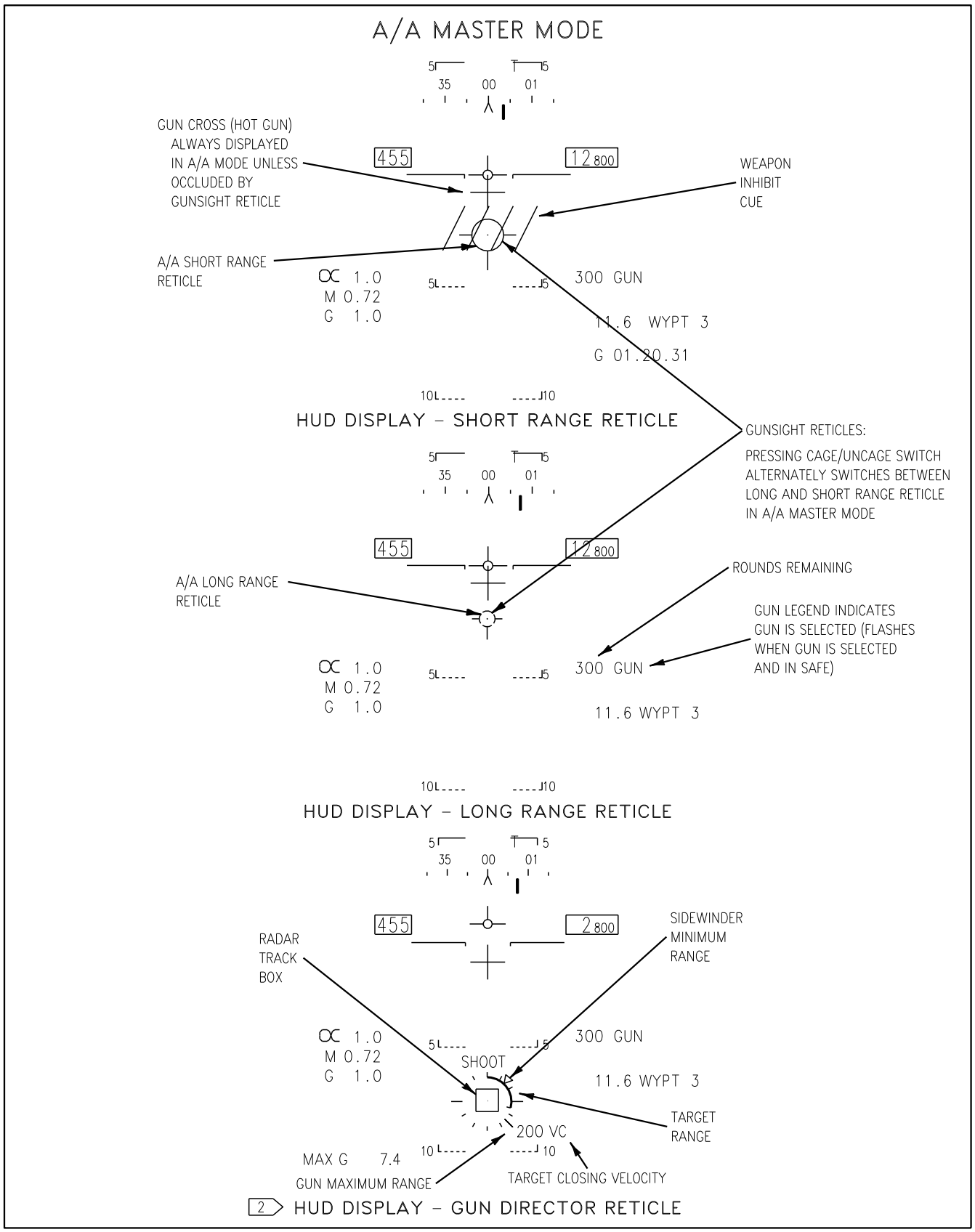

Figure 2-155. Gun System Fail Indications (Sheet 2 of 2)

reverses only a default number of sprockets (8). This results in a hot gun and rounds down stream that will not be able to be fired. For this reason, DO NOT fire with a limited failure unless mandatory.

2.12.5.4 Other Mechanical Failures.

1. Safing cam failure.
2. Gun drive failure.
3. Gun drive reverses during forward rotation.
4. Electrical failure.

2.12.5.5 Safety Considerations. For safety considerations, treat all gun failures in the same manner.

1. Master arm OFF (SAFE).
2. Gun deselect.

2.12.6 PGU-20/U and PGU-32/U Penetration Capability. Refer to Figures 2-156 and 2-157 respectively.

2.12.7 Safe Escape (Terrain, Fragmentation and Ricochet Avoidance). The GAU-12/U safe escape tables (see Figures 2-158 through 2-161) provide minimum cease-fire altitudes required to keep the aircraft from entering the hazardous area considering terrain avoidance, fragmentation and ricochet (aircraft danger zone). An open fire altitude is provided in these tables based on a one second burst. Longer burst may be used by adjusting the open fire altitude provided the minimum cease fire altitude is not violated.

The aircraft danger zone is a function of projectile type and target type. Maximum fragmentation and ricochet altitudes are significantly higher for the PGU-23/U Target Practice (TP) projectile as compared to both the PGU-20/U Armor Piercing Incendiary (API) and PGU-22/U High Explosive Incendiary (HEI) projectiles. When using the TP round, maximum ricochets of up to 1,500 feet AGL have been recorded against hard targets (such as armor), but the maximum ricochets decrease to less than 800 feet AGL when used against soft targets (earth and sand). The PGU-23/U TP Safe Escape table provides minimum release altitudes for deliveries against both hard and soft targets.

API and HEI rounds exhibit the same aircraft danger zone, independent of target type. Maximum ricochets for the API and HEI rounds against both hard and soft targets is 1,500 feet AGL. Safe escape tables are provided for the API and HEI rounds.

The aircraft maneuver required to satisfy safe escape for flight path angles shallower than or equal to -30É is a straight path dive release followed by a 5g level breakaway to a minimum of 60É heading change. Safe escape for the -45É and -60É flight path angle deliveries is based on a straight path dive release followed by a wings level pull-up.

All 25 mm rounds are a ″Ballistic Match″ by contract specification. The gun CCIP symbology is generated by the same ballistic algorithm regardless of which type round is used. One set of delivery data and release error sensitivity charts is used to complete weaponeering for all 25 mm rounds. The PGU-23 TP has a separate safe escape table due to its higher minimum release altitudes.

PGU-20/U PENETRATION DATA			AIRCRAFT SPEED (KTAS)				
			400	450	500	550	600
ARMOR (RHA) THICKNESS	[1] IMPACT ANGLE	[2] V50 (FT/S)	[3] R50 (FT)	[3] R50 (FT)	[3] R50 (FT)	[3] R50 (FT)	[3] R50 (FT)
1.0 inch	90É 60É 30É	1873 2081 3116	8120 7078 3253	8615 7470 3540	9215 7897 3829	9981 8372 4120	11200 8921 4410
2.0 inch	90É 60É 30É	3092 3437 5146	3335 2163 None	3623 2451 None	3911 2737 None	4200 3022 None	4494 3310 None
2.5 inch	90É 60É 30É	3368 3743 5604	2398 1123 None	2684 1409 None	2971 1697 None	3258 1984 None	3579 2272 None

NOTE:
[1] The angle of the target surface with respect to the line of flight of the projectile.
[2] The velocity at which 50 percent of the projectiles will penetrate the target.
[3] The range at which 50 percent of the projectiles will penetrate the target.
Shaded Area - Indicates a slant range which violates the safe escape tables.

Figure 2-156. PGU-20/U Penetration Capability

PGU-32/U PENETRATION DATA			AIRCRAFT SPEED (KTAS)				
			400	450	500	550	600
ARMOR (RHA) THICKNESS	[1] IMPACT ANGLE	[2] V50 (FT/S)	[3] R50 (FT)	[3] R50 (FT)	[3] R50 (FT)	[3] R50 (FT)	[3] R50 (FT)
0.5 inch	90É 60É 30É	1901 2015 2750	7169 6589 4019	7728 7002 4334	8445 7517 4638	9369 8173 4929	10559 9019 5208
0.75 inch	90É 60É 30É	3049 3060 3131	2871 2830 2569	3193 3150 2881	3519 3476 3202	3845 3802 3528	4165 4123 3854

NOTE:
[1] The angle of the target surface with respect to the line of flight of the projectile.
[2] The velocity at which 50 percent of the projectiles will penetrate the target.
[3] The range at which 50 percent of the projectiles will penetrate the target.
Shaded Area - Indicates a slant range which violates the safe escape tables.

Figure 2-157. PGU-32/U Penetration Capability

AV-8B SAFE ESCAPE TABLE
GAU-12/U GUN : 25 MM PROJECTILE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

AGAINST ALL TARGETS

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS OPEN FIRE ALT. (FT)	450 KTAS CEASE FIRE ALT. (FT)	450 KTAS SIGHT ANGLE (API) (MIL)	450 KTAS SIGHT ANGLE (HEI) (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS OPEN FIRE ALT. (FT)	500 KTAS CEASE FIRE ALT. (FT)	500 KTAS SIGHT ANGLE (API) (MIL)	500 KTAS SIGHT ANGLE (HEI) (MIL)	500 KTAS RECOVERY ALTITUDE (FT)
-5	5 G	415	348	42	41	219	513	439	40	40	285
	6 G	414	347	42	41	218	512	438	40	40	284
-10	5 G	821	689	41	41	382	968	821	40	40	463
	6 G	812	680	42	41	373	958	811	40	40	478
-15	5 G	1247	1050	41	41	540	1457	1238	40	40	652
	6 G	1234	1037	42	41	527	1431	1212	40	40	626
-20	5 G	1639	1379	42	41	729	1942	1653	40	40	898
	6 G	1551	1291	41	41	667	1772	1483	39	39	761
-30	5 G	2661	2281	41	40	1123	3178	2756	41	41	1386
	6 G	2453	2073	40	41	986	2834	2412	39	39	1140
-45	5 G	4165	3628	39	39	1458	5023	4426	40	40	1822
	6 G	4041	3504	39	39	1423	4435	3838	38	38	1510
-60	5 G	6144	5486	38	38	2121	7523	6792	39	39	2712
	6 G	5706	5048	37	37	1941	6355	5624	36	37	2099

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope.
3. Gross weight = 24,000 lbs.

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Figure 2-158. Safe Escape Table, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 1 of 2)

AV-8B SAFE ESCAPE TABLE
GAU-12/U GUN : 25 MM PROJECTILE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

AGAINST ALL TARGETS

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	550 KTAS OPEN FIRE ALT. (FT)	CEASE FIRE ALT. (FT)	SIGHT ANGLE (API) (MIL)	SIGHT ANGLE (HEI) (MIL)	RECOVERY ALTITUDE (FT)	600 KTAS OPEN FIRE ALT. (FT)	CEASE FIRE ALT. (FT)	SIGHT ANGLE (API) (MIL)	SIGHT ANGLE (HEI) (MIL)	RECOVERY ALTITUDE (FT)
-5	5 G	610	527	38	38	348	753	665	36	37	517
	6 G	600	519	38	38	365	631	543	34	34	395
-10	5 G	1105	943	38	38	560	1173	997	35	35	621
	6 G	1093	931	38	38	548	1089	913	34	34	555
-15	5 G	1661	1420	39	38	758	1826	1564	35	36	920
	6 G	1642	1401	38	38	764	1668	1406	34	34	791
-20	5 G	2280	1962	39	38	1090	2545	2198	36	37	1213
	6 G	2072	1754	38	38	918	2309	1962	35	35	1045
-30	5 G	3748	3284	40	38	1678	4143	3636	38	39	1860
	6 G	3338	2874	38	38	1400	3681	3174	36	36	1544
-45	5 G	5975	5318	39	40	2244	6319	5602	37	37	2308
	6 G	5303	4646	37	38	1840	5617	4900	35	36	1919
-60	5 G	8896	8092	38	40	3278	9304	8426	36	38	3316
	6 G	7678	6874	35	36	2628	7990	7112	33	34	2658

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope.
3. Gross weight = 24,000 lbs.

AV8BB-TAC-05-(89-2)10

Figure 2-158. Safe Escape Table, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 2 of 2)

AV-8B SAFE ESCAPE TABLE
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
1.0 SECOND BURST

AGAINST HARD TARGETS

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS OPEN FIRE ALT. (FT)	450 KTAS CEASE FIRE ALT. (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS OPEN FIRE ALT. (FT)	500 KTAS CEASE FIRE ALT. (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)
-5	5 G	472	406	42	301	580	506	42	386
	6 G	456	390	41	282	540	466	41	348
-10	5 G	1001	869	43	615	1183	1036	43	743
	6 G	955	823	42	575	1097	950	42	664
-15	5 G	1567	1370	44	933	1814	1595	43	1089
	6 G	1491	1294	43	869	1688	1469	43	980
-20	5 G	2135	1875	44	1225	2390	2101	43	1345
	6 G	2031	1771	43	1147	2266	1977	43	1255
-30	5 G	3213	2833	43	1675	3754	3332	43	1962
	6 G	3001	2621	42	1534	3402	2980	42	1708
-45	5 G	4805	4268	41	2098	5667	5070	42	2466
	6 G	4681	4144	41	2063	5077	4480	40	2152
-60	5 G	6904	6246	39	2881	8287	7556	41	3476
	6 G	6464	5806	38	2699	7115	6384	38	2859

AGAINST SOFT TARGETS

-5	5 G	415	348	41	219	513	439	40	285
	6 G	414	347	41	218	512	438	40	284
-10	5 G	853	721	41	467	985	838	40	545
	6 G	825	693	42	445	939	792	40	506
-15	5 G	1293	1096	41	659	1502	1283	41	777
	6 G	1255	1058	42	633	1398	1179	40	690
-20	5 G	1773	1513	41	863	2072	1783	41	1028
	6 G	1679	1419	42	795	1902	1613	40	891
-30	5 G	2829	2449	41	1290	3354	2932	42	1562
	6 G	2617	2237	40	1150	3004	2582	40	1310
-45	5 G	4357	3820	40	1650	5215	4618	41	2014
	6 G	4233	3696	39	1615	4627	4030	39	1702
-60	5 G	6372	5714	38	2349	7751	7020	40	2940
	6 G	5934	5276	37	2169	6583	5852	37	2327

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope.
3. Gross weight = 24,000 lbs.

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Figure 2-159. Safe Escape Table, GAU-12/U Gun, 25mm Projectile, PGU-23/U Target Practice (Sheet 1 of 2)

AV-8B SAFE ESCAPE TABLE
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
1.0 SECOND BURST

AGAINST HARD TARGETS

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	550 KTAS OPEN FIRE ALT. (FT)	550 KTAS CEASE FIRE ALT. (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)	600 KTAS OPEN FIRE ALT. (FT)	600 KTAS CEASE FIRE ALT. (FT)	600 KTAS SIGHT ANGLE (MIL)	600 KTAS RECOVERY ALTITUDE (FT)
-5	5 G	691	610	41	475	805	717	38	567
	6 G	647	566	39	434	753	665	37	517
-10	5 G	1363	1202	42	870	1523	1347	40	971
	6 G	1277	1116	41	791	1423	1247	38	889
-15	5 G	2044	1804	43	1223	2226	1964	41	1320
	6 G	1922	1682	41	1124	2096	1834	39	1219
-20	5 G	2740	2422	43	1550	3017	2670	42	1685
	6 G	2528	2210	41	1374	2765	2418	39	1501
-30	5 G	4344	3880	44	2274	4731	4224	43	2448
	6 G	3906	3442	42	1968	4273	3766	40	2136
-45	5 G	6628	5972	43	2897	6977	6260	40	2966
	6 G	5953	5296	40	2490	6269	5552	37	2571
-60	5 G	9670	8866	42	4052	10081	9204	39	4094
	6 G	8444	7640	38	3394	8762	7884	36	3430

AGAINST SOFT TARGETS

-5	5 G	610	527	39	348	665	577	35	427
	6 G	600	519	38	365	631	543	34	395
-10	5 G	1127	966	39	634	1265	1089	36	713
	6 G	1065	904	38	579	1181	1005	35	647
-15	5 G	1750	1510	40	930	1944	1682	37	1038
	6 G	1612	1372	38	814	1786	1524	36	909
-20	5 G	2420	2102	40	1230	2685	2338	38	1353
	6 G	2210	1892	39	1057	2445	2098	36	1181
-30	5 G	3928	3464	42	1858	4321	3814	40	2038
	6 G	3510	3046	39	1572	3859	3352	37	1722
-45	5 G	6171	5514	41	2440	6517	5800	38	2506
	6 G	5499	4842	38	2036	5813	5096	35	2115
-60	5 G	9128	8324	40	3510	9538	8660	38	2506
	6 G	7906	7102	37	2856	8222	7344	35	2890

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope.
3. Gross weight = 24,000 lbs.

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Figure 2-159. Safe Escape Table, GAU-12/U Gun, 25mm Projectile, PGU-23/U Target Practice (Sheet 2 of 2)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 1.0 SECOND BURST

450 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-5	*415	348	4529	90	1.85	41	4503	3833	4.11	2183
	**472	406	5090	126	2.12	42	5049	4415	5.20	1940
	500	434	5355	140	2.26	42	5309	4688	5.83	1831
	600	534	6250	194	2.80	45	6182	5615	8.44	1492
	700	634	7059	252	3.39	49	6968	6459	11.57	1231
	800	734	7778	311	4.02	52	7665	7214	15.22	1066
	900	834	8416	360	4.64	56	8285	7883	19.27	995
	1000	934	8986	400	5.22	61	8843	8480	23.56	947
	2000	1934	12796	570	9.86	106	12670	12475	67.78	718
	4000	3934	16934	651	16.39	184	17084	16965	144.69	597
	5000	4934	18411	666	19.04	218	18756	18651	177.91	580
	8000	7934	21945	688	25.86	306	23035	22947	262.31	572
	10000	9934	23931	694	29.82	354	25616	25533	308.55	580
	12000	11934	25785	697	33.50	397	28126	28043	348.30	590
	15000	14934	28454	699	38.62	450	31857	31775	397.87	605
	20000	19934	32871	698	46.42	519	38180	38095	459.34	625
-10	821	689	4548	51	1.88	41	4597	3887	4.04	2167
	*853	721	4717	56	1.95	41	4766	4061	4.37	2092
	900	768	4962	62	2.08	41	5013	4313	4.89	1986
	1000	868	5476	78	2.35	43	5528	4845	6.09	1775
	**1001	869	5481	78	2.36	43	5534	4850	6.11	1773
	1100	968	5977	96	2.65	44	6030	5365	7.47	1585
	1200	1068	6462	117	2.98	46	6516	5870	9.06	1416
	1500	1368	7812	193	4.09	52	7860	7290	15.16	1062
	2000	1868	9688	305	6.03	66	9743	9282	29.04	899
	3000	2868	12484	437	9.49	99	12627	12294	61.29	744
	4000	3868	14556	506	12.51	133	14852	14583	93.65	667
	5000	4868	16227	546	15.21	165	16719	16487	124.36	626
	8000	7868	20053	603	22.13	248	21311	21126	205.05	587
	10000	9868	22113	619	26.12	296	23988	23815	250.16	587
	12000	11868	23994	628	29.81	337	26547	26380	289.21	593
	15000	14868	26638	634	34.92	390	30295	30130	338.32	604
	20000	19868	30907	635	42.63	459	36548	36381	399.80	622

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-1

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-1)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 1 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 1.0 SECOND BURST

450 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-15	1247	1050	4573	36	1.92	41	4723	3997	4.42	2129
	*1293	1096	4736	38	2.01	41	4891	4168	4.72	2057
	1300	1103	4760	39	2.02	41	4916	4194	4.78	2047
	1400	1203	5111	45	2.19	42	5278	4561	5.54	1897
	1500	1303	5459	53	2.39	43	5636	4927	6.33	1757
	**1567	1370	5689	59	2.53	44	5873	5170	6.96	1668
	2000	1803	7122	108	3.57	49	7346	6689	11.97	1194
	3000	2803	9936	246	6.44	69	10262	9737	31.43	883
	4000	3803	12151	344	9.23	95	12630	12197	56.22	765
	5000	4803	13959	409	11.82	122	14636	14263	82.14	696
	8000	7803	18045	508	18.65	198	19507	19220	155.50	614
	10000	9803	20178	537	22.62	243	22280	22016	198.30	602
	12000	11803	22086	553	26.30	283	24893	24640	235.90	600
	15000	14803	24710	567	31.36	335	28665	28419	283.77	607
	20000	19803	28841	572	38.98	402	34862	34617	344.52	621
-20	1639	1379	4441	26	1.91	41	4721	3986	4.49	2147
	1700	1400	4602	28	2.00	41	4893	4159	4.79	2074
	*1773	1513	4794	32	2.10	41	5097	4366	5.17	1990
	1800	1540	4865	32	2.13	41	5172	4442	5.31	1960
	1900	1640	5126	36	2.28	42	5450	4724	5.89	1850
	2000	1740	5385	41	2.43	43	5726	5004	6.52	1745
	2100	1840	5644	46	2.59	44	6000	5284	7.14	1645
	**2135	1875	5733	48	2.64	44	6095	5380	7.43	1612
	3000	2740	7847	116	4.39	53	8347	7695	16.10	1037
	3500	3240	8953	161	5.56	61	9538	8928	23.58	943
	4000	3740	9975	204	6.73	70	10652	10082	32.30	877
	5000	4740	11792	275	9.05	90	12682	12176	51.96	782
	8000	7740	16003	406	15.53	156	17710	17318	114.51	654
	10000	9740	18188	450	19.42	197	20559	20202	153.63	625
	12000	11740	20112	475	23.04	235	23216	22878	188.88	615
	15000	14740	22714	498	28.04	284	27013	26688	234.58	613
	20000	19740	26710	510	35.54	350	33165	32845	293.66	623

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-2

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-2)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 2 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 1.0 SECOND BURST

450 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-30	2661	2281	4543	22	2.15	40	5255	4514	6.27	1960
	2700	2320	4608	23	2.19	41	5331	4591	6.37	1931
	2800	2420	4775	24	2.30	41	5525	4786	6.75	1857
	*2829	2449	4823	25	2.33	41	5581	4843	6.84	1836
	3000	2630	5107	29	2.51	42	5911	5176	7.48	1717
	**3213	2833	5459	34	2.74	43	6320	5589	8.37	1577
	4000	3620	6728	58	3.80	49	7802	7092	12.79	1157
	5000	4620	8248	103	5.43	58	9602	8930	21.35	964
	6000	5620	9652	147	7.15	69	11303	10668	32.55	873
	7000	6620	10944	187	8.90	84	12913	12311	45.42	808
	8000	7620	12134	223	10.66	98	14441	13869	59.27	759
	10000	9620	14260	281	14.12	129	17302	16775	87.96	697
	12000	11620	16135	321	17.46	159	19980	19482	115.86	664
	15000	14620	18629	361	22.18	201	23778	23307	154.29	641
	20000	19620	22330	388	29.38	259	29833	29378	206.81	634
-45	4165	3628	4086	19	2.42	39	5828	5082	9.51	1795
	*4357	3820	4271	21	2.57	40	6094	5349	9.91	1704
	**4805	4268	4700	25	2.94	41	6713	5971	10.99	1509
	5000	4463	4886	27	3.11	42	6982	6241	11.48	1432
	6000	5463	5825	40	4.12	46	8348	7616	14.80	1108
	7000	6463	6733	58	5.30	51	9692	8973	19.44	988
	8000	7463	7606	78	6.53	58	11012	10306	25.24	920
	9000	8463	8442	97	7.82	66	12307	11614	31.95	868
	10000	9463	9244	116	9.12	73	13579	12898	39.26	827
	12000	11463	10751	149	11.79	91	16062	15403	54.82	766
	15000	14463	12803	189	15.78	118	19660	19025	78.84	711
	20000	19463	15834	229	22.20	159	25439	24826	115.72	672
-60	6144	5486	3431	20	3.09	38	7032	6282	14.31	1462
	*6372	5714	3556	22	3.26	38	7292	6542	14.58	1393
	**6904	6246	3845	24	3.68	39	7896	7148	15.46	1245
	7000	6342	3896	25	3.76	40	8005	7257	15.67	1220
	8000	7342	4430	33	4.66	43	9137	8393	17.83	1048
	9000	8342	4952	41	5.64	46	10263	9522	20.54	978
	10000	9342	5461	50	6.66	50	11382	10646	23.75	928
	11000	10342	5957	58	7.71	53	12496	11763	27.27	888
	12000	11342	6440	66	8.78	58	13603	12875	31.05	855
	15000	14342	7813	91	12.09	72	16892	16175	43.37	782
	20000	19342	9890	120	17.65	96	22285	21580	64.36	719

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-3

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-3)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 3 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

500 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-5	*513	439	5217	171	2.12	40	5157	4483	10.74	1965
	**580	506	5809	203	2.45	42	5737	5095	12.24	1725
	600	526	5980	213	2.54	42	5904	5272	12.73	1659
	700	626	6792	268	3.08	44	6695	6117	15.43	1373
	800	726	7527	325	3.66	48	7408	6887	18.61	1155
	900	826	8187	380	4.26	52	8047	7581	22.22	1038
	1000	926	8778	426	4.84	56	8623	8202	26.17	981
	2000	1926	12706	627	9.50	99	12553	12330	68.85	732
	4000	3926	16927	721	16.05	176	17043	16909	144.78	602
	5000	4926	18422	739	18.70	209	18733	18614	177.76	583
	8000	7926	21986	763	25.51	296	23039	22940	261.70	573
	10000	9926	23983	770	29.46	344	25629	25535	307.78	581
	12000	11926	25844	774	33.12	386	28144	28051	347.44	590
	15000	14926	28512	775	38.21	438	31875	31782	397.03	605
	20000	19926	32919	774	45.94	504	38188	38092	458.69	624
-10	968	821	5168	93	2.12	40	5212	4460	10.61	1976
	*985	838	5253	96	2.16	40	5298	4547	10.83	1940
	1000	853	5328	98	2.20	41	5373	4625	11.00	1909
	1100	953	5820	115	2.48	42	5867	5136	12.25	1712
	**1183	1036	6220	131	2.72	43	6267	5552	13.40	1563
	1200	1053	6301	134	2.78	44	6348	5636	13.66	1534
	1500	1353	7650	208	3.82	49	7694	7053	19.09	1124
	2000	1853	9551	330	5.70	62	9596	9076	31.89	922
	3000	2853	12395	478	9.15	93	12520	12142	62.93	757
	4000	3853	14501	556	12.16	125	14775	14470	94.62	676
	5000	4853	16196	604	14.86	156	16662	16401	124.90	633
	8000	7853	20060	668	21.77	239	21287	21080	204.94	590
	10000	9853	22132	687	25.75	286	23974	23782	249.84	588
	12000	11853	24018	697	29.42	327	26538	26352	288.81	593
	15000	14853	26661	704	34.48	379	30285	30101	337.95	604
	20000	19853	30917	706	42.13	445	36526	36341	399.66	622

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-4

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-4)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 4 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

500 KTAS

FLIGHT PATH ANGLE	OPEN FIRE ALT	CEASE FIRE ALT	RANGE TO CENTER OF PATTERN	PATTERN LENGTH ON GROUND	TIME OF FALL	SIGHT ANGLE	OPEN FIRE SLANT RANGE	CEASE FIRE SLANT RANGE	TRAJECTORY DROP	AVERAGE BURST IMPACT VELOCITY
(DEG)	(FT)	(FT)	(FT)	(FT)	(SEC)	(MILS)	(FT)	(FT)	(MILS)	(FT/SEC)
-15	1457	1238	5207	67	2.19	40	5376	4595	11.01	1933
	1500	1282	5355	73	2.27	41	5527	4753	11.29	1872
	*1502	1283	5361	70	2.28	41	5534	4757	11.37	1869
	1600	1382	5694	81	2.47	42	5876	5110	12.11	1736
	1700	1482	6028	91	2.67	43	6220	5463	13.06	1610
	1800	1582	6358	101	2.89	43	6560	5813	14.07	1492
	**1814	1595	6402	99	2.91	43	6607	5858	14.29	1476
	1900	1682	6683	112	3.12	44	6894	6158	15.20	1383
	2000	1782	7002	125	3.36	46	7222	6498	16.41	1283
	3000	2782	9828	271	6.15	65	10147	9562	34.45	902
	4000	3782	12066	377	8.90	89	12533	12048	58.30	778
	5000	4782	13896	451	11.47	114	14557	14140	83.58	705
	8000	7782	18020	562	18.28	190	19459	19139	156.01	618
	10000	9782	20168	596	22.25	234	22244	21950	198.51	604
	12000	11782	22082	616	25.90	273	24862	24582	235.98	601
	15000	14782	24705	631	30.94	324	28633	28362	283.86	607
	20000	19782	28822	637	38.49	389	34820	34549	344.82	621
-20	1942	1653	5155	52	2.24	40	5485	4689	11.21	1910
	2000	1711	5303	55	2.32	41	5643	4849	11.55	1848
	*2072	1783	5487	58	2.42	41	5838	5048	12.00	1774
	2200	1911	5811	64	2.62	42	6183	5399	12.85	1648
	2300	2011	6062	70	2.78	43	6451	5672	13.57	1555
	**2390	2101	6286	76	2.94	43	6689	5916	14.26	1476
	2400	2111	6310	77	2.95	43	6716	5943	14.36	1467
	3000	2711	7747	127	4.16	50	8249	7523	20.38	1072
	3500	3211	8856	176	5.30	57	9440	8760	27.31	964
	4000	3711	9881	223	6.45	66	10557	9920	35.57	893
	5000	4711	11711	302	8.74	85	12595	12029	54.45	795
	8000	7711	15951	448	15.17	149	17645	17206	115.81	660
	10000	9711	18149	499	19.04	189	20504	20106	154.53	629
	12000	11711	20081	526	22.63	226	23168	22790	189.57	617
	15000	14711	22682	553	27.60	274	26964	26603	235.21	614
	20000	19711	26666	567	35.06	338	33107	32752	294.44	623

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-5

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-5)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 5 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 1.0 SECOND BURST

500 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-30	3178	2756	5341	43	2.59	41	6197	5390	13.11	1686
	3200	2778	5377	43	2.62	41	6239	5432	13.19	1672
	3300	2878	5540	46	2.73	42	6429	5624	13.63	1608
	*3354	2932	5627	47	2.80	42	6531	5727	13.88	1574
	3400	2978	5702	48	2.84	42	6618	5815	14.08	1546
	**3754	3332	6270	60	3.29	43	7282	6489	15.88	1345
	3800	3378	6342	61	3.35	44	7368	6576	16.18	1320
	5000	4578	8173	115	5.20	53	9533	8786	25.40	982
	6000	5578	9577	162	6.90	65	11232	10526	36.08	887
	7000	6578	10870	208	8.62	78	12842	12173	48.53	819
	8000	7578	12062	247	10.35	93	14371	13734	62.01	769
	10000	9578	14195	312	13.77	122	17236	16650	90.12	704
	12000	11578	16072	356	17.08	151	19915	19362	117.75	668
	15000	14578	18563	401	21.77	192	23711	23188	156.02	644
	20000	19578	22248	434	28.91	249	29755	29251	208.64	635
-45	5023	4426	4866	34	3.01	40	6982	6161	15.87	1493
	*5215	4618	5046	37	3.18	41	7244	6425	16.42	1418
	**5667	5070	5468	43	3.62	42	7861	7046	17.82	1256
	6500	5903	6232	58	4.52	45	8985	8181	21.05	1056
	7000	6403	6679	67	5.09	48	9652	8854	23.42	1004
	7500	6903	7118	79	5.70	51	10314	9523	26.09	966
	8000	7403	7548	89	6.32	55	10969	10185	29.03	933
	10000	9403	9181	131	8.87	69	13532	12776	42.65	836
	12000	11403	10683	167	11.50	86	16012	15279	57.97	773
	15000	14403	12727	212	15.45	111	19603	18899	81.79	716
	20000	19403	15739	258	21.80	152	25371	24691	118.67	674
-60	7523	6792	4143	35	4.07	39	8580	7753	20.16	1149
	*7751	7020	4264	36	4.27	40	8838	8011	20.66	1106
	**8287	7556	4545	41	4.77	41	9442	8617	21.90	1042
	8500	7769	4655	43	4.97	42	9681	8857	22.52	1024
	9000	8269	4913	47	5.46	43	10242	9421	23.87	991
	10000	9269	5418	57	6.45	46	11360	10543	27.03	939
	11000	10269	5911	66	7.49	50	12472	11659	30.51	897
	12000	11269	6391	76	8.55	55	13578	12770	34.23	863
	15000	14269	7753	103	11.82	69	16862	16065	46.52	788
	18000	17269	9014	126	15.14	83	20103	19316	59.33	742
	20000	19269	9809	137	17.33	92	22246	21464	67.60	722

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-6

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-6)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 6 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

550 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-5	*610	527	5797	238	2.36	39	5711	5018	17.57	1801
	**691	610	6456	293	2.76	41	6348	5710	19.35	1551
	700	619	6527	298	2.80	41	6416	5784	19.57	1526
	800	719	7269	350	3.33	44	7139	6558	22.35	1281
	900	819	7944	405	3.89	47	7794	7268	25.54	1102
	1000	919	8554	456	4.47	50	8386	7910	29.11	1018
	1500	1419	10910	610	7.01	71	10710	10387	49.37	840
	2000	1919	12602	684	9.14	91	12422	12171	70.13	747
	4000	3919	16907	792	15.69	167	16989	16840	145.05	608
	5000	4919	18420	812	18.35	201	18695	18564	177.79	586
	8000	7919	22016	839	25.15	285	23031	22922	261.26	574
	10000	9919	24022	848	29.08	332	25629	25527	307.20	581
	12000	11919	25888	851	32.73	373	28149	28047	346.78	590
	15000	14919	28559	853	37.78	425	31882	31780	396.35	604
	20000	19919	32963	853	45.46	491	38193	38088	458.09	624
-10	1105	943	5691	140	2.34	38	5729	4937	17.25	1836
	*1127	966	5798	148	2.39	39	5834	5051	17.45	1792
	1200	1039	6142	162	2.60	40	6179	5409	18.41	1661
	1300	1139	6603	182	2.89	41	6641	5890	19.86	1495
	**1363	1202	6886	195	3.09	42	6924	6187	20.87	1397
	1400	1239	7050	205	3.21	43	7088	6360	21.48	1346
	1500	1339	7483	229	3.55	45	7520	6816	23.29	1215
	2000	1839	9403	359	5.39	57	9439	8861	35.03	947
	3000	2839	12293	521	8.80	87	12401	11981	64.82	772
	4000	3839	14433	609	11.80	118	14684	14346	95.82	686
	5000	4839	16150	661	14.49	148	16591	16301	125.70	639
	8000	7839	20053	735	21.39	229	21249	21022	205.05	592
	10000	9839	22137	756	25.35	275	23947	23736	249.76	589
	12000	11839	24028	768	29.01	315	26515	26311	288.65	593
	15000	14839	26675	776	34.05	366	30266	30065	337.72	604
	20000	19839	30927	776	41.64	432	36505	36301	399.51	621

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-7

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-7)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 7 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 1.0 SECOND BURST

550 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-15	1661	1420	5785	104	2.45	39	5969	5140	17.80	1770
	1700	1460	5915	110	2.53	39	6101	5279	18.06	1720
	*1750	1510	6078	115	2.62	40	6270	5452	18.52	1658
	1900	1660	6561	131	2.93	41	6769	5965	20.06	1484
	2000	1760	6878	143	3.16	42	7095	6304	21.16	1378
	**2044	1804	7016	148	3.26	43	7236	6450	21.69	1334
	2500	2260	8374	217	4.46	50	8636	7915	28.30	1032
	3000	2760	9710	293	5.86	59	10023	9375	37.84	923
	4000	3760	11969	410	8.57	82	12425	11887	60.73	792
	5000	4760	13818	492	11.12	108	14464	14001	85.39	716
	8000	7760	17981	616	17.90	180	19399	19044	156.82	622
	10000	9760	20142	654	21.84	223	22195	21870	199.02	606
	12000	11760	22062	677	25.48	262	24818	24509	236.36	603
	15000	14760	24689	694	30.49	312	28592	28294	284.16	607
	20000	19760	28801	702	37.99	377	34776	34479	345.17	621
-20	2280	1962	5920	85	2.62	39	6304	5455	18.53	1672
	2300	1983	5970	89	2.65	39	6357	5511	18.64	1653
	*2420	2102	6264	93	2.84	40	6672	5830	19.58	1545
	2500	2183	6461	102	2.98	41	6880	6047	20.13	1475
	2700	2383	6941	117	3.34	43	7394	6574	21.89	1317
	**2740	2422	7035	117	3.41	43	7496	6676	22.32	1288
	2800	2483	7178	125	3.53	44	7647	6835	22.84	1245
	3000	2683	7644	144	3.94	45	8144	7350	24.93	1123
	3500	3183	8751	195	5.04	53	9335	8588	31.38	986
	4000	3683	9779	245	6.17	60	10453	9751	39.19	911
	5000	4683	11618	330	8.43	78	12496	11873	57.34	809
	8000	7683	15886	492	14.80	140	17568	17084	117.45	666
	10000	9683	18097	547	18.65	179	20437	19999	155.74	633
	12000	11683	20036	580	22.22	215	23106	22692	190.56	619
	15000	14683	22640	610	27.16	263	26905	26510	236.08	615
	20000	19683	26616	626	34.56	326	33043	32655	295.35	623

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-8

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-8)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 8 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

550 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-30	3748	3284	6189	72	3.13	41	7204	6338	20.92	1426
	3800	3336	6271	74	3.20	41	7300	6436	21.19	1397
	*3928	3464	6471	79	3.37	42	7536	6676	21.93	1330
	4000	3536	6583	81	3.47	42	7669	6810	22.38	1294
	**4344	3880	7113	97	3.95	44	8294	7448	24.63	1140
	4400	3936	7198	99	4.03	44	8395	7551	25.04	1120
	4500	4036	7350	104	4.18	45	8574	7734	25.78	1090
	5000	4536	8091	130	4.97	50	9456	8638	29.93	1002
	6000	5536	9491	180	6.64	60	11152	10377	40.15	901
	7000	6536	10783	228	8.34	73	12760	12024	52.19	831
	8000	7536	11976	271	10.04	86	14290	13589	65.31	779
	10000	9536	14111	343	13.42	115	17156	16511	92.90	711
	12000	11536	15992	392	16.69	143	19837	19228	120.14	673
	15000	14536	18482	441	21.35	183	23633	23058	158.16	647
	20000	19536	22157	478	28.43	238	29672	29118	210.68	636
-45	5975	5318	5696	57	3.78	40	8236	7346	23.86	1218
	*6171	5514	5874	61	3.97	41	8499	7612	24.61	1160
	**6628	5972	6286	70	4.48	43	9110	8231	26.48	1066
	7000	6344	6615	79	4.90	45	9605	8730	28.23	1022
	8000	7344	7478	101	6.09	50	10917	10058	33.68	946
	9000	8344	8307	123	7.33	57	12206	11362	39.99	890
	10000	9344	9102	146	8.60	64	13473	12644	46.98	846
	12000	11344	10597	185	11.19	80	15948	15144	61.98	780
	15000	14344	12631	235	15.10	105	19534	18761	85.51	721
	20000	19344	15626	286	21.40	144	25293	24547	122.16	677
-60	8896	8092	4807	56	5.17	40	10098	9197	28.19	1012
	*9128	8324	4924	59	5.39	40	10358	9457	28.86	998
	**9670	8866	5196	64	5.93	42	10962	10064	30.53	968
	10000	9196	5359	67	6.26	43	11330	10433	31.61	951
	11000	10196	5846	77	7.28	47	12439	11547	35.07	907
	12000	11196	6321	88	8.31	51	13543	12655	38.78	872
	13000	12196	6783	98	9.38	56	14640	13758	42.69	842
	14000	13196	7232	108	10.46	59	15733	14855	46.78	816
	15000	14196	7668	117	11.55	64	16820	15946	51.01	794
	18000	17196	8915	141	14.83	77	20056	19191	63.71	747
	20000	19196	9700	155	16.99	86	22195	21336	72.00	726

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-9

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-9)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 9 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

600 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-5	665	577	5939	323	2.37	35	5816	5124	24.23	1821
	*753	665	6606	361	2.76	37	6470	5816	26.22	1566
	**805	717	6981	385	3.01	38	6837	6206	27.53	1435
	900	812	7630	432	3.51	41	7468	6885	30.15	1230
	1000	912	8256	483	4.04	44	8077	7544	33.26	1080
	1500	1412	10695	655	6.57	63	10476	10113	52.07	867
	2000	1912	12442	739	8.70	84	12237	11957	72.11	766
	4000	3912	16851	861	15.29	158	16901	16736	145.79	614
	5000	4912	18390	883	17.96	190	18632	18487	178.20	591
	8000	7912	22027	916	24.76	274	23005	22887	261.11	576
	10000	9912	24044	924	28.69	321	25615	25502	306.87	581
	12000	11912	25927	928	32.33	362	28149	28038	346.21	590
	15000	14912	28617	931	37.40	413	31899	31788	395.52	604
	20000	19912	33047	930	45.07	478	38231	38117	456.97	623
-10	1173	997	5828	187	2.35	35	5854	5024	24.07	1854
	1200	1024	5952	191	2.41	35	5978	5153	24.40	1804
	*1265	1089	6247	203	2.59	36	6275	5461	25.25	1689
	1300	1124	6404	209	2.68	37	6433	5625	25.73	1630
	1400	1224	6846	229	2.97	38	6876	6088	27.17	1473
	1500	1324	7276	252	3.28	40	7306	6540	28.78	1332
	**1523	1347	7373	257	3.36	40	7403	6642	29.15	1302
	2000	1824	9209	381	5.03	50	9238	8598	39.31	978
	3000	2824	12149	560	8.41	79	12242	11775	67.56	790
	4000	3824	14328	658	11.40	109	14559	14184	97.71	697
	5000	4824	16074	718	14.09	139	16491	16171	127.04	647
	8000	7824	20025	799	20.98	219	21193	20943	205.53	595
	10000	9824	22124	823	24.94	263	23905	23673	249.97	590
	12000	11824	24031	834	28.60	303	26488	26262	288.60	594
	15000	14824	26700	845	33.65	355	30258	30038	337.31	604
	20000	19824	30978	845	41.24	420	36519	36295	398.75	621

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-10

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-10)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 10 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

600 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-15	1826	1564	6182	146	2.62	36	6376	5503	25.41	1686
	1900	1638	6416	154	2.76	37	6618	5752	26.11	1598
	*1944	1682	6554	158	2.85	37	6760	5899	26.55	1549
	2000	1738	6728	165	2.97	38	6941	6086	27.13	1487
	**2226	1964	7417	193	3.48	41	7652	6824	29.75	1266
	2500	2238	8216	235	4.18	44	8476	7688	33.57	1075
	3000	2738	9558	314	5.53	53	9868	9155	42.34	947
	4000	3738	11838	440	8.21	75	12287	11693	64.05	809
	5000	4738	13710	529	10.74	99	14345	13833	87.90	727
	8000	7738	17921	669	17.49	170	19321	18931	158.05	627
	10000	9738	20099	711	21.42	212	22132	21775	199.87	609
	12000	11738	22036	735	25.06	251	24770	24430	236.85	604
	15000	14738	24685	756	30.08	301	28563	28236	284.23	608
	20000	19738	28820	763	37.57	365	34767	34440	344.85	621
-20	2545	2198	6451	122	2.89	37	6878	5979	26.70	1547
	*2685	2338	6783	133	3.13	38	7234	6344	27.83	1424
	3000	2654	7516	161	3.71	41	8018	7155	30.68	1197
	**3017	2670	7554	160	3.74	42	8060	7196	30.92	1187
	4000	3654	9651	265	5.87	55	10325	9558	43.83	932
	5000	4654	11499	357	8.09	72	12376	11692	61.08	824
	6000	5654	13109	431	10.27	91	14222	13603	80.16	752
	7000	6654	14531	488	12.38	111	15909	15341	99.86	705
	8000	7654	15803	534	14.41	132	17475	16945	119.56	672
	10000	9654	18030	595	18.24	169	20358	19878	157.31	637
	12000	11654	19985	631	21.81	205	23041	22587	191.67	622
	15000	14654	22610	663	26.74	253	26858	26425	236.68	616
	20000	19654	26608	682	34.14	315	33015	32590	295.49	623

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-11

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-11)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 11 of 12)

AV-8B DELIVERY DATA
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

600 KTAS

FLIGHT PATH ANGLE (DEG)	OPEN FIRE ALT (FT)	CEASE FIRE ALT (FT)	RANGE TO CENTER OF PATTERN (FT)	PATTERN LENGTH ON GROUND (FT)	TIME OF FALL (SEC)	SIGHT ANGLE (MILS)	OPEN FIRE SLANT RANGE (FT)	CEASE FIRE SLANT RANGE (FT)	TRAJECTORY DROP (MILS)	AVERAGE BURST IMPACT VELOCITY (FT/SEC)
-30	4143	3636	6714	100	3.49	39	7847	6919	29.28	1300
	*4321	3814	6985	108	3.72	40	8168	7246	30.39	1216
	4500	3994	7256	118	3.98	41	8488	7576	31.52	1142
	**4731	4224	7599	128	4.32	43	8897	7993	33.26	1073
	5000	4494	7993	144	4.74	45	9367	8477	35.39	1025
	6000	5494	9389	198	6.36	55	11059	10214	45.04	917
	7000	6494	10680	249	8.03	66	12666	11863	56.56	844
	8000	7494	11875	296	9.72	80	14196	13431	69.25	790
	10000	9494	14014	373	13.06	107	17065	16360	96.16	718
	12000	11494	15905	425	16.31	135	19755	19089	122.75	678
	15000	14494	18413	479	20.95	174	23565	22936	159.99	649
	20000	19494	22108	519	28.01	229	29620	29015	211.77	637
-45	6319	5602	5938	75	3.96	37	8646	7684	31.03	1175
	*6517	5800	6115	78	4.18	38	8910	7950	31.81	1124
	**6977	6260	6520	89	4.68	40	9519	8567	33.81	1047
	7000	6284	6541	90	4.70	41	9550	8599	33.88	1045
	8000	7284	7398	114	5.87	46	10858	9923	39.08	961
	9000	8284	8222	138	7.09	52	12144	11225	45.14	903
	10000	9284	9012	162	8.34	59	13408	12504	51.92	856
	12000	11284	10506	202	10.90	75	15883	15005	66.29	788
	15000	14284	12543	256	14.77	98	19471	18626	88.97	743
	20000	19284	15546	310	21.02	137	25237	24421	124.65	679
-60	9304	8426	4948	70	5.38	38	10521	9541	34.82	1002
	*9538	8660	5063	73	5.61	38	10782	9802	35.56	989
	**10081	9204	5329	79	6.14	39	11385	10409	37.28	959
	11000	10123	5773	87	7.06	43	12403	11431	40.26	918
	12000	11123	6245	97	8.09	47	13506	12538	43.72	881
	13000	12123	6706	108	9.14	51	14603	13640	47.35	850
	14000	13123	7153	119	10.20	55	15695	14737	51.22	823
	15000	14123	7590	128	11.28	59	16782	15828	55.16	801
	18000	17123	8836	154	14.53	73	20018	19075	67.27	751
	20000	19123	9622	167	16.69	81	22158	21220	75.16	729

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15-degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B190-12

WARNING!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets.
If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(88-12)10

Figure 2-160. Delivery Data, GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 12 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

450 KTAS CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-5	*348	17	-22	-117	55	-109	32	200	-222	3.8	20	.5	20	5.2
	**406	21	-27	-145	74	-160	47	228	-253	4.4	25	.5	25	5.6
	500	29	-37	-195	113	-266	81	268	-297	5.3	33	.6	33	6.1
	600	38	-50	-253	162	-401	132	303	-335	6.2	42	.7	42	6.8
	700	49	-64	-307	216	-539	195	330	-364	7.0	52	.8	52	7.5
	800	60	-77	-347	268	-654	267	350	-385	7.7	63	.9	63	8.2
	900	69	-87	-372	308	-739	336	365	-399	8.3	73	1.0	73	8.8
	1000	76	-96	-386	334	-803	396	375	-408	8.8	83	1.1	83	9.4
	2000	104	-128	-361	348	-977	661	389	-413	12.7	160	2.0	160	12.6
	4000	114	-138	-264	260	-934	740	357	-372	17.1	270	3.7	270	15.8
	5000	117	-140	-234	231	-908	745	346	-357	18.8	315	4.5	314	16.8
	8000	125	-149	-174	173	-866	750	327	-335	23.0	429	6.5	429	18.6
	10000	132	-157	-149	148	-858	758	324	-331	25.6	496	7.6	496	19.4
	12000	142	-168	-130	130	-862	772	326	-332	28.1	558	8.5	558	19.8
	15000	158	-187	-108	109	-882	800	335	-341	31.9	645	9.5	644	20.2
	20000	190	-224	-83	83	-939	864	361	-366	38.2	776	10.6	776	20.3
-10	689	8	-10	-28	19	-21	12	107	-112	3.9	20	.9	20	5.3
	*721	8	-10	-30	20	-24	13	111	-117	4.1	22	.9	22	5.3
	**869	11	-14	-42	30	-42	23	132	-138	4.9	28	1.0	28	5.8
	900	12	-15	-45	32	-47	25	136	-143	5.0	30	1.1	30	5.9
	1000	14	-17	-55	40	-64	34	149	-156	5.5	34	1.1	34	6.2
	1100	16	-20	-67	50	-86	46	161	-169	6.0	40	1.2	40	6.6
	1200	19	-24	-80	61	-112	60	172	-181	6.5	46	1.3	46	7.0
	1500	29	-36	-121	101	-204	117	201	-210	7.9	65	1.6	65	8.3
	2000	44	-54	-162	148	-333	218	232	-242	9.7	98	2.1	97	10.0
	3000	64	-77	-186	179	-485	360	260	-270	12.6	155	2.9	155	12.3
	4000	76	-91	-183	180	-560	442	271	-280	14.9	206	3.7	206	13.9
	5000	84	-100	-175	172	-601	493	275	-283	16.7	251	4.5	251	15.0
	8000	100	-119	-144	143	-658	573	280	-286	21.3	368	6.5	367	17.2
	10000	109	-131	-129	127	-682	605	285	-290	24.0	435	7.6	435	18.1
	12000	120	-142	-115	114	-704	635	291	-296	26.5	497	8.5	497	18.7
	15000	137	-160	-97	98	-740	677	303	-308	30.3	583	9.5	583	19.2
	20000	169	-195	-76	76	-808	751	331	-336	36.5	713	10.7	713	19.5

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-1

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

AV8BB-TAC-05-(90-1)10

Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25 mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 1 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-15	1050	5	-6	-12	9	-9	6	75	-76	4.0	21	1.4	21	5.3
	*1096	6	-7	-13	10	-10	7	78	-80	4.2	22	1.4	22	5.4
	1300	7	-9	-19	15	-18	12	91	-94	4.9	29	1.5	29	5.8
	**1370	8	-10	-21	17	-21	14	96	-98	5.2	31	1.6	31	6.0
	1400	8	-10	-22	17	-23	15	98	-100	5.3	32	1.6	32	6.0
	1500	9	-11	-25	20	-28	19	104	-107	5.6	35	1.7	35	6.3
	2000	16	-19	-49	41	-74	48	133	-136	7.3	56	2.1	56	7.7
	3000	32	-38	-91	85	-192	140	173	-177	10.3	105	3.0	105	10.2
	4000	45	-53	-111	107	-286	222	196	-201	12.6	152	3.8	152	12.0
	5000	55	-65	-118	115	-355	287	211	-216	14.6	195	4.6	195	13.3
	8000	76	-90	-114	113	-475	409	235	-239	19.5	310	6.5	310	15.9
	10000	88	-103	-106	104	-521	459	246	-250	22.3	377	7.6	377	16.9
	12000	98	-116	-98	97	-560	500	256	-260	24.9	438	8.5	438	17.6
	15000	115	-135	-86	85	-611	553	272	-275	28.7	524	9.6	524	18.3
	20000	144	-167	-69	68	-691	634	302	-305	34.9	652	10.7	652	18.7
-20	1379	4	-5	-7	5	-4	4	57	-57	4.0	21	1.8	21	5.3
	*1513	4	-5	-8	7	-6	5	62	-63	4.4	24	1.9	24	5.5
	1700	5	-6	-10	8	-9	7	69	-70	4.9	28	2.0	28	5.8
	1800	6	-7	-11	10	-11	9	73	-74	5.2	31	2.1	31	5.9
	**1875	6	-7	-12	11	-12	10	76	-77	5.4	33	2.1	33	6.1
	1900	6	-7	-13	11	-13	10	77	-78	5.4	33	2.1	33	6.1
	2000	7	-8	-14	12	-16	12	81	-82	5.7	36	2.2	36	6.3
	2100	7	-9	-16	14	-18	14	85	-86	6.0	39	2.3	39	6.5
	3000	15	-18	-38	34	-63	47	115	-117	8.3	71	3.0	71	8.5
	3500	20	-23	-49	46	-94	72	128	-131	9.5	91	3.5	91	9.5
	4000	25	-29	-59	55	-126	99	140	-143	10.7	110	3.9	110	10.4
	5000	34	-40	-72	69	-185	150	159	-162	12.7	149	4.6	149	11.8
	8000	56	-65	-85	84	-318	275	194	-197	17.7	258	6.6	258	14.6
	10000	68	-79	-84	83	-378	335	209	-212	20.6	324	7.7	323	15.7
	12000	79	-92	-80	80	-426	382	223	-225	23.2	384	8.6	384	16.6
	15000	95	-111	-73	73	-486	443	241	-244	27.0	468	9.6	468	17.3
	20000	121	-142	-61	61	-573	531	273	-276	33.2	595	10.8	595	17.9

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-2

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

AV8BB-TAC-05-(90-2)10

Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 2 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2281	3	-4	-4	3	-2	3	44	-44	4.5	25	2.8	25	5.5
	*2449	3	-4	-4	4	-3	4	47	-47	4.8	27	2.9	27	5.7
	2700	4	-4	-5	5	-5	5	52	-52	5.3	32	3.0	32	6.0
	2800	4	-5	-6	5	-5	5	54	-54	5.5	34	3.1	34	6.1
	**2833	4	-5	-6	5	-6	5	55	-55	5.6	34	3.1	34	6.1
	3000	4	-5	-6	6	-7	7	58	-58	5.9	37	3.2	37	6.3
	4000	8	-9	-14	12	-20	17	75	-76	7.8	61	4.0	61	7.8
	5000	12	-14	-22	21	-42	35	91	-92	9.6	89	4.8	89	9.2
	6000	17	-20	-30	29	-67	57	106	-106	11.3	118	5.5	118	10.4
	7000	22	-25	-36	35	-94	81	118	-119	12.9	148	6.2	148	11.4
	8000	27	-31	-41	40	-122	106	129	-130	14.4	177	6.8	177	12.3
	10000	36	-42	-47	46	-174	154	149	-150	17.3	235	7.9	235	13.6
	12000	46	-53	-49	49	-222	200	165	-166	20.0	291	8.8	291	14.6
	15000	60	-69	-50	49	-286	261	187	-189	23.8	371	9.8	371	15.6
	20000	83	-96	-45	45	-376	350	221	-223	29.8	492	11.1	492	16.5
-45	3628	2	-3	-2	2	-1	2	35	-35	5.1	29	4.1	29	5.7
	*3820	2	-3	-2	2	-2	2	37	-37	5.3	31	4.2	31	5.9
	**4268	3	-3	-3	2	-3	3	42	-41	6.0	37	4.5	37	6.2
	5000	4	-4	-4	4	-5	5	49	-48	7.0	48	4.9	48	6.9
	6000	5	-6	-6	6	-10	10	58	-57	8.3	66	5.7	66	7.9
	7000	7	-8	-9	8	-17	16	67	-66	9.7	86	6.4	86	8.9
	8000	9	-10	-11	11	-26	23	75	-75	11.0	108	7.1	108	9.8
	9000	11	-13	-14	13	-36	32	84	-84	12.3	129	7.7	129	10.5
	10000	14	-16	-16	16	-47	42	92	-92	13.6	152	8.2	152	11.2
	12000	19	-22	-20	19	-71	65	107	-107	16.1	197	9.1	197	12.2
	15000	27	-31	-23	23	-111	102	128	-128	19.7	264	10.2	264	13.4
	20000	42	-48	-25	25	-179	166	161	-161	25.4	372	11.5	372	14.6
-60	5486	2	-2	-1	1	-2	2	36	-35	6.3	40	5.5	40	6.3
	*5714	2	-3	-1	1	-2	3	37	-37	6.5	42	5.7	42	6.5
	**6246	2	-3	-2	2	-3	3	41	-40	7.1	49	6.0	49	6.9
	7000	3	-4	-2	2	-4	5	46	-45	8.0	60	6.5	60	7.5
	8000	4	-5	-3	3	-7	7	52	-51	9.1	75	7.2	75	8.3
	9000	5	-6	-4	4	-10	10	58	-58	10.3	92	7.9	92	9.0
	10000	6	-7	-5	5	-14	14	65	-64	11.4	110	8.5	110	9.6
	11000	7	-8	-6	6	-19	19	71	-70	12.5	128	9.0	128	10.2
	12000	8	-9	-7	7	-24	24	77	-76	13.6	146	9.5	146	10.7
	15000	12	-14	-9	9	-44	42	95	-94	16.9	202	10.6	202	11.9
	20000	20	-23	-12	11	-84	80	124	-123	22.3	296	11.9	296	13.3

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-3

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

AV8BB-TAC-05-(90-3)10

Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 3 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

500 KTAS CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-5	*439	18	-19	-124	66	-136	43	218	-240	4.5	25	.5	24	5.5
	**506	23	-24	-153	88	-196	62	244	-269	5.1	30	.6	30	5.8
	600	30	-31	-199	125	-297	99	277	-304	5.9	38	.6	38	6.4
	700	38	-40	-249	170	-419	150	306	-335	6.7	47	.7	47	7.0
	800	47	-49	-294	218	-536	211	328	-359	7.4	57	.8	57	7.7
	900	55	-57	-326	261	-631	277	344	-375	8.0	67	.9	67	8.3
	1000	62	-64	-346	293	-704	338	357	-387	8.6	77	1.0	77	8.9
	2000	92	-94	-346	333	-934	627	382	-406	12.6	155	2.0	154	12.3
	4000	107	-109	-259	256	-918	726	356	-370	17.0	264	3.6	264	15.5
	5000	111	-113	-230	228	-897	735	345	-356	18.7	309	4.4	309	16.5
	8000	126	-127	-171	170	-858	743	327	-335	23.0	424	6.4	424	18.4
	10000	137	-138	-147	146	-852	752	325	-331	25.6	490	7.5	490	19.1
	12000	150	-152	-127	127	-856	766	327	-333	28.1	552	8.4	552	19.6
	15000	170	-172	-106	106	-876	794	336	-341	31.9	638	9.4	637	20.0
	20000	213	-215	-80	80	-933	857	362	-367	38.2	768	10.5	768	20.1
-10	821	9	-9	-32	22	-28	16	118	-123	4.5	24	1.0	24	5.4
	*838	9	-9	-33	23	-30	17	120	-126	4.5	25	1.0	25	5.5
	1000	12	-12	-46	34	-52	28	141	-147	5.4	32	1.1	32	6.0
	**1036	13	-13	-49	36	-57	31	145	-152	5.6	34	1.1	34	6.1
	1100	14	-15	-56	42	-69	37	152	-160	5.9	37	1.2	37	6.3
	1200	17	-17	-67	51	-91	49	164	-171	6.3	42	1.3	42	6.7
	1500	25	-26	-105	86	-174	98	192	-201	7.7	61	1.5	61	7.9
	2000	39	-40	-149	135	-302	196	225	-235	9.6	93	2.0	92	9.6
	3000	59	-60	-177	170	-460	340	256	-266	12.5	150	2.9	150	12.0
	4000	72	-72	-177	173	-541	425	268	-277	14.8	200	3.7	200	13.6
	5000	80	-81	-171	167	-587	479	273	-281	16.7	246	4.4	246	14.7
	8000	101	-102	-142	141	-649	564	280	-286	21.3	362	6.4	362	17.0
	10000	113	-114	-126	125	-674	598	284	-290	24.0	429	7.5	428	17.9
	12000	126	-128	-113	112	-697	627	291	-295	26.5	490	8.4	490	18.5
	15000	146	-148	-96	95	-733	668	303	-307	30.3	576	9.4	576	19.0
	20000	186	-187	-74	74	-800	741	331	-335	36.5	705	10.6	704	19.3

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-4

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

AV8BB-TAC-05-(90-4)10

Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 4 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-15	1238	6	-6	-15	12	-13	9	84	-86	4.6	25	1.5	25	5.5
	*1283	7	-7	-16	12	-14	10	87	-89	4.8	27	1.5	27	5.6
	1500	8	-8	-22	18	-24	16	100	-103	5.5	33	1.6	33	6.0
	**1595	9	-9	-25	20	-29	19	106	-109	5.9	37	1.7	37	6.3
	1600	9	-9	-25	20	-29	19	106	-109	5.9	37	1.7	37	6.3
	1700	10	-10	-29	24	-36	24	112	-115	6.2	40	1.8	40	6.5
	1800	11	-12	-33	27	-44	29	117	-121	6.6	44	1.9	44	6.8
	1900	13	-13	-38	31	-53	34	123	-126	6.9	49	1.9	49	7.0
	2000	14	-14	-43	36	-63	41	128	-132	7.2	53	2.0	53	7.3
	3000	29	-29	-85	79	-176	128	169	-173	10.1	101	2.9	101	9.9
	4000	42	-43	-105	101	-271	209	193	-198	12.5	147	3.7	147	11.7
	5000	53	-53	-114	111	-341	274	209	-214	14.6	190	4.5	190	13.0
	8000	77	-78	-111	110	-463	398	234	-238	19.5	304	6.4	304	15.6
	10000	90	-91	-104	102	-512	450	245	-249	22.2	371	7.5	370	16.7
	12000	104	-105	-95	95	-551	492	255	-259	24.9	432	8.4	432	17.4
	15000	123	-124	-84	84	-601	544	271	-275	28.6	517	9.5	517	18.0
	20000	160	-162	-67	67	-679	624	301	-304	34.8	644	10.6	644	18.5
-20	1653	5	-5	-8	7	-7	6	66	-66	4.7	26	1.9	26	5.5
	*1783	5	-5	-10	8	-9	7	71	-71	5.0	29	2.0	29	5.7
	2000	6	-6	-13	11	-13	10	79	-80	5.6	34	2.1	34	6.1
	**2101	7	-7	-14	12	-16	12	82	-83	5.9	37	2.2	37	6.2
	2200	7	-7	-16	14	-19	14	86	-87	6.2	40	2.3	40	6.4
	2300	8	-8	-18	15	-22	17	89	-91	6.5	43	2.4	43	6.6
	2400	9	-9	-20	17	-26	19	93	-94	6.7	46	2.4	46	6.8
	3000	14	-14	-34	30	-56	41	112	-114	8.2	67	3.0	67	8.2
	3500	19	-19	-45	42	-86	65	126	-128	9.4	87	3.4	87	9.2
	4000	23	-24	-55	52	-116	91	138	-140	10.6	106	3.8	106	10.0
	5000	33	-33	-68	66	-175	142	157	-159	12.6	145	4.6	145	11.5
	8000	56	-57	-83	81	-308	266	193	-196	17.6	253	6.5	253	14.3
	10000	70	-70	-82	81	-368	325	208	-211	20.5	318	7.6	317	15.5
	12000	84	-84	-78	78	-417	373	222	-225	23.2	378	8.4	378	16.3
	15000	102	-103	-72	71	-476	434	241	-243	27.0	461	9.5	461	17.1
	20000	137	-138	-60	59	-562	520	272	-275	33.1	587	10.7	587	17.7

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-5

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round. AV8BB-TAC-05-(90-5)10

Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 5 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2756	4	-4	-5	4	-4	4	52	-52	5.4	31	3.0	31	5.8
	*2932	4	-4	-6	5	-6	5	55	-55	5.7	35	3.1	35	6.0
	3200	5	-5	-7	6	-8	7	60	-60	6.2	40	3.3	40	6.4
	3300	5	-5	-7	7	-9	8	62	-62	6.4	42	3.3	42	6.5
	**3332	5	-5	-7	7	-9	8	62	-63	6.5	42	3.3	42	6.5
	3400	6	-6	-8	7	-10	9	64	-64	6.6	44	3.4	44	6.6
	3800	7	-7	-11	10	-15	13	71	-71	7.4	53	3.7	53	7.2
	5000	12	-12	-21	19	-38	32	90	-91	9.5	85	4.7	85	8.9
	6000	17	-17	-28	27	-63	53	104	-105	11.2	114	5.4	114	10.2
	7000	22	-22	-34	33	-89	76	117	-118	12.8	143	6.1	143	11.2
	8000	28	-28	-39	38	-116	100	128	-129	14.4	173	6.7	173	12.0
	10000	38	-39	-45	44	-167	148	148	-149	17.2	230	7.7	230	13.3
	12000	50	-50	-48	47	-215	192	164	-165	19.9	286	8.6	286	14.3
	15000	66	-66	-48	48	-277	253	186	-188	23.7	364	9.7	364	15.4
	20000	95	-96	-44	43	-366	339	220	-222	29.8	484	10.9	484	16.3
-45	4426	3	-3	-3	2	-3	3	43	-42	6.2	38	4.4	38	6.2
	*4618	3	-3	-3	3	-3	4	44	-44	6.4	41	4.6	41	6.3
	**5070	4	-4	-4	3	-5	5	49	-48	7.0	48	4.9	48	6.7
	6500	6	-6	-7	7	-12	11	62	-61	9.0	74	5.9	74	8.2
	7000	8	-7	-8	8	-16	15	66	-66	9.7	84	6.3	84	8.7
	7500	9	-9	-10	9	-20	18	71	-70	10.3	94	6.6	94	9.1
	8000	10	-10	-11	10	-24	22	75	-75	11.0	104	6.9	104	9.5
	10000	15	-15	-15	15	-44	40	91	-91	13.5	148	8.1	148	10.9
	12000	21	-21	-19	18	-68	61	106	-106	16.0	192	9.0	192	12.0
	15000	31	-31	-22	22	-106	97	128	-128	19.6	259	10.1	259	13.2
	20000	50	-50	-24	24	-172	160	160	-161	25.4	366	11.4	366	14.4
-60	6792	3	-3	-2	2	-3	4	44	-43	7.8	55	6.2	55	7.1
	*7020	4	-3	-2	2	-4	4	46	-45	8.0	58	6.3	58	7.2
	**7556	4	-4	-3	3	-5	6	49	-48	8.6	66	6.7	66	7.7
	8500	5	-5	-4	3	-8	8	55	-54	9.7	81	7.4	81	8.4
	9000	6	-6	-4	4	-9	10	58	-57	10.2	90	7.7	90	8.8
	10000	7	-7	-5	5	-13	13	64	-64	11.4	107	8.3	107	9.4
	11000	8	-8	-6	6	-18	17	71	-70	12.5	125	8.8	125	10.0
	12000	10	-10	-7	7	-23	22	77	-76	13.6	143	9.3	143	10.5
	15000	15	-15	-9	9	-41	40	95	-94	16.9	198	10.4	198	11.7
	18000	22	-22	-10	10	-64	61	112	-112	20.1	254	11.3	254	12.6
	20000	27	-27	-11	11	-80	77	123	-123	22.2	291	11.7	291	13.1

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-6

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

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Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 6 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-5	*527	31	-33	-126	74	-155	52	228	-250	5.0	28	.6	28	5.6
	**610	39	-41	-159	100	-226	78	255	-279	5.7	35	.6	35	6.1
	700	47	-51	-198	133	-317	114	281	-307	6.4	42	.7	42	6.6
	800	58	-62	-242	173	-426	164	305	-332	7.1	52	.8	52	7.2
	900	69	-73	-278	215	-525	222	324	-352	7.8	61	.9	61	7.9
	1000	78	-83	-304	250	-606	281	338	-366	8.4	71	1.0	71	8.4
	1500	107	-112	-342	318	-817	489	369	-395	10.7	113	1.5	113	10.5
	2000	120	-124	-331	318	-887	592	374	-397	12.4	149	1.9	148	12.0
	4000	134	-136	-254	251	-900	710	353	-367	17.0	259	3.6	258	15.2
	5000	136	-138	-226	223	-883	722	343	-355	18.7	303	4.3	303	16.2
	8000	143	-145	-169	168	-851	736	327	-335	23.0	418	6.3	418	18.1
	10000	149	-151	-146	144	-846	746	325	-331	25.6	484	7.4	484	18.9
	12000	152	-153	-126	125	-850	759	327	-333	28.1	545	8.3	545	19.4
	15000	158	-160	-105	105	-870	788	336	-341	31.9	631	9.3	630	19.8
	20000	172	-174	-79	79	-925	849	362	-367	38.2	760	10.4	760	19.9
-10	943	15	-16	-34	25	-34	19	126	-132	4.9	27	1.1	27	5.6
	*966	16	-16	-36	26	-37	21	129	-135	5.1	28	1.1	28	5.6
	**1202	22	-23	-56	43	-73	40	155	-162	6.2	39	1.2	39	6.4
	1300	25	-26	-66	51	-94	51	165	-173	6.6	45	1.3	45	6.7
	1400	28	-29	-77	61	-118	65	175	-183	7.1	50	1.4	50	7.1
	1500	32	-33	-89	72	-145	81	184	-192	7.5	56	1.5	56	7.5
	2000	49	-51	-135	122	-272	174	218	-227	9.4	87	2.0	87	9.3
	3000	73	-75	-168	161	-435	319	251	-261	12.4	144	2.8	144	11.6
	4000	87	-89	-171	167	-522	408	265	-273	14.7	195	3.6	195	13.3
	5000	97	-98	-166	163	-571	465	271	-279	16.6	240	4.4	240	14.4
	8000	115	-116	-139	138	-639	554	279	-285	21.2	356	6.3	355	16.7
	10000	124	-125	-124	122	-665	588	284	-289	23.9	422	7.4	422	17.6
	12000	128	-129	-111	111	-689	619	290	-295	26.5	484	8.3	484	18.2
	15000	136	-137	-94	94	-725	661	303	-307	30.3	569	9.3	568	18.8
	20000	151	-152	-72	72	-791	731	331	-335	36.5	697	10.5	696	19.1

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-7

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

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Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 7 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-15	1420	11	-11	-17	13	-17	11	91	-94	5.1	29	1.6	29	5.6
	*1510	12	-12	-19	15	-20	14	97	-99	5.5	32	1.6	32	5.8
	1700	14	-14	-25	20	-30	20	108	-110	6.1	38	1.7	38	6.2
	**1804	15	-16	-29	24	-37	24	113	-116	6.5	42	1.8	42	6.5
	1900	17	-17	-32	27	-44	29	119	-122	6.8	46	1.9	46	6.7
	2000	18	-19	-37	31	-53	35	124	-127	7.1	50	2.0	50	7.0
	2500	27	-28	-60	53	-106	72	147	-151	8.6	73	2.4	72	8.4
	3000	36	-37	-78	72	-161	116	165	-169	10.0	96	2.9	96	9.6
	4000	51	-52	-99	96	-254	196	190	-195	12.4	142	3.7	142	11.4
	5000	63	-64	-109	106	-325	261	206	-211	14.5	184	4.4	184	12.7
	8000	87	-88	-108	107	-452	388	233	-237	19.4	298	6.3	298	15.4
	10000	98	-99	-101	100	-502	440	244	-248	22.2	364	7.4	364	16.4
	12000	105	-106	-94	93	-541	482	254	-258	24.8	425	8.3	425	17.1
	15000	115	-116	-82	82	-592	536	270	-274	28.6	510	9.3	509	17.8
	20000	131	-132	-65	65	-669	615	300	-304	34.8	636	10.5	636	18.3
-20	1962	9	-9	-11	9	-11	9	75	-76	5.5	32	2.1	32	5.8
	*2102	10	-10	-12	11	-14	11	80	-81	5.8	35	2.2	35	6.0
	2300	11	-11	-15	13	-19	14	87	-88	6.4	40	2.3	40	6.4
	**2422	12	-12	-18	15	-23	17	91	-92	6.7	44	2.4	44	6.6
	2500	13	-13	-19	16	-25	19	93	-95	6.9	46	2.5	46	6.8
	2700	15	-15	-23	20	-34	25	100	-102	7.4	53	2.6	53	7.2
	2800	16	-16	-25	22	-38	28	103	-105	7.6	56	2.7	56	7.4
	3000	18	-18	-30	27	-49	36	109	-111	8.1	64	2.9	64	7.8
	3500	23	-23	-41	38	-77	59	123	-125	9.3	83	3.3	83	8.9
	4000	28	-29	-51	48	-107	83	135	-137	10.5	102	3.7	102	9.7
	5000	39	-39	-65	62	-164	133	154	-157	12.5	140	4.5	140	11.2
	8000	63	-64	-79	79	-297	256	191	-194	17.6	247	6.4	247	14.0
	10000	76	-77	-80	78	-358	315	207	-210	20.4	311	7.5	311	15.2
	12000	84	-85	-77	76	-407	364	221	-223	23.1	371	8.3	371	16.1
	15000	95	-96	-70	70	-467	425	240	-242	26.9	454	9.4	454	16.9
	20000	112	-113	-58	58	-552	510	271	-274	33.0	579	10.6	579	17.5

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-8

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

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Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 and PGU-33 (Sheet 8 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	3284	7	-7	-6	6	-7	7	61	-61	6.3	40	3.2	40	6.2
	*3464	8	-8	-7	7	-9	8	64	-64	6.7	43	3.4	43	6.5
	3800	9	-9	-9	9	-13	11	70	-70	7.3	51	3.6	51	6.9
	**3880	9	-9	-10	9	-14	12	71	-71	7.4	52	3.7	52	7.0
	4000	10	-10	-11	10	-16	14	73	-73	7.7	55	3.8	55	7.2
	4400	12	-12	-14	13	-23	19	79	-80	8.4	66	4.1	66	7.8
	4500	12	-12	-15	14	-24	21	81	-81	8.6	68	4.2	68	8.0
	5000	15	-15	-19	18	-35	29	89	-89	9.5	82	4.6	82	8.7
	6000	20	-20	-26	25	-58	49	103	-103	11.2	110	5.3	110	9.9
	7000	26	-26	-32	31	-83	71	115	-116	12.8	139	6.0	139	10.9
	8000	31	-32	-37	36	-109	95	127	-128	14.3	168	6.6	168	11.7
	10000	42	-42	-43	42	-160	141	146	-147	17.2	225	7.6	225	13.1
	12000	50	-51	-46	46	-207	185	163	-164	19.8	280	8.5	280	14.1
	15000	62	-62	-47	46	-268	244	185	-186	23.6	358	9.6	358	15.1
	20000	78	-78	-42	42	-356	329	219	-220	29.7	477	10.8	477	16.1
-45	5318	6	-6	-4	3	-5	5	51	-50	7.3	50	4.9	50	6.8
	*5514	6	-6	-4	4	-6	6	52	-52	7.6	53	5.0	53	6.9
	**5972	7	-7	-5	5	-8	8	56	-56	8.2	61	5.4	61	7.4
	7000	9	-9	-8	7	-14	13	66	-65	9.6	81	6.1	81	8.4
	8000	12	-12	-10	10	-22	20	74	-74	10.9	101	6.8	101	9.3
	9000	14	-14	-12	12	-31	28	82	-82	12.2	122	7.4	122	10.0
	10000	17	-17	-14	14	-41	37	90	-90	13.5	144	7.9	144	10.7
	12000	22	-22	-18	18	-64	58	106	-105	15.9	188	8.9	188	11.8
	15000	30	-30	-21	21	-101	93	127	-127	19.5	254	10.0	254	13.0
	20000	42	-42	-23	23	-165	153	159	-160	25.3	359	11.2	359	14.2
-60	8092	6	-6	-3	3	-6	6	52	-51	9.2	72	6.9	72	7.9
	*8324	6	-6	-3	3	-6	7	54	-53	9.5	76	7.1	76	8.0
	**8866	7	-7	-4	4	-8	9	57	-56	10.1	85	7.4	85	8.4
	10000	9	-9	-5	5	-12	12	64	-63	11.3	104	8.1	104	9.2
	11000	10	-10	-6	6	-16	16	70	-70	12.4	121	8.6	121	9.8
	12000	11	-11	-7	6	-21	21	76	-76	13.5	139	9.1	139	10.3
	13000	13	-13	-7	7	-27	26	82	-82	14.6	157	9.5	157	10.7
	14000	14	-14	-8	8	-33	32	88	-88	15.7	175	9.9	175	11.2
	15000	15	-15	-9	9	-39	38	94	-94	16.8	194	10.3	194	11.5
	18000	20	-20	-10	10	-61	58	111	-111	20.1	249	11.2	249	12.4
	20000	22	-22	-11	11	-76	73	123	-122	22.2	286	11.6	286	12.9

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-9

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

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Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 (Sheet 9 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

600 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-5	577	32	-34	-108	66	-133	48	218	-237	5.1	28	.6	28	5.5
	*665	39	-41	-137	88	-195	71	244	-265	5.8	35	.7	35	6.0
	**717	43	-46	-156	104	-237	88	258	-280	6.2	39	.7	39	6.3
	900	60	-64	-224	166	-406	166	298	-322	7.5	55	.9	55	7.3
	1000	70	-74	-255	202	-490	219	314	-339	8.1	64	1.0	64	7.9
	1500	101	-105	-314	289	-735	433	354	-378	10.5	106	1.4	106	10.1
	2000	116	-119	-312	299	-827	548	363	-385	12.2	142	1.9	141	11.6
	4000	132	-135	-247	244	-876	689	350	-364	16.9	252	3.5	252	14.9
	5000	135	-138	-220	218	-865	706	341	-353	18.6	297	4.3	297	15.9
	8000	142	-144	-167	166	-842	727	326	-334	23.0	411	6.2	411	17.9
	10000	148	-150	-144	142	-837	738	324	-331	25.6	477	7.3	477	18.6
	12000	152	-153	-126	126	-843	754	327	-333	28.1	539	8.2	539	19.1
	15000	158	-160	-105	105	-864	783	336	-341	31.9	624	9.2	624	19.6
	20000	173	-174	-79	79	-920	844	362	-367	38.2	754	10.3	753	19.7
-10	997	16	-17	-31	23	-32	18	124	-129	5.0	27	1.1	27	5.5
	*1089	18	-19	-37	28	-42	24	134	-139	5.5	31	1.1	31	5.7
	1200	21	-22	-45	34	-57	32	145	-152	6.0	36	1.2	36	6.0
	1300	24	-24	-54	42	-73	41	155	-162	6.4	41	1.3	41	6.4
	**1347	26	-27	-61	48	-88	49	162	-169	6.8	45	1.3	45	6.6
	1400	27	-27	-63	50	-93	52	165	-172	6.9	46	1.4	46	6.7
	1500	30	-31	-74	59	-116	65	174	-181	7.3	52	1.5	52	7.1
	2000	47	-48	-120	107	-237	150	209	-217	9.2	82	1.9	82	8.8
	3000	71	-72	-158	151	-405	295	245	-254	12.2	138	2.8	138	11.3
	4000	86	-87	-164	160	-497	387	260	-269	14.6	188	3.6	188	12.9
	5000	95	-97	-161	158	-551	447	268	-275	16.5	233	4.3	233	14.1
	8000	114	-115	-136	135	-627	541	277	-283	21.2	349	6.2	349	16.5
	10000	123	-124	-123	120	-655	578	283	-288	23.9	415	7.3	415	17.4
	12000	129	-130	-109	109	-680	609	289	-294	26.5	477	8.2	477	18.0
	15000	137	-138	-93	93	-717	653	303	-307	30.3	562	9.2	562	18.6
	20000	151	-152	-72	72	-784	726	331	-335	36.5	690	10.3	690	18.9

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-10

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

AV8BB-TAC-05-(90-10)10

Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 (Sheet 10 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 1.0 SECOND BURST

600 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-15	1564	13	-13	-17	14	-19	13	95	-98	5.5	31	1.6	31	5.7
	*1682	14	-14	-20	17	-24	16	102	-104	5.9	35	1.7	35	5.9
	1900	17	-17	-27	23	-36	24	113	-116	6.6	43	1.8	43	6.4
	**1964	17	-18	-30	25	-41	27	117	-120	6.8	45	1.9	45	6.6
	2000	18	-18	-31	26	-43	29	118	-121	6.9	46	1.9	46	6.7
	2500	26	-27	-52	46	-91	62	141	-145	8.5	68	2.4	68	8.0
	3000	35	-36	-71	65	-144	103	160	-164	9.9	91	2.8	91	9.2
	4000	50	-51	-93	89	-236	181	186	-191	12.3	136	3.6	136	11.1
	5000	62	-63	-104	101	-308	247	203	-208	14.3	178	4.3	178	12.4
	8000	86	-87	-105	104	-439	376	231	-235	19.3	291	6.2	291	15.1
	10000	97	-98	-100	98	-490	430	243	-246	22.1	357	7.3	357	16.1
	12000	105	-106	-93	92	-531	473	253	-257	24.8	419	8.2	418	16.9
	15000	115	-116	-81	81	-583	528	270	-273	28.6	503	9.2	503	17.6
	20000	131	-132	-65	64	-663	608	300	-303	34.8	629	10.4	629	18.1
-20	2198	11	-11	-12	10	-13	10	80	-81	6.0	36	2.2	36	6.0
	*2338	12	-12	-14	12	-17	13	85	-86	6.3	39	2.3	39	6.2
	**2670	14	-14	-19	17	-27	20	96	-97	7.2	49	2.5	49	6.8
	3000	17	-18	-26	23	-42	31	106	-107	8.0	60	2.8	60	7.5
	4000	28	-28	-47	44	-97	75	132	-134	10.3	97	3.6	97	9.4
	5000	38	-39	-61	58	-153	123	151	-154	12.4	135	4.4	135	10.9
	6000	47	-48	-69	68	-203	168	167	-169	14.2	171	5.1	171	12.0
	7000	55	-56	-74	73	-247	209	179	-182	15.9	207	5.7	207	13.0
	8000	62	-63	-77	75	-285	245	189	-192	17.5	241	6.3	241	13.8
	10000	75	-76	-78	76	-347	306	205	-208	20.4	305	7.4	305	15.0
	12000	84	-84	-75	75	-397	355	219	-222	23.0	365	8.2	365	15.8
	15000	96	-96	-69	69	-458	416	239	-241	26.9	448	9.3	448	16.7
	20000	113	-113	-57	57	-544	502	271	-273	33.0	572	10.5	572	17.3

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-11

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

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Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 (Sheet 11 of 12)

AV-8B RELEASE ERROR SENSITIVITIES
GAU-12/U GUN : 25 MM PROJECTILE PGU-23/U TARGET PRACTICE
PGU-20/U, PGU-22/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33
1.0 SECOND BURST

600 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	3636	9	-9	-7	7	-9	9	65	-65	6.9	45	3.4	45	6.5
	*3814	9	-9	-8	8	-11	10	68	-68	7.2	48	3.5	48	6.7
	**4224	11	-11	-11	10	-17	14	75	-75	8.0	58	3.8	58	7.3
	4500	12	-12	-13	12	-22	18	79	-80	8.5	65	4.1	65	7.7
	5000	15	-15	-17	16	-31	26	87	-87	9.4	78	4.5	78	8.4
	6000	20	-20	-24	23	-53	45	101	-102	11.1	106	5.2	106	9.6
	7000	26	-26	-30	29	-78	66	114	-114	12.7	134	5.9	134	10.6
	8000	31	-31	-35	34	-103	89	125	-126	14.2	163	6.5	163	11.5
	10000	42	-42	-42	41	-153	134	145	-146	17.1	219	7.5	219	12.8
	12000	51	-51	-45	45	-199	178	162	-163	19.8	274	8.4	274	13.9
	15000	62	-62	-46	46	-261	237	184	-185	23.6	352	9.5	352	14.9
	20000	78	-79	-42	42	-348	322	218	-220	29.6	470	10.7	470	15.9
-45	5602	7	-7	-4	4	-5	6	52	-52	7.7	52	5.0	52	6.8
	*5800	7	-7	-4	4	-6	6	54	-54	8.0	55	5.1	55	7.0
	**6260	8	-8	-5	5	-8	8	58	-58	8.6	64	5.4	64	7.4
	7000	10	-10	-7	7	-13	12	65	-64	9.5	78	6.0	78	8.1
	8000	12	-12	-9	9	-20	19	73	-73	10.9	98	6.6	98	9.0
	9000	15	-15	-12	11	-29	26	82	-81	12.1	119	7.2	119	9.8
	10000	17	-17	-14	13	-38	35	89	-89	13.4	140	7.8	140	10.4
	12000	23	-23	-17	17	-60	55	105	-105	15.9	183	8.7	183	11.5
	15000	31	-31	-21	20	-97	89	126	-126	19.5	249	9.8	249	12.8
	20000	43	-43	-22	22	-160	148	159	-159	25.2	354	11.1	354	14.0
-60	8426	7	-7	-3	3	-6	7	54	-53	9.5	75	7.0	75	7.9
	*8660	7	-7	-3	3	-7	7	55	-55	9.8	79	7.1	79	8.0
	**9204	8	-8	-4	4	-8	9	59	-58	10.4	88	7.5	88	8.4
	11000	10	-10	-5	5	-15	15	70	-69	12.4	118	8.5	118	9.5
	12000	12	-12	-6	6	-20	20	76	-75	13.5	136	8.9	136	10.1
	13000	13	-13	-7	7	-25	24	82	-81	14.6	154	9.4	154	10.5
	14000	14	-14	-8	8	-31	30	88	-87	15.7	172	9.8	172	10.9
	15000	16	-16	-8	8	-37	36	94	-93	16.8	190	10.1	190	11.3
	18000	20	-20	-10	10	-58	55	111	-111	20.0	245	11.0	245	12.2
	20000	23	-23	-10	10	-73	70	122	-122	22.2	281	11.5	281	12.7

1. For flight path angles shallower than or equal to -30 degrees, a wings level pullup to horizon followed by a -60-degree breakaway recovery is required. For flight path angles steeper than -30 degrees, a wings level pullup recovery to +15 degrees flight path is required.
2. Minimum release altitudes result in no penetration of the fragment/ricochet envelope. BF 45001-R1-B191-12

Warning!! The lowest altitude for each release angle is the minimum safe release altitude for all rounds except TP against all targets. The * altitude is for TP against soft targets. The ** altitude is for TP against hard targets. If no * or ** is given the 25 MM minimum altitude is applicable to the TP round.

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Figure 2-161. Release Error Sensitivities , GAU-12/U Gun, 25mm Projectile, PGU-20/U, PGU-22/U, PGU-23/U, PGU-25/U, PGU-25A/U, PGU-32 AND PGU-33 (Sheet 12 of 12)

2.13 SUU-25F/A DISPENSER

2.13.1 Description. The SUU-25F/A dispenser (see Figure 2-162) is a reusable four-tube launcher capable of carrying and ejecting rearward eight LUU-2A/B or B/B parachute flares.

Each of the four launching tubes accommodate two parachute flares. An arming kit must be installed on each flare prior to being inserted into the launching tube. A nose cone is used to reduce drag and protect the breech cap electrical assembly cables. Eight breech and four loading/unloading caps are located on the front of the dispenser. A SAFE-ARM stepper switch and a safety switch control and safe the electrical circuitry of the dispenser. Pivotable retaining links with shear pins secure each flare in the launching tubes until ejection takes place.

The first release pulse steps the stepper switch from ARM to position 1 initiating the first impulse cartridge. Gas from the fired cartridge is routed to the expansion area in front of the rear flare of the number one launching tube and exerts force against the flare causing the shear pin of the aft retaining link to shear releasing the link and allowing the flare to be ejected. The launcher tube arming hook assembly strips the flare adapter arming cap which retains the flare timer knob which initiates the flare delay ignition sequence. The next release impulse steps the stepper switch to the next position and fires the impulse cartridge of the forward flare of the launching tube that was previously fired. Sequence of the ejection events are identical to the first flare release. The third release pulse steps the stepper switch to the rear flare of the next launching tube.

WARNING

Remain clear of aft end of dispenser when cartridges are installed. Ejection forces are capable of propelling a store to a distance of 50 feet.

Refer to "External Stores Limitations," chapter 5 for carriage and dispensing restrictions.

2.13.2 Preflight Checks. Refer to NWP 3-22.5-AV8B PG, Pocket Guide, for current Preflight checks.

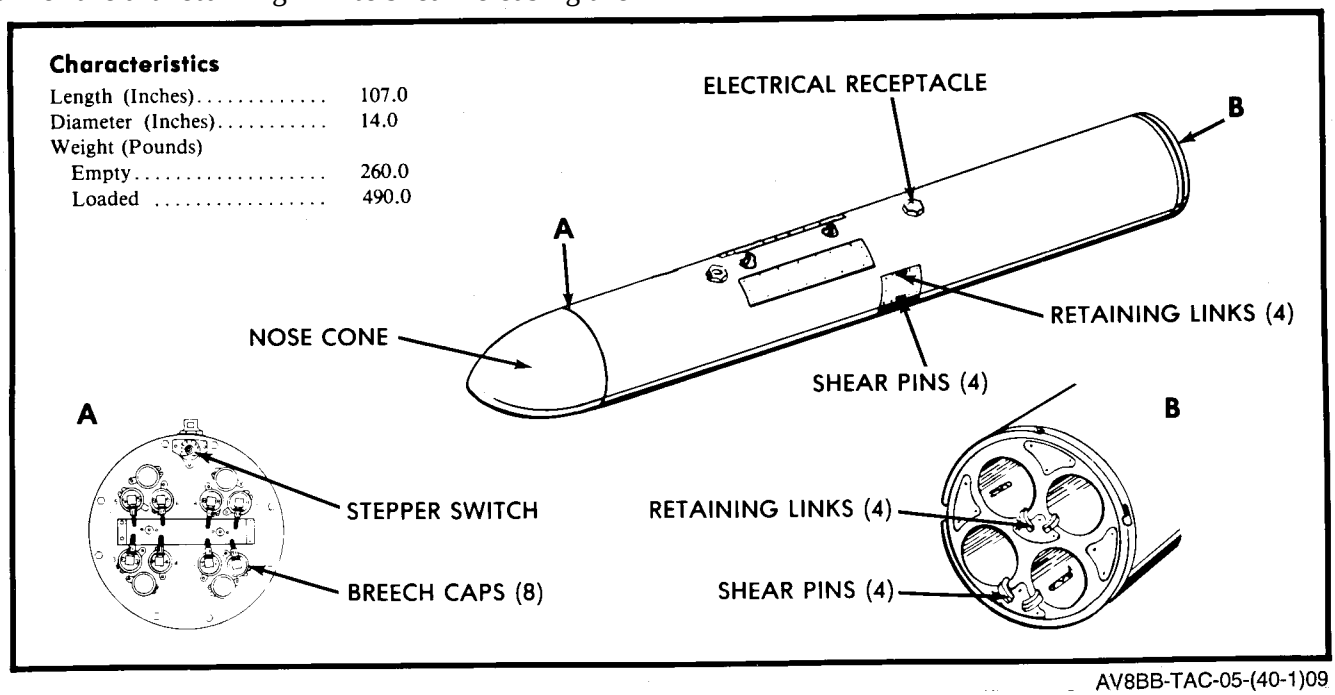

Figure 2-162. SUU-25F/A Dispenser

2.14 LUU-2A/B, -B/B AIRCRAFT PARACHUTE FLARE

2.14.1 Description. The LUU-2A/B, -B/B aircraft parachute flare (APF) (see Figure 2-163) is used for nighttime illumination of surface areas in search and attack operations. Both variants, -A/B and -B/B, are compatible with the SUU-25F/A flare dispenser.

NOTE

The LUU-2A/B is not authorized for shipboard operations.

The LUU-2A/B APF provides 300 seconds of 1,600,000 candle power illumination. The flare components include a timer assembly, parachute suspension system, ignition system, and case-candle assembly. The timer which controls the free-fall distance to parachute deployment and flare ignition has 12 settings between 500 and 11,000 feet of fall and a SAFE setting position. The desired functioning delay is selected by positioning the timer knob to the appropriate setting. A parachute deployment force of 98 pounds is required to initiate the candle.

The LUU-2B/B APF provides 240 seconds of 2,000,000 candle power illumination. The flare components include a timer assembly, parachute suspension system, an out-of-line igniter, and the case assembly with a tamped candle. The timer which controls the free-fall distance to parachute deployment and flare ignition has a 250 feet setting for helicopter use and 13 other settings between 500 and 11,000 feet of fall and a SAFE setting position. The desired functioning delay is selected by positioning the timer knob to the appropriate setting. A parachute deployment force of 90 pounds is required to pull the slider assembly (out-of-line igniter) into line releasing the firing pin to initiate the pyrotechnic train and candle.

A steel lanyard extracts the time knob on both variants of the flare when dispensed/released which allows the timer clock mechanism to function. At the end of the preset delay time, a spring ejects the timer and release mechanism from the flare housing which deploys the 18-foot cruciform parachute. Initiation of the candle subsequently takes place. At candle burnout, an explosive bolt severs one of the suspension cables causing the parachute to collapse and the flare remains to free-fall to the ground thus clearing the airspace of any flare debris hazard.

Flares released from SUU-25F/A dispensers require straight and level delivery. Check the ''External Stores Limitations,'' chapter 5 for additional restrictions.

2.14.2 Preflight Checks. Refer to NWP 3-22.5-AV8B PG, Pocket Guide, for current Dispenser Preflight checks.

2.14.3 Delivery Data. Paraflare data for LUU-2B/B is presented in Figure 2-164. Information on tactical employment of aircraft parachute flares is contained in Volume I, chapter 2 of this TACMAN series.

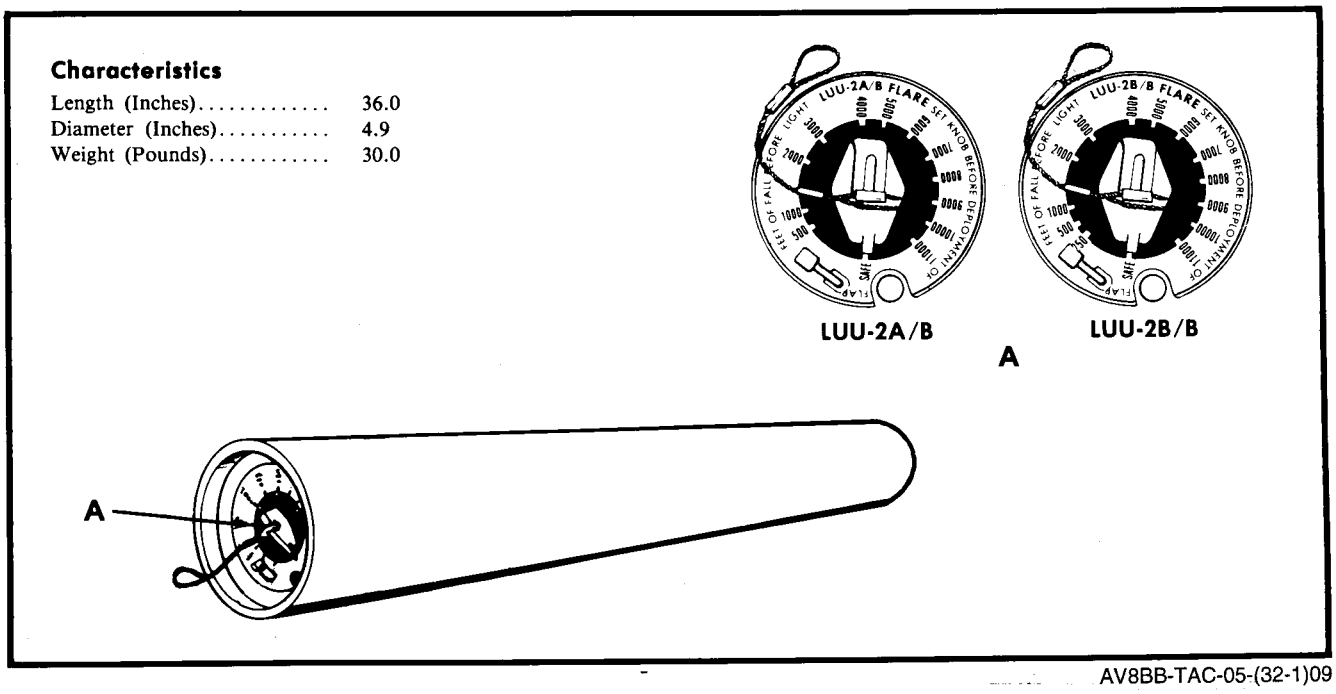

Figure 2-163. LUU-2A/B, -B/B Aircraft Parachute Flare

AV-8B DELIVERY DATA
LUU-2A/B AND LUU-2B/B PARAFLARE
SUU-25F/A 44.0 FT/SEC REARWARD EJECTION
3000 FT FLARE IGNITION / 0 DEGREES RELEASE FLIGHT PATH ANGLE

			RELEASE ALTITUDE (FEET - MSL) / RANGE (FEET)		
FUZE SETTING (FEET OF FALL)	TARGET ALTITUDE (FEET)	TIME OF FALL TO IGNITION (SECONDS)	450 KTAS	500 KTAS	1 550 KTAS
500	0	7.85	3525 / 2248	3517 / 2370	3510 / 2430
1000	0	10.75	3973 / 2673	3960 / 2795	3950 / 2916
1500	0	11.85	4167 / 2795	4153 / 2916	4141 / 3038
2000	0	15.05	4789 / 3099	4771 / 3220	4757 / 3342
3000	0	19.05	5648 / 3342	5627 / 3524	5611 / 3646
4000	0	24.75	6958 / 3585	6936 / 3767	6917 / 3889
5000	0	27.55	7621 / 3706	7598 / 3889	7579 / 4010
6000	0	31.55	8591 / 3828	8567 / 4010	8547 / 4132
7000	0	35.55	9574 / 3949	9549 / 4132	9528 / 4253
8000	0	38.55	10326 / 4010	10300 / 4192	10279 / 4375
9000	0	41.65	11109 / 4071	11082 / 4253	11060 / 4435
10000	0	45.55	12107 / 4192	12079 / 4375	12057 / 4557
11000	0	48.05	12759 / 4253	12731 / 4435	12708 / 4618

1 KCAS LIMIT MAY BE EXCEEDED BELOW 4551 FEET.

Figure 2-164. Delivery Data, LUU-2B/B Paraflare

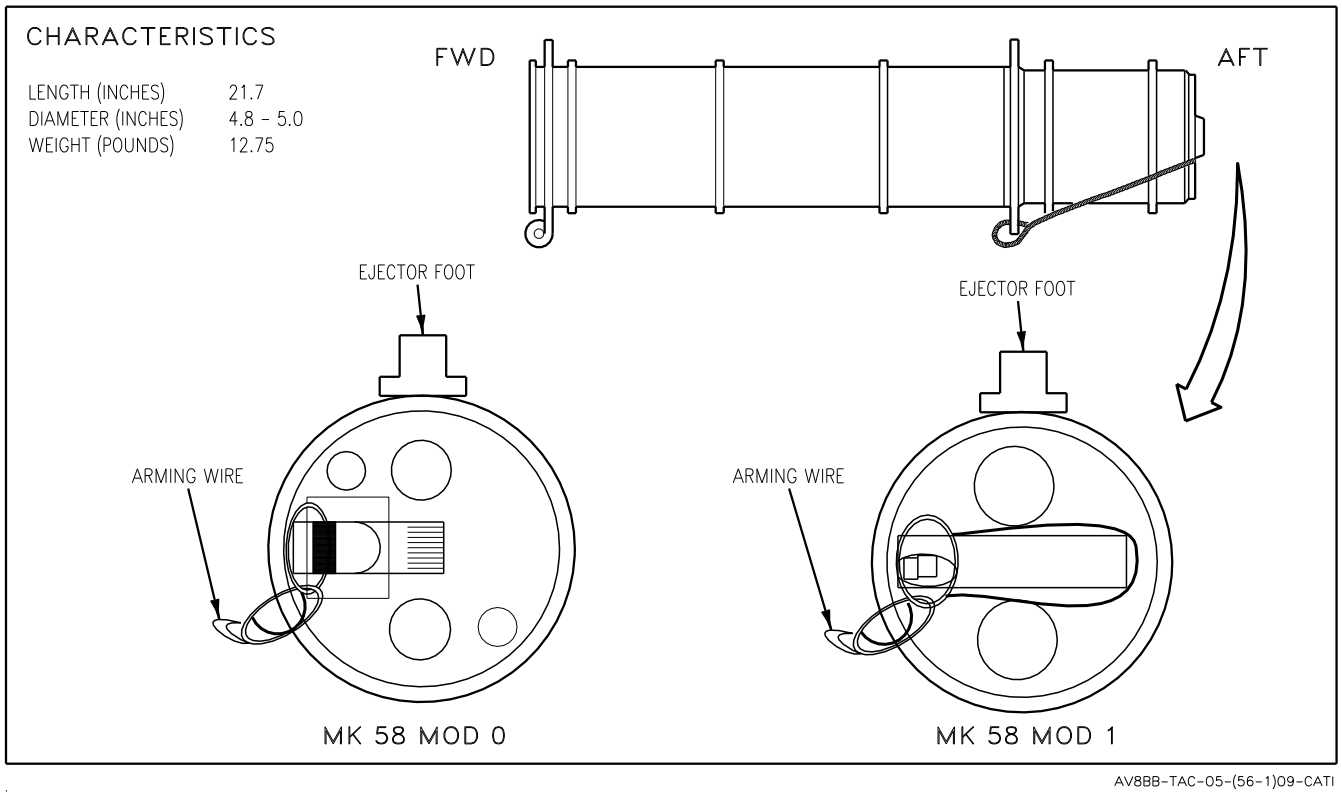

Figure 2-165. Mk 58 Marine Location Marker (MLM)

2.15 AN/ALE-39 COUNTERMEASURES DISPENSING SET

2.15.1 Description. The AN/ALE-39 dispenser is a system capable of dispensing chaff., flares, and expendable jammers. It has a capacity of 60 expendables in the Day Attack aircraft and 180 in the Night attack/radar aircraft. Hardware, controls and indications, programming, and employment considerations are addressed in Volume III, chapter 6 of this TACMAN series. Authorized expendables for use from downward and upward firing dispensers are contained in Volume II, chapter 5 of this TACMAN series.

2.16 Mk 58 MARINE LOCATION MARKER (MLM)

2.16.1 Description. The Mk 58 MLM (see Figure 2-165) is designed for day or night operations requiring a long duration smoke and reference point on the ocean surface. It contains a salt water-activated battery which ignites a pyrotechnic composition candle that emits yellow flame/white smoke for approximately 40 to 60 minutes which is visible for 3 miles.

The cylindrical terneplate (tin) container is received hermetically sealed with a removable tear strip and end cap. Removal of the tear strip and end cap exposes two chimney caps/foil disks and a pull ring attached to aluminum-backed tape covering the battery cavity inlet.

Saltwater reacts as an electrolyte to activate the battery in order to produce the electrical current that initiates a squib which ignites the first of two red phosphorous pyrotechnic composition candles. Saltwater entry into the battery cavity inlet is denied by the aluminum-back tape which is removed by the pull ring at launch/release. Ignition of the MLM occurs approximately 25 seconds after saltwater entry into the battery cavity. Flame/smoke is emitted from the chimney.

Placement points for the breakaway suspension bands (BASB) are stenciled on the MLM for 14-inch suspension requirements.

2.16.2 Preflight Checks. Mk 58 MLM arming wire attached to BASB and pull ring.

2.16.3 Delivery Data. Delivery data for the Mk 58 is presented in Figure 2-166. The Mk 58 is carried on an ITER, either alone or with practice bombs (Mk-76, Mk-106, BDU-48, BDU-33). If carried alone, use a store code of 26 for the most accurate delivery. Figure 2-167 provides data on the amount of error to expect when delivering Mk-58s using store code 26, Mk-106 ballistics. If carried in a mixed ITER load with practice bombs use the store code of the practice bombs.

NOTE

The AV-8B mission computer does not provided ballistics data for Mk-58 deliveries. Figure 2-167 is provided for information to allow pilot corrections for area deliveries.

2.16.4 Limitations. Refer to External Stores Limitations, chapter 5, for carriage and release restrictions.

AV-8B DELIVERY DATA
MK 58 MARINE MARKER

LEVEL RELEASE

450 KTAS			500 KTAS		
RELEASE ALTITUDE	DOWN RANGE TRAVEL	TIME OF FALL	RELEASE ALTITUDE	DOWN RANGE TRAVEL	TIME OF FALL
(FT)	(FT)	(SEC)	(FT)	(FT)	(SEC)
500	1432	7.48	500	1488	7.51
600	1483	8.31	600	1540	8.35
700	1525	9.11	700	1582	9.15
800	1560	9.88	800	1617	9.92
900	1590	10.63	900	1647	10.67
1000	1615	11.37	1000	1673	11.41
1500	1703	14.90	1500	1762	14.95
2000	1754	18.34	2000	1814	18.38
2500	1790	21.73	2500	1851	21.77
3000	1819	25.09	3000	1880	25.13
3500	1844	28.42	3500	1907	28.46
4000	1868	31.73	4000	1931	31.77
4500	1891	35.01	4500	1956	35.05
5000	1914	38.27	5000	1980	38.31
5500	1938	41.50	5500	2004	41.55
6000	1962	44.71	6000	2029	44.76
6500	1986	47.89	6500	2054	47.94
7000	2010	51.06	7000	2079	51.10
7500	2035	54.19	7500	2105	54.24
8000	2060	57.31	8000	2131	57.36
8500	2085	60.40	8500	2157	60.45
9000	2111	63.47	9000	2184	63.52
9500	2137	66.51	9500	2211	66.56
10000	2163	69.53	10000	2239	69.58
11000	2218	75.50	11000	2295	75.55
12000	2274	81.38	12000	2353	81.43
13000	2331	87.16	13000	2413	87.22
14000	2391	92.86	14000	2475	92.91
15000	2452	98.46	15000	2539	98.52

1. ITER release. Ejection velocity : 0.0 ft sec.
2. There are no store code ballistics for the Mk 58 MLM in the SMC. Mk 106 mod 5 store code 26 is the closets available ballistics match. If store code 26 is used in a level delivery the Mk 58 MLM will hit short by the distance indicated in Figure 2-168.

BF 60003-B192-1

Figure 2-166. Delivery Data Mk 58 Marine Marker

AV-8B DELIVERY DATA
MK 58 MARINE MARKER COMPARISON
WITH THE MK 106 MOD 5

		MK 58		MK 106 MOD 5	
A/S (KTAS)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)
450	300	5.6	1286	4.9	1681
	500	7.48	1432	7.0	2005
	1000	11.37	1615	10.4	2367
	5000	38.27	1914	30.9	3101
	10000	69.53	2163	53.9	3511
	15000	98.46	2452	75.3	3961
550	300	5.7	1387	5.1	1849
	500	7.5	1536	6.8	2133
	1000	11.4	1722	10.5	2546
	5000	38.3	2035	31.0	3307
	10000	69.6	2302	54.1	3743
	15000	98.6	2612	75.4	4221

Figure 2-167. Delivery Data Mk 58 Marine Marker Vs. Mk 106 MOD 5

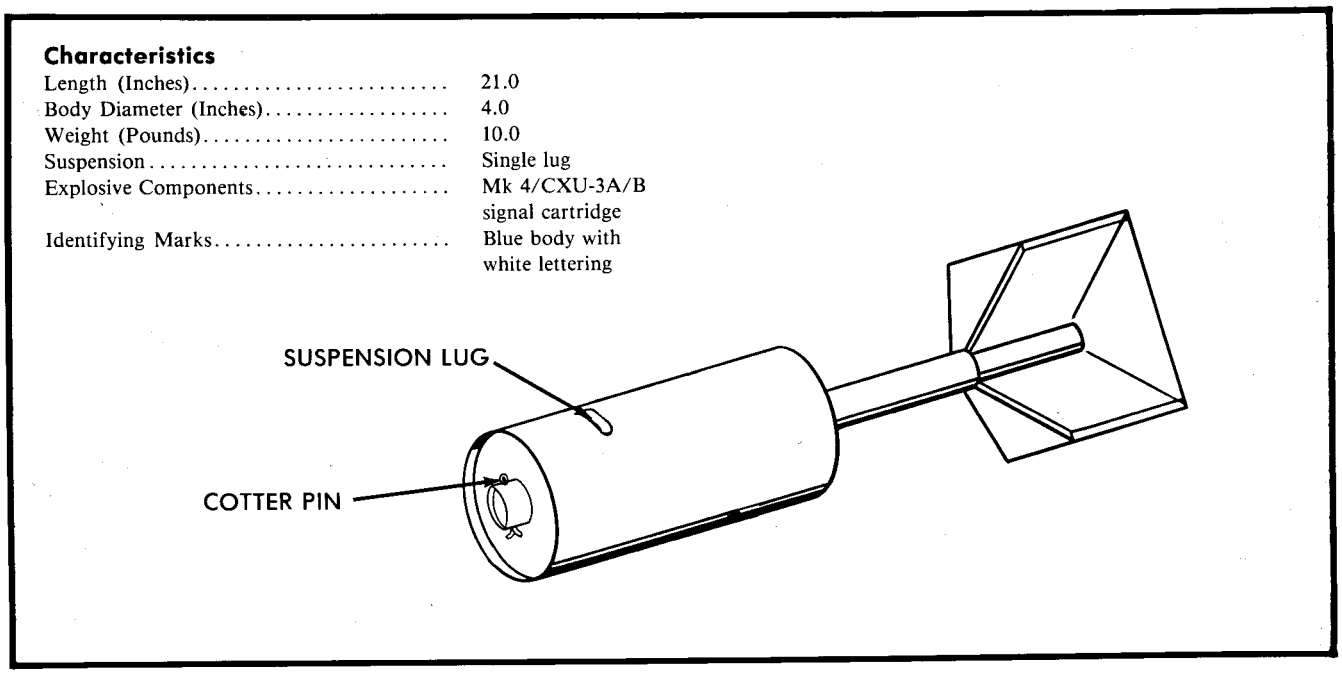

Figure 2-168. BDU-48/B Practice Bomb

2.17 BDU-48/B PRACTICE BOMB

2.17.1 Description. The BDU-48/B practice bomb (see Figure 2-168) is designed to simulate high drag configured Mk 80 series GP bombs and DST's. It is similar in appearance and construction to the Mk 106 Mod 5 practice bomb. It's additional weight provides for a more stable release, better trajectory and improved impact pattern on target. It is comprised of a bomb body assembly with a bore tube for installation of a signal cartridge, a Mk 1 firing pin and a spring loaded retractable suspension lug. Impact initiates the Mk 4 or CXU-3A/B signal cartridge which expels smoke/flame from the bore tube for impact marking.

NOTE

The CXU-3A/B signal cartridge is for day use ONLY.

2.17.2 Preflight Checks.

1. Master arm switch - OFF (SAFE)
2. Emergency jettison - VISUALLY CHECK NOT PRESSED
3. Selective jettison - SAFE
4. (Parent rack) Safe/arm lever - SAFE
5. (BRU-42) Safety stop lever locked
6. Swaybraces adjusted
7. Throttles properly set
8. Cartridges installed; breech caps tight

2.17.3 Prior to Launch (Ground Crew)

1. Rearming/arming (before engine start)
   (a) (Parent rack) Position safe/arm lever(s) to ARM
   (b) (BRU-42) Unlock safety stop lever(s)

2.17.4 After Landing or Ground Abort (Ground Crew)

1. Safing (dearming/rearming area after engine shutdown)

(a) (Parent rack) Position safe/arm lever(s) to SAFE

(b) (BRU-42) Lock safety stop lever(s)

2.17.5 Delivery Data. A Safe Escape table providing terrain avoidance minimum altitudes for various recovery maneuvers is presented in Figure 2-169. Sight Angle charts, Delivery Data tables, and Release Error Sensitivities tables for the BDU-48/B Practice Bomb are presented in Figures 2-170 through 2-172.

AV-8B SAFE ESCAPE TABLE
BDU-48/B PRACTICE BOMB

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	100	110	100	100	97	100	100	84	100
	5 G LEVEL BREAKAWAY	100	110	100	100	97	100	100	84	100
	6 G LEVEL BREAKAWAY	100	110	100	100	97	100	100	84	100
-10	5 G	490	133	200	531	121	200	575	111	200
	6 G	485	133	200	524	120	200	568	110	200
-20	5 G	1035	156	300	1139	147	300	1265	141	300
	6 G	1025	155	300	1117	144	300	1246	139	300

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross Weight = 24,000 lbs.

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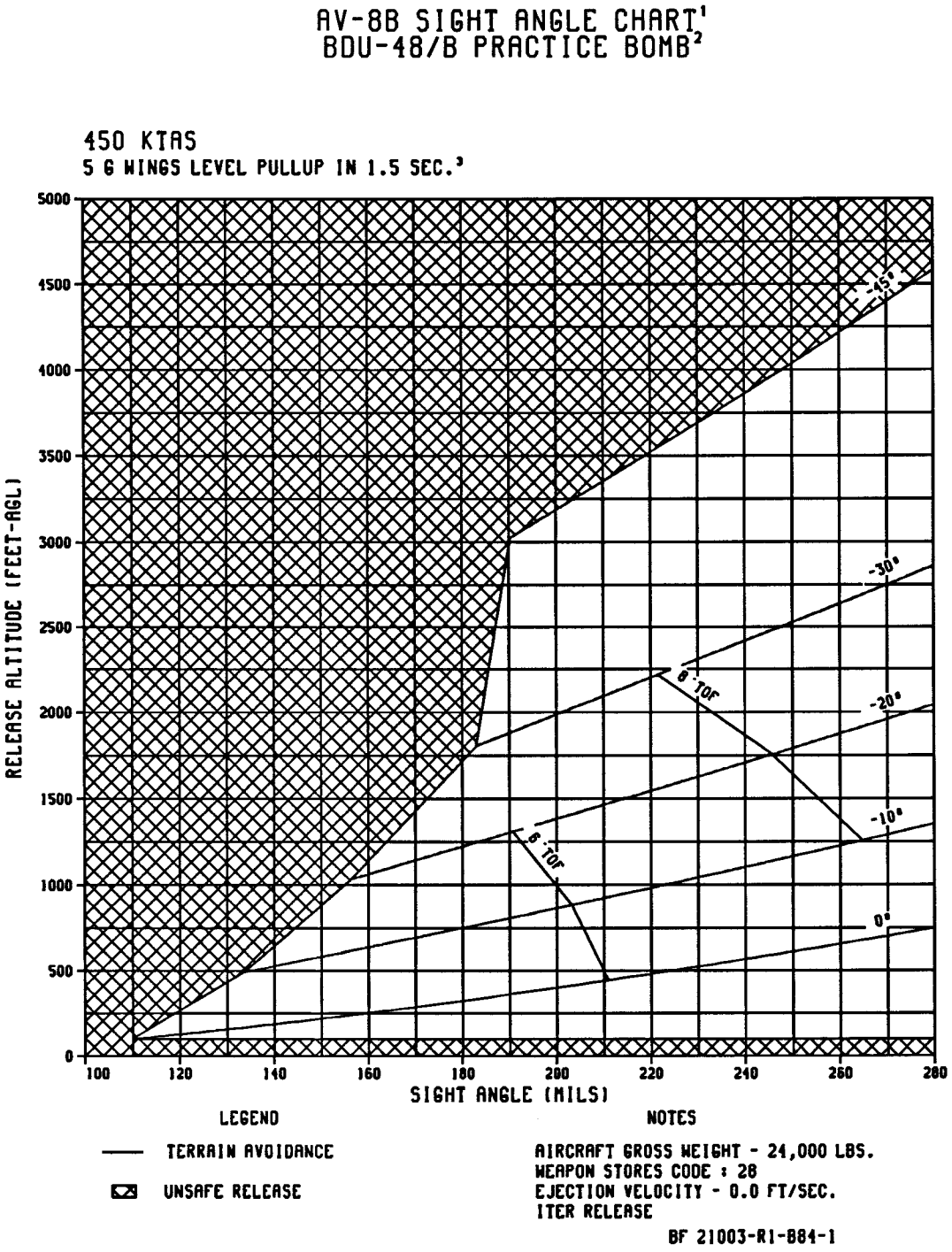
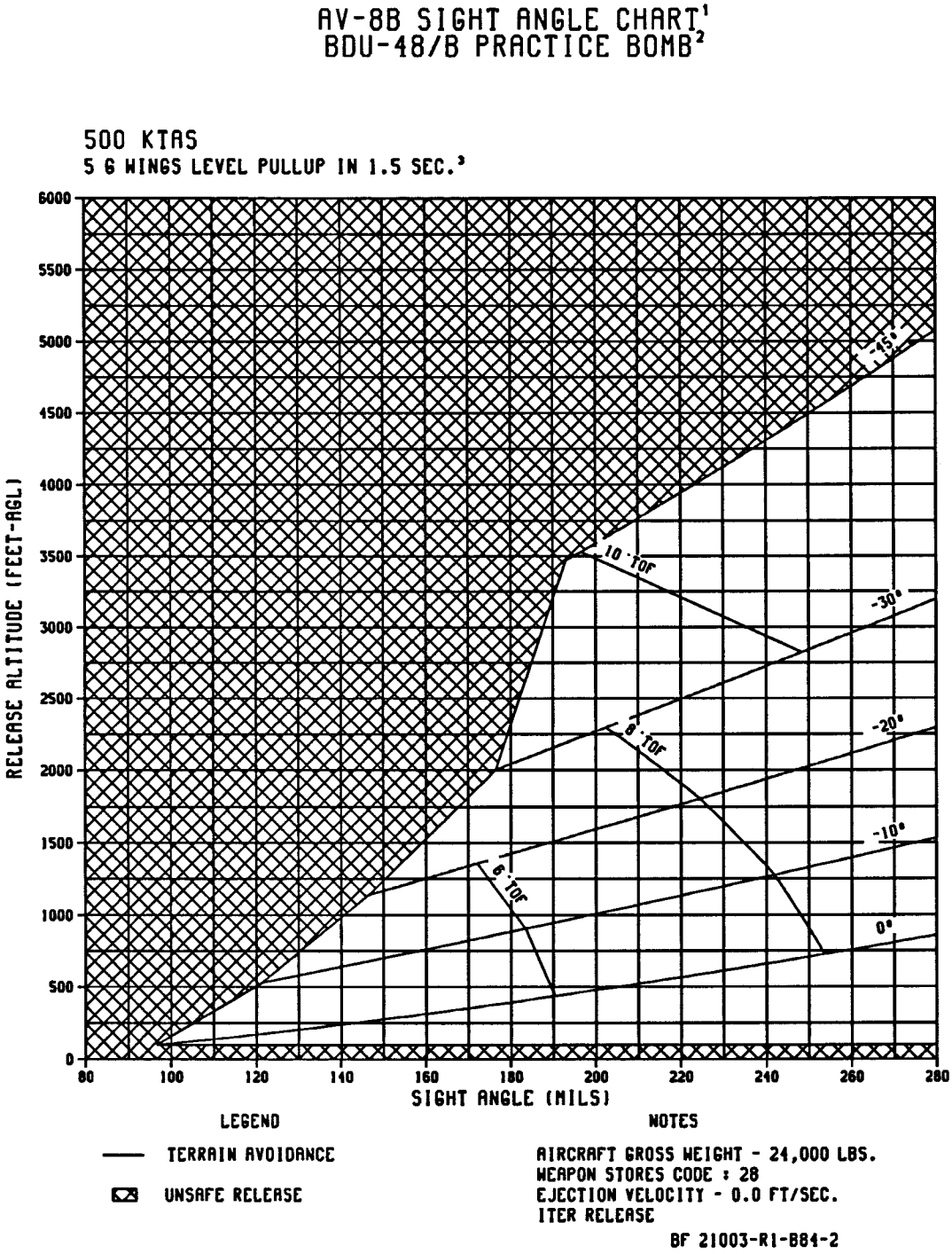
Figure 2-169. Safe Escape Table, BDU-48/B Practice Bomb



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-170. Sight Angle Chart, BDU-48/B Practice Bomb (Sheet 1 of 3)

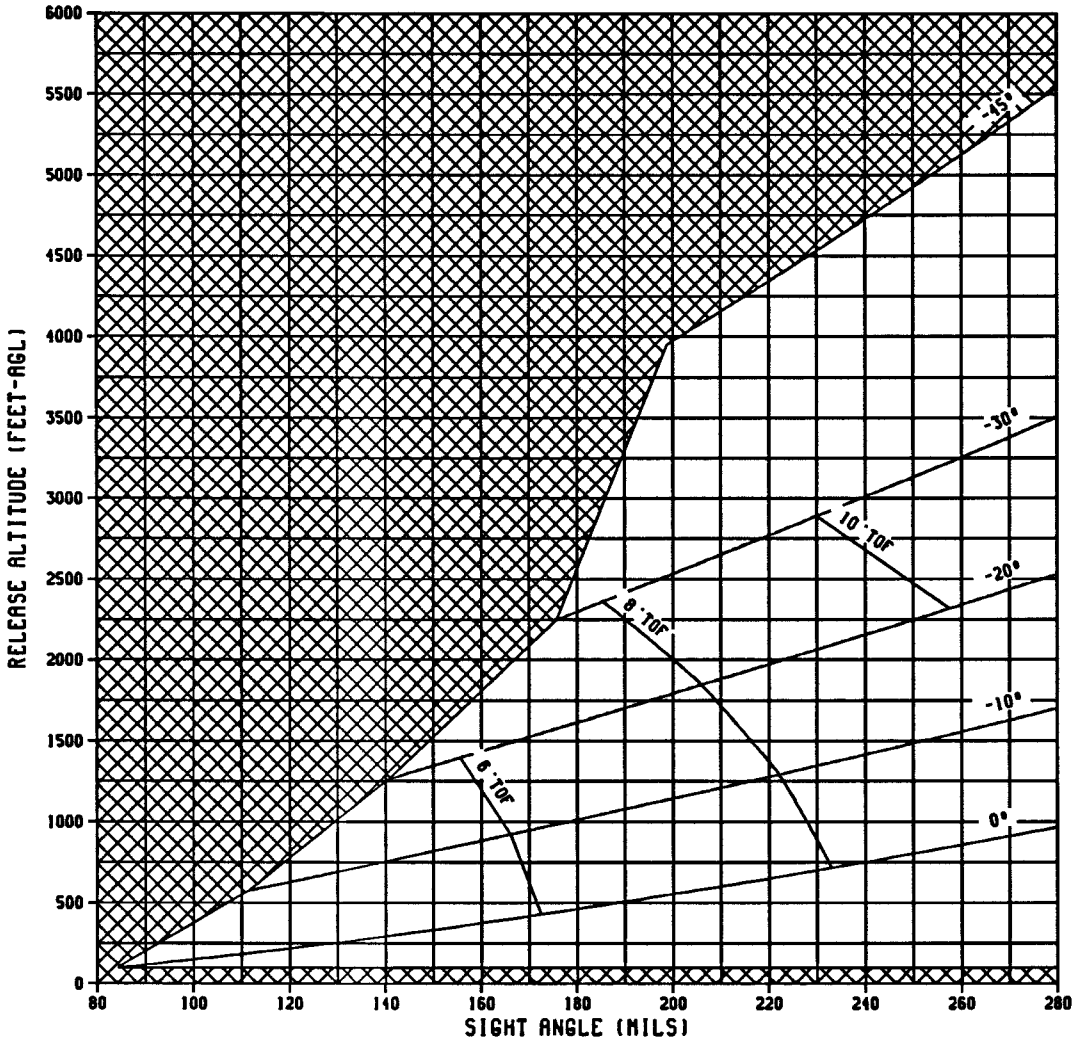


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-170. Sight Angle Chart, BDU-48/B Practice Bomb (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
BDU-48/B PRACTICE BOMB[2]

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 28
EJECTION VELOCITY - 0.0 FT/SEC.
ITER RELEASE

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1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-170. Sight Angle Chart, BDU-48/B Practice Bomb (Sheet 3 of 3)

AV-8B DELIVERY DATA
BDU-48/B PRACTICE BOMB

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.6	1429	1433	110	70	36	4	9.16	451.42
	150	3.2	1696	1703	128	88	36	3	12.17	405.39
	200	3.8	1905	1915	144	105	36	3	14.96	374.06
	250	4.3	2077	2092	159	120	36	3	17.58	351.09
	300	4.8	2225	2245	173	134	37	3	20.07	333.48
	400	5.7	2470	2502	200	161	37	3	24.72	308.39
	500	6.4	2670	2717	224	185	37	3	28.97	291.70
	600	7.1	2840	2903	248	208	37	2	32.88	280.18
	700	7.8	2988	3068	270	230	37	2	36.46	272.10
	760	8.1	3068	3161	282	243	37	2	38.47	268.45
-10	490	3.6	1780	1846	133	94	36	3	22.98	390.55
	600	4.3	2021	2108	153	114	36	3	26.28	360.26
	700	4.9	2212	2320	171	132	36	3	29.26	339.38
	800	5.5	2382	2513	189	150	36	3	32.19	323.14
	900	6.1	2534	2689	206	167	36	2	35.03	310.43
	1000	6.6	2672	2853	223	184	37	2	37.76	300.43
	1100	7.2	2797	3006	239	200	37	2	40.38	292.56
	1200	7.7	2912	3150	256	216	37	2	42.87	286.35
	1300	8.2	3018	3286	271	232	37	2	45.23	281.48
	1380	8.6	3097	3391	284	245	37	2	47.03	278.35
-20	1035	4.7	2050	2296	156	119	35	3	36.76	354.78
	1100	5.0	2135	2402	165	127	35	3	38.05	345.98
	1200	5.5	2260	2559	177	139	35	2	40.05	334.19
	1300	6.0	2376	2708	190	152	35	2	42.02	324.23
	1400	6.4	2485	2852	202	164	35	2	43.96	315.83
	1500	6.9	2587	2990	214	176	36	2	45.85	308.75
	1600	7.3	2682	3123	227	189	36	2	47.69	302.79
	1800	8.2	2858	3377	251	213	36	2	51.20	293.59
	2000	9.1	3014	3617	275	237	36	2	54.45	287.18
	2050	9.3	3051	3676	281	243	36	2	55.22	285.92

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 28.

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Figure 2-171. Delivery Data, BDU-48/B Practice Bomb (Sheet 1 of 3)

AV-8B DELIVERY DATA
BDU-48/B PRACTICE BOMB

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.6	1552	1555	97	64	29	3	8.63	478.18
	150	3.3	1835	1841	113	82	29	3	11.55	425.58
	200	3.9	2054	2064	129	97	29	3	14.27	390.14
	300	4.9	2389	2408	156	125	29	2	19.30	344.64
	400	5.7	2645	2675	182	150	29	2	23.90	316.64
	500	6.5	2852	2896	205	174	29	2	28.13	298.04
	600	7.2	3028	3087	227	196	29	2	32.04	285.16
	700	7.8	3181	3257	248	217	29	2	35.63	276.06
	800	8.4	3316	3411	268	237	29	2	38.95	269.59
	890	9.0	3425	3539	286	254	29	2	41.71	265.39
-10	531	3.7	1960	2031	121	90	29	3	22.83	400.89
	600	4.1	2117	2201	133	102	29	3	24.82	379.81
	700	4.8	2321	2425	150	118	29	2	27.72	355.24
	800	5.4	2502	2627	166	135	29	2	30.60	336.11
	900	6.0	2664	2812	183	151	29	2	33.43	321.09
	1000	6.5	2810	2983	199	167	29	2	36.16	309.23
	1100	7.1	2943	3142	214	183	29	2	38.80	299.84
	1200	7.6	3064	3291	230	199	29	2	41.33	292.39
	1400	8.6	3280	3566	260	229	29	2	46.02	281.84
	1550	9.3	3421	3756	282	251	29	2	49.23	276.67
-20	1139	5.0	2269	2539	147	116	28	2	37.07	357.67
	1200	5.3	2349	2638	154	123	28	2	38.26	349.33
	1300	5.7	2472	2793	165	135	28	2	40.20	337.34
	1400	6.2	2588	2943	177	147	28	2	42.12	327.18
	1500	6.6	2697	3086	189	159	28	2	44.02	318.57
	1600	7.1	2799	3224	201	170	28	2	45.88	311.28
	1800	8.0	2985	3486	224	194	28	2	49.45	299.93
	2000	8.8	3152	3733	247	216	28	2	52.79	291.89
	2200	9.7	3301	3967	269	239	29	2	55.87	286.27
	2300	10.1	3370	4080	280	250	29	2	57.31	284.16

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 28.

BF 21003-R1-B85-3

Figure 2-171. Delivery Data, BDU-48/B Practice Bomb (Sheet 2 of 3)

AV-8B DELIVERY DATA
BDU-48/B PRACTICE BOMB

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.6	1659	1662	84	60	21	3	8.25	500.10
	200	3.9	2183	2192	115	91	21	2	13.77	402.87
	300	4.9	2530	2547	141	118	21	2	18.74	353.30
	400	5.8	2793	2821	166	142	21	2	23.31	322.98
	500	6.5	3007	3048	188	165	21	2	27.53	302.85
	600	7.2	3187	3243	209	186	21	2	31.43	288.91
	700	7.9	3343	3416	230	206	21	2	35.04	279.04
	800	8.5	3481	3572	249	226	21	2	38.37	271.97
	900	9.1	3605	3716	268	245	21	2	41.44	266.92
	980	9.5	3696	3824	283	259	21	2	43.73	263.96
-10	575	3.9	2138	2214	111	88	21	2	23.00	405.03
	600	4.0	2196	2277	115	92	21	2	23.70	396.86
	700	4.7	2411	2510	131	108	21	2	26.53	369.00
	800	5.3	2601	2721	147	124	21	2	29.37	347.30
	900	5.9	2771	2913	163	140	21	2	32.18	330.24
	1000	6.4	2924	3090	178	155	21	2	34.91	316.76
	1200	7.5	3190	3408	208	185	21	2	40.12	297.53
	1400	8.5	3414	3690	238	215	21	2	44.88	285.36
	1600	9.5	3607	3946	266	243	21	2	49.18	277.74
	1750	10.2	3736	4126	287	263	21	2	52.10	274.06
-20	1265	5.4	2505	2806	141	119	20	2	38.10	353.63
	1300	5.5	2550	2862	145	122	20	2	38.77	349.05
	1400	6.0	2671	3016	156	134	20	2	40.68	337.31
	1500	6.5	2786	3164	167	145	20	2	42.57	327.33
	1600	6.9	2893	3306	178	156	20	2	44.43	318.85
	1800	7.8	3089	3575	201	179	20	2	48.04	305.58
	2000	8.7	3263	3827	223	201	20	2	51.44	296.08
	2200	9.5	3420	4066	245	223	20	2	54.60	289.37
	2400	10.3	3561	4294	266	244	20	2	57.51	284.68
	2550	10.9	3658	4459	282	260	20	2	59.53	282.18

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 28.

BF 21003-R1-B85-5

Figure 2-171. Delivery Data, BDU-48/B Practice Bomb (Sheet 3 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-48/B PRACTICE BOMB

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	56	-66	-958	0	-317	136	96	-110	1.4	44	2.1	43	30.3
	150	58	-67	-753	478	-280	146	92	-101	1.7	55	2.8	55	32.1
	200	59	-68	-635	478	-257	150	88	-95	1.9	65	3.5	64	33.7
	250	60	-68	-556	451	-240	152	84	-90	2.1	73	4.2	73	35.0
	300	60	-68	-498	423	-228	152	81	-86	2.2	81	4.8	81	36.1
	400	61	-68	-419	373	-210	151	76	-80	2.5	96	6.1	95	38.1
	500	61	-68	-366	335	-197	149	72	-75	2.7	108	7.3	108	39.8
	600	61	-68	-327	305	-187	147	69	-71	2.9	120	8.6	120	41.3
	700	62	-68	-297	280	-179	145	66	-68	3.1	131	9.7	131	42.7
	760	62	-68	-282	268	-175	144	64	-66	3.2	137	10.5	137	43.4
-10	490	28	-31	-143	109	-48	37	34	-34	1.8	60	8.6	60	32.5
	600	32	-36	-146	120	-58	46	36	-37	2.1	72	9.8	72	34.2
	700	35	-39	-147	125	-64	52	38	-38	2.3	83	10.8	83	35.7
	800	38	-42	-146	129	-70	58	39	-39	2.5	93	11.8	93	37.0
	900	40	-44	-145	130	-75	63	40	-40	2.7	103	12.8	103	38.2
	1000	42	-46	-143	130	-78	67	40	-40	2.9	112	13.8	112	39.3
	1100	44	-48	-140	130	-82	70	41	-41	3.0	121	14.8	121	40.3
	1200	45	-49	-137	128	-84	73	41	-41	3.1	130	15.8	130	41.3
	1300	47	-51	-135	127	-87	76	41	-41	3.3	139	16.7	139	42.2
	1380	47	-52	-132	125	-88	78	41	-41	3.4	146	17.5	145	42.9
-20	1035	24	-27	-68	59	-30	26	25	-25	2.3	80	15.6	80	34.6
	1100	25	-28	-70	61	-32	28	26	-25	2.4	85	16.2	85	35.3
	1200	27	-30	-73	64	-36	32	27	-27	2.6	93	17.0	93	36.2
	1300	29	-32	-75	67	-39	35	28	-27	2.7	101	17.8	101	37.1
	1400	31	-34	-76	69	-42	38	29	-28	2.9	108	18.7	108	38.0
	1500	33	-36	-77	71	-45	41	30	-29	3.0	116	19.5	116	38.8
	1600	34	-37	-78	72	-48	44	30	-30	3.1	124	20.3	123	39.5
	1800	37	-40	-79	74	-53	49	31	-31	3.4	138	21.9	138	41.0
	2000	40	-43	-79	75	-58	54	32	-32	3.6	153	23.4	153	42.2
	2050	40	-44	-79	75	-59	55	33	-32	3.7	157	23.7	156	42.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 28.

BF 21003-R1-B86-1

Figure 2-172. Release Error Sensitivities, BDU-48/B Practice Bomb (Sheet 1 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-48/B PRACTICE BOMB

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	53	-55	-1052	0	-395	158	112	-130	1.6	44	1.8	44	28.2
	150	54	-56	-825	528	-341	170	106	-119	1.8	56	2.4	55	30.0
	200	55	-56	-694	525	-309	174	101	-111	2.1	65	3.1	65	31.5
	300	55	-57	-543	462	-270	176	93	-100	2.4	82	4.2	82	34.0
	400	55	-57	-455	407	-246	174	87	-91	2.7	97	5.4	96	36.0
	500	55	-57	-396	364	-229	171	82	-85	2.9	110	6.5	109	37.7
	600	55	-57	-353	330	-216	167	77	-80	3.1	121	7.6	121	39.2
	700	55	-57	-321	303	-206	164	74	-77	3.3	132	8.7	132	40.6
	800	55	-57	-294	280	-198	161	71	-73	3.4	143	9.8	143	41.8
	890	55	-57	-275	263	-192	159	69	-71	3.5	152	10.8	151	42.8
-10	531	26	-26	-147	113	-55	42	38	-39	2.0	62	8.0	62	30.7
	600	28	-29	-150	121	-61	48	40	-40	2.2	70	8.7	70	31.8
	700	31	-32	-151	128	-69	55	41	-42	2.4	81	9.6	81	33.2
	800	33	-34	-152	132	-76	61	42	-43	2.6	91	10.5	91	34.6
	900	35	-36	-151	135	-81	67	43	-44	2.8	101	11.5	101	35.8
	1000	37	-38	-149	136	-85	72	44	-44	3.0	110	12.4	110	37.0
	1100	38	-40	-147	135	-89	76	44	-44	3.1	120	13.3	119	38.0
	1200	40	-41	-144	134	-92	79	45	-45	3.3	129	14.2	128	39.0
	1400	42	-43	-139	131	-97	85	45	-45	3.6	146	16.0	145	40.8
	1550	43	-45	-134	128	-100	88	45	-45	3.8	158	17.3	158	42.0
-20	1139	22	-23	-71	61	-34	30	28	-28	2.5	84	14.9	84	33.1
	1200	23	-24	-72	64	-36	32	29	-28	2.6	89	15.4	89	33.7
	1300	25	-26	-75	67	-40	35	30	-29	2.8	97	16.1	97	34.6
	1400	26	-27	-77	69	-43	38	31	-30	2.9	105	16.9	105	35.5
	1500	28	-29	-78	72	-47	42	31	-31	3.1	112	17.7	112	36.4
	1600	29	-30	-79	73	-50	45	32	-32	3.2	120	18.5	120	37.1
	1800	32	-33	-81	76	-56	50	33	-33	3.5	135	20.0	135	38.6
	2000	34	-35	-81	77	-61	55	35	-34	3.7	149	21.4	149	40.0
	2200	36	-37	-81	78	-65	60	36	-35	4.0	164	22.9	163	41.2
	2300	37	-38	-81	78	-67	62	36	-35	4.1	171	23.6	170	41.8

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 28.

BF 21003-R1-B86-3

Figure 2-172. Release Error Sensitivities, BDU-48/B Practice Bomb (Sheet 2 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-48/B PRACTICE BOMB

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

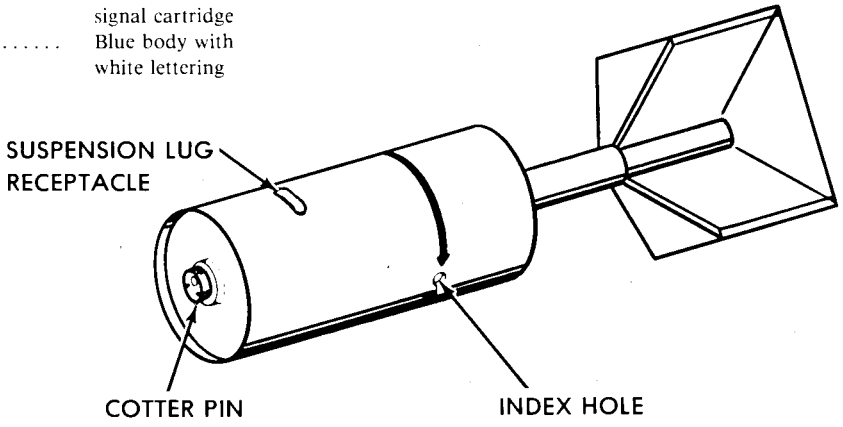
RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	73	-78	-1137	0	-474	178	128	-150	1.7	45	1.6	44	26.6
	200	70	-74	-746	568	-360	196	114	-126	2.2	66	2.7	66	30.0
	300	68	-71	-581	497	-311	197	104	-112	2.5	83	3.8	83	32.4
	400	65	-68	-486	435	-280	194	96	-102	2.8	97	4.9	97	34.5
	500	64	-67	-422	388	-259	190	90	-95	3.0	110	5.9	110	36.2
	600	62	-65	-376	351	-243	185	85	-89	3.2	122	7.0	122	37.7
	700	61	-64	-340	322	-231	181	81	-84	3.4	133	8.0	133	39.0
	800	60	-63	-312	298	-220	178	78	-81	3.6	144	9.0	144	40.2
	900	60	-62	-289	277	-212	174	75	-77	3.7	154	10.0	154	41.3
	980	59	-62	-273	263	-206	172	73	-75	3.8	161	10.8	161	42.1
-10	575	30	-31	-150	118	-62	47	42	-42	2.2	65	7.7	65	29.5
	600	31	-32	-152	121	-64	49	42	-43	2.3	68	7.9	68	29.9
	700	33	-35	-155	130	-73	57	44	-45	2.5	79	8.8	79	31.4
	800	35	-37	-156	135	-80	64	46	-46	2.7	89	9.6	89	32.7
	900	37	-39	-155	138	-86	70	46	-47	2.9	99	10.5	99	34.0
	1000	38	-40	-154	140	-91	76	47	-47	3.1	109	11.4	109	35.1
	1200	41	-43	-150	139	-99	84	48	-48	3.4	127	13.1	127	37.2
	1400	42	-44	-144	136	-104	90	48	-48	3.7	144	14.8	144	39.1
	1600	44	-46	-139	133	-108	95	48	-48	3.9	161	16.5	161	40.7
	1750	44	-47	-134	129	-110	98	48	-48	4.1	173	17.7	172	41.8
-20	1265	25	-26	-74	65	-39	34	31	-30	2.8	91	14.6	91	32.4
	1300	25	-27	-75	66	-40	35	31	-31	2.9	94	14.9	94	32.7
	1400	27	-28	-77	69	-44	39	32	-32	3.0	101	15.6	101	33.6
	1500	28	-30	-79	72	-48	42	33	-33	3.2	109	16.4	109	34.5
	1600	29	-31	-80	74	-51	45	34	-33	3.3	117	17.1	117	35.3
	1800	32	-33	-82	77	-57	51	35	-35	3.6	132	18.6	132	36.8
	2000	33	-35	-83	79	-63	57	36	-36	3.8	146	20.0	146	38.2
	2200	35	-37	-83	80	-68	62	37	-37	4.1	161	21.4	160	39.5
	2400	37	-38	-83	80	-72	66	38	-38	4.3	175	22.7	174	40.6
	2550	37	-39	-82	80	-75	69	39	-38	4.5	185	23.7	185	41.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 28.

BF 21003-R1-B86-5

Figure 2-172. Release Error Sensitivities, BDU-48/B Practice Bomb (Sheet 3 of 3)

Characteristics	Mod 5
Length (Inches)	21.12
Body Diameter (Inches)	3.87
Weight (Pounds)	5
Suspension	Single lug
Explosive Components	Mk 4/CXU-3A/B signal cartridge
Identifying Marks	Blue body with white lettering



AV8BB-TAC-05-(36-1)09

Figure 2-173. Mk 106 Mod 5 Practice Bomb

2.18 MK 106 MOD 5 PRACTICE BOMB

2.18.1 Description. The Mk 106 practice bomb (see Figure 2-173) is designed to simulate a high drag nuclear weapon or underwater mine. It is comprised of a cylindrical bomb body assembly with a bore tube for installation of a signal cartridge, a screw in firing device and a spring loaded retractable suspension lug. The screw-in firing device has provisions for safing by installing a safety pin. Impact initiates the Mk 4 or CXU-3A/B signal cartridge which expels smoke/flame from the bore tube for impact marking.

NOTE

The CXU-3A/B signal cartridge is for day use ONLY.

2.18.2 Preflight Checks.

1. Master arm switch - OFF (SAFE)
2. Emergency jettison - VISUALLY CHECK NOT PRESSED
3. Selective jettison - SAFE
4. (Parent rack) Safe/arm lever - SAFE
5. (BRU-42) Safety stop lever locked
6. Swaybraces adjusted
7. Throttles properly set
8. Cartridges installed; breech caps tight
9. Firing device safety pin removed

2.18.3 Prior to Launch (Ground Crew)

1. Rearming/arming (before engine start)
   (a) (Parent rack) Position safe/arm lever(s) to ARM
   (b) (BRU-42) Unlock safety stop lever(s)

2.18.4 After Landing or Ground Abort (Ground Crew)

1. Safing (dearming/rearming area after engine shutdown)

(a) (Parent rack) Position safe/arm lever(s) to SAFE

(b) (BRU-42) Unlock safety stop lever(s)

2.18.5 Delivery Data. A Safe Escape table providing terrain avoidance minimum altitudes for various recovery maneuvers is presented in Figure 2-174. Sight Angle charts, Delivery Data tables, and Release Error Sensitivities tables for the Mk 106 Practice Bomb are presented in Figures 2-175 through 2-177.

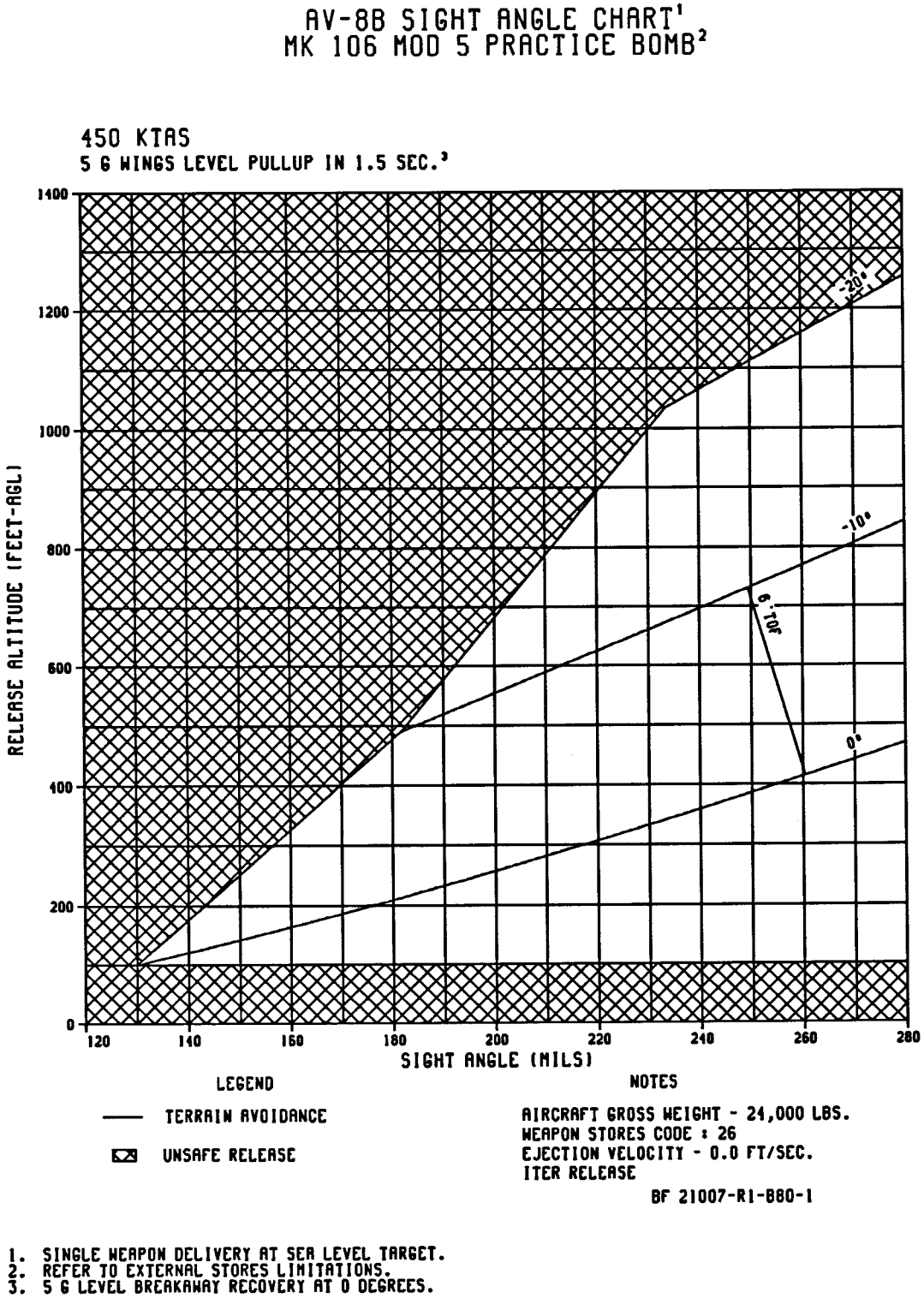
AV-8B SAFE ESCAPE TABLE
MK 106 MOD 5 PRACTICE BOMB

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS			500 KTAS			550 KTAS		
		MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)	MIN REL ALTITUDE (FT)	SIGHT ANGLE (MIL)	RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	100	130	100	100	116	100	100	104	100
	5 G LEVEL BREAKAWAY	100	130	100	100	116	100	100	104	100
	6 G LEVEL BREAKAWAY	100	130	100	100	116	100	100	104	100
-10	5 G	490	182	200	531	173	200	575	167	200
	6 G	485	180	200	524	171	200	568	166	200
-20	5 G	1035	234	300	1139	231	300	1265	236	300
	6 G	1025	231	300	1117	227	300	1246	233	300

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross weight = 24,000 lbs.

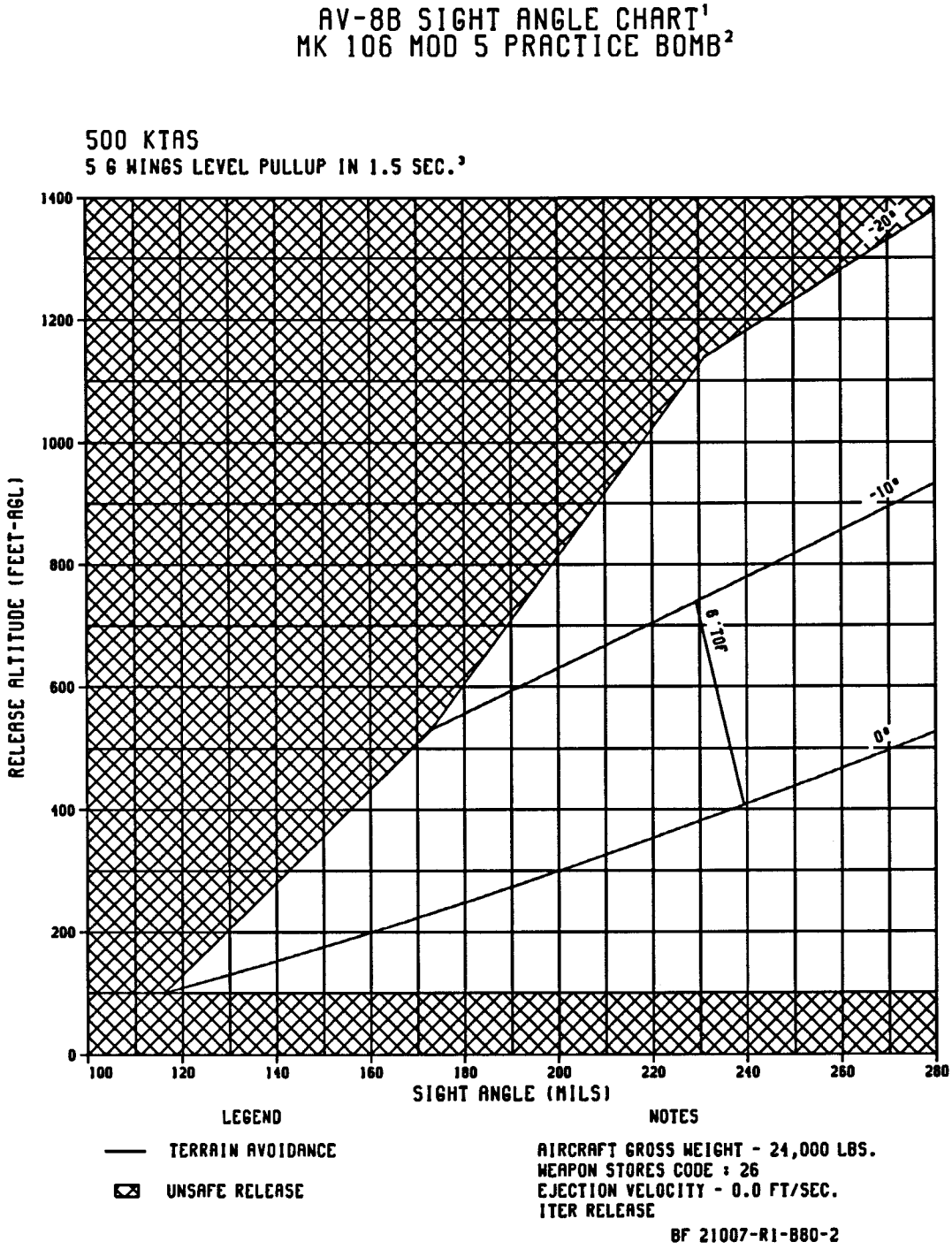
BF 21007-R1-B79-1

Figure 2-174. Safe Escape Table, Mk 106 Mod 5 Practice Bomb



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-175. Sight Angle Chart, Mk 106 Mod 5 Practice Bomb (Sheet 1 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-175. Sight Angle Chart, Mk 106 Mod 5 Practice Bomb (Sheet 2 of 3)

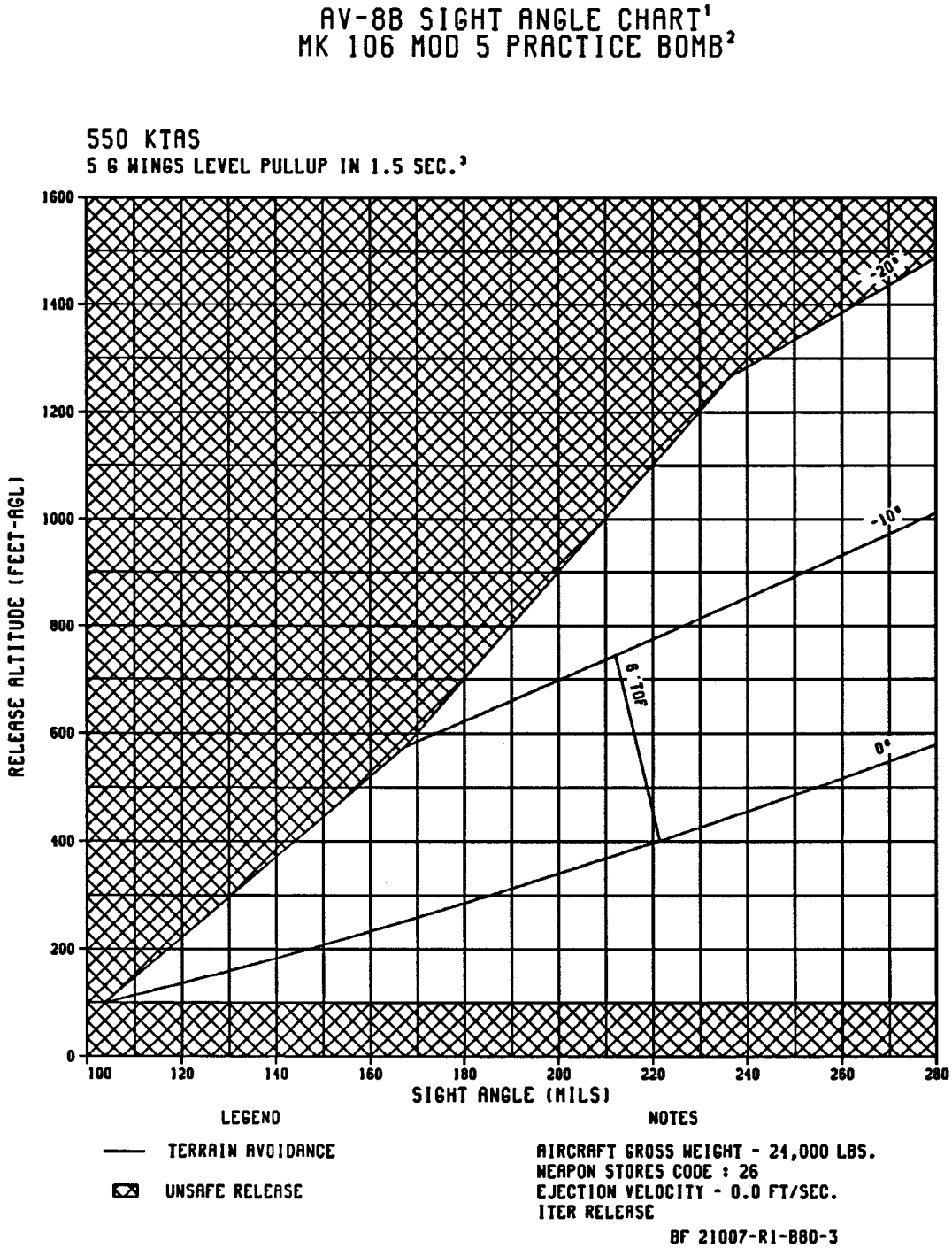


Figure 2-175. Sight Angle Chart, Mk 106 Mod 5 Practice Bomb (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 106 MOD 5 PRACTICE BOMB

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	1126	1131	130	89	36	5	12.06	319.22
	150	3.2	1323	1331	154	113	36	4	16.83	271.36
	200	3.9	1468	1482	176	135	36	4	21.35	242.62
	250	4.4	1584	1604	197	157	36	4	25.62	223.71
	300	4.9	1681	1707	217	177	37	4	29.62	210.65
	350	5.4	1764	1798	236	196	37	4	33.36	201.35
	400	5.9	1836	1879	255	215	37	4	36.85	194.64
	450	6.3	1900	1953	273	233	37	4	40.09	189.77
	475	6.5	1930	1987	282	241	37	4	41.62	187.86
-10	490	4.2	1498	1577	182	142	36	4	32.04	237.92
	500	4.3	1514	1595	185	144	36	4	32.58	235.54
	550	4.6	1589	1682	199	159	36	4	35.28	225.13
	600	5.0	1657	1763	213	173	36	4	37.92	216.80
	650	5.4	1720	1838	227	187	36	4	40.48	210.12
	700	5.8	1777	1909	241	201	36	4	42.94	204.76
	750	6.1	1829	1977	255	215	36	4	45.29	200.48
	800	6.5	1878	2041	268	228	36	4	47.54	197.05
	850	6.8	1923	2102	282	242	36	4	49.68	194.34
-20	1035	6.0	1712	2000	234	195	35	3	50.76	209.67
	1050	6.1	1724	2019	237	198	35	3	51.27	208.62
	1100	6.4	1764	2079	247	209	35	3	52.94	205.50
	1150	6.7	1801	2137	258	219	35	3	54.56	202.87
	1200	7.0	1837	2194	268	230	35	3	56.11	200.65
	1250	7.3	1871	2250	279	240	35	3	57.61	198.80

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 26.

BF 21007-R1-B81-1

Figure 2-176. Delivery Data, Mk 106 Mod 5 Practice Bomb (Sheet 1 of 3)

AV-8B DELIVERY DATA
MK 106 MOD 5 PRACTICE BOMB

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	1206	1210	116	83	29	5	11.65	303.25
	150	3.3	1408	1416	139	106	29	4	16.38	260.04
	200	3.9	1558	1571	161	128	29	4	20.89	234.18
	250	4.5	1677	1695	181	148	29	4	25.15	217.22
	300	5.0	1775	1800	200	167	29	4	29.16	205.54
	350	5.5	1859	1892	219	186	29	4	32.91	197.28
	400	5.9	1933	1974	237	204	29	4	36.41	191.36
	450	6.4	1998	2048	254	222	29	4	39.67	187.11
	500	6.8	2057	2117	271	238	29	4	42.69	184.07
	530	7.0	2089	2155	281	248	29	4	44.40	182.70
-10	531	4.4	1629	1713	173	141	29	4	32.98	228.15
	550	4.6	1657	1746	178	146	29	4	34.00	224.39
	600	5.0	1729	1830	192	160	29	4	36.65	215.91
	650	5.3	1794	1908	205	173	29	3	39.24	209.16
	700	5.7	1853	1981	219	187	29	3	41.73	203.78
	750	6.1	1908	2050	232	200	29	3	44.13	199.50
	800	6.4	1959	2116	246	213	29	3	46.42	196.11
	850	6.8	2006	2178	259	226	29	3	48.61	193.43
	900	7.1	2049	2238	272	239	29	3	50.68	191.33
	950	7.4	2090	2296	284	252	29	3	52.64	189.71
-20	1139	6.5	1861	2182	231	200	28	3	52.80	203.65
	1150	6.6	1870	2195	234	202	28	3	53.16	203.07
	1200	6.9	1907	2253	244	213	28	3	54.76	200.73
	1250	7.2	1942	2310	254	223	28	3	56.31	198.77
	1300	7.5	1976	2365	264	233	28	3	57.79	197.15
	1350	7.8	2008	2419	274	243	28	3	59.20	195.81
	1400	8.1	2038	2472	284	253	28	3	60.56	194.71

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 26.

BF 21007-R1-B81-2

Figure 2-176. Delivery Data, Mk 106 Mod 5 Practice Bomb (Sheet 2 of 3)

AV-8B DELIVERY DATA
MK 106 MOD 5 PRACTICE BOMB

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.6	1270	1274	104	79	21	4	11.40	336.37
	150	3.3	1477	1484	126	101	21	4	16.11	281.88
	200	4.0	1629	1641	147	122	21	4	20.61	249.76
	250	4.5	1749	1767	166	142	21	3	24.87	228.85
	300	5.1	1849	1873	185	161	21	3	28.88	214.47
	350	5.5	1934	1966	203	179	21	3	32.65	204.26
	400	6.0	2009	2048	221	197	21	3	36.16	196.88
	450	6.4	2074	2123	238	214	21	3	39.43	191.51
	500	6.8	2133	2191	255	230	21	3	42.46	187.59
	590	7.5	2226	2303	284	259	21	3	47.38	183.10
-10	575	4.7	1748	1840	167	143	21	3	34.41	229.96
	600	4.9	1784	1882	174	150	21	3	35.74	225.13
	650	5.3	1851	1962	187	163	21	3	38.34	216.91
	700	5.7	1912	2037	200	176	21	3	40.86	210.30
	750	6.0	1969	2107	214	189	21	3	43.29	204.99
	800	6.4	2021	2174	226	202	21	3	45.61	200.73
	850	6.7	2069	2237	239	215	21	3	47.83	197.32
	900	7.1	2114	2298	252	228	21	3	49.94	194.61
	950	7.4	2156	2356	265	241	21	3	51.94	192.47
	1025	7.9	2214	2440	283	259	21	3	54.74	190.10
-20	1265	7.2	2008	2373	236	213	20	3	55.79	201.60
	1300	7.4	2032	2412	243	220	20	3	56.85	200.19
	1350	7.7	2065	2467	253	230	20	3	58.30	198.45
	1400	8.0	2096	2520	263	240	20	3	59.69	197.00
	1450	8.3	2126	2573	273	250	20	3	61.03	195.80
	1500	8.5	2154	2625	282	259	20	3	62.30	194.82

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 26.

BF 21007-R1-B81-3

Figure 2-176. Delivery Data, Mk 106 Mod 5 Practice Bomb (Sheet 3 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 106 MOD 5 PRACTICE BOMB

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	36	-43	-787	0	-184	95	61	-67	1.1	42	3.3	42	37.3
	150	36	-42	-622	381	-166	101	57	-61	1.3	55	4.6	55	41.0
	200	36	-41	-523	393	-152	103	53	-56	1.5	65	6.0	65	44.0
	250	36	-41	-456	372	-142	102	50	-52	1.6	75	7.3	75	46.6
	300	35	-40	-407	348	-134	101	47	-49	1.7	84	8.6	83	48.9
	350	35	-40	-369	325	-127	99	45	-46	1.8	92	9.9	92	50.9
	400	35	-39	-338	305	-122	97	43	-44	1.9	99	11.3	99	52.8
	450	34	-39	-313	286	-117	96	41	-42	2.0	107	12.6	106	54.4
	475	34	-39	-302	278	-115	95	41	-41	2.0	110	13.2	110	55.2
-10	490	22	-24	-160	126	-45	37	25	-25	1.6	71	13.9	70	44.6
	500	22	-25	-160	127	-46	38	25	-25	1.6	72	14.1	72	45.0
	550	23	-25	-159	131	-49	41	25	-25	1.7	79	15.3	78	46.7
	600	24	-26	-158	134	-51	43	26	-25	1.8	85	16.4	85	48.2
	650	24	-27	-156	135	-53	45	26	-25	1.8	92	17.6	91	49.7
	700	25	-28	-153	135	-54	47	26	-25	1.9	98	18.8	98	51.1
	750	25	-28	-151	135	-55	49	26	-25	2.0	104	19.9	104	52.4
	800	26	-29	-148	134	-57	50	26	-25	2.0	110	21.1	110	53.7
	850	26	-29	-145	133	-57	51	26	-25	2.1	116	22.2	115	54.8
-20	1035	20	-22	-87	77	-32	30	19	-18	2.0	102	26.3	102	50.8
	1050	20	-22	-87	78	-33	30	19	-19	2.0	103	26.6	103	51.1
	1100	21	-23	-88	79	-34	31	19	-19	2.1	108	27.6	108	52.1
	1150	21	-23	-88	80	-35	33	20	-19	2.1	114	28.6	113	53.0
	1200	22	-24	-88	80	-36	34	20	-19	2.2	119	29.6	118	54.0
	1250	22	-24	-88	81	-38	35	20	-19	2.2	124	30.5	123	54.9

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 26.

BF 21007-R1-B82-1

Figure 2-177. Release Error Sensitivities, Mk 106 Mod 5 Practice Bomb (Sheet 1 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 106 MOD 5 PRACTICE BOMB

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	33	-34	-855	0	-220	109	69	-77	1.2	43	2.9	43	35.4
	150	32	-33	-672	419	-194	115	64	-69	1.4	56	4.1	55	39.1
	200	31	-32	-563	427	-176	116	59	-63	1.6	66	5.4	66	42.1
	250	31	-32	-489	403	-163	115	56	-58	1.7	76	6.6	76	44.6
	300	30	-31	-435	375	-153	113	52	-55	1.8	85	7.8	84	46.9
	350	30	-31	-393	349	-144	111	50	-52	1.9	93	9.1	93	48.9
	400	29	-30	-360	326	-137	108	48	-49	2.0	100	10.3	100	50.8
	450	29	-30	-333	306	-131	106	46	-47	2.0	108	11.6	107	52.4
	500	29	-30	-311	288	-126	104	44	-45	2.1	115	12.8	114	54.0
	530	29	-30	-299	278	-124	103	43	-44	2.2	119	13.5	118	54.9
-10	531	19	-19	-166	134	-51	42	27	-27	1.7	75	13.5	75	43.6
	550	19	-20	-165	135	-52	43	27	-27	1.7	77	14.0	77	44.2
	600	20	-20	-164	138	-55	46	28	-27	1.8	84	15.1	84	45.8
	650	20	-21	-162	140	-57	48	28	-27	1.9	90	16.1	90	47.3
	700	21	-21	-160	141	-59	50	28	-27	2.0	97	17.3	97	48.7
	750	21	-22	-157	140	-60	52	28	-27	2.1	103	18.4	103	50.1
	800	21	-22	-155	140	-61	53	28	-27	2.1	109	19.4	109	51.3
	850	22	-22	-152	139	-62	55	28	-27	2.2	115	20.5	114	52.5
	900	22	-23	-149	137	-63	56	28	-27	2.2	120	21.6	120	53.7
	950	22	-23	-146	136	-64	57	27	-27	2.3	126	22.7	126	54.8
-20	1139	17	-18	-90	81	-37	33	21	-20	2.2	110	26.3	110	50.4
	1150	17	-18	-90	81	-37	34	21	-20	2.2	111	26.5	111	50.6
	1200	17	-18	-90	82	-38	35	21	-20	2.3	116	27.5	116	51.5
	1250	18	-19	-90	83	-39	36	21	-21	2.3	121	28.4	121	52.5
	1300	18	-19	-90	83	-40	37	21	-21	2.4	126	29.4	126	53.3
	1350	18	-19	-90	84	-41	38	22	-21	2.4	131	30.3	131	54.2
	1400	19	-20	-90	84	-43	40	22	-21	2.5	136	31.2	136	55.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 26.

BF 21007-R1-B82-2

Figure 2-177. Release Error Sensitivities, Mk 106 Mod 5 Practice Bomb (Sheet 2 of 3)

AV-8B RELEASE ERROR SENSITIVITIES
MK 106 MOD 5 PRACTICE BOMB

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	43	-46	-912	0	-253	121	76	-86	1.3	44	2.7	43	34.1
	150	41	-43	-713	451	-219	128	70	-76	1.5	56	3.8	56	37.7
	200	39	-41	-595	456	-197	128	65	-69	1.6	67	5.0	67	40.7
	250	37	-39	-515	427	-181	126	60	-64	1.8	77	6.1	76	43.3
	300	36	-37	-457	396	-168	123	57	-59	1.9	86	7.3	85	45.5
	350	35	-36	-413	368	-158	120	54	-56	2.0	94	8.5	93	47.5
	400	34	-35	-378	343	-150	117	51	-53	2.0	101	9.7	101	49.3
	450	33	-34	-349	321	-143	115	49	-50	2.1	109	10.8	108	51.0
	500	32	-33	-325	302	-137	112	47	-48	2.2	116	12.0	115	52.6
	590	31	-32	-290	273	-129	108	44	-45	2.3	127	14.2	127	55.1
-10	575	21	-22	-170	141	-57	47	29	-29	1.8	80	13.6	80	43.3
	600	21	-22	-169	142	-58	48	29	-29	1.9	83	14.1	83	44.1
	650	21	-22	-167	144	-60	51	29	-29	2.0	90	15.1	89	45.6
	700	22	-23	-165	145	-62	53	29	-29	2.0	96	16.2	96	47.0
	750	22	-23	-162	145	-64	55	29	-29	2.1	102	17.3	102	48.4
	800	22	-23	-160	144	-65	56	29	-29	2.2	108	18.3	108	49.7
	850	22	-23	-157	143	-66	57	29	-29	2.2	114	19.4	114	50.9
	900	23	-23	-154	142	-67	59	29	-29	2.3	120	20.4	120	52.0
	950	23	-24	-151	140	-67	60	29	-29	2.4	125	21.5	125	53.1
	1025	23	-24	-147	138	-68	61	29	-28	2.4	134	23.0	133	54.7
-20	1265	18	-19	-92	85	-41	37	22	-21	2.4	121	27.2	121	51.0
	1300	18	-19	-92	85	-42	38	22	-22	2.4	125	27.9	124	51.6
	1350	19	-19	-92	85	-43	39	22	-22	2.5	130	28.8	129	52.5
	1400	19	-19	-92	86	-44	41	23	-22	2.5	135	29.7	134	53.3
	1450	19	-20	-92	86	-45	42	23	-22	2.6	140	30.6	139	54.1
	1500	19	-20	-91	86	-46	43	23	-22	2.6	144	31.4	144	54.9

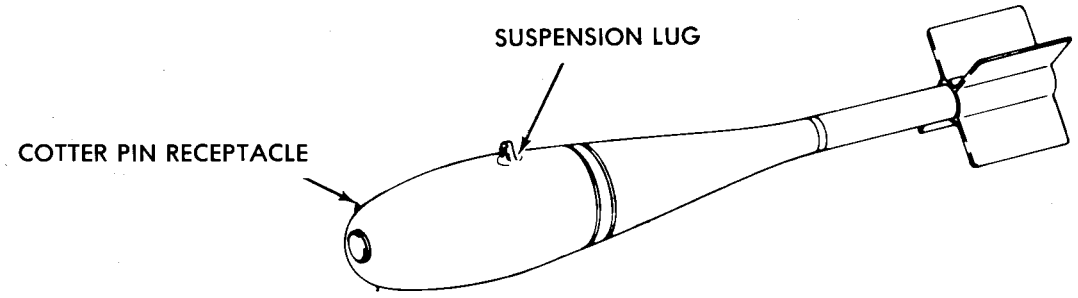
1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive delivieries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 26.

BF 21007-R1-B82-3

Figure 2-177. Release Error Sensitivities, Mk 106 Mod 5 Practice Bomb (Sheet 3 of 3)

Characteristics

Length (Inches)	24.7
Body Diameter (Inches)	4.0
Weight (Pounds)	25
Suspension	Single lug
Explosive Components	Mk 4/CXU-3A/B signal cartridge
Identifying Marks	Blue body with white lettering



AV8BB-TAC-05-(37-1)09

Figure 2-178. Mk 76 Mod 5 Practice Bomb

2.19 MK 76 MOD 5 PRACTICE BOMB

2.19.1 Description. The Mk 76 practice bomb (see Figure 2-178) is designed to simulate low drag freefall weapons. It is comprised of a teardrop-shaped cast metal bomb body assembly with a bore tube for installation of a signal cartridge, a Mk 1 firing pin and a screw-in single suspension lug. Impact initiates the Mk 4 or CXU-3A/B signal cartridge which expels smoke/flame from the bore tube for impact marking.

NOTE

The CXU-3A/B signal cartridge is for day use ONLY.

2.19.2 Preflight Checks.

1. Master arm switch - OFF (SAFE)
2. Emergency jettison - VISUALLY CHECK NOT PRESSED
3. Selective jettison - SAFE
4. (Parent rack) Safe/arm lever - SAFE
5. (BRU-42) Safety stop lever locked
6. Swaybraces adjusted
7. Throttles properly set

2.19.3 Prior to Launch (Ground Crew)

1. Rearming/arming (before engine start)
   (a) (Parent rack) Position safe/arm lever(s) to ARM
   (b) (BRU-42) Unlock safety stop lever(s)

2.19.4 After Landing or Ground Abort (Ground Crew)

1. Safing (dearming/rearming area after engine shutdown)
   (a) (Parent rack) Position safe/arm lever(s) to SAFE
   (b) (BRU-42) Lock safety stop lever(s)

2.19.5 Delivery Data. A Safe Escape table providing terrain avoidance minimum altitudes for

various recovery maneuvers is presented in Figure 2-179. Sight Angle Charts, Delivery Data tables, Release Error Sensitivities and Loft Delivery Data tables for the Mk 76 Practice Bomb are presented in Figures 2-180 through 2-183.

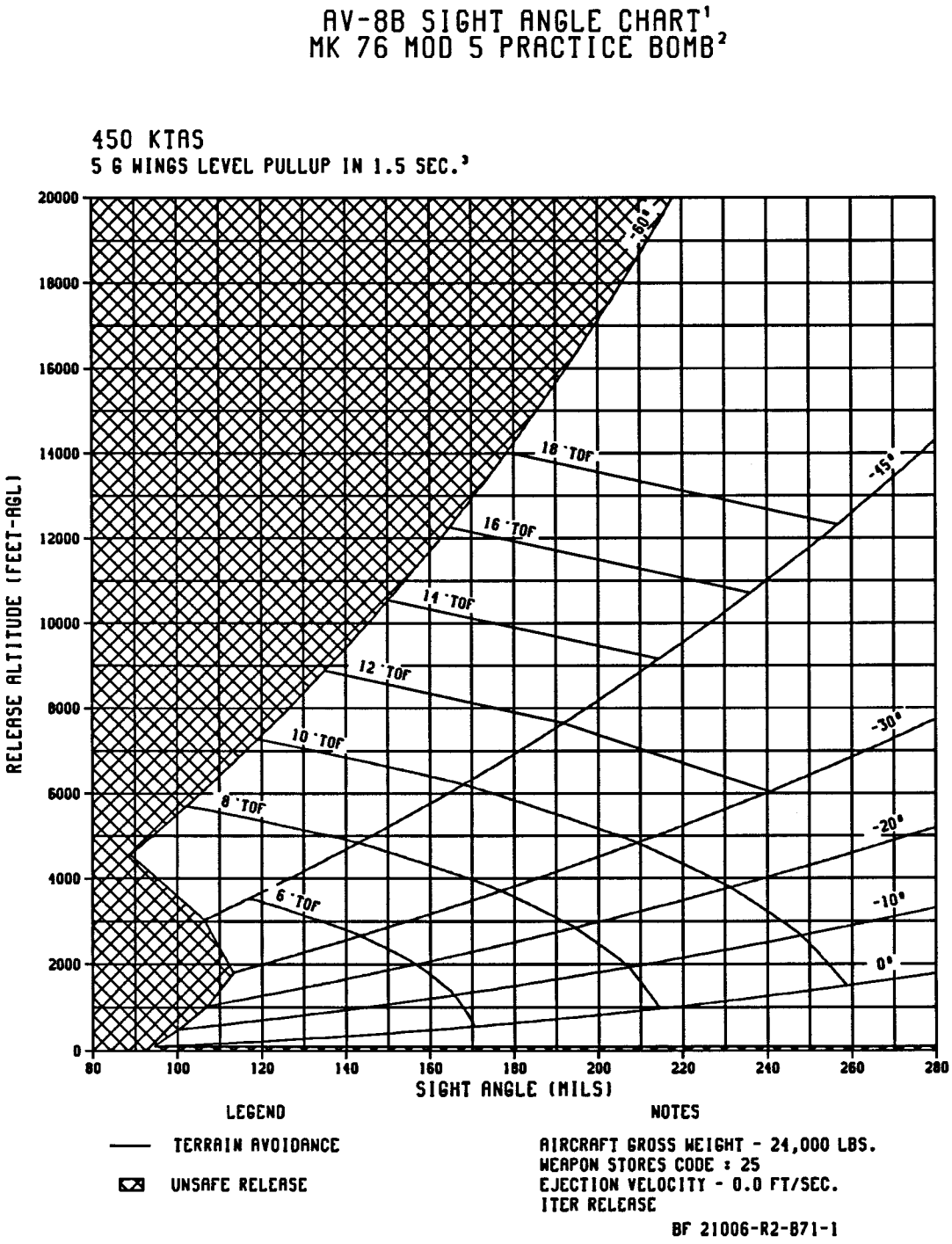
AV-8B SAFE ESCAPE TABLE
MK 76 MOD 5 PRACTICE BOMB

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	100	94	100	100	81	100	100	69	100
	5 G LEVEL BREAKAWAY	100	94	100	100	81	100	100	69	100
	6 G LEVEL BREAKAWAY	100	94	100	100	81	100	100	69	100
-10	5 G	490	100	200	531	87	200	575	74	200
	6 G	485	100	200	524	86	200	568	74	200
-20	5 G	1035	107	300	1139	94	300	1265	82	300
	6 G	1025	107	300	1117	93	300	1246	88	300
-30	5 G	1805	113	500	2005	100	500	2249	89	500
	6 G	1788	113	500	1944	98	500	2208	81	500
-45	5 G	3027	106	700	3468	97	700	3950	87	700
	6 G	3001	106	700	3279	93	700	3811	85	700
-60	5 G	4556	89	1000	5291	82	1000	6024	74	1000
	6 G	4416	87	1000	4864	77	1000	5615	70	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross weight = 24,000 lbs.

BF 21006-R2-B70-1

Figure 2-179. Safe Escape Table, Mk 76 Mod 5 Practice Bomb

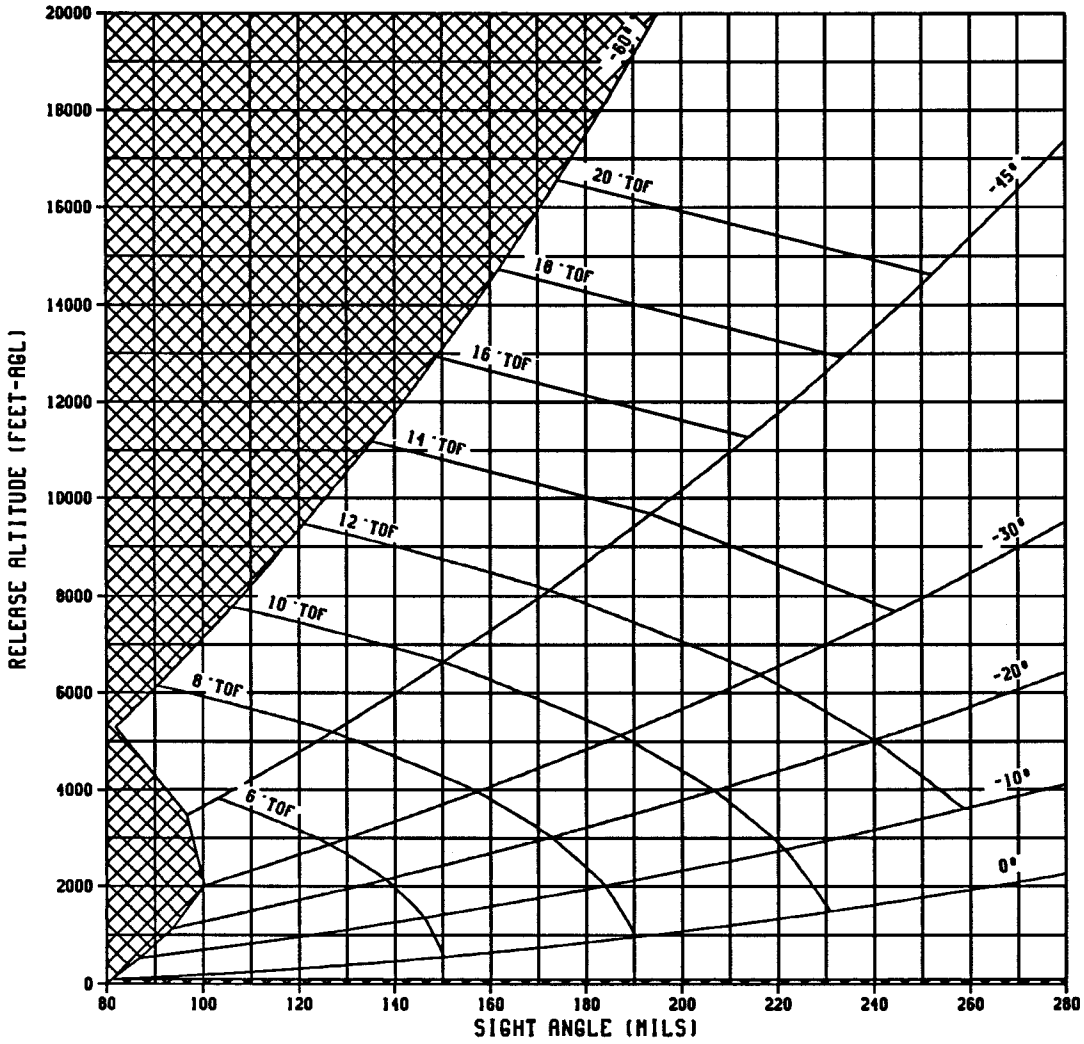


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-180. Sight Angle Chart, Mk 76 Mod 5 Practice Bomb (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 76 MOD 5 PRACTICE BOMB[2]

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 25
EJECTION VELOCITY - 0.0 FT/SEC.
ITER RELEASE

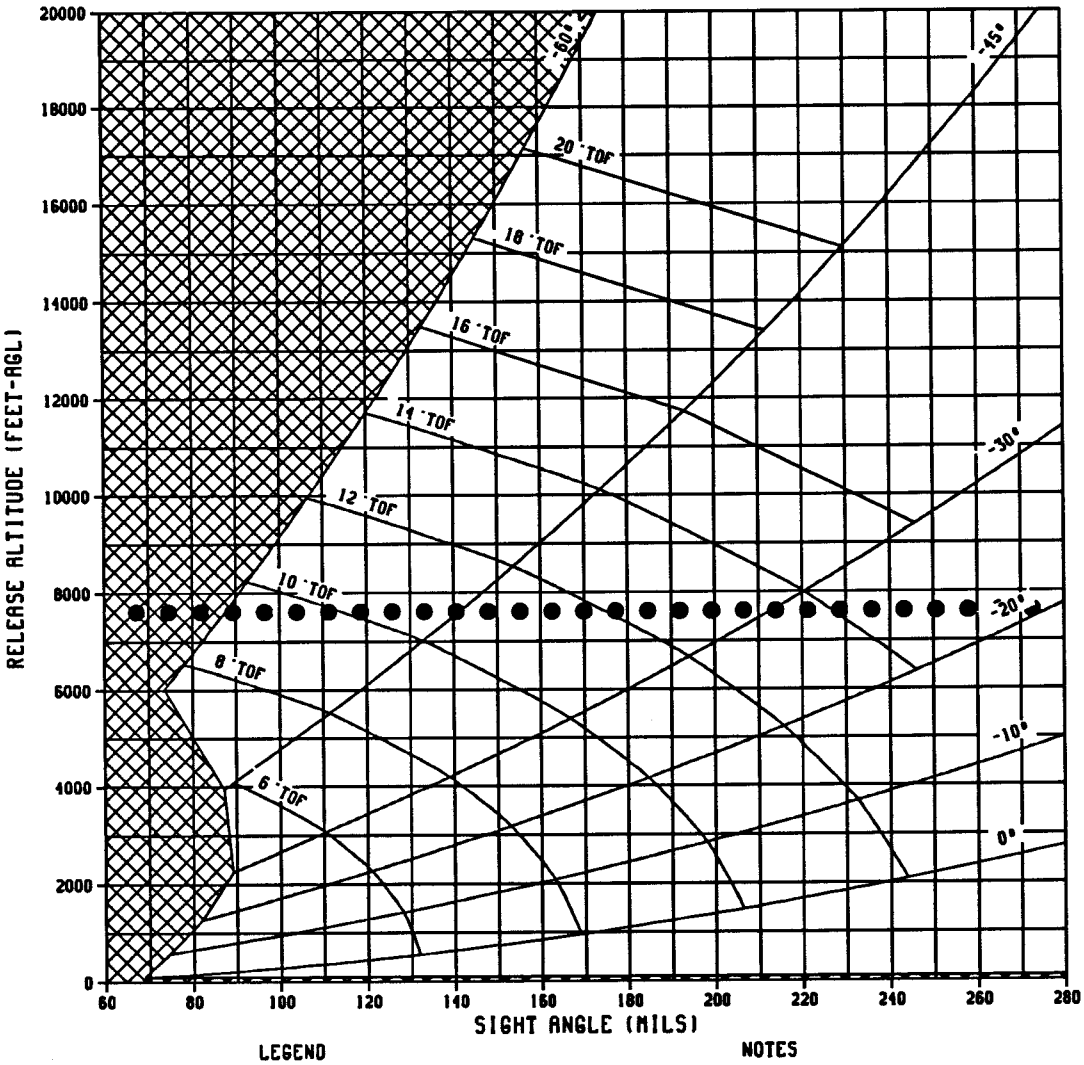
BF 21006-R2-B71-2

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-180. Sight Angle Chart, Mk 76 Mod 5 Practice Bomb (Sheet 2 of 3)

AV-8B SIGHT ANGLE CHART[1]
MK 76 MOD 5 PRACTICE BOMB[2]

550 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

TERRAIN AVOIDANCE

UNSAFE RELEASE
KCAS EXCEEDS RELEASE LIMITS BELOW THIS LINE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 25
EJECTION VELOCITY - 0.0 FT/SEC.
ITER RELEASE

BF 21006-R2-871-3

1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-180. Sight Angle Chart, Mk 76 Mod 5 Practice Bomb (Sheet 3 of 3)

AV-8B DELIVERY DATA
MK 76 MOD 5 PRACTICE BOMB

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	1809	1812	94	55	36	3	6.31	721.27
	200	3.5	2552	2560	117	78	36	2	9.05	706.24
	400	5.0	3580	3603	150	111	37	2	13.01	689.02
	600	6.2	4352	4393	175	137	37	1	16.09	678.96
	800	7.2	4992	5056	197	159	37	1	18.70	672.51
	1000	8.1	5548	5637	217	178	37	1	21.00	668.31
	1400	9.6	6496	6645	251	212	38	1	24.94	664.10
	1800	11.0	7300	7519	281	242	38	1	28.29	663.39
-10	490	2.8	2037	2095	100	62	36	3	16.99	726.35
	600	3.3	2383	2458	111	72	36	2	18.22	721.95
	1000	5.0	3472	3613	144	106	37	2	22.16	710.74
	1500	6.7	4585	4824	180	142	37	1	26.28	703.54
	1600	7.0	4784	5045	187	148	37	1	27.02	702.71
	1700	7.3	4978	5260	193	155	37	1	27.75	702.04
	1800	7.6	5166	5471	199	161	37	1	28.45	701.51
	1900	7.9	5349	5676	205	167	37	1	29.13	701.11
	2000	8.2	5526	5877	211	173	37	1	29.79	700.83
	2100	8.5	5700	6074	217	178	38	1	30.44	700.67
	2200	8.8	5868	6267	223	184	38	1	31.07	700.60
	2300	9.0	6033	6457	229	190	38	1	31.68	700.63
	2400	9.3	6194	6643	234	195	38	1	32.28	700.75
	2500	9.6	6352	6826	240	200	38	1	32.86	700.95
	2600	9.8	6506	7006	245	206	38	1	33.43	701.22
	2700	10.1	6657	7184	250	211	38	1	33.99	701.56
	2800	10.3	6805	7359	255	216	38	1	34.53	701.97
	2900	10.6	6950	7531	260	221	38	1	35.06	702.43
	3000	10.8	7092	7701	265	226	38	1	35.58	702.95
	3400	11.8	7637	8360	284	244	39	1	37.56	705.52
-20	1035	3.4	2326	2545	107	70	35	2	27.85	736.33
	1200	3.9	2631	2892	116	79	35	2	28.90	734.55
	1600	5.0	3322	3687	137	100	36	2	31.27	731.63
	2000	6.0	3954	4431	157	119	36	1	33.45	730.28
	2500	7.2	4678	5304	180	142	36	1	35.94	730.26
	2600	7.4	4815	5472	184	146	36	1	36.41	730.44
	2700	7.7	4950	5638	188	150	37	1	36.87	730.67
	2800	7.9	5083	5803	192	154	37	1	37.32	730.94
	2900	8.1	5213	5966	197	159	37	1	37.76	731.27
	3000	8.3	5342	6127	201	163	37	1	38.20	731.64
	3100	8.6	5469	6286	205	167	37	1	38.63	732.04
	3200	8.8	5593	6444	209	171	37	1	39.05	732.49
	3500	9.4	5957	6909	221	182	37	1	40.28	734.05
	4000	10.4	6532	7659	239	200	38	1	42.19	737.24
	4500	11.4	7072	8382	257	218	38	1	43.95	741.00
	5000	12.4	7582	9082	273	234	38	1	45.58	745.21
	5300	12.9	7875	9492	283	243	39	1	46.51	747.89

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 25.

AV8BB-TAC-05-(94-1)10

Figure 2-181. Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 1 of 6)

AV-8B DELIVERY DATA
MK 76 MOD 5 PRACTICE BOMB

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	1805	4.2	2629	3189	113	78	33	2	38.69	750.44
	2000	4.7	2870	3498	120	85	33	2	39.47	750.66
	2500	5.7	3457	4266	138	102	34	1	41.38	751.89
	3000	6.7	4008	5006	155	119	34	1	43.16	753.93
	3500	7.6	4527	5723	171	135	35	1	44.82	756.61
	4000	8.5	5019	6418	186	149	35	1	46.36	759.78
	5000	10.3	5932	7758	214	177	36	1	49.17	767.21
	6000	11.9	6767	9044	240	202	37	1	51.65	775.57
	7000	13.5	7538	10287	264	225	38	1	53.85	784.45
	7800	14.7	8116	11257	281	242	38	1	55.44	791.68
-45	3027	5.2	2599	3990	106	76	29	1	53.28	776.57
	4000	6.7	3298	5184	127	96	29	1	55.37	784.23
	5000	8.2	3966	6382	146	115	30	1	57.31	792.52
	6000	9.7	4590	7554	164	132	31	1	59.06	801.00
	7000	11.1	5175	8705	181	149	31	1	60.64	809.50
	8000	12.5	5727	9839	197	164	32	1	62.09	817.83
	9000	13.8	6250	10957	212	178	33	1	63.41	825.97
	10000	15.1	6747	12063	227	192	34	1	64.62	833.75
	12000	17.6	7675	14245	253	216	35	1	66.76	848.28
	14000	20.0	8530	16394	277	238	37	0	68.59	861.55
	14500	20.6	8733	16927	282	243	38	0	69.01	864.67
-60	4556	6.5	2250	5081	89	65	22	1	66.91	804.46
	5000	7.1	2437	5562	94	70	23	1	67.43	808.66
	6000	8.4	2843	6639	106	81	23	1	68.52	817.87
	7000	9.7	3228	7708	116	92	24	1	69.53	826.70
	8000	10.9	3595	8771	127	101	24	1	70.46	835.07
	10000	13.4	4280	10877	145	119	25	1	72.11	850.49
	12000	15.7	4910	12966	163	135	26	0	73.53	864.33
	14000	18.0	5495	15040	178	150	28	0	74.77	876.26
	16000	20.2	6041	17102	193	163	29	0	75.85	886.06
	18000	22.3	6552	19156	206	174	30	0	76.83	893.04
	20000	24.5	7035	21201	218	185	31	0	77.70	898.83

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 25.

AV8BB-TAC-05-(94-2)10

Figure 2-181. Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 2 of 6)

AV-8B DELIVERY DATA
MK 76 MOD 5 PRACTICE BOMB

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	2003	2005	81	50	29	3	5.72	794.15
	200	3.5	2821	2829	102	71	29	2	8.23	773.83
	400	5.1	3950	3971	131	101	29	1	11.90	749.71
	600	6.2	4796	4833	155	124	29	1	14.78	734.76
	1000	8.1	6101	6182	193	162	29	1	19.41	716.97
	1500	10.0	7364	7515	232	201	30	1	24.02	705.87
	2000	11.7	8402	8637	265	234	30	1	27.85	701.15
	2300	12.6	8954	9244	283	251	30	1	29.88	700.20
-10	531	2.8	2263	2324	87	56	29	2	16.39	795.33
	600	3.2	2492	2564	93	62	29	2	17.07	791.20
	1000	4.7	3665	3799	122	92	29	1	20.64	772.64
	1500	6.5	4871	5097	155	124	29	1	24.46	758.08
	1600	6.8	5088	5334	161	130	29	1	25.15	755.96
	1700	7.1	5299	5565	167	136	29	1	25.83	754.04
	1800	7.4	5503	5790	172	142	30	1	26.50	752.32
	1900	7.7	5701	6010	178	147	30	1	27.14	750.78
	2000	8.0	5894	6225	183	153	30	1	27.77	749.40
	2100	8.3	6083	6435	189	158	30	1	28.39	748.16
	2200	8.5	6266	6641	194	163	30	1	28.99	747.07
	2300	8.8	6446	6844	199	168	30	1	29.58	746.10
	2400	9.1	6621	7042	204	173	30	1	30.15	745.26
	2500	9.3	6792	7238	209	178	30	1	30.72	744.52
	2600	9.6	6960	7429	214	183	30	1	31.27	743.89
	2700	9.9	7124	7618	219	188	30	1	31.81	743.36
	2800	10.1	7285	7804	224	192	30	1	32.33	742.92
	2900	10.4	7442	7987	228	197	30	1	32.85	742.56
	3000	10.6	7597	8168	233	202	30	1	33.36	742.28
	4000	12.9	9008	9856	275	243	31	1	37.94	742.92
-20	1139	3.5	2600	2838	94	64	28	2	27.26	801.82
	1200	3.6	2717	2970	97	67	28	2	27.60	800.40
	1600	4.7	3449	3802	115	85	28	1	29.73	792.54
	2000	5.7	4123	4583	132	103	28	1	31.72	786.74
	2500	6.8	4898	5499	153	123	29	1	34.03	781.75
	2600	7.1	5046	5676	157	127	29	1	34.47	781.00
	2700	7.3	5191	5851	161	131	29	1	34.91	780.33
	2800	7.5	5333	6024	164	134	29	1	35.34	779.72
	2900	7.7	5474	6194	168	138	29	1	35.76	779.18
	3000	8.0	5612	6364	172	142	29	1	36.17	778.71
	3100	8.2	5748	6531	176	146	29	1	36.58	778.29
	3200	8.4	5883	6697	179	149	29	1	36.99	777.93
	3500	9.0	6275	7185	190	160	29	1	38.16	777.18
	4000	10.0	6895	7971	207	177	30	1	40.01	776.83
	5000	11.9	8029	9458	239	208	30	1	43.34	778.75
	6000	13.7	9051	10859	268	236	31	1	46.27	783.07
	6500	14.6	9528	11534	282	250	31	1	47.60	785.84

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 25.

AV8BB-TAC-05-(94-3)10

Figure 2-181. Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 3 of 6)

AV-8B DELIVERY DATA
MK 76 MOD 5 PRACTICE BOMB

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2005	4.3	2957	3573	100	72	26	1	38.13	811.79
	3000	6.3	4152	5123	130	102	27	1	41.48	806.34
	3500	7.2	4704	5863	145	116	27	1	43.03	805.19
	4000	8.1	5228	6583	158	130	28	1	44.49	804.84
	5000	9.8	6204	7968	184	155	28	1	47.19	806.06
	6000	11.4	7100	9295	208	178	29	1	49.62	809.11
	7000	13.0	7928	10576	230	200	29	1	51.81	813.41
	8000	14.5	8701	11820	251	220	30	1	53.79	818.52
	9000	15.9	9427	13033	270	239	31	1	55.60	824.12
	9600	16.8	9843	13749	281	249	31	1	56.60	827.61
-45	3468	5.5	2999	4585	97	72	23	1	53.01	833.61
	4000	6.3	3393	5245	106	82	23	1	54.04	834.30
	5000	7.7	4096	6464	124	99	23	1	55.85	836.52
	6000	9.1	4756	7656	140	115	24	1	57.53	839.68
	7000	10.5	5378	8827	156	130	25	1	59.08	843.50
	8000	11.8	5966	9980	171	145	25	1	60.51	847.77
	10000	14.4	7056	12239	198	171	26	1	63.05	857.04
	12000	16.9	8050	14450	223	195	27	0	65.24	866.26
	14000	19.3	8965	16624	246	216	29	0	67.15	874.81
	16000	21.6	9810	18768	266	235	30	0	68.86	881.81
	17400	23.2	10367	20254	280	248	31	0	69.93	886.12
-60	5291	6.9	2625	5907	82	63	18	1	66.80	856.90
	6000	7.8	2925	6675	89	70	18	1	67.53	859.82
	7000	9.1	3331	7752	99	79	18	1	68.49	864.13
	8000	10.3	3718	8822	108	89	19	1	69.40	868.41
	10000	12.6	4445	10943	126	105	19	1	71.04	876.75
	12000	14.9	5115	13045	142	121	20	0	72.48	884.24
	14000	17.2	5736	15130	157	135	21	0	73.78	890.25
	16000	19.4	6316	17201	171	148	22	0	74.93	895.53
	18000	21.5	6860	19263	183	159	23	0	75.96	900.24
	20000	23.7	7372	21315	195	170	24	0	76.89	904.00

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 25. AV8BB-TAC-05-(94-4)10

Figure 2-181. Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 4 of 6)

AV-8B DELIVERY DATA
MK 76 MOD 5 PRACTICE BOMB

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	2192	2194	69	46	21	2	5.25	863.63
	200	3.5	3082	3089	87	65	21	2	7.59	837.18
	600	6.3	5219	5253	137	114	21	1	13.75	785.51
	1000	8.2	6624	6699	172	150	21	1	18.16	760.60
	1500	10.1	7979	8119	208	186	21	1	22.60	743.31
	2000	11.7	9090	9307	239	217	22	1	26.32	733.97
	2500	13.2	10047	10354	267	244	22	1	29.55	729.26
	2800	14.0	10568	10933	282	259	22	1	31.30	727.95
-10	575	2.9	2498	2563	74	52	21	2	15.95	859.41
	1500	6.2	5123	5338	133	110	21	1	23.00	808.76
	1600	6.6	5355	5589	138	116	21	1	23.66	805.34
	1700	6.9	5581	5834	143	121	21	1	24.30	802.18
	1800	7.2	5800	6073	149	126	21	1	24.93	799.27
	1900	7.5	6013	6306	154	132	21	1	25.55	796.58
	2000	7.8	6220	6534	159	137	21	1	26.15	794.10
	2100	8.0	6422	6756	164	142	21	1	26.74	791.80
	2200	8.3	6619	6975	169	146	21	1	27.32	789.68
	2300	8.6	6811	7189	173	151	21	1	27.89	787.73
	2400	8.9	6999	7399	178	156	21	1	28.44	785.94
	2500	9.1	7183	7605	183	160	21	1	28.98	784.28
	2600	9.4	7362	7808	187	165	21	1	29.52	782.77
	2700	9.6	7538	8007	192	169	22	1	30.04	781.37
	2800	9.9	7711	8203	196	174	22	1	30.56	780.10
	2900	10.1	7880	8396	201	178	22	1	31.06	778.94
	3000	10.4	8046	8587	205	182	22	1	31.56	777.88
	5000	14.8	10861	11957	280	257	22	1	39.91	771.65
-20	1265	3.6	2916	3179	82	60	20	2	26.91	860.85
	2500	6.5	5084	5665	130	108	20	1	32.52	829.65
	2600	6.8	5240	5849	133	112	20	1	32.93	827.97
	2700	7.0	5393	6031	137	115	21	1	33.34	826.39
	2800	7.2	5545	6211	140	119	21	1	33.75	824.90
	2900	7.4	5694	6390	144	122	21	1	34.15	823.50
	3000	7.6	5840	6566	147	125	21	1	34.54	822.18
	3100	7.8	5985	6740	151	129	21	1	34.94	820.94
	3200	8.1	6128	6913	154	132	21	1	35.32	819.78
	3300	8.3	6269	7084	157	135	21	1	35.70	818.70
	3400	8.5	6408	7254	161	139	21	1	36.08	817.68
	3500	8.7	6545	7422	164	142	21	1	36.45	816.73
	4000	9.7	7204	8240	180	158	21	1	38.24	812.90
	6000	13.4	9501	11237	237	214	22	1	44.44	808.38
	8000	16.7	11414	13938	286	262	23	1	49.39	813.56

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 25.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL.
   Refer to stores limitations for specific KCAS restrictons.

AV8BB-TAC-05-(94-5)10

Figure 2-181. Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 5 of 6)

AV-8B DELIVERY DATA
MK 76 MOD 5 PRACTICE BOMB

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2249	4.5	3341	4027	89	69	19	1	37.85	865.49
	4000	7.7	5399	6720	134	114	19	1	42.99	846.23
	5000	9.4	6429	8145	158	137	20	1	45.60	841.24
	6000	11.0	7376	9508	180	159	20	1	47.98	839.07
	7000	12.5	8254	10822	201	180	20	1	50.16	838.95
	8000	14.0	9072	12096	221	199	21	1	52.15	840.29
	9000	15.5	9841	13336	239	217	21	1	53.99	842.67
	10000	16.9	10565	14547	257	234	22	1	55.67	845.77
	11000	18.2	11252	15735	273	250	22	0	57.22	849.36
	11500	18.9	11582	16322	281	258	22	0	57.95	851.28
-45	3950	5.8	3429	5231	87	70	15	1	52.90	880.78
	4000	5.9	3467	5293	88	71	15	1	52.98	880.53
	6000	8.7	4889	7740	119	102	16	1	56.31	874.36
	8000	11.3	6158	10096	147	129	16	1	59.24	873.53
	10000	13.9	7303	12383	172	155	17	1	61.81	875.68
	12000	16.3	8347	14618	196	178	18	0	64.07	879.34
	14000	18.7	9307	16811	218	199	19	0	66.06	883.60
	16000	21.0	10195	18972	239	218	20	0	67.83	887.91
	18000	23.3	11022	21107	257	236	21	0	69.41	891.99
	20000	25.5	11796	23220	275	253	22	0	70.84	895.67
-60	6024	7.4	3000	6729	74	62	11	1	66.77	896.41
	7000	8.6	3411	7787	82	70	11	1	67.68	895.72
	8000	9.7	3815	8863	91	79	11	1	68.57	895.60
	9000	10.9	4202	9933	99	87	11	1	69.41	895.92
	10000	12.1	4574	10996	107	95	11	0	70.20	896.57
	12000	14.3	5275	13108	122	109	12	0	71.67	898.47
	14000	16.6	5926	15202	136	123	12	0	73.00	900.76
	16000	18.8	6532	17282	150	136	13	0	74.20	903.12
	18000	20.9	7100	19350	162	148	13	0	75.28	905.35
	20000	23.1	7633	21407	174	159	14	0	76.27	907.35

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 25.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL.
   Refer to stores limitations for specific KCAS restrictons.

AV8BB-TAC-05-(94-6)10

Figure 2-181. Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 6 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 76 MOD 5 PRACTICE BOMB

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	89	-105	-1072	0	-527	172	151	-180	1.8	42	1.3	42	23.0
	200	104	-119	-720	535	-439	203	154	-174	2.6	60	1.8	59	23.2
	400	125	-139	-492	430	-389	229	155	-169	3.6	85	2.6	85	23.6
	600	140	-154	-396	363	-370	242	155	-166	4.4	105	3.3	105	23.9
	800	152	-166	-341	319	-360	251	155	-164	5.1	122	3.8	122	24.1
	1000	162	-176	-303	288	-354	258	155	-162	5.6	137	4.3	137	24.2
	1400	180	-194	-255	246	-348	268	154	-160	6.6	163	5.2	163	24.5
	1800	195	-209	-224	218	-346	276	154	-159	7.5	186	5.9	186	24.7
-10	490	32	-36	-100	76	-40	29	44	-45	2.1	48	5.3	48	22.8
	600	39	-44	-104	84	-49	37	49	-50	2.5	56	5.6	56	22.9
	1000	61	-68	-108	97	-78	61	64	-65	3.6	84	6.4	84	23.2
	1500	84	-92	-107	101	-105	86	76	-78	4.8	113	7.3	113	23.4
	1600	89	-97	-107	101	-110	90	78	-80	5.0	118	7.4	118	23.4
	1700	93	-101	-106	101	-115	95	80	-82	5.3	124	7.6	124	23.5
	1800	97	-105	-106	101	-119	99	82	-83	5.5	129	7.7	129	23.5
	1900	101	-109	-105	100	-123	103	84	-85	5.7	134	7.9	134	23.5
	2000	104	-113	-105	100	-127	106	85	-87	5.9	139	8.0	139	23.6
	2100	108	-117	-104	100	-131	110	87	-88	6.1	143	8.2	143	23.6
	2200	112	-121	-104	99	-135	114	88	-89	6.3	148	8.3	148	23.6
	2300	115	-125	-103	99	-139	117	89	-91	6.5	153	8.4	153	23.6
	2400	119	-128	-102	99	-142	121	91	-92	6.6	157	8.6	157	23.7
	2500	122	-132	-102	98	-145	124	92	-93	6.8	162	8.7	162	23.7
	2600	125	-135	-101	98	-149	127	93	-95	7.0	166	8.8	166	23.7
	2700	128	-138	-100	97	-152	130	94	-96	7.2	171	8.9	170	23.7
	2800	131	-142	-100	97	-155	133	96	-97	7.4	175	9.0	175	23.7
	2900	134	-145	-99	96	-158	136	97	-98	7.5	179	9.2	179	23.8
	3000	137	-148	-98	96	-161	139	98	-99	7.7	183	9.3	183	23.8
	3400	149	-160	-96	94	-173	151	102	-103	8.4	199	9.7	199	23.8
-20	1035	25	-28	-38	33	-19	17	31	-31	2.5	58	9.2	58	22.7
	1200	29	-33	-41	36	-24	21	34	-34	2.9	66	9.4	66	22.7
	1600	41	-45	-45	42	-35	31	42	-42	3.7	84	9.9	84	22.8
	2000	51	-57	-48	45	-46	40	49	-49	4.4	101	10.3	101	22.9
	2500	65	-71	-51	48	-59	52	56	-56	5.3	122	10.8	122	22.9
	2600	67	-73	-51	49	-61	55	57	-57	5.5	126	10.9	126	22.9
	2700	70	-76	-52	49	-64	57	58	-58	5.6	129	11.0	129	22.9
	2800	72	-79	-52	50	-66	59	60	-60	5.8	133	11.1	133	23.0
	2900	75	-81	-52	50	-69	61	61	-61	6.0	137	11.2	137	23.0
	3000	77	-84	-52	50	-71	64	62	-62	6.1	141	11.2	141	23.0
	3100	80	-87	-53	51	-74	66	63	-63	6.3	144	11.3	144	23.0
	3200	82	-89	-53	51	-76	68	64	-64	6.4	148	11.4	148	23.0
	3500	89	-97	-53	52	-83	75	68	-68	6.9	159	11.6	159	23.0
	4000	100	-109	-54	53	-95	86	73	-73	7.7	176	12.0	176	23.0
	4500	111	-120	-54	53	-106	96	77	-78	8.4	193	12.3	193	23.0
	5000	121	-131	-55	53	-116	106	82	-82	9.1	209	12.7	209	23.0
	5300	127	-137	-55	54	-122	112	84	-85	9.5	218	12.8	218	23.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 25.

AV8BB-TAC-05-(95-1)10

Figure 2-182. Release Error Sensitivities, Mk 76 Mod 5 Practice Bomb (Sheet 1 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 76 MOD 5 PRACTICE BOMB

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	1805	23	-26	-22	20	-16	15	28	-27	3.2	72	12.7	72	22.4
	2000	27	-30	-23	22	-19	18	30	-30	3.5	79	12.8	79	22.4
	2500	35	-39	-26	24	-26	24	36	-36	4.3	96	13.2	96	22.5
	3000	44	-48	-28	27	-33	31	41	-41	5.0	112	13.5	112	22.5
	3500	52	-57	-30	29	-41	39	46	-46	5.7	128	13.7	128	22.4
	4000	60	-66	-31	30	-49	46	51	-51	6.4	144	14.0	144	22.4
	5000	77	-84	-33	32	-65	61	60	-60	7.8	174	14.4	174	22.4
	6000	93	-100	-34	34	-81	76	68	-68	9.0	202	14.8	202	22.3
	7000	108	-117	-35	34	-97	92	75	-75	10.3	228	15.1	228	22.2
	7800	119	-129	-35	35	-110	104	81	-81	11.3	249	15.3	249	22.1
-45	3027	20	-23	-12	11	-14	14	26	-25	4.0	88	16.7	88	22.0
	4000	29	-33	-14	13	-22	22	33	-33	5.2	114	16.9	114	21.9
	5000	39	-43	-16	15	-32	30	41	-40	6.4	139	17.1	139	21.8
	6000	49	-54	-17	17	-42	40	47	-47	7.6	164	17.2	164	21.7
	7000	59	-65	-18	18	-53	50	54	-53	8.7	188	17.3	188	21.5
	8000	69	-75	-19	19	-64	61	60	-60	9.8	211	17.4	211	21.4
	9000	78	-86	-20	19	-75	72	66	-66	11.0	233	17.5	233	21.3
	10000	88	-96	-20	20	-87	84	73	-72	12.1	255	17.5	255	21.1
	12000	106	-116	-21	21	-112	107	84	-84	14.2	297	17.6	297	20.9
	14000	125	-136	-22	22	-137	132	96	-95	16.4	338	17.6	338	20.6
	14500	129	-141	-22	22	-144	138	99	-98	16.9	348	17.6	348	20.5
-60	4556	18	-20	-7	7	-16	17	28	-27	5.1	109	19.3	109	21.5
	5000	20	-23	-7	7	-19	19	31	-30	5.6	119	19.3	119	21.5
	6000	26	-29	-8	8	-26	26	37	-36	6.6	142	19.3	142	21.3
	7000	31	-35	-9	9	-33	33	42	-42	7.7	163	19.2	163	21.2
	8000	37	-42	-10	10	-41	41	48	-47	8.8	184	19.2	184	21.0
	10000	49	-55	-11	11	-59	58	59	-58	10.9	225	19.1	225	20.7
	12000	61	-67	-12	11	-78	78	70	-69	13.0	265	18.9	265	20.4
	14000	73	-80	-12	12	-99	98	81	-80	15.0	303	18.8	303	20.2
	16000	84	-93	-13	13	-121	120	91	-91	17.1	341	18.6	341	19.9
	18000	95	-105	-13	13	-144	143	102	-101	19.2	377	18.5	377	19.7
	20000	106	-116	-13	13	-168	167	112	-112	21.2	413	18.4	413	19.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 25.

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Figure 2-182. Release Error Sensitivities, Mk 76 Mod 5 Practice Bomb (Sheet 2 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 76 MOD 5 PRACTICE BOMB

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	89	-91	-1190	0	-698	201	183	-222	2.0	42	1.0	42	20.8
	200	104	-106	-798	594	-564	239	187	-214	2.8	60	1.5	60	21.1
	400	123	-125	-545	477	-490	272	188	-206	4.0	86	2.2	85	21.5
	600	138	-139	-439	402	-461	288	187	-202	4.8	105	2.7	105	21.8
	1000	159	-161	-335	319	-435	306	185	-196	6.2	137	3.6	137	22.2
	1500	179	-181	-272	263	-422	319	184	-192	7.5	170	4.5	170	22.6
	2000	195	-198	-234	228	-417	329	183	-189	8.6	197	5.3	197	22.8
	2300	204	-207	-217	213	-415	334	182	-188	9.2	212	5.7	212	22.9
-10	531	30	-31	-97	75	-43	31	50	-51	2.3	48	4.7	48	20.7
	600	34	-35	-100	80	-49	36	54	-55	2.6	53	4.9	53	20.8
	1000	55	-56	-107	96	-82	62	71	-73	3.8	80	5.6	80	21.1
	1500	77	-79	-109	102	-113	90	85	-87	5.1	109	6.3	109	21.4
	1600	81	-83	-109	102	-118	95	88	-89	5.3	114	6.4	114	21.4
	1700	85	-87	-109	103	-124	100	90	-92	5.6	120	6.6	120	21.5
	1800	89	-91	-109	103	-129	104	92	-94	5.8	125	6.7	125	21.5
	1900	93	-94	-108	103	-133	109	94	-95	6.0	130	6.8	130	21.6
	2000	96	-98	-108	103	-138	113	95	-97	6.2	135	6.9	134	21.6
	2100	100	-102	-107	103	-142	117	97	-99	6.4	139	7.1	139	21.6
	2200	103	-105	-107	102	-147	121	99	-101	6.6	144	7.2	144	21.7
	2300	107	-108	-107	102	-151	125	100	-102	6.8	149	7.3	149	21.7
	2400	110	-112	-106	102	-155	129	102	-104	7.0	153	7.4	153	21.7
	2500	113	-115	-106	102	-159	133	103	-105	7.2	158	7.5	158	21.8
	2600	116	-118	-105	101	-162	136	105	-107	7.4	162	7.6	162	21.8
	2700	119	-121	-104	101	-166	140	106	-108	7.6	166	7.7	166	21.8
	2800	122	-124	-104	101	-170	143	107	-109	7.8	171	7.8	171	21.9
	2900	125	-127	-103	100	-173	147	109	-110	8.0	175	8.0	175	21.9
	3000	128	-130	-103	100	-177	150	110	-112	8.2	179	8.1	179	21.9
	4000	154	-157	-97	95	-206	180	120	-122	9.9	218	9.0	218	22.1
-20	1139	23	-24	-37	32	-21	18	35	-35	2.8	59	8.3	58	20.6
	1200	25	-25	-38	33	-22	20	36	-36	3.0	61	8.3	61	20.6
	1600	35	-36	-43	39	-33	29	45	-45	3.8	79	8.7	79	20.8
	2000	45	-46	-46	43	-44	39	52	-52	4.6	96	9.1	96	20.9
	2500	57	-58	-49	47	-58	51	60	-60	5.5	116	9.6	116	21.0
	2600	59	-61	-50	48	-61	53	61	-62	5.7	119	9.6	119	21.0
	2700	62	-63	-50	48	-63	56	63	-63	5.9	123	9.7	123	21.1
	2800	64	-65	-51	49	-66	58	64	-64	6.0	127	9.8	127	21.1
	2900	66	-68	-51	49	-69	61	66	-66	6.2	131	9.9	131	21.1
	3000	69	-70	-52	50	-71	63	67	-67	6.4	134	10.0	134	21.1
	3100	71	-72	-52	50	-74	65	68	-68	6.5	138	10.0	138	21.1
	3200	73	-75	-52	50	-76	68	69	-70	6.7	142	10.1	142	21.1
	3500	80	-82	-53	51	-84	75	73	-73	7.2	152	10.3	152	21.2
	4000	91	-93	-54	53	-96	86	79	-79	8.0	169	10.7	169	21.2
	5000	111	-113	-55	54	-119	108	89	-89	9.5	202	11.3	202	21.3
	6000	130	-132	-55	54	-141	128	98	-98	10.9	232	11.8	232	21.4
	6500	138	-141	-55	54	-151	138	102	-102	11.5	246	12.0	246	21.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 25.

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Figure 2-182. Release Error Sensitivities, Mk 76 Mod 5 Practice Bomb (Sheet 3 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 76 MOD 5 PRACTICE BOMB

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2005	22	-23	-21	20	-17	16	32	-31	3.6	73	11.5	73	20.5
	3000	38	-39	-26	25	-31	29	43	-43	5.1	106	12.1	106	20.6
	3500	45	-46	-28	27	-39	36	49	-48	5.9	121	12.3	121	20.6
	4000	53	-54	-30	29	-47	43	54	-54	6.6	136	12.6	136	20.7
	5000	68	-70	-32	31	-63	58	63	-63	8.0	165	13.0	165	20.7
	6000	83	-85	-34	33	-79	74	72	-71	9.3	193	13.4	193	20.7
	7000	98	-100	-35	34	-95	89	79	-79	10.6	219	13.7	219	20.7
	8000	112	-114	-35	35	-111	104	87	-87	11.8	244	14.0	244	20.7
	9000	125	-128	-36	35	-127	119	94	-94	13.0	269	14.2	269	20.6
	9600	133	-136	-36	36	-136	128	98	-98	13.7	283	14.4	283	20.6
-45	3468	21	-21	-12	11	-15	15	30	-29	4.6	92	15.3	92	20.2
	4000	25	-26	-13	12	-20	19	34	-34	5.2	106	15.4	106	20.2
	5000	34	-35	-15	14	-28	27	42	-41	6.5	130	15.6	130	20.2
	6000	43	-44	-16	16	-38	36	49	-48	7.7	154	15.8	154	20.1
	7000	53	-54	-17	17	-48	46	55	-55	8.8	177	15.9	177	20.1
	8000	62	-64	-18	18	-59	56	62	-61	10.0	200	16.0	200	20.0
	10000	80	-83	-20	19	-81	78	75	-74	12.2	243	16.2	243	19.9
	12000	98	-102	-21	21	-105	100	87	-86	14.4	285	16.4	285	19.7
	14000	113	-120	-22	21	-129	124	98	-98	16.6	325	16.5	325	19.6
	16000	130	-135	-22	22	-154	148	110	-109	18.8	365	16.6	365	19.4
	17400	144	-147	-22	22	-172	166	118	-117	20.3	391	16.6	391	19.3
-60	5291	19	-20	-7	7	-18	18	33	-32	5.9	117	17.8	117	19.8
	6000	23	-24	-8	7	-22	22	37	-36	6.7	132	17.8	132	19.8
	7000	28	-29	-8	8	-29	29	43	-42	7.8	153	17.8	153	19.7
	8000	34	-35	-9	9	-36	36	49	-48	8.8	173	17.8	173	19.6
	10000	46	-47	-10	10	-53	52	60	-59	10.9	213	17.8	213	19.5
	12000	57	-60	-11	11	-71	70	71	-70	13.0	252	17.8	252	19.3
	14000	70	-72	-12	12	-90	89	82	-81	15.1	290	17.7	290	19.2
	16000	83	-85	-12	12	-111	109	92	-92	17.2	327	17.7	327	19.0
	18000	96	-99	-13	13	-133	131	103	-102	19.3	364	17.6	364	18.9
	20000	109	-112	-13	13	-155	153	113	-113	21.3	399	17.6	399	18.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 25.

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Figure 2-182. Release Error Sensitivities, Mk 76 Mod 5 Practice Bomb (Sheet 4 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 76 MOD 5 PRACTICE BOMB

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	130	-139	-1306	0	-905	230	217	-269	2.2	42	.9	42	19.0
	200	144	-151	-875	652	-709	277	221	-257	3.1	60	1.3	60	19.4
	600	173	-177	-480	441	-560	335	220	-239	5.3	106	2.3	106	20.1
	1000	190	-194	-366	348	-522	355	217	-231	6.7	138	3.1	138	20.6
	1500	205	-210	-296	286	-501	370	214	-225	8.1	171	3.9	170	21.0
	2000	218	-222	-254	248	-491	380	212	-221	9.3	198	4.6	198	21.3
	2500	228	-233	-226	222	-485	388	210	-218	10.4	223	5.2	223	21.5
	2800	234	-239	-213	209	-483	392	209	-217	10.9	237	5.5	237	21.6
-10	575	39	-39	-95	74	-47	33	56	-57	2.6	49	4.3	49	19.0
	1500	84	-86	-110	102	-119	93	93	-96	5.3	106	5.6	105	19.8
	1600	88	-90	-110	103	-125	99	96	-98	5.6	111	5.7	111	19.8
	1700	92	-94	-110	104	-131	104	98	-101	5.8	116	5.8	116	19.9
	1800	96	-98	-110	104	-137	109	101	-103	6.1	121	5.9	121	19.9
	1900	99	-102	-110	104	-142	114	103	-105	6.3	126	6.0	126	20.0
	2000	103	-105	-110	105	-148	119	105	-107	6.5	131	6.1	131	20.0
	2100	106	-109	-110	105	-153	123	107	-109	6.8	136	6.2	136	20.1
	2200	109	-112	-109	105	-157	128	109	-111	7.0	140	6.3	140	20.1
	2300	113	-115	-109	105	-162	132	111	-113	7.2	145	6.5	145	20.2
	2400	116	-119	-109	105	-166	136	112	-115	7.4	150	6.6	150	20.2
	2500	119	-122	-108	104	-171	140	114	-116	7.6	154	6.7	154	20.3
	2600	122	-125	-108	104	-175	144	116	-118	7.8	159	6.8	158	20.3
	2700	124	-127	-108	104	-179	148	117	-119	8.0	163	6.9	163	20.3
	2800	127	-130	-107	104	-183	152	119	-121	8.2	167	7.0	167	20.4
	2900	130	-133	-107	104	-187	156	120	-122	8.4	171	7.0	171	20.4
	3000	132	-136	-106	103	-191	160	121	-124	8.6	176	7.1	175	20.4
	5000	175	-180	-97	95	-251	219	141	-144	12.0	250	8.7	250	20.9
-20	1265	29	-30	-36	32	-23	20	39	-39	3.2	60	7.6	60	19.0
	2500	59	-60	-48	45	-57	50	64	-64	5.7	110	8.6	110	19.5
	2600	61	-63	-48	46	-60	52	65	-65	5.8	114	8.7	114	19.5
	2700	63	-65	-49	47	-63	55	67	-67	6.0	118	8.7	118	19.5
	2800	66	-67	-49	47	-65	57	68	-69	6.2	121	8.8	121	19.6
	2900	68	-70	-50	48	-68	60	70	-70	6.4	125	8.9	125	19.6
	3000	70	-72	-50	48	-71	62	71	-72	6.6	129	9.0	129	19.6
	3100	72	-74	-51	49	-74	64	73	-73	6.7	132	9.0	132	19.6
	3200	74	-76	-51	49	-76	67	74	-74	6.9	136	9.1	136	19.7
	3300	76	-78	-52	50	-79	69	75	-76	7.1	139	9.2	139	19.7
	3400	78	-80	-52	50	-82	72	77	-77	7.3	143	9.2	143	19.7
	3500	80	-82	-52	51	-84	74	78	-78	7.4	146	9.3	146	19.7
	4000	90	-93	-54	52	-97	86	84	-85	8.2	163	9.6	163	19.8
	6000	124	-128	-56	55	-144	130	104	-105	11.2	226	10.7	226	20.1
	8000	152	-157	-56	55	-185	170	121	-121	13.9	282	11.6	282	20.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 25.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL. Refer to stores limitations for specific KCAS restrictions.

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Figure 2-182. Release Error Sensitivities, Mk 76 Mod 5 Practice Bomb (Sheet 5 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
MK 76 MOD 5 PRACTICE BOMB

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2249	28	-28	-21	19	-18	17	36	-35	4.0	76	10.6	76	18.9
	4000	52	-54	-28	27	-44	41	56	-56	6.7	129	11.5	129	19.3
	5000	66	-68	-31	30	-60	56	66	-66	8.1	158	11.9	158	19.4
	6000	79	-82	-33	32	-77	71	75	-75	9.5	185	12.3	185	19.5
	7000	91	-94	-34	34	-93	86	83	-83	10.8	211	12.6	211	19.5
	8000	103	-107	-35	35	-109	101	91	-91	12.1	236	12.9	236	19.5
	9000	114	-118	-36	35	-125	117	98	-98	13.3	261	13.2	261	19.6
	10000	125	-129	-37	36	-141	132	105	-105	14.5	284	13.4	284	19.6
	11000	133	-138	-37	37	-156	147	112	-112	15.7	307	13.7	307	19.5
	11500	138	-143	-37	37	-164	154	115	-115	16.3	319	13.8	319	19.5
-45	3950	26	-26	-11	11	-17	17	34	-34	5.2	98	14.2	98	18.8
	4000	26	-27	-12	11	-18	17	35	-34	5.3	99	14.2	99	18.8
	6000	42	-43	-15	15	-35	33	50	-49	7.7	146	14.6	146	18.9
	8000	58	-60	-17	17	-55	52	63	-63	10.1	191	15.0	191	18.9
	10000	73	-76	-19	19	-76	73	76	-76	12.4	234	15.3	234	18.9
	12000	87	-90	-21	20	-99	95	89	-88	14.6	276	15.5	276	18.9
	14000	98	-102	-21	21	-123	118	101	-100	16.8	316	15.7	316	18.8
	16000	109	-113	-22	22	-148	141	112	-112	19.0	355	15.8	355	18.7
	18000	119	-123	-23	22	-172	165	123	-123	21.1	393	15.9	393	18.6
	20000	128	-132	-23	23	-198	190	134	-134	23.2	431	16.0	431	18.6
-60	6024	24	-25	-7	7	-20	20	37	-37	6.7	125	16.6	125	18.5
	7000	29	-30	-8	7	-26	26	43	-42	7.8	144	16.7	144	18.5
	8000	34	-35	-8	8	-32	32	49	-48	8.9	164	16.7	164	18.5
	9000	39	-40	-9	9	-40	40	55	-54	9.9	184	16.8	184	18.5
	10000	44	-46	-10	9	-48	47	60	-60	11.0	204	16.8	204	18.5
	12000	53	-55	-11	11	-65	64	71	-71	13.1	242	16.9	242	18.5
	14000	61	-63	-11	11	-83	82	82	-82	15.2	280	16.9	280	18.4
	16000	68	-70	-12	12	-103	101	93	-93	17.3	317	17.0	317	18.3
	18000	75	-77	-13	12	-124	122	104	-103	19.3	353	17.0	353	18.3
	20000	81	-83	-13	13	-146	143	114	-114	21.4	389	17.0	389	18.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code 25.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL. Refer to stores limitations for specific KCAS restrictions.

AV8BB-TAC-05-(95-6)10

Figure 2-182. Release Error Sensitivities, Mk 76 Mod 5 Practice Bomb (Sheet 6 of 6)

AV-8B LOFT DELIVERY DATA
200 FT-AGL RUN-IN
MK 76 MOD 5 PRACTICE BOMB

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-MSL)	WEAPON APOGEE FROM RELEASE			PULLUP TO RELEASE		PULLUP TO TARGET		RELEASE TO TARGET	
					DRT (FT)	TOF (SEC)	ALT (FT-MSL)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)
0	10	450	15	339	2821	4	594	2533	3	9345	13	6811	10
		500	14	370	3355	4	675	2987	4	10879	14	7891	11
		550	13	400	3827	5	751	3442	4	12293	15	8852	12
	20	450	26	749	4872	7	1680	4082	5	14748	23	10667	18
		500	25	865	5667	8	1961	4857	6	17120	25	12263	19
		550	24	975	6326	8	2209	5617	6	19180	27	13563	21
	30	450	36	1368	6002	10	3211	5423	7	18306	32	12883	25
		500	35	1616	6935	11	3768	6483	8	21229	35	14747	27
		550	34	1836	7689	12	4244	7478	8	23724	37	16246	29
	38	450	44	1985	6284	12	4602	6345	9	19845	39	13500	30
		500	43	2349	7262	13	5406	7574	10	23040	42	15465	33
		550	43	2680	8008	14	6079	8739	10	25719	45	16980	34
5000	10	450	16	5339	2838	4	5594	2528	3	9413	13	6886	10
		500	15	5370	3384	4	5676	2983	4	10990	14	8007	11
		550	14	5400	3871	5	5753	3438	4	12445	15	9007	12
	20	450	27	5740	4888	7	6668	4042	5	14823	23	10781	18
		500	25	5857	5743	8	6958	4827	6	17330	25	12504	19
		550	24	5966	6445	8	7213	5578	6	19492	27	13914	21
	30	450	37	6353	6007	10	8181	5365	7	18380	32	13015	25
		500	36	6601	7034	11	8764	6438	8	21522	35	15084	27
		550	35	6820	7833	12	9250	7428	8	24120	37	16693	29
	38	450	46	6939	6249	12	9517	6238	9	19792	38	13554	30
		500	44	7314	7329	13	10368	7496	10	23247	42	15750	32
		550	43	7645	8173	14	11078	8664	10	26130	45	17466	34
10000	10	450	17	10339	2828	4	10592	2520	3	9428	13	6908	10
		500	16	10370	3410	4	10677	2978	4	11090	14	8112	11
		550	15	10396	3920	5	10752	3416	4	12571	15	9155	12
	20	450	28	10731	4854	7	11646	4002	5	14798	23	10795	18
		500	26	10848	5799	8	11952	4785	6	17498	25	12713	19
		550	25	10956	6550	9	12213	5548	6	19783	27	14235	21
	30	450	39	11317	5920	10	13102	5269	7	18215	32	12946	25
		500	37	11574	7065	11	13727	6363	8	21643	35	15280	27
		550	36	11804	7954	12	14249	7382	8	24477	37	17095	29
	38	450	48	11878	6110	12	14374	6100	9	19491	38	13391	29
		500	46	12265	7316	13	15284	7386	9	23257	42	15871	32
		550	44	12607	8260	14	16042	8584	10	26394	45	17810	34

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Figure 2-183. Loft Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 1 of 3)

AV-8B LOFT DELIVERY DATA
5000 FT-AGL RUN-IN
MK 76 MOD 5 PRACTICE BOMB

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-MSL)	WEAPON APOGEE FROM RELEASE			PULLUP TO RELEASE		PULLUP TO TARGET		RELEASE TO TARGET	
					DRT (FT)	TOF (SEC)	ALT (FT-MSL)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)
0	10	450	16	5139	2837	4	5394	2528	3	16535	27	14007	23
		500	15	5170	3382	4	5476	2984	4	18365	28	15381	24
		550	14	5200	3868	5	5553	3438	4	19971	28	16534	25
	20	450	27	5540	4884	7	6467	4043	5	19819	34	15776	29
		500	25	5657	5738	8	6757	4828	6	22339	36	17512	30
		550	24	5766	6438	8	7012	5579	6	24475	37	18896	31
	30	450	37	6153	6001	10	7979	5367	7	21948	41	16581	34
		500	36	6401	7026	11	8562	6440	8	25038	44	18598	36
		550	35	6621	7845	12	9056	7429	8	27615	46	20186	37
	38	450	45	6740	6242	12	9316	6241	9	22564	47	16323	38
		500	44	7115	7320	13	10167	7499	10	25957	50	18459	40
		550	43	7445	8162	14	10874	8666	10	28779	52	20113	42
5000	10	450	17	10139	2827	4	10392	2520	3	16747	27	14227	23
		500	16	10170	3408	4	10477	2978	4	18714	27	15736	24
		550	15	10200	3917	5	10556	3434	4	20409	28	16975	24
	20	450	28	10531	4869	7	11449	4004	5	20011	34	16008	29
		500	26	10648	5794	8	11751	4786	6	22721	36	17936	30
		550	25	10756	6544	9	12013	5549	6	24998	37	19449	31
	30	450	39	11117	5938	10	12909	5271	7	21980	41	16709	34
		500	37	11375	7082	11	13534	6365	8	25374	44	19009	36
		550	36	11604	7945	12	14047	7384	8	28110	46	20727	37
	38	450	48	11679	6104	12	14174	6104	9	22389	46	16285	37
		500	46	12065	7333	13	15093	7389	9	26154	49	18765	40
		550	44	12408	8250	14	15840	8586	10	29191	52	20605	42
10000	10	450	20	15135	2812	4	15385	2488	3	16898	26	14410	23
		500	17	15166	3416	4	15472	2954	4	18980	27	16026	24
		550	16	15196	3937	5	15552	3411	4	20734	28	17323	24
	20	450	31	15515	4782	7	16410	3936	5	19998	34	16062	28
		500	27	15638	5797	8	16734	4744	6	22980	35	18236	30
		550	26	15754	6616	9	17015	5530	6	25464	37	19934	31
	30	450	43	16070	5753	10	17791	5141	7	21706	40	16565	33
		500	39	16336	7013	11	18455	6254	8	25415	43	19161	35
		550	37	16575	7995	12	19011	7305	8	28457	45	21152	37
	38	450	53	16592	5804	12	18942	5914	9	21802	45	15888	37
		500	49	16999	7182	13	19935	7243	9	25975	49	18732	39
		550	46	17354	8251	14	20754	8469	10	29381	52	20911	42

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Figure 2-183. Loft Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 2 of 3)

AV-8B LOFT DELIVERY DATA
10000 FT-AGL RUN-IN
MK 76 MOD 5 PRACTICE BOMB

TARGET ALTITUDE (FT-MSL)	FLIGHT PATH (DEG)	RUN-IN VEL (KTAS)	PITCH ATTITUDE (DEG)	REL ALT (FT-MSL)	WEAPON APOGEE FROM RELEASE			PULLUP TO RELEASE		PULLUP TO TARGET		RELEASE TO TARGET	
					DRT (FT)	TOF (SEC)	ALT (FT-MSL)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)	DRT (FT)	TOF (SEC)
0	10	450	17	10139	2827	4	10392	2520	3	20410	35	17889	32
		500	16	10170	3408	4	10477	2978	4	22569	36	19591	32
		550	15	10200	3917	5	10556	3434	4	24396	37	20962	33
	20	450	28	10531	4869	7	11449	4004	5	23095	42	19091	37
		500	26	10648	5794	8	11751	4786	6	25909	44	21123	38
		550	25	10756	6544	9	12013	5549	6	28241	45	22692	39
	30	450	39	11117	5938	10	12909	5271	7	24478	48	19207	41
		500	37	11375	7082	11	13534	6365	8	27922	51	21557	43
		550	36	11604	7945	12	14047	7384	8	30673	53	23289	44
	38	450	48	11679	6104	12	14174	6104	9	24461	53	18357	45
		500	46	12065	7333	13	15093	7389	9	28255	56	20866	47
		550	44	12408	8250	14	15840	8586	10	31294	59	22707	49
5000	10	450	20	15135	2812	4	15385	2488	3	20720	35	18232	31
		500	17	15166	3416	4	15472	2954	4	23025	36	20071	32
		550	16	15196	3937	5	15552	3411	4	24928	36	21517	33
	20	450	31	15515	4782	7	16410	3936	5	23216	41	19280	36
		500	27	15638	5797	8	16734	4744	6	26335	43	21590	37
		550	26	15754	6616	9	17015	5530	6	28893	45	23363	38
	30	450	43	16070	5753	10	17791	5141	7	24315	48	19174	41
		500	39	16336	7013	11	18455	6254	8	28101	50	21847	43
		550	37	16575	7995	12	19011	7305	8	31175	53	23870	44
	38	450	53	16592	5804	12	18942	5914	9	23961	52	18047	44
		500	49	16999	7182	13	19935	7243	9	28189	56	20946	46
		550	46	17354	8251	14	20754	8469	10	31613	58	23143	48
10000	10	450	24	20135	2770	4	20381	2476	3	20929	34	18453	31
		500	20	20166	3394	4	20469	2942	4	23375	35	20433	32
		550	18	20196	3950	5	20551	3404	4	25427	36	22023	32
	20	450	37	20499	4620	7	21358	3860	5	23108	41	19248	36
		500	32	20620	5695	8	21689	4666	6	26468	43	21803	37
		550	31	20744	6611	9	21995	5479	6	29319	44	23840	38
	30	450	49	21028	5393	10	22628	5005	7	23720	47	18715	40
		500	45	21283	6784	11	23314	6100	8	27864	50	21764	42
		550	41	21533	7938	12	23930	7187	8	31392	52	24205	44
	38	450	58	21569	5319	11	23701	5806	9	23110	51	17304	42
		500	57	21900	6794	13	24650	7024	9	27517	54	20493	45
		550	52	22280	8070	14	25574	8310	10	31496	57	23187	48

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Figure 2-183. Loft Delivery Data, Mk 76 Mod 5 Practice Bomb (Sheet 3 of 3)

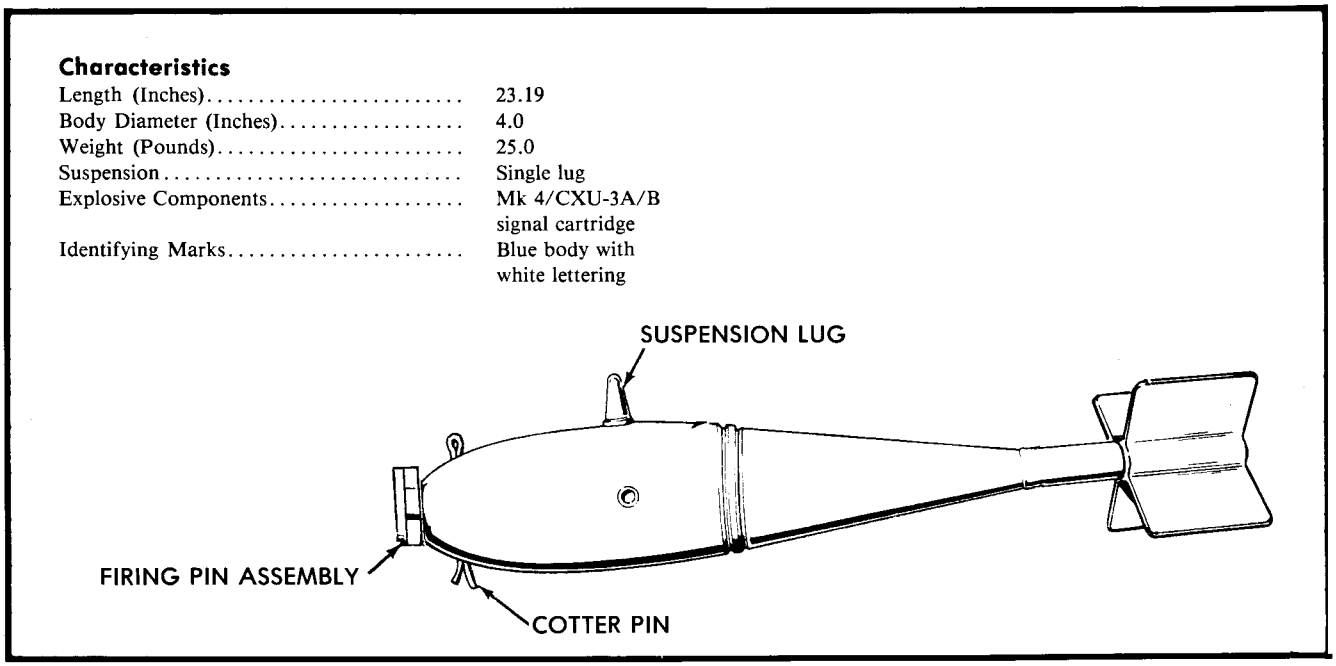

Figure 2-184. BDU-33D/B Practice Bomb

2.20 BDU-33D/B PRACTICE BOMB

2.20.1 Description. The BDU-33D/B is an Air Force designed practice bomb (see Figure 2-184) used to simulate low drag freefall weapons. It is similar in appearance and construction to the Mk 76 Mod 5 practice bomb. It is comprised of a teardrop-shaped cast metal bomb body assembly with a bore tube for installation of a signal cartridge, a firing pin assembly and a screw-in single suspension lug. The firing pin assembly which is extremely sensitive to pressure has provisions for safing by the use of a safety block which is removed after loading. Impact initiates the Mk 4 or CXU-3A/B signal cartridge which expels smoke/flame from the bore tube for impact marking.

NOTE

The CXU-3A/B signal cartridge is for day use ONLY.

2.20.2 Preflight Checks.

1. Master arm switch - OFF (SAFE)
2. Emergency jettison - VISUALLY CHECK NOT PRESSED
3. Selective jettison - SAFE
4. (Parent rack) Safe/arm lever - SAFE
5. (BRU-42) Safety stop lever locked
6. Swaybraces adjusted
7. Throttles properly set
8. Cartridges installed; breech caps tight
9. Safety block and safety pin installed

2.20.3 Prior to Launch (Ground Crew)

1. Rearming/arming (before engine start)
   (a) (Parent rack) Position safe/arm lever(s) to ARM
   (b) (BRU-42) Unlock safety stop lever(s)
   (c) Remove safety pin(s) and safety block(s)

2.20.4 After Landing or Ground Abort (Ground Crew)

1. Safing (dearming/rearming area after engine shutdown)

   (a) Install safety block(s) and safety pin(s)

   (b) (Parent rack) Position safe/arm lever(s) to SAFE

   (c) (BRU-42) Lock safety stop lever(s)

2.20.5 Delivery Data. A Safe Escape table providing terrain avoidance minimum altitudes for various recover maneuvers is presented in Figure 2-185. Sight Angle charts, Delivery Data tables, and Release Error Sensitivities tables for the BDU-33 Practice Bomb are presented in Figures 2-186 through 2-188.

AV-8B SAFE ESCAPE TABLE
BDU-33D/B PRACTICE BOMB

RELEASE FLT PATH ANGLE (DEG)	TYPE RECOVERY	450 KTAS MIN REL ALTITUDE (FT)	450 KTAS SIGHT ANGLE (MIL)	450 KTAS RECOVERY ALTITUDE (FT)	500 KTAS MIN REL ALTITUDE (FT)	500 KTAS SIGHT ANGLE (MIL)	500 KTAS RECOVERY ALTITUDE (FT)	550 KTAS MIN REL ALTITUDE (FT)	550 KTAS SIGHT ANGLE (MIL)	550 KTAS RECOVERY ALTITUDE (FT)
0	STRAIGHT AND LEVEL	100	95	100	100	81	100	100	69	100
	5 G LEVEL BREAKAWAY	100	95	100	100	81	100	100	69	100
	6 G LEVEL BREAKAWAY	100	95	100	100	81	100	100	69	100
-10	5 G	490	100	200	531	87	200	575	74	200
	6 G	485	100	200	524	86	200	568	74	200
-20	5 G	1035	107	300	1139	94	300	1265	82	300
	6 G	1025	107	300	1117	93	300	1246	81	300
-30	5 G	1805	113	500	2005	100	500	2249	89	500
	6 G	1788	113	500	1944	98	500	2208	88	500
-45	5 G	3027	107	700	3468	97	700	3950	87	700
	6 G	3001	106	700	3279	93	700	3811	85	700
-60	5 G	4556	89	1000	5291	82	1000	6024	73	1000
	6 G	4416	87	1000	4864	77	1000	5615	70	1000

1. Wings level pullup recovery unless otherwise specified.
2. Minimum release altitude for terrain avoidance.
3. Gross weight = 24,000 lbs.

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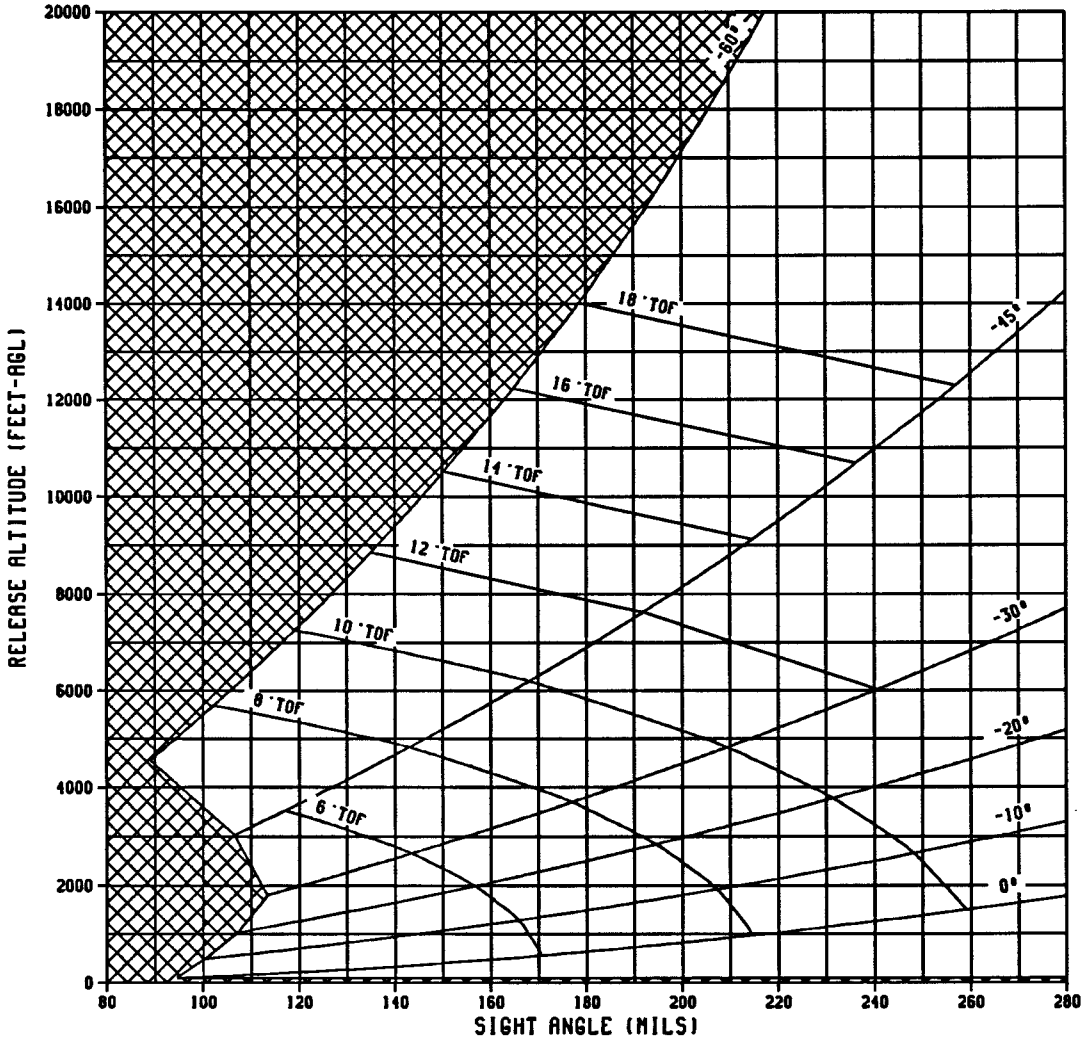
Figure 2-185. Safe Escape Table, BDU-33D/B Practice Bomb

AV-8B SIGHT ANGLE CHART[1]
BDU-33D/B PRACTICE BOMB[2]

450 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]

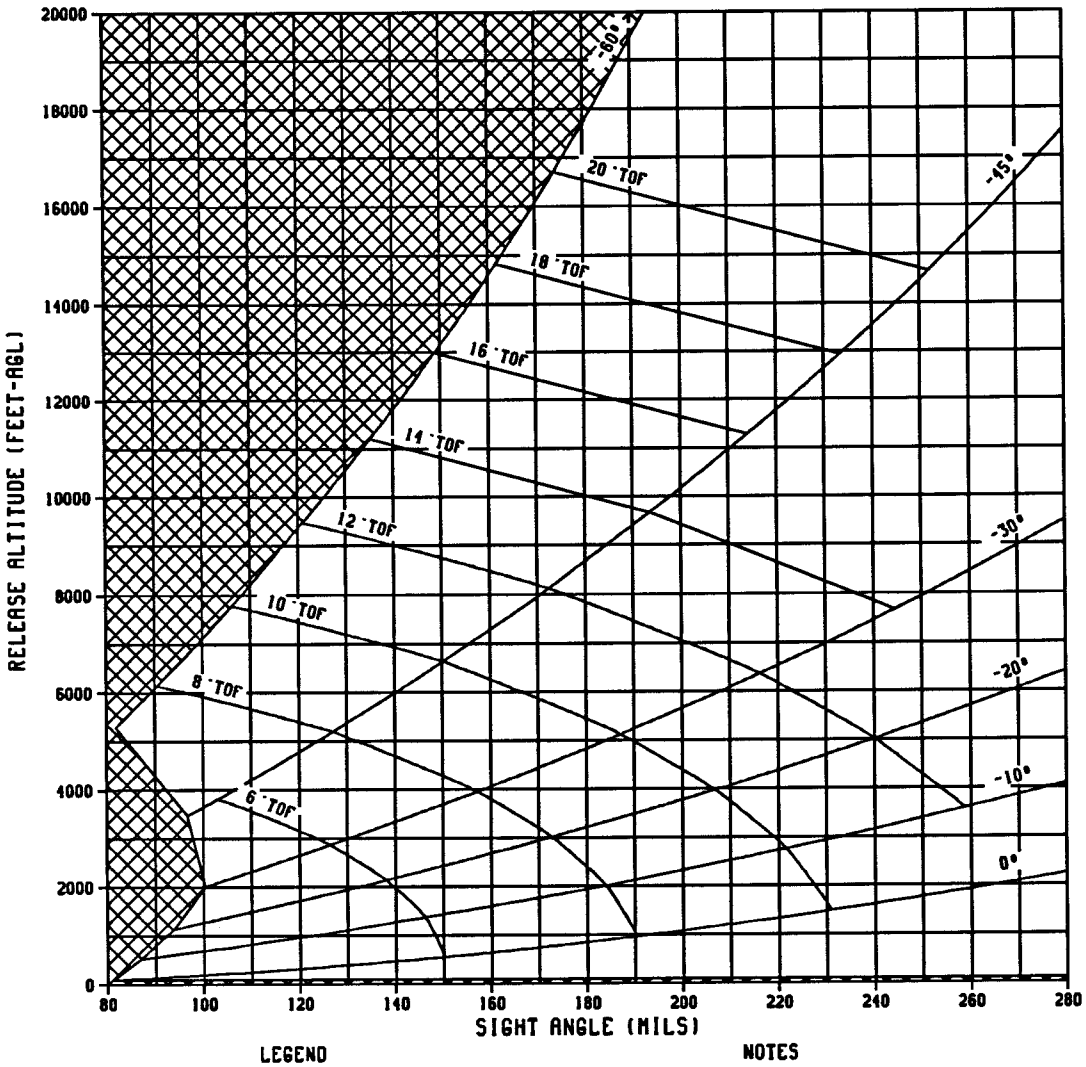


1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-186. Sight Angle Chart, BDU-33D/B Practice Bomb (Sheet 1 of 3)

AV-8B SIGHT ANGLE CHART[1]
BDU-33D/B PRACTICE BOMB[2]

500 KTAS
5 G WINGS LEVEL PULLUP IN 1.5 SEC.[3]



LEGEND

—— TERRAIN AVOIDANCE

UNSAFE RELEASE

NOTES

AIRCRAFT GROSS WEIGHT - 24,000 LBS.
WEAPON STORES CODE : 27
EJECTION VELOCITY - 0.0 FT/SEC.
ITER RELEASE

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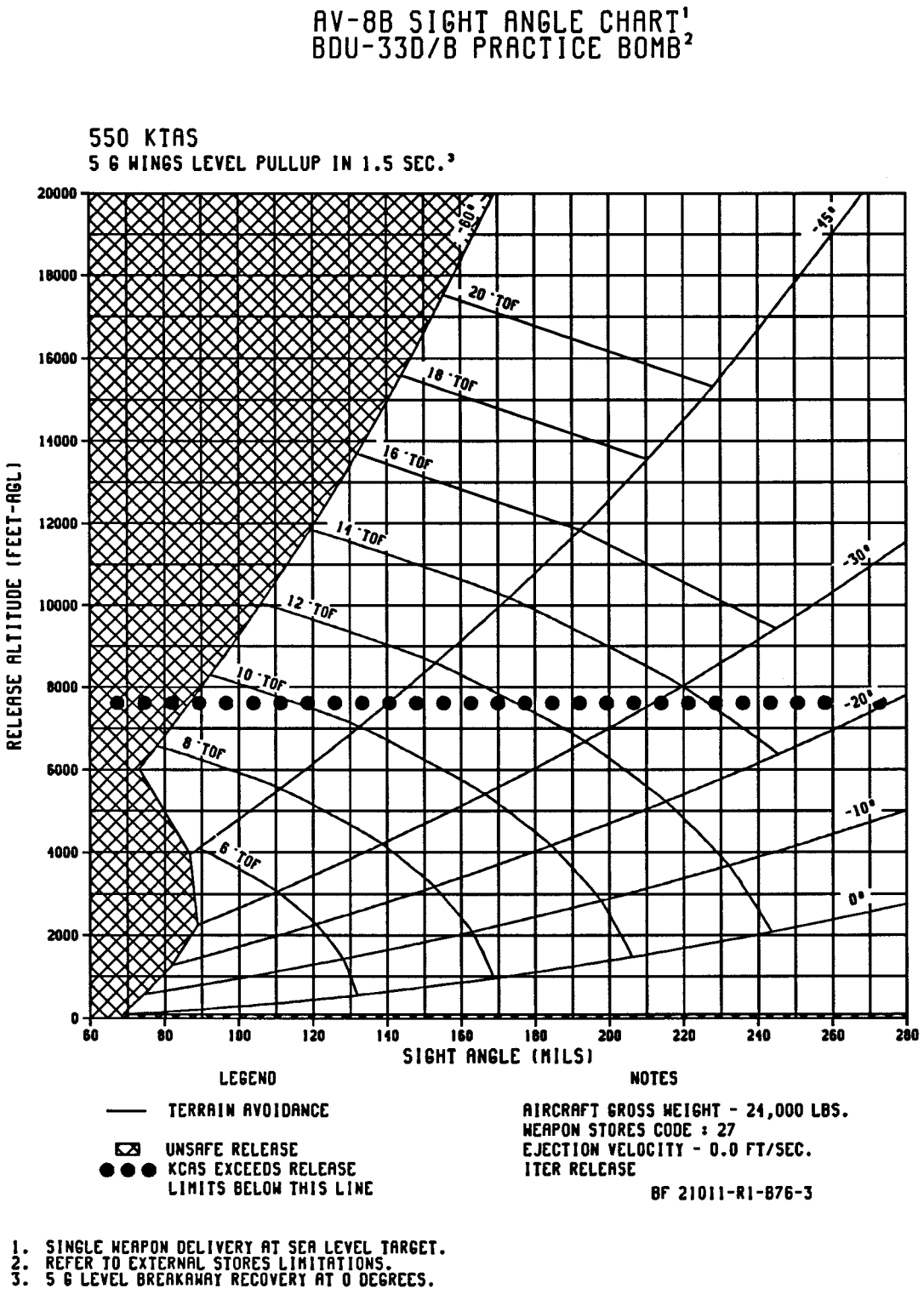
1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-186. Sight Angle Chart, BDU-33D/B Practice Bomb (Sheet 2 of 3)



1. SINGLE WEAPON DELIVERY AT SEA LEVEL TARGET.
2. REFER TO EXTERNAL STORES LIMITATIONS.
3. 5 G LEVEL BREAKAWAY RECOVERY AT 0 DEGREES.

Figure 2-186. Sight Angle Chart, BDU-33D/B Practice Bomb (Sheet 3 of 3)

AV-8B DELIVERY DATA
BDU-33D/B PRACTICE BOMB

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	1808	1811	95	55	36	3	6.31	713.19
	300	4.3	3110	3125	135	96	37	2	11.21	688.18
	500	5.7	3983	4014	163	125	37	2	14.66	675.44
	700	6.7	4678	4730	187	149	37	1	17.49	667.62
	900	7.7	5270	5347	207	169	37	1	19.94	662.60
	1100	8.5	5793	5896	226	188	37	1	22.12	659.41
	1300	9.3	6264	6397	243	205	37	1	24.10	657.51
	1500	10.0	6696	6861	259	220	38	1	25.91	656.58
	1700	10.7	7096	7296	274	235	38	1	27.58	656.39
	1800	11.0	7286	7505	281	242	38	1	28.38	656.53
-10	490	2.8	2036	2094	100	62	36	3	17.01	722.07
	600	3.3	2382	2457	111	72	36	2	18.24	717.27
	800	4.2	2955	3061	128	90	37	2	20.30	710.34
	1000	5.0	3470	3611	144	106	37	2	22.19	705.18
	1200	5.7	3940	4119	159	121	37	1	23.93	701.36
	1500	6.7	4581	4820	180	142	37	1	26.33	697.48
	2000	8.2	5520	5871	212	173	38	1	29.86	694.55
	2500	9.6	6343	6818	240	201	38	1	32.95	694.58
	3000	10.9	7081	7690	266	226	39	1	35.68	696.55
	3300	11.6	7492	8186	280	240	39	1	37.19	698.40
-20	1035	3.4	2325	2545	107	70	35	2	27.87	732.66
	1500	4.7	3154	3493	132	95	36	2	30.72	727.73
	2000	6.0	3952	4429	157	119	36	1	33.49	725.22
	2500	7.2	4674	5301	180	142	37	1	35.99	724.78
	3000	8.4	5337	6122	201	163	37	1	38.27	725.84
	3500	9.4	5951	6904	221	183	37	1	40.36	728.02
	4000	10.5	6523	7652	240	201	38	1	42.28	731.03
	4500	11.4	7062	8374	257	218	38	1	44.05	734.66
	5000	12.4	7570	9072	274	235	39	1	45.70	738.75
	5200	12.8	7766	9346	281	241	39	1	46.32	740.49

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.

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Figure 2-187. Delivery Data, BDU-33D/B Practice Bomb (Sheet 1 of 6)

AV-8B DELIVERY DATA
BDU-33D/B PRACTICE BOMB

450 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	1805	4.2	2629	3189	113	78	34	2	38.71	746.82
	2000	4.7	2869	3497	121	85	34	2	39.50	746.81
	2500	5.7	3456	4265	138	103	34	1	41.42	747.53
	3000	6.7	4006	5005	155	119	35	1	43.20	749.15
	3500	7.6	4524	5720	171	135	35	1	44.87	751.48
	4000	8.5	5015	6415	186	150	35	1	46.43	754.37
	5000	10.3	5926	7753	214	177	36	1	49.25	761.36
	6000	12.0	6758	9037	240	202	37	1	51.74	769.40
	7000	13.6	7527	10279	264	226	38	1	53.96	778.05
	7800	14.8	8103	11247	282	243	39	1	55.56	785.18
-45	3027	5.2	2598	3989	107	76	29	1	53.30	773.01
	4000	6.7	3297	5184	127	96	30	1	55.40	780.00
	5000	8.3	3964	6381	146	115	30	1	57.35	787.77
	6000	9.7	4586	7552	165	133	31	1	59.11	795.89
	7000	11.1	5170	8702	182	149	32	1	60.71	804.15
	8000	12.5	5721	9835	198	165	33	1	62.16	812.44
	9000	13.8	6243	10953	213	179	33	1	63.49	820.63
	10000	15.1	6739	12059	227	192	34	1	64.70	828.68
	12000	17.6	7665	14239	253	217	36	1	66.83	844.16
	14500	20.6	8723	16922	283	244	38	0	69.06	862.00
-60	4556	6.5	2249	5081	89	65	23	1	66.93	800.87
	5000	7.1	2436	5562	94	70	23	1	67.45	804.89
	6000	8.4	2841	6639	106	81	24	1	68.55	813.81
	8000	10.9	3592	8769	127	102	25	1	70.50	830.94
	10000	13.4	4276	10876	146	119	26	1	72.15	846.94
	12000	15.7	4906	12964	163	135	27	0	73.57	861.68
	14000	18.0	5491	15038	179	150	28	0	74.79	875.16
	16000	20.2	6039	17102	193	163	30	0	75.85	887.44
	18000	22.3	6555	19156	206	174	31	0	76.78	898.64
	20000	24.3	7045	21205	218	185	32	0	77.60	908.90

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.

BF 21011-R1-B77-2

Figure 2-187. Delivery Data, BDU-33D/B Practice Bomb (Sheet 2 of 6)

AV-8B DELIVERY DATA
BDU-33D/B PRACTICE BOMB

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	2002	2005	81	50	29	3	5.73	783.41
	300	4.4	3435	3448	118	87	29	2	10.23	749.34
	500	5.7	4392	4420	144	113	29	1	13.44	730.98
	700	6.8	5152	5200	166	135	29	1	16.09	718.92
	900	7.7	5799	5868	184	154	29	1	18.41	710.44
	1100	8.6	6368	6462	202	171	30	1	20.48	704.31
	1400	9.7	7120	7256	225	194	30	1	23.26	698.11
	1700	10.7	7784	7968	246	215	30	1	25.73	694.40
	2000	11.7	8384	8619	265	234	30	1	27.96	692.44
	2300	12.6	8933	9224	283	252	30	1	30.01	691.76
-10	531	2.9	2262	2324	87	56	29	2	16.40	790.18
	600	3.2	2492	2563	93	62	29	2	17.08	785.74
	700	3.6	2808	2894	100	70	29	2	18.03	779.92
	800	4.0	3107	3209	108	77	29	2	18.94	774.75
	900	4.4	3392	3509	115	85	29	2	19.82	770.12
	1000	4.7	3663	3797	123	92	29	1	20.66	765.97
	2000	8.0	5889	6219	184	153	30	1	27.83	741.67
	3000	10.6	7587	8159	233	202	30	1	33.45	734.38
	4000	12.9	8993	9842	276	244	31	1	38.06	735.10
	4200	13.4	9249	10158	284	252	31	1	38.88	735.84
-20	1139	3.5	2599	2838	94	64	28	2	27.27	797.69
	2000	5.7	4122	4581	133	103	29	1	31.75	781.18
	2500	6.9	4896	5497	153	123	29	1	34.07	775.68
	3000	8.0	5609	6360	172	142	29	1	36.22	772.28
	3500	9.0	6270	7181	190	160	30	1	38.22	770.50
	4000	10.0	6889	7966	208	177	30	1	40.08	769.97
	4500	11.0	7470	8721	224	193	30	1	41.81	770.44
	5000	12.0	8020	9451	240	208	31	1	43.44	771.70
	5500	12.9	8542	10160	255	223	31	1	44.95	773.58
	6500	14.6	9516	11524	283	250	32	1	47.72	778.74

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.

BF 21011-R1-B77-3

Figure 2-187. Delivery Data, BDU-33D/B Practice Bomb (Sheet 3 of 6)

AV-8B DELIVERY DATA
BDU-33D/B PRACTICE BOMB

500 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2005	4.3	2957	3572	100	72	27	1	38.15	808.04
	2500	5.3	3568	4357	116	88	27	1	39.87	804.21
	3000	6.3	4151	5122	131	102	27	1	41.51	801.64
	4000	8.1	5226	6581	158	130	28	1	44.53	799.55
	5000	9.8	6201	7965	184	155	28	1	47.24	800.42
	6000	11.4	7095	9292	208	178	29	1	49.68	803.33
	7000	13.0	7923	10572	230	200	30	1	51.88	807.63
	8000	14.5	8695	11815	251	220	30	1	53.86	812.87
	9000	15.9	9420	13028	271	239	31	1	55.66	818.72
	9500	16.7	9767	13625	280	248	32	1	56.50	821.81
-45	3468	5.5	2998	4584	97	73	23	1	53.02	830.64
	4000	6.3	3392	5245	106	82	23	1	54.05	831.12
	5000	7.7	4095	6463	124	99	24	1	55.87	833.12
	6000	9.1	4755	7656	140	115	24	1	57.55	836.21
	8000	11.8	5965	9979	171	145	25	1	60.53	844.52
	10000	14.4	7056	12238	198	171	27	1	63.06	854.41
	12000	16.9	8052	14451	223	194	28	0	65.23	864.89
	14000	19.2	8972	16628	245	215	29	0	67.10	875.40
	16000	21.5	9831	18779	265	234	31	0	68.73	885.64
	18000	23.7	10640	20909	284	252	32	0	70.14	895.44
-60	5291	6.9	2625	5906	82	63	18	1	66.81	854.93
	6000	7.8	2925	6675	89	70	18	1	67.53	857.89
	7000	9.1	3330	7752	99	80	19	1	68.50	862.32
	8000	10.3	3718	8822	108	89	19	1	69.40	866.96
	10000	12.6	4446	10944	126	105	20	1	71.03	876.54
	12000	14.9	5118	13046	142	120	21	0	72.45	886.18
	14000	17.1	5745	15133	156	134	22	0	73.69	895.61
	16000	19.3	6334	17208	170	147	23	0	74.79	904.70
	18000	21.3	6890	19274	182	158	23	0	75.75	913.33
	20000	23.4	7419	21332	193	168	24	0	76.61	921.44

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.

BF 21011-R1-B77-4

Figure 2-187. Delivery Data, BDU-33D/B Practice Bomb (Sheet 4 of 6)

AV-8B DELIVERY DATA
BDU-33D/B PRACTICE BOMB

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
0	100	2.5	2194	2196	69	46	21	2	5.25	864.71
	200	3.5	3085	3092	87	65	21	2	7.58	837.89
	300	4.4	3755	3767	102	80	21	1	9.43	819.50
	400	5.1	4310	4328	115	93	21	1	11.02	805.46
	500	5.7	4792	4818	126	104	21	1	12.44	794.17
	1000	8.2	6628	6703	172	150	21	1	18.17	759.00
	1500	10.1	7983	8123	208	186	21	1	22.63	741.01
	2000	11.8	9093	9310	239	217	22	1	26.37	731.19
	2500	13.2	10049	10356	266	244	22	1	29.62	726.14
	2800	14.0	10570	10934	282	259	22	1	31.38	724.65
-10	575	2.9	2499	2564	74	52	21	2	15.94	860.69
	700	3.4	2922	3005	83	61	21	2	17.01	850.91
	800	3.8	3241	3338	90	67	21	2	17.84	843.89
	900	4.2	3544	3657	96	74	21	1	18.64	837.48
	1000	4.5	3835	3963	103	81	21	1	19.41	831.62
	1500	6.2	5127	5342	132	110	21	1	22.98	808.69
	2000	7.8	6225	6538	159	136	21	1	26.14	793.34
	3000	10.4	8053	8593	205	182	22	1	31.56	776.13
	4000	12.7	9565	10368	244	222	22	1	36.08	769.45
	5000	14.8	10872	11967	280	257	22	1	39.93	768.73
-20	1265	3.6	2917	3180	82	60	20	2	26.89	862.46
	1500	4.2	3370	3689	91	70	20	1	28.02	854.59
	2000	5.4	4267	4712	111	89	20	1	30.32	840.86
	2500	6.5	5088	5669	129	108	20	1	32.48	830.43
	3000	7.6	5846	6571	147	125	21	1	34.51	822.59
	4000	9.7	7212	8247	179	157	21	1	38.20	812.66
	5000	11.6	8423	9795	209	187	21	1	41.48	808.15
	6000	13.4	9516	11249	236	214	22	1	44.39	807.27
	7000	15.1	10515	12632	261	238	22	1	47.00	808.86
	8000	16.7	11439	13959	285	261	23	1	49.33	812.12

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL.
   Refer to stores limitations for specific KCAS restrictons.

BF 21011-R1-B77-5

Figure 2-187. Delivery Data, BDU-33D/B Practice Bomb (Sheet 5 of 6)

AV-8B DELIVERY DATA
BDU-33D/B PRACTICE BOMB

550 KTAS

RELEASE FLIGHT PATH (DEG)	RELEASE ALTITUDE (FT)	TIME OF FALL (SEC)	DOWN RANGE TRAVEL (FT)	SLANT RANGE (FT)	SIGHT ANGLE (MIL)	TRAJECTORY DROP (MIL)	ANGLE OF ATTACK (MIL)	PARALLAX (MIL)	STRIKING ANGLE (DEG)	IMPACT VELOCITY (FT/SEC)
-30	2249	4.5	3342	4029	89	69	19	1	37.82	867.70
	2500	5.0	3662	4434	96	75	19	1	38.60	863.81
	3000	5.9	4272	5220	109	89	19	1	40.11	857.24
	4000	7.7	5405	6724	134	114	19	1	42.94	848.03
	5000	9.3	6438	8151	157	137	20	1	45.53	842.80
	6000	10.9	7388	9518	179	158	20	1	47.89	840.49
	7000	12.5	8271	10835	200	179	20	1	50.06	840.30
	8000	14.0	9095	12113	219	198	21	1	52.04	841.67
	10000	16.8	10602	14574	255	233	22	0	55.51	847.52
	11600	18.9	11700	16476	281	258	23	0	57.89	853.99
-45	3950	5.8	3432	5232	87	70	15	1	52.85	884.84
	4000	5.9	3470	5295	88	71	15	1	52.93	884.60
	5000	7.3	4204	6532	103	86	16	1	54.63	880.97
	6000	8.6	4896	7744	118	101	16	1	56.22	879.08
	7000	9.9	5551	8934	132	115	16	1	57.71	878.57
	8000	11.2	6173	10105	146	128	16	1	59.10	879.14
	10000	13.8	7329	12398	171	153	17	0	61.61	882.57
	12000	16.2	8389	14642	194	175	18	0	63.80	888.00
	15000	19.7	9837	17938	225	205	19	0	66.56	898.03
	20000	25.0	11975	23311	268	246	22	0	70.13	916.03
-60	6024	7.3	3003	6731	73	61	11	1	66.70	903.89
	7000	8.5	3416	7789	82	70	11	1	67.59	904.13
	8000	9.7	3823	8866	90	78	11	1	68.46	905.03
	9000	10.8	4213	9937	98	86	11	1	69.27	906.45
	10000	11.9	4588	11002	106	93	11	0	70.04	908.28
	12000	14.2	5300	13118	120	108	12	0	71.45	912.86
	14000	16.3	5965	15218	134	121	12	0	72.70	918.20
	16000	18.4	6591	17305	147	133	13	0	73.82	923.93
	18000	20.5	7184	19381	158	144	13	0	74.81	929.76
	20000	22.5	7739	21445	169	154	14	0	75.74	934.22

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude.
   Level deliveries based on 5 g level breakaway recovery.
   Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.
4. Maximum KCAS limit may be exceeded below 7613 ft-MSL.
   Refer to stores limitations for specific KCAS restrictons.

BF 21011-R1-B77-6

Figure 2-187. Delivery Data, BDU-33D/B Practice Bomb (Sheet 6 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-33D/B PRACTICE BOMB

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
0	100	88	-105	-1072	0	-526	172	150	-179	1.8	42	1.3	42	23.0
	300	115	-130	-575	479	-406	218	155	-171	3.1	74	2.3	73	23.5
	500	132	-147	-436	393	-377	236	155	-167	4.0	96	3.0	95	23.8
	700	146	-160	-365	339	-363	246	155	-164	4.7	114	3.6	114	24.0
	900	157	-171	-320	302	-356	254	154	-163	5.3	130	4.1	129	24.2
	1100	166	-180	-289	275	-351	260	154	-161	5.9	144	4.5	144	24.4
	1300	175	-189	-265	254	-348	265	154	-160	6.4	157	5.0	157	24.5
	1500	183	-197	-246	238	-346	269	154	-160	6.9	169	5.4	169	24.6
	1700	190	-204	-230	224	-345	273	153	-159	7.3	180	5.8	180	24.7
	1800	193	-207	-224	217	-345	275	153	-159	7.5	186	5.9	186	24.7
-10	490	32	-36	-101	77	-40	29	44	-45	2.1	48	5.3	48	22.8
	600	39	-44	-104	84	-49	37	49	-50	2.5	56	5.6	56	22.9
	800	50	-56	-107	92	-65	50	58	-59	3.1	71	6.0	71	23.1
	1000	61	-68	-108	97	-78	61	64	-65	3.6	84	6.4	84	23.2
	1200	71	-78	-108	99	-90	72	70	-71	4.1	96	6.8	96	23.3
	1500	84	-92	-108	101	-106	86	76	-78	4.8	113	7.3	113	23.5
	2000	104	-113	-105	100	-127	106	85	-86	5.9	139	8.1	139	23.6
	2500	121	-131	-102	98	-145	124	92	-93	6.8	162	8.7	162	23.7
	3000	137	-147	-99	96	-161	139	97	-99	7.7	183	9.3	183	23.8
	3300	145	-156	-97	94	-170	148	100	-102	8.2	196	9.6	195	23.9
-20	1035	25	-28	-39	33	-19	17	31	-31	2.5	58	9.2	58	22.7
	1500	38	-42	-44	41	-32	28	40	-40	3.5	80	9.8	80	22.8
	2000	51	-56	-49	45	-46	40	49	-49	4.4	102	10.3	101	22.9
	2500	65	-70	-51	49	-59	52	56	-56	5.3	122	10.8	122	23.0
	3000	77	-84	-53	51	-71	64	62	-62	6.1	141	11.3	141	23.0
	3500	89	-96	-54	52	-83	75	68	-68	6.9	159	11.7	159	23.0
	4000	100	-108	-54	53	-95	86	73	-73	7.7	177	12.1	176	23.1
	4500	111	-120	-54	53	-106	96	77	-78	8.4	193	12.4	193	23.1
	5000	121	-130	-55	53	-116	106	82	-82	9.1	209	12.7	209	23.0
	5200	125	-135	-55	54	-120	110	83	-84	9.3	215	12.8	215	23.0

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.

BF 21011-R1-B78-1

Figure 2-188. Release Error Sensitivities, BDU-33D/B Practice Bomb (Sheet 1 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-33D/B PRACTICE BOMB

450 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	1805	23	-26	-22	20	-16	15	28	-27	3.2	72	12.7	72	22.5
	2000	27	-30	-23	22	-19	18	30	-30	3.5	79	12.9	79	22.5
	2500	35	-39	-26	25	-26	24	36	-36	4.3	96	13.2	96	22.5
	3000	44	-48	-28	27	-34	31	41	-41	5.0	113	13.5	113	22.5
	3500	52	-57	-30	29	-41	39	46	-46	5.7	129	13.8	129	22.5
	4000	60	-66	-31	30	-49	46	51	-51	6.4	144	14.0	144	22.5
	5000	77	-84	-33	32	-65	61	60	-59	7.8	174	14.5	174	22.4
	6000	93	-100	-34	34	-81	77	68	-67	9.0	202	14.8	202	22.3
	7000	108	-117	-35	35	-97	92	75	-75	10.3	229	15.2	229	22.3
	7800	120	-129	-36	35	-110	104	81	-81	11.2	249	15.4	249	22.2
-45	3027	20	-23	-12	11	-14	14	26	-25	4.0	88	16.7	88	22.0
	4000	29	-33	-14	13	-22	22	33	-33	5.2	114	16.9	114	22.0
	5000	39	-43	-16	15	-32	31	41	-40	6.4	139	17.1	139	21.8
	6000	49	-54	-17	17	-42	40	47	-47	7.6	164	17.3	164	21.7
	7000	59	-65	-18	18	-53	50	54	-53	8.7	188	17.4	188	21.6
	8000	69	-76	-19	19	-64	61	60	-60	9.8	211	17.5	211	21.5
	9000	79	-86	-20	19	-76	72	66	-66	11.0	234	17.5	234	21.3
	10000	89	-97	-20	20	-88	84	72	-72	12.1	256	17.6	256	21.2
	12000	108	-117	-21	21	-112	108	84	-84	14.2	298	17.6	298	20.9
	14500	132	-143	-22	21	-144	139	98	-98	16.9	348	17.6	348	20.6
-60	4556	18	-20	-7	7	-16	17	28	-27	5.1	110	19.4	110	21.6
	5000	20	-23	-8	7	-19	19	31	-30	5.6	120	19.3	120	21.5
	6000	26	-29	-8	8	-26	26	37	-36	6.6	142	19.3	142	21.4
	8000	37	-42	-10	10	-41	41	48	-47	8.8	185	19.2	185	21.1
	10000	50	-55	-11	11	-59	59	59	-58	10.9	226	19.1	226	20.8
	12000	62	-68	-12	11	-79	78	70	-69	13.0	265	19.0	265	20.5
	14000	74	-81	-12	12	-99	98	81	-80	15.0	304	18.8	304	20.2
	16000	86	-95	-12	12	-121	120	91	-91	17.1	340	18.6	340	19.9
	18000	99	-108	-13	13	-144	143	102	-101	19.2	376	18.4	376	19.6
	20000	111	-121	-13	13	-168	167	112	-112	21.2	411	18.3	411	19.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.

BF 21011-R1-B78-2

Figure 2-188. Release Error Sensitivities, BDU-33D/B Practice Bomb (Sheet 2 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-33D/B PRACTICE BOMB

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	89	-92	-1190	0	-697	201	183	-222	2.0	42	1.0	42	20.8
	300	115	-117	-637	531	-515	259	187	-209	3.4	74	1.9	74	21.3
	500	132	-133	-483	435	-472	281	187	-203	4.4	96	2.5	96	21.7
	700	144	-146	-404	376	-451	293	186	-199	5.2	114	3.0	114	21.9
	900	155	-156	-354	335	-439	302	185	-197	5.9	130	3.4	130	22.2
	1100	164	-166	-319	305	-431	308	184	-194	6.5	145	3.8	144	22.3
	1400	176	-178	-281	271	-423	316	183	-192	7.3	164	4.4	164	22.6
	1700	187	-189	-254	247	-418	323	183	-190	8.0	181	4.9	181	22.7
	2000	197	-198	-234	228	-416	328	182	-189	8.6	197	5.3	197	22.9
	2300	205	-207	-217	213	-414	334	181	-188	9.2	212	5.7	212	23.0
-10	531	30	-31	-97	75	-43	31	50	-51	2.3	48	4.7	48	20.7
	600	34	-35	-100	80	-50	36	54	-55	2.6	53	4.9	53	20.8
	700	40	-41	-103	86	-58	43	59	-60	2.9	60	5.1	60	20.9
	800	45	-46	-105	90	-66	50	63	-65	3.2	67	5.2	67	21.0
	900	50	-51	-106	93	-74	56	67	-69	3.5	74	5.4	74	21.0
	1000	55	-56	-108	96	-82	63	71	-72	3.8	80	5.6	80	21.1
	2000	97	-99	-108	103	-138	113	95	-97	6.2	135	7.0	135	21.7
	3000	129	-131	-103	100	-177	150	110	-111	8.2	179	8.1	179	22.0
	4000	156	-158	-97	96	-207	180	120	-121	9.8	218	9.0	218	22.2
	4200	161	-163	-96	95	-212	185	122	-123	10.2	226	9.2	225	22.2
-20	1139	23	-24	-37	32	-21	18	35	-35	2.8	59	8.3	59	20.6
	2000	45	-46	-46	43	-45	39	52	-52	4.6	96	9.1	96	20.9
	2500	57	-59	-50	47	-58	51	60	-60	5.5	116	9.6	116	21.0
	3000	69	-71	-52	50	-71	63	67	-67	6.4	135	10.0	135	21.1
	3500	81	-83	-53	51	-84	75	73	-73	7.2	152	10.4	152	21.2
	4000	92	-94	-54	53	-96	86	79	-79	8.0	170	10.7	170	21.3
	4500	103	-104	-55	53	-108	97	84	-84	8.7	186	11.0	186	21.3
	5000	113	-115	-55	54	-119	108	89	-89	9.5	202	11.3	202	21.4
	5500	123	-125	-55	54	-130	118	93	-94	10.2	217	11.6	217	21.4
	6500	141	-144	-55	54	-151	138	101	-102	11.5	247	12.1	247	21.4

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.

BF 21011-R1-B78-3

Figure 2-188. Release Error Sensitivities, BDU-33D/B Practice Bomb (Sheet 3 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-33D/B PRACTICE BOMB

500 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
-30	2005	23	-23	-21	20	-17	16	32	-31	3.6	73	11.5	73	20.5
	2500	30	-31	-24	23	-24	22	38	-37	4.4	90	11.8	90	20.6
	3000	38	-39	-26	25	-31	29	43	-43	5.1	106	12.1	106	20.6
	4000	54	-55	-30	29	-47	43	54	-53	6.6	136	12.6	136	20.7
	5000	70	-71	-32	31	-63	58	63	-63	8.0	165	13.0	165	20.8
	6000	85	-87	-34	33	-79	74	72	-71	9.3	193	13.4	193	20.8
	7000	100	-102	-35	34	-95	89	79	-79	10.6	219	13.7	219	20.7
	8000	114	-117	-35	35	-111	104	87	-87	11.8	245	14.0	245	20.7
	9000	129	-131	-36	35	-127	120	94	-94	13.0	269	14.3	269	20.7
	9500	135	-138	-36	36	-135	127	97	-97	13.6	281	14.4	281	20.6
-45	3468	21	-22	-12	11	-15	15	30	-29	4.6	93	15.3	93	20.2
	4000	25	-26	-13	12	-20	19	34	-34	5.2	106	15.4	106	20.2
	5000	35	-36	-15	14	-28	27	42	-41	6.5	130	15.6	130	20.2
	6000	44	-45	-16	16	-38	36	49	-48	7.7	154	15.8	154	20.1
	8000	64	-65	-18	18	-59	56	62	-61	10.0	200	16.1	200	20.0
	10000	83	-85	-20	19	-82	78	75	-74	12.2	243	16.3	243	19.9
	12000	103	-105	-21	20	-105	101	87	-86	14.5	285	16.4	285	19.7
	14000	123	-126	-21	21	-130	124	98	-98	16.6	325	16.4	325	19.5
	16000	144	-146	-21	21	-155	149	110	-110	18.8	363	16.5	363	19.3
	18000	164	-166	-21	21	-181	174	121	-121	20.9	400	16.5	400	19.1
-60	5291	19	-20	-7	7	-18	18	33	-32	5.9	117	17.8	117	19.8
	6000	23	-24	-8	7	-22	22	37	-36	6.7	132	17.8	132	19.8
	7000	29	-30	-8	8	-29	29	43	-42	7.8	153	17.8	153	19.7
	8000	35	-36	-9	9	-36	36	49	-48	8.8	173	17.8	173	19.6
	10000	48	-49	-10	10	-53	52	60	-59	10.9	213	17.8	213	19.5
	12000	61	-62	-11	11	-71	70	71	-70	13.0	252	17.7	252	19.3
	14000	75	-76	-12	11	-90	89	82	-81	15.1	289	17.7	289	19.1
	16000	90	-91	-12	12	-111	109	92	-92	17.2	325	17.6	325	18.9
	18000	104	-106	-12	12	-132	130	103	-102	19.3	360	17.5	360	18.7
	20000	120	-122	-12	12	-154	153	114	-113	21.3	394	17.3	394	18.5

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.

BF 21011-R1-B78-4

Figure 2-188. Release Error Sensitivities, BDU-33D/B Practice Bomb (Sheet 4 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-33D/B PRACTICE BOMB

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	RANGE MILS ERROR	CROSS FEET ERROR	CROSS MILS ERROR
0	100	132	-141	-1307	0	-907	230	217	-270	2.2	42	.9	42	19.0
	200	147	-153	-876	652	-710	277	222	-258	3.1	60	1.3	60	19.3
	300	157	-162	-699	583	-641	301	223	-251	3.8	74	1.6	74	19.6
	400	165	-169	-597	524	-603	317	222	-247	4.3	86	1.8	86	19.8
	500	172	-176	-530	478	-579	328	222	-243	4.8	96	2.1	96	20.0
	1000	196	-200	-367	349	-524	356	217	-231	6.7	138	3.1	138	20.6
	1500	214	-217	-296	287	-503	371	214	-225	8.1	171	3.9	171	21.0
	2000	228	-230	-255	249	-492	381	212	-221	9.3	199	4.6	198	21.3
	2500	240	-242	-226	222	-487	389	210	-218	10.4	223	5.2	223	21.5
	2800	246	-249	-213	209	-485	393	210	-217	10.9	237	5.5	237	21.7
-10	575	39	-40	-94	74	-47	33	56	-57	2.6	49	4.3	49	19.0
	700	47	-48	-99	82	-59	42	63	-65	3.0	57	4.5	57	19.1
	800	53	-54	-102	87	-68	49	68	-70	3.3	64	4.6	64	19.2
	900	58	-59	-104	91	-76	56	73	-75	3.7	71	4.7	71	19.3
	1000	63	-65	-106	94	-84	63	77	-79	4.0	77	4.9	77	19.4
	1500	87	-89	-110	102	-120	93	94	-96	5.3	105	5.5	105	19.7
	2000	107	-109	-110	105	-148	119	105	-108	6.5	131	6.1	131	20.0
	3000	140	-142	-106	103	-192	160	121	-124	8.6	176	7.1	175	20.4
	4000	166	-168	-101	99	-225	193	133	-135	10.4	215	8.0	215	20.7
	5000	188	-191	-97	95	-253	220	142	-144	12.0	250	8.7	250	20.9
-20	1265	30	-31	-36	31	-23	19	40	-39	3.2	60	7.5	60	19.0
	1500	36	-37	-39	35	-29	25	45	-45	3.7	70	7.8	70	19.1
	2000	49	-50	-44	41	-43	37	55	-55	4.7	91	8.2	91	19.3
	2500	61	-63	-48	45	-57	50	64	-64	5.7	110	8.6	110	19.4
	3000	73	-75	-50	48	-71	62	71	-72	6.6	129	8.9	129	19.6
	4000	95	-97	-54	52	-97	86	84	-85	8.2	163	9.6	163	19.8
	5000	116	-118	-55	54	-122	109	95	-96	9.8	195	10.2	195	20.0
	6000	134	-136	-56	55	-145	131	105	-105	11.2	226	10.7	226	20.1
	7000	151	-154	-56	55	-166	151	113	-114	12.6	254	11.2	254	20.1
	8000	168	-170	-55	55	-187	171	121	-122	14.0	281	11.6	281	20.2

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.
4. Maximum KCAS limit may be exceeded below 7613 ft-msl. Refer to stores limitations for specific KCAS restrictions.

BF 21011-R1-B78-5

Figure 2-188. Release Error Sensitivities, BDU-33D/B Practice Bomb (Sheet 5 of 6)

AV-8B RELEASE ERROR SENSITIVITIES
BDU-33D/B PRACTICE BOMB

550 KTAS — CORRECTION TO HORIZONTAL RANGE (+ = FT LONG, - = FT SHORT)

RELEASE FLIGHT PATH (DEG)	ALT (AGL) (FT)	AIRSPEED SENSITIVITY +10 KTS	AIRSPEED SENSITIVITY -10 KTS	ALTITUDE SENSITIVITY +100 FT	ALTITUDE SENSITIVITY -100 FT	RELEASE ANGLE SENSITIVITY +1 DEG	RELEASE ANGLE SENSITIVITY -1 DEG	SIGHT ANGLE SENSITIVITY +5 MIL	SIGHT ANGLE SENSITIVITY -5 MIL	ONE MIL LEFT OR RIGHT	TEN KNOT WIND SENSITIVITY RANGE FEET ERROR	TEN KNOT WIND SENSITIVITY RANGE MILS ERROR	TEN KNOT WIND SENSITIVITY CROSS FEET ERROR	TEN KNOT WIND SENSITIVITY CROSS MILS ERROR
-30	2249	28	-29	-21	19	-18	17	36	-35	4.0	76	10.5	76	18.9
	2500	32	-33	-22	21	-22	20	39	-39	4.4	84	10.7	84	18.9
	3000	40	-41	-24	23	-29	27	45	-45	5.2	99	10.9	99	19.0
	4000	55	-56	-28	27	-44	41	56	-56	6.7	129	11.4	129	19.2
	5000	70	-72	-31	30	-60	56	66	-66	8.2	158	11.9	157	19.3
	6000	85	-87	-33	32	-77	71	75	-75	9.5	185	12.2	185	19.4
	7000	99	-101	-34	33	-93	86	83	-83	10.8	211	12.6	211	19.4
	8000	113	-115	-35	34	-109	102	91	-91	12.1	236	12.9	236	19.5
	10000	140	-142	-36	35	-141	133	106	-106	14.6	284	13.4	284	19.5
	11600	158	-160	-36	36	-167	157	116	-117	16.5	320	13.7	320	19.4
-45	3950	27	-27	-11	11	-17	17	35	-34	5.2	98	14.1	98	18.7
	4000	27	-28	-11	11	-17	17	35	-34	5.3	99	14.1	99	18.7
	5000	36	-36	-13	13	-26	25	42	-42	6.5	122	14.3	122	18.7
	6000	45	-46	-15	14	-35	33	50	-49	7.7	145	14.5	145	18.8
	7000	54	-55	-16	16	-44	42	57	-56	8.9	168	14.7	168	18.8
	8000	63	-64	-17	17	-54	52	64	-63	10.1	190	14.9	190	18.8
	10000	82	-83	-19	18	-76	73	77	-76	12.4	232	15.1	232	18.7
	12000	98	-100	-20	20	-99	94	89	-89	14.6	273	15.3	273	18.7
	15000	122	-124	-21	21	-135	129	107	-107	17.9	332	15.5	332	18.5
	20000	141	-160	-21	21	-198	190	135	-135	23.3	422	15.5	422	18.1
-60	6024	25	-26	-7	7	-19	20	38	-37	6.7	124	16.5	124	18.4
	7000	31	-31	-8	7	-25	26	43	-42	7.8	143	16.5	143	18.4
	8000	37	-37	-8	8	-32	32	49	-48	8.9	163	16.6	163	18.4
	9000	42	-43	-9	9	-39	39	55	-54	9.9	182	16.6	182	18.4
	10000	48	-49	-9	9	-47	47	60	-60	11.0	202	16.7	202	18.3
	12000	59	-60	-10	10	-64	63	72	-71	13.1	239	16.7	239	18.2
	14000	69	-70	-11	11	-82	81	83	-82	15.2	276	16.7	276	18.1
	16000	79	-81	-11	11	-102	100	93	-93	17.3	311	16.6	311	18.0
	18000	81	-90	-12	12	-122	120	104	-104	19.4	346	16.6	346	17.8
	20000	77	-90	-13	13	-143	140	115	-114	21.4	380	16.5	380	17.7

1. Single weapon delivery at sea level target.
2. Lowest altitude of each release angle is the minimum safe release altitude. Level deliveries based on 5 g level breakaway recovery. Straight path dive deliveries based on 5 g wings level pullup.
3. ITER release. Ejection velocity : 0.0 ft/sec. Stores code : 27.
4. Maximum KCAS limit may be exceeded below 7613 ft-msl. Refer to stores limitations for specific KCAS restrictions.

BF 21011-R1-B78-6

Figure 2-188. Release Error Sensitivities, BDU-33D/B Practice Bomb (Sheet 6 of 6)

2.21 ADSID V

2.21.1 Description. The ADSID V (Figure 2-189) is an air deployed, expendable, camouflaged Tactical Remote Sensor System (TRSS) Phase V sensor. When released and implanted in the ground at strategic locations, it is capable of monitoring and transmitting seismic disturbances. Upon impact, power to an internal battery is activated to begin remote operation. The ADSID V converts seismic inputs from the earth into coded radio frequency output which is then decoded by sensor-monitoring elements of the TRSS.

NOTE

The ADSID V shown in Figure 2-189 is the helicopter version and not authorized for AV-8B carriage or delivery; a high speed version is in development. This description is for information only.

A string of emplaced ADSID V's is necessary in order to obtain meaningful intelligence from the sensors. The ADSID V's are generally deployed in strings of three to six at intervals ranging from 500 to 1,000 meters.

The ADSID V sensor consists of an internal electronics and battery package, two-piece one lug suspension system (for compatibility with fixed wing aircraft), tail fin, aft base plate and a molded monopole antenna with ground plane radials.

The soil composition of the target area and the ground implant angle of the ADSID V determine the launch envelope for the successful operation of the device.

2.21.1.1 Impact angle. The ADSID V implant angle should be between 0 and 30É from the vertical. Within this range, adequate seismic operation and RF output will occur.

2.21.1.2 Soil Composition. The ADSID V should be implanted at least 1 foot into the ground for various soils. This depth is a minimum to allow the device to stand upright and not tip over. In extremely soft soils where penetration can be much deeper, the aft base plate will keep the antenna above ground level. Soil composition can be divided into three categories:

1. Medium to coarse sand and hard dry clay or silt.

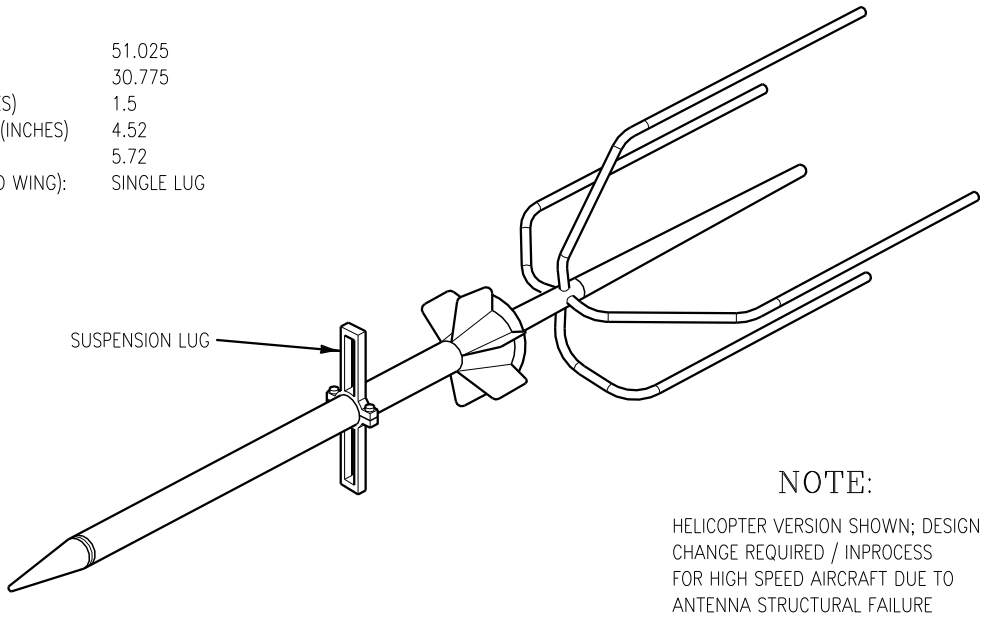
2. Loose fine sand and moist stiff clay or silt.

3. Clay or silt with mixture of sand and loose moist topsoil with mixture of sand, clay or silt.

Upon determining the approximate sites for ADSID V implant, a terrain analysis is conducted and compared to the 3 soil categories listed, and appropriate release conditions planned.

CHARACTERISTICS

LENGTH (INCHES)	
TIP TO TIP	51.025
TIP TO BASE PLATE	30.775
BODY DIAMETER (INCHES)	1.5
BASE PLATE DIAMETER (INCHES)	4.52
WEIGHT (POUNDS)	5.72
SUSPENSION (FOR FIXED WING):	SINGLE LUG



NOTE:

HELICOPTER VERSION SHOWN; DESIGN CHANGE REQUIRED / INPROCESS FOR HIGH SPEED AIRCRAFT DUE TO ANTENNA STRUCTURAL FAILURE DURING CARRIAGE.

AV8BB-TAC-05-(61-1)09-CATI

Figure 2-189. Air Delivered Seismic Intrusion Detector, Phase V (ADSID V)

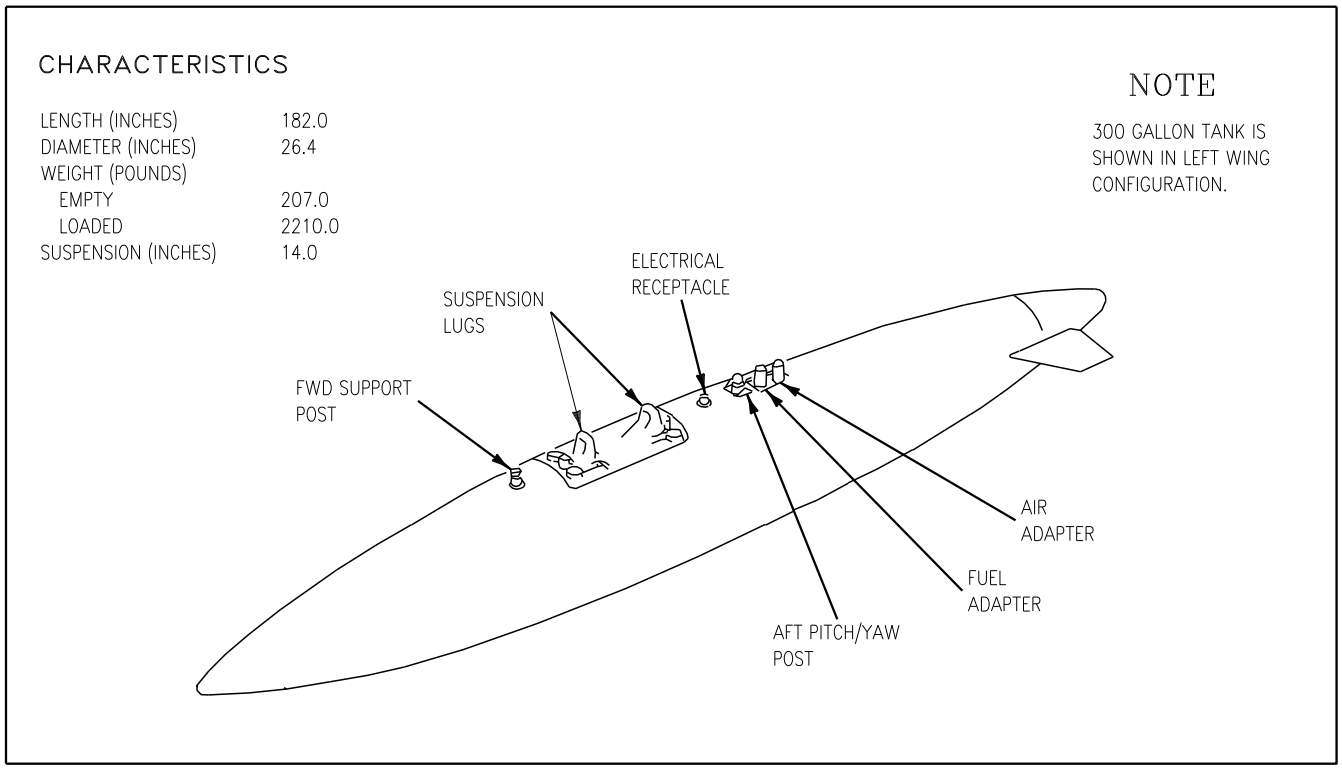


Figure 2-190. 300-Gallon Fuel Tank

AV8BB-TAC-05-(23-1)09-CATI

2.22 300-GALLON FUEL TANK

2.22.1 Description. The 300-gallon fuel tank (see Figure 2-190) is an external, jettisonable, aerodynamic fuel tank which is carried to supplement the aircraft internal fuel supply. It is configured for 14-inch suspension to allow for carriage on the BRU-36 ejector rack. Fuel/air adapters and electrical connectors are located aft of the rear suspension lug to provide the appropriate mating of aircraft and tank.

Air pressure from an aircraft source forces the fuel from the tank and into the internal fuel system. A probe and float switch are incorporated within the fuel tank. The probe transmits fuel quantity information to the cockpit and the float switch activates a valve to shut-off fuel flow when the tank is pressure fueled.

The aerodynamic configuration of the fuel tank requires one horizontal fin to be installed outboard on the tail cone. Various aircraft station configurations are required due to flight characteristics and safe separation when jettisoned. Refer to External Stores Limitations, chapter 5 for carriage and jettison restrictions.

2.22.2 Preflight Checks.

1. Master arm switch - OFF (SAFE)
2. Emergency jettison - VISUALLY CHECK NOT PRESSED
3. Selective jettison - SAFE
4. Safe/arm lever - SAFE
5. Swaybraces adjusted
6. Throttles properly set
7. Cartridges installed; breech caps tight
8. Fuel/air lines and electrical connectors connected and secure

2.22.3 Prior to Launch (Ground Crew)

1. Rearming/arming (before engine start)
   (a) Position safe/arm lever(s) to ARM(BRU-42) Unlock safety stop lever(s)

2.23 TACTICAL AIRCREW COMBAT TRAINING SYSTEM POD (TACTS/AIS)

2.23.1 Description. The airborne instrumentation subsystem (AIS) (referred to as the TACTS pod) (see Figure 2-191) is a 12.7-cm (5-inch) diameter pod that contains an inertial reference unit (IRU), ranging transponder, air data sensor, and digital interface unit. The pod is carried on a standard LAU-7 launcher. The pod is used during TACTS training and is a subsystem of the TACTS, working in a closed loop with the ground system. The pod is designed to measure and down-link altitude-rate and acceleration components, pressure data, and missile-firing data. The pod transmits a down-link message to the TACTS. This information is correlated and displayed in real time as it occurs and is recorded for post mission debriefing.

The Tactical Aircrew Combat Training System (TACTS) was designed to train aircrews in air combat maneuvering (ACM) and related tactics. TACTS function is to observe one-versus-one, one-versus-multiple, or multiple-versus-multiple ACM engagements of aircraft employing simulated air-to-air missiles, and to provide real-time missile envelope indications to aircrews, real-time construction, and post-engagement playback and display for aircrew training and tactics evaluation. TACTS also enables aircrews to observe the results of no-drop bomb scoring of all authorized weapons/stores except the gun against ground targets. TACTS consists of the following subsystems:

1. Tracking instrumentation subsystem.

2. Control and computation subsystem (CCS).

3. Display and debriefing subsystem (DDS).

Operation of the pod is accomplished by utilizing the ac and dc aircraft power through the launcher umbilical hookup connector. The TRNG (training) mode is not available with the TACTS/AIS pod installed.

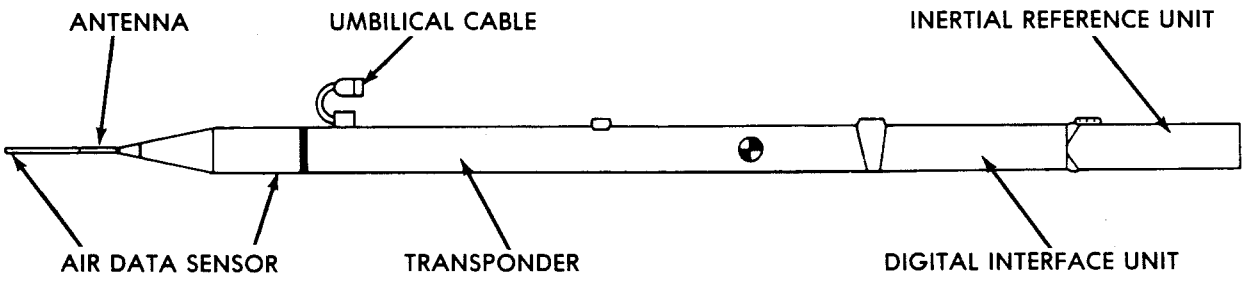
Refer to the ''External Stores Limitations,'' chapter 5 for authorized versions of the TACTS/AIS pod that are cleared for carriage.

2.23.2 Training Modes. The TACTS/AIS pod has five modes of operation which enable aircrew training to be accomplished in a logical sequence of progression in acquisition of combat skills. One or all five modes can be used during a given exercise depending on the programming of the ground station. Modes 1 and 2 are based upon the aircraft being within rule-of-thumb missile and firing boundaries/envelopes. Modes 3, 4, and 6 use real-time missile simulations for providing realistic instruction in ACM tactics and missile capabilities/P_k probabilities. Modes 1 and 3 are considered non-firing modes that provide a continuous tone when the aircraft is within the proper envelope. Modes 2, 4 and 6 are firing modes and require a trigger squeeze to initiate envelope calculations or missile simulations. For more details, refer to TACTS User's Guide.

2.23.3 Preflight Checks. Refer to NWP 3-22.5-AV8B PG, Pocket Guide, for current Preflight checks.

Characteristics

Length (Inches)	138.0
Diameter (Inches)	5.0
Weight (Pounds)	72.0



AV8BB-TAC-05-(39-1)09

Figure 2-191. Tactical Aircrew Combat Training System (TACTS/AIS POD)

2.24 Airborne Instrumentation Subsystem, Internal (AISI)

2.24.1 Description. On Night Attack and Radar aircraft, the AISI avionics unit is mounted inside the aircraft access panel door 61 and includes an external antenna mounted to the lower fuselage just aft of door 61. The AISI monitors the aircraft avionics and EW mux buses and down links aircraft flight data, switchology positions, and weapons release tones. AISI weapons processing logic for AIM-9, guns and no-drop bomb scoring simulations is derived directly from the AV-8B mission computers and the SMS codes. No unique AISI switchology or SMS codes are required. Pilots may use SIM mode and/or normal combat checklists for realistic air-to-air and air-to-ground training. Real time and post mission TACTS evaluations are available with normal switchology.

CHAPTER 3

Weapon Fuzing

3.1 BOMB FUZING DISCUSSION

3.1.1 General. Selection of the fuze type to ensure proper parameters (arming time/ functioning delay) is absolutely essential for the safety of the delivery aircraft and for the effectiveness of the mission. Weapon kill mechanisms vary widely (GP bombs, cluster weapons, fire bombs) and some weapons may be employed in very different roles (GP bombs as bombs or destructors). Consequently, it is necessary to maintain a number of different types of fuzes in the stockpile, and the peculiar operating characteristics of each impose varying delivery requirements and restrictions.

Fuzes may be divided into two general categories: electrical or mechanical. Each has its own advantages and disadvantages.

Electrical fuzes may be employed with a target detecting device/sensing element to provide an airburst. Electrical fuzes permit in-flight selection of the function mode (airburst/impact). The FMU-139 fuze arming time is in-flight selectable dependent on aircraft dive angle (unretarded delivery ONLY). The Mk 344/376 fuze is preset to arm at a given time in the low drag (unretarded) delivery. Both the FMU-139 and Mk 376 fuzes are indirectly selected to arm at 2.6 seconds when the fuze senses a retard (high drag) weapon release mode. The response time (time between weapon impact and detonation) for an electrical fuze is shorter than for a mechanical fuze. This faster response time produces a truly “instantaneous” weapon detonation. This is a distinct tactical advantage when maximum fragmentation and minimum cratering are required. Electrical fuzes permit the use of a steel nose plug: the configuration that is most effective for the penetration of a hardened target. With the fuze located in the bomb tail well, there also is less likelihood of overriding the fuze functioning delay through physical crushing. Electrical fuzes impose no maximum carriage or release speed conditions.

Mechanical fuzes have a lower early burst probability. With the exception of Mk-339 and FMU-140, mechanical fuzes do not have the capability for in-flight selection of arming time/ functioning delay. Due to exposed vanes and arming wires, mechanical fuzes are subject to various delivery and carriage speed restrictions. In shallow or low angle impacts, the reliability of mechanical impact fuzes is lower than for electrical fuzes under the same impact conditions.

The aircraft rearming or turnaround time is approximately the same for both fuze categories. Bombs equipped with electrical fuzes are completely assembled prior to aircraft loading. The fuze arming wire need only be rigged positively/ indirectly to a bomb rack/pylon attachment point with the Mk 122 Arming Safety Switch electrical cable connector and lanyard connected to the rack receptacle and latch assembly. Bombs equipped with mechanical fuzes are normally fuzed after aircraft loading. In addition to installing the fuze, an arming wire must be connected/routed to the proper rack solenoid, to the high drag fin if required, and both routed and installed in the fuze vane.

The overall system reliability for both fuze categories is about the same. The fuze system includes all the components necessary to activate a fuze type (i.e., arming wires, arming solenoids, SMC, Mk 122 Arming Safety Switch, safety clips, etc). It does not include the aircraft weapon release system or its component parts.

3.2 CONVENTIONAL WEAPONS FUZING

3.2.1 Introduction. The combination of using the right air-to-ground ordnance with the correct fuzing is required for effective weapon delivery and also for the safety of the aircraft and pilot. Understanding the weapon characteristics, and

the changes in these characteristics when the weapon is fuzed in a specific manner may prevent degraded mission effectiveness, or loss of aircraft.

The wide range of mission requirements makes it necessary to maintain many different types of bomb and rocket fuzes in inventory. Each fuze type can add its own delivery requirements on the mission profile. This chapter covers the purpose and characteristics of fuzes used in air-to-ground weapons and the type of fuzes available.

3.2.2 Purpose of Fuzes. A fuze is a mechanical or electrical device used to detonate an explosive charge or device at the ideal time and place. A fuze will permit safe handling of explosive weapons and allow bombs and rockets to be safely stored, transported and loaded onto the aircraft. The fuze also allows safe weapons separation from the aircraft prior to fuze arming. Safe separation is the minimum acceptable separation distance between aircraft and weapon at the time the fuze arms. A fuze can be used to maximizes the destructive effectiveness of the weapon on a target by detonation at the ideal time.

3.2.3 Fuze Functioning. A fuze has three means of functioning: impact, time, and proximity.

Impact functioning requires target (ground) contact. Fuze operation could be the result of crushing the fuze (as in the M904 fuze) or due to movement of a mass due to inertia (as in the Mk 376 fuze). In the M904 fuze case, a firing pin is driven into a sensitive explosive element thus initiating the explosive train. In the Mk 376 fuze case, a powered timing mechanism (a clock) is started which eventually releases a firing pin.

A fuze which functions at target contact or shortly thereafter (up to 0.25 seconds after impact) is called an impact fuze. A fuze which functions minutes, hours, or even days after impact is called a long delay fuze or long delay impact fuze. The short delay in the impact fuze allows a bomb to penetrate the target in order to achieve maximum damage. A long delay impact fuze is employed to deny an area to the enemy or for its nuisance value.

A time fuze operates at a specific time after weapon release. The time is determined by a clock. As with impact fuzes, the time at which a time fuze functions could also be fixed or preflight selectable. At the end of the time interval, a firing pin is released to initiate the explosive train. These fuze types are employed in canister-type weapons.

Proximity is defined as nearness, so there are no true mechanical proximity fuzes. With the use of fuze extenders, target detecting devices, or probes, impact fuzes can duplicate the action and the effectiveness of a true low burst height proximity fuze. The only Navy/Marine Corps fuze that truly functions based on proximity is the FMU-140 electrical fuze used on canister weapons. The Mk-43 target detection device (TDD), though not a fuze, enables an electrical impact fuze to function as a proximity fuze.

3.2.4 Fuze Arming. Prior to functioning, a fuze must arm. Fuze arming occurs after weapon release and occurs only after a sufficient time delay. Arming delay is measured in seconds beginning at weapon release and ending at fuze arming.

3.2.5 Fuze Malfunction. Fuze malfunction can result in an early weapon burst or a dud. If the fuze detonates prior to ground impact, an early burst malfunction has occurred. A fuze that duds fails to detonate the weapon upon ground impact. A dud occurs for one of three reasons: The fuze is inoperative, impact occurs prior to fuze arming, or the fuze was not correctly enabled at release.

3.2.6 Characteristics of Fuzes.

3.2.6.1 Sequence of Operation. The operation of a fuze always occurs in a sequential order. First, the weapon is released from the aircraft and the arming wire is withdrawn. For all conventional fuzes, the arming wire must be retracted before the arming fuze can function. Next, the arming delay is initiated. This allows

for safe separation between the aircraft and weapon. When the arming delay expires the fuze function is enabled. This function may be detonation by impact, altitude sensing, or a time delay. Detonation is when the weapon explodes instantaneously or is delayed for milliseconds to hours.

3.2.6.2 Bomb Fuzing Criteria. Mating a fuze to a weapon requires consideration of several factors. These include:

(a) Authorized bomb fuze combination.

(b) The type of weapon release.

(c) The type of recovery.

(d) The release conditions.

(e) Aircraft recovery altitude.

(f) Number of weapons delivered per pass.

(g) Desired effect of the bomb.

3.2.6.3 Fuze Arming Time. Once the fuze and weapon criteria is determined, the fuze arming time must be selected. Correct selection of fuze arming times will make sure that the weapons being delivered have enough arming time so that in the event of early detonation, the probability of a fragment hit on the aircraft will be within acceptable limits. Fuze arming time depends on release conditions. Actual weapon time of fall must equal or exceed fuze arming time plus arming tolerance.

3.2.7 Operating Principle - Mechanical Fuzes. Most current mechanical fuzes contain the same basic elements and operate on similar principles.

3.2.7.1 Arming. Arming is accomplished via a vane/impeller. This vane/impeller is held stationary before weapon release by an arming wire/safety clip which is attached/routed to an arming solenoid on the bomb rack. During an armed weapon release, the arming wire/safety clip is withdrawn, the vane/impeller is unlocked and driven by the airstream providing the mechanical energy needed to operate the fuze arming/functioning mechanism.

If the weapon is to be released armed, the appropriate bomb rack arming solenoid is energized, thus ensuring withdrawal/retention of the arming wire. At release, the arming wire/safety clip is withdrawn from the fuze vane/impeller permitting it to rotate in the airstream. This rotation drives a gear train which removes certain safety locks in the fuze and aligns the explosive train. When this occurs, the fuze is considered armed and ready to function (fire). The gear train mechanism is designed to provide a finite delay after separation from the aircraft. In all impact fuzes this time is referred to as an arming time, which can only be preflight selected in some fuzes. In time fuzes, a functioning time is selected and arming occurs after a predetermined part of this functioning interval has elapsed.

3.2.7.2 Functioning. In impact fuzes, the firing pin is driven into the detonator on weapon impact. This in turn initiates the fuze booster explosive which initiates the main bomb explosive charge. For a nose fuze, longitudinal deformation or crushing of the fuze body is the action which moves the firing pin. Selection of the proper functioning delay time is necessary for maximum weapon effectiveness against a target. Some recommended delay times (for target effectiveness) are presented later in this chapter and a thorough discussion of functioning delay time versus target type is presented in the Joint Munitions Effectiveness Manual (JMEM).

In time fuzes, the firing pin is released by a timing mechanism at a preset time. This time is preflight selectable. Since time fuzes are employed in dispenser weapons, the time selected is a function of the delivery tactic to be employed, submunition characteristics (arming requirements) and the desired impact pattern.

3.2.8 Mechanical Fuzes In Current Inventory. Mechanical fuzes in the current inventory include the following types.

3.2.8.1 M904 Series. The M904 series is the most widely used fuze for Mk 80 series bombs.

The arming time is preflight selectable and the functioning delay time (M9 element) is installed during fuze installation. This fuze is used in the nose well of Mk 80 series bombs. It can be utilized in both the unretarded (low drag) and the retarded (high drag) configuration. It is NOT RECOMMENDED for use against extremely hard targets (runways, dams, or bunkers). M904-series fuzes are available in both the thermally protected and non-thermally protected versions. See Figure 3-3.

3.2.8.2 Mk 339 Mechanical Time Fuze. This fuze is used to control the opening of dispenser weapons. An impeller enables the arming mechanism. A timing (clockwork) mechanism then completes the arming cycle and, at a preset functioning time after weapon release, an explosive charge is initiated resulting in dispenser opening. This fuze is limited to dispenser applications and cannot be used in high-explosive bombs.

3.2.8.3 Mk 13 Initiator. This fuze and igniter combination has an ''omni-directional'' firing mechanism which functions irrespective of the weapon impact orientation. It employs a magnesium-teflon powder/pellets filled igniter to ignite the jelled fuel after rupture of the fire bomb canister.

3.2.9 Operating Principle-Electrical Fuzes. Current electrical fuzes contain the same basic elements and operate in a similar manner.

3.2.9.1 Arming. Two events must occur for electrical fuzes to arm. One is the removal of an arming wire and the second is the transmission to the fuze of a dc electrical signal. If either does not occur, arming is inhibited. Both events occur as the weapon leaves the aircraft and has separated from the bomb rack by approximately six inches. The electrical signal is generated in the SMC, routed through the aircraft wiring, bomb rack, Mk 122 Arming Safety Switch, internal bomb cabling to the fuze, and to the Mk 43 TDD if installed. This signal, in addition to containing the energy required to power the fuze electronics and initiate the fuze electro-explosive devices, contains command information. This command information (voltage quantity and polarity) is decoded in the fuze and determines the fuze operating parameters (i.e., arming time, function mode, functioning delay time).

3.2.9.2 Functioning. Functioning of an electrical fuze is accomplished by closure of an internal impact switch at target contact, which releases stored electrical energy to fire the detonator, or by the electrical signal generated by the TDD at target approach. This signal is routed to the impact fuze detonator. The impact switch is sensitive to low angle or graze impacts in all axes which increases electrical fuze reliability over mechanical fuzing in shallow angle impacts. This also tends to increase the probability of fuze functioning due to bomb-to-bomb collisions during some releases.

3.2.10 Electrical Fuzes In Current Inventory. Electric fuzes in the current inventory will include the following representative types. The TDD has been included in this section for convenience. They are not classified as fuzes since they do not contain an explosive train. They must be employed in combination with an electrical fuze.

3.2.10.1 Mk 344 Fuze. This fuze offers a single arming time (5.5-seconds) and three impact options (0.000-, 0.015-, or 0.100-second). When employed in combination with a TDD/sensing element, a fourth option (airburst) is available. The four detonation options are in-flight selectable through cockpit switchology. The Mk 344 is ONLY AUTHORIZED for inert low drag (unretarded) deliveries.

3.2.10.2 Mk 376 Fuze. This fuze offers two arming times (10.0- or 2.6-seconds) and three impact options (0.000-, 0.015-, or 0.100-second). When employed with a TDD/sensing element, a fourth option (airburst) is available. The four detonation options are in-flight selectable through cockpit switchology. When the high drag (retard) weapon configuration is selected, the 2.6-second arming time is automatically selected and cannot be changed by switchology.

3.2.10.3 FMU-139 Fuze. This fuze offers three arming times (2.6-, 5.5-, or 10.0-seconds) and two

impact options (instantaneous and delay). Both impact options are in-flight selectable through cockpit switchology. However, the functioning delay (DLY) time (0.010, 0.025, 0.060) is ONLY PREFLIGHT SELECTABLE. Both the 5.5- and 10.0-second arming times are directly inflight dependent on aircraft dive angle and weapon drag option mode. Dive angles of 12É or less and low drag option provides 10.0-second arming and the 12É or greater dive provides 5.5-second arming. See Figure 3-7 for the exception. The 2.6-second arm time is indirectly selected by weapon retardation after release. Selection of the high drag option provides 2.6-second arming with 10.0-second arming backup in case of weapon failure to retard. When employed with a Mk 43 TDD an airburst or preset functioning delay at impact capability is available.

3.2.10.4 FMU-140 Dispenser Proximity Fuze. The FMU-140 is a Dispenser Proximity Fuze used on cluster munitions that was developed to replace the Mk 339 Mechanical Time Fuze. The eventual inventory mix, as currently planned, calls for 75% Mk 339 and 25% FMU-140 fuzes. The fuze incorporates a proximity sensing device that allows the selection of ten heights of function ranging from 300 feet to 3000 feet. Fire arm times are available ranging from 1.2 to 10 seconds. A primary (Height of Function) mode is selectable or an option mode that provides a 1.2 second arm and fire of the canister weapon for low altitude releases. Flexibility in delivery of cluster munitions is greatly increased with the FMU-140 reducing the requirement for pilots to achieve exact release altitudes because the fuze uses ground proximity (Height of Function) vice a specific time of fall. This, combined with the incorporation of high altitude ballistics in the weapons computer, has expanded the delivery possibilities of cluster munitions beyond the low altitude regime and makes the weapons useful in all threat levels.

3.2.10.5 Mk 43 Target Detecting Device. This VT element can be employed in either a low drag (unretarded)/high drag (retarded) weapon configuration. It is designed to operate at shallow target approach angles and low vertical closing velocities encountered with high drag (retarded) weapons released at low altitudes in a straight and level delivery.

3.2.11 Carriage and Release Speed Restrictions. Individual fuze data sheets in this chapter list the maximum and minimum carriage and release speeds imposed by the fuze itself. The maximum speed may be further reduced by the weapon configuration or by airframe restrictions. These additional restrictions are found in the ''External Stores Limitations,'' chapter 5, or in the ''Weapon Delivery/Description'' chapter 2 of this manual. If no other speed restrictions apply, then the fuze imposed limits are the limiting speed restrictions.

Carriage speed restrictions are usually imposed by the fuze arming wire configurations, but in certain cases are the result of airstream buffeting/vibrations which occur to the weapon.

Release speeds are imposed by the aerodynamic characteristics of the fuze. In some cases, release at speeds higher than authorized can damage the arming vane or cause faulty or erratic arming. In general, maximum carriage and release speeds are determined by safety considerations, but in some cases reliability is the governing factor. Weapon effectiveness can also limit release speeds; excessive release speeds can cause the weapon to penetrate too deeply into the ground to be effective or the resulting high velocity/impact shock can cause damage to the fuze/arming device.

Minimum release speeds are sometimes imposed. These speeds are necessary to ensure proper arming/functioning of the fuze, or in the case of two electrical fuzes (Mk 376/FMU-139), to ensure operation of the retard-sensing circuit during high drag (retarded) deliveries.

3.2.12 Safe-Jettison. To safe-jettison bombs with mechanical fuzes, the bomb rack arming solenoids are left in the deenergized condition, allowing the arming wire/swivel assembly to be released and remain with the fuze and weapon at release. Electrical fuzes can be safe-jettisoned by selecting the SAFE fuzing option on the ODU or ACP. It is important to recognize that NO

WEAPON can be safe-jettisoned with 100 percent certainty that there will be no detonation. With mechanical fuzes, it cannot always be assured that the arming wire/swivel assembly will be released by the deenergized arming solenoid. If a weapon with an unarmed fuze impacts with sufficient velocity on a hard target, detonation can still occur, with possible bomb fragment damage to the delivery aircraft, if, the aircraft is below the minimum authorized release altitude for that particular weapon and delivery tactic. Therefore, weapons should be safe-jettisoned over soft ground or water, at low speeds, and at an altitude that is greater than the fragmentation envelope for that weapon. This is particularly important for bombs configured with mechanical nose fuzes.

3.2.13 Arming Wires. Loss of an arming wire inflight will probably result in a mechanical fuze arming while the weapon is still on the bomb rack. If it is an impact fuze, when the bomb is released it could detonate dangerously close to the aircraft, if, it is subjected to bomb-to-bomb collision. if it is a time fuze, it could result in dispenser opening while still attached to the aircraft. The submunitions would now be a hazard to the delivery aircraft. Arming wires are secured by safety clips at the fuze arming vane, or by clamps which are integral to the fuze itself. Details of arming wire installation appear in the Airborne Weapons/Stores Loading Manual (A1-AV8BB-LWS-000), Conventional Weapons Checklists (A1-AV8BB-LWS-( )), and the Tactical Manual Pocket Guide (NWP 3-22.5-AV8B PG). Additional information on preflight checks also is provided in each fuze description.

The arming wire used with electrical fuzes represents one of the two actions required for fuze arming. Inadvertent withdrawal of this wire will not result in an armed fuze while the weapon is still on the aircraft unless other system components fail. Premature arming wire withdrawal from the Mk 376 fuze however, will result in a shorter arming time when the weapon is eventually released. The Mk 43 Target Detecting Device uses an arming wire as one means of initiation (jungle canopy penetration). If no arming wire is installed in a Mk 43 TDD, it must have a small safety pin installed in the striker. This pin must not be removed prior to takeoff; otherwise the device will be inoperative at the time of weapon release.

Check that all warning tags and safety pins or wires have been removed from the weapon/fuze prior to launch. Any remaining tags or pins could possibly cause the weapons/fuze to malfunction/dud. The Mk 43 TDD is an exception to this warning.

3.2.14 Guidelines for Selection of Fuze Arming Times. Operations employing in-flight option of delivery mode (high drag versus low-drag, high-altitude straight-and-level versus dive, etc.) present a potential hazard because of the possibility that an arming time may be selected which is unsafe for the type of delivery maneuver actually being used. Refer to paragraphs 3.12 through 3.14.2 for detailed description of selection of authorized fuze arming times and associated maximum stick lenghts.

WARNING

Failure to follow prescribed procedure for selection of fuze arming times and maximum stick length may result in either weapon failure to function or fragmentation hazard to the delivery aircraft. Extra precaution must be used when selecting fuze arming times with VT sensing elements. The higher early burst rate of fuzes when configured with VT sensing elements may increase the fuze arming time or reduce the maximum permissible stick length for some delivery maneuvers, especially if used with retarded weapons.

Summarized below are additional precautions that must be observed during high drag weapon deliveries.

1. Delivery of retarded weapons in dives of less than 20É or from altitudes below 500 feet will result in weapon duds when the bombs are fuzed only with a M904 fuze or in dual fuzed bombs when only the M904 fuze is activated. Shallow bomb-impact angles also increase the

probability of an ensuing ricochet; under these conditions, bombs may ricochet 700 to 800 feet in the air and 7,000 to 8,000 feet down range, detonating on a following impact.

2. A high drag fin malfunction (i.e., separation of the fin assembly of a fin blade(s) from the bomb, or failure of the fin to open or a paratail to attain full bloom) together with the short arming times and low release altitudes normally authorized for retarded deliveries may present a critical safe escape situation at weapon impact. This situation becomes more critical as stick lengths increase. These hazards are minimized if an electrical fuze is used for retarded deliveries, particularly at low altitudes. These fuzes are designed to dud in the event of a fin malfunction since the bomb impacts prior to the 10-second backup arm time. When the M904 mechanical fuze is used ensure that the fuze is not allowed to arm unless the retarding mechanism deploys; this is accomplished by using a fin to fuze lanyard (refer to loading procedure).

3.2.15 Dual Fuzing. A GP bomb may be fuzed with a combination of nose and tail impact fuzes for a given mission, either to increase the number of weapon delivery options, or to increase the probability of weapon functioning. The advantages of dual fuzing must be balanced against the added complexity of weapon assembly and loading, cockpit switchology, and the possible hazards to the delivery aircraft that could result from switchology errors.

Dual fuzing requires the pilot/aircrew to be knowledgeable of the correct weapon arming wire rigging and appropriate switchology (Figure 3-1) required to obtain the recommended fuze and arming time for the delivery tactic to be employed/fuze functioning delay option desired. IMPROPER cockpit switchology could result in aircraft damage/loss with certain fuze combinations.

There is a minimum authorized arming time for each of the currently employed delivery tactics or maneuvers, for example: a level release with/without a 5g breakaway; a straight path dive with a 5g wings level puul-up, etc. Dual fuzing can provide weapon delivery flexibility if each fuze has a different arming time and is employed in a different delivery tactic. As an example, a bomb with a retarding fin fuzed with a FMU-139 and M904 combination (the M904 preflight set for a 2-second or 4-second arming time, FMU-139 planned for a 5.5-second or 10-second arming time) can be delivered in authorized release conditions (i.e. maneuver, altitude, airspeed, dive angle, etc.) for a given weapon/fin/fuze combination in the low drag configuration. The FMU-139 fuze would be employed in the authorized low drag delivery tactic and the M904 in the authorized high drag tactic. Safe separation between bomb and aircraft for the shorter M904 arming time (2-second or 4-second) is obtained ONLY if proper fin retardation occurs. An arming wire is rigged to interlock the fuze and fin, thus assuring that the fuze will not be allowed to arm if the fin fails to open. This fuze interlock arming wire MUST BE USED whenever a M904 fuze is the primary fuze for a high drag configured weapon and the fuze arming time selected is shorter than that authorized for a straight and level unretarded delivery.

The desired M904 fuze functioning delay time (M9 element) for the preceding example depends upon the tactical plan. If the tactical plan calls for a primary and secondary target, the functioning delay time utilized in either fuze could be different depending on each target requirement. If there is only a single target, the preceding dual fuzing example offers a possible alternate delivery maneuver in attacking the target, and both fuzes for this scenario could be set to the same functioning time.

WARNING

To allow redundant dual fuzing capability for HD/LD in-flight selectable configurations, the fuze/fin interlock arming wire may be removed when the M904 nose fuze is set to an authorized low drag fuze arming time (6 seconds or greater). It is incumbent upon the aircrew to ensure that the high drag weapons are delivered within the authorized high drag and low drag M904 arming time and maximum authorized stick length parameters in the event that a high drag device does not deploy during delivery.

As an example with an M904 arming time of 6-seconds or greater, high drag deliveries below 5,000 feet in a 10É to 30É dive, or level deliveries below 5,000 feet with a 5g level breakaway can be performed that are within authorized stick lengths if the high drag device malfunctions. This alows safe deliveries without the fuze/fin interlock arming wire.

Dual fuzing can also increase the probability of obtaining a weapon detonation. In this case, weapon delivery flexibility is secondary to weapon reliability. Both fuzes in this example would employ approximately the same arming time, limiting the combination to a single mission delivery tactic. As an example with a M904 arming time of 6-seconds and FMU-139 arming time of 5.5-seconds, low drag deliveries may be performed as long as both arming times are authorized for the given release conditions, and the worst case (shorter) maximum authorized stick length of both fuzes is usde. Selecting the appropriate fuze functioning time is extremely important for optimum weapon effectiveness. Cockpit switchology is also important, as activation of the wrong fuze/functioning delay time will nullify weapon blast/destructive effects. Installing the longest M9 functioning delay element in the M904 fuze places the fuze in only a clean-up role and its effectiveness against soft targets is minimal. Instantaneous functioning is preferred for the majority of target types except for hard targets. For hardened targets, the use of a nose fuze vice a steel nose plug and tail fuze could cause bomb detonation at impact with no penetration. The probability of this occurring when the impact velocity is greater than 700 feet/second is high. Therefore, when dual fuzing is being employed to increase reliability, it is recommended that both fuzes have approximately the same arming time and that the M904 fuze have the M9 non-delay (INST) element installed.

Figure 3-1, presents the cockpit switchology for various combinations of authorized nose and tail fuzes. The following criteria were used to prepare this table:

1. A fuze arming time and an associated delivery tactic were derived from the ‘‘Authorized Fuze Arming Time/Maximum Stick Lengths ’’ charts (see Figure 3-16). The arming time selected for any tactic was based on a minimum release speed of 400 KIAS and the largest bomb in a family (i.e., Mk 83 - low drag configuration; Mk 82 - high drag configuration).

2. The M904 fuze, when employed by itself, can be configured for any of the six functioning delay times available.

3. The M904 fuze, when employed to compliment the tail fuze, has the non-delay (INST-0.000-second) functioning delay time element installed.

4. The table was developed for a weapon configured with a high drag (retard) fin assembly. To determine the options available for a weapon configured with an unretarded fin assembly, ignore the first three fuze combinations and any later references to a retarded delivery capability.

5. It is assumed that all proper preflight inputs concerning weapon/fuzing have been entered into the SMC.

Fuze [5]				Weapon Fuze Input		
				Armament Control Panel		Mission Fuzing Reliability
Nose	Tail	Delivery Tactic	Fuze Option	Fuze Display	Manual Control Knob	
M904 [1]	FMU-139	Retard	[2]	N	NORM	Single
		Dive [7] [8]	[6]	IN	NORM	Single
				D1	NORM	Single
M904 [1]	FMU-139	Retard	0.000 sec	NIN	NORM	Redundant
			[6]	D1	NORM	Single
		S & L	[6]	IN	NORM	Single
				D1	NORM	Single
M904 (6 sec)	FMU-139	Dive [4] [7]	0.000 sec	NIN	NORM	Redundant
			[6]	D1	NORM	Single
M904 (6 sec)	FMU-139	Retard	[6]	IN	NORM	Single
				D1	NORM	Single
		S & L	[6]	IN	NORM	Single
				D1	NORM	Single
		Dive	[6]	N	NORM	Single
M904 (10 sec)	FMU-139	S & L	[2]	N [4]	NORM	Single
		Dive	[6]	IN [4]	NORM	Single
				D1 [4]	NORM	Single
M904 (10 sec)	FMU-139	Retard	[6]	IN	NORM	Single
				D1	NORM	Single
		S & L	[6]	NIN [8]	NORM	Redundant
				D1	NORM	

Figure 3-1. Authorized Dual Fuzing Combinations (Sheet 1 of 3)

Fuze [5]				Weapon Fuze Input		
				Armament Control Panel		Mission Fuzing Reliability
Nose	Tail	Delivery Tactic	Fuze Option	Fuze Display	Manual Control Knob	
M904 [1]	---	Retard [3]	[2]	N	NORM	Single
M904 [1]	Mk 344	Retard	[2]	N	NORM	Single
		Dive	0.000 sec	IN	NORM	Single
			0.015 sec	D2	NORM	Single
			0.100 sec	D2	NORM	Single
M904 [1]	Mk 376	Retard	0.000 sec	NIN	NORM	Redundant
			0.015 sec	D1	NORM	Single
			0.100 sec	D2	NORM	Single
		S & L	0.000 sec	IN	NORM	Single
			0.015 sec	D1	NORM	Single
			0.100 sec	D2	NORM	Single
M904 [1]	Mk 344 [4]	Dive	0.000 sec	NIN	NORM	Redundant
			0.015 sec	D1	NORM	Single
			0.100 sec	D2	NORM	Single
M904 (6 sec)	MK 376	Retard	0.000 sec	IN	NORM	Single
			0.015 sec	D1	NORM	Single
			0.100 sec	D2	NORM	Single
		S & L	0.000 sec	IN	NORM	Single
			0.015 sec	D1	NORM	Single
			0.100 sec	D2	NORM	Single
		Dive	[2]	N	NORM	Single

Figure 3-1. Authorized Dual Fuzing Combinations (Sheet 2 of 3)

Fuze [5]				Weapon Fuze Input		
				Armament Control Panel		Mission Fuzing Reliability
Nose	Tail	Delivery Tactic	Fuze Option	Fuze Display	Manual Control Knob	
M904 (10 sec)	Mk 344 [4]	S & L	[2]	N	NORM	Single
		Dive	0.000 sec	IN	NORM	Single
			0.015 sec	D1	NORM	Single
			0.100 sec	D2	NORM	Single
M904 (10 sec)	Mk 376	Retard	0.000 sec	IN	NORM	Single
			0.015 sec	D1	NORM	Single
			0.100 sec	D2	NORM	Single
		S & L	0.000 sec	NIN	NORM	Single
			0.015 sec	D1	NORM	Single
			0.100 sec	D2	NORM	Single

[1] The M904 fuze and high drag (retard fin interlocking arming wire IS REQUIRED. The M904 fuze arming time may be set for either 2, 4, or 6 seconds. Refer to Figure "Authorized Fuze Arming Times" for stick length and release speed restrictions.

[2] The functioning delay tine interval (M9 element) of the M904 fuze may be tailored for the target to be attacked.

[3] Weapon reliability can be increased by rigging the high drag (retard) fin release band arming wire for positive withdrawal at weapon release.

[4] The weapon MUST BE COMMITTED to the low drag (unretarded) configuration: the high drag (retard) fin release band will be configured to remain CLOSED during weapon release.

[5] In-flight PILOT OPTION delivery mode (Low/High Drag) NOT CURRENTLY AUTHORIZED from parent rack.

[6] FMU-139 functioning delay (10 ms, 25 ms, 60 ms, INST) MUST BE set on fuze faceplate during weapon assembly.

[7] Aircraft dive angle at weapon release MUST BE 12É or greater for FMU-139 fuze to arm at 5.5 seconds. Refer to FMU-139 description for exception.

[8] Aircraft dive angle at weapon release MUST BE 12É or less for FMU-139 fuze to arm at 10.0 seconds. Refer to FMU-139 description for exception.

Figure 3-1. Authorized Dual Fuzing Combinations (Sheet 3 of 3)

3.2.16 Guidelines for Selection of Fuze Functioning Delay. The M904 fuze is limited to preflight selection (M9 element installation) of the functioning delay time. This delay time must be considered during the mission planning procedure. Electrical fuzes, however, feature in-flight selection of the functioning delay time. Selection of function mode (instantaneous-delay)/function delay time can be made inflight based on changing target conditions. It is IMPERATIVE that the pilot know how to select the function mode (INST/delay) and functioning delay time based on target type in order to obtain the best target kill probability.

Weapon effectiveness is directly related to the utilization of the appropriate fuze function mode or functioning delay time. Studies have demonstrated that a weapon, which could produce 100 percent damage to a target when the proper fuze functioning delay was employed, could also produce as little as 1 percent damage if the wrong fuze functioning delay was used.

The following guidelines serve as a rule of thumb in the selection of the best function mode or functioning time so as to optimize weapon effectiveness against targets of opportunity.

NOTE

Certain targets require bomb penetration to maximize weapon effects. For these cases, the bomb should be fitted with a steel nose plug and fuze cavity liner to ensure structural bomb integrity at impact. If the weapon is fitted with a VT element, the bomb is suitable only for those targets which can be defeated by an airburst or an instantaneous surface burst.

1. The maximum crater diameter can be produced by using a 10- or 15-millisecond delay time. This delay is most effective in cratering reinforced runways, roads, or hard packed soil, either dry or muddy. The 60- or 100-millisecond delay results in excessive penetration in most soils before bomb detonation which tends to minimize cratering. On hard-packed soils such as roads or under runways, the weapon will come to a complete stop with very little penetration, so crater diameter will be the same irrespective of the functioning delay time actually used. For this type of target, the use of the 60- or 100-millisecond delay affords no improvement in target damage over a 10- or 15-millisecond delay.

2. A weapon will come to a complete stop and thus achieve maximum penetration at about 50 milliseconds after weapon impact. If maximum penetration is desired, the 60- or 100-millisecond functioning delay time should be selected. Maximum penetration is required for destruction of underground bunkers and storage tanks, buildings of more than two stories, ships such as cruisers and heavy destroyers and earth covered hangars. Maximum damage can be inflicted upon bridge abutments and tunnels by the earth shaking action resulting from deep penetration detonations.

3. The 15- or 25-millisecond delay is most effective against bridge spans, heavily constructed single-story buildings, stonework defenses, and railroad yards. Above ground storage tanks and armored vehicles are most effectively destroyed by either an instantaneous or by a 10- or 15-millisecond delay, with the delay being more effective in the event of a direct hit. A steel nose plug should be installed if the pilot opts for the delay mode.

4. Instantaneous functioning with electrical fuzes is truly “instantaneous” as compared to the instantaneous reaction for mechanical fuzes. Fragmentation effects are maximized and cratering is virtually nonexistent because there is no weapon penetration. Therefore, targets which are protected by even a light surface covering will not be effectively damaged. On the other hand, aircraft parked in the open, radar vans, missile fire control equipment, unarmored vehicles, and personnel are good targets for an instantaneous surface burst. Above ground storage tanks and armored vehicles can be damaged or destroyed

by fragmentation from a near miss surface burst.

5. An airburst is most effective against revetted aircraft, troops in foxholes and open trenches. The only means of destroying a well revetted target, short of a direct hit, is with an airburst. VT elements will function on approach to heavy foliage. The foliage acts as a shield against weapon fragments. Therefore, to maximize damage when the target is covered by thick foliage, the Mk 43 TDD should be mechanically initiated and the electrical fuze set for a functioning delay time.

6. The before mentioned guidelines hold true for all Mk 80 series bombs. While certain bombs are more effective against specific target types, these guidelines are all correct within the general range of effectiveness for the available functioning options.

7. Refinements of this data are available in the Joint Munitions Effectiveness Manual (JMEM). Figure 3-2 is a summary and recommends what is considered the optimum functioning delay for several typical targets.

SUMMARY OF FUNCTIONING DELAY OPTIONS FOR BEST TARGET KILL PROBABILITY (TYPICAL)

Target		Preferred Functioning Delay Option	Alternate Delay Option
Tank, armored vehicles	Near Miss	INST	VT
	Direct Hit [1]	0.010	0.015
Jet aircraft	On runway	INST	VT
	Behind revetment	VT	----
Personnel in open		INST	VT
Heavy ships (DDs and larger)		0.100	0.060
Light coastal ships, barges	Near Miss	0.100	0.060
	Direct Hit [1]	0.010	0.015
Railroad	Rolling Stock	INST	VT
	Yards, Tracks	0.010 or 0.015	0.025
Buildings	Single-Story	0.015 or 0.025	0.010
	Multi-Story	0.100	----
Bridges	Masonry	INST	0.010
	Suspension	INST	0.010 or 0.015
Tunnels, bunkers, underground storage tanks		0.100	----
Runways		0.010 or 0.015	0.025

Notes:
[1] Probability of direct hit is substantially less than that for near miss.

Figure 3-2. Summary of Functioning Delay Options For Best Target Kill Probability (Typical)

3.3 M904 SERIES MECHANICAL NOSE FUZE

3.3.1 Description. The M904 Series mechanical nose fuze (see Figure 3-3) is authorized for use in Mk 80 Series GP bombs. It may be used individually or in combination with an electric tail fuze to increase weapon delivery flexibility or fuzing reliability. An adapter booster has to be installed to provide mating of the fuze and bomb nose fuze well.

Nine preflight selectable arming delays from 2 to 18 seconds, in 2-second increments, are available and can be set into the fuze by means of an arming delay setting knob on the face of the fuze. Six M9 functioning elements are available; one non-delay (0.000-second-INST) and five delay (0.01, 0.05, 0.10, and 0.25 second) of which one must be present in the fuze prior to installation in the bomb. Fuzes are normally issued with either an M9 non-delay (0.000) or 0.025 element installed. If mission requirements dictate the use of another element, it must be so specified on the Operational Load Plan.

The M904 E2/E3/E4 fuzes are functionally the same with the exception that the E3/E4 are more sensitive against soft targets such as mud and water, particularly in the retarded delivery mode. The M904E2 is UNSUITABLE against hard targets (concrete) at high impact velocities and may detonate instantaneously at impact regardless of the M9 element installed. The M904E4 differs from the E3 only in that it has a fire-retardant molded rubber sleeve over the fuze body to increase the resistance to cook off during a fire.

M904E4 fuzes were developed for use with thermally protected adapter boosters and thermally protected Mk 80 Series GP bombs to increase cook off time in the event of accidental engulfment by fire. This fuze can be used with non-thermal protected adapter boosters and GP bombs, ONLY IF, E2/E3 fuzes are not available. However, the E4 fuze by itself will not increase the cook off time unless used in combination with a thermally protected adapter booster and bomb. The use of an E2/E3 fuze in a thermally protected bomb can, if the weapon is exposed to fire, result in a greater potential hazard than if these fuzes were used in a standard non-thermally protected bomb. The non-thermally protected fuze will react to the heat before the thermally protected bomb and fuze detonation will cause the bomb to go high order. With non-thermally protected fuzes and bombs, the bomb main charge will normally react to heat first and produce a low-order explosive reaction. Identification of the thermally protected adapter booster is provided by the bold black letters THERMALLY PROTECTED on the forward collar face.

The SAFE/ARM status of the fuze was determined during fuze installation by the displays found in the two observation windows. Refer to NAVAIR 11-1F-2 or NAVAIR 11-5A-17 for details.

3.3.2 Applications and Restrictions. The M904 Series fuze functions due to deformation or crushing of the vane and arming delay setting knob into the fuze body and is only sensitive to impacts that occur in a narrow cone along the bomb's longitudinal axis. At shallow impact angles, the fuze may not even contact the target mass. For straight and level deliveries less than 500 feet or from dives of less than 20É (both common to retarded deliveries), a Mk 376 electrical tail fuze is preferred because it is sensitive to and will function on graze impacts.

The M904 Series fuze may detonate instantaneously on impact with an extremely hard target such as a concrete runway, dam, or bunker, or the bomb itself may detonate due to these very severe impact conditions. The M904 fuze is not very effective when hard target penetration is desired. A steel nose plug, fuze well support cup, and an electrical tail fuze with the appropriate functioning delay selected is preferred for hard targets.

Of the nine preflight selectable arming delays, the 2- and 4-second settings are authorized for RETARDED DELIVERIES ONLY. The arming time that is authorized is a function of planned delivery speed and altitude. See Figure 3-16 ''Authorized Fuze Arming Times/Maximum Stick Lengths'' for various maneuvers and airspeeds.

The 2- and 4- second arming time settings are "locked out" so that a conscious effort is required to select either one of these settings. A stop screw located on the fuze body must be removed in order to select the 2- or 4-second arming delay settings. The stop screw MUST NOT be reinstalled after the arming delay has been set or the fuze will dud. The stop screw is NOT removed for any setting other than 2- or 4-second arming time.

Safe separation between bomb and aircraft, for the shorter arming times, is obtained only if proper bomb retardation occurs. An arming wire is rigged to interlock the fuze and the retarding fin thus assuring that the fuze will not be allowed to arm if the retarding fin fails to open. This fuze interlock arming wire MUST be used whenever a M904 fuzed bomb is to be delivered in the high drag (retard) configuration (preflight select or pilot option) or when the arming time utilized is shorter than the arming time authorized for delivery of a bomb in the low drag (unretarded) configuration in a straight and level delivery.

NOTE

Buildup/loading procedures require the interlocking arming wire to ALWAYS BE INSTALLED. Removal of this wire will be determined by the mission planner.

Although the INST functioning element will normally provide a surface burst with little or no penetration, the reaction time of the fuze is longer than that of an electrical fuze over the total target spectrum. Electrical fuzes should be used if maximum fragmentation and minimum target cratering is desired.

The fuze arming time tolerance accuracy will not be maintained at release speeds below 175 KIAS. The arming time will probably exceed weapon time of fall causing a dud. Refer to ''External Stores Limitations,'' chapter 5 for any additional restrictions.

3.3.3 Preflight Checks

1. (If Applicable) Fuze Cover Removed
2. Fuze Safe
3. Fuze Set
4. Safety Wire/Warning Tags Removed
5. Arming Wire(s) Installed in Accordance with Airborne Weapons/Stores Loading Manual (A1-AV8BB-LWS-000), required Conventional Weapons Checklists (A1-AV8BB-LWS-( )), and the Tactical Manual Pocket Guide (NWP 3-22.5-AV8B PG).

Characteristics

Type	Impact - Mechanical - Nose
Limit Speeds	
Max Carriage	600 KIAS
Max Release	600 KIAS
Min Release	175 KIAS
Arming Times	2, 4, 6, 8, 10, 12, 14, 16, 18-seconds
Arming Time Tolerance	4, 6, 8, 10, 12, 14, 16, 18-sec nominal — ± 10% 2 sec nominal — −10% + 20%
Functioning Times	0.000, 0.010, 0.025, 0.050, 0.100, 0.250-sec
In-Flight Options	None
Authorized Bombs	All MK 80 Series GP (low/high drag configured)

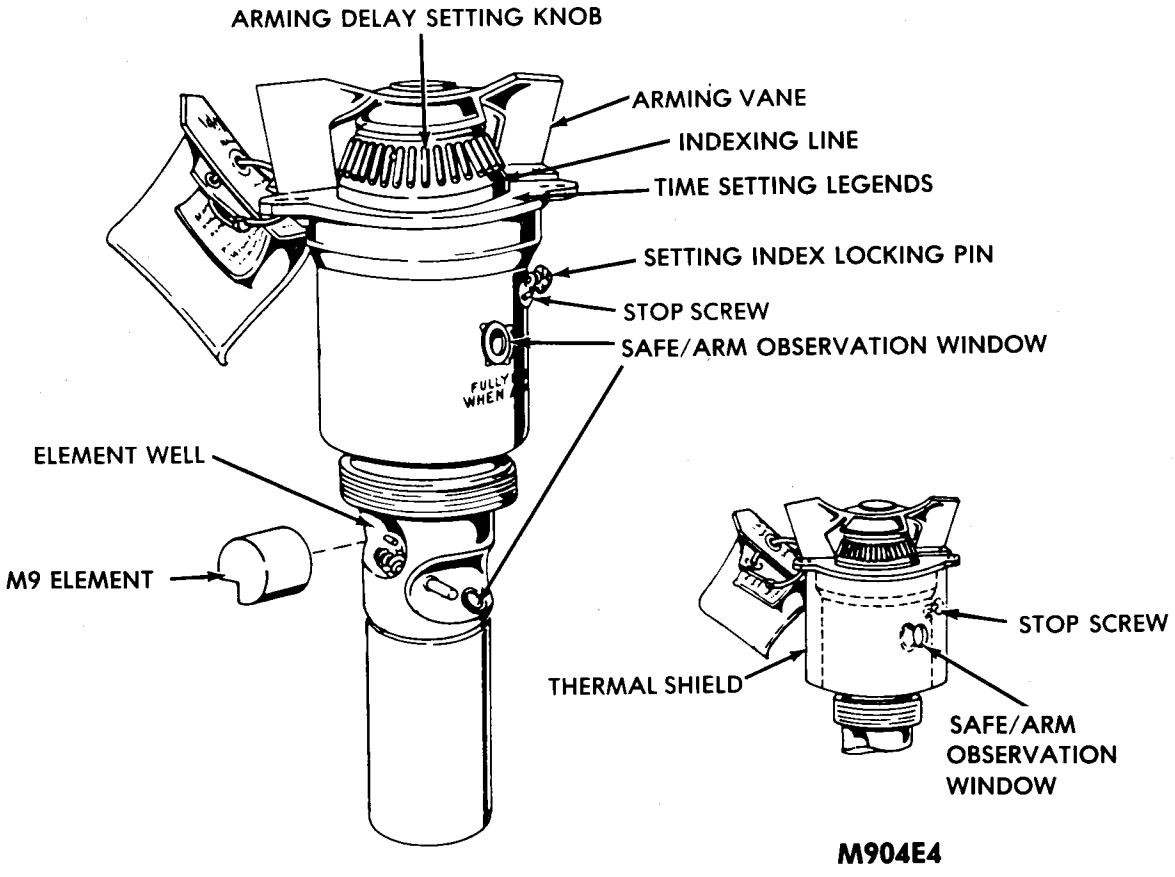


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Figure 3-3. M904 Series Mechanical Nose Fuze

3.4 Mk 344/376 ELECTRICAL TAIL FUZE

3.4.1 Description. The Mk 344/376 electrical tail fuze (see Figure 3-4) is compatible with all Mk 80 Series GP bombs. Electrical tail fuzes provide several advantages over mechanical nose fuzes: VT airburst (combination of fuze and TDD), in-flight selectable arming times (Mk 376), in-flight selectable functioning delays, hard target penetration, "Jungle canopy" penetration, improved instantaneous functioning at impact, and no maximum carriage or release restrictions. Minimum release speed for high drag (retard) weapons is 400 KIAS.

The Mk 344 fuze has a single arming time (5.5-seconds) which is authorized ONLY for INERT UNRETARDED DELIVERIES primarily in a dive maneuver. The Mk 344 fuze may however, be utilized in level release maneuvers ONLY if a 4g level breakaway or 4g climbing turn is executed after weapon release. The Mk 376 fuze has a dual arming time capability, 2.6 seconds for retarded deliveries and 10.0 seconds for unretarded deliveries. An internal fuze retard-sensing retardation mechanism determines the arming time by sensing the weapon delivery mode.

The Mk 344 and 376 fuzes are considered RADHAZ safe. Two independent events must occur to accomplish fuze arming. One is the introduction of electrical energy and the other is removal of the arming wire that allows activation of the Mk 31 safety device (retardation sensor). The expendable Mk 122 Arming Safety Switch installed in the charging receptacle of the bomb and connected to the bomb rack receptacle interrupts the charging circuitry until the rack hooks open and the weapon has traveled approximately six inches closing the safety switch and completing the circuitry.

The Mk 344/376 electrical tail fuze is initiated (charged) by the aircraft SMC which delivers a high dc voltage at weapon release. The level of charging voltage and polarity (positive/negative) controls selection of the functioning delay and has no effect on the arming time. The charging voltage is routed from the aircraft control circuitry through the bomb rack, Mk 122 Arming Safety Switch, and internal bomb cabling to the fuze storage capacitors. This same dc voltage is also routed to the bomb nose fuze well. If installed, and the appropriate voltage is applied, the VT element (Mk 43 TDD) will be initiated.

Four dc voltages are available from the SMC: +300 vdc, +195 vdc, –195 vdc, –300 vdc. Both positive voltages initiate the fuze to function in the instantaneous (INST) mode. However the +300 vdc is normally restricted to initiating an installed VT element (Mk 43 TDD). Both negative voltages provide initiation of the functioning delay circuitry for a short delay (-195 vdc/0.015-second) or a long delay (–300 vdc/0.100-second) after weapon impact.

Detonation of the fuze is accomplished by two methods: closure of the internal impact switch at target contact releases the stored voltage to fire the detonator or a voltage is sent from the VT element directly to the detonator. The impact switch is sensitive to low angle graze impacts in all axes which increases fuze reliability over mechanical fuzing in shallow angle impacts. This also tends to increase the early-burst rate due to bomb-to-bomb collision during some release parameters.

An abort circuit in the Mk 376 drains the storage capacitors and prevents the fuze from arming if impact occurs (between 2.6 and 10.0 seconds) before fuzing arming completes. This circuitry provides aircraft safe separation if the retard fin fails and the weapon ricochets at impact during low deliveries.

Electrical fuzes, due to their design and location in the bomb, have no effect on the bomb's cook off characteristics in the event of engulfment by fire.

3.4.2 Applications and Restrictions. The Mk 344/376 fuze may be used alone, with a VT element or in conjunction with an M904 Series mechanical nose fuze. When installed by itself, a steel nose plug and fuze cavity liner must be installed in the bomb nose fuze well. When used in Laser Guided Bombs/Guided Bomb Units, delivery restrictions and minimum authorized

arming times are the same as for other Mk 80 Series GP bombs delivered in similar modes.

See Figure 3-5 for the ODU selections required to obtain the various options.

The Mk 344/376 fuze can be detonated by target contact or a VT element. Refer to the Mk 43 TDD description for additional information.

NOTE

In-flight pilot option delivery mode only authorized with ZRF arming unit configured bomb racks.

Mk 344 fuzes are RESTRICTED from use in retarded (high drag) weapons. MINIMUM release speed for Mk 376 fuzes in the retarded mode is 400 KIAS. Speeds below 400 KIAS do not ensure proper operation of the fuze retardation-sensing mechanism. All other non-fuze related delivery restrictions also apply.

NOTE

All lots of Mk 344 fuzes are restricted for CONUS training use only. Restrictions concerning shorebase/ shipboard use and voltage requirements for initiation are covered in Ammunition, Unserviceable, Suspended and Limited Use (NAVSEA TWO24-AA-ORD-010). This publication was formerly NAVSEA OD17190.

Because electrical fuzes do occasionally function at arming (early burst), it is imperative that the Authorized Fuze Arming Times/Maximum Stick Lengths be consulted and observed. Certain delivery maneuvers call for a 5.5-second arming time; others require 10-second arming time. Proper arming time selection and proper delivery maneuvers ARE MANDATORY to reduce the probability of aircraft damage in the event of an early burst.

Early burst rate for an electrical fuze/VT element combination is higher than the early burst rate for the electrical fuze by itself. See Figure 3-16 ''Authorized Fuze Arming Times/ Maximum Stick Lengths'' when employing this combination.

WARNING

- DO NOT use Mk 344 fuzes for unretarded straight and level release with a straight and level recovery. The Mk 344 fuze may be used for unretarded straight and level releases ONLY if a 4g level breakaway or climbing turn is executed after weapon release. (Refer to General Information under Authorized Fuze Arming Times.) Mk 344 fuzes are NOT authorized for use in high drag (retard) weapon deliveries.
- The Mk 376 fuze can be used for straight and level releases without an after release maneuver or for dive deliveries of bombs in the low drag configuration, if the time of fall is longer than the 10-second arming time, and for delivery of bombs in the high drag (retard) configuration.

Bombs fuzed with only electrical fuzes can be jettisoned safe by selecting the SAFE fuzing option on the ODU or ACP.

Refer to ''External Stores Limitations,'' chapter 5 for any additional restrictions.

3.4.3 Preflight Checks

1. Mk 122 Arming Safety Switch Lanyard Tab Attached to Spring Latch

2. Ensure Proper Fuze Installed and Identifying Decal is Affixed to Bomb Body/Fin

3. Fuze Restraining Clip Installed

4. Arming Wire(s) Installed in Accordance with Airborne Weapons/Stores Loading Manual (A1-AV8BB-LWS-000), required Conventional Weapons Checklists (A1-AV8BB-LWS-( )), and the Tactical Manual Pocket Guide (NWP 3-22.5-AV8B PG).

Characteristics

Type	Impact - Electrical - Tail
Limit Speeds	
Max Carriage and Release	No fuze imposed limits
Min Release	High drag, 400 KIAS Low drag, no fuze imposed limits
Arming Time(s)	
MK 344	Low drag, 5.5-seconds
MK 376	High drag, 2.6-seconds Low drag, 10.0-seconds
Arming Time Tolerance	2.6-sec nominal — 2.3 to 3.0 5.5-sec nominal — 5.0 to 6.0 10.0-sec nominal — 8.8 to 11.0
Functioning Delay Times (Seconds)	0.000 (INST), 0.015, 0.100
Inflight Options	Three; Four if VT element installed
Authorized Bombs	
MK 344	MK 81/82/83 Series GP (UNRETARDED DELIVERIES ONLY)
MK 376	MK 81/82 (low/high drag configured) and MK 83 Series GP

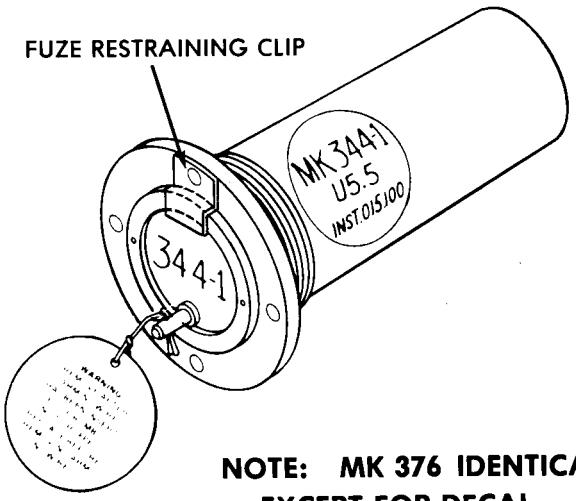

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Figure 3-4. Mk 344/376 Electrical Tail Fuze

Mk 344 or Mk 376 ONLY

ODU DISPLAY	FUZING OPTION
IN	0.000 Second (On Impact)
D1	0.015 Second (After Impact)
D2	0.100 Second (After Impact)

Mk 334/376/Mk 43 TDD Combination (Mk 43 Electrically Activated)

ODU DISPLAY	FUZING OPTION
V	Airburst (0.000 Second on Impact: Backup)
D1	0.015 Second (After Impact)
D2	0.100 Second (After Impact)

Mk 344/376/Mk 43 TDD Combination (Mk 43 Mechanically Activated)

ODU DISPLAY	FUZING OPTION
V	Airburst (0.000 Second on Impact: Backup)
V1	0.015 Second After Target Sensing: Proximity: (0.015 Second After Impact: Backup)
V2	0.100 Second After Target Sensing: Proximity: (0.100 Second After Impact: Backup)

Figure 3-5. Option Display Unit (ODU) Selections

3.5 FMU-139/B ELECTRICAL TAIL FUZE

3.5.1 Description. The FMU-139 series electrical fuze (see Figure 3-6) is a solid state, microcomputer, multi-position (nose/tail) fuze that is compatible with all Mk 80 Series GP bombs. It is a joint service fuze (Navy/Air Force) with multiple available settings which must be preflight selected (during weapon assembly). The FMU-139 is used as a tail fuze in current Navy/Marine Corps GP bombs and is intended to replace both the Mk 344 and Mk 376 electrical fuzes.

The FMU-139/B and FMU-139A/B fuzes are internally identical in operation. Externally, the A/B version has a shorter arming wire/gag rod housing to facilitate Air Force assembly applications.

The FMU-139 electrical tail fuze provides several advantages over a mechanical nose fuze: VT airburst (combination of fuze and TDD), in-flight selectable arming times, hard target penetration, ″Jungle Canopy″ penetration, improved instantaneous functioning at impact and no maximum carriage restrictions. MINIMUM release speed for high drag (retard) weapons is 400 KIAS.

The FMU-139 incorporates the three arming times provided by the Mk 344/376 (2.6/5.5/10.0 seconds) and has three functioning delays plus instantaneous available (10/25/60 milliseconds, INST). The arming times are in-flight selectable (aircraft dive angle and drag option dependent) and the functioning delay (HIGH DRAG ARM/DELAY switch) MUST BE SET prior to flight (during weapon assembly).

NOTE

Only the 2.6/60, 2.6/25, 2.6/10 and 2.6/INST HIGH DRAG ARM/DELAY switch positions on the fuze are authorized for use.

NOTE

The LOW DRAG ARM TIME switch should be in the ″X″ position. Other than ″X″ position poses no safety of flight, improper functioning of the fuze or cause for weapon rejection.

Arming times of 5.5 seconds and 10.0 seconds are used FOR UNRETARDED DELIVERIES. The SMC software programming determines the selection of 5.5 seconds and 10.0 seconds arming time as a function of dive angle and drag option mode (Low/High drag). An aircraft dive angle of 12É or greater and Low drag option is required for 5.5 second arming. A dive angle of 12É or less and Low drag option provides 10.0 second arming. See Figure 3-7 for the exception to the 12É dive angle verses arming time rule.

The 2.6 seconds arming time is for RETARDED DELIVERIES. An internal fuze retard-sensing circuit determines if the proper g-level is present for the microcomputer to select the 2.6 seconds arming time. Selection of the High drag option at any angle provides 2.6 second arming automatically with a 10.0 second arming time backup in case of weapon failure to retard.

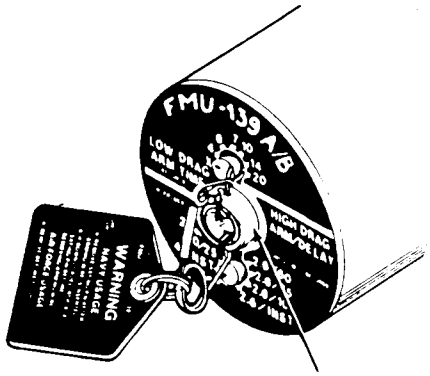
WARNING

High drag weapon releases requires mandatory selection of the High drag option on the DDI/MPCD to ensure weapon dudding and no entry of fragmentation envelope in case of fin failure.

The FMU-139 fuze is considered RADHAZ safe. Two independent events must occur to accomplish fuze arming. One is the introduction of electrical energy and the other is removal of the arming wire that assists in retaining the gag rod in the retracted (locked) position. The gag rod physically locks the fuze safe/arm rotor in the safe position (out-of-line firing train). An internal gag rod lock retains the gag rod in the retracted (locked) position until approximately 100 milliseconds prior to completion of the fuze

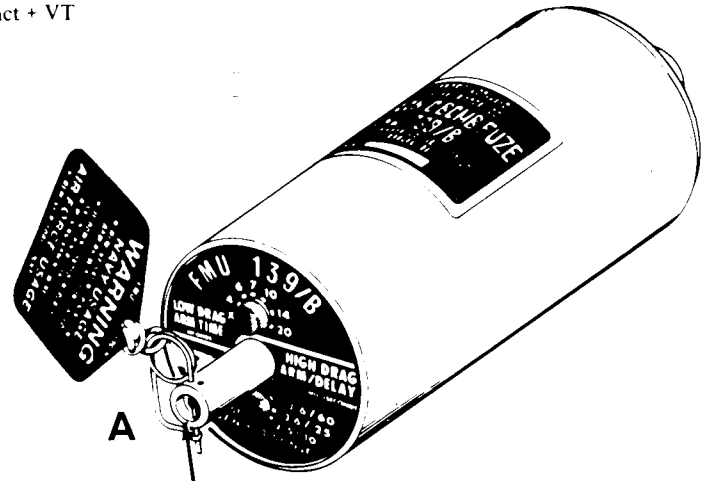
Characteristics

Type	Impact - Electrical - Tail
Limit Speeds	
Max Carriage	No fuze imposed limits
Min Release	High drag, 400 KIAS
	Low drag, nose fuze imposed limits
Arming Time(s)	Low drag, 5.5-seconds
	High drag, 2.6-seconds
	Low drag, 10.0-seconds
Arming Time Tolerence	2.6-sec nominal - 2.47 to 2.73
	5.5-sec nominal - 5.23 to 5.78
	10.0-sec nominal - 9.5 to 10.5
Functioning Delay Times (Milliseconds)	60, 25, 10, INST
Inflight Options	Three arming times; Two impact + VT



A

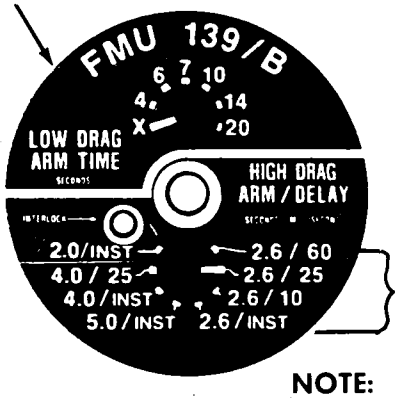
ARMING WIRE HOUSING



A

GAG ROD/ARMING WIRE HOUSING

LOW DRAG ARM TIME SWITCH SHOULD ALWAYS BE IN "X" POSITION



A

ONLY THESE FOUR POSITIONS ARE AUTHORIZED FOR USE.

NOTE: DISREGARD 2.6 HIGH DRAG ARM TIME LABELING. ONE OF FOUR AUTHORIZED POSITIONS MUST ALWAYS BE SELECTED REGARDLESS OF DELIVERY MODE (LOW/HIGH DRAG)

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Figure 3-6. FMU-139 Electrical Tail Fuze

arming time. The expendable Mk 122 Arming Safety Switch installed in the charging receptacle of the bomb and connected to the bomb rack receptacle interrupts the charging circuitry until the rack hooks open and the weapon has traveled approximately six inches; closing the safety switch and completing the circuitry.

The FMU-139 electrical tail fuze is initiated (charged) by the aircraft SMC which delivers a high (300/195) dc voltage at weapon release. The level (magnitude) of charging voltage and polarity (positive/negative) controls selection of the functioning delay and arming time respectively. The charging voltage is routed from the aircraft control circuitry through the bomb rack, Mk 122 arming safety switch and internal bomb cabling to the fuze primary energy storage capacitor which supplies the power for a 60 second mission life. The same dc charging voltage is also routed to the bomb nose fuze well. If installed, the VT element (Mk 43 TDD) is electrically initiated by +300 volts, provided the aircraft dive angle is 12É or less (Increasing dive angle, Low drag option) or whenever the High drag option is selected on the DDI/MPCD.

3.5.2 FMU-139 Software Overrride Switchology.

The following steps describe the software override switchology requirements for releasing GP bombs with FMU-139 electrical tail fuze at dive angles steeper than 12É in order to obtain a 10.0 second fuze arm time.

Non-VT Fuzing:

1. Functioning time (high drag/delay switch) must be preselected (2.6/INST, 2.6/25, 2.6/60) on FMU-139 fuze and cannot be changed in flight.

2. Use appropriate nose fuze code (0 plug, 1, M904, 15 general mechanical fuze).

3. Use Mk 376 tail fuze code 8.

WARNING

Selection of D1 or D2 on cockpit ODU will cause FMU-139 to arm at 5.5 seconds.

4. Pilot must select IN on cockpit ODU.

Non-VT/VT (pilot option) Mk 43 TDD (elec):

1. Functioning time (high drag arm/delay switch) must be preselected on fuze to 2.6/INST.

2. Use nose fuze code 8.

3. Use Mk 376 tail fuze code 8.

WARNING

Selection of D1/V1 or D2/V2 on cockpit ODU will cause FMU-139 to arm at 5.5 seconds.

NOTE

Cockpit ODU selection of IN does not allow VT (Mk 43 TDD) initiation. To select VT option the pilot must select V on the cockpit ODU.

4. Pilot must select V or IN on cockpit ODU.

Four dc voltages with corresponding polarities are available from the aircraft fuze function control system power supply:

+300 = 10.0 seconds Arm Time/INST functioning

+195 = 10.0 seconds Arm Time/Delay functioning

–195 = 5.5 seconds Arm Time/Delay functioning

–300 = 5.5 seconds Arm Time/INST functioning

Both positive voltages provide 10.0 seconds arming and are dependent on the aircraft dive angle being 12É or less (increasing dive angle, low drag option) or high drag option selected on the DDI. Both negative voltages provide 5.5 seconds arming and are dependent on the aircraft dive angle being 12É or greater (increasing dive angle, low drag option) or 8É or greater (decreasing dive angle, low drag option). See Figure 3-7 for the exception to the 12É dive angle verses arming time rule. A magnitude of 300 volts provides instantaneous (INST) functioning and 195 volts provides the preset delay functioning time on the fuze. Fuze functioning time is selected by depressing the appropriate option select button (IN/D1) on the ODU.

NOTE

- Fuze functioning time WILL ALWAYS BE instantaneous, REGARDLESS of delay time preset on fuze, whenever IN is selected on the ODU.

- Preset fuze functioning delay time of INST CAN NOT BE OVERRIDDEN by selecting the D1 option select button on the ODU. Mission flexibility may be impaired when 2.6/INST position is preflight selected on the fuze.

Regardless of aircraft dive angle and polarity of fuze charging voltage, the fuze ALWAYS ARMS at 2.6 seconds if retardation is sensed. Failure of the fuze to sense retardation provides an automatic selection of the next higher arming time which is dependent on polarity of charging voltage (i.e., 10 seconds = positive, 5.5 seconds = negative). High drag deliveries require the High drag option on the DDI to be selected which provides a positive charging voltage. Fuze failure to sense retardation automatically provide 10 second arming and insufficient TOF for fuze arming which results in a dud weapon.

Fuze arming and electrical charging commences at weapon release. Subsequently, the gag rod lock unlocks the gag rod allowing gag rod extension and physical unlocking of the safe/arm rotor approximately 100 milliseconds prior to completion of fuze arming (2.6/5.5/10.0). At completion of fuze arm time, an explosive bellows rotates the safe/arm rotor into the armed position (in-line-firing train). Closure of the internal impact switch at target contact or receipt of a proximity signal from a VT element, if installed, initiates the explosive train through the instantaneous/delay circuitry. The impact switch is sensitive to low angle graze impacts in all axes which increases fuze reliability over mechanical fuzing in shallow angle impacts. An internal fuze circuit causes the fuze to automatically dud if an impact occurs between 1.8 seconds after release and completion of arming. This circuitry, in conjunction with the out-of-line firing train and shorted detonator circuit, safe guards the delivery aircraft from weapon detonations caused by bomb-to-bomb collisions until after fuze arming.

The fuze microcomputer samples the retard sensors for the first 2.5 seconds of weapon flight (every 62.5 milliseconds) and selects a retard mode of operation ONLY AFTER 16 positive samples of a retarded flight profile. This circuitry provides aircraft safe separation if the retard fin fails and the weapon ricochets at impact during low level deliveries.

Additional built in safety provisions are: automatic fuze failure if SMC charging voltage is applied to fuze for more than 500 milliseconds (aircraft rack interlock switch/Mk 122 arming safety switch failure with hung weapon); impact and proximity sensors are disconnected for 80 milliseconds after fuze arming (prevents fuze detonation from spurious electrical signals/vibrations generated during arming); fuze disregards proximity signals and function on impact ONLY, if receipt of proximity signal is sensed between 1.8 seconds after weapon release and completion of arm time; firing capacitor energy from the primary storage capacitor does not become available until 125 milliseconds prior to arming time completion.

3.5.3 Applications and Restrictions. The FMU-139 fuze may be used alone, with a VT element (Mk 43 TDD) or in conjunction with a

M904 Series mechanical nose fuze. When installed by itself, a steel nose plug and fuze cavity liner must be installed in the bomb nose fuze well. When used in Guided Bomb Units (GBU's) delivery restrictions and minimum authorized arming times are the same as for other Mk 80 Series GP bombs delivered in similar modes.

See Figure 3-7 for the fuze function ODU display required to obtain various options. Refer to chapters 1 for additional details concerning SMC/ODU programming and the automatic electrical safe-fuzing control function.

The FMU-139 fuze can be detonated by target contact or a VT element. Refer to Mk 43 TDD description for additional information.

The FMU-139 can be dual fuzed with a M904 mechanical nose fuze to increase mission flexibility/double weapon reliability (redundant fuzing). MINIMUM release speed for FMU-139 fuzes in the retarded mode is 400 KIAS. All other non-fuze related delivery restrictions also apply.

NOTE

In-flight pilot option delivery mode only authorized with ZRF arming unit configured bomb racks.

Because the possibility does exist that an electrical fuze could function at arming (early burst), it is IMPERATIVE that the ″Minimum Authorized Fuze Arming tables″ be consulted and observed. Certain delivery maneuvers call for a 5.5 second arming time; others require a 10.0 second arming time. Proper arming time selection and proper delivery maneuvers ARE MANDATORY to reduce the probability of aircraft damage in the event of an early burst.

Early burst rate for an electrical fuze/VT element combination is higher than the early burst rate for the electrical fuze by itself. See Figure 3-16 ''Minimum Authorized Fuze Arming Time tables'' when employing this combination.

WARNING

High drag weapon releases require mandatory selection of the high drag option on the DDI to ensure weapon dudding and non-entry of fragmentation envelope in case of fin failure.

NOTE

The 10-second arming time can be used for straight and level releases without an after release maneuver or for dive deliveries of bombs in the low drag configuration, if the time-of-fall (TOF) is longer than the 10-second arming time and the aircraft dive angle is 12É or less (increasing dive angle).

Bombs fuzed with only electrical fuzes can be jettisoned safe by selecting the SAFE fuzing option on the ODU or ACP.

Refer to chapter 5, ''External Stores Limitations table,'' for any additional restrictions.

3.5.4 Preflight Checks.

1. Mk 122 Arming Safety Switch Lanyard Tab Attached to ELEC FUZ/Spring Latch

2. ENSURE PROPER FUZE INSTALLED/PRESET and Identified Preset Data Annotated on Bomb Fin

NOTE

The FMU-139 fuze does not have an external identifying decal.

3. Arming Wire(s) Installed in Accordance with Airborne Weapons/Stores Loading Manual (A1-AV8BB-LWS-000), required Conventional Weapons Checklists (A1-AV8BB-LWS-( )), and the Tactical Manual Pocket Guide (NWP 3-22.5-AV8B PG).

FMU-139 ONLY ONLY

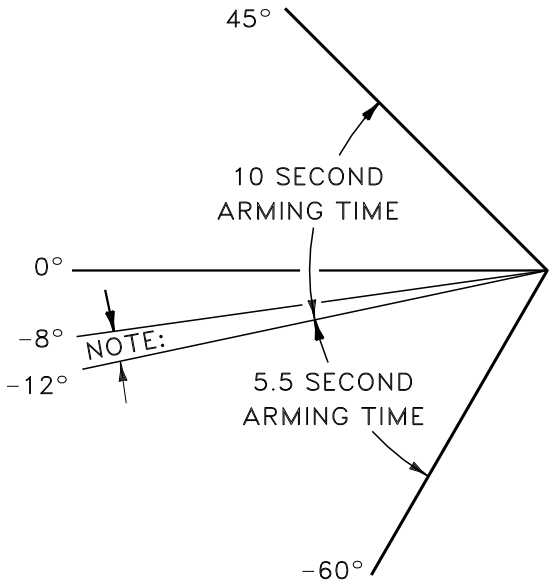
FUZING OPTION DESIRED		ODU OPTION
ARMING TIME AND DIVE ANGLE REQUIRED (1)	FUNCTIONING TIME	
SEE DETAIL A	ON IMPACT (0.00 Second)	IN (2)
	DELAY AFTER IMPACT (3)	D1

(1) 2.6 second arm time automatic for retarded weapon

(2) IN option overrides preset delay on fuze

(3) Delay interval of 10, 25 or 60ms MUST BE SET during weapon assembly

DETAIL A
ARMING TIME AND DIVE ANGLE REQUIRED



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NOTE

Decreasing dive angle from 12É to 8É provides 5.5 seconds arm time

Figure 3-7. Option Display Unit (ODU) Selections (Sheet 1 of 2)

FMU-139/Mk 43 (E) TDD COMBINATION (Mk 43 ELECTRICALLY ACTIVATED)

FUZING OPTION DESIRED		ODU OPTION
ARMING TIME AND DIVE ANGLE REQUIRED (1)	FUNCTIONING TIME	
SEE DETAIL A	AIRBURST (2)	V (3)
	ON IMPACT (0.00 second)	IN (4)
	DELAY AFTER IMPACT (5)	D1

(1) 2.6 second arm time automatic for retarded weapon

(2) Fuze provides impact functioning if TDD fails to function

(3) Low drag electrical activation requires 12É or less dive angle (unless using the software override switchology procedure described on page 3-24). High drag electrical activation requires selection of DDI High drag option

(4) IN option overrides preset delay on fuze

(5) Delay interval of 10, 25 or 60ms MUST BE SET during weapon assembly

FMU-139/Mk 43 (M) TDD COMBINATION (Mk 43 MECHANICALLY ACTIVATED)

FUZING OPTION DESIRED		ODU OPTION
ARMING TIME AND DIVE ANGLE REQUIRED (1)	FUNCTIONING TIME	
SEE DETAIL A	AIRBURST (2), (3)	V
	ON IMPACT DELAY (4), (5)	V1

(1) 2.6 second arm time automatic for retarded weapons

(2) Airburst option available if ″Jungle Canopy Penetration″ not required

(3) Fuze provides impact functioning if TDD fails to function

(4) Preferred option for ″Jungle Canopy Penetration″

(5) Delay interval of 10, 25 or 60ms MUST BE SET during weapon assembly

Figure 3-7. Option Display Unit (ODU) Selections (Sheet 2 of 2)

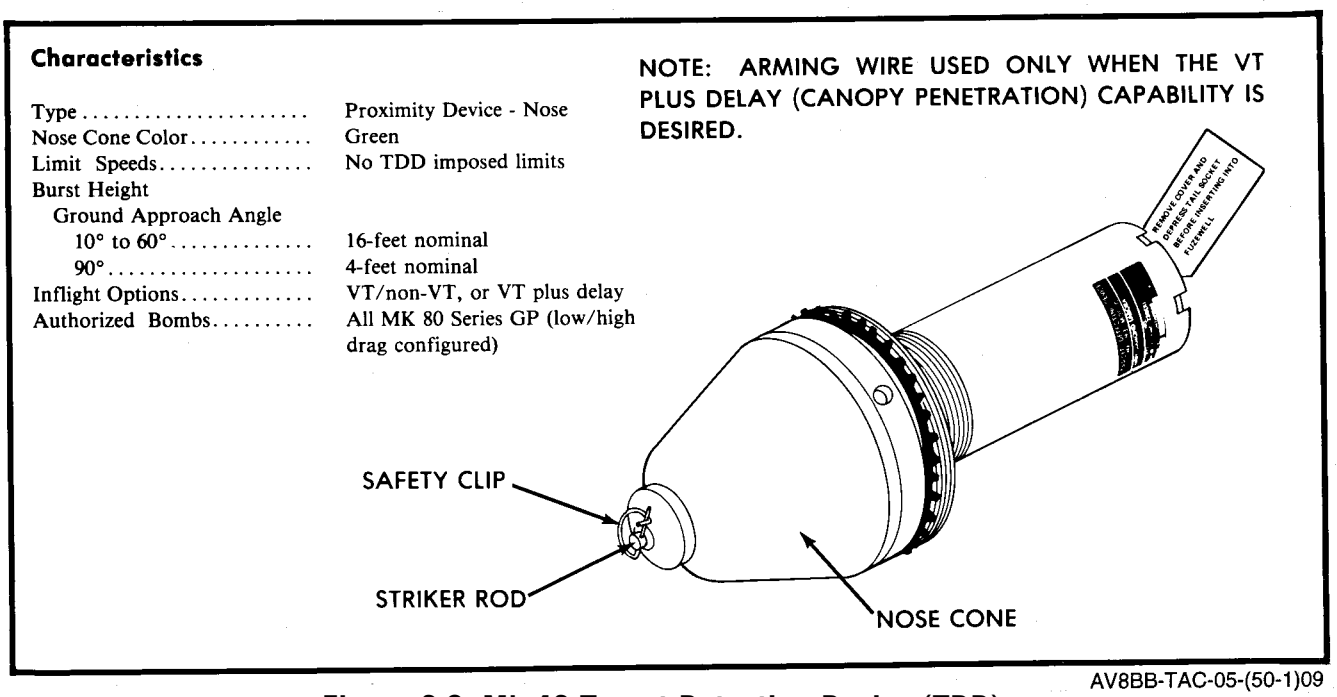

Figure 3-8. Mk 43 Target Detecting Device (TDD)

3.6 Mk 43 TARGET DETECTING DEVICE (TDD)

3.6.1 Description. The Mk 43 TDD (see Figure 3-8) provides an air burst (VT) option for either low or high drag electrical fuzed configured Mk 80 Series GP bombs. The TDD was designed to operate at shallow target approach angles and low vertical closing velocities encountered in high drag (retard) weapons released at low altitudes in a straight and level delivery.

The Mk 43 TDD has no explosive components and is not classified as a fuze. It can only be used in combination with an electrical impact tail fuze which provides the explosive train and safety of the combination. The Mk 43 TDD provides an electrical voltage (firing signal) to the impact fuze functioning circuitry when it senses the appropriate target reflections.

The Mk 43 TDD can be electrically or mechanically activated. It is electrically activated by +300 vdc supplied by the aircraft SMC. The TDD senses target reflections and function, sending a firing voltage to the impact fuze detonator.

NOTE

- Low drag delivered Mk 43 TDD / FMU-139 combination REQUIRES an aircraft dive angle of LESS THAN 12É for electrical activation of the TDD, unless the SMC is coded for a Mk 376. (See FMU-139 software override procedure on page 3-24).

- When using a Mk 43 TDD to obtain an airburst, only the ″V″ ODU fuze option should be used.

Mechanical activation is accomplished by the withdrawal of an arming wire from the TDD striker rod release mechanism at weapon release. Mechanical activation is only used when the VT-Plus Functioning Delay (tree canopy penetration) option is desired. The TDD will sense tree top foliage and function, sending a firing voltage to the fuze delay circuitry allowing foliage penetration prior to weapon detonation. The height of the TDD functioning (send a firing

voltage) is dependent on foliage density and water content. The actual point (height) of detonation is a function of tree height, functioning delay selected, and weapon velocity (i.e., low/high drag).

Refer to the Mk 344/376 and FMU-139 electrical fuze section concerning available functioning options and appropriate Mk 43 TDD activation requirements.

The mean effective area (MEA) of a bomb is the fragment kill area. The magnitude of the MEA is a function of target type and weapon approach angle with the maximum fragment effectiveness accomplished by an above ground detonation (air-burst). A typical bomb/target approach angle of 90É will yield the maximum MEA when detonation occurs 1 to 2 feet above the target. As the approach angle decreases, a higher burst height is required to yield the maximum MEA. The Mk 43 TDD with its antenna radiation pattern at right angles to the longitudinal axis of the bomb, provides the required burst height/approach angle relationship. At a 90É target angle, the TDD will function between 0 and 4 feet above the target. At a 60É target approach angle, the burst height is approximately 16 feet.

The burst heights mentioned in the preceding paragraph are for above ground (i.e., a target of 50 percent reflectivity). Wet ground (or water) raises the burst height. Extremely dry ground lowers the burst height.

3.6.2 Applications and Restrictions. The early-burst rate for an electrical impact fuze/TDD element combination is higher than the rate for the impact fuze alone. Consult the ''Authorized Fuze Arming Times/Maximum Stick Lengths'' whenever the TDD/electrical fuze combination are to be used (see Figure 3-16).

The Mk 43 TDD CANNOT detonate the weapon until the impact fuze arming cycle has been completed. To ensure proper fuzing system operation, the minimum release altitude must be sufficient to allow the impact fuze to arm at least 50 feet above the terrain which will provide sufficient time for the Mk 43 TDD to receive and process a target return signal and function at the proper burst height.

In the event that the Mk 43 TDD fails to function, the impact fuze will provide a backup by detonating the weapon at impact. When electrical activation of the TDD is being utilized, the impact fuze functions in the instantaneous functioning mode which will not cancel all the bomb's fragmentation effects in the event that the Mk 43 TDD fails to function. If mechanical activation is being utilized, the impact fuze still provides a backup. However, due to the functioning delay selected, bomb detonation occurs after impact canceling the bomb's fragmentation effects on the target.

WARNING

When activated, TDD's can respond to and react to mutual interference which increases the possibility of early bursts. Refer to chapter 5 (Figure 5-3 specific note 8) for TDD intervals.

For Conventional Loft or Dive-Toss deliveries, the same intervalometer restrictions apply (see chapter 5 specific note 7). However, at delivery speeds above 400 KIAS and with 4g releases, shorter intervals may be used if required. The same high rate of early bursts may be expected, however, there is no increased risk of fragment damage to the delivery aircraft.

Mechanical activation requires an arming wire which is ALWAYS positive rigged to the bomb rack/pylon to ensure withdrawal at weapon release. Positive rigging of the arming wire is to ensure withdrawal in the event of accidental selection (+300 vdc) and electrical activation of the TDD via the aircraft SMC. IF NOT WITHDRAWN, the reflectivity of the arming wire as it whips around the TDD could cause the TDD to function and send a firing voltage to the fuze at the completion of the arming cycle.

Mechanical activation of the TDD does not allow an in-flight option of VT/NON VT. However, a near surface burst is possible against a

non-canopy (open terrain) target if the appropriate fuze functioning delay is selected. Select the 0.015 delay (Mk 344/376) or 10-millisecond delay (FMU-139) for low drag configured weapons and 0.100 delay (Mk 376) or 60-millisecond delay (FMU-139) for high drag configurations. This is applicable only to bomb/target approach angles of 10É to 60É.

Refer to the ″External Stores Limitations,″ chapter 5 for any additional restrictions.

3.6.3 Preflight Checks.

1. Electrical Activation:

   (a) Striker Rod Safety Clip Installed

   (b) Instruction Tag Removed

2. Mechanical Activation:

   (a) Arming Wire Installed in Accordance with Airborne Weapons/Stores Loading Manual (A1-AV8BB-LWS-000), Conventional Weapons Checklists (A1-AV8BB-LWS-( )), and the Tactical Manual Pocket Guide (NWP 3-22.5-AV8B PG).

   (b) Striker Rod Safety Clip and Instruction Tag Removed

3.7 Mk 339 Mod 0/1 MECHANICAL TIME FUZE

3.7.1 Description. The Mk 339 Mod 0/1 mechanical time fuze (see Figure 3-9) is a universal dispenser fuze which is currently used to initiate opening of Rockeye, and Gator weapons. The Mk 339 Series fuze provides two accurate functioning times (primary/option). The altitude at which dispenser opening occurs is determined by the selected functioning time and weapon release altitude. Desired submunition dispersal density and target area coverage depends directly on the functioning time and delivery parameters, i.e., altitude, airspeed, and release angle. Presently available are the factory preset functioning times of 1.2 seconds (primary) and 4.0 seconds (option), or resetting to a times from 1.2 to 100 seconds. (4.0 to 50 seconds for software limits). Use of either the primary or option functioning time, as preflight set, is in-flight selectable (i.e., pilot option).

NOTE

In-flight fuze option mode ONLY AUTHORIZED with ZRF arming unit configured bomb racks.

Both Mods of the fuze are functionally identical with the exception of the longer functioning times available on the Mod 1. The Mods differ physically in that the Mod 1 has a white functioning mode indicator located over the primary dial in the time setting observation window. If the indicator is located over the option dial, it indicates that the option wire has been accidentally pulled or intentionally removed to commit the fuze to the option mode. The Mod 1 fuze can be reset to the primary mode if desired, whereas the Mod 0 cannot be reset. Refer to NAVAIR 11-1F-2 for appropriate details.

Functioning time settings for the two mods are displayed on the primary (black) and option dials, Mod 0 (silver) and Mod 1 (white), visible through the time setting observation window. The SAFE/ARM status of the fuze is visible through the arming indicator window (plastic bubble). The fuze is armed if the tip of the slider protrudes beyond the fuze housing into the indicator bubble. Later production fuzes feature a green foil disk and red tipped slider to enhance the visual indication of an armed fuze.

The primary and option mode arming wires are secured to the fuze through integral starting brackets. The primary wire also retains the impeller sealing band. Neither arming wire requires the use of safety (Fahnestock) clips to secure them in place.

3.7.2 Applications and Restrictions. The Mk 339 Mod 0/1 mechanical time fuze provides a choice of two functioning times: primary and option. To select the primary functioning mode the weapon is released so that ONLY the primary wire is withdrawn. To release in the option mode, BOTH the primary and option wires must

be withdrawn. Because the primary wire releases the sealing band on the impeller of the fuze and actuates the timer, the weapon will dud if ONLY the option wire is withdrawn.

NOTE

In-flight fuze option mode ONLY AUTHORIZED with ZRF arming unit configured bomb racks.

Mk 339 fuzed weapons are received with a primary functioning time of 1.2 seconds and an option functioning time of 4.0 seconds. Delivery data tables are provided for a multitude of times. In general, the shorter functioning time (1.2 seconds) is used for low altitude level releases and the longer times are used for dive/high altitude deliveries. Refer to NAVAIR 11-1F-2 for appropriate functioning time changing procedures.

Deselection of the CBU store will erase the pilot entered option time. Reselection of the CBU and OPTION will bring up the default 4.0 second HUD aiming symbology which must be overridden by the pilot again prior to release.

NOTE

Selection of PRIMARY on the ODU/ ACP will ALWAYS provide 1.2 second HUD aiming symbology for release regardless of the time set on the Mk-339. Selection of OPTION provides 4.0 second HUD aiming symbology which can be overridden by the pilot; a value from 4.0 to 50 (to match the value set on the Mk-339) can be entered via the ODU and UFC.

The Mk 339 fuze will completely arm and function below 200 KIAS. However, the dispenser submunitions (bomblet) arming time is the governing criteria for minimum delivery speeds. Minimum release speed requirements are:

Mk 20 Rockeye/ CBU-99/100	225 KIAS
CBU-78 Gator	200 KIAS

Refer to chapter 5 ″External Stores Limitations″ (Figure 5-3) for any additional restrictions.

3.7.3 Preflight Checks

1. Fuze Safe

2. Fuze Primary/Option Time Set; Safety Pin(s) Removed

3. Arming Wire/Extractor(s) Installed in Accordance with Airborne Weapons/Stores Loading Manual (A1-AV8BB-LWS-000), required Conventional Weapons Checklists (A1-AV8BB-LWS-( )), and the Tactical Manual Pocket Guide (NWP 3-22.5-AV8B PG).

Characteristics

Type	Time - Mechanical - Nose
Limit Speeds	
Max Carriage and Release	No fuze imposed limits
Min Release	Determined by Submunitions
Preset Functioning Times	
Primary	1.2-seconds
Option	4.0-seconds
Functioning Time Range	
Mod 0 (primary and option)	1.2- to 50.0-seconds
Mod 1 (primary and option)	1.2- to 100.0-seconds
Inflight Options	Two (primary or option)

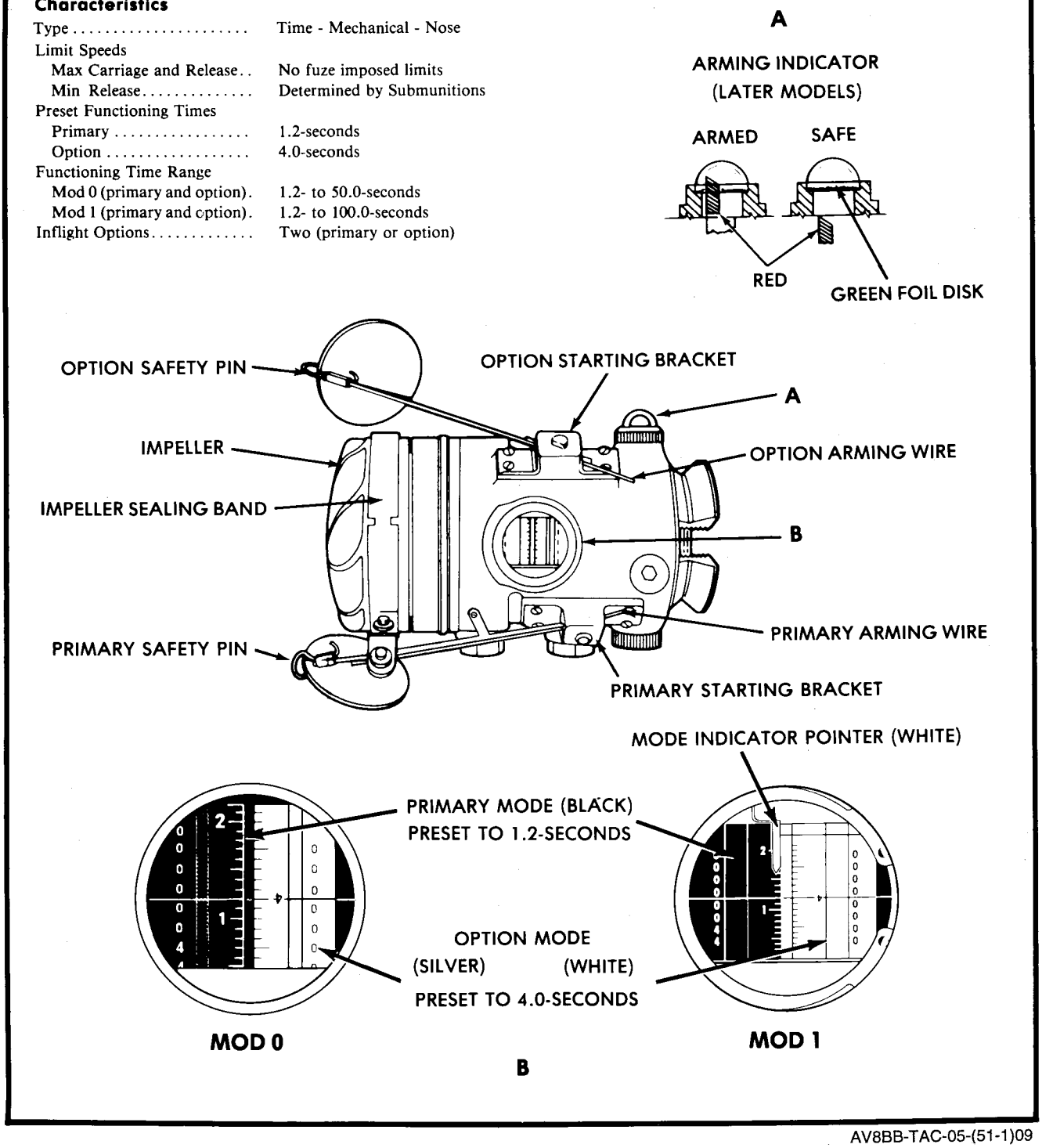

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Figure 3-9. Mk 339 Mod 0/1 Mechanical Time Fuze

3.8 FMU-140/B DISPENSER PROXIMITY FUZE (DPF)

3.8.1 Description. The FMU-140 DPF (see Figure 3-10) is an universal dispenser fuze which is used to initiate opening of rockeye and gator weapons. The DPF is intended to replace the Mk 339 mechanical time fuze in most applications and provides greater accuracy of submunition dispersion during loft and high altitude deliveries in addition to enhancing target egress.

The DPF is an airspeed discriminating, thermal battery powered, range gated doppler radar which functions as a radar altimeter and can be used in a high ECM environment. The DPF provides two in-flight selectable functioning modes (primary/option) in addition to a built-in 300 feet height-of-function (HOF) backup for the primary functioning mode.

The altitude at which dispenser opening occurs for proper submunition dispersal density and target coverage depends directly on the preflight selected arming time/height-of-function (HOF) and delivery parameters (i.e., altitude, airspeed and release angle). Of the two in-flight selectable functioning modes, the primary (proximity) mode is normally used for loft/high altitude deliveries and the option (arm and fire) mode is used for low altitude dive and level releases,

NOTE

Failure to set the ARM TIME switch to other than SAFE will result in a dud DPF.

The FMU-140/B has two preflight selectable (ARM TIME and HOF) switches located on the right side. There are five arm times from 1.2 to 10.0 seconds and ten HOF settings from 300 to 3,000 feet available. The ARM TIME switch SAFE position provides ground handling safety by internally grounding the circuitry if inadvertent primary arming lanyard actuation were to occur. The SAFE/ARM status of the DPF is readily apparent as protrusion of the red tipped indicator pitot tube through the radome which indicates the DPF is armed.

The DPF has four safety interlocks, two electrical (ARM TIME switch/pressure switch) and two mechanical (Battery Firing Device/gag rod), which prevent inadvertent alignment of the internal Safe and Arm mechanism (S&A) for firing train alignment. The ARM TIME switch in the SAFE position shunts thermal battery output to the timing circuitry and S&A to ground. The Battery Firing Device (BFD) physically locks the S&A rotor (firing train) out of alignment. Extraction of the primary arming lanyard at weapon release removes the BFD from the rotor and initiates thermal battery functioning. Extension of the indicator pitot tube 0.4 seconds prior to arm time completion removes the gag rod from the S&A rotor. Indicator pitot tube extension exposes the pressure switch which closes and fires the explosive bellows motor that aligns the S&A rotor when approximately 225 KCAS is sensed.

The primary functioning mode (proximity) utilizes the HOF proximity aspect/capability of the DPF. Withdrawal of the primary arming lanyard at weapon release initiates the BFD and thermal battery. Approximately 0.4 second prior to arm time completion, the indicator pitot tube unlocks and extends. If 225 KCAS is sensed, the S&A firing train is aligned and completion of the arm time occurs which allows the DPF to initiate dispenser opening when the preflight selected HOF has been obtained.

NOTE

In-flight fuze functioning mode is ONLY AUTHORIZED with Zero Retention Force (ZRF) arming unit configured bomb racks.

The option functioning mode (arm and fire) is accomplished by the withdrawal of BOTH the primary and option arming lanyards at weapon release. As the primary lanyard initiates thermal battery functioning and timing circuitry operation with subsequent indicator pitot tube extension, the weapon will dud if ONLY the option lanyard is withdrawn. Option arming lanyard withdrawal shifts the internal timing circuitry to automatically function at the factory preset 1.2-second arm time which overrides the preflight

selected ARM TIME switch setting. Expiration of the 1.2-second arm time and sufficient airspeed sensed (225 KCAS) completes the alignment of the S&A firing train. Approximately 20 milliseconds after firing train alignment the DPF initiates dispenser opening.

A 300-feet backup functioning mode is automatically provided by the DPF in the primary (proximity) functioning mode in the event that the DPF has not armed prior to reaching the preset HOF or the dispenser never reaches the preselected HOF. The DPF will initiate dispenser opening after arm time completion if approximately 300-feet AGL has been reached. To preclude early functioning during a loft maneuver, the FMU-140 will not function until at least 100 fpm rate of descent is sensed.

3.8.2 Applications and Restrictions. The FMU-140/B DPF provides an in-flight choice of two functioning modes, primary (proximity) and option (arm and fire), in addition to a built-in 300-feet HOF primary mode backup. To select the primary (proximity) functioning mode, the weapon is released so that ONLY the primary arming lanyard is withdrawn.

To release in the option (arm and fire) mode, BOTH the primary and option arming lanyards must be withdrawn. Because the primary arming lanyard initiates thermal battery functioning and timing circuitry operation with subsequent indicator pitot tube extension, the weapon will dud if ONLY the option arming lanyard is withdrawn.

NOTE

In-flight fuze functioning mode ONLY AUTHORIZED with Zero Retention Force (ZRF) arming unit configured bomb racks.

FMU-140/B fuzed weapons require the ARM TIME and HOF switches to be preflight selected. In general, the primary (proximity) mode is normally used for loft/high altitude deliveries and the option (arm and fire) mode is used for low altitude dive and level releases.

NOTE

Failure to set the ARM TIME switch to other than SAFE will result in a dud DPF.

The FMU-140/B DPF will arm and function below 225 KCAS. However, to ensure reliable functioning of the air sensing pressure switch, a MINIMUM delivery speed of 225 KCAS is required. Unlike the Mk 339 mechanical time fuze, dispenser submunition arming time requirements need not be considered since rockeye and gator submunitions will function reliably at 225 KCAS.

Refer to External Stores Limitations table, chapter 5, for any additional restrictions.

3.8.3 Preflight Checks.

1. Fuze Safe

2. Fuze ARM TIME and HOF Switches Set

NOTE

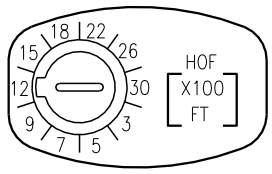
If using the FMU-140 in primary (HOF mode) allow a minimum of 2.0-seconds time of fall, to activate the battery, prior to reaching desired HOF.

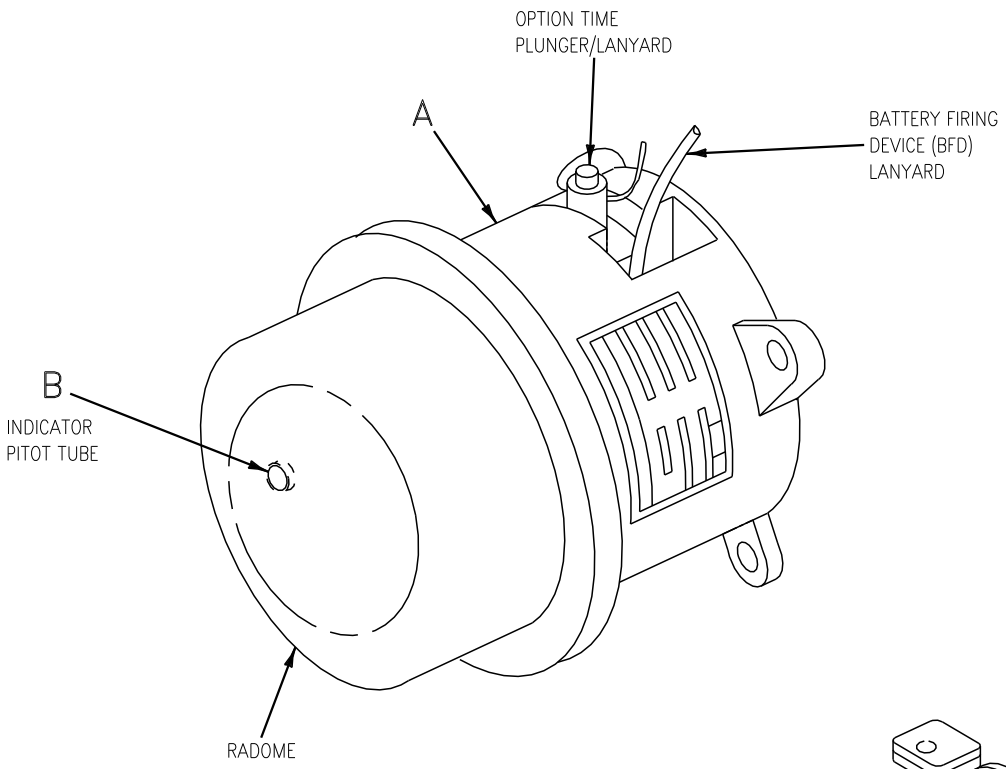
3. Primary/Option Arming Lanyards Connected in Accordance with Airborne Weapons/ Stores Loading Manual (A1-AV8BB-LWS-000), required Conventional Weapons Checklists (A1-AV8BB-LWS-( )), and the Tactical Manual Pocket Guide (NWP 3-22.5-AV8B PG).

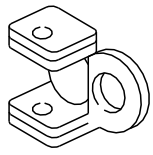
CHARACTERISTICS

TYPE	PROXIMITY FUZE NOSE
LIMIT SPEEDS	
MAX CARRIAGE AND RELEASE	NO FUZE IMPOSED LIMITS
MIN RELEASE	225 KCAS
ARMING TIMES	1.2 - 10.0 SECONDS
HEIGHT OF FUNCTION (HOF) RANGE	300 - 3000 FEET AGL
INFLIGHT OPTION FUNCTIONING MODES	PRIMARY (PROXIMITY) OPTION (ARM AND FIRE)
AUTHORIZED WEAPONS	ROCKEYE, GATOR

A







EARLY MODEL
FUZES

B

NOTE

FUZE ARMED IF RED VISIBLE ON
EXTENDED INDICATOR PITOT TUBE.

AV8BB-TAC-05-(60-1)09-CATI

Figure 3-10. (U) FMU-140/B Dispenser Proximity Fuze (DPF)

3.9 MK 13 FIRE BOMB INITIATOR

3.9.1 Description. The Mk 13 initiator (see Figure 3-11) consists of two major components, the Mk 273 Mod 1 igniter and the Mk 343 fuze. These two components are assembled, shipped, stored, and issued as a unit. The Mk 13 is authorized for use only in the Mk 77 Mod 4/5 Fire Bomb. An initiator is installed in both of the two side filler holes.

The Mk 273 Mod 1 igniter contains magnesium-teflon powder and pellets and will reliably ignite all current jelled fuels.

The Mk 343 fuze provides two preflight-selectable functioning delays (INST/DELAY). Selection of functioning delay is dependent on type of gel mixture and target (land/water). The desired functioning delay INST or DELAY (0.27-second) is selected by aligning the slot of the firing mode selector indicator with the desired indication on the tear-top decal. The fuze arming vane is covered by a square prescored tear-top, which is similar to a pop-top drink can. At release, a lanyard, which is attached to the tear-top and bomb rack arming solenoid, removes the tear-top allowing the spring loaded arming vane to pop up into the airstream.

The SAFE/ARM status of the fuze can be determined by the condition of the tear-top cover. If the tear-top cover has been pulled off far enough so that the arming vane is exposed or popped up, the fuze should be considered to be armed.

3.9.2 Applications and Restrictions. Selection of functioning delays are as follows:

Gelled JP-5	Land Target	INST
MOGAS, JP-4	Land Target	DELAY
Any Mix	Water Target	INST

The Mk 343 fuze can arm if the air flow across the vane is greater than 80 KIAS. Due to the unstabilized tumbling flight path of a released fire bomb, a MINIMUM release speed of 300 KIAS is required for the fuze to reliably arm.

Safe jettison of any fire bomb cannot be assured. Impact may cause the Mk 13 initiator to deflagrate regardless of release conditions. Refer to the ‘‘External Stores Limitations,’’ chapter 5 for any additional restrictions.

3.9.3 Preflight Checks

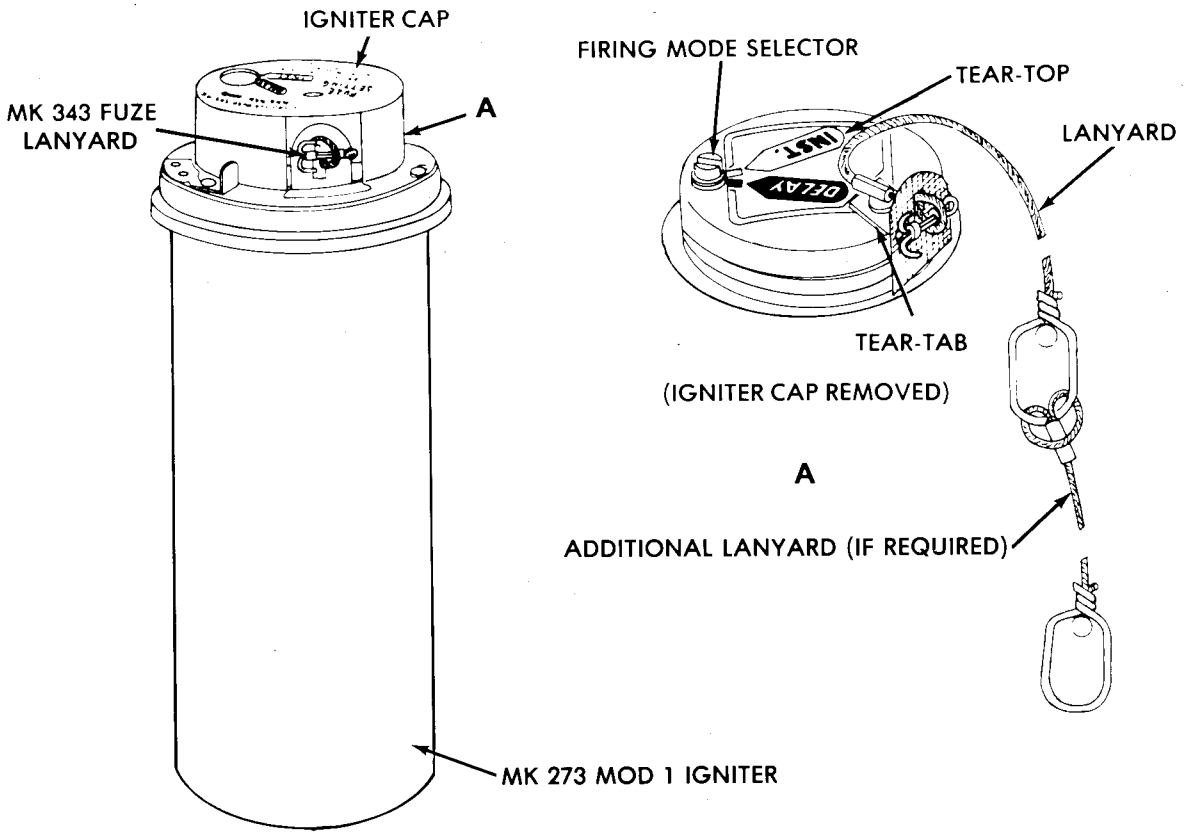
1. Inspect Fuze Tear-top for any Separation/ Tears

2. Functioning Delay Set

3. Lanyards Installed in Accordance with Pocket Guide/Weapons/Stores Loading Manual

Characteristics

Type	Impact - Mechanical - Side
Limit Speeds	
Max Carriage and Release	No fuze imposed limits
Min Release	300 KIAS
Arming Time	1.0-second
Arming Time Tolerance	1.0-sec nominal — 0.8 to 1.2
Functioning Times	0.000, 0.270-second
Inflight Options	None
Authorized Bombs	MK 77 Mod 4/5 Fire Bomb



AV8BB-TAC-05-(52-1)09

Figure 3-11. Mk 13 Fire Bomb Initiator

3.10 MK 80 SERIES GP BOMB DESTRUCTOR (DST)/UNDERWATER MINE ARMING/FIRING SYSTEM

3.10.1 Mk 32 Description. The Mk 32 Mod 1 arming device (along with the Mk 42 firing mechanism / Mk 57 Target Detecting Device (TDD) are used to convert Mk 82/83 GP bombs into DSTs (Mk 36/40/41) or underwater mines (Mk 62/63/64), The Mk 32 arming device is similar in appearance to the M904 mechanical nose fuze. The arming device interrupts the circuitry (explosive train alignment) between the tail firing mechanism/TDD and weapon main charge until the appropriate air travel and weapon impact criteria have been met. The Mk 32 is solid gold in color with a tapered collar which flares out to uniformly mate with the bomb body. The arming device requires the installation of an adapter booster for weapon compatibility during assembly.

The Mk 32 arming device requires a minimum of 175 KIAS release speed, 2.45 seconds time-of-flight (enabling time), and weapon impact/water entry inertia to complete the explosive train alignment (circuitry).

A premature firing signal from the firing mechanism/TDD will not cause weapon detonation until completion of arming device alignment sequence.

NOTE

The INERT Mk 30 arming device is authorized for use in Exercise Training (ET) DSTs and underwater mines.

3.10.2 Mk 42 Description. The Mk 42 firing mechanism / Mk 57 Target Detecting Device (TDD) (along with the Mk 32 Mod 1 arming device) are used to convert Mk 82/83 GP bombs into DSTs (Mk 36/40/41) or underwater mines (Mk 62/63/64). The firing mechanism/TDD and associated battery are installed in the bomb tail fuze cavity, which is interconnected with the nose fuze cavity arming device by internal cabling in the bomb body. The firing mechanism/TDD is initiated by the withdrawal of an arming wire at weapon release and will not activate (arm) until the preset delay arming period runs down.

Appropriate magnetic/magnetic-seismic presetting information is found in NAVSEA OP 2637, Volume I and II, Operational Characteristics of U.S. Naval Mines.

3.11 ROCKET FUZING

3.11.1 General. Rocket fuzes are divided into three categories based on mode of functioning:

Impact
Time
Proximity

Impact Firing fuzes are referred to as point detonating (PD) or base detonating (BD) according to their location in the warhead. The Mk 191 fuze, which is permanently installed in the Mk 24 Mod 0 (GP) warhead is the only current base detonating fuze in use.

Time fuzes detonate/initiate the warhead at a preset time after rocket launch and motor burnout. The three time fuzes currently in use are the Mk 193, M442, and FMU-136/B, which are installed in the Mk 33 Mod 1, M257, and Mk 84 Mod 4 warheads.

Proximity fuzes radiate an RF frequency at right angles to the warhead axis and upon receipt of a reflected RF energy (target reflection), detonate the warhead. The insensitivity of the fuze allows ripple firing (salvo) of the rockets, and precludes using the fuze for air-to-air missions. Water content of the target increases the magnitude of the target reflected signal which results in a higher burst height (warhead detonation). The fuze senses foliage and will detonate the warhead above the foliage with the burst height dependent on growth density and its moisture content.

3.11.2 Arming. Two types of arming mechanisms are used. One mechanism uses a combination of rocket motor acceleration integration/ time for arming. This mechanism provides a safe separation distance between the delivery aircraft and rocket warhead by delaying the completion of the arming cycle for a specific period of time if the rocket motor maintains a minimum acceleration level. Approximately 20 to 30g's of sustained acceleration for about 1-second is required for arming. Variation of arming distances should be anticipated due to manufacturing tolerance and temperature effects on the fuze mechanism. The second type of mechanism employs acceleration/ time integration to enable with actual arming occurring at motor burnout. Distance is determined by an acceleration time integration mechanism in the fuze and time is determined by motor burnout/clock mechanism.

3.11.3 Safety. Rocket fuzes contain internal safety/arming devices to prevent arming for any condition other than the completion of a clean rocket launch. Delivery (launching) of airborne rockets within the appropriate release envelopes given for this aircraft should preclude possible damage to the aircraft.

NOTE

- As some fuzes have shorter arming distances/times, ONLY those motor/warhead/fuze combinations listed in the Warhead/Fuze Combination Charts in the Rocket descriptions are authorized for carriage/release.
- MIXING of VT and PD fuzes in the same 5-inch launcher is AUTHORIZED , IF, warheads are of same type.

3.11.4 Rocket Fuzes. The following paragraphs provide a brief description of all currently authorized rocket fuzes (see Figure 3-12). Refer to NAVAIR 11-1F-2 for detailed functioning information.

3.11.4.1 Mk 352 Impact (PD). The Mk 352 nose fuze was designed to be used in either 2.75-inch/5.00-inch rocket warheads. It requires an adapter booster BBU-15/B for installation in 5.00-inch warheads. The fuze is sensitive to low angle impacts on all targets including water, and will function when it impacts 0.016-inch thick aluminum sheet at approach angles as small as 3É to 5É. The fuze has instantaneous impact functioning and requires a sustained acceleration of 20g's minimum in order to arm. Air travel to arm is approximately 800 to 1,200 feet and time to arm is 1.07 to 1.36 seconds at 40g's.

3.11.4.2 FMU-90/B Impact (PD). The FMU-90/B nose fuze is identical in all respects to the Mk 352 fuze with the exception of a 0.05-second impact functioning delay time. It can also be used in most configurations as the Mk 352.

3.11.4.3 M427 Impact (PD). The M427 nose fuze was designed to be used with 2.75-inch rocket warheads. The fuze is sensitive to low angle impacts as low as 5É and will function on water targets. The fuze has instantaneous impact functioning and requires a sustained acceleration of 20g's in order to arm. Air travel to arm is approximately 800 to 1,250 feet and time to arm is 1.09 to 1.34 seconds at 40g's.

3.11.4.4 Mk 188 Mod 0 Impact (PD). The Mk 188 Mod 0 nose fuze was designed to be used with 5.00-inch warheads against ground/water targets. The fuze will function reliably at low angle impacts. The fuze has instantaneous impact functioning and requires a sustained acceleration of 20g's in order to arm. Air travel to arm is approximately 400 to 800 feet and time to arm is 0.7 to 0.9 seconds.

3.11.4.5 Mk 191 Impact (PD). The Mk 191 base fuze is permanently installed in the 5.00-inch Mk 24 Mod 0 GP warhead. The fuze has a 0.002- to 0.007-second functioning delay after impact and does not function reliably on impact with water. The fuze was designed for hard target penetration and must be used in combination with a hardened steel nose plug installed in the nose fuze cavity when used for that purpose. This fuze requires a sustained acceleration of 30g's in order to arm. Air travel to arm is approximately 400 to 800 feet and time to arm is approximately 0.8 to 1.0 second at 50g's.

3.11.4.6 Mk 193 Time. The Mk 193 time fuze is permanently installed in the 5.00-inch Mk 33 Mod 1 Flare warhead. The fuze provides a preset fixed time interval which commences at launch. The flare candle will be ignited 13 to 17 seconds after launch. This fuze requires a sustained acceleration of 30g's in order to enable and arms at motor burnout. Air travel to arm is approximately 1,000 feet and time to arm is approximately 1.0 second.

3.11.4.7 M442 Time. The M442 time fuze is permanently installed in the M257 2.75-inch Flare warhead. The fuze provides a preset fixed time interval which commences at rocket launch. The flare candle will ignite approximately 13.5 seconds after launch. The fuze requires a sustained acceleration of 16g's in order to enable and arms at motor burnout. Air travel to arm is approximately 2,137 feet (Mk 66 motor) and time to arm is approximately 1.0-second.

3.11.4.8 FMU-136/B Time The FMU-136/B time fuze is permanently installed in the Mk 84 Mod 4 5.00-inch chaff warhead. The fuze provides a preflight selectable functioning time (3 to 80 seconds) in 0.5-second increments which commences approximately 0.2-second after launch. The fuze requires a sustained acceleration of 30g's to arm. Air travel to arm is approximately 400 to 600 feet and time to arm is 0.65 to 0.85 seconds at 60g's.

3.11.4.9 Mk 93 Mod 0/M414A1 Proximity. The Mk 93 Mod 0/M414A1 nose fuzes were designed to be used with 5.00-inch warheads against ground targets at low approach angles. This fuze coupled with the Mk 32 AT/APERS warhead is highly effective for flak suppression and antipersonnel missions. The fuze has two modes of operation; airburst (primary) and impact (secondary) backup in the event of proximity failure. The only difference between the two fuzes is the burst height range. The Mk 93 Mod 0 fuze provides a higher burst height (35 to 60 feet) which is required for the Mk 63 HE-FRAG warhead. The M414A1 provides a burst height of 15 to 40 feet. Burst height ranges for both fuzes is based on average ground and at target approach angles of 20É to 40É. This fuze requires a sustained acceleration of 30g's in order to enable and arms at motor burnout. Air travel to arm is approximately 1,000 feet and time to arm is approximately 1.0 second.

3.11.4.10 BBU-15/B Adapter Booster. The BBU-15/B adapter booster was designed to allow the installation of the Mk 352/FMU-90/B 2.75-inch Impact nose fuzes in Mk 24/32/34/63 5.00-inch warheads.

3.11.5 Preflight Checks. With the exception of the FMU-136/B time fuze (Mk 84 MOD 4 CHAFF), there are no preflight checks to be performed. On FMU-136/B Functioning time set as desired.

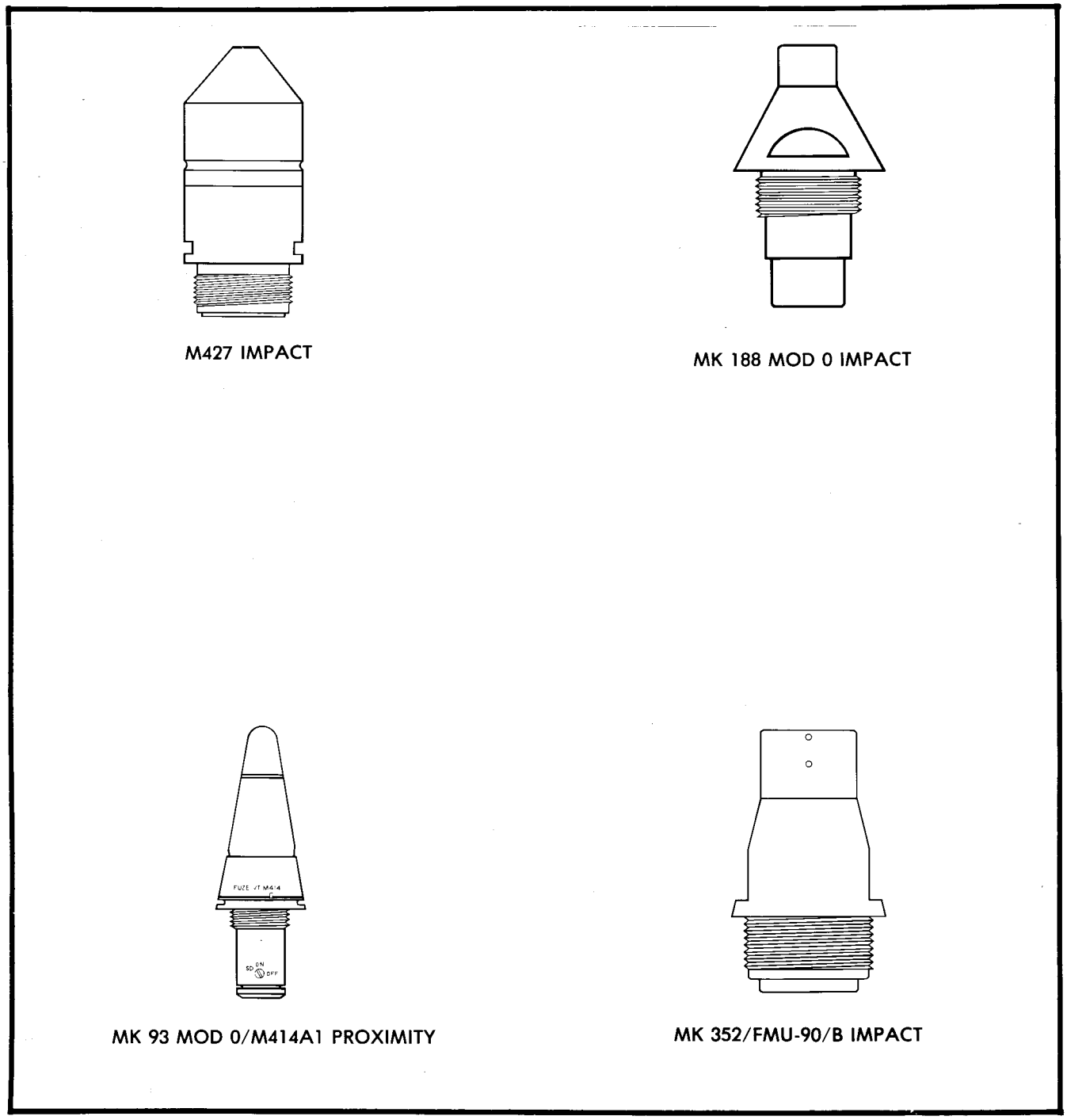


Figure 3-12. Airborne Rocket Fuses (Sheet 1 of 2)

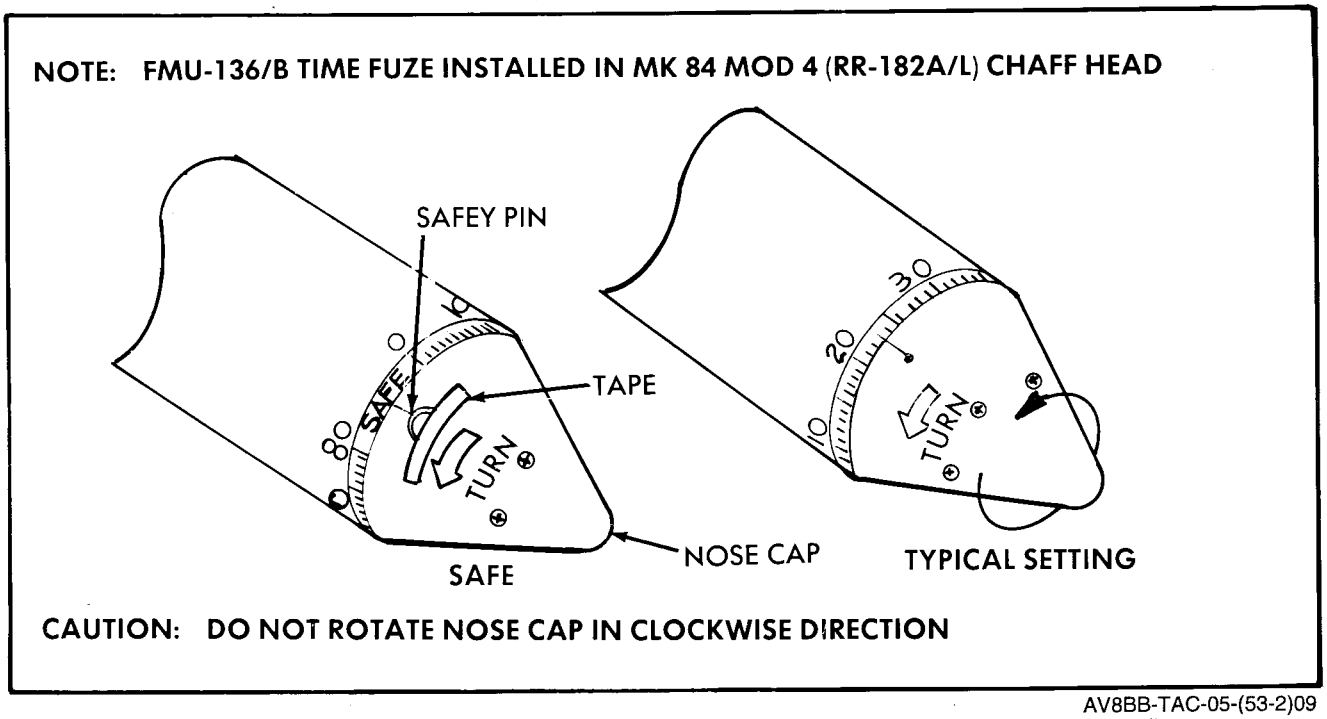


Figure 3-12. Airborne Rocket Fuzes (Sheet 2 of 2)

3.12 MINIMUM RELEASE ALTITUDES REQUIRED FOR FUZE TO ARM

The vertical distance required for the weapon to have sufficient time of fall to allow the fuze to arm is presented in Figure 3-13. These altitudes are based on impact occurring at the fuze arming time plus a late arm tolerance. Late arm times for each fuze are presented in Figure 3-14, ''Fuze Characteristics.'' When the minimum altitude for fragment or terrain avoidance exceeds the minimum altitude for fuze to arm, the minimum altitude for fragment or terrain avoidance is presented and noted on the ''Minimum Release Altitudes Required for Fuze to Arm'' chart (see Figure 3-13). Minimum release altitudes for fragment avoidance are based on a 0.0 fragment hit probability for the last bomb released in the stick and a sea level target. The minimum fragment and terrain avoidance altitudes are for a straight path dive release with a 5g wings level pullup and a level release with a 5g level breakaway recovery. Conditions marked ''NC'' are not cleared due to stores limitations.

AV-8B MINIMUM RELEASE ALTITUDES REQUIRED FOR FUZE TO ARM

WEAPON:		MK 81 MOD 1												
FIN ASSEMBLY:		CONICAL					MK 14 MOD 2							
MODE:							LOW DRAG					HIGH DRAG		
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MINIMUM RELEASE ALTITUDES (FT-MSL)												
0	450	500F	615	737	1285	1987	500F	610	731	1270	1956	100T	132	258
	500	500F	614	736	1283	1982	500F	608	729	1266	1949	100T	129	252
	550	400F	613	735	1279	1977	400F	607	728	1263	1943	100T	126	247
-10	450	1200F	1395	1592	2416	3397	1100F	1379	1573	2380	3331	490T	490T	634
	500	1200F	1479	1683	2535	3544	1100F	1461	1662	2495	3469	531T	531T	652
	550	1200F	1562	1773	2651	3686	1100F	1542	1750	2608	3606	575T	575T	669
-20	450	1800F	2149	2417	3509	4759	1700F	2123	2387	3452	4656	1035T	1035T	1035T
	500	1800F	2316	2598	3745	5051	1700F	2285	2564	3680	4935	1139T	1139T	1139T
	550	1800F	2480	2777	3976	5331	1800F	2446	2739	3907	5208	1265T	1265T	1265T
-30	450	2400F	2855	3190	4531	6031	2300F	2819	3149	4453	5893	1805T	1805T	1805T
	500	2400F	3099	3455	4876	6458	2300F	3056	3407	4788	6301	2005T	2005T	2005T
	550	2500F	3338	3715	5214	6859	2400F	3292	3664	5119	6701	2249T	2249T	2249T
-45	450	3027T	3777	4199	5863	7689	3027T	3727	4142	5758	7503	NC	NC	NC
	500	3468T	4121	4573	6351	8288	3468T	4063	4508	6231	8080	NC	NC	NC
	550	3950T	4458	4940	6822	8829	3950T	4396	4870	6700	8635	NC	NC	NC
-60	450	4556T	4556T	4968	6879	8951	4556T	4556T	4900	6751	8727	NC	NC	NC
	500	5291T	5291T	5426	7474	9673	5291T	5291T	5347	7330	9430	NC	NC	NC
	550	6024T	6024T	6024T	8036	10312	6024T	6024T	6024T	7902	10089	NC	NC	NC

NOTES:
1. Data based on level release with 5g level breakaway and straight path dive release with 5g wings level pullup.
2. F - Indicates fragment avoidance minimum altitude.
3. T - Indicates terrain avoidance minimum altitude.
4. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
BF 11103-R2
BF 11106-R0
F1-1

Figure 3-13. Minimum Release Altitudes Required for Fuze to Arm (Sheet 1 of 5)

AV-8B MINIMUM RELEASE ALTITUDES REQUIRED FOR FUZE TO ARM

WEAPON:		MK 82 MOD 2 (TP)												
FIN ASSEMBLY:		CONICAL					MK 15							
MODE:							LOW DRAG					HIGH DRAG		
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MINIMUM RELEASE ALTITUDES (FT-MSL)												
0	450	500F	599	720	1264	1963	500F	594	715	1251	1932	100T	130	259
	500	500F	599	720	1262	1961	500F	593	714	1248	1926	100T	126	252
	550	500F	598	719	1260	1957	400F	592	712	1244	1919	100T	123	246
-10	450	1200F	1382	1577	2400	3382	1200F	1366	1561	2368	3313	490T	490T	653
	500	1200F	1467	1670	2522	3534	1200F	1448	1651	2484	3453	531T	531T	668
	550	1200F	1552	1762	2642	3683	1200F	1529	1740	2598	3590	575T	575T	683
-20	450	1800F	2139	2406	3498	4754	1800F	2112	2380	3448	4647	1035T	1035T	1035T
	500	1800F	2308	2590	3740	5055	1800F	2275	2558	3679	4926	1139T	1139T	1139T
	550	1900F	2475	2772	3977	5349	1800F	2436	2734	3906	5201	1265T	1265T	1265T
-30	450	2300F	2848	3183	4527	6038	2300F	2811	3147	4458	5892	1805T	1805T	1805T
	500	2500F	3095	3452	4880	6477	2400F	3049	3407	4795	6301	2005T	2005T	2005T
	550	2600F	3340	3717	5225	6903	2500F	3285	3664	5128	6703	2249T	2249T	2249T
-45	450	3100F	3776	4198	5871	7715	3100F	3724	4148	5775	7514	NC	NC	NC
	500	3468T	4125	4578	6368	8333	3468T	4061	4516	6252	8093	NC	NC	NC
	550	3950T	4470	4952	6853	8921	3950T	4395	4879	6722	8658	NC	NC	NC
-60	450	4556T	4556T	4975	6897	8994	4556T	4556T	4913	6780	8750	NC	NC	NC
	500	5291T	5291T	5439	7505	9746	5291T	5291T	5363	7364	9456	NC	NC	NC
	550	6024T	6024T	6024T	8090	10446	6024T	6024T	6024T	7936	10142	NC	NC	NC

NOTES: 1. Data based on level release with 5g level breakaway and straight path dive release with 5g wings level pullup.
2. F - Indicates fragment avoidance minimum altitude.
3. T - Indicates terrain avoidance minimum altitude.

BF 11213-R2
BF 11212-R2
BF 11217-R1
BF 11216-R6
F1-2

Figure 3-13. Minimum Release Altitudes Required for Fuze to Arm (Sheet 2 of 5)

AV-8B MINIMUM RELEASE ALTITUDES REQUIRED FOR FUZE TO ARM

WEAPON:		MK 82 MOD 2 (TP)							
FIN ASSEMBLY:		BSU-86/B							
MODE:		LOW DRAG					HIGH DRAG		
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0
RELEASE CONDITIONS:									
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MINIMUM RELEASE ALTITUDES (FT-MSL)							
0	450	500F	592	712	1243	1917	200F	200F	273
	500	500F	590	710	1239	1909	200F	200F	268
	550	400F	588	707	1234	1900	100T	135	264
-10	450	1200F	1358	1552	2350	3282	500F	500F	722
	500	1100F	1439	1639	2461	3415	531T	531T	757
	550	1100F	1517	1724	2568	3541	575T	575T	780
-20	450	1800F	2100	2364	3418	4598	1035T	1035T	1156
	500	1800F	2259	2537	3640	4865	1139T	1139T	1227
	550	1800F	2414	2705	3853	5117	1265T	1265T	1277
-30	450	2300F	2793	3124	4415	5824	1805T	1805T	1805T
	500	2400F	3027	3378	4741	6216	2005T	2005T	2005T
	550	2400F	3252	3623	5051	6583	2249T	2249T	2249T
-45	450	3027T	3700	4117	5716	7421	NC	NC	NC
	500	3468T	4029	4475	6175	7970	NC	NC	NC
	550	3950T	4347	4819	6609	8480	NC	NC	NC
-60	450	4556T	4556T	4874	6708	8634	NC	NC	NC
	500	5291T	5291T	5312	7267	9300	NC	NC	NC
	550	6024T	6024T	6024T	7792	9913	NC	NC	NC

NOTES:
1. Data based on level release with 5g level breakaway and straight path dive release with 5g wings level pullup.
2. F - Indicates fragment avoidance minimum altitude.
3. T - Indicates terrain avoidance minimum altitude.

BF 11223-R2
BF 11224-R5
F1-3

Figure 3-13. Minimum Release Altitudes Required for Fuze to Arm (Sheet 3 of 5)

AV-8B MINIMUM RELEASE ALTITUDES REQUIRED FOR FUZE TO ARM

WEAPON:		MK 83 MOD 5 (TP)												
FIN ASSEMBLY:		CONICAL					BSU-85/B							
MODE:							LOW DRAG					HIGH DRAG		
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0
RELEASE CONDITIONS:														
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MINIMUM RELEASE ALTITUDES (FT-MSL)												
0	450	500F	591	712	1257	1954	500F	588	709	1247	1934	200F	200F	272
	500	500F	590	712	1256	1952	500F	587	707	1245	1929	200F	200F	267
	550	500F	590	711	1254	1950	500F	585	706	1240	1921	200F	200F	262
-10	450	1400F	1400F	1575	2403	3383	1400F	1400F	1564	2380	3340	600F	600F	731
	500	1400F	1462	1670	2528	3538	1300F	1450	1655	2498	3483	531T	531T	762
	550	1300F	1548	1763	2650	3692	1300F	1531	1743	2612	3618	575T	575T	789
-20	450	1900F	2137	2411	3513	4767	1900F	2120	2392	3476	4699	1035T	1035T	1172
	500	2000F	2307	2597	3759	5073	1900F	2285	2572	3710	4982	1139T	1139T	1237
	550	2000F	2477	2781	4001	5374	2000F	2446	2747	3936	5255	1265T	1265T	1294
-30	450	2500F	2850	3194	4553	6063	2500F	2827	3167	4501	5968	1805T	1805T	1805T
	500	2600F	3099	3466	4913	6510	2600F	3067	3430	4843	6382	2005T	2005T	2005T
	550	2800F	3347	3735	5264	6942	2700F	3303	3687	5175	6783	2249T	2249T	2249T
-45	450	3300F	3783	4219	5914	7758	3300F	3751	4181	5841	7623	NC	NC	NC
	500	3500F	4135	4604	6421	8387	3500F	4090	4552	6322	8207	NC	NC	NC
	550	3950T	4485	4982	6911	8975	3950T	4424	4916	6790	8761	NC	NC	NC
-60	450	4556T	4556T	5003	6955	9054	4556T	4556T	4957	6864	8885	NC	NC	NC
	500	5291T	5291T	5474	7574	9816	5291T	5291T	5410	7452	9597	NC	NC	NC
	550	6024T	6024T	6024T	8163	10519	6024T	6024T	6024T	8015	10246	NC	NC	NC

NOTES: 1. Data based on level release with 5g level breakaway and straight path dive release with 5g wings level pullup.
2. F - Indicates fragment avoidance minimum altitude.
3. T - Indicates terrain avoidance minimum altitude.

BF 11307-R1
BF 11306-R1
BF 11309-R2
BF 11308-R5
F1-4

Figure 3-13. Minimum Release Altitudes Required for Fuze to Arm (Sheet 4 of 5)

AV-8B MINIMUM RELEASE ALTITUDES REQUIRED FOR FUZE TO ARM

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MINIMUM RELEASE ALTITUDES (FT-AGL)			
0	450	592	1926	587	1919
	500	590	1918	586	1913
	550	588	1905	584	1904
-10	450	1362	3303	1358	3300
	500	1443	3438	1440	3439
	550	1518	3552	1520	3569
-20	450	2107	4632	2105	4634
	500	2268	4900	2267	4911
	550	2417	5132	2425	5172
-30	450	2805	5871	2804	5879
	500	3039	6258	3042	6283
	550	3257	6600	3272	6663
-45	450	3717	7483	3719	7501
	500	4046	8018	4053	8068
	550	4353	8487	4378	8582
-60	450	4556T	8706	4556T	8737
	500	5291T	9351	5291T	9423
	550	6024T	9898	6024T	10028

NOTES:
1. Data based on level release with a 5g level breakaway and straight path dive release with a 5g wings level pullup.
2. T - Indicates terrain avoidance minimum altitude.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F1-5

Figure 3-13. Minimum Release Altitudes Required for Fuze to Arm (Sheet 5 of 5)

FUZE CHARACTERISTICS

FUZE	ARMING TIMES (SEC)	EARLY ARM TIMES (SEC)	LATE ARM TIMES (SEC)	PROBABILITY OF EARLY BURST (PEB)
M904 SERIES	2.0*	1.8*	2.4*	0.00001
	4.0*	3.6*	4.4*	
	6.0	5.4	6.6	
	8.0	7.2	8.8	
	10.0	9.0	11.0	
	12.0	10.8	13.2	
	14.0	12.6	15.4	
	16.0	14.4	17.6	
	18.0	16.2	19.8	
MK 344 (VT)	5.5	5.0	6.0	0.0291
MK 344 (NON-VT)	5.5	5.0	6.0	0.0011
MK 376 (VT)	2.6*	2.3*	3.0*	0.0291
	10.0	8.8	11.0	
MK 376 (NON-VT)	2.6*	2.3*	3.0*	0.0011
	10.0	8.8	11.0	
FMU-139 (VT)	2.6*	2.5*	2.7*	0.0290
	5.5	5.2	5.8	
	10.0	9.5	10.5	
FMU-139 (NON-VT)	2.6*	2.5*	2.7*	0.0011
	5.5	5.2	5.8	
	10.0	9.5	10.5	

* THESE ARMING TIMES ARE ONLY AUTHORIZED FOR HIGH DRAG DELIVERIES.

F2-1

Figure 3-14. Fuze Characteristics

3.13 EARLY BURST MANEUVERS

3.13.1 General. Early burst data for fuze arming time/stick length combinations are determined by performing the following maneuvers as described in paragraphs 3.13.1.1 through 3.13.1.4. All maneuvers are based on a 24,000-pound aircraft weight. Dive maneuvers are based on a constant release/recovery power setting until the flight path angle equals zero. Level maneuvers are based on 100 percent military power immediately after last bomb release. Also, higher g's and/or less g-buildup times than those stated in the maneuver descriptions result in added safety.

3.13.1.1 Straight Path Dive Release with a 5g Wings Level Pullup. A straight path constant velocity flight is maintained during weapon release and for a 1.0-second pilot/aircraft response delay after the last weapon is released. At the end of the response delay, the load factor is increased linearly to 5.0g's in 1.5 seconds. This load factor (or the maximum attainable within the angle-of-attack limits) is maintained to achieve a 15É flightpath run-out angle.

3.13.1.2 Level Release with a Straight and Level Recovery. A constant velocity flight is maintained throughout weapon release and recovery. The initiation of a sharp climbing maneuver immediately after the last bomb release will result in added safety.

3.13.1.3 Level Release with a 5g Level Breakaway. A constant velocity flight is maintained during weapon release and for a 1.0-second pilot/aircraft response delay after the last weapon in released. After the response delay, the load factor is increased linearly to 5.0g's in 1.5 seconds and the aircraft is rolled as a function of the load factor in order to maintain a level flightpath turn. This load factor (or the maximum attainable within the angle-of-attack limits) is maintained until a 90É heading change is achieved.

3.13.1.4 Loft Delivery with a Wing-Over Escape. The maneuver is initiated with the specified run-in velocity. Military thrust is applied immediately prior to pullup. The load factor is then increased linearly to 3.0g's in 1.0 second. After the desired loft angle is reached, the weapon is released and the aircraft is rolled 135É in 2.0 seconds. After a 90É heading change is achieved, recovery is initiated.

3.14 FUZE ARMING TIMES

The proper selection of fuze arming times is one of the most important aspects of weapon delivery from the standpoint of safety and reliability. Choosing the proper fuze arming time will ensure that:

1. The delivered weapons will have sufficient time to arm properly before impact.

2. In the event of weapon detonation at arming, the probability of damage to the delivery aircraft will be minimized.

A detonation either at or shortly after arming is known as an ''early burst.'' The resulting damage to the aircraft can range from minor fragment hits to catastrophic loss of aircraft and pilot. Early burst can result from bomb-to-bomb collision, bomb-to aircraft collision, or fuze malfunction. Figure 3-16 presents authorized fuze arming times versus maximum stick lengths which ensure that, in the event of an early burst, the probability of fragment hit is within acceptable limits. To minimize the possibility of aircraft damage, refer to Bomb Fuzing text and select arming times in accordance with the procedures given in ''Instructions for Use of Figure 3-16.''

NOTE

Arming times less than those listed are unauthorized; arming times greater than those listed are authorized for stick lengths up to and including 4.0 seconds, providing the weapon's time of fall exceeds the arming time.

Refer to the ''Minimum Release Altitudes Required for Fuze to Arm'' charts, Figure 3-13 to obtain the altitude necessary for proper time of fall. Data defining authorized fuze arming times and probability of hit are based on early burst occurring at the fuze arming time considering the early arm tolerance of each fuze. The early arm tolerances for each fuze are given in Figure 3-14.

WARNING

No data are provided for airspeeds less than 450 KTAS, therefore releases at less than 450 KTAS are prohibited. For airspeeds greater than 550 KTAS use the 550 KTAS stick length parameters. For airspeeds between those provided use the stick length for the slower of the two contiguous airspeeds. Do not interpolate.

NOTE

- All stick lengths consider a single weapon detonation of the worst case bomb at the fuze arming time. A 0.0-second stick length indicates a single release pulse. Stick lengths greater than 4.0 seconds have not been evaluated. For those cases marked UA, the fuze arming time is unauthorized and for those marked DUD, the fuze arming time exceeds the weapon's time of fall. Conditions marked ''NC '' are not cleared due to stores limitations.

- When dual fuzing, determine the maximum stick lengths for the arming times of both fuzes. Use the most restrictive stick length for weapon delivery. When using Laser Guided Bombs/Guided Bomb Units, delivery restrictions and minimum authorized arming times are the same as for other Mk 80 series GP bombs delivered in similar modes.

3.14.1 Safety Criteria for Authorized Fuze Arming Times. A fuze arming time is authorized if the following safety criteria are met:

1. FOR EACH WEAPON RELEASE IN A STICK, THE PROBABILITY OF FRAGMENT HIT ON THE DELIVERY AIRCRAFT IN THE EVENT OF EARLY BURST ($P_{H/EB}$) AT FUZE ARMING TIME DOES NOT EXCEED 1 IN 10 (0.10).

AND

2. THE OVERALL PROBABILITY OF FRAGMENT HIT (P_H) PER WEAPON RELEASE DOES NOT EXCEED 1 IN 10,000 (0.0001).

The overall probability of fragment hit, P_H is defined as the product of $P_{H/EB}$ and P_{EB}. $P_{H/EB}$ is the probability of at least one fragment hit on the delivery aircraft in the event of early burst at fuze arming. P_{EB} is the probability of occurrence of early burst and is derived from range testing and updated by ordnance expenditure and incident reports. Early burst probabilities and arming times for current fuzes are given in Figure 3-14.

WARNING

The Mk 344 (VT and NON-VT) fuze is not authorized in the high drag mode. The FMU-139 (VT and NON-VT) fuze arming times of 5.5 and 10.0 seconds also are not authorized in the high drag mode.

3.14.2 Instructions for Use of Figure 3-16. The data in Figure 3-16 for the authorized fuzes are presented as maximum stick lengths in seconds verses fuze arming times for specified aircraft release and recovery maneuvers and are determined by performing the following steps.

1. Obtain authorized arming times and maximum stick length combinations from Figure 3-16 by determining the following parameters:

   (a) Type of release (level, straight path dive, or loft).

   (b) Type of recovery (straight ahead, breakaway, wings level pullup, or wing-over).

   (c) Bomb/fin/fuze combinations.

   (d) Number of release pulses per pass.

   (e) Release conditions (angle, airspeed, and altitude FT-MSL).

   (f) Intervalometer setting.

2. Record from Figure 3-16 for the selected weapon at the intended release conditions, the maximum permissible stick lengths for the available arming times.

3. Compute the total stick length (TSL) in seconds.

Parent Rack: TSL = [(QUANTITY/MULTIPLE)-1)]x(INTERVAL)

ITER: TSL = [(QUANTITY/MULTIPLE)+1]x(INTERVAL)

where: TSL is the time in seconds between first and last weapons released.

NOTE

ITERs require the addition (+) of one (1) due to the posibility of an extra release pulse. This extra pulse may occur when the SMC attempts to control the interval and spacing of the stores being released from ITERs, it skips a station in the release sequence. The possibility of an extra pulse is accounted for when computing total stick length (TSL) for safety reasons.

4. If the stick lengths recorded in step 2 are equal to or greater than the total stick lengths (TSL) from step 3, then the corresponding arming time(s) for those stick lengths are authorized. If the recorded stick lengths are less than TSL, then the corresponding arming times are unauthorized.

5. Be certain that the intended maneuver is compatible with release/carriage speed restrictions.

3.14.3 Sample Problem. Determine authorized fuze arming times for the following delivery:

Type release: level
Type recovery: 5g level breakaway
Fuze: M904
Weapon: 6 Mk 81 Mod 1 bombs
Fin Assembly: conical
Release Altitude: 5,000 feet MSL
Release Velocity: 450 KTAS
Intervalometer Setting: 110 milliseconds
Rack: parent, single release

1. Select the data as shown from Figure 3-15 under title:
AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY M904 FUZE

2. Record the permissible stick length versus arming times for the given conditions.

Arming Times (Seconds)	Maximum Stick Lengths (Seconds)
6.0*	2.0

*M904 Arming Times greater than 6.0 seconds are authorized for stick lengths up to and including 4.0 seconds.

3. Total Stick Length (TSL) = ((6/1)-1) x (0.110). TSL = 0.55 second.

4. Comparing the stick length computed in step 3 (0.55 second) to the value obtained from Figure 3-15, the value for 6.0-second arming time is greater than 0.55; thus, 6.0 seconds is an authorized arming time for the considered delivery parameters.

5. If the resulting arming time is tactically ″too high″, or computed stick length is greater than maximum authorized stick length, then:

(a) Reduce the number of weapons released or the release interval setting or both, or

(b) Investigate Figure 3-16 for other possible specific release conditions which permit the stick length computed in Step 3 for the arming time desired, or

(c) Investigate the possibility of employing another type of maneuver for which data are available, or

(d) See Figure 3-18 and related text defining the probability of fragment hit in the event of early burst. This chart may be used only if the Officer-in-Tactical-Command (OTC) authorizes violation of maximum authorized stick lenghts or minimum authorized fuze arming times.

WARNING

The mission planner must follow the defined procedures in selecting arming time(s) shorter than those authorized.

NOTE

Use of Figure 3-18 is not permitted with electrical fuzes because of their higher early burst rates.

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY
M904 FUZE

WEAPON:		MK 81 MOD 1	MK 82 MOD 2 (TP)						
FIN ASSEMBLY:		CONICAL	MK 14 MOD 2		CONICAL		MK 15		
MODE:			LOW DRAG	HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	6.0	2.0	6.0	8.0	6.0	8.0	2.0
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN TO 5,000	450	2.0	4.0	4.0	1.4	4.0	1.6	4.0	0.2
	500	3.6	4.0	4.0	1.4	4.0	1.8	4.0	4.0
	550	4.0	4.0	4.0	1.6	4.0	2.2	4.0	4.0
5,001 TO 10,000	450	1.4	1.8	4.0	1.0	4.0	1.0	4.0	UA
	500	1.6	4.0	4.0	1.0	4.0	1.2	4.0	4.0
	550	2.0	4.0	4.0	1.2	4.0	1.4	4.0	4.0
10,001 TO 20,000	450	0.2	0.4	4.0	0.0	2.6	0.0	2.8	UA
	500	0.6	0.6	4.0	0.2	3.0	0.2	3.4	UA
	550	0.6	0.8	4.0	0.2	3.2	0.2	4.0	UA

F3-1

Figure 3-15. Sample Authorized Fuze Arming Times/Maximum Stick Lengths

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE M904 FUZE

WEAPON:		MK 81 MOD 1			MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL	MK 14 MOD 2		CONICAL	MK 15		BSU-86/B	
MODE:			LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG	LOW DRAG	HIGH DRAG
ARMING TIMES:		6.0	6.0	2.0	6.0	6.0	2.0	6.0	2.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
-10	450	2.2	2.6	4.0	1.8	1.8	0.4	2.0	UA
	500	2.6	4.0	4.0	2.0	2.2	4.0	2.4	UA
	550	3.2	4.0	4.0	2.2	2.6	4.0	3.2	0.2
-20	450	2.2	2.4	4.0	1.8	1.8	0.6	1.8	UA
	500	2.4	2.8	4.0	1.8	2.0	4.0	2.2	UA
	550	2.6	3.8	4.0	2.0	2.4	4.0	2.6	0.4
-30	450	2.0	2.2	4.0	1.6	1.6	0.8	1.8	UA
	500	2.2	2.4	4.0	1.8	1.8	4.0	2.0	UA
	550	2.4	2.8	4.0	1.8	2.0	4.0	2.2	0.6
-45	450	1.8	1.8	NC	1.4	1.6	NC	1.6	NC
	500	1.8	2.0	NC	1.6	1.6	NC	1.8	NC
	550	1.8	2.0	NC	1.6	1.6	NC	1.8	NC
-60	450	1.4	1.4	NC	1.0	1.0	NC	1.2	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11105-R1
BF 11103-R2
BF 11213-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
F4-1

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 1 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE M904 FUZE

WEAPON:		MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		CONICAL		BSU-85/B		
MODE:				LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	8.0	6.0	8.0	2.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)				
-10	450	1.0	4.0	1.0	4.0	UA
	500	1.2	4.0	1.2	4.0	UA
	550	1.4	4.0	1.4	4.0	4.0
-20	450	1.0	4.0	1.0	4.0	UA
	500	1.2	4.0	1.2	4.0	0.0
	550	1.4	4.0	1.4	4.0	4.0
-30	450	1.0	3.8	1.0	3.8	UA
	500	1.2	3.8	1.2	4.0	0.2
	550	1.2	DUD	1.4	DUD	4.0
-45	450	1.0	DUD	1.0	DUD	NC
	500	1.0	DUD	1.0	DUD	NC
	550	1.0	DUD	1.0	DUD	NC
-60	450	DUD	DUD	0.6	DUD	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11307-R1
BF 11309-R2
BF 11308-R5
F4-2

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 2 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE MK 344 AND MK 376 (NON-VT) FUZES

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
-10	450	1.4	4.0	1.6	4.0	4.0	1.0	4.0	1.2	4.0	4.0
	500	1.6	4.0	2.2	4.0	4.0	1.2	4.0	1.4	4.0	4.0
	550	2.0	4.0	4.0	4.0	4.0	1.4	4.0	1.6	4.0	4.0
-20	450	1.4	4.0	1.6	4.0	4.0	1.0	4.0	1.2	4.0	4.0
	500	1.6	DUD	1.8	4.0	4.0	1.2	DUD	1.4	4.0	4.0
	550	1.8	DUD	2.4	DUD	4.0	1.4	DUD	1.6	DUD	4.0
-30	450	1.4	DUD	1.4	DUD	4.0	1.0	DUD	1.0	DUD	4.0
	500	1.4	DUD	1.6	DUD	4.0	1.2	DUD	1.2	DUD	4.0
	550	1.6	DUD	2.0	DUD	4.0	1.2	DUD	1.4	DUD	4.0
-45	450	1.2	DUD	1.2	DUD	NC	1.0	DUD	1.0	DUD	NC
	500	1.2	DUD	1.4	DUD	NC	1.0	DUD	1.2	DUD	NC
	550	1.4	DUD	1.6	DUD	NC	1.2	DUD	1.2	DUD	NC
-60	450	1.0	DUD	1.0	DUD	NC	0.8	DUD	0.8	DUD	NC

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
F4-3

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 3 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE MK 344 AND MK 376 (NON-VT) FUZES

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B		
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
-10	450	1.2	4.0	4.0	0.2	4.0	0.2	4.0	4.0
	500	1.6	4.0	4.0	0.4	4.0	0.6	4.0	4.0
	550	2.0	4.0	4.0	0.6	4.0	0.8	4.0	4.0
-20	450	1.2	4.0	1.4	0.4	4.0	0.4	4.0	4.0
	500	1.4	4.0	4.0	0.6	DUD	0.6	4.0	4.0
	550	1.8	DUD	4.0	0.8	DUD	0.8	DUD	4.0
-30	450	1.2	DUD	0.6	0.4	DUD	0.4	DUD	4.0
	500	1.4	DUD	4.0	0.6	DUD	0.6	DUD	4.0
	550	1.6	DUD	4.0	0.6	DUD	0.8	DUD	4.0
-45	450	1.0	DUD	NC	0.4	DUD	0.4	DUD	NC
	500	1.2	DUD	NC	0.6	DUD	0.6	DUD	NC
	550	1.4	DUD	NC	0.6	DUD	0.8	DUD	NC
-60	450	0.8	DUD	NC	0.4	DUD	0.4	DUD	NC

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-4

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 4 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
-10	450	1.4	4.0	0.6	4.0
	500	1.6	4.0	1.0	4.0
	550	2.0	4.0	1.2	4.0
-20	450	1.4	4.0	0.8	4.0
	500	1.6	4.0	1.0	4.0
	550	1.8	DUD	1.2	DUD
-30	450	1.4	DUD	0.8	DUD
	500	1.4	DUD	1.0	DUD
	550	1.6	DUD	1.0	DUD
-45	450	1.2	DUD	0.6	DUD
	500	1.2	DUD	0.8	DUD
	550	1.4	DUD	1.0	DUD
-60	450	1.0	DUD	0.6	DUD
	500	DUD	DUD	DUD	DUD

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.
4. DUDs are based on a Sea-Level Target.

BF 16002-R0
BF 16003-R1
F4-4A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 5 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE MK 344 AND MK 376 (VT) FUZES

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
-10	450	0.2	4.0	0.4	4.0	4.0	0.2	4.0	0.2	4.0	UA
	500	0.6	4.0	0.8	4.0	4.0	0.4	4.0	0.4	4.0	UA
	550	0.8	4.0	1.2	4.0	4.0	0.4	4.0	0.4	4.0	4.0
-20	450	0.4	4.0	0.6	4.0	4.0	0.4	4.0	0.4	4.0	UA
	500	0.6	DUD	0.8	4.0	4.0	0.6	DUD	0.6	4.0	UA
	550	0.8	DUD	1.0	DUD	4.0	0.6	DUD	0.6	DUD	4.0
-30	450	0.4	DUD	0.6	DUD	4.0	0.4	DUD	0.4	DUD	UA
	500	0.6	DUD	0.8	DUD	4.0	0.6	DUD	0.4	DUD	UA
	550	0.8	DUD	1.0	DUD	4.0	0.6	DUD	0.6	DUD	4.0
-45	450	0.4	DUD	0.6	DUD	NC	0.4	DUD	0.4	DUD	NC
	500	0.6	DUD	0.8	DUD	NC	0.4	DUD	0.4	DUD	NC
	550	0.8	DUD	1.0	DUD	NC	0.4	DUD	0.6	DUD	NC
-60	450	0.4	DUD	0.4	DUD	NC	0.4	DUD	0.4	DUD	NC

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
F4-5

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 6 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE MK 344 AND MK 376 (VT) FUZES

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B		
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
-10	450	0.0	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.2	4.0	UA	UA	4.0	UA	4.0	UA
	550	0.8	4.0	UA	UA	4.0	UA	4.0	4.0
-20	450	0.4	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.4	4.0	UA	0.0	DUD	0.0	4.0	UA
	550	0.8	DUD	UA	0.0	DUD	0.0	DUD	0.8
-30	450	0.4	DUD	UA	UA	DUD	UA	DUD	UA
	500	0.4	DUD	UA	0.0	DUD	UA	DUD	0.6
	550	0.8	DUD	UA	0.0	DUD	0.0	DUD	0.6
-45	450	0.4	DUD	NC	UA	DUD	0.0	DUD	NC
	500	0.4	DUD	NC	0.0	DUD	0.0	DUD	NC
	550	0.6	DUD	NC	0.0	DUD	0.2	DUD	NC
-60	450	0.4	DUD	NC	UA	DUD	UA	DUD	NC

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-6

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 7 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE FMU-139 (NON-VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)									MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		CONICAL		MK 15			BSU-86/B				CONICAL		BSU-85/B		
MODE:				LOW DRAG		HIGH DRAG	LOW DRAG		HIGH DRAG				LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	2.6		5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)													
-10	450	1.4	4.0	1.4	4.0	4.0	1.6	4.0	4.0		0.6	4.0	0.6	4.0	4.0
	500	1.6	4.0	1.8	4.0	4.0	2.0	4.0	4.0		0.8	4.0	0.8	4.0	4.0
	550	1.8	4.0	2.2	4.0	4.0	2.4	4.0	4.0		1.0	4.0	1.0	4.0	4.0
-20	450	1.4	4.0	1.4	4.0	4.0	1.4	4.0	4.0		0.8	4.0	0.8	4.0	4.0
	500	1.4	DUD	1.6	4.0	4.0	1.8	4.0	4.0		0.8	DUD	1.0	4.0	4.0
	550	1.6	DUD	2.0	DUD	4.0	2.2	DUD	4.0		1.0	DUD	1.0	DUD	4.0
-30	450	1.2	DUD	1.4	DUD	4.0	1.4	DUD	4.0		0.8	DUD	0.8	DUD	4.0
	500	1.4	DUD	1.6	DUD	4.0	1.6	DUD	4.0		0.8	DUD	0.8	DUD	4.0
	550	1.4	DUD	1.8	DUD	4.0	1.8	DUD	4.0		1.0	DUD	1.0	DUD	4.0
-45	450	1.2	DUD	1.2	DUD	NC	1.2	DUD	NC		0.6	DUD	0.6	DUD	NC
	500	1.2	DUD	1.4	DUD	NC	1.4	DUD	NC		0.8	DUD	0.8	DUD	NC
	550	1.4	DUD	1.4	DUD	NC	1.6	DUD	NC		0.8	DUD	1.0	DUD	NC
-60	450	1.0	DUD	1.0	DUD	NC	1.0	DUD	NC		0.6	DUD	0.6	DUD	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-7

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 8 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE FMU-139 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
-10	450	1.4	4.0	0.6	4.0
	500	1.6	4.0	1.0	4.0
	550	2.0	4.0	1.2	4.0
-20	450	1.4	4.0	0.8	4.0
	500	1.6	4.0	1.0	4.0
	550	1.8	DUD	1.2	DUD
-30	450	1.4	DUD	0.8	DUD
	500	1.4	DUD	1.0	DUD
	550	1.6	DUD	1.0	DUD
-45	450	1.2	DUD	0.6	DUD
	500	1.2	DUD	0.8	DUD
	550	1.4	DUD	1.0	DUD
-60	450	1.0	DUD	0.6	DUD
	500	DUD	DUD	DUD	DUD

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.
2. DUDs are based on a Sea-Level Target.

BF 16002-R0
BF 16003-R1
F4-7A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 9 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE FMU-139 (VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)								MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		CONICAL		MK 15			BSU-86/B			CONICAL		BSU-85/B		
MODE:				LOW DRAG		HIGH DRAG	LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS:														
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)												
-10	450	0.4	4.0	0.4	4.0	UA	0.4	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.6	4.0	0.6	4.0	UA	0.6	4.0	UA	UA	4.0	UA	4.0	0.0
	550	0.8	4.0	0.8	4.0	4.0	1.0	4.0	UA	0.0	4.0	0.0	4.0	4.0
-20	450	0.6	4.0	0.6	4.0	UA	0.8	4.0	UA	0.0	4.0	0.0	4.0	UA
	500	0.8	DUD	0.8	4.0	UA	0.8	4.0	UA	0.2	DUD	0.0	4.0	UA
	550	0.8	DUD	0.8	DUD	4.0	1.0	DUD	UA	0.2	DUD	0.2	DUD	4.0
-30	450	0.6	DUD	0.6	DUD	0.0	0.6	DUD	UA	0.0	DUD	0.0	DUD	UA
	500	0.8	DUD	0.8	DUD	2.6	0.6	DUD	UA	0.2	DUD	0.0	DUD	2.2
	550	0.8	DUD	0.8	DUD	4.0	1.0	DUD	UA	0.2	DUD	0.2	DUD	4.0
-45	450	0.6	DUD	0.6	DUD	NC	0.6	DUD	NC	0.0	DUD	0.2	DUD	NC
	500	0.6	DUD	0.6	DUD	NC	0.6	DUD	NC	0.2	DUD	0.2	DUD	NC
	550	0.6	DUD	0.8	DUD	NC	0.8	DUD	NC	0.2	DUD	0.2	DUD	NC
-60	450	0.6	DUD	0.4	DUD	NC	0.6	DUD	NC	0.0	DUD	0.0	DUD	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-8

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 10 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
M904 FUZE

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	8.0	6.0	8.0	2.0	6.0	8.0	6.0	8.0	2.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
-10	450	1.8	4.0	2.0	4.0	4.0	1.4	4.0	1.4	4.0	UA
	500	2.0	4.0	2.4	4.0	4.0	1.6	4.0	1.6	4.0	4.0
	550	2.4	4.0	4.0	4.0	4.0	1.8	4.0	2.0	4.0	4.0
-20	450	1.8	4.0	1.8	4.0	4.0	1.4	4.0	1.4	4.0	UA
	500	2.0	4.0	2.2	4.0	4.0	1.6	4.0	1.6	4.0	4.0
	550	2.2	4.0	2.6	4.0	4.0	1.6	4.0	1.8	4.0	4.0
-30	450	1.6	4.0	1.8	4.0	4.0	1.4	4.0	1.4	4.0	UA
	500	1.8	4.0	2.0	4.0	4.0	1.4	4.0	1.6	4.0	4.0
	550	2.0	4.0	2.2	4.0	4.0	1.6	4.0	1.8	4.0	4.0
-45	450	1.6	4.0	1.6	4.0	NC	1.2	3.6	1.2	3.8	NC
	500	1.6	4.0	1.6	4.0	NC	1.4	3.8	1.4	3.8	NC
	550	1.8	4.0	2.0	4.0	NC	1.4	4.0	1.6	4.0	NC
-60	450	1.4	3.6	1.4	3.6	NC	1.0	3.2	1.0	3.2	NC
	500	1.4	3.6	1.4	3.8	NC	1.2	3.4	1.2	3.4	NC
	550	1.4	3.8	1.6	3.8	NC	1.2	3.4	1.4	3.4	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11105-R1
BF 11103-R2
BF 11213-R2
BF 11217-R1
BF 11216-R6
F4-9

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 11 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
M904 FUZE

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B		
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	8.0	2.0	6.0	8.0	6.0	8.0	2.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
-10	450	1.4	4.0	UA	0.6	3.8	0.6	3.8	UA
	500	1.8	4.0	UA	0.8	4.0	0.8	4.0	UA
	550	2.2	4.0	UA	1.0	4.0	1.0	4.0	1.2
-20	450	1.6	4.0	UA	0.8	3.8	0.8	3.6	UA
	500	1.8	4.0	UA	0.8	3.8	0.8	3.8	UA
	550	2.0	4.0	UA	1.0	3.8	1.0	4.0	1.0
-30	450	1.4	4.0	UA	0.8	3.6	0.8	3.6	UA
	500	1.6	4.0	UA	0.8	3.6	0.8	3.6	UA
	550	1.8	4.0	UA	1.0	3.6	1.0	3.8	0.8
-45	450	1.2	3.8	NC	0.8	3.2	0.8	3.2	NC
	500	1.4	4.0	NC	0.8	3.2	0.8	3.2	NC
	550	1.6	4.0	NC	0.8	3.2	1.0	3.2	NC
-60	450	1.2	3.4	NC	0.6	3.0	0.6	3.0	NC
	500	1.2	3.4	NC	0.6	3.0	0.8	3.0	NC
	550	1.4	3.6	NC	0.8	3.0	0.8	3.0	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11307-R1
BF 11309-R2
BF 11308-R5
F4-10

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 12 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZES

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
-10	450	1.2	4.0	1.2	4.0	4.0	0.6	4.0	0.8	4.0	4.0
	500	1.2	4.0	1.4	4.0	4.0	0.8	4.0	1.0	4.0	4.0
	550	1.6	4.0	2.0	4.0	4.0	1.0	4.0	1.2	4.0	4.0
-20	450	1.2	4.0	1.2	4.0	4.0	0.8	4.0	0.8	4.0	4.0
	500	1.2	4.0	1.4	4.0	4.0	1.0	4.0	1.0	4.0	4.0
	550	1.4	4.0	1.8	4.0	4.0	1.0	4.0	1.2	4.0	4.0
-30	450	1.0	4.0	1.2	4.0	4.0	0.8	4.0	0.8	4.0	4.0
	500	1.2	4.0	1.2	4.0	4.0	0.8	4.0	1.0	4.0	4.0
	550	1.4	4.0	1.6	4.0	4.0	1.0	4.0	1.2	4.0	4.0
-45	450	1.0	4.0	1.0	4.0	NC	0.6	4.0	0.8	4.0	NC
	500	1.0	4.0	1.2	4.0	NC	0.8	4.0	0.8	4.0	NC
	550	1.2	4.0	1.4	4.0	NC	0.8	4.0	1.0	4.0	NC
-60	450	0.8	4.0	0.8	4.0	NC	0.6	4.0	0.6	4.0	NC
	500	1.0	4.0	1.0	4.0	NC	0.6	4.0	0.8	4.0	NC
	550	1.0	DUD	1.0	DUD	NC	0.8	DUD	0.8	DUD	NC

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
F4-11

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 13 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZES

WEAPON:	MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:	BSU-86/B			CONICAL		BSU-85/B		
MODE:	LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS:								
FLIGHT PATH ANGLE (DEG) / VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
-10 / 450	0.8	4.0	0.6	UA	4.0	UA	4.0	0.8
500	1.0	4.0	1.0	0.0	4.0	0.2	4.0	4.0
550	1.4	4.0	4.0	0.2	4.0	0.4	4.0	4.0
-20 / 450	0.8	4.0	0.6	0.2	4.0	0.2	4.0	0.6
500	1.0	4.0	0.8	0.2	4.0	0.2	4.0	4.0
550	1.4	4.0	4.0	0.4	4.0	0.4	4.0	4.0
-30 / 450	0.8	4.0	0.4	0.2	4.0	0.2	4.0	0.6
500	1.0	4.0	0.4	0.2	4.0	0.4	4.0	4.0
550	1.2	4.0	4.0	0.4	4.0	0.4	4.0	4.0
-45 / 450	0.8	4.0	NC	0.2	4.0	0.2	4.0	NC
500	0.8	4.0	NC	0.2	4.0	0.4	4.0	NC
550	1.0	4.0	NC	0.4	4.0	0.4	4.0	NC
-60 / 450	0.6	4.0	NC	0.2	4.0	0.2	4.0	NC
500	0.8	4.0	NC	0.2	4.0	0.2	4.0	NC
550	1.0	4.0	NC	0.2	DUD	0.4	DUD	NC

NOTES: 1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-12

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 14 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
-10	450	1.0	4.0	0.2	4.0
	500	1.2	4.0	0.6	4.0
	550	1.6	4.0	0.8	4.0
-20	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.8	4.0
-30	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.8	4.0
-45	450	1.0	4.0	0.4	4.0
	500	1.0	4.0	0.6	4.0
	550	1.2	4.0	0.6	4.0
-60	450	0.8	4.0	0.4	4.0
	500	1.0	4.0	0.4	4.0
	550	1.0	4.0	0.6	DUD

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.
4. DUDs are based on a Sea-Level Target.

BF 16002-R0
BF 16003-R1
F4-12A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 15 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (VT) FUZES

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
-10	450	UA	4.0	UA	4.0	4.0	UA	4.0	UA	4.0	UA
	500	0.2	4.0	0.4	4.0	4.0	UA	4.0	0.0	4.0	UA
	550	0.4	4.0	0.6	4.0	4.0	UA	4.0	0.2	4.0	UA
-20	450	0.2	4.0	0.2	4.0	4.0	UA	4.0	0.0	4.0	UA
	500	0.2	4.0	0.4	4.0	4.0	0.0	4.0	0.2	4.0	UA
	550	0.6	4.0	0.6	4.0	4.0	0.0	4.0	0.2	4.0	UA
-30	450	0.2	4.0	0.2	4.0	4.0	0.0	4.0	0.0	4.0	UA
	500	0.4	4.0	0.4	4.0	4.0	0.2	4.0	0.2	4.0	UA
	550	0.6	4.0	0.6	4.0	4.0	0.4	4.0	0.2	4.0	UA
-45	450	0.2	4.0	0.2	4.0	NC	0.2	4.0	0.2	4.0	NC
	500	0.4	4.0	0.4	4.0	NC	0.2	4.0	0.2	4.0	NC
	550	0.4	4.0	0.6	4.0	NC	0.4	4.0	0.2	4.0	NC
-60	450	0.2	4.0	0.2	4.0	NC	0.0	4.0	0.2	4.0	NC
	500	0.2	4.0	0.4	4.0	NC	0.2	4.0	0.2	4.0	NC
	550	0.4	DUD	0.4	DUD	NC	0.2	DUD	0.2	DUD	NC

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
F4-13

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 16 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (VT) FUZES

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B		
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
-10	450	UA	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.0	4.0	UA	UA	4.0	UA	4.0	UA
	550	0.0	4.0	UA	UA	4.0	UA	4.0	UA
-20	450	0.0	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.2	4.0	UA	UA	4.0	UA	4.0	UA
	550	0.2	4.0	UA	UA	4.0	UA	4.0	0.6
-30	450	0.2	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.2	4.0	UA	UA	4.0	UA	4.0	UA
	550	0.2	4.0	UA	UA	4.0	UA	4.0	0.4
-45	450	0.2	4.0	NC	UA	4.0	UA	4.0	NC
	500	0.2	4.0	NC	UA	4.0	UA	4.0	NC
	550	0.2	4.0	NC	UA	4.0	UA	4.0	NC
-60	450	0.2	4.0	NC	UA	4.0	UA	4.0	NC
	500	0.2	4.0	NC	UA	4.0	UA	4.0	NC
	550	0.2	4.0	NC	UA	DUD	UA	DUD	NC

NOTES: 1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-14

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 17 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
FMU-139 (NON-VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)									MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		CONICAL		MK 15			BSU-86/B				CONICAL		BSU-85/B		
MODE:				LOW DRAG		HIGH DRAG	LOW DRAG		HIGH DRAG				LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	2.6		5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS:															
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)													
-10	450	1.0	4.0	1.0	4.0	4.0	1.2	4.0	4.0		0.2	4.0	0.2	4.0	4.0
	500	1.2	4.0	1.4	4.0	4.0	1.4	4.0	4.0		0.4	4.0	0.4	4.0	4.0
	550	1.4	4.0	1.6	4.0	4.0	1.8	4.0	4.0		0.6	4.0	0.8	4.0	4.0
-20	450	1.0	4.0	1.2	4.0	4.0	1.2	4.0	4.0		0.6	4.0	0.4	4.0	4.0
	500	1.2	4.0	1.2	4.0	4.0	1.4	4.0	4.0		0.6	4.0	0.6	4.0	4.0
	550	1.4	4.0	1.4	4.0	4.0	1.6	4.0	4.0		0.6	4.0	0.8	4.0	4.0
-30	450	1.0	4.0	1.0	4.0	4.0	1.2	4.0	1.6		0.6	4.0	0.6	4.0	4.0
	500	1.2	4.0	1.2	4.0	4.0	1.2	4.0	4.0		0.6	4.0	0.6	4.0	4.0
	550	1.2	4.0	1.4	4.0	4.0	1.4	4.0	4.0		0.6	4.0	0.8	4.0	4.0
-45	450	0.8	4.0	1.0	4.0	NC	1.0	4.0	NC		0.4	4.0	0.4	4.0	NC
	500	1.0	4.0	1.0	4.0	NC	1.2	4.0	NC		0.6	4.0	0.6	4.0	NC
	550	1.2	4.0	1.2	4.0	NC	1.2	4.0	NC		0.6	4.0	0.6	4.0	NC
-60	450	0.8	4.0	0.8	4.0	NC	0.8	4.0	NC		0.4	4.0	0.4	4.0	NC
	500	0.8	4.0	1.0	4.0	NC	1.0	4.0	NC		0.4	4.0	0.4	4.0	NC
	550	1.0	DUD	1.0	DUD	NC	1.0	4.0	NC		0.4	DUD	0.6	DUD	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-15

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 18 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
FMU-139 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
-10	450	1.0	4.0	0.2	4.0
	500	1.2	4.0	0.6	4.0
	550	1.6	4.0	0.8	4.0
-20	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.8	4.0
-30	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.8	4.0
-45	450	1.0	4.0	0.4	4.0
	500	1.0	4.0	0.6	4.0
	550	1.2	4.0	0.6	4.0
-60	450	0.8	4.0	0.4	4.0
	500	1.0	4.0	0.4	4.0
	550	1.0	4.0	0.6	DUD

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.
2. DUDs are based on a Sea-Level Target.

BF 16002-R0
BF 16003-R1
F4-15A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 19 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
FMU-139 (VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)									MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		CONICAL		MK 15			BSU-86/B				CONICAL		BSU-85/B		
MODE:				LOW DRAG		HIGH DRAG	LOW DRAG		HIGH DRAG				LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	2.6		5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)													
-10	450	UA	4.0	UA	4.0	UA	UA	4.0	UA		UA	4.0	UA	4.0	UA
	500	0.0	4.0	UA	4.0	UA	0.4	4.0	UA		UA	4.0	UA	4.0	UA
	550	0.0	4.0	0.4	4.0	UA	0.4	4.0	0.0		UA	4.0	UA	4.0	4.0
-20	450	0.0	4.0	0.2	4.0	UA	0.2	4.0	UA		UA	4.0	UA	4.0	UA
	500	0.2	4.0	0.4	4.0	UA	0.6	4.0	UA		UA	4.0	UA	4.0	UA
	550	0.2	4.0	0.6	4.0	UA	0.6	4.0	UA		UA	4.0	UA	4.0	4.0
-30	450	0.2	4.0	0.4	4.0	UA	0.4	4.0	UA		UA	4.0	UA	4.0	UA
	500	0.4	4.0	0.4	4.0	UA	0.4	4.0	UA		UA	4.0	UA	4.0	UA
	550	0.4	4.0	0.6	4.0	4.0	0.4	4.0	UA		UA	4.0	0.0	4.0	1.4
-45	450	0.2	4.0	0.4	4.0	NC	0.4	4.0	NC		UA	4.0	UA	4.0	NC
	500	0.4	4.0	0.4	4.0	NC	0.4	4.0	NC		UA	4.0	UA	4.0	NC
	550	0.6	4.0	0.4	4.0	NC	0.4	4.0	NC		UA	4.0	0.0	4.0	NC
-60	450	0.2	4.0	0.2	4.0	NC	0.2	4.0	NC		UA	4.0	UA	4.0	NC
	500	0.4	4.0	0.4	4.0	NC	0.4	4.0	NC		UA	4.0	UA	4.0	NC
	550	0.4	DUD	0.4	DUD	NC	0.4	4.0	NC		UA	DUD	UA	DUD	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-16

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 20 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
M904 FUZE

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	8.0	6.0	8.0	2.0	6.0	8.0	6.0	8.0	2.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
-10	450	0.6	4.0	0.8	4.0	4.0	0.0	3.6	0.0	3.6	UA
	500	1.0	4.0	1.2	4.0	4.0	0.6	4.0	0.6	4.0	UA
	550	1.2	4.0	1.4	4.0	4.0	0.8	4.0	0.8	4.0	1.6
-20	450	0.8	4.0	0.8	4.0	1.8	0.2	3.4	0.2	3.4	UA
	500	1.0	4.0	1.2	4.0	4.0	0.6	3.6	0.8	3.8	UA
	550	1.2	4.0	1.2	4.0	4.0	0.8	3.8	0.8	4.0	4.0
-30	450	0.8	3.8	0.8	3.8	1.6	0.4	3.2	0.4	3.2	UA
	500	1.0	4.0	1.0	4.0	4.0	0.6	3.4	0.8	3.4	UA
	550	1.2	4.0	1.2	4.0	4.0	0.8	3.6	0.8	3.8	4.0
-45	450	0.8	3.4	0.8	3.4	NC	0.4	2.8	0.4	2.8	NC
	500	1.0	3.6	1.0	3.6	NC	0.6	3.0	0.6	3.2	NC
	550	1.0	3.6	1.0	3.6	NC	0.6	3.2	0.8	3.2	NC
-60	450	0.6	3.0	0.8	3.0	NC	0.4	2.6	0.4	2.6	NC
	500	0.8	3.0	0.8	3.0	NC	0.6	2.6	0.6	2.6	NC
	550	1.0	3.2	1.0	3.2	NC	0.6	2.8	0.6	2.8	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11105-R1
BF 11103-R2
BF 11213-R2
BF 11217-R1
BF 11216-R6
F4-17

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 21 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
M904 FUZE

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B		
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	8.0	4.0	6.0	8.0	6.0	8.0	4.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
-10	450	0.2	3.8	4.0	UA	2.6	UA	2.2	4.0
	500	0.6	4.0	4.0	UA	3.0	UA	2.2	4.0
	550	0.8	4.0	4.0	UA	3.0	UA	3.0	4.0
-20	450	0.4	3.4	4.0	UA	2.6	UA	2.6	4.0
	500	0.8	4.0	4.0	0.0	2.8	0.0	2.8	4.0
	550	0.8	4.0	4.0	0.0	2.8	0.0	3.0	4.0
-30	450	0.4	3.2	4.0	UA	2.6	UA	2.4	4.0
	500	0.8	3.6	4.0	0.0	2.6	0.0	2.8	4.0
	550	0.8	3.8	4.0	0.2	2.8	0.0	2.8	4.0
-45	450	0.4	3.0	NC	0.0	2.4	0.0	2.4	NC
	500	0.6	3.2	NC	0.0	2.4	0.0	2.6	NC
	550	0.8	3.4	NC	0.2	2.6	0.2	2.6	NC
-60	450	0.4	2.6	NC	0.0	2.2	0.0	2.2	NC
	500	0.6	2.8	NC	0.0	2.2	0.0	2.2	NC
	550	0.6	2.8	NC	0.2	2.4	0.2	2.4	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11307-R1
BF 11309-R2
BF 11308-R5
F4-18

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 22 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZES

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
-10	450	UA	4.0	0.0	4.0	4.0	UA	4.0	UA	4.0	0.4
	500	0.4	4.0	0.4	4.0	4.0	UA	4.0	UA	4.0	4.0
	550	0.4	4.0	0.6	4.0	4.0	0.0	4.0	0.0	4.0	4.0
-20	450	0.0	4.0	0.2	4.0	4.0	UA	4.0	UA	4.0	0.4
	500	0.4	4.0	0.4	4.0	4.0	0.0	4.0	0.0	4.0	4.0
	550	0.4	4.0	0.6	4.0	4.0	0.0	4.0	0.2	4.0	4.0
-30	450	0.2	4.0	0.2	4.0	4.0	UA	4.0	UA	4.0	0.2
	500	0.4	4.0	0.4	4.0	4.0	0.0	4.0	0.0	4.0	4.0
	550	0.4	4.0	0.6	4.0	4.0	0.2	4.0	0.2	4.0	4.0
-45	450	0.2	4.0	0.2	4.0	NC	UA	4.0	UA	4.0	NC
	500	0.4	4.0	0.4	4.0	NC	0.0	4.0	0.0	4.0	NC
	550	0.4	4.0	0.6	4.0	NC	0.2	4.0	0.2	4.0	NC
-60	450	0.2	4.0	0.2	4.0	NC	UA	4.0	0.0	4.0	NC
	500	0.2	4.0	0.4	4.0	NC	0.0	4.0	0.0	4.0	NC
	550	0.4	4.0	0.4	4.0	NC	0.2	4.0	0.2	4.0	NC

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
F4-19

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 23 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZES

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)			
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B	
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG	HIGH DRAG
ARMING TIMES:		5.5	10.0	2.6	5.5	10.0	5.5 10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)						
-10	450	UA	4.0	UA	UA	4.0	UA 4.0	UA
	500	0.0	4.0	UA	UA	4.0	UA 4.0	UA
	550	0.0	4.0	0.4	UA	4.0	UA 4.0	4.0
-20	450	UA	4.0	UA	UA	4.0	UA 4.0	UA
	500	0.0	4.0	UA	UA	4.0	UA 4.0	UA
	550	0.2	4.0	0.2	UA	4.0	UA 4.0	4.0
-30	450	UA	4.0	UA	UA	4.0	UA 4.0	UA
	500	0.2	4.0	UA	UA	4.0	UA 4.0	UA
	550	0.2	4.0	0.2	UA	4.0	UA 4.0	4.0
-45	450	0.0	4.0	NC	UA	4.0	UA 4.0	NC
	500	0.2	4.0	NC	UA	4.0	UA 4.0	NC
	550	0.2	4.0	NC	UA	4.0	UA 4.0	NC
-60	450	0.0	4.0	NC	UA	4.0	UA 4.0	NC
	500	0.0	4.0	NC	UA	4.0	UA 4.0	NC
	550	0.2	4.0	NC	UA	4.0	UA 4.0	NC

NOTES: 1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-20

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 24 of 70)

10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
-10	450	UA	4.0	UA	4.0
	500	0.2	4.0	UA	4.0
	550	0.4	4.0	UA	4.0
-20	450	0.0	4.0	UA	4.0
	500	0.4	4.0	UA	4.0
	550	0.4	4.0	UA	4.0
-30	450	0.0	4.0	UA	4.0
	500	0.4	4.0	UA	4.0
	550	0.4	4.0	UA	4.0
-45	450	0.2	4.0	UA	4.0
	500	0.4	4.0	UA	4.0
	550	0.4	4.0	UA	4.0
-60	450	0.2	4.0	UA	4.0
	500	0.2	4.0	UA	4.0
	550	0.4	4.0	UA	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-20A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 25 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (VT) FUZES

WEAPON:	MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:	CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:			LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:	5.5	10.0	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG) / VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
-10 / 450	UA	4.0	UA	4.0	UA	UA	3.6	UA	3.8	UA
500	UA	4.0	UA	4.0	4.0	UA	4.0	UA	4.0	UA
550	UA	4.0	UA	4.0	4.0	UA	4.0	UA	4.0	UA
-20 / 450	UA	4.0	UA	4.0	UA	UA	3.8	UA	3.8	UA
500	UA	4.0	UA	4.0	4.0	UA	4.0	UA	4.0	UA
550	UA	4.0	UA	4.0	4.0	UA	4.0	UA	4.0	UA
-30 / 450	UA	4.0	UA	4.0	UA	UA	3.6	UA	3.8	UA
500	UA	4.0	UA	4.0	4.0	UA	4.0	UA	4.0	UA
550	UA	4.0	UA	4.0	4.0	UA	4.0	UA	4.0	UA
-45 / 450	UA	4.0	UA	4.0	NC	UA	3.8	UA	3.8	NC
500	UA	4.0	UA	4.0	NC	UA	3.8	UA	3.8	NC
550	UA	4.0	UA	4.0	NC	UA	3.8	UA	4.0	NC
-60 / 450	UA	4.0	UA	4.0	NC	UA	3.6	UA	3.6	NC
500	UA	4.0	UA	4.0	NC	UA	3.8	UA	3.8	NC
550	UA	4.0	UA	4.0	NC	UA	3.8	UA	4.0	NC

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
F4-21

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 26 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (VT) FUZES

WEAPON:	MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:	BSU-86/B			CONICAL		BSU-85/B		
MODE:	LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS:								
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)						
-10	450	UA	4.0	UA	UA	3.2	UA	3.0	UA
	500	UA	4.0	UA	UA	3.8	UA	3.0	UA
	550	UA	4.0	UA	UA	4.0	UA	4.0	UA
-20	450	UA	3.8	UA	UA	3.4	UA	3.6	UA
	500	UA	4.0	UA	UA	3.4	UA	4.0	UA
	550	UA	4.0	UA	UA	3.4	UA	4.0	UA
-30	450	UA	3.8	UA	UA	3.4	UA	3.4	UA
	500	UA	4.0	UA	UA	3.8	UA	3.8	UA
	550	UA	4.0	UA	UA	3.8	UA	4.0	UA
-45	450	UA	3.8	NC	UA	3.4	UA	3.2	NC
	500	UA	3.8	NC	UA	3.4	UA	3.2	NC
	550	UA	4.0	NC	UA	3.6	UA	3.2	NC
-60	450	UA	3.6	NC	UA	3.0	UA	3.2	NC
	500	UA	3.8	NC	UA	3.2	UA	3.2	NC
	550	UA	4.0	NC	UA	3.4	UA	3.4	NC

NOTES:
1. Mk 344 fuze users 5.5-second arming time only.
2. Mk 376 fuze users 2.6-and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 27 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
FMU-139 (NON-VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)								MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		CONICAL		MK 15			BSU-86/B			CONICAL		BSU-85/B		
MODE:				LOW DRAG		HIGH DRAG	LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)												
-10	450	UA	4.0	UA	4.0	4.0	UA	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.2	4.0	0.2	4.0	4.0	0.4	4.0	0.6	UA	4.0	UA	4.0	2.8
	550	0.4	4.0	0.4	4.0	4.0	0.4	4.0	4.0	UA	4.0	UA	4.0	4.0
-20	450	0.0	4.0	0.0	4.0	2.0	0.0	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.2	4.0	0.4	4.0	4.0	0.4	4.0	0.4	UA	4.0	UA	4.0	2.0
	550	0.4	4.0	0.4	4.0	4.0	0.6	4.0	1.6	UA	4.0	UA	4.0	4.0
-30	450	0.0	4.0	0.0	4.0	1.6	0.0	4.0	UA	UA	4.0	UA	4.0	UA
	500	0.4	4.0	0.4	4.0	4.0	0.4	4.0	0.4	UA	4.0	UA	4.0	1.4
	550	0.4	4.0	0.4	4.0	4.0	0.6	4.0	1.4	UA	4.0	UA	4.0	4.0
-45	450	0.2	4.0	0.2	4.0	NC	0.2	4.0	NC	UA	4.0	UA	4.0	NC
	500	0.2	4.0	0.4	4.0	NC	0.4	4.0	NC	UA	4.0	UA	4.0	NC
	550	0.4	4.0	0.4	4.0	NC	0.4	4.0	NC	UA	4.0	UA	4.0	NC
-60	450	0.0	4.0	0.2	4.0	NC	0.2	4.0	NC	UA	4.0	UA	4.0	NC
	500	0.2	4.0	0.2	4.0	NC	0.2	4.0	NC	UA	4.0	UA	4.0	NC
	550	0.4	4.0	0.4	4.0	NC	0.4	4.0	NC	UA	4.0	UA	4.0	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-23

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 28 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
FMU-139 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
-10	450	UA	4.0	UA	4.0
	500	0.2	4.0	UA	4.0
	550	0.4	4.0	UA	4.0
-20	450	0.0	4.0	UA	4.0
	500	0.4	4.0	UA	4.0
	550	0.4	4.0	UA	4.0
-30	450	0.0	4.0	UA	4.0
	500	0.4	4.0	UA	4.0
	550	0.4	4.0	UA	4.0
-45	450	0.2	4.0	UA	4.0
	500	0.4	4.0	UA	4.0
	550	0.4	4.0	UA	4.0
-60	450	0.2	4.0	UA	4.0
	500	0.2	4.0	UA	4.0
	550	0.4	4.0	UA	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-23A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 29 of 70)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE
FMU-139 (VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)								MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		CONICAL		MK 15			BSU-86/B			CONICAL		BSU-85/B		
MODE:				LOW DRAG		HIGH DRAG	LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)												
-10	450	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
	500	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
	550	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
-20	450	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
	500	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
	550	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
-30	450	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
	500	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
	550	UA	4.0	UA	4.0	UA	UA	4.0	UA	UA	4.0	UA	4.0	UA
-45	450	UA	4.0	UA	4.0	NC	UA	4.0	NC	UA	4.0	UA	4.0	NC
	500	UA	4.0	UA	4.0	NC	UA	4.0	NC	UA	4.0	UA	4.0	NC
	550	UA	4.0	UA	4.0	NC	UA	4.0	NC	UA	4.0	UA	4.0	NC
-60	450	UA	4.0	UA	4.0	NC	UA	4.0	NC	UA	3.8	UA	4.0	NC
	500	UA	4.0	UA	4.0	NC	UA	4.0	NC	UA	4.0	UA	4.0	NC
	550	UA	4.0	UA	4.0	NC	UA	4.0	NC	UA	4.0	UA	4.0	NC

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-24

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 30 of 70)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY
M904 FUZE

WEAPON:		MK 81 MOD 1				MK 82 MOD 2 (TP)					
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2		CONICAL	MK 15		BSU-86/B		
MODE:				LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG	LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	8.0	6.0	2.0	8.0	8.0	2.0	6.0	8.0	4.0
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
MIN	450	UA	4.0	4.0	4.0	4.0	4.0	UA	UA	4.0	4.0
TO	500	UA	4.0	4.0	4.0	4.0	4.0	4.0	UA	4.0	4.0
5,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5,001	450	UA	4.0	UA	4.0	4.0	4.0	UA	UA	4.0	4.0
TO	500	UA	4.0	4.0	4.0	4.0	4.0	4.0	UA	4.0	4.0
10,000	550	UA	4.0	4.0	4.0	4.0	4.0	4.0	UA	4.0	4.0
10,001	450	UA	UA	UA	4.0	UA	UA	UA	UA	UA	4.0
TO	500	UA	4.0	UA	4.0	UA	UA	UA	UA	UA	4.0
20,000	550	UA	4.0	UA	4.0	UA	4.0	4.0	UA	4.0	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11105-R1
BF 11103-R2
BF 11213-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
F4-25

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 31 of 70)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY
M904 FUZE

WEAPON:		MK 83 MOD 5 (TP)		
FIN ASSEMBLY:		CONICAL	BSU-85/B	
MODE:			LOW DRAG	HIGH DRAG
ARMING TIMES:		10.0	8.0	2.0
RELEASE CONDITIONS:				
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)		
MIN TO 5,000	450	4.0	UA	UA
	500	4.0	UA	UA
	550	4.0	4.0	4.0
5,001 TO 10,000	450	4.0	UA	UA
	500	4.0	UA	UA
	550	4.0	UA	4.0
10,001 TO 20,000	450	4.0	UA	UA
	500	4.0	UA	UA
	550	4.0	UA	UA

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11307-R1
BF 11309-R2
BF 11308-R5
F4-26

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 32 of 70)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY
MK 376 (NON-VT) FUZE

WEAPON:		MK 81 MOD 1			MK 82 MOD 2 (TP)					MK 83 MOD 5 (TP)		
FIN ASSEMBLY:		CONICAL	MK 14 MOD 2		CONICAL	MK 15		BSU-86/B		CONICAL	BSU-85/B	
MODE:			LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG	LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG
ARMING TIMES:		10.0	10.0	2.6	10.0	10.0	2.6	10.0	2.6	10.0	10.0	2.6
RELEASE CONDITIONS:												
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)										
MIN	450	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
TO	500	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5,001	450	4.0	4.0	4.0	4.0	4.0	4.0	4.0	UA	4.0	4.0	UA
TO	500	4.0	4.0	4.0	4.0	4.0	4.0	4.0	UA	4.0	4.0	4.0
10,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
10,001	450	4.0	4.0	4.0	4.0	4.0	UA	4.0	UA	UA	UA	UA
TO	500	4.0	4.0	4.0	4.0	4.0	4.0	4.0	UA	UA	UA	UA
20,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	UA	4.0	4.0	4.0

NOTES: 1. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-27

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 33 of 70)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY MK 376 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B	GBU-16/B, A/B
FIN ASSEMBLY:		CONICAL	CONICAL
MODE:			
ARMING TIMES:		10.0	10.0
RELEASE CONDITIONS:			
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)	
MIN	450	4.0	4.0
TO	500	4.0	4.0
5,000	550	4.0	4.0
5,001	450	4.0	4.0
TO	500	4.0	4.0
10,000	550	4.0	4.0
10,001	450	4.0	4.0
TO	500	4.0	4.0
20,000	550	4.0	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-27A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 34 of 70)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY
MK 376 (VT) FUZE

WEAPON:		MK 81 MOD 1			MK 82 MOD 2 (TP)					MK 83 MOD 5 (TP)		
FIN ASSEMBLY:		CONICAL	MK 14 MOD 2		CONICAL	MK 15		BSU-86/B		CONICAL	BSU-85/B	
MODE:			LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG	LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG
ARMING TIMES:		10.0	10.0	2.6	10.0	10.0	2.6	10.0	2.6	10.0	10.0	2.6
RELEASE CONDITIONS:												
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)										
MIN	450	4.0	4.0	4.0	4.0	4.0	UA	4.0	UA	UA	UA	UA
TO	500	4.0	4.0	4.0	4.0	4.0	UA	4.0	UA	UA	4.0	UA
5,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	UA	4.0	4.0	4.0
5,001	450	4.0	4.0	4.0	4.0	4.0	UA	UA	UA	UA	UA	UA
TO	500	4.0	4.0	4.0	4.0	4.0	UA	4.0	UA	UA	UA	UA
10,000	550	4.0	4.0	4.0	4.0	4.0	UA	4.0	UA	UA	UA	UA
10,001	450	UA	UA	UA	UA	UA	UA	UA	UA	UA	UA	UA
TO	500	UA	4.0	4.0	UA	UA	UA	UA	UA	UA	UA	UA
20,000	550	4.0	4.0	4.0	UA	UA	UA	UA	UA	UA	UA	UA

NOTES: 1. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-28

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 35 of 70)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY
FMU-139 (NON-VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)					MK 83 MOD 5 (TP)		
FIN ASSEMBLY:		CONICAL	MK 15		BSU-86/B		CONICAL	BSU-85/B	
MODE:			LOW DRAG	HIGH DRAG	LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG
ARMING TIMES:		10.0	10.0	2.6	10.0	2.6	10.0	10.0	2.6
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN	450	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
TO	500	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5,001	450	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
TO	500	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
10,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
10,001	450	4.0	4.0	4.0	4.0	UA	4.0	4.0	UA
TO	500	4.0	4.0	4.0	4.0	UA	4.0	4.0	4.0
20,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-29

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 36 of 70)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY FMU-139 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
MIN	450	UA	4.0	UA	4.0
TO	500	UA	4.0	UA	4.0
5,000	550	UA	4.0	UA	4.0
5,001	450	UA	4.0	UA	4.0
TO	500	UA	4.0	UA	4.0
10,000	550	UA	4.0	UA	4.0
10,001	450	UA	4.0	UA	4.0
TO	500	UA	4.0	UA	4.0
20,000	550	UA	4.0	UA	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-29A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 37 of 70)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY
FMU-139 (VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)					MK 83 MOD 5 (TP)		
FIN ASSEMBLY:		CONICAL	MK 15		BSU-86/B		CONICAL	BSU-85/B	
MODE:			LOW DRAG	HIGH DRAG	LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG
ARMING TIMES:		10.0	10.0	2.6	10.0	2.6	10.0	10.0	2.6
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN	450	4.0	4.0	UA	4.0	UA	4.0	4.0	UA
TO	500	4.0	4.0	4.0	4.0	UA	4.0	4.0	4.0
5,000	550	4.0	4.0	4.0	4.0	UA	4.0	4.0	4.0
5,001	450	4.0	4.0	UA	4.0	UA	UA	UA	UA
TO	500	4.0	4.0	UA	4.0	UA	UA	UA	4.0
10,000	550	4.0	4.0	4.0	4.0	UA	UA	4.0	4.0
10,001	450	UA	UA	UA	UA	UA	UA	UA	UA
TO	500	UA	UA	UA	UA	UA	UA	UA	UA
20,000	550	UA	4.0	UA	4.0	UA	UA	UA	UA

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-30

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 38 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY
M904 FUZE

WEAPON:		MK 81 MOD 1			MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL	MK 14 MOD 2		CONICAL		MK 15		
MODE:			LOW DRAG	HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	6.0	2.0	6.0	8.0	6.0	8.0	2.0
RELEASE CONDITIONS:									
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN	450	2.0	4.0	4.0	1.4	4.0	1.6	4.0	0.2
TO	500	3.6	4.0	4.0	1.4	4.0	1.8	4.0	4.0
5,000	550	4.0	4.0	4.0	1.6	4.0	2.2	4.0	4.0
5,001	450	1.4	1.8	4.0	1.0	4.0	1.0	4.0	UA
TO	500	1.6	4.0	4.0	1.0	4.0	1.2	4.0	4.0
10,000	550	2.0	4.0	4.0	1.2	4.0	1.4	4.0	4.0
10,001	450	0.2	0.4	4.0	0.0	2.6	0.0	2.8	UA
TO	500	0.6	0.6	4.0	0.2	3.0	0.2	3.4	UA
20,000	550	0.6	0.8	4.0	0.2	3.2	0.2	4.0	UA

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11105-R1
BF 11103-R2
BF 11213-R2
BF 11217-R1
BF 11216-R6
F4-31

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 39 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY
M904 FUZE

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B		
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		6.0	8.0	4.0	6.0	8.0	6.0	8.0	2.0
RELEASE CONDITIONS:									
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN	450	1.6	4.0	4.0	0.8	3.6	0.8	3.8	UA
TO	500	2.4	4.0	4.0	0.8	4.0	0.8	4.0	0.0
5,000	550	4.0	4.0	4.0	0.8	4.0	0.8	4.0	4.0
5,001	450	1.2	4.0	4.0	0.6	3.2	0.6	3.2	UA
TO	500	1.4	4.0	4.0	0.6	3.2	0.6	3.4	UA
10,000	550	1.8	4.0	4.0	0.6	3.2	0.6	3.6	0.2
10,001	450	0.0	2.8	4.0	UA	1.8	UA	1.8	UA
TO	500	0.2	4.0	4.0	UA	2.0	UA	2.0	UA
20,000	550	0.4	4.0	4.0	UA	2.0	UA	2.0	UA

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11307-R1
BF 11309-R2
BF 11308-R5
F4-32

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 40 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY MK 344 AND MK 376 (NON-VT) FUZES

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
MIN	450	1.0	4.0	2.0	4.0	4.0	0.8	4.0	0.8	4.0	4.0
TO	500	1.4	4.0	3.6	4.0	4.0	0.8	4.0	1.0	4.0	4.0
5,000	550	1.6	4.0	4.0	4.0	4.0	0.8	4.0	1.2	4.0	4.0
5,001	450	0.6	4.0	0.8	4.0	4.0	0.4	4.0	0.4	4.0	4.0
TO	500	0.8	4.0	1.4	4.0	4.0	0.6	4.0	0.6	4.0	4.0
10,000	550	1.0	4.0	3.4	4.0	4.0	0.6	4.0	0.8	4.0	4.0
10,001	450	UA	4.0	UA	4.0	4.0	UA	4.0	UA	4.0	0.2
TO	500	0.0	4.0	0.0	4.0	4.0	UA	4.0	UA	4.0	4.0
20,000	550	0.0	4.0	0.2	4.0	4.0	UA	4.0	UA	4.0	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
F4-33

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 41 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY MK 344 AND MK 376 (NON-VT) FUZES

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B		
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS:									
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN	450	1.0	4.0	0.8	0.2	4.0	0.2	4.0	4.0
TO	500	1.2	4.0	4.0	0.2	4.0	0.4	4.0	4.0
5,000	550	1.4	4.0	4.0	0.2	4.0	0.4	4.0	4.0
5,001	450	0.6	4.0	0.4	0.0	4.0	0.0	4.0	0.8
TO	500	0.8	4.0	0.4	0.0	4.0	0.0	4.0	4.0
10,000	550	0.8	4.0	4.0	0.0	4.0	0.0	4.0	4.0
10,001	450	UA	4.0	UA	UA	4.0	UA	4.0	UA
TO	500	UA	4.0	0.0	UA	4.0	UA	4.0	UA
20,000	550	UA	4.0	0.2	UA	4.0	UA	4.0	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-34

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 42 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
MIN	450	1.2	4.0	0.6	4.0
TO	500	1.2	4.0	0.6	4.0
5,000	550	1.4	4.0	0.6	4.0
5,001	450	0.8	4.0	0.4	4.0
TO	500	1.0	4.0	0.4	4.0
10,000	550	1.0	4.0	0.4	4.0
10,001	450	UA	4.0	UA	4.0
TO	500	0.0	4.0	UA	4.0
20,000	550	0.0	4.0	UA	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-34A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 43 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY MK 344 AND MK 376 (VT) FUZES

WEAPON:		MK 81 MOD 1					MK 82 MOD 2 (TP)				
FIN ASSEMBLY:		CONICAL		MK 14 MOD 2			CONICAL		MK 15		
MODE:				LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS:											
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
MIN	450	0.2	4.0	0.4	4.0	4.0	0.2	4.0	0.2	4.0	UA
TO	500	0.4	4.0	0.4	4.0	4.0	0.2	4.0	0.2	4.0	UA
5,000	550	0.4	4.0	0.4	4.0	4.0	0.2	4.0	0.2	4.0	4.0
5,001	450	0.0	4.0	0.0	4.0	4.0	UA	4.0	UA	4.0	UA
TO	500	0.2	4.0	0.2	4.0	4.0	UA	4.0	0.0	4.0	UA
10,000	550	0.2	4.0	0.4	4.0	4.0	0.0	4.0	0.0	4.0	UA
10,001	450	UA	4.0	UA	4.0	UA	UA	2.8	UA	2.8	UA
TO	500	UA	4.0	UA	4.0	4.0	UA	3.2	UA	3.4	UA
20,000	550	UA	4.0	UA	4.0	4.0	UA	3.4	UA	4.0	UA

NOTES: 1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A
BF 11104-R1
BF 11106-R0
BF 11212-R2
BF 11217-R1
BF 11216-R6
F4-35

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 44 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY MK 344 AND MK 376 (VT) FUZES

WEAPON:		MK 82 MOD 2 (TP)			MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B			CONICAL		BSU-85/B		
MODE:		LOW DRAG		HIGH DRAG			LOW DRAG		HIGH DRAG
ARMING TIMES:		5.5	10.0	2.6	5.5	10.0	5.5	10.0	2.6
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN	450	0.2	4.0	UA	UA	4.0	UA	4.0	UA
TO	500	0.2	4.0	UA	UA	4.0	UA	4.0	UA
5,000	550	0.2	4.0	UA	UA	4.0	UA	4.0	0.8
5,001	450	UA	4.0	UA	UA	4.0	UA	4.0	UA
TO	500	0.0	4.0	UA	UA	4.0	UA	4.0	UA
10,000	550	0.0	4.0	UA	UA	4.0	UA	4.0	UA
10,001	450	UA	3.0	UA	UA	2.4	UA	2.4	UA
TO	500	UA	3.6	UA	UA	2.8	UA	2.6	UA
20,000	550	UA	4.0	UA	UA	2.8	UA	2.6	UA

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 2.6- and 10.0-second arming times only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-36

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 45 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY
FMU-139 (NON-VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)					MK 83 MOD 5 (TP)		
FIN ASSEMBLY:		CONICAL	MK 15		BSU-86/B		CONICAL	BSU-85/B	
MODE:			LOW DRAG	HIGH DRAG	LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG
ARMING TIMES:		10.0	10.0	2.6	10.0	2.6	10.0	10.0	2.6
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN	450	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
TO	500	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5,001	450	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
TO	500	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
10,000	550	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
10,001	450	4.0	4.0	4.0	4.0	UA	4.0	4.0	UA
TO	500	4.0	4.0	4.0	4.0	0.4	4.0	4.0	4.0
20,000	550	4.0	4.0	4.0	4.0	1.0	4.0	4.0	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-37

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 46 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY FMU-139 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE CONDITIONS:					
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
MIN	450	1.2	4.0	0.6	4.0
TO	500	1.2	4.0	0.6	4.0
5,000	550	1.4	4.0	0.6	4.0
5,001	450	0.8	4.0	0.4	4.0
TO	500	1.0	4.0	0.4	4.0
10,000	550	1.0	4.0	0.4	4.0
10,001	450	UA	4.0	UA	4.0
TO	500	0.0	4.0	UA	4.0
20,000	550	0.0	4.0	UA	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-37A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 47 of 70)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY
FMU-139 (VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)					MK 83 MOD 5 (TP)		
FIN ASSEMBLY:		CONICAL	MK 15		BSU-86/B		CONICAL	BSU-85/B	
MODE:			LOW DRAG	HIGH DRAG	LOW DRAG	HIGH DRAG		LOW DRAG	HIGH DRAG
ARMING TIMES:		10.0	10.0	2.6	10.0	2.6	10.0	10.0	2.6
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
MIN	450	4.0	4.0	UA	4.0	UA	4.0	4.0	UA
TO	500	4.0	4.0	UA	4.0	0.0	4.0	4.0	0.0
5,000	550	4.0	4.0	4.0	4.0	0.0	4.0	4.0	4.0
5,001	450	4.0	4.0	UA	4.0	UA	4.0	4.0	UA
TO	500	4.0	4.0	UA	4.0	UA	4.0	4.0	UA
10,000	550	4.0	4.0	UA	4.0	0.2	4.0	4.0	4.0
10,001	450	3.8	4.0	UA	4.0	UA	3.6	3.6	UA
TO	500	4.0	4.0	UA	4.0	UA	3.6	3.6	UA
20,000	550	4.0	4.0	UA	4.0	UA	4.0	3.6	UA

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2
BF 11217-R1
BF 11216-R6
BF 11223-R2
BF 11224-R5
BF 11306-R1
BF 11309-R2
BF 11308-R5
F4-38

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 48 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
M904 FUZE

WEAPON:	MK 81 MOD 1		MK 82 MOD 2 (TP)		
FIN ASSEMBLY:	CONICAL	MK 14 MOD 2	CONICAL	MK 15	BSU-86/B
MODE:		LOW DRAG		LOW DRAG	LOW DRAG
ARMING TIMES:	6.0	6.0	6.0 8.0	6.0 8.0	6.0 8.0

201 TO 5,000 FT-MSL RUN-IN ALTITUDE

RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)					
10	450	1.4	2.4	0.8 3.0	1.0 4.0	1.0 4.0	
	500	2.2	2.8	0.8 3.6	1.2 4.0	1.8 4.0	
	550	2.4	4.0	0.8 4.0	1.6 4.0	4.0 4.0	
20	450	1.8	4.0	0.6 3.8	0.8 4.0	0.8 4.0	
	500	2.6	4.0	0.6 4.0	1.0 4.0	4.0 4.0	
	550	4.0	4.0	0.8 4.0	4.0 4.0	4.0 4.0	
30	450	2.2	4.0	0.4 4.0	0.6 4.0	0.6 4.0	
	500	4.0	4.0	0.6 4.0	0.8 4.0	4.0 4.0	
	550	4.0	4.0	0.6 4.0	1.0 4.0	4.0 4.0	
38	450	4.0	4.0	0.4 4.0	0.4 4.0	0.4 4.0	
	500	4.0	4.0	0.4 4.0	0.6 4.0	0.8 4.0	
	550	4.0	4.0	0.4 4.0	0.6 4.0	4.0 4.0	

5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE

10	450	0.8	1.6	0.2 2.6	0.4 2.8	0.6 3.2	
	500	1.4	2.2	0.4 2.8	0.6 4.0	0.8 4.0	
	550	1.6	2.6	0.6 3.0	0.8 4.0	1.0 4.0	
20	450	0.8	1.4	0.2 2.4	0.2 3.0	0.4 4.0	
	500	1.2	2.4	0.4 3.0	0.4 4.0	0.6 4.0	
	550	2.0	4.0	0.4 4.0	0.6 4.0	0.8 4.0	
30	450	0.6	1.4	0.0 2.2	0.0 4.0	0.2 4.0	
	500	1.4	4.0	0.0 4.0	0.2 4.0	0.2 4.0	
	550	1.8	4.0	0.2 4.0	0.2 4.0	0.4 4.0	
38	450	1.0	0.8	0.0 4.0	0.0 4.0	0.0 4.0	
	500	1.4	4.0	0.0 4.0	0.0 4.0	0.0 4.0	
	550	1.8	4.0	0.0 4.0	0.0 4.0	0.0 4.0	

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A BF 11105-R1 BF 11213-R2 BF 11217-R1 BF 11223-R2

F4-39

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 49 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
M904 FUZE

WEAPON:	MK 81 MOD 1			MK 82 MOD 2 (TP)					
FIN ASSEMBLY:	CONICAL		MK 14 MOD 2	CONICAL		MK 15		BSU-86/B	
MODE:			LOW DRAG			LOW DRAG		LOW DRAG	
ARMING TIMES:	6.0	8.0	6.0	6.0	8.0	6.0	8.0	6.0	8.0

10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
10	450	0.2	2.6	0.4	UA	1.6	UA	1.8	0.0	2.0
	500	0.6	4.0	1.2	0.2	2.2	0.2	2.4	0.2	3.0
	550	0.8	4.0	1.6	0.2	2.2	0.4	3.8	0.4	4.0
20	450	0.2	4.0	0.2	UA	1.6	UA	1.8	UA	2.0
	500	0.4	4.0	0.6	0.0	2.0	0.0	2.4	0.0	4.0
	550	0.4	4.0	1.4	0.0	2.2	0.0	4.0	0.0	4.0
30	450	0.0	2.0	0.2	UA	1.6	UA	1.6	UA	1.6
	500	0.0	4.0	0.4	UA	1.8	UA	2.0	UA	4.0
	550	0.2	4.0	1.0	UA	1.8	UA	4.0	0.0	4.0
38	450	0.8	4.0	0.4	1.2	2.4	1.0	2.2	1.0	4.0
	500	0.8	4.0	0.4	1.2	2.4	1.0	2.2	1.0	4.0
	550	0.8	4.0	0.4	1.2	2.4	1.0	2.2	1.0	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A BF 11105-R1 BF 11213-R2 BF 11217-R1 BF 11223-R2

F4-40

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 50 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
M904 FUZE

WEAPON:		MK 83 MOD 5 (TP)					
FIN ASSEMBLY:		CONICAL			BSU-85/B		
MODE:					LOW DRAG		
ARMING TIMES:		6.0	8.0	10.0	6.0	8.0	10.0
		201 TO 5,000 FT-MSL RUN-IN ALTITUDE					
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)					
10	450	0.0	1.8	4.0	0.0	2.0	4.0
	500	0.0	2.0	4.0	0.2	2.2	4.0
	550	0.0	2.2	4.0	0.2	2.6	4.0
20	450	0.0	1.8	4.0	0.0	2.0	4.0
	500	0.0	2.0	4.0	0.0	2.2	4.0
	550	0.0	2.0	4.0	0.0	4.0	4.0
30	450	UA	1.6	4.0	UA	1.8	4.0
	500	UA	1.8	4.0	UA	2.0	4.0
	550	UA	1.8	4.0	UA	4.0	4.0
38	450	UA	1.6	4.0	UA	1.6	4.0
	500	UA	1.6	4.0	UA	2.0	4.0
	550	UA	1.6	4.0	UA	4.0	4.0
		5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE					
10	450	UA	1.4	3.4	UA	1.4	3.6
	500	UA	1.6	3.6	UA	1.8	4.0
	550	UA	1.6	3.8	UA	1.8	4.0
20	450	UA	1.4	3.4	UA	1.4	3.6
	500	UA	1.4	3.8	UA	1.6	4.0
	550	UA	1.4	4.0	UA	1.6	4.0
30	450	UA	1.0	3.4	UA	1.4	4.0
	500	UA	1.0	4.0	UA	1.4	4.0
	550	UA	1.2	4.0	UA	1.4	4.0
38	450	0.8	1.8	4.0	0.6	1.6	4.0
	500	0.8	1.8	4.0	0.6	1.6	4.0
	550	0.8	1.8	4.0	0.6	1.6	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11307-R1 BF 11309-R2

F4-41

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 51 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
M904 FUZE

WEAPON:		MK 83 MOD 5 (TP)					
FIN ASSEMBLY:		CONICAL			BSU-85/B		
MODE:					LOW DRAG		
ARMING TIMES:		6.0	8.0	10.0	6.0	8.0	10.0
		10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE					
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)					
10	450	UA	1.0	2.8	UA	1.0	2.8
	500	UA	1.2	3.0	UA	1.2	3.2
	550	UA	1.2	3.2	UA	1.2	3.8
20	450	UA	1.2	3.0	UA	1.0	3.0
	500	UA	1.2	3.0	UA	1.0	3.2
	550	UA	1.2	3.2	UA	1.2	3.6
30	450	UA	1.0	3.0	UA	1.0	3.0
	500	UA	1.0	3.0	UA	1.0	3.0
	550	UA	1.0	3.0	UA	1.0	4.0
38	450	2.0	3.2	4.0	2.0	3.2	4.0
	500	2.0	3.2	4.0	2.0	3.2	4.0
	550	2.0	3.2	4.0	2.0	3.2	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11307-R1 BF11309-R2 F4-42

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 52 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:	MK 81 MOD 1				MK 82 MOD 2 (TP)			
FIN ASSEMBLY:	CONICAL		MK 14 MOD 2		CONICAL		MK 15	
MODE:			LOW DRAG				LOW DRAG	
ARMING TIMES:	5.5	10.0	5.5	10.0	5.5	10.0	5.5	10.0
201 TO 5,000 FT-MSL RUN-IN ALTITUDE								
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)						
10	450	0.8	4.0	1.4	4.0	0.2	4.0	0.4	4.0
	500	1.0	4.0	1.8	4.0	0.2	4.0	0.6	4.0
	550	1.2	4.0	2.2	4.0	0.4	4.0	0.6	4.0
20	450	0.6	4.0	1.6	4.0	0.2	4.0	0.2	4.0
	500	1.0	4.0	2.0	4.0	0.2	4.0	0.4	4.0
	550	1.2	4.0	4.0	4.0	0.2	4.0	0.6	4.0
30	450	1.2	4.0	1.4	4.0	0.0	4.0	0.0	4.0
	500	1.2	4.0	4.0	4.0	0.0	4.0	0.2	4.0
	550	1.4	4.0	4.0	4.0	0.0	4.0	0.2	4.0
38	450	1.4	4.0	1.4	4.0	UA	4.0	UA	4.0
	500	1.4	4.0	4.0	4.0	UA	4.0	UA	4.0
	550	1.4	4.0	4.0	4.0	UA	4.0	UA	4.0
5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE								
10	450	0.4	4.0	0.6	4.0	UA	4.0	0.0	4.0
	500	0.6	4.0	1.2	4.0	0.0	4.0	0.2	4.0
	550	0.6	4.0	1.6	4.0	0.0	4.0	0.2	4.0
20	450	0.2	4.0	0.4	4.0	UA	4.0	UA	4.0
	500	0.4	4.0	1.0	4.0	UA	4.0	0.0	4.0
	550	0.4	4.0	1.2	4.0	UA	4.0	0.0	4.0
30	450	0.0	4.0	0.0	4.0	UA	4.0	UA	4.0
	500	0.2	4.0	1.0	4.0	UA	4.0	UA	4.0
	550	0.2	4.0	1.2	4.0	UA	4.0	UA	4.0
38	450	UA	4.0	0.6	4.0	UA	4.0	UA	4.0
	500	UA	4.0	0.6	4.0	UA	4.0	UA	4.0
	550	0.4	4.0	1.2	4.0	UA	4.0	UA	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A BF 11104-R1 BF 11212-R2 BF 11217-R1 F4-43

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 53 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:	MK 81 MOD 1		MK 82 MOD 2 (TP)	
FIN ASSEMBLY:	CONICAL	MK 14 MOD 2	CONICAL	MK 15
MODE:		LOW DRAG		LOW DRAG
ARMING TIMES:	5.5 10.0	5.5 10.0	5.5 10.0	5.5 10.0

10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
10	450	UA 4.0	UA 4.0	UA 3.4	UA 4.0
	500	0.2 4.0	0.4 4.0	UA 4.0	UA 4.0
	550	0.2 4.0	0.8 4.0	UA 4.0	UA 4.0
20	450	UA 4.0	UA 4.0	UA 3.8	UA 4.0
	500	0.0 4.0	0.0 4.0	UA 4.0	UA 4.0
	550	0.0 4.0	0.2 4.0	UA 4.0	UA 4.0
30	450	UA 4.0	UA 4.0	UA 3.4	UA 4.0
	500	UA 4.0	UA 4.0	UA 4.0	UA 4.0
	550	UA 4.0	0.0 4.0	UA 4.0	UA 4.0
38	450	0.4 4.0	0.4 4.0	1.0 4.0	0.8 4.0
	500	0.4 4.0	0.4 4.0	1.0 4.0	0.8 4.0
	550	0.4 4.0	0.4 4.0	1.0 4.0	0.8 4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A BF 11104-R1 BF 11212-R2 BF 11217-R1 F4-44

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 54 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:	MK 82 MOD 2 (TP)		MK 83 MOD 5 (TP)			
FIN ASSEMBLY:	BSU-86/B		CONICAL		BSU-85/B	
MODE:	LOW DRAG				LOW DRAG	
ARMING TIMES:	5.5	10.0	5.5	10.0	5.5	10.0
201 TO 5,000 FT-MSL RUN-IN ALTITUDE						
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)				
10	450	0.4	4.0	UA	3.6	UA	4.0
	500	0.8	4.0	UA	4.0	UA	4.0
	550	1.4	4.0	UA	4.0	UA	4.0
20	450	0.2	4.0	UA	3.8	UA	4.0
	500	0.6	4.0	UA	4.0	UA	4.0
	550	1.2	4.0	UA	4.0	UA	4.0
30	450	0.0	4.0	UA	4.0	UA	4.0
	500	0.2	4.0	UA	4.0	UA	4.0
	550	0.4	4.0	UA	4.0	UA	4.0
38	450	0.0	4.0	UA	4.0	UA	4.0
	500	0.0	4.0	UA	4.0	UA	4.0
	550	0.0	4.0	UA	4.0	UA	4.0
5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE						
10	450	0.0	4.0	UA	3.0	UA	3.2
	500	0.2	4.0	UA	3.2	UA	3.8
	550	0.4	4.0	UA	3.4	UA	4.0
20	450	0.0	4.0	UA	3.0	UA	3.2
	500	0.0	4.0	UA	3.4	UA	4.0
	550	0.0	4.0	UA	3.6	UA	4.0
30	450	UA	4.0	UA	3.0	UA	3.2
	500	UA	4.0	UA	3.2	UA	4.0
	550	UA	4.0	UA	4.0	UA	4.0
38	450	UA	4.0	0.8	3.2	0.6	4.0
	500	UA	4.0	0.8	3.2	0.6	4.0
	550	UA	4.0	0.8	4.0	0.6	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2 BF 11306-R1 BF 11309-R2

F4-45

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 55 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:	MK 82 MOD 2 (TP)				MK 83 MOD 5 (TP)			
FIN ASSEMBLY:	BSU-86/B				CONICAL		BSU-85/B	
MODE:	LOW DRAG						LOW DRAG	
ARMING TIMES:	5.5	10.0			5.5	10.0	5.5	10.0

10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)					
10	450	UA	4.0	UA	2.6	UA	2.6
	500	UA	4.0	UA	2.6	UA	2.8
	550	0.0	4.0	UA	2.6	UA	3.2
20	450	UA	4.0	UA	2.4	UA	2.6
	500	UA	4.0	UA	2.4	UA	2.8
	550	UA	4.0	UA	2.8	UA	3.2
30	450	UA	4.0	UA	2.6	UA	2.8
	500	UA	4.0	UA	2.6	UA	2.8
	550	UA	4.0	UA	2.6	UA	2.8
38	450	0.8	4.0	1.6	4.0	1.6	4.0
	500	0.8	4.0	1.6	4.0	1.6	4.0
	550	0.8	4.0	1.6	4.0	1.6	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2 BF 11306-R1 BF 11309-R2 F4-46

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 56 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
201 TO 5,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
10	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.6	4.0
20	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.6	4.0
30	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.6	4.0
38	450	1.2	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.6	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-46A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 57 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
10	450	0.6	4.0	0.2	4.0
	500	0.8	4.0	0.2	4.0
	550	1.0	4.0	0.4	4.0
20	450	0.8	4.0	0.4	4.0
	500	0.8	4.0	0.4	4.0
	550	1.0	4.0	0.4	4.0
30	450	0.6	4.0	0.4	4.0
	500	0.8	4.0	0.4	4.0
	550	0.8	4.0	0.4	4.0
38	450	0.4	4.0	0.2	4.0
	500	0.8	4.0	0.4	4.0
	550	0.8	4.0	0.4	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-46B

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 58 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
10,001 TO 15,000 FT-MSL RELEASE ALTITUDE
MK 344 AND MK 376 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
10	450	0.4	4.0	0.0	4.0
	500	0.4	4.0	0.2	4.0
	550	0.6	4.0	0.2	4.0
20	450	0.0	4.0	0.0	4.0
	500	0.4	4.0	0.2	4.0
	550	0.4	4.0	0.2	4.0
30	450	UA	4.0	UA	3.6
	500	0.2	4.0	0.0	4.0
	550	0.4	4.0	0.0	4.0
38	450	UA	4.0	UA	3.0
	500	UA	4.0	UA	4.0
	550	0.2	4.0	0.0	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-46C

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 59 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
MK 344 AND MK 376 (VT) FUZE

WEAPON:	MK 81 MOD 1				MK 82 MOD 2 (TP)			
FIN ASSEMBLY:	CONICAL		MK 14 MOD 2		CONICAL		MK 15	
MODE:			LOW DRAG				LOW DRAG	
ARMING TIMES:	5.5	10.0	5.5	10.0	5.5	10.0	5.5	10.0
201 TO 5,000 FT-MSL RUN-IN ALTITUDE								
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)						
10	450	UA	4.0	0.0	4.0	UA	3.4	UA 3.8
	500	0.0	4.0	0.0	4.0	UA	3.6	UA 4.0
	550	0.0	4.0	0.0	4.0	UA	3.8	UA 4.0
20	450	UA	4.0	UA	4.0	UA	3.2	UA 4.0
	500	0.0	4.0	UA	4.0	UA	3.6	UA 4.0
	550	0.0	4.0	UA	4.0	UA	4.0	UA 4.0
30	450	UA	4.0	UA	4.0	UA	2.8	UA 4.0
	500	UA	4.0	UA	4.0	UA	4.0	UA 4.0
	550	UA	4.0	UA	4.0	UA	4.0	UA 4.0
38	450	UA	4.0	UA	4.0	UA	2.8	UA 2.6
	500	UA	4.0	UA	4.0	UA	4.0	UA 4.0
	550	UA	4.0	UA	4.0	UA	4.0	UA 4.0
5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE								
10	450	UA	3.6	UA	3.6	UA	2.6	UA 2.6
	500	UA	3.6	UA	4.0	UA	2.6	UA 3.2
	550	UA	4.0	UA	4.0	UA	2.8	UA 4.0
20	450	UA	3.4	UA	3.4	UA	2.6	UA 2.8
	500	UA	3.6	UA	4.0	UA	2.6	UA 3.0
	550	UA	4.0	UA	4.0	UA	2.8	UA 4.0
30	450	UA	2.8	UA	3.2	UA	2.6	UA 2.6
	500	UA	2.8	UA	4.0	UA	2.6	UA 2.6
	550	UA	4.0	UA	4.0	UA	2.6	UA 4.0
38	450	UA	3.0	UA	3.0	UA	2.6	UA 2.4
	500	UA	3.0	UA	4.0	UA	2.6	UA 2.4
	550	UA	3.0	UA	4.0	UA	2.6	UA 2.4

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A BF 11104-R1 BF 11212-R2 BF 11217-R1 F4-47

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 60 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
MK 344 AND MK 376 (VT) FUZE

WEAPON:	MK 81 MOD 1				MK 82 MOD 2 (TP)			
FIN ASSEMBLY:	CONICAL		MK 14 MOD 2		CONICAL		MK 15	
MODE:			LOW DRAG				LOW DRAG	
ARMING TIMES:	5.5	10.0	5.5	10.0	5.5	10.0	5.5	10.0

10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)							
10	450	UA	2.6	UA	2.8	UA	2.0	UA	1.8
	500	UA	3.0	UA	3.2	UA	2.0	UA	2.2
	550	UA	3.0	UA	3.6	UA	2.4	UA	2.6
20	450	UA	2.6	UA	3.0	UA	1.8	UA	1.8
	500	UA	3.0	UA	3.0	UA	2.0	UA	2.4
	550	UA	3.0	UA	4.0	UA	2.2	UA	2.4
30	450	UA	2.2	UA	2.4	UA	1.8	UA	1.8
	500	UA	2.8	UA	2.8	UA	1.8	UA	1.8
	550	UA	2.8	UA	2.8	UA	1.8	UA	2.6
38	450	0.4	2.8	0.4	2.8	1.0	3.4	0.8	3.2
	500	0.4	2.8	0.4	2.8	1.0	3.4	0.8	3.2
	550	0.4	2.8	0.4	2.8	1.0	3.4	0.8	3.2

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11101-R21A BF 11104-R1 BF 11212-R2 BF 11217-R1 F4-48

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 61 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
MK 344 AND MK 376 (VT) FUZE

WEAPON:	MK 82 MOD 2 (TP)		MK 83 MOD 5 (TP)			
FIN ASSEMBLY:	BSU-86/B		CONICAL		BSU-85/B	
MODE:	LOW DRAG				LOW DRAG	
ARMING TIMES:	5.5	10.0	5.5	10.0	5.5	10.0
201 TO 5,000 FT-MSL RUN-IN ALTITUDE						
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)				
10	450	UA	4.0	UA 2.4	UA	2.6
	500	UA	4.0	UA 2.6	UA	3.0
	550	UA	4.0	UA 2.8	UA	3.6
20	450	UA	4.0	UA 2.4	UA	2.6
	500	UA	4.0	UA 2.6	UA	3.2
	550	UA	4.0	UA 2.8	UA	4.0
30	450	UA	4.0	UA 2.2	UA	2.2
	500	UA	4.0	UA 2.2	UA	2.6
	550	UA	4.0	UA 2.2	UA	4.0
38	450	UA	4.0	UA 2.0	UA	2.2
	500	UA	4.0	UA 2.0	UA	2.6
	550	UA	4.0	UA 2.2	UA	2.6
5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE						
10	450	UA	2.8	UA 2.0	UA	1.8
	500	UA	3.8	UA 2.0	UA	2.0
	550	UA	4.0	UA 2.0	UA	2.4
20	450	UA	2.6	UA 2.0	UA	2.2
	500	UA	4.0	UA 2.0	UA	2.2
	550	UA	4.0	UA 2.0	UA	2.4
30	450	UA	2.8	UA 2.0	UA	2.0
	500	UA	4.0	UA 2.0	UA	2.0
	550	UA	4.0	UA 2.0	UA	2.0
38	450	UA	2.6	0.8 3.0	0.6	2.6
	500	UA	2.6	0.8 3.0	0.6	2.6
	550	UA	4.0	0.8 3.0	0.6	2.6

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2 BF11306-R1 BF 11309-R2 F4-49

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 62 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
MK 344 AND MK 376 (VT) FUZE

WEAPON:	MK 82 MOD 2 (TP)		MK 83 MOD 5 (TP)			
FIN ASSEMBLY:	BSU-86/B		CONICAL		BSU-85/B	
MODE:	LOW DRAG				LOW DRAG	
ARMING TIMES:	5.5	10.0	5.5	10.0	5.5	10.0

10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)					
10	450	UA	2.4	UA	1.4	UA	1.6
	500	UA	2.4	UA	1.6	UA	1.6
	550	UA	2.8	UA	1.6	UA	1.6
20	450	UA	1.8	UA	1.6	UA	1.6
	500	UA	2.4	UA	1.8	UA	1.8
	550	UA	2.4	UA	1.8	UA	2.0
30	450	UA	1.8	UA	1.2	UA	1.4
	500	UA	1.8	UA	1.2	UA	1.4
	550	UA	2.4	UA	1.2	UA	1.6
38	450	0.8	3.0	1.6	4.0	1.6	4.0
	500	0.8	3.0	1.6	4.0	1.6	4.0
	550	0.8	3.0	1.6	4.0	1.6	4.0

NOTES:
1. Mk 344 fuze uses 5.5-second arming time only.
2. Mk 376 fuze uses 10.0-second arming time only.
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2 BF 11306-R1 BF 11309-R2 F4-50

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 63 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
FMU-139 (NON-VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)						MK 83 MOD 5 (TP)			
FIN ASSEMBLY:		CONICAL		MK 15		BSU-86/B		CONICAL		BSU-85/B	
MODE:				LOW DRAG		LOW DRAG				LOW DRAG	
ARMING TIMES:		5.5	10.0	5.5	10.0	5.5	10.0	5.5	10.0	5.5	10.0
		201 TO 5,000 FT-MSL RUN-IN ALTITUDE									
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
10	450	0.4	4.0	0.6	4.0	0.8	4.0	UA	4.0	UA	4.0
	500	0.6	4.0	0.8	4.0	1.2	4.0	UA	4.0	0.0	4.0
	550	0.6	4.0	1.0	4.0	4.0	4.0	UA	4.0	0.0	4.0
20	450	0.2	4.0	0.4	4.0	0.6	4.0	UA	4.0	UA	4.0
	500	0.4	4.0	0.6	4.0	1.0	4.0	UA	4.0	UA	4.0
	550	0.4	4.0	1.0	4.0	4.0	4.0	UA	4.0	UA	4.0
30	450	0.2	4.0	0.2	4.0	0.2	4.0	UA	4.0	UA	4.0
	500	0.2	4.0	0.4	4.0	0.6	4.0	UA	4.0	UA	4.0
	550	0.2	4.0	0.6	4.0	4.0	4.0	UA	4.0	UA	4.0
38	450	0.0	4.0	0.2	4.0	0.0	4.0	UA	4.0	UA	4.0
	500	0.0	4.0	0.2	4.0	0.2	4.0	UA	4.0	UA	4.0
	550	0.0	4.0	0.2	4.0	0.4	4.0	UA	4.0	UA	4.0
		5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE									
10	450	0.0	4.0	0.2	4.0	0.2	4.0	UA	4.0	UA	4.0
	500	0.2	4.0	0.4	4.0	0.4	4.0	UA	4.0	UA	4.0
	550	0.2	4.0	0.4	4.0	0.6	4.0	UA	4.0	UA	4.0
20	450	0.0	4.0	0.0	4.0	0.0	4.0	UA	4.0	UA	4.0
	500	0.0	4.0	0.2	4.0	0.2	4.0	UA	4.0	UA	4.0
	550	0.0	4.0	0.2	4.0	0.4	4.0	UA	4.0	UA	4.0
30	450	UA	4.0	UA	4.0	0.0	4.0	UA	4.0	UA	4.0
	500	UA	4.0	UA	4.0	0.0	4.0	UA	4.0	UA	4.0
	550	UA	4.0	0.0	4.0	0.0	4.0	UA	4.0	UA	4.0
38	450	0.0	4.0	UA	4.0	UA	4.0	0.8	4.0	0.6	4.0
	500	0.0	4.0	UA	4.0	UA	4.0	0.8	4.0	0.6	4.0
	550	0.0	4.0	UA	4.0	UA	4.0	0.8	4.0	0.6	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2 BF 11217-R1 BF 11223-R2 BF 11306-R1 BF 11309-R2 F4-51

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 64 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
FMU-139 (NON-VT) FUZE

WEAPON:	MK 82 MOD 2 (TP)						MK 83 MOD 5 (TP)			
FIN ASSEMBLY:	CONICAL		MK 15		BSU-86/B		CONICAL		BSU-85/B	
MODE:			LOW DRAG		LOW DRAG				LOW DRAG	
ARMING TIMES:	5.5	10.0	5.5	10.0	5.5	10.0	5.5	10.0	5.5	10.0
10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE										
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)									
10	450	UA	4.0	UA	4.0	UA	4.0	UA	3.4	UA	3.4
	500	UA	4.0	0.0	4.0	0.0	4.0	UA	3.6	UA	3.8
	550	0.0	4.0	0.0	4.0	0.2	4.0	UA	3.6	UA	4.0
20	450	UA	4.0	UA	4.0	UA	4.0	UA	3.2	UA	3.6
	500	UA	4.0	UA	4.0	UA	4.0	UA	3.6	UA	3.8
	550	UA	4.0	UA	4.0	UA	4.0	UA	3.8	UA	4.0
30	450	UA	4.0	UA	4.0	UA	4.0	UA	3.4	UA	3.8
	500	UA	4.0	UA	4.0	UA	4.0	UA	3.4	UA	4.0
	550	UA	4.0	UA	4.0	UA	4.0	UA	4.0	UA	4.0
38	450	1.0	4.0	1.0	4.0	1.0	4.0	1.8	4.0	1.8	4.0
	500	1.0	4.0	1.0	4.0	1.0	4.0	1.8	4.0	1.8	4.0
	550	1.0	4.0	1.0	4.0	1.0	4.0	1.8	4.0	1.8	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2 BF 11217-R1 BF 11223-R2 BF 11306-R1 BF 11309-R2 F4-52

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 65 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
201 TO 5,000 FT-MSL RELEASE ALTITUDE
FMU-139 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
10	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.6	4.0
20	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.6	4.0
30	450	1.0	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.6	4.0
38	450	1.2	4.0	0.6	4.0
	500	1.2	4.0	0.6	4.0
	550	1.4	4.0	0.6	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-52A

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 66 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE
FMU-139 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
10	450	0.6	4.0	0.2	4.0
	500	0.8	4.0	0.2	4.0
	550	1.0	4.0	0.4	4.0
20	450	0.8	4.0	0.4	4.0
	500	0.8	4.0	0.4	4.0
	550	1.0	4.0	0.4	4.0
30	450	0.6	4.0	0.4	4.0
	500	0.8	4.0	0.4	4.0
	550	0.8	4.0	0.4	4.0
38	450	0.4	4.0	0.2	4.0
	500	0.8	4.0	0.4	4.0
	550	0.8	4.0	0.4	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-52B

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 67 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
10,001 TO 15,000 FT-MSL RELEASE ALTITUDE
FMU-139 (NON-VT) FUZE

WEAPON:		GBU-12B/B, C/B		GBU-16/B, A/B	
FIN ASSEMBLY:		CONICAL		CONICAL	
MODE:					
ARMING TIMES:		5.5	10.0	5.5	10.0
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)			
10	450	0.4	4.0	0.0	4.0
	500	0.4	4.0	0.2	4.0
	550	0.6	4.0	0.2	4.0
20	450	0.0	4.0	0.0	4.0
	500	0.4	4.0	0.2	4.0
	550	0.4	4.0	0.2	4.0
30	450	UA	4.0	UA	3.6
	500	0.2	4.0	0.0	4.0
	550	0.4	4.0	0.0	4.0
38	450	UA	4.0	UA	3.0
	500	UA	4.0	UA	4.0
	550	0.2	4.0	0.0	4.0

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 16002-R0
BF 16003-R1
F4-52C

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 68 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
FMU-139 (VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)				MK 83 MOD 5 (TP)	
FIN ASSEMBLY:		CONICAL	MK 15	BSU-86/B	CONICAL	BSU-85/B	
MODE:			LOW DRAG	LOW DRAG		LOW DRAG	
ARMING TIMES:		5.5 10.0	5.5 10.0	5.5 10.0	5.5 10.0	5.5 10.0	
		201 TO 5,000 FT-MSL RUN-IN ALTITUDE					
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)					
10	450	UA 4.0	UA 4.0	UA 4.0	UA 3.2	UA 3.4	
	500	UA 4.0	UA 4.0	UA 4.0	UA 3.4	UA 3.8	
	550	UA 4.0	UA 4.0	UA 4.0	UA 3.6	UA 4.0	
20	450	UA 4.0	UA 4.0	UA 4.0	UA 3.2	UA 3.6	
	500	UA 4.0	UA 4.0	UA 4.0	UA 3.4	UA 4.0	
	550	UA 4.0	UA 4.0	UA 4.0	UA 4.0	UA 4.0	
30	450	UA 4.0	UA 4.0	UA 4.0	UA 3.2	UA 3.4	
	500	UA 4.0	UA 4.0	UA 4.0	UA 3.4	UA 4.0	
	550	UA 4.0	UA 4.0	UA 4.0	UA 4.0	UA 4.0	
38	450	UA 3.4	UA 4.0	UA 4.0	UA 3.0	UA 3.2	
	500	UA 4.0	UA 4.0	UA 4.0	UA 3.4	UA 3.2	
	550	UA 4.0	UA 4.0	UA 4.0	UA 3.4	UA 4.0	
		5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE					
10	450	UA 3.4	UA 3.4	UA 3.8	UA 2.8	UA 2.8	
	500	UA 3.4	UA 4.0	UA 4.0	UA 2.8	UA 2.8	
	550	UA 3.8	UA 4.0	UA 4.0	UA 2.8	UA 3.2	
20	450	UA 3.4	UA 3.4	UA 3.6	UA 2.6	UA 3.0	
	500	UA 3.4	UA 4.0	UA 4.0	UA 2.6	UA 3.0	
	550	UA 3.8	UA 4.0	UA 4.0	UA 2.8	UA 3.2	
30	450	UA 3.2	UA 3.2	UA 3.2	UA 2.6	UA 2.6	
	500	UA 3.2	UA 4.0	UA 4.0	UA 2.6	UA 2.6	
	550	UA 4.0	UA 4.0	UA 4.0	UA 2.6	UA 3.0	
38	450	0.0 3.0	UA 3.2	UA 4.0	0.8 3.4	0.6 3.0	
	500	0.0 3.0	UA 3.2	UA 4.0	0.8 3.4	0.6 3.0	
	550	0.0 3.0	UA 4.0	UA 4.0	0.8 3.4	0.6 3.0	

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2 BF 11217-R1 BF 11223-R2 BF 11306-R1 BF 11309-R2 F4-53

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 69 of 70)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
FMU-139 (VT) FUZE

WEAPON:		MK 82 MOD 2 (TP)				MK 83 MOD 5 (TP)	
FIN ASSEMBLY:		CONICAL	MK 15	BSU-86/B	CONICAL	BSU-85/B	
MODE:			LOW DRAG	LOW DRAG		LOW DRAG	
ARMING TIMES:		5.5 10.0	5.5 10.0	5.5 10.0	5.5 10.0	5.5 10.0	
		10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE					
RELEASE FLIGHT PATH ANGLE (DEG)	RUN-IN VELOCITY (KTAS)	MAXIMUM STICK LENGTH (SECONDS)					
10	450	UA 2.8	UA 3.0	UA 3.0	UA 2.2	UA 2.2	
	500	UA 2.8	UA 3.0	UA 3.2	UA 2.2	UA 2.2	
	550	UA 3.0	UA 3.6	UA 4.0	UA 2.2	UA 2.2	
20	450	UA 2.4	UA 2.6	UA 2.6	UA 2.4	UA 2.4	
	500	UA 2.8	UA 3.2	UA 3.2	UA 2.4	UA 2.4	
	550	UA 3.4	UA 3.2	UA 4.0	UA 2.6	UA 2.4	
30	450	UA 2.4	UA 2.6	UA 3.0	UA 2.0	UA 2.2	
	500	UA 2.4	UA 2.6	UA 3.0	UA 2.0	UA 2.2	
	550	UA 2.6	UA 3.0	UA 3.0	UA 2.4	UA 2.4	
38	450	1.0 3.8	1.0 3.6	1.0 3.4	1.8 4.0	1.8 4.0	
	500	1.0 3.8	1.0 3.6	1.0 3.4	1.8 4.0	1.8 4.0	
	550	1.0 3.8	1.0 3.6	1.0 3.4	1.8 4.0	1.8 4.0	

NOTES: 1. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11212-R2 BF 11217-R1 BF 11223-R2 BF 11306-R1 BF 11309-R2 F4-54

Figure 3-16. Authorized Fuze Arming Times/Maximum Stick Lengths (Sheet 70 of 70)

3.15 PROBABILITY OF FRAGMENT HIT IN THE EVENT OF EARLY BURST

The probability of the delivery aircraft being hit by at least one fragment in the event of early burst at arming ($P_{H/EB}$) is given in Figure 3-18. Deviations from the authorized maximum stick lengths/minimum fuze arming times should be approved only when the maximum stick lengths/ minimum fuze arming times will substantially limit or degrade mission effectiveness or no other suitable alternative is available. The purpose of these charts is to provide increased tactical flexibility. The OTC may approve deviations from the minimum authorized arming time prescribed in Figure 3-16 when the tactical advantage realized by using shorter arming times or longer stick lengths justifies the resulting added risk. The present P_{EB}s associated with the current electrical fuzes do not permit use of the tables in Figure 3-18 and still maintain the maximum authorized P_H of 1 in 10,000 (0.0001). Therefore, deviations may only be approved when using M904 series mechanical fuzes. The very low probability of early burst of this series fuze may permit use of shorter arming times and longer stick lengths under certain tactical situations without increasing the over all risk above that warranted by the mission. It must be recognized that an early burst at shorter arming times will not only increase the probability of a fragment hit but will also increase the severity of damage in the event of a hit.

WARNING

The Minimum Authorized Arming times in Figure 3-16 are computed on the basis that the probability of a fragment hit on the delivery aircraft in the event of an early burst ($P_{H/EB}$) shall not exceed 1 in 10 (0.10), and the overall probability of a fragment hit per each bomb dropped (P_H) shall not exceed 1 in 10,000 (0.0001).When deviations to these safety criteria are necessary, latitude may be exercised in accepting higher values of $P_{H/EB}$ but the established limit of P_H of 1 in 10,000 shall not be exceeded. P_H is the product of $P_{H/EB}$ and P_{EB}. P_{EB} is the probability of early burst given in Figure 3-14.

NOTE

In Figure 3-18, conditions marked ''NC'' are not cleared due to stores limitations. Arming times less than those listed have a $P_{H/EB}$ of 1.0, and arming times greater than those listed have no probability (NP) of hit given early burst. ''NP'' in Figure 3-18 is defined as a probability of hit given early burst of less than or equal to 5 in 10,000. $P_{H/EB}$ values presented in Figure 3-18 are for a range of airspeeds and cannot be directly compared to every stick length value presented in Figure 3-16. The $P_{H/EB}$ values for the range of airspeeds are provided based on the airspeed resulting in the highest $P_{H/EB}$ for the given release condition. These values are applicable to any airspeed within the given range.

3.15.1 Instructions for Use of Figure 3-18. In the event that the OTC determines that it is crucial to release at the lowest possible altitude, an arming time less than the minimum authorized arming time obtained from Figure 3-16 is needed. The risk in using this shorter arming

time would be obtained from Figure 3-18 in the following manner:

1. Locate the entry point to Figure 3-18 by identifying:

   (a) Release/recovery maneuver.

   (b) Release airspeed, angle, and altitude.

   (c) Weapon configuration.

   (d) Arming time for which an estimation of hazard is desired.

   (e) Stick length (seconds) - round up the maximum stick length computed for use in Figure 3-16 to the nearest second.

   (f) Fuze which corresponds with the desired arming time.

2. Record necessary values of $P_{H/EB}$.

3. Obtain P_{EB} (probability of early burst) for the desired fuze from Figure 3-14, ''Fuze Characteristics.''

4. Compute the overall probability of fragment hit (P_H) by multiplying $P_{H/EB}$ (step 2) and P_{EB} (step 3). Compare P_H to the constraint defined in ''WARNING'' given above. Note that the low early burst probability of the M904 allows the constraint ($P_H \leqq 0.0001$) to be satisfied even when $P_{H/EB}$ is 1.0; however, this is not true with the Mk 344, Mk 376, and FMU-139 fuzes because of their higher early burst rates.

It is important to understand that Probability of Hit need only be computed when the planned release exceeds authorized maximum stick lengths. Confusion can arise when the P_H worksheet is completed as ″practice″ for a release that falls within the constraints of the maximum stick length provided in Figure 3-16. More often than not the answer obtained from the P_H worksheet will give a solution that is greater than the 1 in 10,000 that is allowed. This occurs for several reasons but the largest contributor is the requirement to round the stick length up to the next highest second. For example, if you desire a 500 ms stick length and the maximum authorized is 600 ms you have met the criteria for a safe release, If you decide to conduct a practice P_H problem, step E of the problem will requires you to round up to 1.0 second. This results in a 100 percent increase in stick length and a dramatic increase in the probability of hit given an early burst ($P_{H/EB}$). Combine this with the higher early burst rates of electrical fuzes and the result will almost certainly be in violation of the 1 in 10,000 for probability of hit.

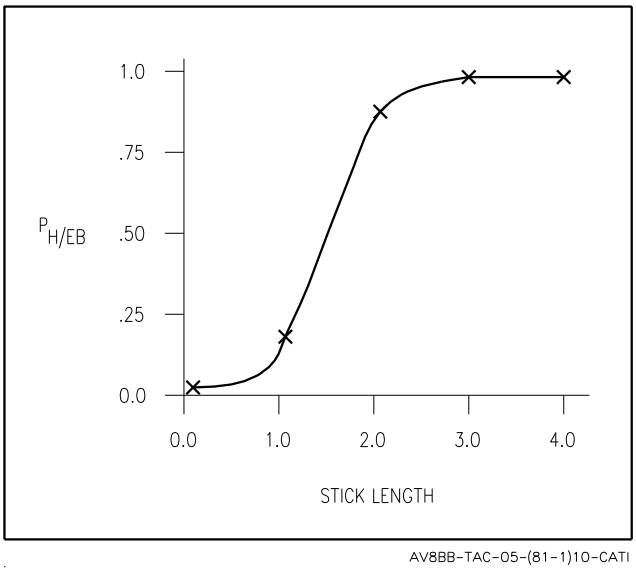


Figure 3-17. Typical Plot for $P_{H/EB}$.

Another common tendency is to interpolate the data between 0.0 and 1.0 second to arrive at the actual value for 500 ms. The problem here is that interpolation assumes the plot for $P_{H/EB}$ is linear which it is not. Again you will arrive at a solution that is safe by the weaponeering worksheet but not safe by the P_H worksheet. The graph for $P_{H/EB}$ if plotted would look similar to Figure 3-17. It should be apparent that the slope of the curve increases as stick length increases and is not linear. The graph depicts the data points pulled from a Mk 82, BSU-86 LD, released between 5,000 and 10,000 feet, in a 45É dive with 5.5 seconds of arm time (Figure 3-19, sheet 7 of 32). It is important to be aware of what the data is doing between 0.0 and 1.0 seconds which is where we typically release. The only way to compute what the actual $P_{H/EB}$ is at 500 ms would be to have the graph that depicts all the

actual points from 0.0 to 4.0 seconds or a computer program with a detailed database that will compute the numbers for you. Neither of these options are realistic. The number of actual points for the $P_{H/EB}$ numbers are few and the error tolerance large. If you were to plot the actual points, the graph produced would not appear as smooth as the one above. It would not contain enough points to produce a usable curve and the upper and lower confidence bounds would be too large.

As a result, we are given data in Figure 3-19 that leads us in a safe conservative direction. We round up our stick lengths to error on the safe side. The recommendation is to only use the charts with the intent to use the M904 mechanical fuze since its probability of early burst (P_{EB}) is very low at 0.00001. We should only be doing P_H computations when required because we have violated authorized stick lengths and then plan on using the M904 mechanical nose fuze. Practice P_H problems can still be computed but don't look for the answer to be one that is less than the 1 in 10,000 allowed.

3.15.2 Sample Problem. Determine P_H using a shorter arming time than was authorized in the previous sample problem.

Type Release: level
Type Recovery: 5g level breakaway
Weapon: Mk 81 bomb
Fin Assembly: conical
Release Altitude: 5,000 feet MSL
Release Velocity: 450 KTAS
Fuze: M904*
Arming Time: 4.0 seconds
Maximum Stick Length: 1.0 second (0.55 seconds rounded up to the nearest 1 second)

1. Select $P_{H/EB}$ as shown from Figure 3-18 under title:

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY

2. $P_{H/EB} = 0.988$

3. P_{EB} for the M904 fuze = 0.00001.

4. Compute the overall probability of hit (P_H).

$P_H = P_{H/EB} \times P_{EB}$
$P_H = 0.988 \times 0.00001$
$P_H = 0.00000988$

* Note that the 5.5-second arming time is also less than 6.0 seconds. However, due to the higher probability of early burst rate of the Mk 344 (0.0011 for non-VT) and FMU-139 (0.0010 for non-VT), these fuzes will not satisfy the required criteria for the selected release parameters.

5. Since the computed P_H satisfies the constraint of $P_H \leqq 0.0001$ in the "WARNING", the 4.0 second arming time is permissible. However, if an early burst does occur at 4.0 seconds, the aircraft is sufficiently close to the detonation point that the probability of fragment hit ($P_{H/EB}$) is 0.988 (98.8 percent). At this point, the OTC must decide if the mission requirements are worth the risk involved in using a 4.0-second arming time.

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY

WEAPON:		MK 81 MOD 1											
FIN ASSEMBLY:		CONICAL					MK 14 MOD 2						
MODE:							LOW DRAG					HIGH DRAG	
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	2.0	2.6
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)											
MIN TO 5,000	0.0	0.544	0.001	NP	NP	NP	0.273	0.001	NP	NP	NP	NP	NP
	1.0	0.988	0.055	0.004	NP	NP	0.799	0.029	0.003	NP	NP	NP	NP
	2.0	1.000	0.284	0.094	NP	NP	0.957	0.090	0.035	NP	NP	NP	NP
	3.0	1.000	0.447	0.167	0.001	NP	0.981	0.117	0.052	NP	NP	NP	NP
	4.0	1.000	0.606	0.247	0.003	NP	0.985	0.189	0.078	0.001	NP	NP	NP
5,001 TO 10,000	0.0	0.837	0.003	0.001	NP	NP	0.698	0.002	0.001	NP	NP	0.004	NP
	1.0	1.000	0.148	0.035	NP	NP	0.969	0.098	0.025	NP	NP	0.008	NP
	2.0	1.000	0.572	0.213	NP	NP	0.995	0.301	0.113	NP	NP	0.008	NP
	3.0	1.000	0.709	0.375	0.002	NP	1.000	0.379	0.142	0.002	NP	0.008	NP
	4.0	1.000	0.831	0.506	0.015	NP	1.000	0.523	0.211	0.005	NP	0.008	NP
10,001 TO 20,000	0.0	0.998	0.130	0.040	NP	NP	0.987	0.115	0.038	NP	NP	0.074	0.009
	1.0	1.000	0.649	0.343	0.002	NP	0.998	0.598	0.290	0.001	NP	0.083	0.009
	2.0	1.000	0.868	0.662	0.018	NP	1.000	0.811	0.601	0.014	NP	0.090	0.009
	3.0	1.000	0.894	0.740	0.057	0.001	1.000	0.850	0.680	0.044	0.001	0.091	0.009
	4.0	1.000	0.957	0.849	0.088	0.002	1.000	0.916	0.797	0.066	0.001	0.091	0.009

F5-1

Figure 3-18. Sample Probability of Fragment Hit in Event of Early Burst

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE

WEAPON:		MK 81 MOD 1								
FIN ASSEMBLY:		CONICAL				MK 14 MOD 2				
MODE:						LOW DRAG				HIGH DRAG
ARMING TIMES:		4.0	5.5	6.0	8.0	4.0	5.5	6.0	8.0	2.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)								
-10	0.0	0.450	0.002	NP	NP	0.383	0.001	NP	NP	NP
	1.0	1.000	0.025	0.003	NP	0.978	0.013	0.002	NP	NP
	2.0	1.000	0.206	0.051	NP	1.000	0.139	0.031	NP	0.001
	3.0	1.000	0.658	0.236	NP	1.000	0.405	0.129	NP	0.001
	4.0	1.000	0.779	0.470	0.002	1.000	0.586	0.229	0.001	0.001
-20	0.0	0.426	NP	NP	NP	0.344	NP	NP	NP	NP
	1.0	1.000	0.014	0.002	NP	0.989	0.008	0.002	NP	NP
	2.0	1.000	0.231	0.060	NP	1.000	0.200	0.043	NP	0.001
	3.0	1.000	0.785	0.322	NP	1.000	0.697	0.244	NP	0.001
	4.0	1.000	0.885	0.668	0.003	1.000	0.840	0.547	0.002	0.001
-30	0.0	0.419	NP	NP	NP	0.329	NP	NP	NP	NP
	1.0	1.000	0.017	0.002	NP	1.000	0.010	0.002	NP	NP
	2.0	1.000	0.314	0.071	NP	1.000	0.272	0.062	NP	0.001
	3.0	1.000	0.883	0.557	NP	1.000	0.866	0.432	NP	0.001
	4.0	1.000	0.937	0.811	0.005	1.000	0.939	0.780	0.003	0.001
-45	0.0	0.446	NP	NP	NP	0.325	NP	NP	NP	NC
	1.0	1.000	0.033	0.003	NP	1.000	0.020	0.002	NP	NC
	2.0	1.000	0.609	0.154	NP	1.000	0.529	0.124	NP	NC
	3.0	1.000	0.965	0.823	NP	1.000	0.975	0.808	NP	NC
	4.0	1.000	0.966	0.910	NP	1.000	0.989	0.952	NP	NC
-60	0.0	0.533	NP	NP	NP	0.351	NP	NP	NP	NC
	1.0	1.000	0.056	NP	NP	1.000	0.045	NP	NP	NC
	2.0	1.000	0.885	NP	NP	1.000	0.881	NP	NP	NC
	3.0	1.000	0.885	NP	NP	1.000	0.938	NP	NP	NC
	4.0	1.000	0.885	NP	NP	1.000	0.938	NP	NP	NC

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
BF 11103-R2
BF 11106-R0
F6-1

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 1 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE

WEAPON: MK 82 MOD 2 (TP)

FIN ASSEMBLY:	CONICAL				MK 15					
MODE:					LOW DRAG				HIGH DRAG	
ARMING TIMES:	4.0	5.5	6.0	8.0	4.0	5.5	6.0	8.0	2.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG) / STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)									
-10 / 0.0	0.657	0.002	NP	NP	0.629	0.003	NP	NP	0.091	0.017
1.0	0.995	0.056	0.009	NP	0.993	0.041	0.004	NP	0.109	0.028
2.0	1.000	0.439	0.122	NP	1.000	0.361	0.103	NP	0.125	0.032
3.0	1.000	0.822	0.495	NP	1.000	0.745	0.421	NP	0.126	0.033
4.0	1.000	0.887	0.710	0.003	1.000	0.847	0.620	0.003	0.127	0.033
-20 / 0.0	0.650	NP	NP	NP	0.617	NP	NP	NP	0.082	0.014
1.0	0.997	0.044	0.002	NP	0.996	0.037	0.002	NP	0.109	0.027
2.0	1.000	0.518	0.147	NP	1.000	0.443	0.127	NP	0.128	0.031
3.0	1.000	0.892	0.625	NP	1.000	0.854	0.549	NP	0.130	0.034
4.0	1.000	0.929	0.824	0.004	1.000	0.917	0.780	0.003	0.131	0.034
-30 / 0.0	0.664	NP	NP	NP	0.622	NP	NP	NP	0.077	0.014
1.0	0.999	0.050	0.002	NP	0.998	0.040	0.002	NP	0.106	0.026
2.0	1.000	0.622	0.191	NP	1.000	0.553	0.160	NP	0.128	0.031
3.0	1.000	0.942	0.756	NP	1.000	0.939	0.718	NP	0.131	0.034
4.0	1.000	0.960	0.896	0.023	1.000	0.965	0.889	0.015	0.132	0.034
-45 / 0.0	0.710	NP	NP	NP	0.662	NP	NP	NP	NC	NC
1.0	1.000	0.078	0.003	NP	1.000	0.055	0.003	NP	NC	NC
2.0	1.000	0.810	0.363	NP	1.000	0.788	0.312	NP	NC	NC
3.0	1.000	0.975	0.891	NP	1.000	0.990	0.907	NP	NC	NC
4.0	1.000	0.986	0.959	NP	1.000	0.996	0.974	NP	NC	NC
-60 / 0.0	0.790	NP	NP	NP	0.742	NP	NP	NP	NC	NC
1.0	1.000	0.147	NP	NP	1.000	0.119	NP	NP	NC	NC
2.0	1.000	0.926	NP	NP	1.000	0.950	NP	NP	NC	NC
3.0	1.000	0.926	NP	NP	1.000	0.981	NP	NP	NC	NC
4.0	1.000	0.926	NP	NP	1.000	0.981	NP	NP	NC	NC

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11213-R2
BF 11212-R2
BF 11217-R1
BF 11216-R6
F6-2

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 2 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE

WEAPON:		MK 82 MOD 2 (TP)							MK 83 MOD 5 (TP)			
FIN ASSEMBLY:		BSU-86/B							CONICAL			
MODE:		LOW DRAG				HIGH DRAG						
ARMING TIMES:		4.0	5.5	6.0	8.0	2.0	2.6	4.0	4.0	5.5	6.0	8.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)										
-10	0.0	0.607	0.003	NP	NP	0.277	0.027	NP	0.934	0.019	0.004	NP
	1.0	0.989	0.037	0.004	NP	0.469	0.057	NP	1.000	0.223	0.099	NP
	2.0	1.000	0.312	0.081	NP	0.505	0.084	NP	1.000	0.794	0.342	NP
	3.0	1.000	0.685	0.361	NP	0.509	0.085	NP	1.000	0.984	0.852	0.003
	4.0	1.000	0.800	0.556	0.002	0.511	0.086	0.001	1.000	0.993	0.952	0.045
-20	0.0	0.591	NP	NP	NP	0.277	0.025	NP	0.935	0.006	NP	NP
	1.0	0.994	0.033	0.003	NP	0.496	0.066	NP	1.000	0.209	0.048	NP
	2.0	1.000	0.399	0.108	NP	0.549	0.093	NP	1.000	0.866	0.424	NP
	3.0	1.000	0.827	0.494	NP	0.556	0.095	0.001	1.000	0.988	0.918	0.003
	4.0	1.000	0.904	0.745	0.003	0.561	0.097	0.002	1.000	0.993	0.967	0.092
-30	0.0	0.591	NP	NP	NP	0.287	0.020	NP	0.943	0.005	NP	NP
	1.0	1.000	0.037	0.002	NP	0.538	0.102	NP	1.000	0.231	0.042	NP
	2.0	1.000	0.513	0.150	NP	0.614	0.132	0.001	1.000	0.900	0.533	NP
	3.0	1.000	0.922	0.673	NP	0.623	0.139	0.005	1.000	0.993	0.933	0.003
	4.0	1.000	0.968	0.880	0.007	0.630	0.140	0.006	1.000	0.999	0.980	0.118
-45	0.0	0.628	NP	NP	NP	NC	NC	NC	0.963	0.010	NP	NP
	1.0	1.000	0.048	0.003	NP	NC	NC	NC	1.000	0.288	0.078	NP
	2.0	1.000	0.749	0.260	NP	NC	NC	NC	1.000	0.947	0.696	NP
	3.0	1.000	0.990	0.907	NP	NC	NC	NC	1.000	1.000	0.975	NP
	4.0	1.000	0.996	0.977	NP	NC	NC	NC	1.000	1.000	0.997	NP
-60	0.0	0.708	NP	NP	NP	NC	NC	NC	0.984	0.004	NP	NP
	1.0	1.000	0.106	NP	NP	NC	NC	NC	1.000	0.408	NP	NP
	2.0	1.000	0.952	NP	NP	NC	NC	NC	1.000	0.985	NP	NP
	3.0	1.000	1.000	NP	NP	NC	NC	NC	1.000	0.985	NP	NP
	4.0	1.000	1.000	NP	NP	NC	NC	NC	1.000	0.985	NP	NP

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11307-R1
BF 11306-R1
F6-3

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 3 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP MINIMUM TO 5,000 FT-MSL RELEASE ALTITUDE

WEAPON: MK 83 MOD 5 (TP)

FIN ASSEMBLY: BSU-85/B

MODE:	LOW DRAG				HIGH DRAG	
ARMING TIMES:	4.0	5.5	6.0	8.0	2.0	2.6

RELEASE CONDITIONS:

FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)					
-10	0.0	0.932	0.036	0.004	NP	0.359	0.018
	1.0	1.000	0.217	0.092	NP	0.451	0.039
	2.0	1.000	0.782	0.340	NP	0.522	0.041
	3.0	1.000	0.980	0.837	0.003	0.524	0.045
	4.0	1.000	0.992	0.944	0.019	0.526	0.047
-20	0.0	0.935	0.006	NP	NP	0.284	0.015
	1.0	1.000	0.194	0.035	NP	0.475	0.026
	2.0	1.000	0.824	0.356	NP	0.565	0.049
	3.0	1.000	0.991	0.899	0.003	0.570	0.057
	4.0	1.000	0.996	0.978	0.082	0.573	0.059
-30	0.0	0.947	0.011	NP	NP	0.239	0.013
	1.0	1.000	0.215	0.030	NP	0.502	0.028
	2.0	1.000	0.913	0.466	NP	0.615	0.062
	3.0	1.000	0.995	0.954	0.003	0.625	0.073
	4.0	1.000	0.999	0.986	0.126	0.632	0.076
-45	0.0	0.963	0.003	NP	NP	NC	NC
	1.0	1.000	0.267	0.065	NP	NC	NC
	2.0	1.000	0.968	0.715	NP	NC	NC
	3.0	1.000	1.000	0.974	NP	NC	NC
	4.0	1.000	1.000	0.999	NP	NC	NC
-60	0.0	0.980	0.006	NP	NP	NC	NC
	1.0	1.000	0.373	NP	NP	NC	NC
	2.0	1.000	0.989	NP	NP	NC	NC
	3.0	1.000	0.989	NP	NP	NC	NC
	4.0	1.000	0.989	NP	NP	NC	NC

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11309-R2
BF 11308-R5
F6-4

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 4 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE

WEAPON:		MK 81 MOD 1								
FIN ASSEMBLY:		CONICAL				MK 14 MOD 2				
MODE:						LOW DRAG				HIGH DRAG
ARMING TIMES:		4.0	5.5	6.0	8.0	4.0	5.5	6.0	8.0	2.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)								
-10	0.0	0.682	0.004	0.001	NP	0.667	0.004	0.001	NP	0.004
	1.0	1.000	0.052	0.011	NP	1.000	0.052	0.007	NP	0.006
	2.0	1.000	0.371	0.107	NP	1.000	0.293	0.090	NP	0.008
	3.0	1.000	0.811	0.443	0.001	1.000	0.716	0.291	0.001	0.008
	4.0	1.000	0.898	0.672	0.004	1.000	0.832	0.521	0.002	0.008
-20	0.0	0.666	0.002	NP	NP	0.645	0.002	NP	NP	0.002
	1.0	1.000	0.048	0.006	NP	1.000	0.046	0.005	NP	0.007
	2.0	1.000	0.448	0.122	NP	1.000	0.388	0.113	NP	0.009
	3.0	1.000	0.884	0.577	0.001	1.000	0.857	0.493	0.001	0.009
	4.0	1.000	0.921	0.804	0.007	1.000	0.935	0.743	0.004	0.010
-30	0.0	0.669	0.002	NP	NP	0.640	0.001	NP	NP	NP
	1.0	1.000	0.051	0.005	NP	1.000	0.049	0.005	NP	0.006
	2.0	1.000	0.578	0.162	NP	1.000	0.499	0.137	NP	0.011
	3.0	1.000	0.933	0.711	0.001	1.000	0.931	0.668	0.001	0.012
	4.0	1.000	0.950	0.879	0.021	1.000	0.960	0.875	0.010	0.012
-45	0.0	0.716	0.001	NP	NP	0.656	0.001	NP	NP	NC
	1.0	1.000	0.065	0.006	NP	1.000	0.061	0.005	NP	NC
	2.0	1.000	0.761	0.246	NP	1.000	0.766	0.222	NP	NC
	3.0	1.000	0.972	0.878	0.002	1.000	0.986	0.887	0.002	NC
	4.0	1.000	0.972	0.938	0.051	1.000	0.997	0.963	0.052	NC
-60	0.0	0.790	0.001	NP	NP	0.702	0.001	NP	NP	NC
	1.0	1.000	0.118	0.013	NP	1.000	0.098	0.009	NP	NC
	2.0	1.000	0.930	0.551	NP	1.000	0.944	0.542	NP	NC
	3.0	1.000	0.930	0.940	0.005	1.000	0.998	0.986	0.004	NC
	4.0	1.000	0.930	0.940	0.152	1.000	0.998	0.986	0.174	NC

NOTES:
1. Release velocities are 450, 500 and 550 KTAS.
2. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
BF 11103-R2
BF 11106-R0
F6-5

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 5 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE

WEAPON: MK 82 MOD 2 (TP)

FIN ASSEMBLY:	CONICAL				MK 15						
MODE:					LOW DRAG				HIGH DRAG		
ARMING TIMES:	4.0	5.5	6.0	8.0	4.0	5.5	6.0	8.0	2.0	2.6	4.0

RELEASE CONDITIONS:

FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)										
-10	0.0	0.795	0.019	0.003	NP	0.767	0.017	0.003	NP	0.153	0.021	NP
	1.0	0.998	0.141	0.033	NP	0.998	0.120	0.028	NP	0.192	0.043	NP
	2.0	1.000	0.582	0.255	NP	1.000	0.518	0.205	NP	0.220	0.055	NP
	3.0	1.000	0.887	0.625	0.001	1.000	0.846	0.575	0.001	0.223	0.057	0.001
	4.0	1.000	0.929	0.798	0.019	1.000	0.905	0.756	0.015	0.224	0.057	0.001
-20	0.0	0.786	0.004	0.001	NP	0.751	0.003	NP	NP	0.132	0.021	NP
	1.0	0.999	0.130	0.024	NP	0.999	0.113	0.022	NP	0.189	0.041	NP
	2.0	1.000	0.657	0.298	NP	1.000	0.587	0.259	NP	0.226	0.053	NP
	3.0	1.000	0.926	0.747	0.001	1.000	0.912	0.691	0.001	0.231	0.057	0.003
	4.0	1.000	0.950	0.860	0.028	1.000	0.952	0.857	0.023	0.233	0.058	0.003
-30	0.0	0.790	0.001	NP	NP	0.758	0.001	NP	NP	0.120	0.021	NP
	1.0	1.000	0.139	0.024	NP	0.999	0.121	0.021	NP	0.183	0.038	NP
	2.0	1.000	0.737	0.359	NP	1.000	0.706	0.329	NP	0.230	0.051	0.001
	3.0	1.000	0.958	0.831	NP	1.000	0.960	0.819	NP	0.236	0.056	0.003
	4.0	1.000	0.971	0.915	0.053	1.000	0.977	0.920	0.039	0.240	0.057	0.005
-45	0.0	0.821	0.001	NP	NP	0.799	0.001	NP	NP	NC	NC	NC
	1.0	1.000	0.173	0.029	NP	1.000	0.151	0.026	NP	NC	NC	NC
	2.0	1.000	0.871	0.504	NP	1.000	0.863	0.487	NP	NC	NC	NC
	3.0	1.000	0.984	0.919	0.003	1.000	0.994	0.942	0.002	NC	NC	NC
	4.0	1.000	0.984	0.968	0.138	1.000	0.997	0.980	0.131	NC	NC	NC
-60	0.0	0.876	0.001	NP	NP	0.859	0.002	NP	NP	NC	NC	NC
	1.0	1.000	0.281	0.043	NP	1.000	0.240	0.037	NP	NC	NC	NC
	2.0	1.000	0.952	0.731	NP	1.000	0.972	0.736	NP	NC	NC	NC
	3.0	1.000	0.952	0.975	0.025	1.000	1.000	0.993	0.024	NC	NC	NC
	4.0	1.000	0.952	0.975	0.321	1.000	1.000	0.993	0.379	NC	NC	NC

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11213-R2
BF 11212-R2
BF 11217-R1
BF 11216-R6
F6-6

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 6 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE

WEAPON:		MK 82 MOD 2 (TP)							MK 83 MOD 5 (TP)			
FIN ASSEMBLY:		BSU-86/B							CONICAL			
MODE:		LOW DRAG				HIGH DRAG						
ARMING TIMES:		4.0	5.5	6.0	8.0	2.0	2.6	4.0	4.0	5.5	6.0	8.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)										
-10	0.0	0.749	0.017	0.002	NP	0.372	0.047	NP	0.975	0.096	0.026	NP
	1.0	0.997	0.117	0.027	NP	0.611	0.098	NP	1.000	0.399	0.147	NP
	2.0	1.000	0.484	0.185	NP	0.631	0.122	NP	1.000	0.900	0.591	0.002
	3.0	1.000	0.816	0.523	0.001	0.632	0.128	0.003	1.000	0.991	0.923	0.009
	4.0	1.000	0.882	0.712	0.012	0.632	0.129	0.003	1.000	0.996	0.976	0.109
-20	0.0	0.736	0.003	NP	NP	0.398	0.041	NP	0.975	0.050	0.005	NP
	1.0	0.998	0.105	0.020	NP	0.622	0.107	NP	1.000	0.337	0.106	NP
	2.0	1.000	0.564	0.222	NP	0.651	0.164	0.004	1.000	0.929	0.633	0.001
	3.0	1.000	0.895	0.653	0.001	0.658	0.177	0.006	1.000	0.993	0.948	0.007
	4.0	1.000	0.941	0.829	0.020	0.661	0.181	0.007	1.000	0.998	0.975	0.126
-30	0.0	0.743	0.001	NP	NP	0.486	0.042	NP	0.976	0.016	0.003	NP
	1.0	0.999	0.111	0.019	NP	0.723	0.121	NP	1.000	0.355	0.112	NP
	2.0	1.000	0.663	0.303	NP	0.750	0.204	0.003	1.000	0.944	0.686	NP
	3.0	1.000	0.960	0.801	NP	0.751	0.225	0.006	1.000	0.999	0.948	0.009
	4.0	1.000	0.977	0.922	0.032	0.751	0.231	0.009	1.000	1.000	0.993	0.176
-45	0.0	0.782	0.001	NP	NP	NC	NC	NC	0.983	0.009	0.001	NP
	1.0	1.000	0.141	0.025	NP	NC	NC	NC	1.000	0.454	0.136	NP
	2.0	1.000	0.865	0.463	NP	NC	NC	NC	1.000	0.955	0.786	NP
	3.0	1.000	0.995	0.938	0.002	NC	NC	NC	1.000	0.999	0.993	0.039
	4.0	1.000	0.998	0.982	0.128	NC	NC	NC	1.000	0.999	0.993	0.327
-60	0.0	0.842	0.002	NP	NP	NC	NC	NC	0.992	0.009	0.001	NP
	1.0	1.000	0.212	0.035	NP	NC	NC	NC	1.000	0.626	0.194	NP
	2.0	1.000	0.972	0.726	NP	NC	NC	NC	1.000	0.998	0.894	NP
	3.0	1.000	1.000	0.995	0.023	NC	NC	NC	1.000	0.998	0.985	0.091
	4.0	1.000	1.000	1.000	0.403	NC	NC	NC	1.000	0.998	0.985	0.539

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11307-R1
BF 11306-R1
F6-7

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 7 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
5,001 TO 10,000 FT-MSL RELEASE ALTITUDE

WEAPON: MK 83 MOD 5 (TP)

FIN ASSEMBLY: BSU-85/B

MODE:		LOW DRAG			HIGH DRAG		
ARMING TIMES:	4.0	5.5	6.0	8.0	2.0	2.6	4.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)					
-10	0.0	0.972	0.094	0.021	NP	0.631	0.078	0.006
	1.0	1.000	0.343	0.145	0.001	0.708	0.093	0.006
	2.0	1.000	0.870	0.540	0.002	0.765	0.118	0.006
	3.0	1.000	0.991	0.902	0.007	0.769	0.125	0.006
	4.0	1.000	0.996	0.969	0.109	0.770	0.126	0.006
-20	0.0	0.968	0.046	0.005	NP	0.567	0.065	0.001
	1.0	1.000	0.315	0.114	NP	0.740	0.098	0.001
	2.0	1.000	0.919	0.613	0.001	0.822	0.131	0.002
	3.0	1.000	0.995	0.956	0.007	0.828	0.147	0.003
	4.0	1.000	0.998	0.984	0.127	0.830	0.147	0.004
-30	0.0	0.969	0.014	0.002	NP	0.474	0.054	NP
	1.0	1.000	0.339	0.117	NP	0.803	0.102	NP
	2.0	1.000	0.956	0.697	NP	0.884	0.151	NP
	3.0	1.000	0.999	0.970	0.009	0.884	0.166	NP
	4.0	1.000	1.000	0.994	0.183	0.884	0.173	NP
-45	0.0	0.982	0.009	0.002	NP	NC	NC	NC
	1.0	1.000	0.440	0.143	NP	NC	NC	NC
	2.0	1.000	0.982	0.804	NP	NC	NC	NC
	3.0	1.000	1.000	0.996	0.044	NC	NC	NC
	4.0	1.000	1.000	1.000	0.321	NC	NC	NC
-60	0.0	0.994	0.011	0.002	NP	NC	NC	NC
	1.0	1.000	0.615	0.190	NP	NC	NC	NC
	2.0	1.000	1.000	0.930	NP	NC	NC	NC
	3.0	1.000	1.000	1.000	0.100	NC	NC	NC
	4.0	1.000	1.000	1.000	0.590	NC	NC	NC

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11309-R2
BF 11308-R5
F6-8

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 8 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE

WEAPON: MK 81 MOD 1

FIN ASSEMBLY:		CONICAL					MK 14 MOD 2						
MODE:							LOW DRAG					HIGH DRAG	
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	2.0	2.6
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)											
-10	0.0	0.947	0.091	0.030	NP	NP	0.943	0.084	0.028	NP	NP	0.088	0.009
	1.0	1.000	0.395	0.128	0.001	NP	1.000	0.359	0.113	0.001	NP	0.088	0.009
	2.0	1.000	0.762	0.471	0.003	NP	1.000	0.744	0.432	0.002	NP	0.097	0.009
	3.0	1.000	0.923	0.754	0.018	NP	1.000	0.925	0.727	0.018	NP	0.099	0.009
	4.0	1.000	0.955	0.852	0.060	0.001	1.000	0.956	0.849	0.047	0.001	0.099	0.009
-20	0.0	0.939	0.074	0.022	NP	NP	0.946	0.066	0.019	NP	NP	0.072	0.007
	1.0	1.000	0.396	0.125	0.001	NP	1.000	0.361	0.111	0.001	NP	0.085	0.007
	2.0	1.000	0.804	0.516	0.002	NP	1.000	0.784	0.475	0.002	NP	0.102	0.007
	3.0	1.000	0.950	0.807	0.023	NP	1.000	0.953	0.800	0.019	NP	0.104	0.007
	4.0	1.000	0.970	0.889	0.081	0.001	1.000	0.988	0.899	0.070	0.001	0.104	0.007
-30	0.0	0.940	0.056	0.016	NP	NP	0.949	0.047	0.015	NP	NP	0.059	0.004
	1.0	1.000	0.401	0.123	0.001	NP	1.000	0.373	0.112	NP	NP	0.085	0.005
	2.0	1.000	0.838	0.560	0.002	NP	1.000	0.849	0.554	0.002	NP	0.106	0.006
	3.0	1.000	0.969	0.873	0.027	NP	1.000	0.980	0.857	0.024	NP	0.107	0.007
	4.0	1.000	0.972	0.933	0.101	0.002	1.000	0.997	0.945	0.101	0.001	0.110	0.008
-45	0.0	0.959	0.037	0.008	NP	NP	0.968	0.035	0.007	NP	NP	NC	NC
	1.0	1.000	0.445	0.135	NP	NP	1.000	0.429	0.124	NP	NP	NC	NC
	2.0	1.000	0.916	0.700	0.002	NP	1.000	0.924	0.681	0.002	NP	NC	NC
	3.0	1.000	0.916	0.935	0.038	NP	1.000	0.991	0.950	0.035	NP	NC	NC
	4.0	1.000	0.916	0.935	0.258	0.002	1.000	0.991	0.964	0.245	0.002	NC	NC
-60	0.0	0.988	0.035	0.004	NP	NP	0.984	0.035	0.004	NP	NP	NC	NC
	1.0	1.000	0.548	0.171	NP	NP	1.000	0.551	0.155	NP	NP	NC	NC
	2.0	1.000	0.960	0.840	0.003	NP	1.000	0.984	0.862	0.002	NP	NC	NC
	3.0	1.000	0.960	0.840	0.088	NP	1.000	0.984	0.922	0.084	NP	NC	NC
	4.0	1.000	0.960	0.840	0.435	0.002	1.000	0.984	0.922	0.481	0.003	NC	NC

NOTES:
1. Release velocities are 450, 500 and 550 KTAS.
2. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
BF 11103-R2
BF 11106-R0
F6-9

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 9 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE

WEAPON:		MK 82 MOD 2 (TP)												
FIN ASSEMBLY:		CONICAL					MK 15							
MODE:									LOW DRAG				HIGH DRAG	
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)												
-10	0.0	0.967	0.205	0.081	NP	NP	0.960	0.198	0.077	NP	NP	0.412	0.071	0.003
	1.0	1.000	0.503	0.274	0.007	NP	0.998	0.487	0.263	0.006	NP	0.554	0.097	0.003
	2.0	1.000	0.822	0.582	0.013	NP	1.000	0.787	0.556	0.012	NP	0.594	0.151	0.003
	3.0	1.000	0.956	0.816	0.050	NP	1.000	0.935	0.781	0.044	NP	0.596	0.157	0.007
	4.0	1.000	0.966	0.900	0.159	0.005	1.000	0.961	0.874	0.132	0.004	0.596	0.159	0.007
-20	0.0	0.964	0.170	0.054	NP	NP	0.954	0.162	0.052	NP	NP	0.454	0.066	0.002
	1.0	1.000	0.501	0.269	0.001	NP	0.999	0.497	0.260	NP	NP	0.569	0.105	0.002
	2.0	1.000	0.840	0.598	0.010	NP	1.000	0.844	0.604	0.008	NP	0.613	0.167	0.005
	3.0	1.000	0.968	0.853	0.056	NP	1.000	0.970	0.852	0.052	NP	0.616	0.177	0.008
	4.0	1.000	0.968	0.935	0.203	0.005	1.000	0.976	0.930	0.187	0.004	0.616	0.180	0.008
-30	0.0	0.961	0.133	0.040	NP	NP	0.952	0.121	0.036	NP	NP	0.484	0.057	0.001
	1.0	1.000	0.509	0.271	NP	NP	1.000	0.512	0.260	NP	NP	0.573	0.115	0.001
	2.0	1.000	0.892	0.652	0.008	NP	1.000	0.880	0.639	0.007	NP	0.638	0.187	0.008
	3.0	1.000	0.979	0.913	0.067	NP	1.000	0.982	0.908	0.063	NP	0.641	0.207	0.008
	4.0	1.000	0.979	0.953	0.259	0.008	1.000	0.985	0.957	0.249	0.007	0.641	0.212	0.008
-45	0.0	0.968	0.100	0.023	NP	NP	0.959	0.091	0.021	NP	NP	NC	NC	NC
	1.0	1.000	0.566	0.292	NP	NP	1.000	0.565	0.282	NP	NP	NC	NC	NC
	2.0	1.000	0.944	0.777	0.009	NP	1.000	0.958	0.767	0.008	NP	NC	NC	NC
	3.0	1.000	0.944	0.945	0.109	NP	1.000	0.990	0.969	0.100	NP	NC	NC	NC
	4.0	1.000	0.944	0.945	0.357	0.005	1.000	0.990	0.969	0.380	0.005	NC	NC	NC
-60	0.0	0.980	0.093	0.019	NP	NP	0.977	0.085	0.017	NP	NP	NC	NC	NC
	1.0	1.000	0.668	0.351	NP	NP	1.000	0.666	0.343	NP	NP	NC	NC	NC
	2.0	1.000	0.960	0.868	0.014	NP	1.000	0.991	0.892	0.013	NP	NC	NC	NC
	3.0	1.000	0.960	0.868	0.195	NP	1.000	0.991	0.925	0.219	NP	NC	NC	NC
	4.0	1.000	0.960	0.868	0.545	0.011	1.000	0.991	0.925	0.580	0.012	NC	NC	NC

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11213-R2
BF 11212-R2
BF 11217-R1
BF 11216-R6
F6-10

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 10 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE

WEAPON:		MK 82 MOD 2 (TP)									MK 83 MOD 5 (TP)			
FIN ASSEMBLY:		BSU-86/B									CONICAL			
MODE:		LOW DRAG					HIGH DRAG							
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0	6.0	5.5	6.0	8.0	10.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)												
-10	0.0	0.954	0.193	0.073	NP	NP	0.607	0.242	0.013	0.001	0.415	0.201	0.003	NP
	1.0	0.997	0.468	0.251	0.006	NP	0.750	0.249	0.017	0.001	0.800	0.556	0.051	NP
	2.0	1.000	0.767	0.528	0.011	NP	0.793	0.294	0.017	0.001	0.978	0.851	0.051	NP
	3.0	1.000	0.929	0.757	0.039	NP	0.794	0.298	0.019	0.001	0.999	0.979	0.134	0.003
	4.0	1.000	0.958	0.862	0.110	0.003	0.794	0.299	0.022	0.001	1.000	0.996	0.366	0.022
-20	0.0	0.948	0.157	0.050	NP	NP	0.594	0.230	0.013	NP	0.367	0.135	NP	NP
	1.0	0.998	0.482	0.249	NP	NP	0.805	0.274	0.017	NP	0.779	0.522	0.007	NP
	2.0	1.000	0.829	0.586	0.008	NP	0.859	0.350	0.017	NP	0.978	0.855	0.046	NP
	3.0	1.000	0.970	0.846	0.048	NP	0.859	0.377	0.025	NP	0.999	0.980	0.135	0.002
	4.0	1.000	0.977	0.931	0.175	0.003	0.859	0.378	0.027	NP	1.000	0.995	0.382	0.017
-30	0.0	0.948	0.113	0.033	NP	NP	0.534	0.211	0.011	NP	0.338	0.126	NP	NP
	1.0	1.000	0.497	0.250	NP	NP	0.799	0.331	0.018	NP	0.786	0.532	0.003	NP
	2.0	1.000	0.884	0.645	0.006	NP	0.870	0.399	0.018	NP	0.987	0.874	0.039	NP
	3.0	1.000	0.983	0.898	0.061	NP	0.871	0.400	0.033	NP	1.000	0.992	0.151	0.001
	4.0	1.000	0.986	0.959	0.240	0.006	0.871	0.403	0.035	NP	1.000	0.992	0.436	0.016
-45	0.0	0.958	0.087	0.020	NP	NP	NC	NC	NC	NC	0.276	0.098	NP	NP
	1.0	1.000	0.558	0.272	NP	NP	NC	NC	NC	NC	0.834	0.555	0.002	NP
	2.0	1.000	0.952	0.752	0.007	NP	NC	NC	NC	NC	0.997	0.912	0.040	NP
	3.0	1.000	0.998	0.972	0.093	NP	NC	NC	NC	NC	0.997	0.985	0.250	0.001
	4.0	1.000	0.998	0.985	0.392	0.004	NC	NC	NC	NC	0.997	0.985	0.551	0.016
-60	0.0	0.977	0.082	0.017	NP	NP	NC	NC	NC	NC	0.240	0.090	NP	NP
	1.0	1.000	0.667	0.336	NP	NP	NC	NC	NC	NC	0.885	0.627	0.002	NP
	2.0	1.000	0.992	0.904	0.013	NP	NC	NC	NC	NC	0.987	0.980	0.053	NP
	3.0	1.000	1.000	0.992	0.226	NP	NC	NC	NC	NC	0.987	0.980	0.323	0.002
	4.0	1.000	1.000	0.992	0.609	0.012	NC	NC	NC	NC	0.987	0.980	0.656	0.027

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11307-R1
BF 11306-R1
F6-11

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 11 of 32)

AV-8B STRAIGHT PATH DIVE RELEASE WITH A 5G WINGS LEVEL PULLUP
10,001 TO 20,000 FT-MSL RELEASE ALTITUDE

WEAPON: MK 83 MOD 5 (TP)

FIN ASSEMBLY: BSU-85/B

MODE:		LOW DRAG					HIGH DRAG			
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0	6.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)								
-10	0.0	1.000	0.427	0.193	0.003	NP	0.815	0.498	0.059	0.001
	1.0	1.000	0.807	0.554	0.047	NP	0.946	0.498	0.059	0.003
	2.0	1.000	0.971	0.857	0.051	NP	0.960	0.580	0.059	0.003
	3.0	1.000	0.999	0.970	0.134	0.003	0.960	0.600	0.059	0.003
	4.0	1.000	1.000	0.995	0.360	0.020	0.960	0.603	0.059	0.003
-20	0.0	0.999	0.372	0.140	NP	NP	0.802	0.408	0.061	0.003
	1.0	1.000	0.806	0.536	0.006	NP	0.959	0.485	0.061	0.003
	2.0	1.000	0.984	0.850	0.048	NP	0.970	0.632	0.061	0.003
	3.0	1.000	1.000	0.984	0.142	0.002	0.970	0.653	0.061	0.003
	4.0	1.000	1.000	0.997	0.404	0.017	0.970	0.657	0.061	0.003
-30	0.0	0.999	0.339	0.123	NP	NP	0.823	0.260	0.054	0.001
	1.0	1.000	0.819	0.546	0.003	NP	0.976	0.575	0.054	0.001
	2.0	1.000	0.987	0.886	0.042	NP	0.985	0.740	0.054	0.001
	3.0	1.000	1.000	0.993	0.153	0.001	0.986	0.758	0.054	0.001
	4.0	1.000	1.000	0.999	0.440	0.018	0.986	0.761	0.054	0.001
-45	0.0	1.000	0.260	0.097	NP	NP	NC	NC	NC	NC
	1.0	1.000	0.843	0.579	0.002	NP	NC	NC	NC	NC
	2.0	1.000	1.000	0.929	0.044	NP	NC	NC	NC	NC
	3.0	1.000	1.000	0.999	0.257	0.002	NC	NC	NC	NC
	4.0	1.000	1.000	0.999	0.579	0.021	NC	NC	NC	NC
-60	0.0	1.000	0.224	0.090	NP	NP	NC	NC	NC	NC
	1.0	1.000	0.912	0.651	0.002	NP	NC	NC	NC	NC
	2.0	1.000	1.000	0.985	0.058	NP	NC	NC	NC	NC
	3.0	1.000	1.000	0.985	0.352	0.003	NC	NC	NC	NC
	4.0	1.000	1.000	0.985	0.703	0.036	NC	NC	NC	NC

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11309-R2
BF 11308-R5
F6-12

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 12 of 32)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY

WEAPON:		MK 81 MOD 1											
FIN ASSEMBLY:		CONICAL					MK 14 MOD 2						
MODE:							LOW DRAG				HIGH DRAG		
ARMING TIMES:		4.0	6.0	8.0	10.0	12.0	4.0	6.0	8.0	10.0	2.0	2.6	
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)											
MIN	450	1.000	0.244	0.006	NP	NP	0.985	0.084	0.003	NP	NP	NP	
TO	500	0.998	0.122	0.003	NP	NP	0.882	0.038	NP	NP	NP	NP	
5,000	550	0.983	0.055	NP	NP	NP	0.614	0.022	NP	NP	NP	NP	
5,001	450	1.000	0.495	0.025	0.001	NP	1.000	0.222	0.008	NP	0.008	NP	
TO	500	1.000	0.277	0.008	NP	NP	0.977	0.079	0.005	NP	NP	NP	
10,000	550	1.000	0.124	0.004	NP	NP	0.876	0.047	0.001	NP	NP	NP	
10,001	450	1.000	0.796	0.110	0.013	0.001	1.000	0.747	0.078	0.004	0.091	0.005	
TO	500	1.000	0.751	0.077	0.004	NP	0.999	0.549	0.038	0.003	0.021	NP	
20,000	550	1.000	0.636	0.043	0.003	NP	0.994	0.262	0.018	0.001	0.002	NP	

NOTES:
1. Stick lengths of 0.0 to 4.0 seconds apply to all probabilities of hit given early burst.
2. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
BF 11103-R2
BF 11106-R0
F6-13

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 13 of 32)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY

WEAPON: MK 82 MOD 2 (TP)

FIN ASSEMBLY:		CONICAL				MK 15						
MODE:						LOW DRAG				HIGH DRAG		
ARMING TIMES:		6.0	8.0	10.0	12.0	6.0	8.0	10.0	12.0	2.0	2.6	4.0
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)										
MIN TO 5,000	450	0.584	0.029	NP	NP	0.480	0.016	NP	NP	0.120	0.032	NP
	500	0.516	0.018	NP	NP	0.296	0.008	NP	NP	0.044	0.011	NP
	550	0.399	0.006	NP	NP	0.140	0.002	NP	NP	0.013	NP	NP
5,001 TO 10,000	450	0.710	0.081	0.004	NP	0.634	0.044	0.003	NP	0.207	0.052	NP
	500	0.648	0.042	0.003	NP	0.531	0.021	0.001	NP	0.075	0.021	NP
	550	0.589	0.026	0.003	NP	0.390	0.011	NP	NP	0.020	0.007	NP
10,001 TO 20,000	450	0.838	0.250	0.033	0.001	0.815	0.218	0.022	0.001	0.532	0.147	0.001
	500	0.821	0.213	0.022	0.001	0.766	0.170	0.012	NP	0.266	0.058	0.002
	550	0.787	0.172	0.014	NP	0.731	0.082	0.006	NP	0.097	0.022	NP

NOTES: 1. Stick lengths of 0.0 to 4.0 seconds apply to all probabilities of hit given early burst.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11213-R2
BF 11212-R2
BF 11217-R1
BF 11216-R6
F6-14

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 14 of 32)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY

WEAPON:		MK 82 MOD 2 (TP)							
FIN ASSEMBLY:		BSU-86/B							
MODE:				LOW DRAG				HIGH DRAG	
ARMING TIMES:		4.0	6.0	8.0	10.0	12.0	2.0	2.6	4.0
RELEASE CONDITIONS:									
ALTITUDE (FT-MSL)	VELOCITY (KTAS)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)							
MIN	450	1.000	0.380	0.008	NP	NP	0.463	0.087	NP
TO	500	1.000	0.161	0.002	NP	NP	0.259	0.053	NP
5,000	550	0.985	0.038	NP	NP	NP	0.120	0.028	NP
5,001	450	1.000	0.581	0.027	0.004	NP	0.629	0.101	0.002
TO	500	1.000	0.426	0.014	0.001	NP	0.531	0.115	0.003
10,000	550	1.000	0.200	0.004	NP	NP	0.216	0.045	NP
10,001	450	1.000	0.791	0.200	0.018	0.001	0.698	0.236	0.019
TO	500	1.000	0.738	0.118	0.010	NP	0.473	0.297	0.002
20,000	550	1.000	0.654	0.057	0.004	NP	0.636	0.152	0.002

NOTES: 1. Stick lengths of 0.0 to 4.0 seconds apply to all probabilities of hit given early burst.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
F6-15

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 15 of 32)

AV-8B LEVEL RELEASE WITH A STRAIGHT AND LEVEL RECOVERY

WEAPON:		MK 83 MOD 5 (TP)										
FIN ASSEMBLY:		CONICAL				BSU-85/B						
MODE:						LOW DRAG				HIGH DRAG		
ARMING TIMES:		6.0	8.0	10.0	12.0	6.0	8.0	10.0	12.0	2.0	2.6	4.0
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	VELOCITY (KTAS)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)										
MIN	450	0.923	0.167	0.006	NP	0.880	0.143	0.004	NP	0.414	0.028	NP
TO	500	0.884	0.142	0.004	NP	0.844	0.116	0.002	NP	0.141	0.004	NP
5,000	550	0.844	0.123	0.003	NP	0.734	0.043	NP	NP	0.048	0.003	NP
5,001	450	0.966	0.262	0.036	0.001	0.941	0.222	0.015	NP	0.682	0.101	0.003
TO	500	0.947	0.219	0.010	NP	0.918	0.184	0.007	NP	0.299	0.013	NP
10,000	550	0.919	0.182	0.008	NP	0.878	0.137	0.006	NP	0.096	0.006	NP
10,001	450	0.989	0.506	0.111	0.021	0.990	0.515	0.109	0.004	0.951	0.549	0.008
TO	500	0.988	0.504	0.103	0.003	0.974	0.451	0.278	0.003	0.820	0.165	0.004
20,000	550	0.982	0.452	0.079	0.003	0.972	0.377	0.065	0.002	0.400	0.050	NP

NOTES: 1. Stick lengths of 0.0 to 4.0 seconds apply to all probabilities of hit given early burst.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11307-R1
BF 11306-R1
BF 11309-R2
BF 11308-R5
F6-16

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 16 of 32)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY

WEAPON:		MK 81 MOD 1											
FIN ASSEMBLY:		CONICAL					MK 14 MOD 2						
MODE:									LOW DRAG			HIGH DRAG	
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	2.0	2.6
RELEASE CONDITIONS:													
ALTITUDE (FT-MSL)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)											
MIN	0.0	0.544	0.001	NP	NP	NP	0.273	0.001	NP	NP	NP	NP	NP
TO	1.0	0.988	0.055	0.004	NP	NP	0.799	0.029	0.003	NP	NP	NP	NP
5,000	2.0	1.000	0.284	0.094	NP	NP	0.957	0.090	0.035	NP	NP	NP	NP
	3.0	1.000	0.447	0.167	0.001	NP	0.981	0.117	0.052	NP	NP	NP	NP
	4.0	1.000	0.606	0.247	0.003	NP	0.985	0.189	0.078	0.001	NP	NP	NP
5,001	0.0	0.837	0.003	0.001	NP	NP	0.698	0.002	0.001	NP	NP	0.004	NP
TO	1.0	1.000	0.148	0.035	NP	NP	0.969	0.098	0.025	NP	NP	0.008	NP
10,000	2.0	1.000	0.572	0.213	NP	NP	0.995	0.301	0.113	NP	NP	0.008	NP
	3.0	1.000	0.709	0.375	0.002	NP	1.000	0.379	0.142	0.002	NP	0.008	NP
	4.0	1.000	0.831	0.506	0.015	NP	1.000	0.523	0.211	0.005	NP	0.008	NP
10,001	0.0	0.998	0.130	0.040	NP	NP	0.987	0.115	0.038	NP	NP	0.074	0.009
TO	1.0	1.000	0.649	0.343	0.002	NP	0.998	0.598	0.290	0.001	NP	0.083	0.009
20,000	2.0	1.000	0.868	0.662	0.018	NP	1.000	0.811	0.601	0.014	NP	0.090	0.009
	3.0	1.000	0.894	0.740	0.057	0.001	1.000	0.850	0.680	0.044	0.001	0.091	0.009
	4.0	1.000	0.957	0.849	0.088	0.002	1.000	0.916	0.797	0.066	0.001	0.091	0.009

NOTES:
1. Release velocities are 450, 500 and 550 KTAS.
2. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
BF 11103-R2
BF 11106-R0
F6-17

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 17 of 32)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY

WEAPON: MK 82 MOD 2 (TP)

FIN ASSEMBLY:		CONICAL					MK 15							
MODE:							LOW DRAG					HIGH DRAG		
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)												
MIN	0.0	0.817	NP	NP	NP	NP	0.764	NP	NP	NP	NP	0.092	0.013	NP
TO	1.0	0.999	0.151	0.025	NP	NP	1.000	0.105	0.021	NP	NP	0.108	0.043	NP
5,000	2.0	1.000	0.612	0.298	NP	NP	1.000	0.478	0.179	NP	NP	0.118	0.043	NP
	3.0	1.000	0.755	0.480	0.002	NP	1.000	0.621	0.363	0.002	NP	0.120	0.043	NP
	4.0	1.000	0.869	0.608	0.017	NP	1.000	0.759	0.484	0.008	NP	0.120	0.043	NP
5,001	0.0	0.897	0.013	NP	NP	NP	0.865	0.012	NP	NP	NP	0.158	0.019	NP
TO	1.0	1.000	0.316	0.090	NP	NP	1.000	0.270	0.076	NP	NP	0.185	0.062	NP
10,000	2.0	1.000	0.734	0.438	NP	NP	1.000	0.640	0.377	NP	NP	0.204	0.062	NP
	3.0	1.000	0.831	0.616	0.015	NP	1.000	0.765	0.541	0.011	NP	0.208	0.062	NP
	4.0	1.000	0.914	0.742	0.051	NP	1.000	0.865	0.667	0.027	NP	0.208	0.062	NP
10,001	0.0	0.995	0.245	0.094	NP	NP	0.989	0.230	0.089	NP	NP	0.460	0.073	0.003
TO	1.0	1.000	0.690	0.426	0.008	NP	0.999	0.663	0.404	0.006	NP	0.515	0.155	0.003
20,000	2.0	1.000	0.892	0.712	0.040	NP	1.000	0.860	0.685	0.036	NP	0.529	0.155	0.003
	3.0	1.000	0.925	0.792	0.140	0.004	1.000	0.897	0.759	0.117	0.004	0.532	0.155	0.003
	4.0	1.000	0.966	0.888	0.203	0.010	1.000	0.950	0.863	0.177	0.009	0.533	0.155	0.003

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11213-R2
BF 11212-R2
BF 11217-R1
BF 11216-R6
F6-18

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 18 of 32)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY

WEAPON:		MK 82 MOD 2 (TP)								MK 83 MOD 5 (TP)				
FIN ASSEMBLY:		BSU-86/B								CONICAL				
MODE:				LOW DRAG				HIGH DRAG						
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0	4.0	5.5	6.0	8.0	10.0
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)												
MIN	0.0	0.724	NP	NP	NP	NP	0.300	0.020	NP	0.993	0.014	NP	NP	NP
TO	1.0	1.000	0.085	0.018	NP	NP	0.429	0.102	NP	1.000	0.421	0.136	NP	NP
5,000	2.0	1.000	0.391	0.126	NP	NP	0.460	0.102	NP	1.000	0.932	0.681	NP	NP
	3.0	1.000	0.522	0.264	0.001	NP	0.463	0.102	NP	1.000	0.972	0.850	0.017	NP
	4.0	1.000	0.666	0.372	0.004	NP	0.463	0.102	NP	1.000	0.993	0.942	0.115	NP
5,001	0.0	0.843	0.011	NP	NP	NP	0.466	0.050	NP	0.998	0.051	0.004	NP	NP
TO	1.0	1.000	0.244	0.065	NP	NP	0.603	0.134	NP	1.000	0.629	0.237	NP	NP
10,000	2.0	1.000	0.591	0.336	NP	NP	0.626	0.134	0.004	1.000	0.969	0.811	0.003	NP
	3.0	1.000	0.719	0.482	0.009	NP	0.629	0.134	0.004	1.000	0.989	0.927	0.082	NP
	4.0	1.000	0.835	0.602	0.021	NP	0.629	0.134	0.004	1.000	0.998	0.980	0.180	0.002
10,001	0.0	0.986	0.224	0.084	NP	NP	0.535	0.217	0.014	1.000	0.480	0.232	0.001	NP
TO	1.0	1.000	0.638	0.385	0.006	NP	0.645	0.327	0.014	1.000	0.936	0.772	0.027	NP
20,000	2.0	1.000	0.835	0.653	0.033	NP	0.696	0.327	0.016	1.000	0.997	0.951	0.111	0.001
	3.0	1.000	0.876	0.732	0.102	0.003	0.698	0.327	0.019	1.000	0.998	0.977	0.329	0.016
	4.0	1.000	0.936	0.840	0.163	0.007	0.698	0.327	0.020	1.000	1.000	0.997	0.425	0.047

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11224-R5
BF 11307-R1
BF 11306-R1
F6-19

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 19 of 32)

AV-8B LEVEL RELEASE WITH A 5G LEVEL BREAKAWAY RECOVERY

WEAPON: MK 83 MOD 5 (TP)

FIN ASSEMBLY: BSU-85/B

MODE:		LOW DRAG				HIGH DRAG			
ARMING TIMES:	4.0	5.5	6.0	8.0	10.0	2.0	2.6	4.0	6.0
RELEASE CONDITIONS: ALTITUDE (FT-MSL)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)							
MIN	0.0	0.985	0.012	NP	NP	NP	0.267	0.010	NP	NP
TO	1.0	1.000	0.351	0.135	NP	NP	0.363	0.018	NP	NP
5,000	2.0	1.000	0.894	0.606	NP	NP	0.413	0.025	NP	NP
	3.0	1.000	0.959	0.812	0.009	NP	0.414	0.028	NP	NP
	4.0	1.000	0.988	0.904	0.102	NP	0.414	0.028	NP	NP
5,001	0.0	0.994	0.055	0.005	NP	NP	0.499	0.060	NP	NP
TO	1.0	1.000	0.619	0.221	NP	NP	0.633	0.110	NP	NP
10,000	2.0	1.000	0.940	0.768	0.003	NP	0.680	0.110	0.002	NP
	3.0	1.000	0.982	0.893	0.080	NP	0.682	0.110	0.003	NP
	4.0	1.000	0.997	0.960	0.155	0.001	0.682	0.110	0.003	NP
10,001	0.0	1.000	0.499	0.234	0.001	NP	0.837	0.312	0.029	0.002
TO	1.0	1.000	0.920	0.741	0.030	NP	0.938	0.556	0.029	0.002
20,000	2.0	1.000	0.996	0.933	0.106	0.001	0.951	0.556	0.029	0.002
	3.0	1.000	0.998	0.974	0.301	0.016	0.952	0.556	0.029	0.002
	4.0	1.000	1.000	0.996	0.425	0.043	0.952	0.556	0.029	0.002

NOTES: 1. Release velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11309-R2
BF 11308-R5
F6-20

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 20 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
201 TO 5,000 FT-MSL RUN-IN ALTITUDE

WEAPON:		MK 81 MOD 1									
FIN ASSEMBLY:		CONICAL					MK 14 MOD 2				
MODE:							LOW DRAG				
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	2.0	4.0	5.5	6.0	8.0
RELEASE CONDITIONS:											
FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)									
10	0.0	0.500	0.003	NP	NP	NP	1.000	0.235	0.003	NP	NP
	1.0	0.999	0.113	0.029	NP	NP	1.000	0.877	0.047	0.018	NP
	2.0	1.000	0.538	0.160	0.001	NP	1.000	0.948	0.131	0.062	NP
	3.0	1.000	0.921	0.501	0.014	NP	1.000	0.948	0.310	0.140	0.009
	4.0	1.000	0.969	0.779	0.042	0.002	1.000	0.948	0.310	0.228	0.017
20	0.0	0.646	0.005	0.001	NP	NP	0.998	0.437	0.004	0.001	NP
	1.0	0.987	0.134	0.039	NP	NP	1.000	0.786	0.058	0.022	NP
	2.0	0.987	0.247	0.102	0.002	NP	1.000	0.786	0.127	0.070	NP
	3.0	0.987	0.350	0.216	0.017	NP	1.000	0.786	0.127	0.080	0.010
	4.0	0.987	0.350	0.216	0.043	0.001	1.000	0.786	0.127	0.080	0.010
30	0.0	0.612	0.018	0.003	NP	NP	1.000	0.380	0.009	0.001	NP
	1.0	0.705	0.071	0.044	NP	NP	1.000	0.677	0.068	0.029	NP
	2.0	0.705	0.156	0.083	0.003	NP	1.000	0.677	0.104	0.060	0.002
	3.0	0.705	0.156	0.092	0.015	NP	1.000	0.677	0.104	0.060	0.007
	4.0	0.705	0.156	0.092	0.015	NP	1.000	0.677	0.104	0.060	0.007
38	0.0	0.760	0.039	0.006	NP	NP	1.000	0.658	0.028	0.004	NP
	1.0	0.782	0.086	0.045	NP	NP	1.000	0.658	0.056	0.035	NP
	2.0	0.782	0.128	0.088	0.006	NP	1.000	0.658	0.103	0.063	NP
	3.0	0.782	0.128	0.088	0.014	NP	1.000	0.658	0.103	0.063	NP
	4.0	0.782	0.128	0.088	0.014	NP	1.000	0.658	0.103	0.063	NP

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
F6-21

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 21 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
201 TO 5,000 FT-MSL RUN-IN ALTITUDE

WEAPON: MK 82 MOD 2 (TP)

FIN ASSEMBLY:	CONICAL					MK 15				
MODE:						LOW DRAG				
ARMING TIMES:	4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0
RELEASE CONDITIONS:										
FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)									
10	0.0	0.910	0.035	0.004	NP	NP	0.860	0.023	0.004	NP	NP
	1.0	1.000	0.474	0.143	NP	NP	1.000	0.281	0.095	NP	NP
	2.0	1.000	0.955	0.699	0.006	NP	1.000	0.812	0.502	0.007	NP
	3.0	1.000	1.000	0.990	0.073	0.001	1.000	0.970	0.860	0.025	NP
	4.0	1.000	1.000	1.000	0.261	0.011	1.000	0.970	0.860	0.088	0.005
20	0.0	0.957	0.040	0.004	NP	NP	0.933	0.030	0.004	NP	NP
	1.0	1.000	0.567	0.187	NP	NP	1.000	0.368	0.133	NP	NP
	2.0	1.000	0.928	0.664	0.009	NP	1.000	0.721	0.428	0.009	NP
	3.0	1.000	0.928	0.838	0.048	0.001	1.000	0.721	0.428	0.025	NP
	4.0	1.000	0.928	0.838	0.103	0.011	1.000	0.721	0.428	0.032	0.001
30	0.0	0.918	0.076	0.019	NP	NP	0.894	0.056	0.016	NP	NP
	1.0	0.969	0.492	0.222	0.002	NP	1.000	0.454	0.182	0.001	NP
	2.0	0.969	0.850	0.579	0.014	NP	1.000	0.565	0.338	0.011	NP
	3.0	0.969	0.850	0.579	0.031	0.004	1.000	0.565	0.338	0.022	0.001
	4.0	0.969	0.850	0.579	0.034	0.011	1.000	0.565	0.338	0.022	0.001
38	0.0	0.902	0.123	0.033	NP	NP	0.891	0.093	0.027	NP	NP
	1.0	0.992	0.486	0.264	0.001	NP	0.891	0.420	0.224	0.002	NP
	2.0	0.992	0.760	0.510	0.019	NP	0.891	0.420	0.315	0.011	NP
	3.0	0.992	0.760	0.510	0.024	0.004	0.891	0.420	0.315	0.014	0.004
	4.0	0.992	0.760	0.510	0.024	0.004	0.891	0.420	0.315	0.014	0.004

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11213-R2
BF 11212-R2
BF 11217-R1
F6-22

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 22 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
201 TO 5,000 FT-MSL RUN-IN ALTITUDE

WEAPON:		MK 82 MOD 2 (TP)					MK 83 MOD 5 (TP)					
FIN ASSEMBLY:		BSU-86/B					CONICAL					
MODE:		LOW DRAG										
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	12.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)										
10	0.0	0.815	0.017	0.004	NP	NP	0.999	0.212	0.038	NP	NP	NP
	1.0	1.000	0.211	0.064	NP	NP	1.000	0.885	0.514	0.005	NP	NP
	2.0	1.000	0.696	0.332	0.006	NP	1.000	1.000	0.985	0.122	NP	NP
	3.0	1.000	0.836	0.643	0.022	NP	1.000	1.000	1.000	0.400	0.008	NP
	4.0	1.000	0.836	0.643	0.025	0.002	1.000	1.000	1.000	0.837	0.143	NP
20	0.0	0.913	0.026	0.004	NP	NP	0.999	0.216	0.083	NP	NP	NP
	1.0	1.000	0.280	0.100	0.001	NP	1.000	0.935	0.620	0.004	NP	NP
	2.0	1.000	0.546	0.234	0.008	NP	1.000	1.000	0.985	0.128	NP	NP
	3.0	1.000	0.546	0.234	0.022	NP	1.000	1.000	1.000	0.436	0.008	NP
	4.0	1.000	0.546	0.234	0.022	NP	1.000	1.000	1.000	0.794	0.105	NP
30	0.0	0.899	0.048	0.014	NP	NP	0.999	0.271	0.122	NP	NP	NP
	1.0	1.000	0.399	0.151	0.001	NP	1.000	0.880	0.627	0.005	NP	NP
	2.0	1.000	0.399	0.185	0.010	NP	1.000	0.998	0.963	0.162	0.002	NP
	3.0	1.000	0.399	0.185	0.011	NP	1.000	0.998	0.963	0.367	0.011	NP
	4.0	1.000	0.399	0.185	0.011	NP	1.000	0.998	0.963	0.367	0.046	NP
38	0.0	0.881	0.078	0.026	NP	NP	0.993	0.349	0.161	NP	NP	NP
	1.0	0.881	0.416	0.192	0.003	NP	1.000	0.876	0.661	0.006	NP	NP
	2.0	0.881	0.416	0.194	0.012	NP	1.000	0.934	0.841	0.138	0.002	NP
	3.0	0.881	0.416	0.194	0.012	NP	1.000	0.934	0.841	0.275	0.011	NP
	4.0	0.881	0.416	0.194	0.012	NP	1.000	0.934	0.841	0.275	0.016	0.001

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11307-R1
BF 11306-R1
F6-23

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 23 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
201 TO 5,000 FT-MSL RUN-IN ALTITUDE

WEAPON: MK 83 MOD 5 (TP)

FIN ASSEMBLY: BSU-85/B
MODE: LOW DRAG

ARMING TIMES: 4.0 5.5 6.0 8.0 10.0 12.0

RELEASE CONDITIONS:

FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)					
10	0.0	0.997	0.210	0.019	NP	NP	NP
	1.0	1.000	0.809	0.463	0.004	NP	NP
	2.0	1.000	1.000	0.955	0.056	NP	NP
	3.0	1.000	1.000	1.000	0.325	0.006	NP
	4.0	1.000	1.000	1.000	0.657	0.068	NP
20	0.0	0.999	0.218	0.074	NP	NP	NP
	1.0	1.000	0.883	0.553	0.004	NP	NP
	2.0	1.000	0.999	0.957	0.083	NP	NP
	3.0	1.000	0.999	0.963	0.327	0.006	NP
	4.0	1.000	0.999	0.963	0.359	0.027	NP
30	0.0	0.998	0.256	0.122	NP	NP	NP
	1.0	1.000	0.865	0.615	0.006	NP	NP
	2.0	1.000	0.978	0.921	0.134	0.002	NP
	3.0	1.000	0.978	0.921	0.250	0.007	NP
	4.0	1.000	0.978	0.921	0.250	0.015	NP
38	0.0	0.993	0.332	0.160	NP	NP	NP
	1.0	1.000	0.832	0.617	0.005	NP	NP
	2.0	1.000	0.912	0.843	0.153	0.002	NP
	3.0	1.000	0.912	0.843	0.153	0.007	NP
	4.0	1.000	0.912	0.843	0.153	0.012	0.001

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11309-R2
F6-24

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 24 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE

WEAPON:		MK 81 MOD 1									
FIN ASSEMBLY:		CONICAL					MK 14 MOD 2				
MODE:							LOW DRAG				
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)									
10	0.0	0.893	0.028	0.007	NP	NP	0.707	0.015	0.004	NP	NP
	1.0	1.000	0.306	0.101	NP	NP	0.997	0.128	0.044	NP	NP
	2.0	1.000	0.891	0.459	0.005	NP	0.997	0.383	0.118	0.005	NP
	3.0	1.000	0.976	0.788	0.040	NP	0.997	0.521	0.300	0.018	NP
	4.0	1.000	0.976	0.806	0.090	0.006	0.997	0.521	0.300	0.037	0.004
20	0.0	0.928	0.039	0.006	NP	NP	0.827	0.025	0.004	NP	NP
	1.0	1.000	0.412	0.140	NP	NP	0.992	0.175	0.064	NP	NP
	2.0	1.000	0.638	0.311	0.007	NP	0.992	0.312	0.124	0.005	NP
	3.0	1.000	0.638	0.351	0.030	0.002	0.992	0.312	0.181	0.021	NP
	4.0	1.000	0.638	0.351	0.061	0.009	0.992	0.312	0.181	0.027	0.006
30	0.0	0.947	0.076	0.022	NP	NP	0.893	0.052	0.017	NP	NP
	1.0	0.980	0.279	0.090	0.001	NP	0.893	0.126	0.067	0.001	NP
	2.0	0.980	0.456	0.237	0.012	NP	0.893	0.229	0.112	0.009	NP
	3.0	0.980	0.456	0.237	0.031	0.004	0.893	0.229	0.112	0.020	0.003
	4.0	0.980	0.456	0.237	0.031	0.008	0.893	0.229	0.112	0.020	0.005
38	0.0	0.927	0.101	0.034	NP	NP	0.923	0.063	0.025	NP	NP
	1.0	0.997	0.401	0.071	0.001	NP	0.923	0.288	0.108	0.001	NP
	2.0	0.997	0.401	0.159	0.009	0.001	0.923	0.288	0.108	0.009	0.001
	3.0	0.997	0.401	0.159	0.026	0.003	0.923	0.288	0.108	0.022	0.002
	4.0	0.997	0.401	0.159	0.026	0.008	0.923	0.288	0.108	0.022	0.004

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
F6-25

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 25 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE

WEAPON: MK 82 MOD 2 (TP)

FIN ASSEMBLY:	CONICAL						MK 15				
MODE:							LOW DRAG				
ARMING TIMES:	4.0	5.5	6.0	8.0	10.0	12.0	4.0	5.5	6.0	8.0	10.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG) / STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)										
10	0.0	0.967	0.112	0.032	NP	NP	NP	0.956	0.087	0.026	NP	NP
	1.0	1.000	0.715	0.362	0.004	NP	NP	1.000	0.601	0.268	0.002	NP
	2.0	1.000	0.983	0.855	0.035	NP	NP	1.000	0.941	0.753	0.023	NP
	3.0	1.000	1.000	1.000	0.180	0.006	NP	1.000	1.000	0.964	0.101	0.006
	4.0	1.000	1.000	1.000	0.499	0.037	NP	1.000	1.000	0.964	0.275	0.016
20	0.0	0.975	0.109	0.031	NP	NP	NP	0.981	0.096	0.027	NP	NP
	1.0	1.000	0.779	0.466	0.002	NP	NP	1.000	0.700	0.373	0.003	NP
	2.0	1.000	0.982	0.886	0.035	NP	NP	1.000	0.943	0.780	0.025	NP
	3.0	1.000	0.982	0.968	0.175	0.005	NP	1.000	0.943	0.780	0.090	0.005
	4.0	1.000	0.982	0.968	0.337	0.026	NP	1.000	0.943	0.780	0.093	0.014
30	0.0	0.971	0.199	0.068	NP	NP	NP	0.958	0.159	0.056	NP	NP
	1.0	0.995	0.683	0.457	0.003	NP	NP	1.000	0.643	0.427	0.002	NP
	2.0	0.995	0.953	0.837	0.065	NP	NP	1.000	0.892	0.744	0.043	NP
	3.0	0.995	0.953	0.837	0.138	0.008	NP	1.000	0.892	0.744	0.058	0.006
	4.0	0.995	0.953	0.837	0.138	0.016	NP	1.000	0.892	0.744	0.058	0.012
38	0.0	0.954	0.297	NP	NP	NP	NP	0.944	0.248	0.086	NP	NP
	1.0	1.000	0.635	0.429	NP	NP	NP	0.998	0.594	0.412	NP	NP
	2.0	1.000	0.854	0.690	0.058	NP	NP	0.998	0.841	0.711	0.033	NP
	3.0	1.000	0.854	0.690	0.058	0.008	NP	0.998	0.841	0.711	0.055	0.007
	4.0	1.000	0.854	0.690	0.058	0.008	0.001	0.998	0.841	0.711	0.055	0.007

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11213-R2
BF 11212-R2
BF 11217-R1
F6-26

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 26 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE

WEAPON:		MK 82 MOD 2 (TP)					MK 83 MOD 5 (TP)					
FIN ASSEMBLY:		BSU-86/B					CONICAL					
MODE:		LOW DRAG										
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	4.0	5.5	6.0	8.0	10.0	12.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)										
10	0.0	0.940	0.075	0.022	NP	NP	1.000	0.353	0.169	0.001	NP	NP
	1.0	1.000	0.539	0.213	0.004	NP	1.000	0.970	0.780	0.008	NP	NP
	2.0	1.000	0.904	0.665	0.017	NP	1.000	1.000	0.997	0.207	0.003	NP
	3.0	1.000	0.957	0.881	0.070	0.004	1.000	1.000	1.000	0.621	0.036	NP
	4.0	1.000	0.957	0.881	0.143	0.009	1.000	1.000	1.000	0.915	0.220	0.002
20	0.0	0.972	0.089	0.024	NP	NP	0.999	0.347	0.158	NP	NP	NP
	1.0	1.000	0.639	0.321	0.002	NP	1.000	0.986	0.843	0.006	NP	NP
	2.0	1.000	0.891	0.687	0.019	NP	1.000	1.000	1.000	0.207	0.002	NP
	3.0	1.000	0.891	0.687	0.043	0.005	1.000	1.000	1.000	0.659	0.048	NP
	4.0	1.000	0.891	0.687	0.043	0.011	1.000	1.000	1.000	0.914	0.233	0.002
30	0.0	0.948	0.143	0.047	NP	NP	0.999	0.506	0.217	NP	NP	NP
	1.0	1.000	0.648	0.420	0.003	NP	1.000	0.969	0.822	0.024	NP	NP
	2.0	1.000	0.833	0.647	0.031	NP	1.000	1.000	0.992	0.257	0.003	NP
	3.0	1.000	0.833	0.647	0.036	0.005	1.000	1.000	0.992	0.652	0.076	NP
	4.0	1.000	0.833	0.647	0.036	0.007	1.000	1.000	0.992	0.652	0.194	0.003
38	0.0	0.937	0.222	0.077	NP	NP	0.999	NP	NP	0.000	NP	NP
	1.0	0.994	0.591	0.388	NP	NP	1.000	0.930	0.791	0.001	NP	NP
	2.0	0.994	0.765	0.646	0.019	NP	1.000	0.964	0.851	0.264	NP	NP
	3.0	0.994	0.765	0.646	0.040	0.007	1.000	0.964	0.851	0.410	NP	NP
	4.0	0.994	0.765	0.646	0.040	0.007	1.000	0.964	0.851	0.410	0.029	0.001

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11307-R1
BF 11306-R1
F6-27

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 27 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
5,001 TO 10,000 FT-MSL RUN-IN ALTITUDE

WEAPON: MK 83 MOD 5 (TP)

FIN ASSEMBLY: BSU-85/B
MODE: LOW DRAG

ARMING TIMES: 4.0 5.5 6.0 8.0 10.0 12.0

RELEASE CONDITIONS:

FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)					
10	0.0	1.000	0.328	0.169	0.002	NP	NP
	1.0	1.000	0.954	0.729	0.010	NP	NP
	2.0	1.000	1.000	0.992	0.196	0.005	NP
	3.0	1.000	1.000	1.000	0.501	0.015	NP
	4.0	1.000	1.000	1.000	0.840	0.172	0.002
20	0.0	1.000	0.319	0.157	NP	NP	NP
	1.0	1.000	0.980	0.818	0.006	NP	NP
	2.0	1.000	1.000	0.998	0.195	0.002	NP
	3.0	1.000	1.000	1.000	0.551	0.025	NP
	4.0	1.000	1.000	1.000	0.757	0.163	0.002
30	0.0	0.999	0.501	0.211	0.001	NP	NP
	1.0	1.000	0.934	0.800	0.024	NP	NP
	2.0	1.000	1.000	0.992	0.241	0.003	NP
	3.0	1.000	1.000	0.992	0.519	0.063	NP
	4.0	1.000	1.000	0.992	0.519	0.117	0.002
38	0.0	0.999	NP	NP	0.000	NP	NP
	1.0	1.000	0.883	0.768	0.001	NP	NP
	2.0	1.000	0.967	0.875	0.223	NP	NP
	3.0	1.000	0.967	0.875	0.223	0.012	NP
	4.0	1.000	0.967	0.875	0.223	0.025	0.001

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11309-R2
F6-28

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 28 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

WEAPON:		MK 81 MOD 1											
FIN ASSEMBLY:		CONICAL						MK 14 MOD 2					
MODE:								LOW DRAG					
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	12.0	4.0	5.5	6.0	8.0	10.0	12.0
RELEASE CONDITIONS:													
FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)											
10	0.0	0.990	0.137	0.051	NP	NP	NP	0.986	0.093	0.036	NP	NP	NP
	1.0	1.000	0.749	0.364	0.004	NP	NP	1.000	0.586	0.230	0.003	NP	NP
	2.0	1.000	0.998	0.886	0.053	NP	NP	1.000	0.901	0.571	0.027	NP	NP
	3.0	1.000	0.998	0.969	0.149	0.006	NP	1.000	0.901	0.617	0.054	0.004	NP
	4.0	1.000	0.998	0.969	0.307	0.039	NP	1.000	0.901	0.617	0.063	0.015	NP
20	0.0	0.994	0.147	0.040	NP	NP	NP	0.991	0.125	0.044	NP	NP	NP
	1.0	1.000	0.795	0.452	0.002	NP	NP	1.000	0.715	0.363	0.002	NP	NP
	2.0	1.000	0.977	0.865	0.052	0.001	NP	1.000	0.715	0.479	0.031	NP	NP
	3.0	1.000	0.977	0.865	0.087	0.008	NP	1.000	0.715	0.479	0.039	0.003	NP
	4.0	1.000	0.977	0.865	0.098	0.020	NP	1.000	0.715	0.479	0.058	0.011	NP
30	0.0	0.989	0.207	0.079	NP	NP	NP	0.982	0.219	0.077	0.001	NP	NP
	1.0	1.000	0.789	0.474	0.012	NP	NP	1.000	0.722	0.374	0.011	NP	NP
	2.0	1.000	0.789	0.539	0.084	0.001	NP	1.000	0.722	0.460	0.058	0.001	NP
	3.0	1.000	0.789	0.539	0.084	0.017	NP	1.000	0.722	0.460	0.058	0.008	NP
	4.0	1.000	0.789	0.539	0.084	0.017	NP	1.000	0.722	0.460	0.058	0.012	NP
38	0.0	0.968	NP	NP	NP	NP	NP	0.969	NP	NP	NP	NP	NP
	1.0	1.000	0.561	0.253	NP	NP	NP	1.000	0.576	0.143	NP	NP	NP
	2.0	1.000	0.561	0.292	0.023	NP	NP	1.000	0.576	0.282	0.015	NP	NP
	3.0	1.000	0.561	0.292	0.046	0.004	NP	1.000	0.576	0.282	0.037	0.005	NP
	4.0	1.000	0.561	0.292	0.046	0.015	0.001	1.000	0.576	0.282	0.037	0.013	0.001

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. The FMU-139 fuze is currently not cleared for use on the Mk 81 Mod 1 (all fins).
3. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11102-R21A
BF 11101-R21A
BF 11105-R1
BF 11104-R1
F6-29

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 29 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

WEAPON: MK 82 MOD 2 (TP)

FIN ASSEMBLY:	CONICAL						MK 15 LOW DRAG					
MODE:												
ARMING TIMES:	4.0	5.5	6.0	8.0	10.0	12.0	4.0	5.5	6.0	8.0	10.0	12.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG) / STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)											
10 / 0.0	0.988	0.337	0.123	NP	NP	NP	0.990	0.300	0.108	NP	NP	NP
1.0	1.000	0.849	0.603	0.019	NP	NP	1.000	0.827	0.570	0.015	NP	NP
2.0	1.000	0.997	0.943	0.145	0.003	NP	1.000	0.983	0.896	0.105	0.004	NP
3.0	1.000	1.000	1.000	0.419	0.030	NP	1.000	1.000	0.987	0.334	0.019	NP
4.0	1.000	1.000	1.000	0.666	0.132	0.001	1.000	1.000	0.987	0.535	0.069	0.001
20 / 0.0	0.996	0.284	0.105	NP	NP	NP	0.995	0.282	0.112	NP	NP	NP
1.0	1.000	0.888	0.655	0.013	NP	NP	1.000	0.840	0.607	0.013	NP	NP
2.0	1.000	1.000	0.974	0.162	0.006	NP	1.000	0.984	0.928	0.118	0.004	NP
3.0	1.000	1.000	1.000	0.459	0.032	NP	1.000	0.984	0.928	0.342	0.023	NP
4.0	1.000	1.000	1.000	0.640	0.103	0.004	1.000	0.984	0.928	0.342	0.056	0.003
30 / 0.0	0.991	0.338	0.156	NP	NP	NP	0.991	0.329	0.140	NP	NP	NP
1.0	1.000	0.862	0.626	0.016	NP	NP	1.000	0.819	0.616	0.013	NP	NP
2.0	1.000	0.987	0.894	0.224	0.006	NP	1.000	0.979	0.898	0.219	0.004	NP
3.0	1.000	0.987	0.894	0.468	0.052	NP	1.000	0.979	0.898	0.362	0.040	NP
4.0	1.000	0.987	0.894	0.468	0.101	0.002	1.000	0.979	0.898	0.362	0.046	0.007
38 / 0.0	0.981	NP	NP	NP	NP	NP	0.974	NP	NP	NP	NP	NP
1.0	1.000	NP	NP	NP	NP	NP	1.000	0.647	NP	NP	NP	NP
2.0	1.000	0.834	0.741	NP	NP	NP	1.000	0.893	0.773	NP	NP	NP
3.0	1.000	0.834	0.741	0.232	NP	NP	1.000	0.893	0.773	0.112	NP	NP
4.0	1.000	0.834	0.741	0.232	0.010	NP	1.000	0.893	0.773	0.112	0.008	NP

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11213-R2
BF 11212-R2
BF 11217-R1
F6-30

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 30 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

WEAPON:		MK 82 MOD 2 (TP)						MK 83 MOD 5 (TP)					
FIN ASSEMBLY:		BSU-86/B						CONICAL					
MODE:		LOW DRAG											
ARMING TIMES:		4.0	5.5	6.0	8.0	10.0	12.0	4.0	5.5	6.0	8.0	10.0	12.0
RELEASE CONDITIONS: FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)											
10	0.0	0.987	0.272	0.100	NP	NP	NP	1.000	0.594	0.276	0.006	NP	NP
	1.0	1.000	0.794	0.537	0.012	NP	NP	1.000	0.993	0.908	0.091	0.001	NP
	2.0	1.000	0.970	0.861	0.088	0.003	NP	1.000	1.000	0.999	0.387	0.019	NP
	3.0	1.000	1.000	0.982	0.264	0.015	NP	1.000	1.000	1.000	0.807	0.132	NP
	4.0	1.000	1.000	0.982	0.427	0.051	0.001	1.000	1.000	1.000	0.972	0.406	0.008
20	0.0	0.993	0.287	0.104	NP	NP	NP	1.000	0.613	0.265	0.002	NP	NP
	1.0	1.000	0.845	0.616	0.012	NP	NP	1.000	0.995	0.957	0.072	NP	NP
	2.0	1.000	0.973	0.901	0.097	0.005	NP	1.000	1.000	1.000	0.377	0.023	NP
	3.0	1.000	0.973	0.901	0.279	0.018	NP	1.000	1.000	1.000	0.873	0.119	NP
	4.0	1.000	0.973	0.901	0.279	0.036	0.002	1.000	1.000	1.000	0.982	0.415	0.030
30	0.0	0.990	0.315	0.128	NP	NP	NP	1.000	0.605	0.346	0.007	NP	NP
	1.0	0.999	0.793	0.590	0.014	NP	NP	1.000	0.982	0.918	0.079	0.001	NP
	2.0	0.999	0.982	0.891	0.202	0.004	NP	1.000	1.000	0.998	0.395	0.056	NP
	3.0	0.999	0.982	0.891	0.297	0.030	NP	1.000	1.000	0.998	0.860	0.130	0.001
	4.0	0.999	0.982	0.891	0.297	0.030	0.006	1.000	1.000	0.998	0.860	0.430	0.021
38	0.0	0.968	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	1.0	1.000	0.600	NP	NP	NP	NP	1.000	NP	NP	NP	NP	NP
	2.0	1.000	0.867	0.759	NP	NP	NP	1.000	0.927	NP	NP	NP	NP
	3.0	1.000	0.867	0.759	0.068	NP	NP	1.000	0.927	0.455	NP	NP	NP
	4.0	1.000	0.867	0.759	0.068	0.007	NP	1.000	0.927	0.455	0.088	NP	NP

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11223-R2
BF 11307-R1
BF 11306-R1
F6-31

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 31 of 32)

AV-8B LOFT DELIVERY WITH A WING-OVER ESCAPE
10,001 TO 15,000 FT-MSL RUN-IN ALTITUDE

WEAPON: MK 83 MOD 5 (TP)

FIN ASSEMBLY: BSU-85/B
MODE: LOW DRAG

ARMING TIMES: 4.0 5.5 6.0 8.0 10.0 12.0

RELEASE CONDITIONS:

FLIGHT PATH ANGLE (DEG)	STICK (SEC)	PROBABILITY OF HIT GIVEN EARLY BURST (PH/EB)					
10	0.0	1.000	0.594	0.284	0.005	NP	NP
	1.0	1.000	0.985	0.883	0.092	0.001	NP
	2.0	1.000	1.000	0.999	0.368	0.014	NP
	3.0	1.000	1.000	1.000	0.747	0.251	NP
	4.0	1.000	1.000	1.000	0.944	0.300	0.010
20	0.0	1.000	0.598	0.251	0.002	NP	NP
	1.0	1.000	0.994	0.937	0.072	NP	NP
	2.0	1.000	1.000	1.000	0.383	0.026	NP
	3.0	1.000	1.000	1.000	0.789	0.109	0.001
	4.0	1.000	1.000	1.000	0.850	0.310	0.026
30	0.0	1.000	0.619	0.339	0.002	NP	NP
	1.0	1.000	0.987	0.902	0.079	0.001	NP
	2.0	1.000	1.000	0.997	0.373	0.026	NP
	3.0	1.000	1.000	0.997	0.813	0.115	0.001
	4.0	1.000	1.000	0.997	0.813	0.338	0.017
38	0.0	NP	NP	NP	NP	NP	NP
	1.0	1.000	NP	NP	NP	NP	NP
	2.0	1.000	0.986	NP	NP	NP	NP
	3.0	1.000	0.986	0.359	NP	NP	NP
	4.0	1.000	0.986	0.359	0.035	NP	NP

NOTES: 1. Run-in velocities are 450, 500 and 550 KTAS.
2. Refer to stores limitations and fuze descriptions for KCAS restrictions.

BF 11309-R2
F6-32

Figure 3-19. Probability of Fragment Hit in Event of Early Burst (Sheet 32 of 32)

CHAPTER 4

Carriage Equipment

4.1 PYLONS

The AV-8B is equipped with seven non-jettisonable pylons (centerline, two inboard, two intermediate, and two outboard) to provide mechanical and electrical interface between the aircraft and the stores carried. The TAV-8B is equipped with two non-jettisonable pylons (the two intermediate) to provide this interface. The BRU-36/A or BRU-36A/A ejector rack is contained internally and provides pylon/weapon interface. On night attack aircraft, provisions are provided for attaching an additional pylon in front of each outrigger landing gear. This non-jettisonable outrigger pylon does not have an ejector release unit or stores station controller and may not be interchanged between stations. Outrigger wiring provisions in the wing are provided for carriage of the LAU-7/A-5 guided missile launcher and the AIM-9 or AGM-122 missile. See Figure 4-1.

4.2 BRU-36/A OR BRU-36A/A EJECTOR RACK

The BRU-36/A or BRU-36A/A ejector rack (Figure 4-1) is a single carriage bomb ejector rack using 14-inch suspension hooks. The ejection system uses two cartridges to generate gas pressure for rack operation. A safe/arm lever guarantees hooks locked and prevents inadvertent release of stores. The safe/arm lever eliminates the need for safety pins.

Gas regulating throttles (orifices) above each ejector foot provide gas pressure regulation. The ejector force can be varied by controlling the size of the throttles through which the gases flow from the burning chamber to the ejector assembly. Throttle settings available are: 33, 66, and 100. Throttle setting is determined by the position of the index mark on the adjustment screw with the number painted on the bomb rack. For current throttle setting, refer to A1-AV8BB-LWS-000, section 5.

WARNING

Use of the wrong throttle setting could result in reduced weapon delivery accuracy or bomb-to-aircraft collision.

4.3 BRU-42/A IMPROVED TRIPLE EJECTOR RACK (ITER)

The BRU-42/A ITER (Figure 4-1) provides a multiple carriage capability for air-to-ground weapons. The ITER is a zero retention force (ZRF) rack. Up to two 1,000-pound class stores may be carried on an ITER , and up to three 500-pound class stores may be carried on an inboard or intermediate pylon ITER. The ITER can also carry practice bombs.

The ITER is suspended from the BRU-36/A or BRU-36A/A ejector rack. Each ejector rack has provisions for mechanically locking the suspension hooks. Each ejector rack is provided with a safety stop lever and does not require safety pins. The safety stop lever is in the locked position when loaded with a weapon to lock the suspension hooks. Placing the stop lever in the unlock (in-flight position) allows the ejector rack to release when the cartridge is fired or the manual release lever is pulled. The safety stop lever cannot be placed in the locked position if the breech mechanism is not properly installed or if both suspension hooks are not latched.

The ejector rack suspension hooks are spaced 14 inches apart, are independently self-latching, and can be released with the manual release lever or with gas pressure generated by cartridge detonation. Opening the hooks by cartridge detonation simultaneously drives the ejector foot down and forcibly ejects the store from the rack.

The BRU-42/A ITER lugs and swaybraces are compatible with the BRU-36/A or BRU-36A/A ejector rack. The ITER shoulder ejector units are angled at 45É to the vertical. The ITER uses a solid state control box.

Through out this volume of the TACMAN series, reference is made via a ″NOTE″ regarding the inability to in-flight select fins for high or low drag configurations and/or in-flight select fuzing regarding nose or tail fuze selection and the selection of primary or option arming times unless the ordnance is loaded on ITERs which incorporate ZRF solenoids. Additionally, the importance of jettisoning mechanically armed ordnance outside its fragmentation envelope is emphasized due to the possibility of this ordnance being released in the armed mode despite selecting ″SAFE″ fuzing prior to release. This occurs due to the fact that BRU-36 bomb racks (pylons) do *not* have ZRF solenoids.

ZRF stands for zero retention force and the following describes the basics of how a ZRF solenoid works and more importantly, why a non-ZRF solenoid fails. The purpose of this section is to provide background knowledge and understanding of how the AV-8B bomb racks work and the reasoning behind limitations involved when using parent stations which use the BRU-36 bomb rack without ZRF solenoids.

When ordnance is configured for in-flight selectability it requires the use of arming wires. These arming wires are routed from the components (fins and fuzing) for which the in-flight feature is desired, through an arming solenoid to the ordnance body. Selection or deselection of the component is then accomplished by either selecting or not selecting a particular option via cockpit switchology. For example, a Mk 80 series bomb with a M904 mechanical nose fuze, a FMU-139 electrical tail fuze and a BSU fin capable of high or low drag configurations, when loaded on a ZRF configured rack can be released either high or low drag and with one, both or neither of the fuzes armed. This is accomplished by choosing to energize or not energize the respective solenoids through which the arming wires are routed. (The FMU-139 arming wire will be pulled due to being positively wired to the rack but no electrical charging pulse will be sent to the fuze unless it is positively selected.)

The ZRF solenoids in ITERs (BRU-42) require positive selection via cockpit switchology in order to remain closed at ordnance release. This is because they are mechanically driven open at weapon release. When high drag is selected on the stores page for a Mk 80 series bomb (references previous paragraph above) the arming solenoid containing the fin arming wire is energized (remains closed) at release thus retaining and pulling the fin arming wire. The same holds true for mechanically armed fuzes. The solenoid, if not selected via cockpit switchology, will not pull the arming wire when the ordnance is released and the arming wire and ring will remain with the bomb. On inspection of the BRU-42 arming solenoid notice that the latching pin moves completely clear when the hooks are driven open. Also notice the spacious slot that is provided for the arming ring. There is little chance of the ring binding in the slot and unintentionally pulling the arming wire after the latching pin has moved clear. Incorporation of ZRF solenoids gives the pilot the capability to optimize weapons selection airborne (selecting fin and fuzing configurations) in addition to providing a truly SAFE jettison capability of mechanically armed fuzes.

The solenoids in the AV-8B pylon racks (BRU-36) would in theory provide the same capability as those in the ITERs. The design of these solenoids differ in several areas which result in their *not* being cleared for in-flight selection of fins and fuzes. Instead of having a latching pin that is mechanically driven clear at ordnance release these solenoids incorporate a spring loaded ball bearing that is electrically held closed when selected. This spring loaded ball, however, is not mechanically driven open when not desired. Instead it relies on dynamic force to overcome the spring force holding the latching ball at release when a particular arming wire that has been routed through the solenoid is not desired. This design appeared workable during ground static test but under the greater dynamic loads of actual release, the lateral forces imposed led to incidents of arming rings binding

in the solenoids and inadvertent arming of fuzes and fins when they were NOT selected. Additionally, the spring loaded ball bearings are subject to dirt and grit build up (from jet blast) which increases the force required to override the spring tension beyond that required to pull the arming wire. Because the BRU-36 solenoid will *not* reliably release the arming wire when not desired, the ″NOTE″ does not allow in-flight selection of fins and fuzes for ordnance loaded on parent stations (BRU-36s). Until this deficiency is corrected we must assume that any arming wire routed through these solenoids will be pulled regardless of the switchology selected in the cockpit even when fuzing is selected to ″SAFE″. Comply with all limits imposed as configured and *never* assume safe jettison of mechanically armed fuzes.

This section was incorporated to increase awareness and understanding of the AV-8B's bomb racks, their capabilities and limitations. Understanding these solenoids will allow decisions regarding configuration and switchology selection that will optimize capabilities and minimize deficiencies.

4.4 LAU-117/A (V)2/A LAUNCHER

The LAU-117A(V)2/A launcher is the Navy version of the single rail launcher and can be identified by its gray color. This launcher can be used to launch all models of the Maverick missile. The launcher provides both mechanical and electrical interface between the aircraft and the missile.

4.4.1 Mechanical Interface. The launcher has one rail, weighs 130 pounds (59 kg), is 94 inches (2.4 meters) long, and is adaptable to 14 or 30 inch (35.6 or 76.2 cm) lug suspension. The launcher rail, designed to mate with the missile hooks, provides both carriage restraint and initial guidance for the missile.

4.4.1.1 Missile Restraint Device. The Missile Restraint Device (MRD), used to retain the missile on the rail, is designed to meet both US Navy and USAF requirements. When used on USN aircraft the MRD should be set in the USN position. The MRD position can be verified by reading the lettering displayed through a notch in the MRD cover on top of the launcher. The legend ″USN″ is visible through the notch and the legend ″USAF″ is hidden by the cover. In the USN position the MRD holdback pin is mechanically locked until an electrical signal is applied from the aircraft which activates the solenoid that unlocks the MRD. When the MRD is locked, the missile cannot leave the rail even if the rocket motor inadvertently fires. In the unlocked position, the MRD pin will retain the missile on the rail for all flight maneuvers, and the pin will retract, releasing the missile, upon application of a forward force of 2,500 to 3,500 pounds (the Maverick rocket motor provides a nominal 10,000 pounds of thrust).

Aircrews can verify proper MRD holdback pin insertion into the missile by observing the red alignment markers on either side of the launcher. When the red marks are in line, the MRD holdback pin is properly inserted and the missile is secure on the launcher.

4.4.1.2 Electrical Interface. The Launcher Electronics Assembly (LEA) provides electrical interface between the aircraft and the missile. Located at the aft end of the launcher, the LEA contains the umbilical connections to the missile and aircraft and the connector for the rocket motor igniter cable.

The launcher controls the signal to start the missile thermal battery and ignite the missile rocker motor. When the pickle button is pressed after the missile is in the Track Mode, the launcher sends a signal to the missile to activate the missile's thermal battery, and it starts a half second timer in the launcher. As the missile battery voltage increases through 18 volts, the missile sends a signal (secondary power true) back to the launcher to verify the battery has activated. With the secondary power true signal present (when the half second timer expires), the launcher sends a firing voltage through the rocket motor igniter cable to initiate launch.

4.4.1.3 Operational Considerations. The launcher may be jettisoned from the aircraft pylon rack with or without the missile attached.

Jettison of the missile from the launcher is not possible.

4.5 LAU-7/A-5 LAUNCHER AND ADU-299A/A ADAPTER

The LAU-7/A-5 launcher (Figure 4-1) is a rail-type launcher for carrying and launching the AIM-9 or AGM-122 missiles. The LAU-7/A-5 carries a supply of nitrogen coolant and its own power supply. The launcher is attached directly to the outboard and outrigger pylons. For intermediate pylon installation, an ADU-299A/A adapter is used to interface the LAU-7/A-5 launcher with the BRU-36/A or BRU-36A/A ejector rack and pylon.

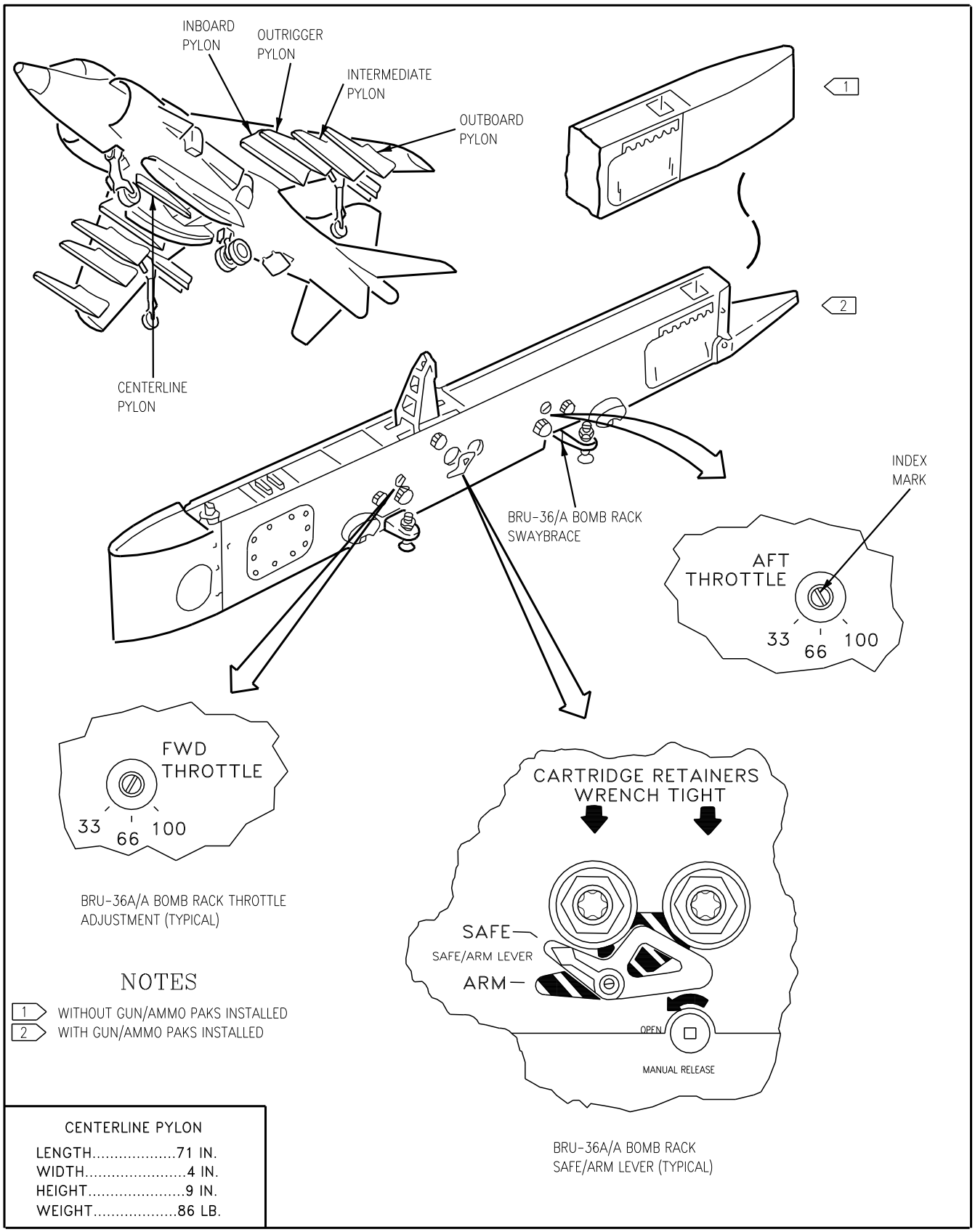


Figure 4-1. Carriage Equipment (Sheet 1 of 5)

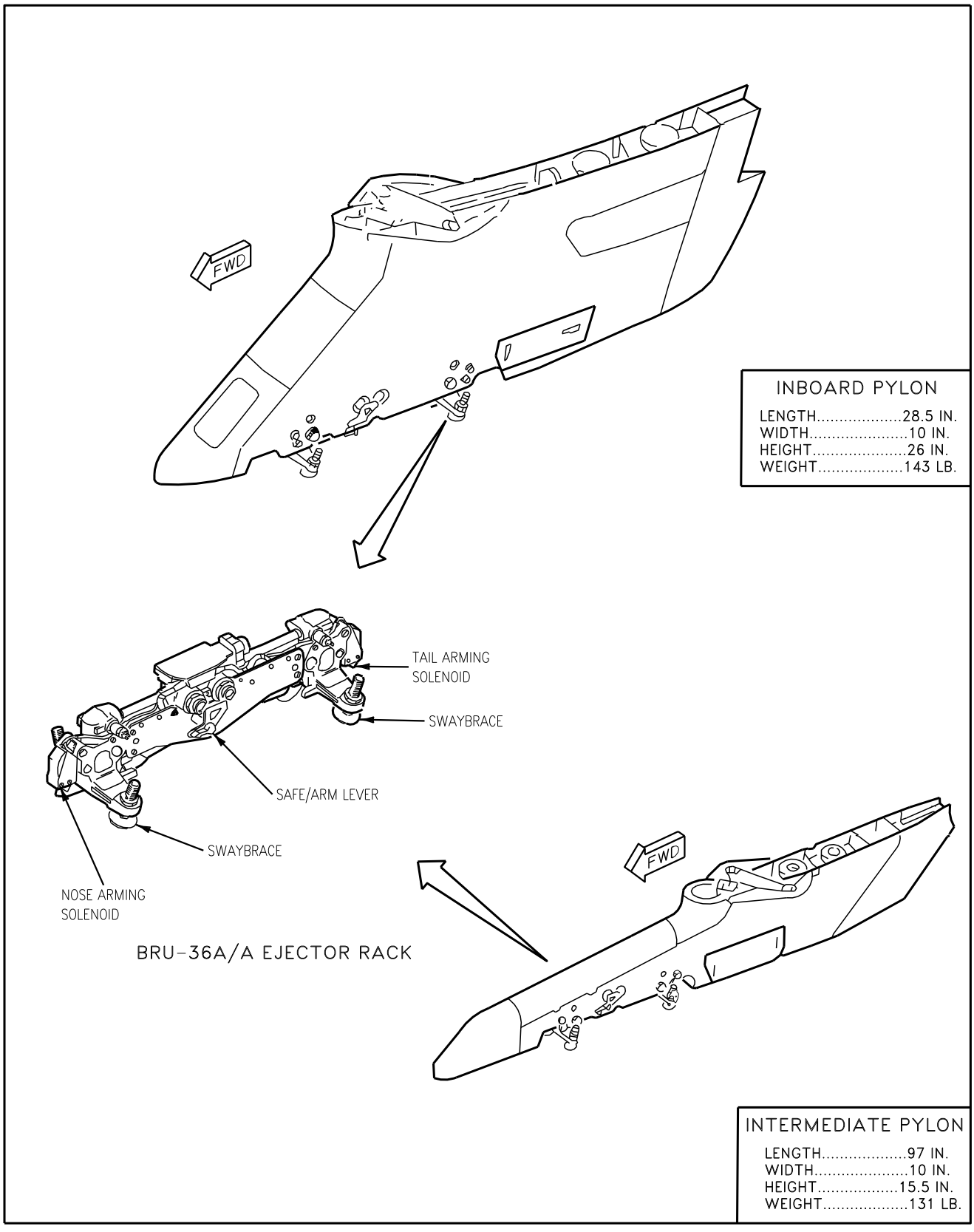


Figure 4-1. Carriage Equipment (Sheet 2 of 5)

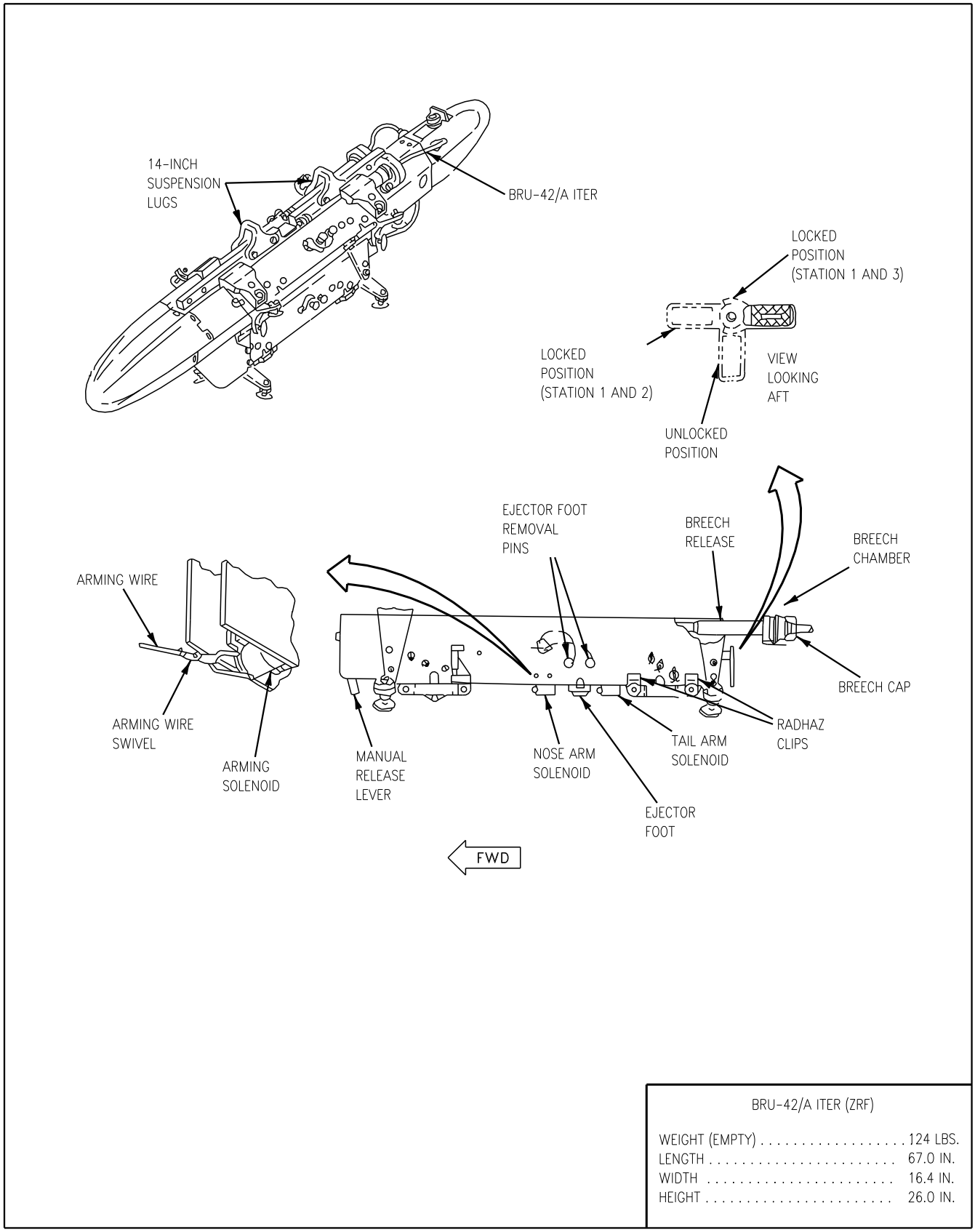


Figure 4-1. Carriage Equipment (Sheet 3 of 5)

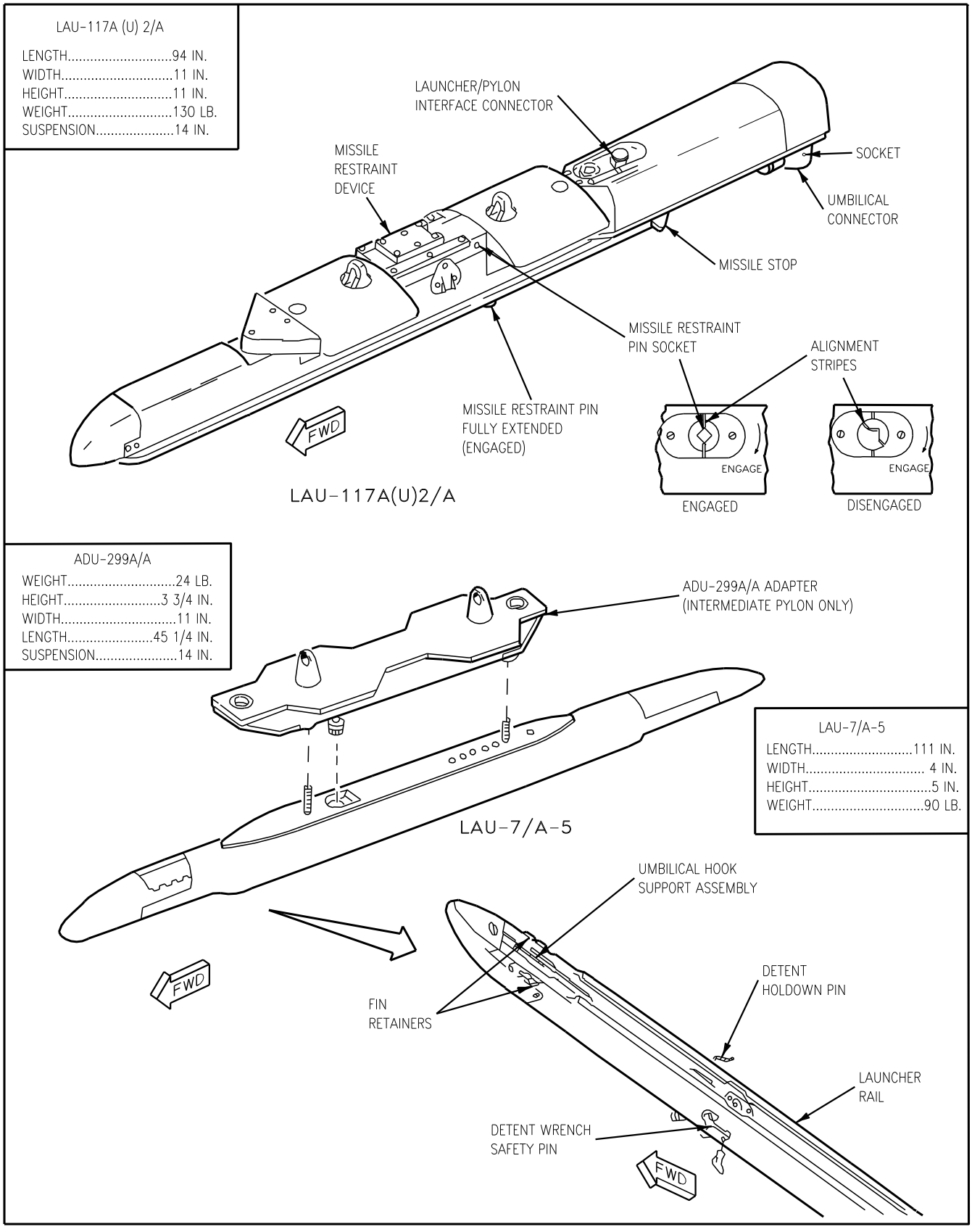


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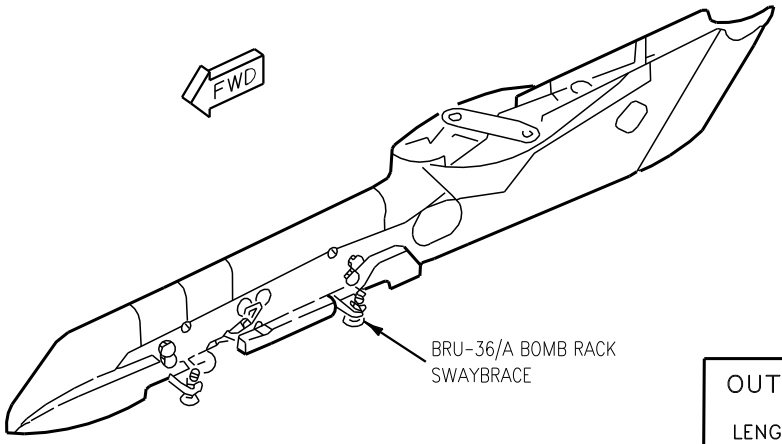
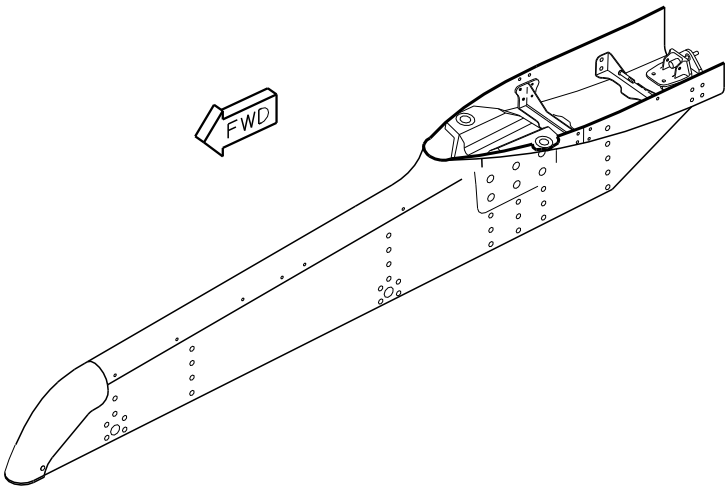
Figure 4-1. Carriage Equipment (Sheet 4 of 5)



OUTBOARD PYLON

LENGTH.....87 IN.
WIDTH.....8 IN.
HEIGHT.....11 IN.
WEIGHT.....96 LB.



OUTRIGGER PYLON

LENGTH.....75.2 IN.
WIDTH.....8 IN.
HEIGHT.....10 IN.
WEIGHT.....68.5 LB.

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Figure 4-1. Carriage Equipment (Sheet 5 of 5)

PART II

AIR-TO-AIR WARFARE

(REFER TO VOLUME I)

PART III

NUCLEAR WARFARE

(NOT APPLICABLE)

PART IV

AIRCRAFT LIMITATIONS

Chapter 5 - Aircraft Limitations

CHAPTER 5

External Stores Limitations

5.1 AIRCRAFT

Basic aircraft limitations not referred to herein are contained in part 1, chapter 4 of the NATOPS Flight Manual, A1-AV8BB-NFM-000.

5.2 EXTERNAL STORES

5.2.1 Introduction. Not all stores in the Navy inventory are cleared for carriage and release from the AV-8B aircraft. Only those store loads covered in this chapter, and the derivable authorized downloads, are authorized for carriage and release. Understanding the various limits imposed on carriage and release is essential to ensure safe operation throughout the envelope. When operating with external stores, the pilot must know stores carriage and release airspeed/Mach limitations, and release mode restrictions. A thorough understanding of minimum release interval (MRI) is also required in order to achieve desired bomb spacing.

Clearance for carriage/release of additional store loadings or new stores must be obtained by message/letter from Naval Air Systems Command.

1. Message request should be submitted using the following format:

FM:	REQUESTING ACTIVITY// (code)//
TO:	TYPE COMMANDER//(code)//
INFO:	COMNAVAIRSYSCOM WASHINGTON DC//14.3.P/4.1/4.7// NAVAIRWARCEN-ACDIV PATUXENT RIVER, MD//4.11.2.4// AIRTEVRON NINE (Classification)//N13034//
SUBJ:	AV-8B TACMAN STORES LIMITATION TABLES CHANGE RECOMMENDATION MSGID/GENADMIN/(Originator)// REF/A/DOC/NWP 3-22.5-AV8B// (If only one ref) AMPN/REF A IS AN AIRCRAFT TACTICAL MANUAL.// (If more than one ref) NARR/(etc.)
RMKS/1.	State request, giving reason and justification for change.

2. Letter requests, with copies to above information addressees, should be addressed as follows:

Commander Naval Air Systems Command (Code 4.3.P),1421 Jefferson Davis Highway, Arlington, VA 22243-5300

3. Additional assistance may be obtained from the following sources:

Commander, Air Test and Evaluation Squadron Nine (VX-9),
Naval Air Weapons Station, China Lake, CA
AV-8B Tactical Manual Model Manager
DSN 437-4857/5164, Comm. (619) 939-4857,
Fax. (619) 939-9999

Naval Air Warfare Center Aircraft Division (4.11.2.4), Patuxent River, MD 20670-5304 DSN 342-4171, Comm. 301-342-4171, Fax. 301-342-1558

Naval Air Systems Command Mr. Bob Phelan Flight Clearance Engineer (Code 4.3.P) 1421 Jefferson Davis Highway, Arlington, VA 22243-5300, DSN 644-3400, Ext 8607, Comm (703) 604-3400, Ext 8607, FAX (703) 604-3539 or 4503.

5.2.2 Authorized Stores. To determine which stores and stores loads are authorized for carriage and release from the AV-8B aircraft, see Figure 5-3. After determining that your desired store load is an authorized line number for a particular weapon in Figure 5-3, then review all limitations, general notes, specific notes, and remarks which pertain to your desired store load.

WARNING

No store loadings other than those shown in Figure 5-3 are authorized.

5.2.3 Stores Limitations. Carriage, release, and jettison limitations for specific authorized loads are listed in Figure 5-3. Throughout the external stores limitations charts, reference is made to general notes, specific notes, and remarks.

1. General Notes. General notes apply to all ordnance deliveries and should be read prior to every ordnance sortie.

2. Specific Notes. Specific notes apply to a particular class of weapon and should be read prior to ordnance sorties carrying that class of weapon.

3. Remarks. Remarks clarify the limitations of a particular weapon and should be read prior to ordnance sorties carrying that particular weapon.

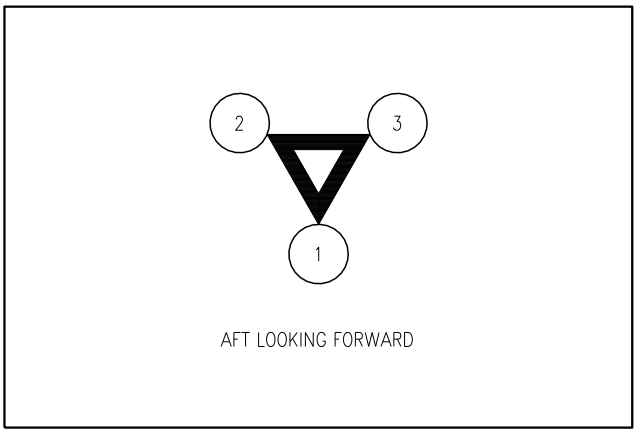
Appropriate general and specific notes are indicated in the last column of Figure 5-3 and are located on a foldout page at the end of Figure 5-3. Remarks are found in the last column of Figure 5-3.

NOTE

Refer to all limitations, notes, and remarks listed in Figure 5-3, for the desired store load, to ensure proper adherence to restrictions.

5.2.4 Store Loadings. External stores can be mounted on six wing pylons (stations 1, 2, 3, 5, 6, 7) and one centerline pylon (station 4) via the BRU-36/A or BRU-36A/A. ITERs (BRU-42/A) can be mounted on stations 2, 3, 5, and 6. LAU-7 missile launcher can be mounted directly on stations 1 and 7. LAU-7 missile launcher can also be mounted on stations 2 and 6 using the ADU-299A/A missile launcher adapter. The LAU-117/A guided missile launcher can be mounted on stations 2, 3, 5, and 6.

The weapon release sequence for an ITER is as follows:



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5.2.5 Store Carriage. Carriage limits are based on aircraft structural considerations and weapon limitations.

5.2.5.1 Mixed Stores Limits. The limits for individual store types are listed in Figure 5-3. When mixing stores, the most restrictive limitations shall apply.

5.2.5.2 Asymmetric Store Loadings. Acceleration g-limits for asymmetric store loadings are provided in Figure 5-1. An asymmetric store

load is defined as any aircraft store load with external store lateral imbalances greater than 80,000 inch-pounds.

Acceleration g-limits for external store lateral imbalances less than 80,000 inch-pounds are listed in Figure 5-3.

5.2.5.3 Takeoff Weight and Center of Gravity. Loadings shown in Figure 5-3 do not indicate if the maximum takeoff weight or center of gravity limit has been exceeded. It is the responsibility of the pilot to check both these limits prior to takeoff.

5.2.5.4 Center of Gravity (CG) - Stability Index. In addition to the effect that the weight of stores and suspension equipment have on the aircraft's CG, the carriage of wing mounted external stores and suspension equipment decreases the aircraft's maximum aft CG limits by an amount based on the stability index (SI) for each aircraft loading store load. The authorized loadings of Figure 5-3 do not necessarily ensure compliance with aircraft SI adjusted CG limits. It is the pilot's responsibility to compute aircraft weight and balance prior to flight and ensure that the CG is maintained within limits. The AV-8B mission planning system (AMPS/NAMPS) can produce the required weight and balance information. Further reference can be found in chart E of NAVAIR 01-1B-40.

STORES LOAD	MANEUVER	MAX./MIN. ACCELERATION
ASYMMETRIC WITH LESS THAN 1,400 POUNDS ON STATIONS 2 OR 6	SYMMETRIC	+5.5/+0.5
	UNSYMMETRIC	+5.5/+1.0
ASYMMETRIC WITH GREATER THAN 1,400 POUNDS ON STATIONS 2 OR 6	SYMMETRIC	+4.5/+0.5
	UNSYMMETRIC	+4.5/+1.0

Figure 5-1. Maneuvering Limitations for Asymmetric Aircraft Configurations

5.2.6 Stores Releases. Release limits are based on weapon/fuzing limits, aircraft aerodynamic and structural limits, potential bomb to bomb collisions, and delivery mode limits.

5.2.6.1 Release Speed Limits. The release limits listed in Figure 5-3 were derived from flight tests and provide for safe employment.

WARNING

The speedbrake may be used to control speed during the dive but must be in the closed position at weapon release.

5.2.6.2 Mixed Stores Releases. Release airspeed limits for individual stores are listed in Figure 5-3. The following applies to mixed store releases.

1. Only one store type can be selected for release on any bomb run.

2. When carrying stores of mixed type, any store type may be released first unless specifically restricted in Figure 5-3.

3. When carrying stores of a mixed type, the most restrictive carriage limitations apply. Release limitations for each store as specified in Figure 5-3 apply.

4. Empty LAU-7 missile launchers mounted on stations 1 and 7 are to be considered the same as empty stations for the purpose of mixed store loadings.

5.2.6.3 Release Acceleration Limits. The maximum allowable g at release is 4.0g and is based on aircraft structural limitations. Some weapons may have maximum release g limitations less than 4.0g and these limitations are based on weapon or safe separation limitations.

5.2.6.4 Aircraft/Bomb Collision. When making a single or multiple bomb release, care must be taken to avoid bunting at release. Since the effective g is less than 1 when in a dive, any further reduction by bunting can cause an aircraft/bomb collision. Various weapons have minimum g restrictions even for ejected release.

5.2.6.5 Bomb Multiple Releases. The stores release program for a bomb run is determined by the pilot's selection of quantity, multiple, and interval. The term quantity (QTY) refers to the total number of bombs to be released in a pattern. Multiple (MULT) refers to the number of bombs that are released simultaneously from the aircraft weapon stations. Interval (INT) is used whenever the quantity being used in the program is greater than the multiple being used. The interval represents the time between weapon releases from the aircraft, in milliseconds, in the manual mode and the ground impact spacing, in feet, between weapons in the computed delivery modes. The combination of QTY and MULT being used in a program determines which of the four possible weapon release sequences is selected. These are:

1. Singles (QTY = 1, MULT = 1) - One weapon is released each time the bomb pickle button is pressed.

2. Pairs (QTY = 2, MULT = 2) - Two weapons are released each time the bomb pickle button is pressed.

3. Ripple Singles (QTY > 1, MULT = 1) - One weapon is released at the interval being used for the releases until the total quantity selected has been released. The pilot is required to press the bomb pickle button throughout the entire release sequence to ensure release of all weapons.

4. Ripple Pairs (QTY > 2, MULT = 2) - Two weapons are released at the interval being used for the releases until the total quantity selected has been released. The pilot is required to press the bomb pickle button throughout the entire release sequence to ensure release of all weapons.

WARNING

Use of step option is not authorized except when firing 2.75-inch and 5.0-inch rockets, AIM-9, and AGM-65E, AGM-65F, and AGM-122 missiles.

NOTE

Singles, pairs, ripple singles, and ripple pairs bomb releases are authorized for all store loads unless specifically restricted in Figure 5-3. The maximum authorized MULT for bomb releases is pairs (MULT = 2). No releases are authorized with MULT greater than 2 (MULT > 2).

5.2.6.6 Rocket Multiple Releases. The rocket release program for a rocket firing run is determined by the pilot's selection of quantity (QTY) and multiple (MULT). Interval for rocket firing is preset and is not available for pilot selection. Quantity and multiple are dependent on the rocket pod single/ripple control switch.

5.2.6.6.1 Single/Ripple Switch Set To Single. The term quantity (QTY) refers to the total number of rockets to be launched. The term multiple (MULT) refers to the number of rockets which will be launched simultaneously and can never be greater than the number of stations loaded with the type of rocket launcher selected. When the same type of rocket pods are loaded on stations 2, 3, 5, and 6, the priority sequence is: 2-6-3-5. The multiple selected can also never be greater than the QTY selected. The six possible combinations are as follows:

1. Singles (QTY = 1, MULT = 1) - One rocket is launched (alternating between wings) each time the bomb pickle button is pressed.

2. Pairs (QTY = 2, MULT = 2) - Two rockets are launched simultaneously (from different rocket launchers, one per wing) each time the bomb pickle button is pressed.

3. Ripple Singles (QTY > 1, MULT = 1) - Rockets are launched consecutively in singles (alternating between wings) until the total quantity selected has been launched. The pilot is required to press the bomb pickle button throughout the entire release sequence to ensure launching of all rockets.

4. Ripple Pairs (QTY > 2, MULT = 2) - Rockets are launched consecutively in pairs (one rocket per wing) until the total quantity selected has been launched. The pilot is required to press the bomb pickle button throughout the entire release sequence to ensure launching of all rockets.

5. Ripples of MULT 3 (QTY > 3, MULT = 3) - Three rockets are launched simultaneously (one launched from each intermediate wing station (2 and 6) and one launched alternately from inboard wing stations (3 and 5) until the total quantity of rockets launched equals the quantity selected, or the launchers on stations 2 and 6 contain no more rockets. If the rocket launchers on stations 2 and 6 have been emptied, and the quantity of rockets launched does not equal the quantity selected, then the aircraft releases the remaining rockets (stations 3 and 5) in the ripple pairs mode, until the quantity selected has been launched. The pilot is required to press the bomb pickle button throughout the entire release sequence to ensure launching of all rockets.

6. Ripples of MULT 4 (QTY > 4, MULT = 4)- Rockets are launched consecutively, four at a time (one from each rocket launcher), until the total quantity selected has been launched. The pilot is required to press the bomb pickle button throughout the entire release sequence to ensure launching of all rockets.

WARNING

Only MULT settings of 1 or 2 can be selected with LAU-61 or LAU-68 rocket launchers.

NOTE

- LAU-61 and LAU-68 2.75 inch rocket pods can not be selected simultaneously.

- During aircraft controlled ripple releases (launcher set to singles) the interval between rockets from a single pod is 140 ms, interval between rockets from different pods is 110 ms. The pilot is required to press the bomb pickle button throughout the entire release sequence to ensure launching of all rockets. Altitude lost during the firing sequence should be considered when planning minimum release altitudes. The release sequence can be up to 8.25 seconds long (e.g. quantity 76, multiple 1 with 4 LAU-61's loaded).

- It is not uncommon to experience hung rockets when using aircraft controlled ripples (pods set to single). The propensity for 5.0 inch rockets fired from LAU-10 launchers to hang is greater than that of 2.75 inch rockets from either LAU-61 or LAU-68 launchers.

- With the Single/Ripple switch set to ripple, the firing interval is 40ms for LAU-61 and LAU-68 launchers, and 95ms for LAU-10 launchers.

5.2.6.6.2 Single/Ripple Switch Set To Ripple. The term QTY refers to the total number of rocket launchers from which rockets will be launched and can never be greater than the total number of rocket launchers available of the type selected. The term MULT refers to the total number of rocket launchers from which

rockets will be launched simultaneously and can never be greater than the number of stations loaded with the type of rocket launcher selected. The MULT selected can never be greater than the QTY selected. The priority sequence when the same type rocket pods are loaded on stations 2, 3, 5, and 6 is: 2-6-3-5. The pilot is required to press the bomb pickle button throughout the entire release sequence to ensure launching of all rockets.

WARNING

Only MULT settings of 1 or 2 can be selected with LAU-61 or LAU-68 rocket launchers.

5.2.6.7 Minimum Release Interval (MRI). The SMS controls MRI for all AUTO, CCIP, and DSL deliveries. Manual release modes allow for manual insertion of release interval in milliseconds. The minimum intervalometer setting for each store type is provided in Figure 5-3 (MIN INT FOR AUTO, CCIP, DSL). DIR and DSL(1) delivery modes allow separation of stores in unsafe release sequences and at release intervals below the established MRIs.

WARNING

- In the DSL(1) mode, a maximum of two stations may be selected. The two stations selected must meet these conditions:
  1. The two stations selected must be symmetric to each other (e.g., 1 and 7)
  2. The two stations selected must be loaded with the same store type.

WARNING

- In the DIR mode, the pilot can select release intervals below the established safe minimum interval for release; therefore, the minimum release intervals in Figure 5-3 General Note J must be strictly adhered to. Selection of more than one type of store for a planned release is not authorized.

- Use of incorrect SMC codes to decrease bomb spacing is prohibited. This will result in invalid ballistics and may create a hazardous release condition.

Refer to NWP 3-22.5-AV8B, Vol. I for a more detailed description of AV-8B aircraft delivery modes.

5.2.6.8 Staggered Intervals. Bomb spacing at ground impact is determined by the foot spacing selected by the pilot when using the computed delivery modes or the intervalometer setting when using the DSL mode. Actual weapon release intervals are determined by the mission computer and SMS based on the flight conditions (airspeed, dive angle, g's) and the pilot selected spacing/interval when delivering Mk 81 with Mk 14 high drag fin, Mk 82 with Mk 15 high drag fin, Mk 77, and Mk 20 bombs from parent stations in the ripple singles or ripple pairs mode. The actual release interval is not the same as the pilot selected interval and varies from station to station. For the Mk 81 with Mk 14 high drag fin, Mk 82 with Mk 15 high drag fin, Mk 77, and Mk 20 the release interval varies with airspeed as depicted in Figure 5-2.

This variable release interval is necessary because wing recoil and pylon cantilever effects results in differing ejection velocities between parent wing stations. These effects will cause uneven bomb spacing at weapon impact if they are not compensated for. The staggered release intervals result in a bomb spacing at impact, equal to the spacing selected by the pilot using foot spacing or intervalometer setting. Compensation is provided automatically and cannot be controlled or altered by the pilot.

Airspeed Range (KCAS)	Outboard to Inboard Interval (milliseconds)	Inboard to Intermediate Interval (milliseconds)
Vmin to 319	192	30
312 to 351	186	30
344 to 383	180	30
376 to 415	174	30
408 to 447	166	30
440 to 479	160	30
472 to 511	154	30
504 to 543	148	30
536 to 550	142	30

Figure 5-2. Mk 81/82 HD MRI'S

5.2.7 Mixed Stores Loading. For the purpose of this discussion, a mixed store loading is any store loading which consists of more than a single store type, and will be referred to as a mixed load in this chapter. Bomb bodies with different fin store loads (e.g., Mk 82 CON FIN/LD /HD) are considered different store types.

Allowable mixed loads for the AV-8B aircraft are specified via the mixed store loading symbol, or specific instructions in the Notes/Remarks column for the primary store to be carried. The symbol is a numbered square, [#] . There are several mixed store loading symbols depicted in Figure 5-3. Each symbol contained in a store load on a particular page of Figure 5-3 is explained at the top of that page. If a symbol is contained in a store station column for a given store load, then a mixed store may be loaded on that station provided the particular mixed store loading symbol description is adhered to; or that station may be left empty. If a symbol is not contained in a store station column for a given store load and no exceptions are noted in the Notes/Remarks column, no store of any type (similar or mixed) may be loaded on that station for that load.

WARNING

Only those multiple store loads shown in Figure 5-3 are authorized. Loading stores in a store load that is not shown or loading stores on a station that is shown empty (no store or mixed store loading symbol displayed) is not authorized. Such loadings will result in unsafe weapon releases.

NOTE

Loads with stores carried adjacent to fuel tanks are treated differently. If a store is authorized for carriage/release adjacent to a fuel tank, specific lines will be included which show the store loads authorized with fuel tanks. The loading of stores adjacent to fuel tanks in any store load not specifically shown is prohibited.

When planning a mixed stores load, perform the following steps:

1. Determine the primary store to be carried.

2. Determine the secondary store(s) to be carried.

3. Look in the store loads contained in Figure 5-3 for the primary store and determine which authorized store load will be used.

4. Check the mixed store loading symbols to determine which mixed store loads, if any, are authorized with the primary load.

5. Look in the store loads in Figure 5-3 for the secondary store(s). Verify that the desired secondary store(s) store load have mixed store loading symbols and that these symbols allow loading of the primary store(s) with the secondary store.

6. Adhere to the most restrictive carriage limitations of either the primary or secondary loads.

7. If a particular store load is found to be unauthorized, check to see if the desired load can be carried in a different store load (see example 2).

The examples that follow illustrate the method used to determine whether or not a mixed load is authorized. For the purposes of this text the term ''parent station store'' is defined to mean any single store loaded on the BRU-36A/A rack. Missiles are considered parent station stores.

Example 1: The desired aircraft weapon load is a Mk 83/BSU-85 high drag bomb on stations 2, 3, 5, and 6 (a total of four Mk 83's), and an AIM-9 Sidewinder on stations 1 and 7.

Step 1:	Determine the weapon priority. The Mk 83's will be the primary store type with the Sidewinders as the secondary store type.
Step 2:	Turn to page 5-40 for Mk 83/ BSU-85 high drag bombs and look for a line number that shows Mk 83s on stations 2, 3, 5, and 6 with a mixed load symbol on stations 1 and 7. Line 1 shows the desired store load, and that Note 1 allows the carriage/release of AIM-9 Sidewinders on stations 1 and 7.
Step 3:	Turn to the page 5-58 for AIM-9 Sidewinders and look for a line number that shows AIM-9s on stations 1 and 7 with a mixed load symbol on stations 2, 3, 5, and 6. Line 2 shows the desired store load and that Note 2 allows the carriage of Mk 83s on stations 2, 3, 5, and 6.
Step 4:	Steps 2 and 3 have determined that the desired store load is authorized. Read all of the notes and limitations associated with both store types and abide by the most restrictive.

Example 2: The desired aircraft weapon load is Maverick missiles on stations 2 and 6 and a Mk 82/BSU-86 high drag bomb on stations 1, 3, 5, and 7, (a total of four Mk 82s).

Step 1:	Determine the weapon priority. The Mavericks will be the primary store type with the Mk 82's as the secondary store type.
Step 2:	Turn to page 5-62 for Maverick and see that line 3 shows the desired store load and that Notes 1 and 2 allow the carriage of Mk 82's on stations 1, 3, 5, and 7.

Step 3: Turn to page 5-32 for Mk 82/ BSU-86 high drag and see that a line does not exist for Mk 82s on stations 1, 3, 5, and 7 with a mixed load symbol on stations 2 and 6. Therefore this store load is not authorized.

Step 4: Repeat the process for a store load with Mavericks carried on stations 3 and 5 and a Mk 82/ BSU-86 high drag on each of stations 1, 2, 6, and 7. This new store load is authorized and will allow us to carry the desired quantity of each store type.

Example 3: The desired weapon aircraft load is a LAU-10 rocket pod with 5.0 inch rockets on station 2, a SUU-25 flare pod on station 6, AIM-9M Sidewinders on stations 1 and 7 and an ITER loaded with Mk 82/BSU-86 high drag bombs on stations 3 and 5.

Step 1: Determine the weapon priority. The Mk 82/BSU-86 bombs are the primary store type with the LAU-10, SUU-25 and Sidewinders as secondary stores.

Step 2: Turn to page 5-35 for Mk 82/ BSU-86 high drag bombs on ITERs and find that line 23 allows us to carry ITERs with Mk 82/BSU-86 high drag bombs on stations 3 and 5; but, observe we can only carry a total of four bombs. Also see that Note 1 allows the carriage of LAU-10 on station 2, a SUU-25 on station 6 and Sidewinders on stations 1 and 7.

Step 3: Turn to page 5-55 for LAU-10s and find that line 5 allows us to carry a LAU-10 on station 2, that Note 2 allows us to carry an ITER load of Mk 82/BSU-86 bombs on stations 3 and 5, and that Note 1 allows us to carry Sidewinders on stations 1 and 7 and a SUU-25 on station 6.

Step 4: Turn to page 5-56 for SUU-25 and find that line 2 allows us to carry a SUU-25 on station 6, Note 2 allows ITERs with Mk 82/BSU-86 bombs on stations 3 and 5, and allows a LAU-10 on station 2. Note 1 allows Sidewinders on stations 1 and 7.

Step 5: Turn to page 5-58 for AIM-9 sidewinders and see that line 2 allows Sidewinders on stations 1 and 7, and that Note 2 allows the carriage of a LAU-10 on stations 2, a SUU-25 on station 6 and ITERs with Mk 82/BSU-86 bombs on stations 3 and 5.

Step 6: The remarks column for LAU-10's has a caution that says ''Some loadings on this sheet may exceed NATOPS takeoff asymmetry limits''. From chapter 1 we find that a loaded LAU-10 D/A weighs 688 pounds and a SUU-25 F/A Dispenser weighs 486 pounds. This results in a takeoff asymmetry of 25,753 inch-pounds which is within the takeoff asymmetry limit listed in chapter 4 of the NATOPS for STO/CTO.

Step 7: The desired store load has now been determined to be authorized. Read all the notes and limitations associated with each store type and abide by the most restrictive.

5.3 JETTISON

Jettison can be accomplished via either the emergency jettison button or the selective jettison button. The applicable jettison button must be held pressed until the release sequence is completed. The release interval is 50 milliseconds. Stations 1, 4, and 7 receive the first release pulse, stations 2 and 6 receive the second release pulse, and stations 3 and 5 receive the third release pulse. Jettison modes available to the pilot are emergency jettison, combat jettison, station jettison, stores jettison, and fuel jettison. Refer to NWP 3-22.5-AV8B, Vol. I for a more detailed explanation of the AV-8B jettison system and jettison modes.

WARNING

- Since unarmed releases (safe jettison) of mechanically fuzed bombs cannot be assured, store jettison should always be performed above an altitude and in a delivery that will allow safe escape should the fuze inadvertently arm.

- Maximum authorized number of stations that may be simultaneously jettisoned using selective jettison is two.

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AV-8B

MK 81 CONFIN	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 81 MAU-94/B CONICAL FIN	1	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	0.0 TO 5.5	0.5 TO 4.0 SNGLS RIPP SNGLS 0.7 TO 4.0 PAIRS RIPP PAIRS FROM STA.3 & 5	1.0	NA	60°/ 0° 45°/ 0° PAIRS RIPP PAIRS FROM STA 3 & 5	40MS RIPP SNGLS 80MS RIPP PAIRS 10MS RIPP SNGLS NA	SEE GENERAL NOTES. SPECIFIC NOTE: 7. **WARNING** MAXIMUM DIVE ANGLE IS 45° WHEN BOMBS ARE RELEASED IN PAIRS FROM STATIONS 3 & 5. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 8, 9, & 10.
	2	[1]	●	●	[1]	●	●	[1]												
	3	●	●	[2]	[1]	[2]	●	●												
	4	●	[1]	●	[1]	●	[1]	●												
	5	●	[2]	[2]	[1]	[2]	[2]	●												
	6	[1]	●	[2]	[1]	[2]	●	[1]												
	7	[1]	[2]	●	[1]	●	[2]	[1]												
	8	●	[1]	[2]	[1]	[2]	[1]	[1]												
	9	[1]	●	[2]	[1]	[2]	[1]	[1]												
	10	[1]	[1]	●	[1]	[1]	[1]	[1]												

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Figure 5-3. External Stores Limitations (Sheet 1 of 66)

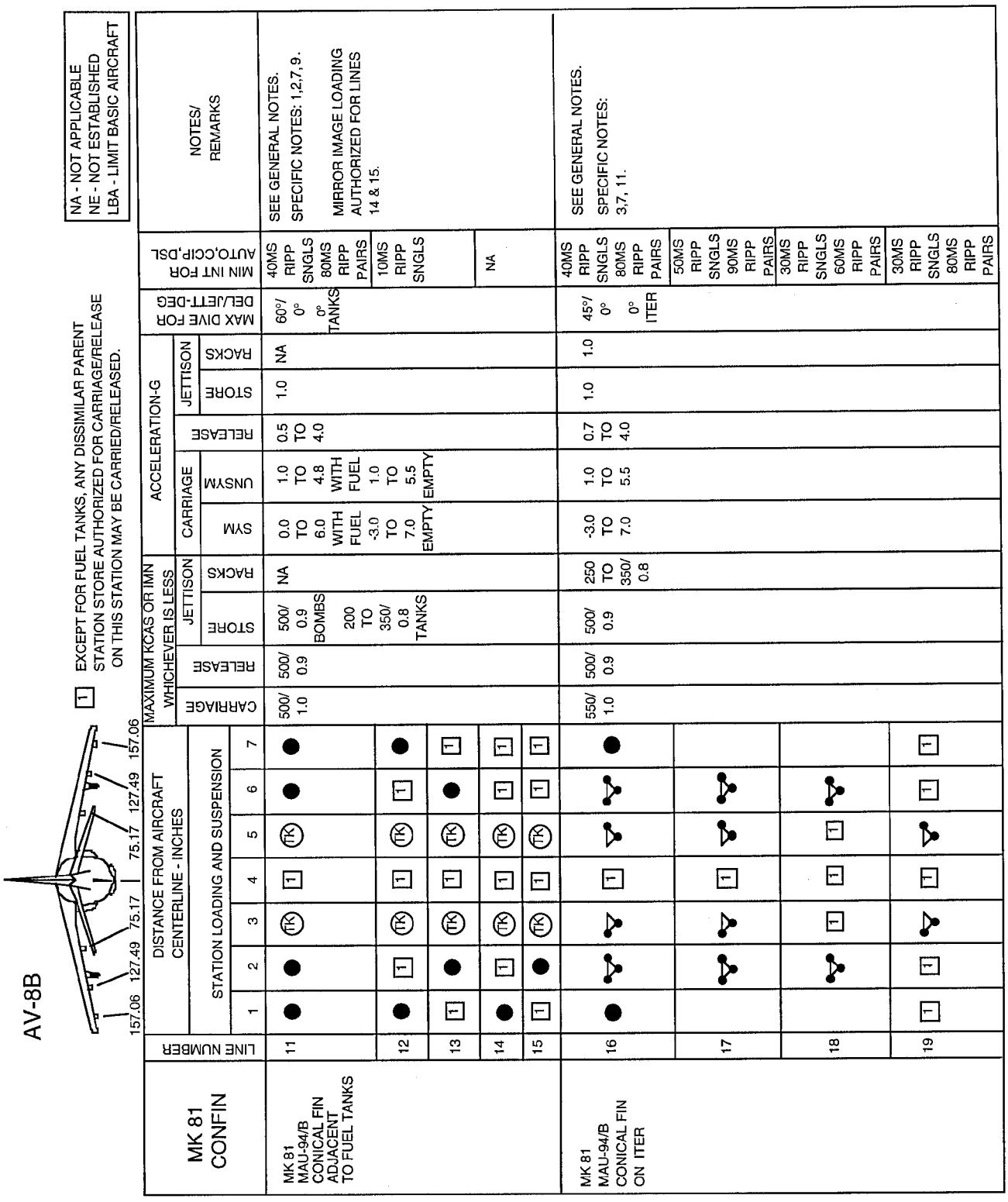

Figure 5-3. External Stores Limitations (Sheet 2 of 66)

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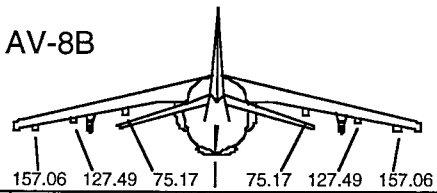

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 81 MK 14 (LOW DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION							MAXIMUM KCAS OR IMN WHICHEVER IS LESS				ACCELERATION-G					MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
									CARRIAGE	RELEASE	JETTISON		CARRIAGE		RELEASE	JETTISON				
		1	2	3	4	5	6	7			STORE	RACKS	SYM	UNSYM		STORE	RACKS			
MK 81 MK 14 MOD 1, 2 LOW DRAG	1	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0 SNGLS RIPP SNGLS 0.7 TO 4.0 PAIRS RIPP PAIRS FROM STA.3 & 5	1.0	NA	60°/ 0° 45°/ 0° PAIRS RIPP PAIRS FROM STA 3 & 5	40MS RIPP SNGLS 80MS RIPP PAIRS 10MS RIPP SNGLS NA	SEE GENERAL NOTES. SPECIFIC NOTES: 4,7. **WARNING** MAXIMUM DIVE ANGLE IS 45° WHEN BOMBS ARE RELEASED IN PAIRS FROM STATIONS 3 & 5. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 7, 8, & 9
	2	[1]	●	●	[1]	●	●	[1]												
	3	●	●	[2]	[1]	[2]	●	●												
	4	●	[2]	[2]	[1]	[2]	[2]	●												
	5	[1]	●	[2]	[1]	[2]	●	[1]												
	6	[1]	[2]	●	[1]	●	[2]	[1]												
	7	●	[1]	[2]	[1]	[2]	[1]	[1]												
	8	[1]	●	[2]	[1]	[2]	[1]	[1]												
	9	[1]	[1]	●	[1]	[1]	[1]	[1]												
MK 81 MK 14 MOD 1, 2 LOW DRAG ADJACENT TO FUEL TANKS	10	●	●	(TK)	[1]	(TK)	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 4.0	1.0 1.0 TANKS	NA	60°/ 0° 0° TANKS	40MS RIPP SNGLS 80MS RIPP PAIRS 10MS RIPP SNGLS NA	SEE GENERAL NOTES. SPECIFIC NOTES: 1,2,4,7,9. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 13 AND 14.
	11	●	[1]	(TK)	[1]	(TK)	[1]	●												
	12	[1]	●	(TK)	[1]	(TK)	●	[1]												
	13	●	[1]	(TK)	[1]	(TK)	[1]	[1]												
	14	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

Figure 5-3. External Stores Limitations (Sheet 3 of 67)

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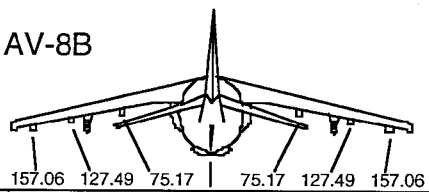

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 81 MK 14 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	ACCELERATION-G CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 81 MK 14 MOD 1,2 HIGH DRAG	1	●	●	●	[1]	●	●	●	550/ 1.0	500/ 0.9	500/ 0.9	NA	-3.0 TO 7.0	1.0 TO 5.5	0.8 TO 4.0	1.0	NA	30°/ 0°	60 MS RIPP SNGLS 130 MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 4, 7.
	2	[1]	●	●	[1]	●	●	[1]											30 MS RIPP SNGSL 40 MS RIPP PAIRS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 7, 8, & 9
	3	●	●	[2]	[1]	[2]	●	●											100 MS RIPP SNGLS 210 MS RIPP PAIRS	
	4	●	[2]	[2]	[1]	[2]	[2]	●											10 MS RIPP SNGLS	
	5	[1]	●	[2]	[1]	[2]	●	[1]												
	6	[1]	[2]	●	[1]	●	[2]	[1]												
	7	●	[1]	[2]	[1]	[2]	[1]	[1]												
	8	[1]	●	[2]	[1]	[2]	[1]	[1]											NA	
	9	[1]	[1]	●	[1]	[1]	[1]	[1]												
MK 81 MK 14 MOD 1,2 HIGH DRAG ADJACENT TO FUEL TANKS	10	●	●	(TK)	[1]	(TK)	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.8 TO 4.0	1.0	NA	30°/ 0° 0° TANKS	100MS RIPP SNGLS 210MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 4, 7, 9. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 13 & 14.
	11	●	[1]	(TK)	[1]	(TK)	[1]	●											10MS RIPP SNGLS	
	12	[1]	●	(TK)	[1]	(TK)	●	[1]												
	13	●	[1]	(TK)	[1]	(TK)	[1]	[1]											NA	
	14	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

Figure 5-3. External Stores Limitations (Sheet 4 of 66)

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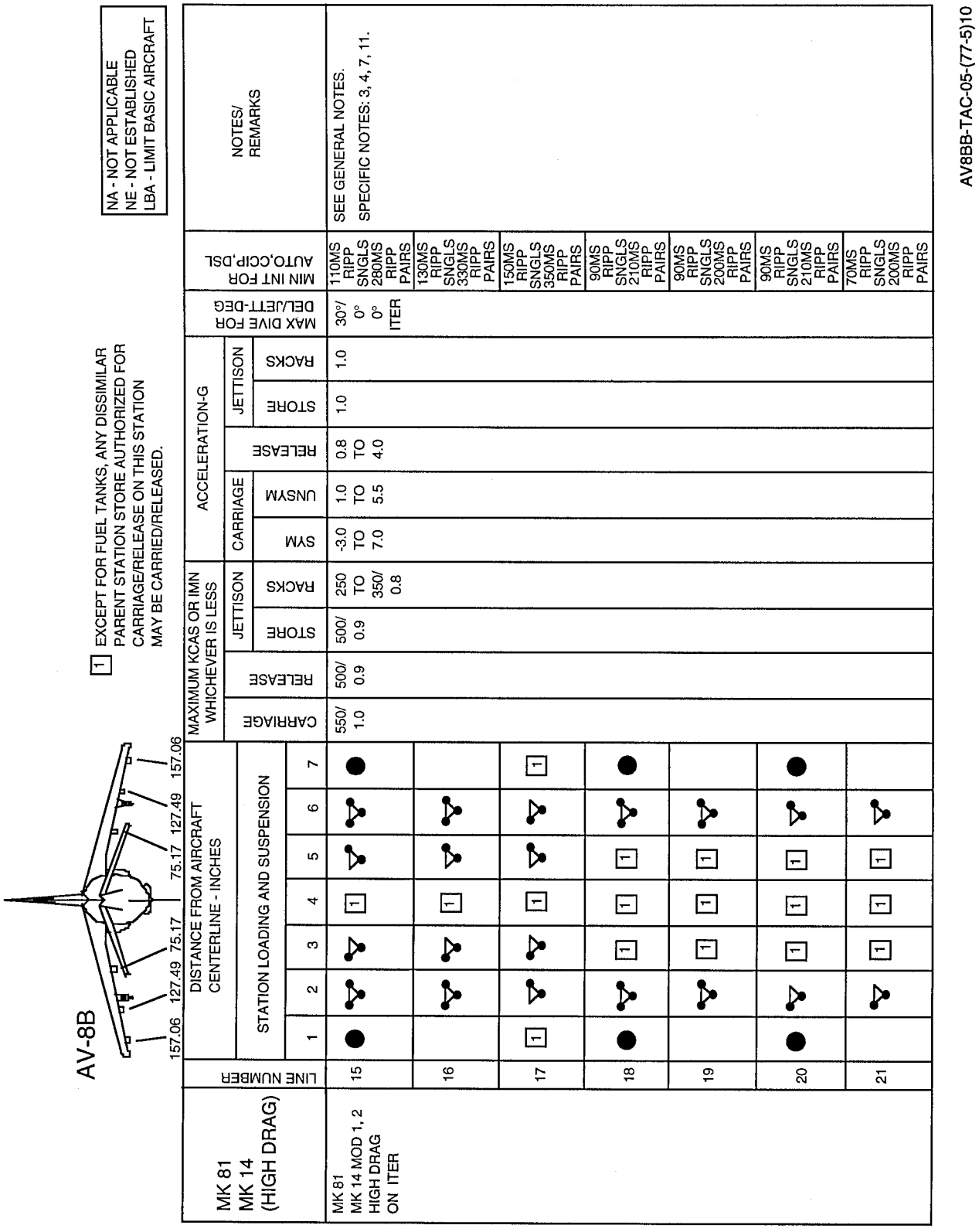

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Figure 5-3. External Stores Limitations (Sheet 5 of 66)

AV-8B

157.06 127.49 75.17 75.17 127.49 157.06

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 81 MK 14 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 81 MK 14 MOD 1,2 HIGH DRAG ON ITER	22	[1]		[1]	[1]	[1]		[1]	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.8 TO 4.0	1.0	1.0	30°/ 0° 0° ITER	80MS RIPP SNGLS 200MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 3, 4, 7, 11.
																			70 MS RIPP SNGLS 200 MS RIPP PAIRS	
	23	[1]	[1]		[1]		[1]	[1]												
MK 81 MK 14 MOD 1,2 HIGH DRAG ON ITER ADJACENT TO FUEL TANKS	24	●		TK	[1]	TK		●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	250 TO 350/ 0.8	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.8 TO 4.0	1.0	1.0	30°/ 0° 0° ITER AND TANKS	90 MS RIPP SNGLS 210 MS RIPP PAIRS	SEE GENERAL NOTES SPECIFIC NOTES: 1, 2, 3, 4, 7, 9, 11.
	25			TK	[1]	TK													70 MS RIPP SNGLS 200 MS RIPP PAIRS	

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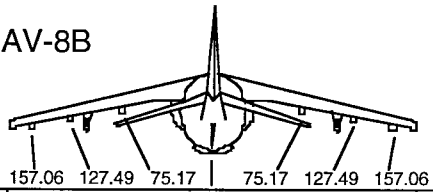
Figure 5-3. External Stores Limitations (Sheet 6 of 66)

AV-8B



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 MAU-93 CONFIN	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	ACCELERATION-G CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 WITH MAU-93/B CONICAL FIN	1	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	NA	60°/ 0°	30MS RIPP SNGLS 60MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 7, 8. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 8, 9, & 10.
	2	[1]	●	●	[1]	●	●	[1]												
	3	●	●	[2]	[1]	[2]	●	●												
	4	●	[1]	●	[1]	●	[1]	●												
	5	●	[2]	[2]	[1]	[2]	[2]	●											10MS RIPP SNGLS	
	6	[1]	●	[2]	[1]	[2]	●	[1]												
	7	[1]	[2]	●	[1]	●	[2]	[1]												
	8	●	[1]	[2]	[1]	[2]	[1]	[1]											NA	
	9	[1]	●	[2]	[1]	[2]	[1]	[1]												
	10	[1]	[1]	●	[1]	[1]	[1]	[1]												
MK 82/BDU-45 OR BLU-111 WITH MAU-93/B CONICAL FIN ADJACENT TO FUEL TANKS	11	●	●	(TK)	[1]	(TK)	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 4.0	1.0	NA	60°/ 0° 0° TANKS	30MS RIPP SNGLS 60MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1,2,7,8,9. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 14 & 15.
	12	●	[1]	(TK)	[1]	(TK)	[1]	●											10MS RIPP SNGLS	
	13	[1]	●	(TK)	[1]	(TK)	●	[1]												
	14	●	[1]	(TK)	[1]	(TK)	[1]	[1]											NA	
	15	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

Figure 5-3. External Stores Limitations (Sheet 7 of 66)

AHR817-77-7-011

1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 MAU-93 CONFIN	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 WITH MAU-93 CONICAL FIN ON ITER	16	●	[1]	[1]	[1]	[1]	[1]	●	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-2.5 TO 5.5	1.0 TO 4.5	0.7 TO 4.0	1.0	1.0	45°/ 0° 0° ITER	40MS RIPP SNGLS 80MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3, 7, 11.
	17		[1]	[1]	[1]	[1]	[1]												50MS RIPP SNGLS 90MS RIPP PAIRS	
	18	[1]	[1]	[1]	[1]	[1]	[1]	[1]					-3.0 TO 7.0	1.0 TO 5.5					60MS RIPP SNGLS 120MS RIPP PAIRS	
	19	●	[1]	[1]	[1]	[1]	[1]	●					-2.5 TO 5.5	1.0 TO 4.5					80MS RIPP SNGLS 150MS RIPP PAIRS	
	20		[1]	[1]	[1]	[1]	[1]													
	21	●	[1]	[1]	[1]	[1]	[1]	●					-3.0 TO 7.0	1.0 TO 5.5						
	22		[1]	[1]	[1]	[1]	[1]												30MS RIPP SNGLS 80MS RIPP PAIRS	
	23	[1]	[1]	[1]	[1]	[1]	[1]	[1]												
	24	[1]	[1]	[1]	[1]	[1]	[1]	[1]												

AV8BB-TAC-05-(77-8)10

Figure 5-3. External Stores Limitations (Sheet 8 of 66)

AV-8B

1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 MAU-93 CONFIN	LINE NUMBER	STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
DISTANCE FROM AIRCRAFT CENTERLINE - INCHES		157.06	127.49	75.17	75.17		127.49	157.06												
MK 82/BDU-45 OR BLU-111 WITH MAU-93 CONICAL FIN ON ITER ADJACENT TO FUEL TANKS	25	●	⊽	(TK)	1	(TK)	⊽	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	250 TO 350/ 0.8	0.0 TO 6.0 WITH FUEL	1.0 TO 4.0 WITH FUEL	0.7 TO 4.0	1.0	1.0	45°/ 0°	80MS RIPP SNGLS 150MS RIPP PAIRS	SEE GENERAL NOTES SPECIFIC NOTES: 1, 2, 3, 7, 9, 11.
	26		⊽	(TK)	1	(TK)	⊽				200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY				0° ITER AND TANKS	30MS RIPP SNGLS 80MS RIPP PAIRS	

AV8BB-TAC-05-(77-9)10

Figure 5-3. External Stores Limitations (Sheet 9 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 BSU-33 CONFIN	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION							MAXIMUM KCAS OR IMN WHICHEVER IS LESS			ACCELERATION-G				MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
		1	2	3	4	5	6	7	CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS			
MK 82/BDU-45 OR BLU-111 WITH BSU-33 CONICAL FIN	1	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	NA	60°/ 0°	30MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 7, 8.
	2	[1]	●	●	[1]	●	●	[1]											60MS RIPP PAIRS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 8, 9, & 10.
	3	●	●	[2]	[1]	[2]	●	●												
	4	●	[1]	●	[1]	●	[1]	●											10MS RIPP SNGLS	
	5	●	[2]	[2]	[1]	[2]	●	●												
	6	[1]	●	[2]	[1]	[2]	●	[1]												
	7	[1]	[2]	●	[1]	●	[2]	[1]											NA	
	8	●	[1]	[2]	[1]	[2]	[1]	[1]												
	9	[1]	●	[2]	[1]	[2]	[1]	[1]												
	10	[1]	[1]	●	[1]	[1]	[1]	[1]												
MK 82/BDU-45 OR BLU-111 WITH BSU-33 CONICAL FIN ADJACENT TO FUEL TANKS	11	●	●	(TK)	[1]	(TK)	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.5 TO 4.0	1.0	NA	60°/ 0°	30MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 7, 8, 9.
	12	●	[1]	(TK)	[1]	(TK)	[1]	●			200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY				0° TANKS	60MS RIPP PAIRS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 14 & 15.
	13	[1]	●	(TK)	[1]	(TK)	●	[1]											10MS RIPP SNGLS	
	14	●	[1]	(TK)	[1]	(TK)	[1]	[1]											NA	
	15	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

AHR817-77-10-011

Figure 5-3. External Stores Limitations (Sheet 10 of 66)

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

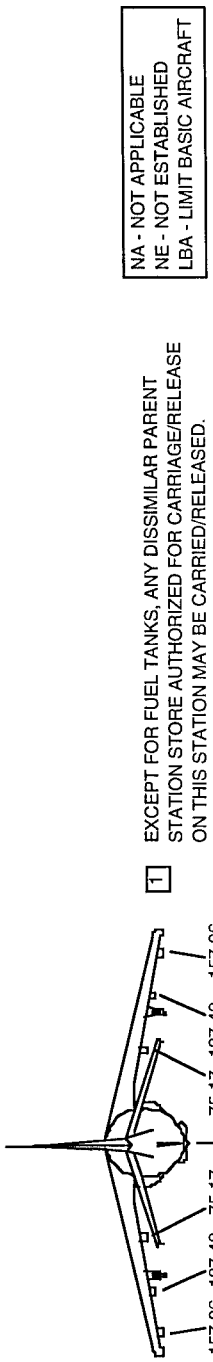
[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

MK 82 OR BLU-111/ BSU-33 CONFIN	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION							MAXIMUM KCAS OR IMN WHICHEVER IS LESS			ACCELERATION-G				MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
		1	2	3	4	5	6	7	CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS	
MK 82/BDU-45 OR BLU-111WITH BSU-33 CONICAL FIN ON ITER	16	●			[1]			●	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-2.5 TO 5.5	1.0 TO 4.5	0.7 TO 4.0	1.0	1.0	45°/ 0° 0° ITER	40MS RIPP SNGLS 80MS RIPP PAIRS
	17				[1]														50MS RIPP SNGLS 90MS RIPP PAIRS
	18	[1]			[1]			[1]					-3.0 TO 7.0	1.0 TO 5.5					60MS RIPP SNGLS 120MS RIPP PAIRS
	19	●			[1]			●					-2.5 TO 5.5	1.0 TO 4.5					30MS RIPP SNGLS 60MS RIPP PAIRS
	20				[1]														
	21	●			[1]			●					-3.0 TO 7.0	1.0 TO 5.5					30MS RIPP SNGLS 70MS RIPP PAIRS
	22				[1]														
	23	[1]			[1]			[1]											30MS RIPP SNGLS 80MS RIPP PAIRS
	24	[1]	[1]		[1]			[1]											

SEE GENERAL NOTES.
SPECIFIC NOTES:
2, 3, 7, 11.

AV8BB-TAC-05-(77-11)10

Figure 5-3. External Stores Limitations (Sheet 11 of 66)



1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 BSU-33 CONFIN	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 WITH BSU-33 CONICAL FIN ON ITER ADJACENT TO FUEL TANKS	25	●	◥	TK	1	TK	◥	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS; 200 TO 350/ 0.8 TANKS	250 TO 350/ 0.8	0.0 TO 6.0 WITH FUEL; -3.0 TO 7.0 EMPTY	1.0 TO 4.0 WITH FUEL; 1.0 TO 5.5 EMPTY	0.7 TO 4.0	1.0	1.0	45°/ 0° 0° ITER AND TANKS	30MS RIPP SNGLS 70MS RIPP PAIRS; 30MS RIPP SNGLS 80MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 3, 7, 9, 11.
	26		◥	TK	1	TK	◥													

AV8BB-TAC-05-(77-12)10

Figure 5-3. External Stores Limitations (Sheet 12 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 MK 15 (LOW DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	RACKS	ACCELERATION-G: CARRIAGE: SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 MK 15 LOW DRAG	1	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	NA	60°/ 0°	30MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 4, 7, 8. MIRROR IMAGE LOADING AUTHORIZED FOR LOADS 7, 8, & 9
	2	[1]	●	●	[1]	●	●	[1]											60MS RIPP PAIRS	
	3	●	●	[2]	[1]	[2]	●	●											10MS RIPP SNGLS	
	4	●	[2]	[2]	[1]	[2]	[2]	●												
	5	[1]	●	[2]	[1]	[2]	●	[1]											NA	
	6	[1]	[2]	●	[1]	●	[2]	[1]												
	7	●	[1]	[2]	[1]	[2]	[1]	[1]												
	8	[1]	●	[2]	[1]	[2]	[1]	[1]												
	9	[1]	[1]	●	[1]	[1]	[1]	[1]												
MK 82/BDU-45 OR BLU-111 MK 15 LOW DRAG ADJACENT TO FUEL TANKS	10	●	●	(TK)	[1]	(TK)	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.5 TO 4.0	1.0	NA	60°/ 0° 0° TANKS	30MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 4, 7, 8, 9. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 13 & 14.
	11	●	[1]	(TK)	[1]	(TK)	[1]	●			200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY					60MS RIPP PAIRS	
	12	[1]	●	(TK)	[1]	(TK)	●	[1]											10MS RIPP SNGLS	
	13	●	[1]	(TK)	[1]	(TK)	[1]	[1]											NA	
	14	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

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Figure 5-3. External Stores Limitations (Sheet 13 of 66)

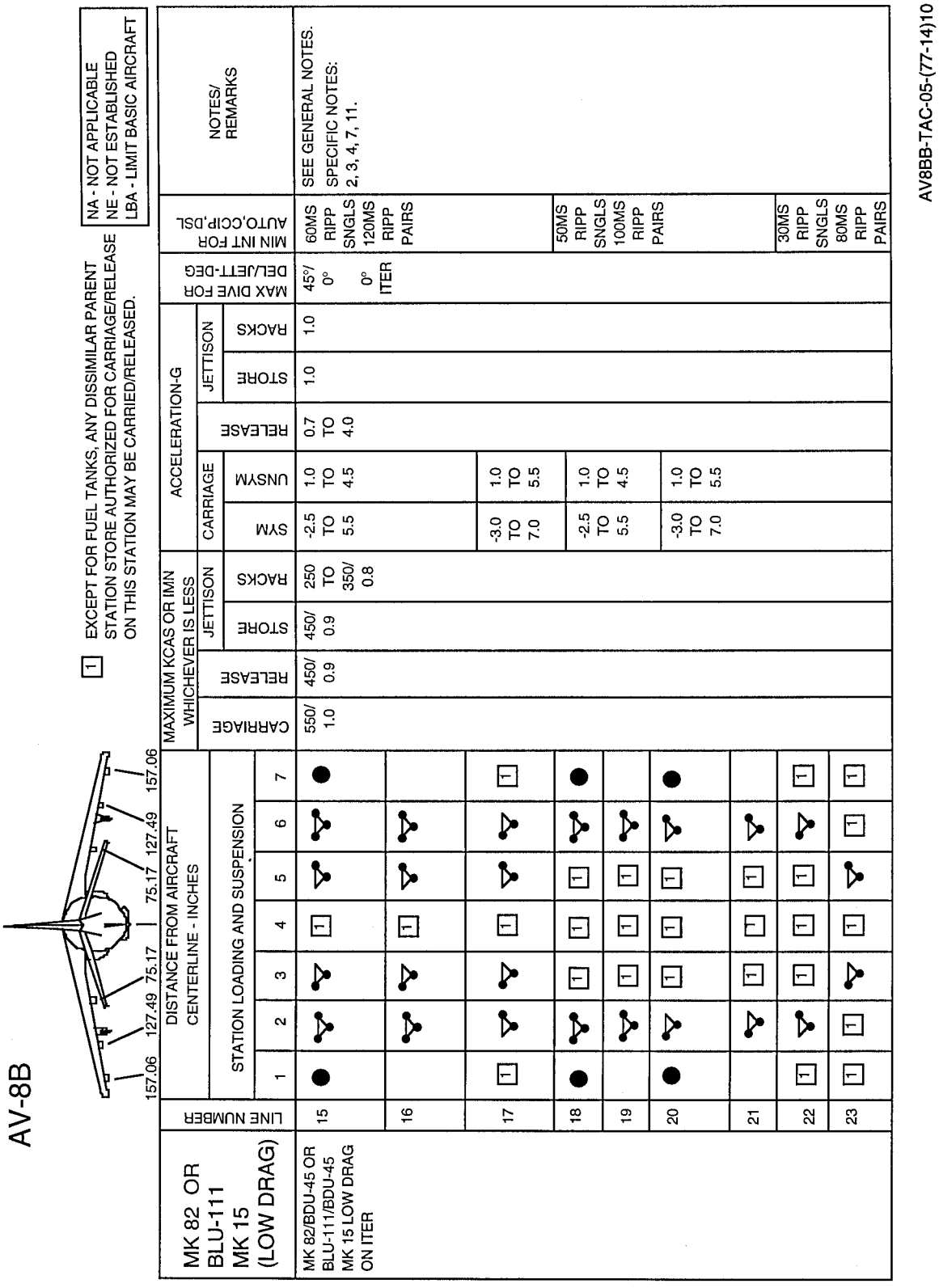

Figure 5-3. External Stores Limitations (Sheet 14 of 66)

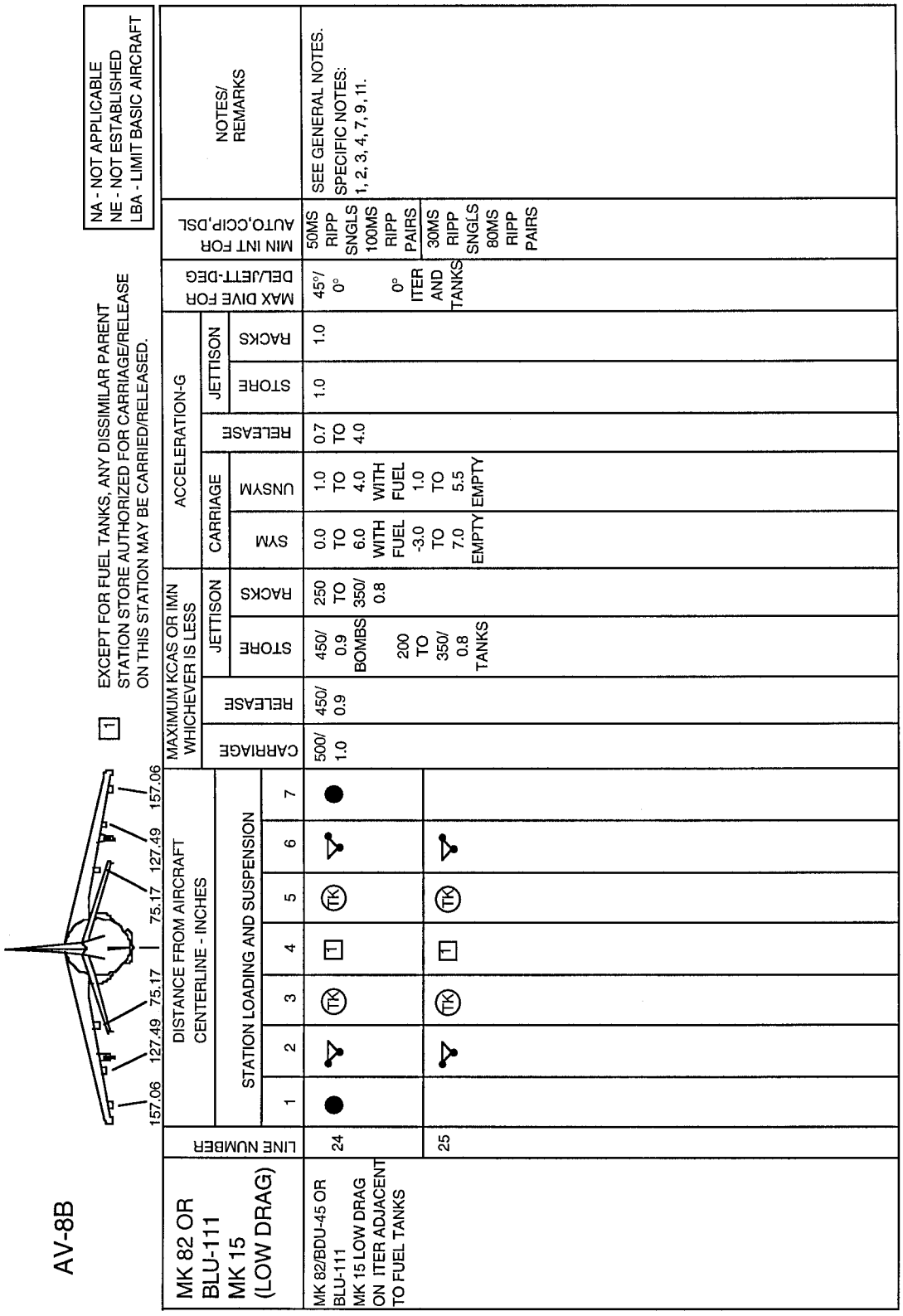

Figure 5-3. External Stores Limitations (Sheet 15 of 66)

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AV-8B

MK 82 OR BLU-111 MK 15 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	STORE JETTISON	RACKS	ACCELERATION-G: CARRIAGE SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 MK 15 HIGH DRAG	1	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.8 TO 4.0	1.0	NA	30°/ 0°	50MS RIPP SNGLS 110MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 4, 7, 8. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 7, 8, & 9.
	2	[1]	●	●	[1]	●	●	[1]											30 MS RIPP SNGLS 40 MS RIPP PAIRS	
	3	●	●	[2]	[1]	[2]	●	●											90 MS RIPP SNGLS 200 MS RIPP PAIRS	
	4	●	[2]	[2]	[1]	[2]	[2]	●											10MS RIPP SNGLS	
	5	[1]	●	[2]	[1]	[2]	●	[1]												
	6	[1]	[2]	●	[1]	●	[2]	[1]												
	7	●	[1]	[2]	[1]	[2]	[1]	[1]											NA	
	8	[1]	●	[2]	[1]	[2]	[1]	[1]												
	9	[1]	[1]	●	[1]	[1]	[1]	[1]												

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Figure 5-3. External Stores Limitations (Sheet 16 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 MK 15 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 MK 15 HIGH DRAG ADJACENT TO FUEL TANKS	10	●	●	(TK)	[1]	(TK)	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.8 TO 4.0	1.0	NA	30°/ 0° 0° TANKS	90MS RIPP SNGLS 220MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 4, 7, 8, 9. MIRROR IMAGE LOADS AUTHORIZED FOR LINES 13 & 14.
	11	●	[1]	(TK)	[1]	(TK)	[1]	●			200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY					10MS RIPP SNGLS	
	12	[1]	●	(TK)	[1]	(TK)	●	[1]											NA	
	13	●	[1]	(TK)	[1]	(TK)	[1]	[1]												
	14	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

AV8BB-TAC-05-(77-17)10

Figure 5-3. External Stores Limitations (Sheet 17 of 66)

AV-8B

157.06 127.49 75.17 75.17 127.49 157.06

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 MK 15 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION							MAXIMUM KCAS OR IMN WHICHEVER IS LESS		ACCELERATION-G				MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
		1	2	3	4	5	6	7	CARRIAGE	RELEASE	CARRIAGE		RELEASE	JETTISON			
											SYM	UNSYM		STORE	RACKS		
MK 82/BDU-45 OR BLU-111 MK 15 HIGH DRAG ON ITER	13	●			[1]			●	550/ 1.0	500/ 0.9	-2.5 TO 5.5	1.0 TO 4.5	0.8 TO 4.0	1.0	1.0	30°/ 0° 0° ITER	110MS RIPP SNGLS 280MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3, 4, 7, 11.
	14				[1]												130MS RIPP SNGLS 330MS RIPP PAIRS	
	15	[1]			[1]	[1]		[1]									90MS RIPP SNGLS 210MS RIPP PAIRS	
	16	●			[1]	[1]		●										
	17				[1]	[1]											90MS RIPP SNGLS 200MS RIPP PAIRS	
	18	●			[1]	[1]		●										
	19				[1]	[1]												
MK 82/BDU-45 OR BLU-111 MK 15 HIGH DRAG ON ITER ADJACENT TO FUEL TANK	20	●		(TK)	[1]	(TK)		●	500/ 0.9	500/ 0.9	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.8 TO 4.0	1.0	1.0	30°/ 0° 0° ITER & TANKS	90MS RIPP SNGLS 210MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 3, 4, 7, 9, 11.
	21			(TK)	[1]	(TK)					-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY					70MS RIPP SNGLS 200MS RIPP PAIRS	

AV8BB-TAC-05-(77-18)10

Figure 5-3. External Stores Limitations (Sheet 18 of 66)

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AV-8B

MK 82 OR BLU-111 BSU-86 (LOW DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 BSU-86/B LOW DRAG	1	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93			-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0			60°/ 0°	30MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 4, 7, 8. MIRROR IMAGE LOADING AUTHORIZED FOR LOADS 8, 9, & 10
	2	[1]	●	●	[1]	●	●	[1]											60MS RIPP PAIRS	
	3	●	●	[2]	[1]	[2]	●	●												
	4	●	[1]	●	[1]	●	[1]	●											10MS RIPP SNGLS	
	5	●	[2]	●	[1]	[2]	[2]	●												
	6	[1]	●	[2]	[1]	[2]	●	[1]											NA	
	7	[1]	[2]	●	[1]	●	[2]	[1]												
	8	●	[1]	[2]	[1]	[2]	[1]	[1]												
	9	[1]	●	[2]	[1]	[2]	[1]	[1]												
	10	[1]	[1]	●	[1]	[1]	[1]	[1]												
MK 82/BDU-45 OR BLU-111 BSU-86/B LOW DRAG ADJACENT TO FUEL TANKS	11	●	●	(TK)	[1]	(TK)	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.5 TO 4.0	1.0	NA	60°/ 0° 0° TANKS	30MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 4, 7, 8, 9. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 14 & 15.
	12	●	[1]	(TK)	[1]	(TK)	[1]	●			200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY					60MS RIPP PAIRS	
	13	[1]	●	(TK)	[1]	(TK)	●	[1]											10MS RIPP SNGLS	
	14	●	[1]	(TK)	[1]	(TK)	[1]	[1]											NA	
	15	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

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Figure 5-3. External Stores Limitations (Sheet 19 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 BSU-86 (LOW DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	RACKS	ACCELERATION-G: CARRIAGE: SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 BSU-86/B LOW DRAG ON ITER	16	●			[1]			●	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-2.5 TO 5.5	1.0 TO 4.5	0.7 TO 4.0	1.0	1.0	45°/ 0° 0° ITER	40MS RIPP SNGLS 80MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3, 4, 7, 11. BSU-86 ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION.
	17				[1]														50MS RIPP SNGLS 90MS RIPP PAIRS	PARENT STATION STORES NOT AUTHORIZED FOR
	18	[1]			[1]			[1]					-3.0 TO 7.0	1.0 TO 5.5					60MS RIPP SNGLS 120MS RIPP PAIRS	IN-FLIGHT SELECTABLE PILOT OPTION.
	19	●		[1]	[1]	[1]		●					-2.5 TO 5.5	1.0 TO 4.5					30MS RIPP SNGLS 60MS RIPP PAIRS	
	20			[1]	[1]	[1]														
	21	●		[1]	[1]	[1]		●					-3.0 TO 7.0	1.0 TO 5.5					30MS RIPP SNGLS 70MS RIPP PAIRS	
	22			[1]	[1]	[1]													30MS RIPP SNGLS 80MS RIPP PAIRS	
	23	[1]		[1]	[1]	[1]		[1]												
	24	[1]	[1]		[1]			[1]												

AV8BB-TAC-05-(77-20)10

Figure 5-3. External Stores Limitations (Sheet 20 of 66)

AV-8B

1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 BSU-86 (LOW DRAG)	LINE NUMBER	STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 BSU-86/B ON ITER ADJACENT TO FUEL TANKS LOW DRAG	25	●	▽	TK	1	TK	▽	●	157.06 127.49 75.17 75.17 127.49 157.06	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	250 TO 350/ 0.8	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.7 TO 4.0	1.0	1.0	45°/ 0° 0° ITER AND TANKS	30MS RIPP SNGLS 70MS RIPP PAIRS 30MS RIPP SNGLS 80MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 3, 7, 9, 11. BSU-86 ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION. PARENT STATION STORES NOT AUTHORIZED FOR IN-FLIGHT SELECTABLE PILOT OPTION.
	26		▽	TK	1	TK	▽														

AV8BB-TAC-05-(77-21)10

Figure 5-3. External Stores Limitations (Sheet 21 of 66)

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AV-8B

MK 82 OR BLU-111 BSU-86 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 BSU-86/B HIGH DRAG	1	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.8 TO 4.0	1.0	NA	30°/ 0°	50MS RIPP SNGLS 110MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 4, 7, 8.
	2	[1]	●	●	[1]	●	●	[1]											30 MS RIPP SNGLS 40 MS RIPP PAIRS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 7, 8, & 9.
	3	●	●	●	[2]	[2]	●	●											90 MS RIPP SNGLS 200 MS RIPP PAIRS	
	4	●	[2]	[2]	[1]	[2]	[2]	●											10MS RIPP SNGLS	
	5	[1]	●	[2]	[1]	[2]	●	[1]												
	6	[1]	[2]	●	[1]	●	[2]	[1]											NA	
	7	●	[1]	[2]	[1]	[2]	[1]	[1]												
	8	[1]	●	[2]	[1]	[2]	[1]	[1]												
	9	[1]	[1]	●	[1]	[1]	[1]	[1]												

AHR817-77-22-011

Figure 5-3. External Stores Limitations (Sheet 22 of 66)

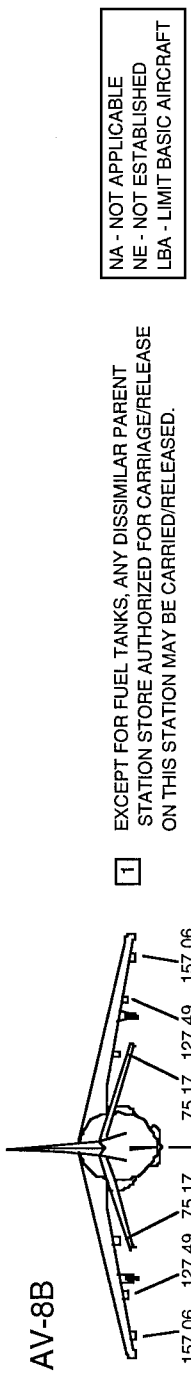
[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 BSU-86 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	RACKS	ACCELERATION-G: CARRIAGE: SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 BSU-86/B HIGH DRAG ADJACENT TO FUEL TANKS	10	●	●	(TK)	[1]	(TK)	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0. TO 4.0	1.0	NA	30°/ 0°	90MS RIPP SNGLS 220MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 4, 7, 8, 9.
	11	●	[1]	(TK)	[1]	(TK)	[1]	●			200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY				0° TANKS	10MS RIPP SNGLS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 13 & 14.
	12	[1]	●	(TK)	[1]	(TK)	●	[1]												
	13	●	[1]	(TK)	[1]	(TK)	[1]	[1]											NA	
	14	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

AV8B-TAC-05-(77-23)10

Figure 5-3. External Stores Limitations (Sheet 23 of 66)



1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

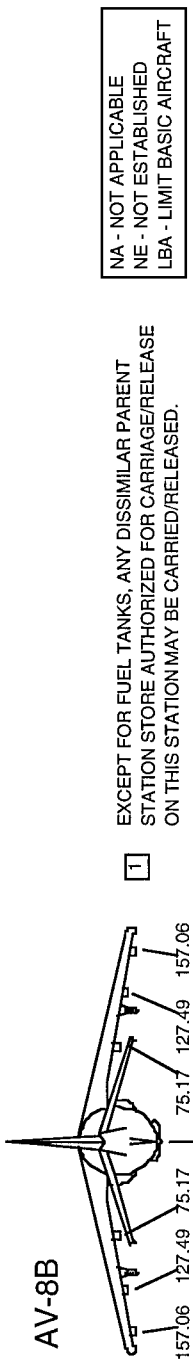
NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 BSU-86 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	RACKS	ACCELERATION-G: CARRIAGE: SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 BSU-86/B HIGH DRAG ON ITER	15	●			1			●	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-2.5 TO 5.5	1.0 TO 4.5	0.8 TO 4.0	1.0	1.0	30°/ 0°	110MS RIPP SNGLS 280MS RIPP PAIRS
	16				1													0° ITER	130MS RIPP SNGLS 330MS RIPP PAIRS
	17	1			1			1					-3.0 TO 7.0	1.0 TO 5.5					150MS RIPP SNGLS 350MS RIPP PAIRS
	18	●			1	1		●					-2.5 TO 5.5	1.0 TO 4.5					90MS RIPP SNGLS 210 RIPP PAIRS
	19				1	1													90MS RIPP SNGLS 200MS RIPP PAIRS
	20	●			1	1		●					-3.0 TO 7.0	1.0 TO 5.5					90MS RIPP SNGLS 210MS RIPP PAIRS
	21				1	1													70MS RIPP SNGLS 200MS RIPP PAIRS

SEE GENERAL NOTES.
SPECIFIC NOTES: 2, 3, 4, 7, 8, 11.
BSU-86 ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION.
PARENT STATION STORES NOT AUTHORIZED FOR IN-FLIGHT SELECTABLE PILOT OPTION.

AV8BB-TAC-05-(77-24)10

Figure 5-3. External Stores Limitations (Sheet 24 of 66)



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 82 OR BLU-111 BSU-86 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	RACKS	ACCELERATION-G: CARRIAGE: SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 82/BDU-45 OR BLU-111 BSU-86/B HIGH DRAG ON ITER	22	[1]		[1]	[1]			[1]	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.8 TO 4.0	1.0	1.0	30°/ 0° 0° ITER	80MS RIPP SNGLS 200MS RIPP PAIRS 70MS RIPP SNGLS 200MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3, 4, 7, 8, 11. BSU-86 ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION. PARENT STATION STORES NOT AUTHORIZED FOR IN-FLIGHT SELECTABLE PILOT OPTION.
	23	[1]	[1]		[1]		[1]	[1]												
MK 82/BDU-45 OR BLU-111 BSU-86/B HIGH DRAG ON ITER ADJACENT TO FUEL TANKS	24	●		TK	[1]	TK		●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	250 TO 350/ 0.8	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.8 TO 4.0	1.0	1.0	30°/ 0° 0° ITER AND TANKS	90MS RIPP SNGLS 210MS RIPP PAIRS 70MS RIPP SNGLS 200MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 3, 4, 7, 8, 9, 11. BSU-86 ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION. PARENT STATION STORES NOT AUTHORIZED FOR IN-FLIGHT SELECTABLE PILOT OPTION.
	25			TK	[1]	TK														

AV8BB-TAC-05-(77-25)10

Figure 5-3. External Stores Limitations (Sheet 25 of 66)

1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

2 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

3 ONLY AIM-9 AND AGM-122 MISSILES ARE AUTHORIZED AS MIXED LOAD ON THIS STATION.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AV-8B

MK 83 OR BLU-110 CONFIN	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	ACCELERATION-G: JETTISON STORE	JETTISON RACKS	CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 83 OR BLU-110 CONICAL FIN	1	[1]	●	●	[1]	●	●	[1]	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 3.5	60°/ 0°	60MS RIPP SNGLS 120MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 6, 7, 8. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 4 & 5.
	2	[1]	[2]	●	[1]	●	[2]	[1]									60MS RIPP SNGLS	
	3	[1]	●	[2]	[1]	[2]	●	[1]									NA	
	4	[1]	●	[2]	[1]	[2]	[1]	[1]										
	5	[1]	[1]	●	[1]	[1]	[1]	[1]										
MK 83 OR BLU-110 CONICAL FIN ADJACENT TO FUEL TANKS	6	[3]	●	(TK)	[1]	(TK)	●	[3]	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	N/A	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 3.5	60°/ 0° 0° TANKS	60MS RIPP SNGLS NA	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 6, 7, 8, 9. MIRROR IMAGE LOADING AUTHORIZED FOR LINE 7
	7	[3]	●	(TK)	[1]	(TK)	[1]	[3]										

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Figure 5-3. External Stores Limitations (Sheet 26 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[3] ONLY AIM-9 AND AGM-122 MISSILES ARE AUTHORIZED AS MIXED LOAD ON THIS STATION.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 83 OR BLU-110 CONFIN	LINE NUMBER	STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 83 OR BLU-110 CONICAL FIN ON ITERS	8	[1]	●	↗↘	[1]	↗↘	●	[1]		550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.7 TO 3.5	1.0	1.0	45°/ 0° 0° ITER	90MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 3, 6, 7, 11, 15.
MK 83 OR BLU-110 CONICAL FIN ON ITERS ADJACENT TO FUEL TANKS	9	[3]	(TK)	↗↘	[1]	↗↘	(TK)	[3]		500/ 1.0	450/ 0.9	450/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	250 TO 350/ 0.8	0.0 TO 3.0 WITH FUEL 0.0 TO 5.5 EMPTY	1.0 TO 2.0 WITH FUEL 1.0 TO 3.0 EMPTY	0.7 TO 3.5	1.0	1.0	45°/ 0° 0° ITER AND TANKS	90MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 3, 6, 7, 9, 11, 15.

AV8BB-TAC-05-(77-27)10

Figure 5-3. External Stores Limitations (Sheet 27 of 66)

AV-8B

1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

2 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

3 ONLY AIM-9 AND AGM-122 MISSILES ARE AUTHORIZED AS MIXED LOAD ON THIS STATION.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 83 OR BLU-110 BSU-85 LOW DRAG	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 83 OR BLU-110 BSU-85/B LOW DRAG	1	[1]	●	●	[1]	●	●	[1]	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.7 TO 3.5	1.0	NA	60°/ 0°	60MS RIPP SNGLS 120MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 6, 7, 8. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 4 & 5.
	2	[1]	●	[2]	[1]	[2]	●	[1]											60MS RIPP SNGLS	
	3	[1]	[2]	●	[1]	●	[2]	[1]											NA	
	4	[1]	●	[2]	[1]	[2]	[1]	[1]												
	5	[1]	[1]	●	[1]	[1]	[1]	[1]												
MK 83 OR BLU-110 BSU-85/B LOW DRAG ADJACENT TO FUEL TANKS	6	[3]	●	(TK)	[1]	(TK)	●	[3]	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	N/A	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.7 TO 3.5	1.0	NA	60°/ 0° 0° TANKS	60MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 6, 7, 8, 9. MIRROR IMAGE LOADING AUTHORIZED FOR LINE 7.
	7	[3]	●	(TK)	[1]	(TK)	[1]	[3]			200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY					NA	

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Figure 5-3. External Stores Limitations (Sheet 28 of 66)

AV-8B

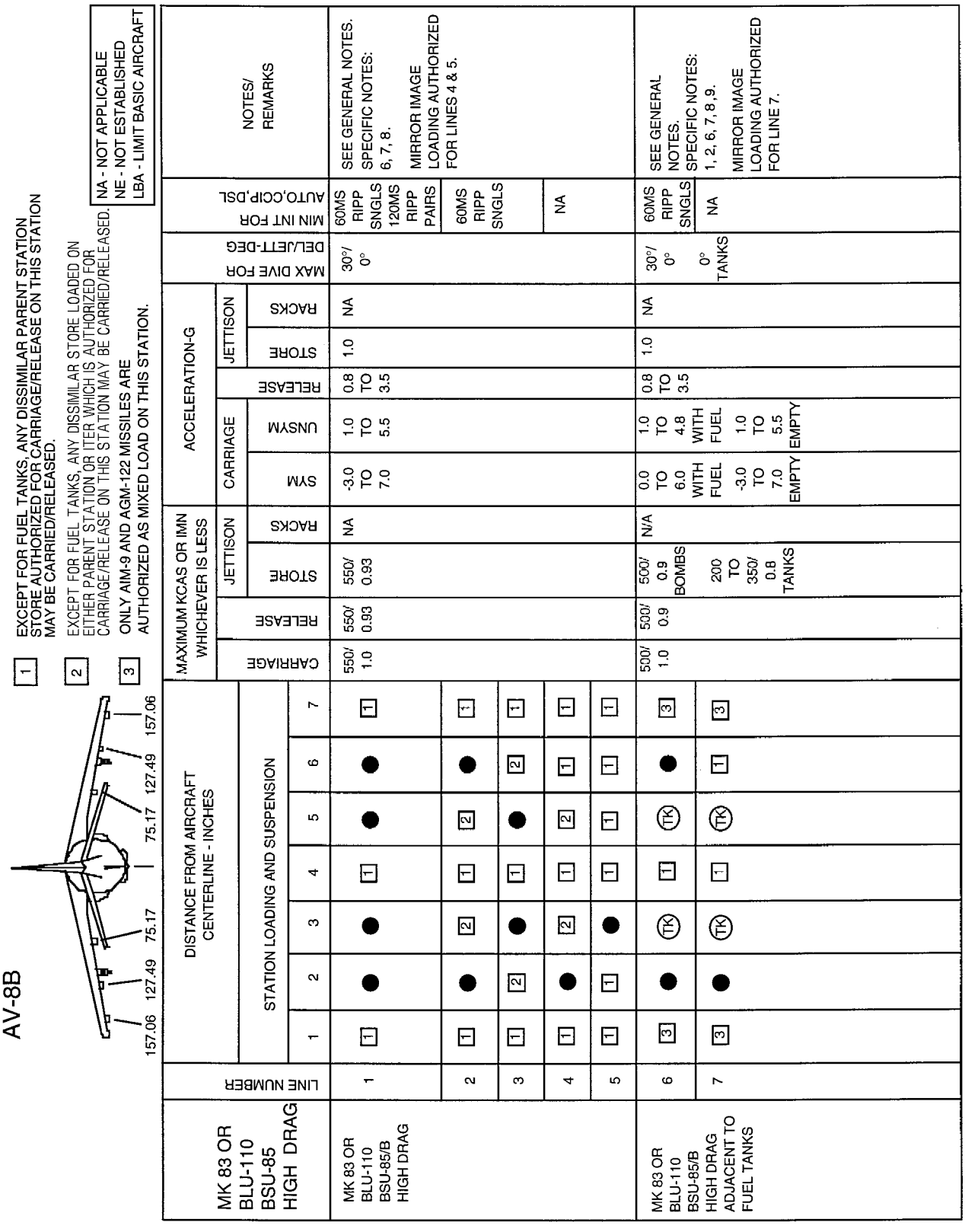
1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 83 OR BLU-110 BSU-85 (LOW DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO, CCIP, DSL	NOTES/ REMARKS
MK 83 OR BLU-110 BSU-85/B LOW DRAG	8	[1]	●	[1]	[1]	[1]	●	[1]	500/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	0.0 TO 4.5	1.0 TO 3.5	1.0	1.0	60°/ 0° 0° ITER	80MS RIPP SNGLS 160MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 6, 7, 13, 15. BSU-85/B ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION. PARENT STATION STORES NOT AUTHORIZED FOR IN-FLIGHT SELECTABLE PILOT OPTION.
	9	[1]	●	[1]	[1]	[1]	●	[1]												
MK 83 OR BLU-110 BSU-85/B LOW DRAG ADJACENT TO FUEL TANKS	10	[1]	(TK)	[1]	[1]	[1]	(TK)	[1]	500/ 1.0	450/ 0.9	450/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	250 TO 350/ 0.8	0.0 TO 3.0 WITH FUEL 0.0 TO 5.5 EMPTY	1.0 TO 2.0 WITH FUEL 1.0 TO 3.0 EMPTY	1.0 TO 3.5	1.0	1.0	60°/ 0° 0° ITER	80MS RIPP SNGLS 160MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 6, 7, 9, 13, 15. BSU-85/B ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION. PARENT STATION STORES NOT AUTHORIZED FOR IN-FLIGHT SELECTABLE PILOT OPTION.

AV8BB-TAC-05-(77-29)10

Figure 5-3. External Stores Limitations (Sheet 29 of 66)



AHR817-77-30-011

Figure 5-3. External Stores Limitations (Sheet 30 of 66)

AV-8B

157.06 127.49 75.17 75.17 127.49 157.06

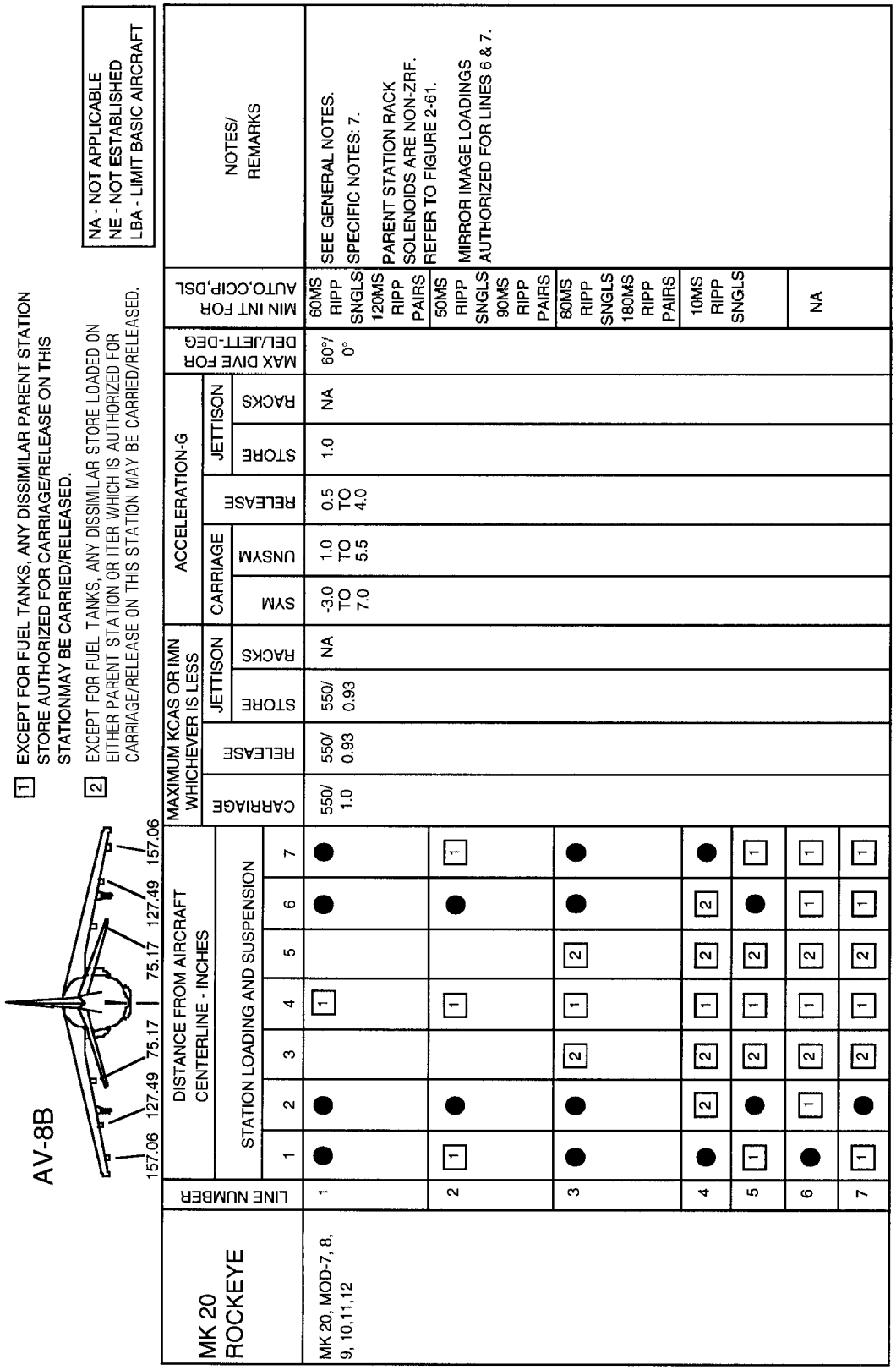
[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 83 OR BLU-110 BSU-85 (HIGH DRAG)	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO, CCIP, DSL	NOTES/ REMARKS
MK 83 OR BLU-110 BSU-85/B HIGH DRAG	8	[1]	●		[1]		●	[1]	500/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	0.0 TO 4.5	1.0 TO 3.5	1.0	1.0	30°/ 0° 0° ITER	80MS RIPP SNGLS 160MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 6, 7, 13, 15. BSU-85/B ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION. PARENT STATION STORES NOT AUTHORIZED FOR IN-FLIGHT SELECTABLE PILOT OPTION.
	9	[1]	[1]		[1]		[1]	[1]												
MK 83 OR BLU-110 BSU-85/B HIGH DRAG ADJACENT TO FUEL TANKS	10	[1]	(TK)		[1]		(TK)	[1]	500/ 1.0	450/ 0.9	450/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	250 TO 350/ 0.8	0.0 TO 3.0 WITH FUEL 0.0 TO 5.5 EMPTY	1.0 TO 2.0 WITH FUEL 1.0 TO 3.0 EMPTY	1.0 TO 3.5	1.0	1.0	30°/ 0° 0° ITER AND TANK	80MS RIPP SNGLS 160MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 6, 7, 9, 15. BSU-85/B ON ITER MAY EXERCISE IN-FLIGHT SELECTABLE HD/LD PILOT OPTION. PARENT STATION STORES NOT AUTHORIZED FOR IN-FLIGHT SELECTABLE PILOT OPTION.

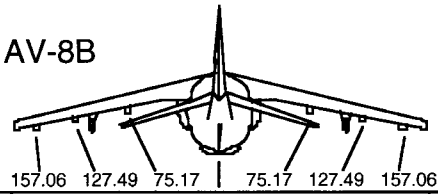
AV8BB-TAC-05-(77-31)10

Figure 5-3. External Stores Limitations (Sheet 31 of 66)



AHR817-77-32-011

Figure 5-3. External Stores Limitations (Sheet 32 of 66)



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

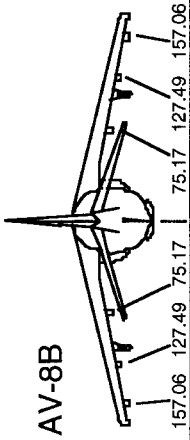
[4] EXCEPT FOR FUEL TANKS, Mk 77 OR Mk 83, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

MK 20 ROCKEYE	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	ACCELERATION-G CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MK 20 MOD-7,8, 9,10,11,12 ADJACENT TO FUEL TANKS	8	●	●	TK	[1]	TK	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.5 TO 4.0	1.0	NA	60°/ 0°	60MS RIPP SNGLS 120MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 7, 9 PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61.
	9	[1]	●	TK	[1]	TK	●	[1]			200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY				0° TANKS	10MS RIPP SNGLS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 9 AND 10.
	10	●	[4]	TK	[1]	TK	[4]	●												
MK 20 MOD-7,8, 9,10,11,12 ON ITERS	11	●	▽		[1]		▽	●	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	1.0	60°/ 0° 0° ITER	90 MS RIPP SNGL 210 MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3, 7, 11 PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61. LOAD 11 - DAY ATTACK ONLY
	12		▽	[1]	[1]	[1]	▽													

AV8BB-TAC-05-(77-33)10

Figure 5-3. External Stores Limitations (Sheet 33 of 66)



1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATIONMAY BE CARRIED/RELEASED.

2 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

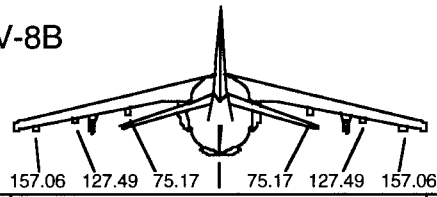
NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

CBU-99/100 ROCKEYE	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
CBU-99/100	13	●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	NA	60°/ 0°	60MS RIPP SNGLS 120MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 7. PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61.
	14	[1]	●	●	[1]	●	●	[1]											50MS RIPP SNGLS 90MS RIPP PAIRS	MIRROR IMAGE LOADINGS AUTHORIZED FOR LINES 19, 20, AND 21.
	15	●	●	[2]	[1]	[2]	●	●											80MS RIPP SNGLS 180MS RIPP PAIRS	
	16	●	[2]	[2]	[1]	[2]	[2]	●											10MS RIPP SNGLS	
	17	[1]	●	[2]	[1]	[2]	●	[1]												
	18	[1]	[2]	●	[1]	●	[1]	[2]											NA	
	19	●	[1]	[2]	[1]	[2]	[1]	[1]												
	20	[1]	●	[2]	[1]	[2]	[1]	[1]												
	21	[1]	[1]	●	[1]	[1]	[1]	[1]												

AHR817-77-34-011

Figure 5-3. External Stores Limitations (Sheet 34 of 66)

AV-8B



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[4] EXCEPT FOR FUEL TANKS, MK 77, OR MK 83, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

CBU-99/100 ROCKEYE	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	ACCELERATION-G CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
CBU-99/100 ADJACENT TO FUEL TANKS	22	●	●	TK	[1]	TK	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 4.0	1.0	NA	60°/ 0° 0° TANKS	60MS RIPP SNGLS 120MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 7, 9. PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 25 AND 26.
	23	[1]	●	TK	[1]	TK	●	[1]											10MS RIPP SNGLS	
	24	●	[4]	TK	[1]	TK	[4]	●												
	25	●	[1]	TK	[1]	TK	[1]	[1]											NA	
	26	[1]	●	TK	[1]	TK	[1]	[1]												
CBU-99/100 ON ITERS	27	●			[1]			●	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	1.0	60°/ 0° 0° ITER	90 MS RIPP SNGL 210 MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3, 7, 11. PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61. LOAD 27 - DAY ATTACK ONLY.
	28			[1]	[1]	[1]														
	29	[1]	[1]		[1]		[1]	[1]												
	30	●	●		[1]		●	●											100 MS RIPP SNGLS	
	31	[1]	●		[1]		●	[1]											140 MS RIPP SNGLS	

AV8BB-TAC-05-(77-35)10

Figure 5-3. External Stores Limitations (Sheet 35 of 66)

AV-8B

157.06 127.49 75.17 75.17 127.49 157.06

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

CBU-78 GATOR	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
CBU-78/B GATOR	1	●	●		[1]		●	●	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	NA	60°/ 0°	60MS RIPP SNGLS 120MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 7, 14. PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61.
	2	[1]	●		[1]		●	[1]											50MS RIPP SNGLS 90MS RIPPLE PAIRS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 6 AND 7.
	3	●	●	[2]	[1]	[2]	●	●											80MS RIPP SNGL 180MS RIPP PAIRS	
	4	●	[2]	[2]	[1]	[2]	[2]	●											10MS RIPP SNGLS	
	5	[1]	●	[2]	[1]	[2]	●	[1]												
	6	●	[1]	[2]	[1]	[2]	[1]	[1]											NA	
	7	[1]	●	[2]	[1]	[2]	[1]	[1]												
CBU-78/B GATOR ON ITERS	8	●			[1]			●	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	1.0	60°/ 0° 0° ITERS	90 MS RIPP SNGL 210 MS RIPP PAIR	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3, 7, 11, 14 PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61. LOAD 8 - DAY ATTACK ONLY.
	9				[1]		[1]													

AHR817-77-36-011

Figure 5-3. External Stores Limitations (Sheet 36 of 66)

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

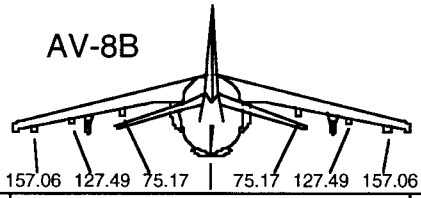
[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

CBU-78 GATOR	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES	STATION LOADING AND SUSPENSION							MAXIMUM KCAS OR IMN WHICHEVER IS LESS		ACCELERATION-G					MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
			1	2	3	4	5	6	7	CARRIAGE	RELEASE	CARRIAGE			RELEASE	JETTISON			
												SYM	UNSYM			STORE	RACKS		
CBU-78A/B CBU-78B/B GATOR	10		●	●	●	[1]	●	●	●	550/ 1.0	550/ 0.93	-3.0 TO 7.0	1.0 TO 5.5		0.5 TO 4.0	1.0	NA	60°/ 0°	60MS RIPP SNGLS 120MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 7, 14.
	11		[1]	●	●	[1]	●	●	[1]		550/ 0.93					NA			50MS RIPP SNGLS 90MS RIPPLE PAIRS	PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61.
	12		●	●	[2]	[1]	[2]	●	●										80MS RIPP SNGL 180MS RIPP PAIRS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 16, 17, AND 18.
	13		●	[2]	[2]	[1]	[2]	[2]	●										10MS RIPP SNGLS	
	14		[1]	●	[2]	[1]	[2]	●	[1]											
	15		[1]	[2]	●	[1]	●	[2]	[1]										NA	
	16		●	[1]	[2]	[1]	[2]	[1]	[1]											
	17		[1]	●	[2]	[1]	[2]	[1]	[1]											
	18		[1]	[1]	●	[1]	[1]	[1]	[1]											

AHR817-77-37-011

Figure 5-3. External Stores Limitations (Sheet 37 of 66)



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[4] EXCEPT FOR FUEL TANKS, MK 77, OR MK 83, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

CBU-78 GATOR	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
CBU-78/B CBU-78A/B CBU-78B/B GATOR ADJACENT TO FUEL TANKS	19	●	●	TK	[1]	TK	●	●	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.5 TO 4.0	1.0	NA	60°/ 0° 0° TANKS	60MS RIPP SNGLS 120MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 7, 9, 14. PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61.
	20	[1]	●	TK	[1]	TK	●	[1]			200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.0 EMPTY					10MS RIPP SNGLS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 22 AND 23.
	21	●	[4]	TK	[1]	TK	[4]	●												
	22	●	[4]	TK	[1]	TK	[4]	[1]												
	23	[1]	●	TK	[1]	TK	[4]	[1]												
CBU-78A/B CBU-78B/B GATOR ON ITERS	24	●			[1]			●	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	1.0	60°/ 0° 0° ITERS	90 MS RIPP SNGL 210 MS RIPP PAIR	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3, 7, 11, 14. PARENT STATION RACK SOLENOIDS ARE NON-ZRF. REFER TO FIGURE 2-61. LOAD 24 - DAY ATTACK ONLY.
	25			[1]	[1]	[1]														
	26	[1]	[1]		[1]		[1]	[1]												
	27	●	●		[1]		●	●											100 MS RIPP SNGLS	
	28	[1]	●		[1]		●	[1]											140 MS RIPP SNGLS	

AV8BB-TAC-05-(77-38)10

Figure 5-3. External Stores Limitations (Sheet 38 of 66)

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AV-8B

LASER GUIDED BOMBS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION							MAXIMUM KCAS OR IMN WHICHEVER IS LESS		ACCELERATION-G				MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
		1	2	3	4	5	6	7	CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS			
GBU-12	1	[1]	●	●	[1]	●	●	[1]	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	NA	60°/ 0°	30MS RIPP SNGLS	SEE GENERAL NOTES.
	2	[1]	[2]	●	[1]	●	[2]	[1]											60MS RIPP PAIRS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 4 & 5
	3	[1]	●	[2]	[1]	[2]	●	[1]												
	4	[1]	●	[2]	[1]	[2]	[1]	[1]											NA	
	5	[1]	[1]	●	[1]	[1]	[1]	[1]												
GBU-12 ADJACENT TO FUEL TANKS	6	[1]	●	Ⓣ[1]	[1]	Ⓣ	●	[1]	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 300/ 0.8 TANKS	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 4.0	1.0	NA	60°/ 0° 0° TANKS	10MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES 1,2,9. MIRROR IMAGE LOADING AUTHORIZED FOR LINE 7.
	7	[1]	●	Ⓣ[1]	[1]	Ⓣ	[1]	[1]												

AHR817-77-39-011

Figure 5-3. External Stores Limitations (Sheet 39 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

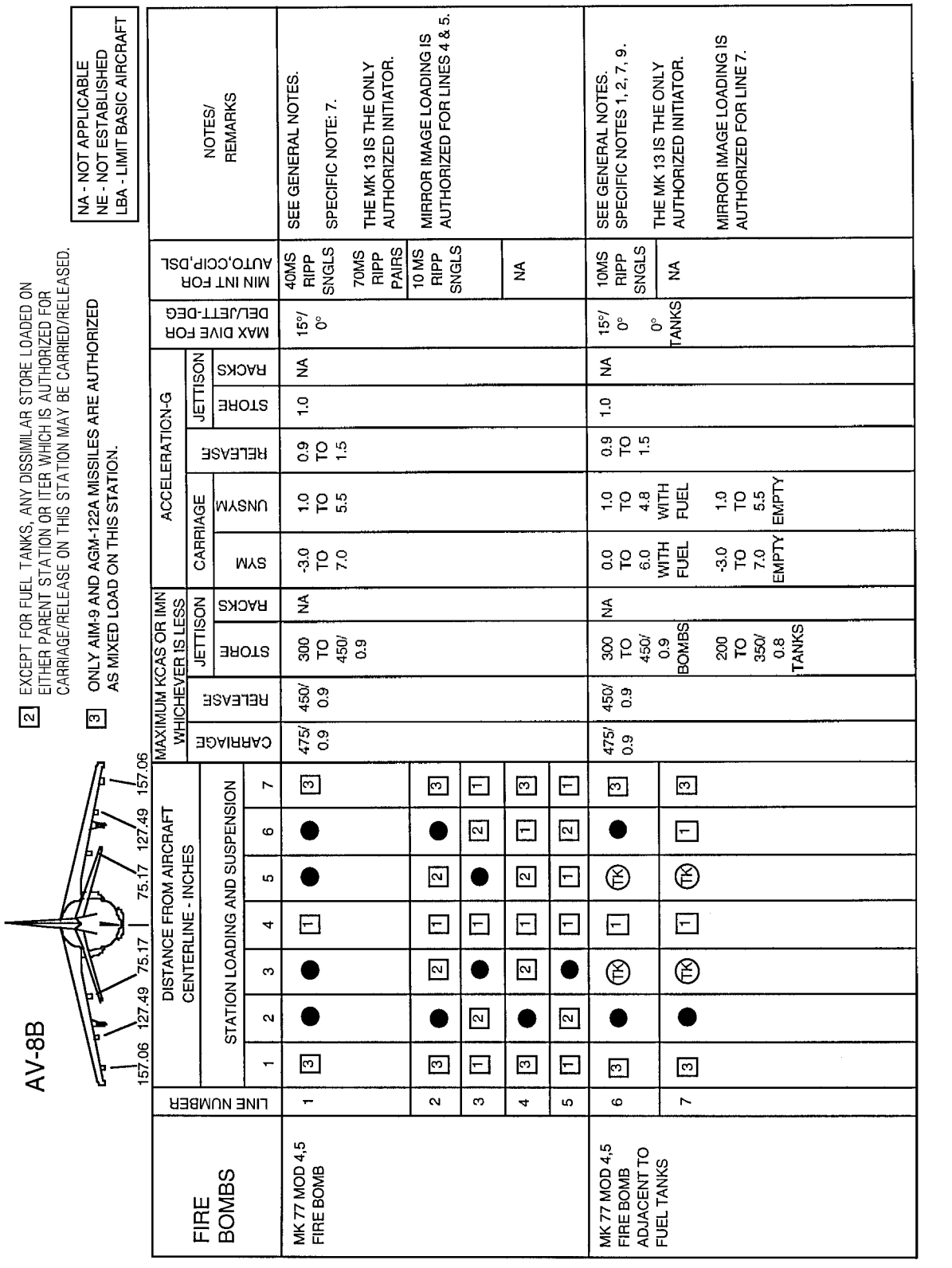
[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

LASER GUIDED BOMBS	LINE NUMBER	STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	RACKS	ACCELERATION-G: CARRIAGE: SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
GBU-16	1	[1]	●	●	[1]	●	●	[1]	550/ 1.0	550/ 0.93	550/ 0.93	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 3.5	1.0	NA	60°/ 0°	60MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTE: 6
	2	[1]	[2]	●	[1]	●	[2]	[1]											120MS RIPP PAIRS	MIRROR IMAGE LOADING AUTHORIZED FOR LINES 4 & 5.
	3	[1]	●	[2]	[1]	[2]	●	[1]												
	4	[1]	●	[2]	[1]	[2]	[1]	[1]												
	5	[1]	[1]	●	[1]	[1]	[1]	[1]												
GBU-16 ADJACENT TO FUEL TANKS	6	[1]	●	(TK)	[1]	(TK)	●	[1]	500/ 1.0	500/ 0.9	500/ 0.9 BOMBS 200 TO 350/ 0.8 TANKS	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 3.5	1.0	NA	60°/ 0° 0° TANKS	60MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES 1,2,6,9. MIRROR IMAGE LOADING AUTHORIZED FOR LINE 7.
	7	[1]	●	(TK)	[1]	(TK)	[1]	[1]												

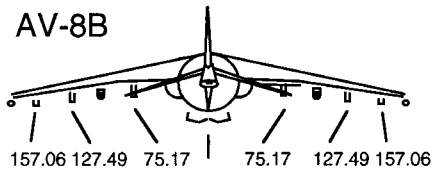
AHR817-77-40-011

Figure 5-3. External Stores Limitations (Sheet 40 of 66)



AHR817-77-41-011

Figure 5-3. External Stores Limitations (Sheet 41 of 66)



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[5] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED. ITERS WITH EITHER MK 76 OR BDU-33 PRACTICE BOMBS ARE ALSO AUTHORIZED.

[6] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED. ITERS WITH EITHER MK 76, BDU-33, BDU-48, OR MK 106 PRACTICE BOMBS ARE ALSO AUTHORIZED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

PRACTICE BOMBS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION							MAXIMUM KCAS OR IMN WHICHEVER IS LESS				ACCELERATION-G					MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO, CCIP, DSL	NOTES/ REMARKS
									CARRIAGE	RELEASE	JETTISON		CARRIAGE		RELEASE	JETTISON				
		1	2	3	4	5	6	7			STORE	RACKS	SYM	UNSYM		STORE	RACKS			
MK 76 OR BDU-33	1				[1]				550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 4.0	1.0	1.0	60°/ 0° 0° ITER	40MS RIPP SNGLS 80MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 1,2,3,5,9. MIXED LOADS OF PRACTICE BOMBS ARE AUTHORIZED ON THE AIRCRAFT, I.E. AN ITER LOAD OF MK 76 ON STA 2 AND AN ITER LOAD OF BDU-48 ON STA 6. PRACTICE BOMBS MAY NOT BE MIX LOADED ON INDIVIDUAL ITERS (NOTE 5 APPLIES). ONLY ONE STORE TYPE MAY BE DELIVERED AT A TIME. MIRROR-IMAGE LOADING IS AUTHORIZED FOR LINES 3, 5, AND 7.
	2			[5]	[1]	[5]			550/ 1.0	550/ 0.93	550/ 0.93							60°/ 0° 0° ITER	30MS RIPP SNGLS 60MS RIPP PAIRS	
	3			[5]	[1]	[5]	[1]													
	4	[1]	[6]		[1]		[6]	[1]		500/ 0.9	500/ 0.9									
	5		[6]		[1]	[1]	[6]													
MK 106 MOD 5 OR BDU-48	6			[5]	[1]	[5]			550/ 1.0	550/ 0.93	550/ 0.93	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.7 TO 4.0	1.0	1.0	45°/ 0° 0° ITER	90MS RIPP SNGLS 200MS RIPP PAIRS	
	7			[5]	[1]	[5]	[1]													

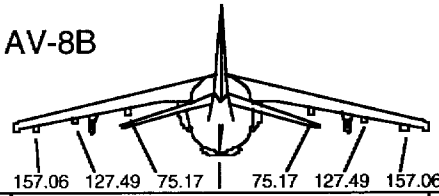
AV8BB-TAC-05-(77-42)10

Figure 5-3. External Stores Limitations (Sheet 42 of 66)

PRACTICE BOMBS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO, CCIP, DSL	NOTES/ REMARKS
MK 76 OR BDU-33 ADJACENT TO FUEL TANKS	8			TK	1	TK			500/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.5 TO 4.0	1.0	1.0	60°/ 0°	30MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 1,2,3,5,9.
	9			TK	1	TK	1				200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY	0.8 TO 4.0	1.0	1.0	0° TANK ITER	60MS RIPP PAIRS	MIXED LOADS OF PRACTICE BOMBS ARE AUTHORIZED ON THE AIRCRAFT, I.E. AN ITER LOAD OF MK 76 ON STA 2 AND AN ITER LOAD OF BDU-48 ON STA 6. PRACTICE BOMBS MAY NOT BE MIX LOADED ON INDIVIDUAL ITERS (NOTE 5 APPLIES). ONLY ONE STORE TYPE MAY BE DELIVERED AT A TIME.
MK 106 MOD 5 OR BDU-48 ADJACENT TO FUEL TANKS	10			TK	1	TK			500/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.5 TO 4.0	1.0	1.0	60°/ 0°	30MS RIPP SNGLS	SEE GENERAL NOTES. SPECIFIC NOTES: 1,2,3,5,9.
	11			TK	1	TK	1				200 TO 350/ 0.8 TANKS		-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY	0.8 TO 4.0	1.0	1.0	0° TANK ITER	60MS RIPP PAIRS	MIXED LOADS OF PRACTICE BOMBS ARE AUTHORIZED ON THE AIRCRAFT, I.E. AN ITER LOAD OF MK 76 ON STA 2 AND AN ITER LOAD OF BDU-48 ON STA 6. PRACTICE BOMBS MAY NOT BE MIX LOADED ON INDIVIDUAL ITERS (NOTE 5 APPLIES). ONLY ONE STORE TYPE MAY BE DELIVERED AT A TIME. MIRROR-IMAGE LOADING IS AUTHORIZED FOR LINES 9 &11.

AV8BB-TAC-05-(77-43)10

Figure 5-3. External Stores Limitations (Sheet 43 of 66)



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

2.75 INCH ROCKETS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
LAU-61 LAU-68 WITH 2.75 IN. ROCKETS	1	[1]	●	●	[1]	●	●	[1]	550/ 1.0	550/ 0.93	200 TO 350/ 0.8	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 1.5	1.0	NA	60°/ 0°	NA	SEE GENERAL NOTES. SPECIFIC NOTE: 10 MINIMUM FIRING SPEED: 425 KCAS SEA LEVEL TO 10,000 FT MSL; 450 KCAS ABOVE 10,000 FT MSL. **CAUTION** SOME LOADINGS ON THIS SHEET MAY EXCEED NATOPS TAKEOFF ASYMMETRY LIMITS. IF SO, A COUNTERBALANCING STORE MUST BE LOADED. **CAUTION** HUNG ROCKETS MAY RESULT FROM AIRCRAFT CONTROLLED RIPPLE FIRINGS
	2	[1]	●	●	[1]	●	[1]	[1]												
	3	[1]	[1]	●	[1]	●	●	[1]												
	4	[1]	●	[2]	[1]	[2]	●	[1]												
	5	[1]	●	[2]	[1]	[2]	[1]	[1]												
	6	[1]	[1]	[2]	[1]	[2]	●	[1]												
	7	[1]	[2]	●	[1]	●	[2]	[1]												
	8	[1]	[2]	[1]	[1]	●	[2]	[1]												
	9	[1]	[2]	●	[1]	[1]	[2]	[1]												
LAU-61 LAU-68 WITH 2.75 IN. ROCKETS ADJACENT TO FUEL TANKS	10	[1]	●	(TK)	[1]	(TK)	●	[1]	500/ 1.0	500/ 0.9	200 TO 350/ 0.8	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 1.5	1.0	NA	60°/ 0° 0° TANKS	NA	
	11	[1]	●	(TK)	[1]	(TK)	[1]	[1]												
	12	[1]	[1]	(TK)	[1]	(TK)	●	[1]												

AHRB17-77-44-011

Figure 5-3. External Stores Limitations (Sheet 44 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

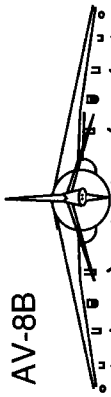
[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

5.0 INCH ROCKETS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
LAU-10 WITH 5.0 IN. ROCKETS	1	[1]	●	●	[1]	●	●	[1]	550/ 1.0	550/ 0.93	200 TO 350/ 0.8	NA	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 1.5	1.0	NA	60°/ 0°	NA	SEE GENERAL NOTES.
	2	[1]	●	●	[1]	●	[1]	[1]												MINIMUM FIRING SPEED: 425 KCAS SEA LEVEL TO 10,000 FT MSL; 450 KCAS ABOVE 10,000 FT MSL.
	3	[1]	[1]	●	[1]	●	●	[1]												CAUTION
	4	[1]	●	[2]	[1]	[2]	●	[1]												SOME LOADINGS ON THIS SHEET MAY EXCEED NATOPS TAKEOFF ASYMMETRY LIMITS. IF SO, A COUNTERBALANCING STORE MUST BE LOADED.
	5	[1]	●	[2]	[1]	[2]	[1]	[1]												CAUTION
	6	[1]	[1]	[2]	[1]	[2]	●	[1]												HUNG ROCKETS MAY RESULT FROM AIRCRAFT CONTROLLED RIPPLE FIRINGS
	7	[1]	[2]	●	[1]	●	[2]	[1]												
	8	[1]	[2]	[1]	[1]	●	[2]	[1]												
	9	[1]	[2]	●	[1]	[1]	[2]	[1]												
LAU-10 WITH 5.0 IN. ROCKETS ADJACENT TO FUEL TANKS	10	[1]	●	(TK)	[1]	(TK)	●	[1]	500/ 1.0	500/ 0.9	200 TO 350/ 0.8	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 1.5	1.0	NA	60°/ 0° 0° TANKS	NA	
	11	[1]	●	(TK)	[1]	(TK)	[1]	[1]												
	12	[1]	[1]	(TK)	[1]	(TK)	●	[1]												

AHR817-77-45-011

Figure 5-3. External Stores Limitations (Sheet 45 of 66)



1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

2 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

SUU-25 FLARE DISPENSER	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO, CCIP, DSL	NOTES/ REMARKS
SUU-25F/A DISPENSER/ LUU-2A/B LUU-2B/B FLARES	1	[1]	●	[2]	[1]	[2]	●	[1]	550/ 1.0	520/ 0.9	200 TO 350/ 0.8	NA	-3.0 TO 7.0	1.0 TO 5.5	0.9 TO 1.5	1.0	NA	10°/ 0°	500 MS RIPP SNGL 1,000 MS RIPP PAIRS	SEE GENERAL NOTES LUU-2A/B AUTHORIZED FOR SHORE BASED OPERATIONS ONLY. FOR LINES 2 & 4: QTY UP TO 8, MULT 1 ONLY; 1,000 MS MRI. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 2 & 4.
	2	[1]	●	[2]	[1]	[2]	[2]	[1]												
SUU-25F/A DISPENSER/ LUU-2A/B LUU-2B/B FLARES ADJACENT TO FUEL TANKS	3	[1]	●	(TK)	[1]	(TK)	●	[1]	500/ 1.0	500/ 0.9	200 TO 350/ 0.8	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.9 TO 1.5	1.0	NA	10°/ 0° 0° TANKS		
	4	[1]	●	(TK)	[1]	(TK)	[2]	[1]												

AHR817-77-46-011

Figure 5-3. External Stores Limitations (Sheet 46 of 66)

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[5] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED. ITERS WITH EITHER MK 76 OR BDU-33 PRACTICE BOMBS ARE ALSO AUTHORIZED.

[6] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED. ITERS WITH EITHER MK 76, BDU-33, BDU-48, OR MK 106 PRACTICE BOMBS ARE ALSO AUTHORIZED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

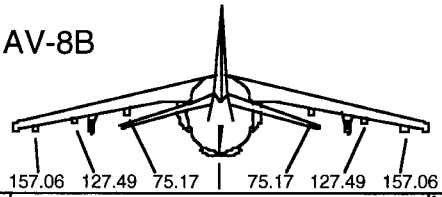
AV-8B

MK 58 MLM	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO, CCIP, DSL	NOTES/ REMARKS
MK 58 MARINE LOCATION MARKER (MLM)	1	[1]			[1]			[1]	550/ 1.0	500/ 0.9	500/ 0.9	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	1.0	1.0	1.0	0°	NA	SEE GENERAL NOTES. SPECIFIC NOTES: 2, 3 & 12. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 4 & 5. ○ - MK 76, BDU-33, BDU-48, OR MK 106 PRACTICE BOMBS ● - MK 58 MLM REF. SHEET 42 & 43 FOR AUTHORIZED PRACTICE BOMB LOADING.
	2	[1]	[6]		[1]		[6]	[1]												
	3	[1]		[5]	[1]	[5]		[1]												
	4	[1]	[6]		[1]	[5]	[6]	[1]												
	5	[1]		[5]	[1]	[5]	[6]	[1]												

AV8B-TAC-05-(77-47)10

Figure 5-3. External Stores Limitations (Sheet 47 of 66)

AV-8B



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AIM-9 C/N/ATM-9 SIDEWINDER TACTS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	ACCELERATION-G CARRIAGE SYM	UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
AIM-9 CATM-9/NATM-9 MISSILES OR TACTS POD	1	✖	✖	[2]	[1]	[2]	✖	✖	LBA	200 TO LBA	200 TO LBA	NA	LBA	LBA	LBA	1.0	NA	NA/ 0°	NA	SEE GENERAL NOTES. AIM-9 MISSILE FIRINGS ARE NOT AUTHORIZED ABOVE 40,000 FT. MSL. 200 KCAS IS MINIMUM AUTH. AIRSPEED FOR AIM-9 FIRING OR JETTISON. JETTISON OF AIM-9 MISSILE IS TO BE PERFORMED BY FIRING OF MISSILE ONLY. JETTISON OF ADU-299 IS NOT AUTHORIZED. MISSILES MAY BE FIRED AT ANY ANGLE OF BANK. **WARNING** IF POSSIBLE, MANEUVER TO AVOID INGESTION OF LAUNCH PLUME AFTER FIRING, TO AVOID INCREASING PROBABILITY OF ENGINE POP SURGE. **WARNING** JETTISONED AIM-9 MISSILES HAVE ACTIVE GUIDANCE SECTION AND LIVE WARHEADS. AVOID JETTISONING AIM-9 MISSILES TOWARD OTHER AIRCRAFT OR POPULATED AREAS.
	2	✖	[2]	[2]	[1]	[2]	[2]	✖												
	3	✖	[2]	[2]	[1]	[2]	[2]	[1]												
	4	[1]	[2]	[2]	[1]	[2]	[2]	✖												
	5	[1]	✖	[2]	[1]	[2]	✖	[1]												
	6	[1]	✖	[2]	[1]	[2]	[1]	[1]												
	7	[1]	[1]	[2]	[1]	[2]	✖	[1]												
	8	✖	✖	[2]	[1]	[2]	[1]	✖												
	9	✖	[1]	[2]	[1]	[2]	✖	✖												
	10	[1]	✖	[2]	[1]	[2]	✖	✖												
	11	✖	✖	[2]	[1]	[2]	✖	[1]												
	12	✖	[1]	[2]	[1]	[2]	✖	[1]												
	13	[1]	✖	[2]	[1]	[2]	[1]	✖												

AHR817-77-4B-011

Figure 5-3. External Stores Limitations (Sheet 48 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

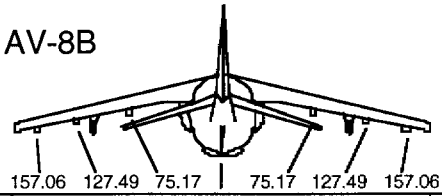
NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AIM-9 C/NATM-9 SIDEWINDER TACTS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	RACKS	ACCELERATION-G: CARRIAGE: SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
AIM-9 CATM-9/NATM-9 MISSILES OR TACTS POD ADJACENT TO FUEL TANKS	14	X	X	TK	1	TK	X	X	500/ 1.0	200 TO 500/ 1.0	200 TO 500/ 1.0 AIM-9	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	LBA	1.0	NA	NA/ 0°	NA	SEE GENERAL NOTES.
	15	X	1	TK	1	TK	1	X										0° TANKS		AIM-9 MISSILE FIRINGS ARE NOT AUTHORIZED ABOVE 40,000 FT. MSL. 200 KCAS IS MINIMUM AUTH. AIRSPEED FOR AIM-9 FIRING OR JETTISON. JETTISON OF AIM-9 MISSILE IS TO BE PERFORMED BY FIRING OF MISSILE ONLY. JETTISON OF ADU-299 IS NOT AUTHORIZED. MISSILES MAY BE FIRED AT ANY ANGLE OF BANK. **WARNING** IF POSSIBLE, MANEUVER TO AVOID INGESTION OF LAUNCH PLUME AFTER FIRING, TO AVOID INCREASING PROBABILITY OF ENGINE POP SURGE. **WARNING** JETTISONED AIM-9 MISSILES HAVE ACTIVE GUIDANCE SECTION AND LIVE WARHEADS. AVOID JETTISONING AIM-9 MISSILES TOWARD OTHER AIRCRAFT OR POPULATED AREAS.
	16	X	1	TK	1	TK	1	1												
	17	1	1	TK	1	TK	1	X												
	18	1	X	TK	1	TK	X	1												
	19	1	X	TK	1	TK	1	1												
	20	1	1	TK	1	TK	X	1												
	21	X	X	TK	1	TK	1	X												
	22	X	1	TK	1	TK	X	X												
	23	1	X	TK	1	TK	X	X												
	24	X	X	TK	1	TK	X	1												
	25	X	1	TK	1	TK	X	1												
	26	1	X	TK	1	TK	1	X												

AV8BB-TAC-05-(77-49)10

Figure 5-3. External Stores Limitations (Sheet 49 of 66)

AV-8B



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AGM-122A C/N/ATM-122A SIDEARM TACTS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	ACCELERATION-G CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
AGM-122A CATM-122A ATM-122A SIDEARM OR TACTS POD	1	X	X	[2]	[1]	[2]	X	X	LBA	200 TO LBA	200 TO LBA	NA	LBA	LBA	0.7 TO 2.0	1.0	NA	45°/ 0°	NA	SEE GENERAL NOTES. SPECIFIC NOTE 14. MISSILE FIRINGS NOT AUTHORIZED ABOVE 25,000 FT. MSL. 200 KCAS IS MINIMUM AUTH. AIRSPEED FOR FIRING OR JETTISON. JETTISON IS TO BE PERFORMED BY FIRING OF MISSILE ONLY. JETTISON OF ADU-299 NOT AUTHORIZED. MISSILES MAY BE FIRED AT ANY ANGLE OF BANK. **WARNING** IF POSSIBLE, MANEUVER TO AVOID INGESTION OF LAUNCH PLUME AFTER FIRING, TO AVOID INCREASING PROBABILITY OF ENGINE POP SURGE. **WARNING** JETTISONED MISSILES HAVE ACTIVE GUIDANCE SECTION AND LIVE WARHEADS. AVOID JETTISONING TOWARD OTHER AIRCRAFT OR POPULATED AREAS.
	2	X	[2]	[2]	[1]	[2]	[2]	X												
	3	X	[2]	[2]	[1]	[2]	[2]	[1]												
	4	[1]	[2]	[2]	[1]	[2]	[2]	X												
	5	[1]	X	[2]	[1]	[2]	X	[1]												
	6	[1]	X	[2]	[1]	[2]	[1]	[1]												
	7	[1]	[1]	[2]	[1]	[2]	X	[1]												
	8	X	X	[2]	[1]	[2]	[1]	X												
	9	X	[1]	[2]	[1]	[2]	X	X												
	10	[1]	X	[2]	[1]	[2]	X	X												
	11	X	X	[2]	[1]	[2]	X	[1]												
	12	X	[1]	[2]	[1]	[2]	X	[1]												
	13	[1]	X	[2]	[1]	[2]	[1]	X												

AHR817-77-51-011

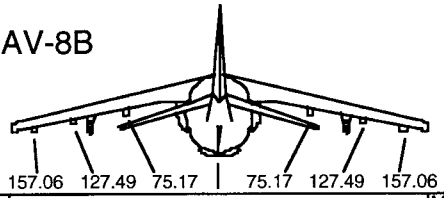
Figure 5-3. External Stores Limitations (Sheet 50 of 66)

AGM-122A C/ATM-122A SIDEARM TACTS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	ACCELERATION-G: CARRIAGE: SYM	UNSYM	RELEASE	JETTISON: STORE	RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
AGM-122A CATM-122A ATM-122A SIDEARM OR TACTS POD ADJACENT TO FUEL TANKS	14	X	X	TK	[1]	TK	X	X	500/ 1.0	200 TO 500/ 0.93	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	0.7 TO 2.0	1.0	NA	45°/ 0°	NA	SEE GENERAL NOTES.
	15	X	□	TK	[1]	TK	[1]	X								0° TANKS		SPECIFIC NOTE 14.
	16	X	[1]	TK	[1]	TK	[1]	[1]		200 TO 350/ 0.8 TANKS	-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY						MISSILE FIRINGS NOT AUTHORIZED ABOVE 25,000 FT. MSL. 200 KCAS IS MINIMUM AUTH. AIRSPEED FOR FIRING OR JETTISON. JETTISON IS TO BE PERFORMED BY FIRING OF MISSILE ONLY.
	17	[1]	[1]	TK	[1]	TK	[1]	X										
	18	[1]	X	TK	[1]	TK	X	[1]										JETTISON OF ADU-299 NOT AUTHORIZED.
	19	[1]	X	TK	[1]	TK	[1]	[1]										
	20	[1]	[1]	TK	[1]	TK	X	[1]										MISSILES MAY BE FIRED AT ANY ANGLE OF BANK. **WARNING** IF POSSIBLE, MANEUVER TO AVOID INGESTION OF LAUNCH PLUME AFTER FIRING, TO AVOID INCREASING PROBABILITY OF ENGINE POP SURGE.
	21	X	X	TK	[1]	TK	[1]	X										
	22	X	[1]	TK	[1]	TK	X	X										
	23	[1]	X	TK	[1]	TK	X	X										**WARNING** JETTISONED MISSILES HAVE ACTIVE GUIDANCE SECTION AND LIVE WARHEADS. AVOID JETTISONING TOWARD OTHER AIRCRAFT OR POPULATED AREAS.
	24	X	X	TK	[1]	TK	X	[1]										
	25	X	[1]	TK	[1]	TK	X	[1]										
	26	[1]	X	TK	[1]	TK	[1]	X										

AV8BB-TAC-05-(77-52)10

Figure 5-3. External Stores Limitations (Sheet 51 of 66)

AV-8B



[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AGM-65 MAVERICK	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS CARRIAGE	RELEASE	JETTISON STORE	JETTISON RACKS	ACCELERATION-G CARRIAGE SYM	CARRIAGE UNSYM	RELEASE	JETTISON STORE	JETTISON RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
AGM-65E AGM-65F CATM-65F TGM-65E LASER MAVERICK IR MAVERICK	1	[1]	X	X	[1]	X	X	[1]	550/ 1.0	550/ 0.93	NA	250 TO 350/ 0.8	-3.0 TO 7.0	1.0 TO 5.5	0.5 TO 3.0	N A	1.0	60°/ 0°	NA	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 9 STA'S 3 & 5: MIN. FIRING SPEED IS 400 KCAS, SEA LEVEL TO 10,000 FT MSL; 450 KCAS, 10-15,000 FT MSL. LAUNCH NOT AUTH. ABOVE 15,000 FT MSL. STA'S 2 & 6: MIN FIRING SPEED IS 200 KCAS, SEA LEVEL TO 33,000 FT MSL. LAUNCH NOT AUTH. ABOVE 33,000 FT MSL.
	2	[1]	X	X	[1]	[1]	X	[1]												
	3	[1]	X	[2]	[1]	[2]	X	[1]												
	4	[1]	X	[2]	[1]	[2]	[1]	[1]												
	5	[1]	[2]	X	[1]	X	[2]	[1]												
	6	[1]	[2]	X	[1]	[1]	[2]	[1]												
AGM-65E AGM-65F CATM-65F TGM-65E LASER MAVERICK IR MAVERICK ADJACENT TO FUEL TANKS	7	[1]	X	(TK)	[1]	(TK)	X	[1]	500/ 1.0	500/ 0.9	NA	250/ TO 350/ 0.8	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	0.5 TO 3.0	NA	1.0	60°/ 0° 0° TANKS	NA	MAX LAUNCH BANK ANGLE IS 30°. IR MAVERICK AUTHORIZED ON DAY ATTACK AV-8B FOR LOGISTIC TRANSPORT ONLY. **CAUTION** SOME LOADINGS ON THIS SHEET MAY EXCEED NATOPS TAKEOFF ASYMMETRY LIMITS. IF SO, A COUNTERBALANCING STORE MUST BE LOADED. MIRROR IMAGE LOADING AUTHORIZED FOR LINES 2, 4, 6 8.
	8	[1]	X	(TK)	[1]	(TK)	[1]	[1]												

AHR817-77-53-011

Figure 5-3. External Stores Limitations (Sheet 52 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

[2] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

ALE-39	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES							MAXIMUM KCAS OR IMN WHICHEVER IS LESS	ACCELERATION-G							MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
		STATION LOADING AND SUSPENSION								CARRIAGE	RELEASE	JETTISON		CARRIAGE		RELEASE	JETTISON		
DECM POD		1	2	3	4	5	6	7				STORE	RACKS	SYM	UNSYM		STORE	RACKS	
ALE-39 CHAFF AND FLARE DISPENSER	1	FUSELAGE MOUNTED DISPENSER - UPWARD/DOWNWARD FIRING: EMPTY, RR-129, RR-144 CHAFF, MK 46, MJU-8B, MJU-8A/B FLARES, MJU-27/B DECOY FLARE, SM-875/ALE STUF, OR COMBINATIONS. DOWNWARD FIRING: EMPTY, AM-6988 POET DECOY, GEN-X, OR COMBINATIONS.							LBA	LBA	NA	NA	LBA	LBA	LBA	NA	NA	LBA	NA	FUSELAGE MOUNTED DISPENSER, AUTHORIZED FOR USE WITH ALL APPROVED STORE LOADINGS. JAMMERS ARE NOT AUTHORIZED FOR UPWARD FIRING DISPENSER. UNDER SOME LOADING CONDITIONS MRI MAY INCREASE FROM 100 TO 150 MS.
AN/ALQ-164 DECM POD	1	[1]	[2]	[2]	●	[2]	[1]													SPECIFIC NOTES 1, 2, & 9 APPLY TO LINES 2 & 3. MINIMUM AN/ALQ-164 OPERATING AIRSPEED IS 200 KCAS.
	2	[1]	[2]	(TK)	●	(TK)	[2]	[1]	500/ 1.0	NA	200 TO 350/ 0.8 TANKS	NA	0.0 TO 6.0 WITH FUEL -3.0 TO 7.0 EMPTY	1.0 TO 4.8 WITH FUEL 1.0 TO 5.5 EMPTY	NA	1.0	NA	0°	NA	JETTISON OF AN/ALQ-164 IS NOT AUTHORIZED. AUTHORIZED FOR USE WITH ALL APPROVED STORE LOADINGS. CAUTION AIRCRAFT CARRYING THE ALQ-164 POD HAVE EXHIBITED HIGHER THAN NORMAL YAW RATES DURING DEPARTURES BELOW 250 KCAS. THESE RATES SIGNIFICANTLY INCREASE THE POSSIBILITY OF FAN RUB DURING DEPARTURES WITHIN THE NATOPS ENVELOPE.
	3	[1]	(TK)	[2]	●	[2]	(TK)	[1]					0.0 TO 3.0 WITH FUEL 0.0 TO 5.5 EMPTY	1.0 TO 2.0 WITH FUEL 1.0 TO 3.0 EMPTY						CAUTION CRUISE PERFORMANCE OF AIRCRAFT CARRYING THE ALQ-164 POD IS UNKNOWN AT THIS TIME. USE CAUTION WHEN CALCULATING RANGE DISTANCES.

AHR817-77-54-011

Figure 5-3. External Stores Limitations (Sheet 53 of 66)

AV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

FUEL TANKS / GUN	LINE NUMBER	STATION LOADING AND SUSPENSION: DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
300 GALLON EXTERNAL FUEL TANKS	1			(TK)	[1]	(TK)			500/ 1.0	NA	200 TO 350/ 0.8	NA	0.0 TO 6.0 WITH FUEL	1.0 TO 4.8 WITH FUEL	NA	1.0	NA	0°	NA	SEE GENERAL NOTES. SPECIFIC NOTES: 1,2,9 SEE INDIVIDUAL STORE TYPES FOR AUTHORIZED LOADING WITH FUEL TANKS.
													-3.0 TO 7.0 EMPTY	1.0 TO 5.5 EMPTY						
	2		(TK)		[1]		(TK)						0.0 TO 3.0 WITH FUEL	1.0 TO 2.0 WITH FUEL						
	3		(TK)	(TK)	[1]	(TK)	(TK)		450/ 0.9				0.0 TO 5.5 EMPTY	1.0 TO 3.0 EMPTY						
GAU-12/U 25 MM GUN	1	FUSELAGE MOUNTED							LBA	SEE RMRK	NA	NA	LBA	LBA	0 TO 7.0	NA	NA	NA	NA	SEE GENERAL NOTES. FUSELAGE MOUNTED GUN IS AUTHORIZED FOR CARRIAGE WITH ALL APPROVED STORE LOADINGS. MINIMUM FIRING AIRSPEED FOR AIRCRAFT WITH F402-RR-408/A ENGINE IS 150 KCAS; WITH F402-RR-406/A ENGINE, 250 KCAS. FIRING IS NOT AUTHORIZED ABOVE 20,000 FT MSL. WHEN FIRING, ENGINE RPM MUST BE GREATER THAN 60%. THE GUN MAY BE FIRED AT ANY ANGLE OF BANK.

AV8BB-TAC-05-(77-55)10

Figure 5-3. External Stores Limitations (Sheet 54 of 66)

AV-8B

[7] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/JETTISON ON THIS STATION MAY BE CARRIED/JETTISONED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

BAGGAGE POD	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MXU-648A/A BAGGAGE CONTAINER	1	[7]	●	●	[7]	●	●	[7]	450/ 0.9	NA	NA	NA	-1.0 TO 5.0	0.0 TO 3.0	NA	NA	NA	NA	NA	SEE GENERAL NOTES.
	2	[7]	[7]	●	[7]	●	[7]	[7]												NOTE: MAX CARGO WT.: 300 LB.
	3	[7]	●	[7]	[7]	[7]	●	[7]												JETTISON OF MXU-648A/A IS NOT AUTHORIZED.
	4	[7]	●	[7]	[7]	[7]	[7]	[7]												MAXIMUM ROLL LIMITED TO 1/2 STICK DEFLECTION TO HIGH SPEED STOP.
	5	[7]	[7]	●	[7]	[7]	[7]	[7]												MIRROR IMAGE LOADING AUTHORIZED FOR LINES 4 & 5.

AV8B-TAC-05-(77-56)10

Figure 5-3. External Stores Limitations (Sheet 55 of 66)

AV-8B

7 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/JETTISON ON THIS STATION MAY BE CARRIED/JETTISONED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

BAGGAGE POD	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
MXU-648A/A BAGGAGE CONTAINER ADJACENT TO FUEL TANKS	6	[7]	●	(TK)	[7]	(TK)	●	[7]	450/ 0.9	NA	NA MXU	NA	0.0 TO 5.0 WITH FUEL	1.0 TO 3.0 WITH FUEL OR EMPTY	NA	NA	NA	NA	NA	SEE GENERAL NOTES. SPECIFIC NOTES: 1, 2, 9.
	7	[7]	●	(TK)	[7]	(TK)	[7]	[7]			200 TO 350/ 0.8 TANKS		-1.0 TO 5.0 EMPTY			1.0 TANKS		0° TANKS		NOTE: MAX CARGO WT.: 300 LB. JETTISON OF MXU-648A/A IS NOT AUTHORIZED.
	8	[7]	(TK)	●	[7]	●	(TK)	[7]	450/ 0.9	NA	NA MXU	NA	0.0 TO 3.0 WITH FUEL	1.0 TO 2.0 WITH FUEL	NA	NA	NA	NA	NA	MAXIMUM ROLL LIMITED TO 1/2 STICK DEFLECTION TO HIGH SPEED STOP.
	9	[7]	(TK)	●	[7]	[7]	(TK)	[7]			200 TO 350/ 0.8 TANKS		0.0 TO 5.0 EMPTY	1.0 TO 3.0 EMPTY		1.0 TANKS		0° TANKS		MIRROR IMAGE LOADING AUTHORIZED FOR LINES 7 & 9.

AV8BB-TAC-05-(77-57)10

Figure 5-3. External Stores Limitations (Sheet 56 of 66)

TAV-8B

[1] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

PRACTICE BOMBS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 2	6	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO, CCIP, DSL	NOTES/ REMARKS
MK 76 OR BDU-33	1	●	●	550/ 1.0	550/ 0.93	550/ 0.93	250 TO 350/ 0.8	-1.0 TO 5.5	1.0 TO 4.5	0.5 TO 4.0	1.0	1.0	60°/ 0° 0° ITER	30MS RIPP SNGLS 60MS RIPP PAIRS	SEE GENERAL NOTES. SPECIFIC NOTES: 3,5 MIXED LOADS OF PRACTICE BOMBS ARE AUTHORIZED ON THE AIRCRAFT, I.E. AN ITER LOAD OF MK 76 ON STA 2 AND AN ITER LOAD OF BDU-48 ON STA 6.
	2	●	[1]												
	3	[1]	●												
MK 106 MOD 5 BDU-48	4	●	●										30°/ 0° 0° ITER	90 MS RIPP SNGLS 200 MS RIPP PAIRS	PRACTICE BOMBS MAY NOT BE MIX LOADED ON INDIVIDUAL ITERS (NOTE 5 APPLIES). ONLY ONE STORE TYPE MAY BE DELIVERED AT A TIME. CAUTION SOME LOADINGS ON THIS SHEET MAY EXCEED NATOPS TAKEOFF ASYMMETRY LIMITS. IF SO, A COUNTERBALANCING STORE MUST BE LOADED.
	5	●	[1]												
	6	[1]	●												

AV8B-TAC-05-(77-58)10

Figure 5-3. External Stores Limitations (Sheet 57 of 66)

TAV-8B

1 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

ROCKETS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES			MAXIMUM KCAS OR IMN WHICHEVER IS LESS			ACCELERATION-G					MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO, CCIP, DSL	NOTES/ REMARKS
		STATION LOADING AND SUSPENSION			CARRIAGE	RELEASE	JETTISON	CARRIAGE		RELEASE	JETTISON				
SUU-25 FLARE DISPENSER		2	6				STORE	SYM	UNSYM		STORE	RACKS			
LAU-61 LAU-68	1	●	●		550/ 1.0	550/ 0.93	200 TO 350/ 0.8	0.0 TO 5.5	1.0 TO 4.0	0.5 TO 1.5	1.0	NA	60°/ 0°	NA	SEE GENERAL NOTES. 425 KCAS MINIMUM FIRING AIRSPEED UP TO 10,000 FT MSL. 450 KCAS MINIMUM FIRING AIRSPEED ABOVE 10,000 FT MSL. CAUTION HUNG ROCKETS MAY RESULT FROM AIRCRAFT CONTROLLED RIPPLE FIRINGS
	2	●	[1]												
	3	[1]	●												
LAU-10	1	●	●												
	2	●	[1]												
	3	[1]	●												
SUU-25F/A DISPENSER/ LUU-2A/B LUU-2B/B FLARES	1	●	●		550/ 1.0	520/ 0.9	200 TO 350/ 0.8	0.0 TO 5.5	1.0 TO 4.0	0.9 TO 1.5	1.0	NA	10°/ 0°	500 MS RIPP SNGL 1,000 MS RIPP PAIRS	SEE GENERAL NOTES. LUU-2A/B AUTHORIZED FOR SHORE BASED OPERATIONS ONLY. FOR LINE 2, QTY UP TO 8, MULT 1 ONLY, 1,000 MS MRI
	2	●	[1]												
	3	[1]	●												

AV8BB-TAC-05-(77-59)10

Figure 5-3. External Stores Limitations (Sheet 58 of 66)

TAV-8B

[8] EXCEPT FOR FUEL TANKS, ANY DISSIMILAR PARENT STATION STORE OR ITER LOAD AUTHORIZED FOR CARRIAGE/JETTISON ON THIS STATION MAY BE CARRIED/JETTISONED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

FUEL TANKS / BAGGAGE POD	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES: STATION LOADING AND SUSPENSION 2	6	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
300 GALLON EXTERNAL FUEL TANKS	1	(TK)	(TK)	500/ 1.0	NA	200 TO 350/ 0.8	NA	0.0 TO 3.0 WITH FUEL 0.0 TO 5.5 EMPTY	1.0 TO 2.0 WITH FUEL 1.0 TO 3.0 EMPTY	NA	1.0	NA	0°	NA	SEE GENERAL NOTES. SPECIFIC NOTES: 1,2, 9
MXU-648A/A BAGGAGE CONTAINER	1	●	●	450/ 0.9	NA	NA	NA	0.0 TO 3.0	1.0 TO 2.0	NA	NA	NA	NA	NA	SEE GENERAL NOTES. MAX CARGO WT: 300 LB. JETTISON OF MXU-648A/A IS NOT AUTHORIZED.
	2	●	[8]												
	3	[8]	●												

AV8BB-TAC-05-(77-60)10

Figure 5-3. External Stores Limitations (Sheet 59 of 66)

TAV-8B

2 EXCEPT FOR FUEL TANKS, ANY DISSIMILAR STORE LOADED ON EITHER PARENT STATION OR ITER WHICH IS AUTHORIZED FOR CARRIAGE/RELEASE ON THIS STATION MAY BE CARRIED/RELEASED.

NA - NOT APPLICABLE
NE - NOT ESTABLISHED
LBA - LIMIT BASIC AIRCRAFT

AIM-9 C/N/ATM-9 SIDEWINDER TACTS	LINE NUMBER	DISTANCE FROM AIRCRAFT CENTERLINE - INCHES / STATION LOADING AND SUSPENSION 1	2	3	4	5	6	7	MAXIMUM KCAS OR IMN WHICHEVER IS LESS: CARRIAGE	RELEASE	JETTISON: STORE	JETTISON: RACKS	ACCELERATION-G: CARRIAGE: SYM	CARRIAGE: UNSYM	RELEASE	JETTISON: STORE	JETTISON: RACKS	MAX DIVE FOR DEL/JETT-DEG	MIN INT FOR AUTO,CCIP,DSL	NOTES/ REMARKS
AIM-9 CATM-9/NATM-9 MISSILES OR TACTS POD	1		X				X		550/ 1.0	550/ 0.93	550/ 0.93	NA	LBA	LBA	LBA	1.0	NA	NA/ 0°	NA	SEE GENERAL NOTES. MIRROR IMAGE LOADING IS AUTHORIZED FOR LINE 2. •AIM-9 MISSILE FIRINGS ARE NOT AUTHORIZED ABOVE 40,000 FT. MSL. •MINIMUM AUTH. AIRSPEED FOR AIM-9 FIRING OR JETTISON IS: 425 KCAS, 0 TO 10,000 FT MSL. 450 KCAS, 10,000 TO 40,000 FT MSL. •JETTISON OF AIM-9 MISSILE IS TO BE PERFORMED BY FIRING OF MISSILE ONLY. •JETTISON OF ADU-299 IS NOT AUTHORIZED. •MISSILES MAY BE FIRED AT ANY ANGLE OF BANK. **WARNING** IF POSSIBLE, MANEUVER TO AVOID INGESTION OF LAUNCH PLUME AFTER FIRING, TO AVOID INCREASING PROBABILITY OF ENGINE POP SURGE. **WARNING** JETTISONED AIM-9 MISSILES HAVE ACTIVE GUIDANCE SECTION AND LIVE WARHEADS. AVOID JETTISONING AIM-9 MISSILES TOWARD OTHER AIRCRAFT OR POPULATED AREAS.
	2	X					[2]													

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Figure 5-3. External Stores Limitations (Sheet 60 of 66)

GENERAL NOTES

A. Only stores loading shown in Figure 5-3 are authorized.

B. Only those multiple store configurations shown in Figure 5-3 are authorized. Loading stores in a configuration that is not shown or loading stores on a station that is shown empty (no store or mixed store loading symbol displayed) is not authorized. Allowable mixed load configurations are specified via the mixed store loading symbol (numbered square).

WARNING

Since unarmed releases (safe jettison) cannot be assured, live store jettison must be performed at an altitude and in a delivery that will allow SAFE escape should the fuze inadvertently arm.

C. In the DSL (1) mode, a maximum of two stations may be selected only when the two stations selected meet these conditions:

(1) The two stations selected are symmetric to each other (e.g., 1 and 7)
(2) The two stations selected are loaded with the same store type.

D. For mixed stores configurations:

1. Only one store type may be selected for release on any bomb run.
2. When carrying mixed stores, any store may be released first unless specifically restricted in Figure 5-3.
3. When carrying mixed stores, the most restrictive carriage limitations apply.

E. Release intervals found under ''MIN INT FOR AUTO, CCIP, DSL'' column are valid only if the stores are released in the normal release sequence and order. Ripple releases are not authorized if stores are released out of their normal sequence or order.

F. Use the following throttle settings for the BRU-36/A or BRU-36A/A bomb racks:

Station	Throttle Setting	Weapon(s)
1,3,4,5, AND 7:	100/100 (fwd/aft)	All authorized stores and suspension equipment
2 AND 6:	66/100 (fwd/aft)	Mk 81 bomb w/CON FIN or Mk 14 LD/HD fin. Mk 82/BDU-45 bomb w/CON FIN or Mk 15 LD/HD or BSU-86 LD/HD or BSU-33 fin. Mk 83 bomb w/CON FIN, BSU-85 LD/HD. Mk 77 Fire Bomb. GBU-12 Guided Bomb. GBU-16 Guided Bomb. Mk 20/CBU-99/ CBU-100 Rockeye. CBU-78A/B GATOR.
	100/100 (fwd/aft)	All other authorized stores and suspension equipment

G. Singles, pairs, ripple singles, and ripple pairs releases are Authorized unless Specifically Prohibited. Bomb ripple releases with MULT greater than 2 are not authorized.

Figure 5-3. External Stores Limitations (Sheet 61 of 66)

H. Maximum authorized bank angle for release and/or jettison is 15É, unless otherwise noted.

I. Use of the step option is not authorized except when firing 2.75-inch rockets, 5.0-inch rockets, AIM-9, and AGM-65E, AGM-65F, and AGM-122 missiles.

J. Use the following table to determine the minimum interval which may be used for DIR mode deliveries. These minimums must be strictly adhered to.

MINIMUM DIR MODE INTERVAL

WEAPON	PARENT RACK	ITER	
	Ripple Singles	Ripple Singles	Ripple Pairs 1
Mk 81 CONFIN	4Oms	6Oms	9Oms
Mk 81/Mk 14 LD	4Oms	Not Authorized	Not Authorized
Mk 81/Mk 14 HD	11Oms	2OOms	35Oms
Mk 82 CONFIN (BSU-33 AND MAU-93)	3Oms	12Oms	15Oms
Mk 82/Mk 15 LD (BSU-86LD)	3Oms	12Oms	12Oms
Mk 82/Mk 15 HD (BSU-86HD)	11Oms	2OOms	35Oms
Mk 83 CONFIN	6Oms	9Oms	Not Authorized
Mk 83/ BSU-85 HD/LD	6Oms	12Oms	21Oms
Mk 2O Mod 7, 8, 9, 1O, 11, 12	8Oms	11Oms	21Oms
CBU-78A/B, B/B GATOR	8Oms	11Oms	21Oms
CBU-99/1OO	8Oms	11Oms	21Oms
Mk 77 Mod 4 and 5	4Oms	Not Authorized	Not Authorized
Mk 76/BDU-33	——	9Oms	24Oms
Mk 1O6/BDU-48	——	2OOms	2OOms

1 When more than one station is selected in DIR mode, the only multiples selectable are one and a number equal to stations selected. Releasing a multiple greater than two is prohibited. Select only two symmetrical stations at a time to accomplish ripple pairs. Select stations in order from outboard to inboard. Selected stations must have identical loadings.

WARNING

In the DIR mode, it is possible to select release intervals below the established safe minimum interval for release; therefore, the minimum release intervals shown above must be strictly adhered to. Selection of more than one type store for a planned release is not authorized.

Use of incorrect SMC codes to decrease bomb spacing will result in invalid ballistics and may create a hazardous release condition.

K. Maximum authorized number of stations that may be simultaneously jettisoned using selective jettison is two.

L. For asymmetric loadings in excess of 90,000 inch pounds; maximum carriage and release speed shall be limited to 520 KCAS/0.88 IMN.

Figure 5-3. External Stores Limitations (Sheet 62 of 66)

WARNING

With large asymmetries, flying qualities rapidly degrade at high MACH. Lateral stick requirements to maintain wings level may exceed the high speed stop, delaying dive recovery and increasing altitude loss. Release at minimum release altitude should be avoided.

M. The carriage of wing mounted external stores and suspension equipment decreases the aircraft's maximum aft CG limit by an amount based on the stability index (SI) for each loading configuration. The authorized loadings of Figure 5-3 do not necessarily ensure compliance with aircraft SI adjusted CG limits. It is the pilot's responsibility to compute aircraft weight and balance prior to flight and ensure that the CG is maintained within limits. The AV-8B mission planning system (AMPS/NAMPS) can provide the required weight and balance information.

N. Speed brakes must be retracted when stores are released. Failure to do so may adversely affect store separation characteristics.

SPECIFIC NOTES

1. 300 gallon external fuel tanks are to be configured with a single, horizontal tail fin on the outboard side of the tank.

2. Lateral stick inputs not to exceed one-half high-speed stop under the following conditions:

   (a) Loadings greater than 650 pounds on centerline station 4.
   (b) Loadings greater than 1,400 pounds on stations 2 and 6.
   (c) All fuel tank configurations except empty inboard (stations 3 and 5) tanks.

3. Downloading of individual stores from authorized ITER loadings is not authorized (except for Mk 76, Mk 106, BDU-33, and BDU-48 practice bombs). Symmetrical downloading of ITERs with Mk 76, Mk 106, BDU-33, or BDU-48 practice bombs is authorized.

4. Airspeed restrictions for tail fin mods authorized for the AV-8B are:

Weapon	Tail Fin Mod Restriction
Mk 81 LD:	Mk 14 Mod 1 and 2 ONLY - No Restrictions
Mk 81 HD:	Mk 14 Mod 1 fin (cable wrapped) - 350 KCAS maximum release Mk 14 Mod 2 fin (cable wrapped) - 500 KCAS maximum release
Mk 82 LD:	Mk 15 Mod 4, 4A, or 6 fins - No restrictions BSU-86 - No restrictions
BDU-45/B LD:	Mk 15 Mod 4, 4A, or 6 fins - No restrictions BSU-86 - No restrictions

Figure 5-3. External Stores Limitations (Sheet 63 of 66)

Weapon	Tail Fin Mod Restriction
Mk 82 HD:	Mk 15 Mod 4 or 4A fins (cable wrapped) - 550 KCAS maximum release Mk 15 Mod 6 fins - 550 KCAS maximum release BSU-86 - No restrictions
BDU-45 HD:	Mk 15 Mod 4 and 4A fins (cable wrapped) - 550 KCAS maximum release Mk 15 Mod 6 fins - 550 KCAS maximum release

The term ‘‘cable wrapped’’ refers to four loops of aircraft control cable (wire rope, steel, NSN 4010-00-222-4474) wrapped around the fin band to retain the fin bands on the fin during fin opening.

WARNING

Use of Mk 15 Mod 1, 1A, 2, 2A, 3, and 3A fins is prohibited.

5. Mixed stores loading of Mk 76 and BDU-33 or Mk 106 or BDU-48 practice bombs on the ITER is not authorized. Mixed stores loading of practice bombs (Mk 76/106, BDU 33/48) with Mk 58 MLMs is authorized in accordance with figure 5-3.

6. For single and odd quantity ripple releases of Mk 83 bombs, airspeed during carriage, delivery, and dive recovery must not exceed 0.88 IMN/520 KCAS or the limits of Figure 5-3, whichever is less.

WARNING

Above 0.88 IMN as g is increased above 3.0, lateral stick requirements to maintain wings level can rapidly exceed the high speed stop, delaying dive recovery and increasing altitude loss. Releases at minimum release altitude should be avoided.

7. See pertinent data for fuzes and initiators below:

Fuze/Device	Maximum Carriage Airspeed	Maximum Release Airspeed	Minimum Release Airspeed	Remarks
M904 Mechanical Nose Fuze	600 KCAS	600 KCAS	175 KCAS	Safety clip is the only authorized arming wire retention device.
Mk 344 Fuze	None	None	None	Not authorized for use with retarded Mk 80 series bombs.
Mk 339 Mechanical Time Fuze	None	None	225 KCAS	Refer to fuze description for limitations.

Figure 5-3. External Stores Limitations (Sheet 64 of 66)

Fuze/Device	Maximum Carriage Airspeed	Maximum Release Airspeed	Minimum Release Airspeed	Remarks
Mk 376	None	None	400 KCAS (HD)	Minimum KCAS applies to retarded release.
FMU-140/B Despenser Proximity Fuze	None	None	225 KCAS	
Mk 43 Target Detecting Device	None	None	None	See SPECIFIC NOTE 8 for authorized weapons and MRI's.
Mk 13 Initiator	None	None	300 KCAS	
FMU-139/B Electric Fuze	None	None	400 KCAS	Authorized Weapons: Mk 82 with MAU-93, BSU-33, Mk 15 MOD 4/4A/6 (LD/HD), BSU-86 (LD/HD), Mk 83 with CONFIN, BSU-85 (LD/HD), GBU-12 C/B, GBU-12 D/B, GBU-16 A/B, GBU-16 B/B.
Mk 20/Mk 20A1 Sensing Element Proximity Fuze	None	None	None	Not Authorized.

8. Mk 43 TDD authorized for single and ripple single releases from parent rack only for the following weapon and corresponding MRI's:

   Mk 82, Mk 83 Low Drag - 500 ms for DSL, equivalent foot spacing in CCIP, AUTO.
   Mk 82 High Drag - 240 ms for DSL, equivalent foot spacing in CCIP, AUTO.
   Mk 83 High Drag - 200 ms for DSL, equivalent foot spacing in CCIP, AUTO.

9. Dive recoveries with tanks should be performed with caution. A maximum of 4g should be used for planned dive recoveries.

WARNING

Flying qualities are degraded due to the sudden and severe onset of buffet. Releases at the minimum release altitude should be avoided due to excessive altitude lost if severe buffet is encountered during the pullout.

10. With pods set to ripple, only MULT settings of 1 or 2 are authorized with LAU-61 or LAU-68 rocket launchers.

Figure 5-3. External Stores Limitations (Sheet 65 of 66)

11. Aircraft software will not balance asymmetric load condition caused by hung weapons on ITERS.

12. If carried singly on ITER, use store code for Mk 106 practice bomb. If carried on ITER with practice bombs loaded on shoulder stations, use store code of the loaded practice bombs. Mixed types of practice bombs (Mk 76/106) on the same ITER are prohibited. Mixed loads of practice bombs are authorized on the aircraft, i.e., an ITER load of Mk 76 on station 2 and an ITER load of BDU-48 on station 6.

13. Release at normal acceleration less than 1.0g will result in bomb-to-remaining-bomb collision.

14. Authorized only for Omnibus 6+C and Omnibus 7 equipped aircraft.

15. Single releases not authorized on Omnibus R-3 equipped aircraft.

Figure 5-3. External Stores Limitations (Sheet 66 of 66)

PART V

SPECIAL PURPOSE EQUIPMENT

(NOT APPLICABLE)

PART VI

AIRCRAFT PERFORMANCE

(REFER TO VOLUME I)

PART VII

AIRCRAFT TACTICAL PLANNING AND EMPLOYMENT

(REFER TO VOLUME III)

PART VIII

LAND-BASED AND SHIPBORNE THREAT SYSTEMS

(REFER TO MCM 3-1)

PART IX

DEFENSIVE ELECTRONIC WARFARE SYSTEMS

(REFER TO VOLUME III)

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