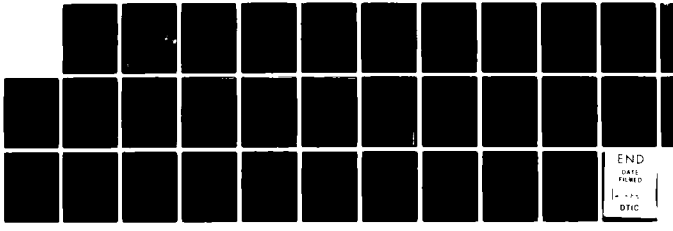
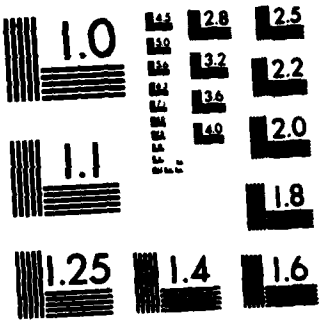
AD-A122 550 SYSTEM INTERFACE REQUIREMENTS SPECIFICATION PART II 1/1
INTERFACE CONFIGURATI..(U) HUGHES AIRCRAFT CO CANOGA
PARK CALIF MISSILE SYSTEMS DIV 24 JUL 73
UNCLASSIFIED AFSC-IS-30873-013A F33657-68-C-0829 F/G 16/4.1 NL





HUGHES
HUGHES AIRCRAFT COMPANY
CODE IDENT 82577

AFSC

SPECIFICATION NO. IS 30873-013A

PART II OF TWO PARTS

PAGE II-1 OF 24 PAGES

(1)

Part I
AD-393 948

SYSTEM INTERFACE REQUIREMENTS SPECIFICATION

PART II

INTERFACE CONFIGURATION AND ACCEPTANCE TEST REQUIREMENTS

A-7D AIRCRAFT SEGMENT/AGM-65A MISSILE SEGMENT

OF THE

WEAPON SYSTEM 319A (MAVERICK)

PREPARED UNDER

CONTRACT NO. F33657-68-C-0829

(ITEM A031 OF DD FORM 1423 CONTRACTOR DATA REQUIREMENTS LIST)

Approved: _____ 20 July 1973
W.I. Green, Program Manager (Date)
AGM-65A Missile Program
Hughes Aircraft Company

Approved: _____
Vought Aeronautics Division (Date)
LTV Aerospace Corporation

Approved: _____ 24 July 1973
AGM-65A System Program Office (Date)

Approved: _____
A-7D Program Management (Date)
Naval Air Systems Command

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LIST OF TABLES

1. SCOPE

→ This part of this specification establishes the requirements for complete identification and acceptance of all interfaces of the AGM-65A missile segment (~~see 6.1.1~~) and the A-7D carrier aircraft segment (~~see 6.1.2~~) of the Weapon System 319A (WS-319A) to be formally agreed to by the Air Force, subsequent to establishment of the interface configuration baseline. The configuration requirements peculiar to the production, testing, quality control, and acceptance of the interface between the AGM-65A missile segment and the A-7D carrier aircraft are specified herein. ←

The interface configuration baseline shall be established by First Article Configuration Inspection (FACI).

2. APPLICABLE DOCUMENTS

The following documents, of the exact issue and date shown, form a part of this specification to the extent specified herein. In the event of conflict between documents referenced here and other detail contents of Sections 3, 4, 5, and 10, the detail requirements of Sections 3, 4, 5, and 10 shall be considered a superseding requirement.

SYSTEM PROGRAM DOCUMENTS

CP30873-031A Part II	dated 16 December 1972 Launcher, Guided Missile, Aircraft, LAU-88/A for Weapons System 319A (MAVERICK)

STANDARDS

Military

MIL-W-5088B	dated 18 June 1965 Military Specification, Wiring, Aircraft, Installation of
MIL-STD-704	dated 6 October 1959 Electric Power, Aircraft Characteristics and Utilization of

SPECIFICATIONS

VAD 204-16-13	Procurement Specification AN/APQ-126, Forward Looking Radar System for A-7D/E

DRAWINGS

Air Force 69J13060	Rack, Bomb Ejector, Aircraft, MAU-12C/A

3. REQUIREMENTS

3.1 Performance. Not applicable.

3.2 Interface configuration.

3.2.1 Interface configuration drawing. Applicable interface configuration drawings are incorporated herein as Figures 1 and 2, supplemented by Tables I through IV.

3.2.1.1 Physical interface.

3.2.1.1.1 Mechanical interface. The mechanical interface of the aircraft segment and the missile segment shall be as defined in Figure 1.

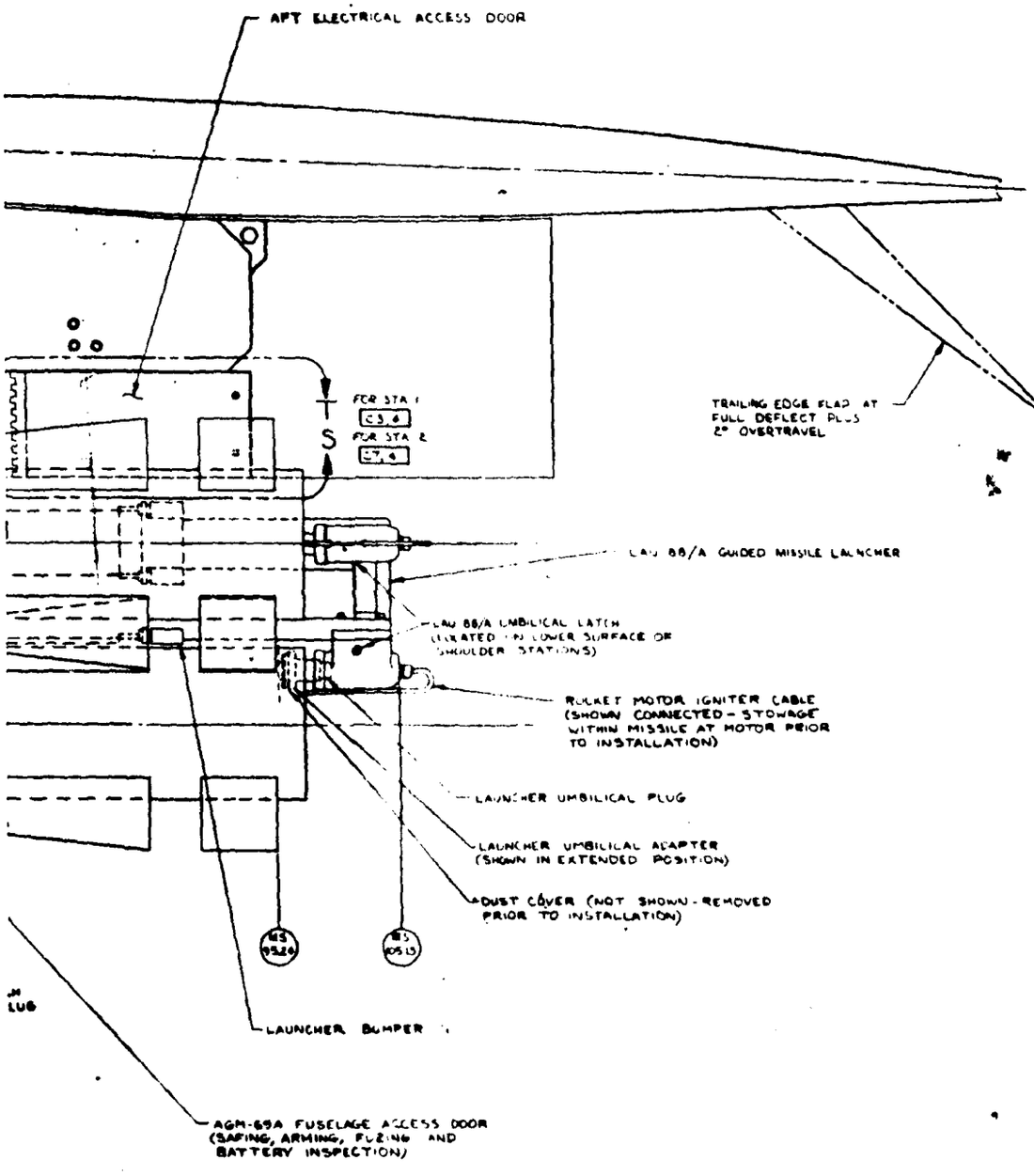
3.2.1.1.2 Carriage configuration interface. The carriage configuration interface shall be as shown in Figure 1.

3.2.1.2 Electrical interface. The electrical interface shall be at the aircraft adapter connector in the aircraft segment mated with the launcher interface connector in the missile segment as shown in Figure 2.

3.2.1.2.1 Electrical power. The aircraft segment shall provide at the interface, and the missile shall be capable of accepting, the following power forms.

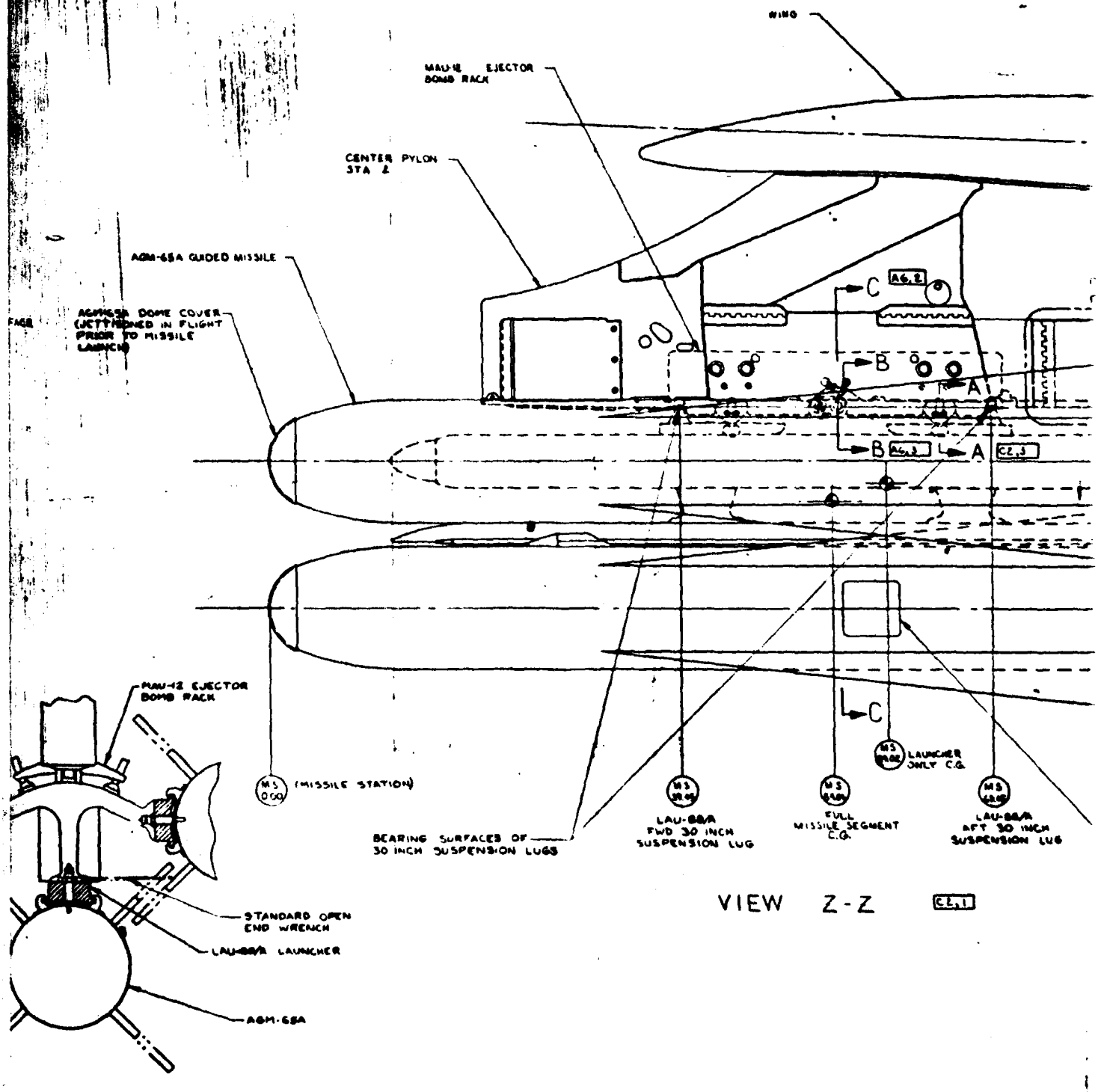
3.2.1.2.1.1 AC power. The AC power provided by the aircraft segment shall be as specified in Table I and shall be capable of meeting the power demand of Figure 3. This power shall meet the AC power requirements of MIL-STD-704, Category B.

3.2.1.2.1.2 DC power. The DC power provided by the aircraft segment shall be as specified in Table I and shall be capable of meeting the power demand of Figure 4 plus the squib-firing pulses of Table II. This power shall meet the requirements of MIL-STD-704, Category B.



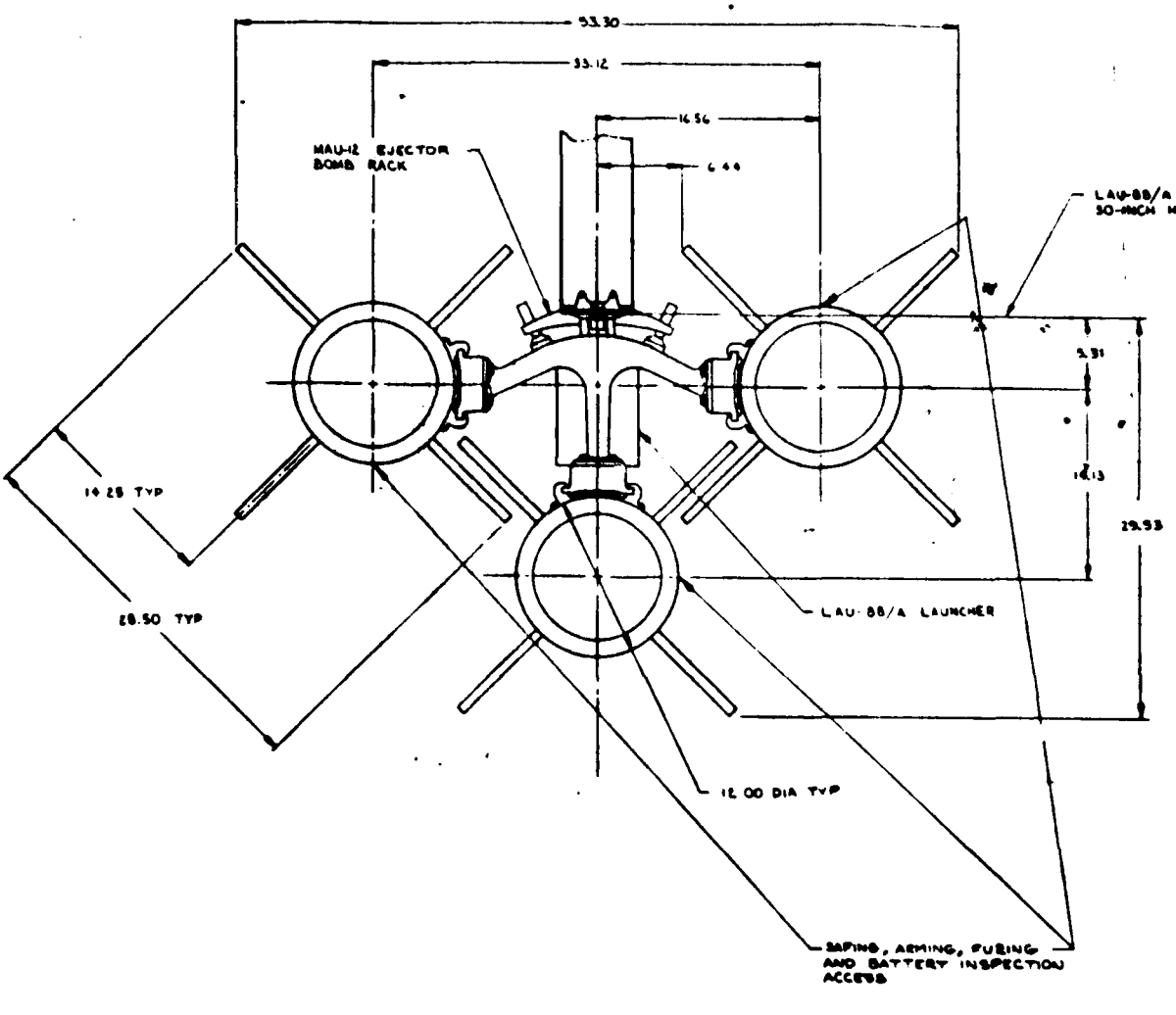
INTERFACE CONTROL-
MECHANICAL
A-7D/AGM-69A

FIGURE 1



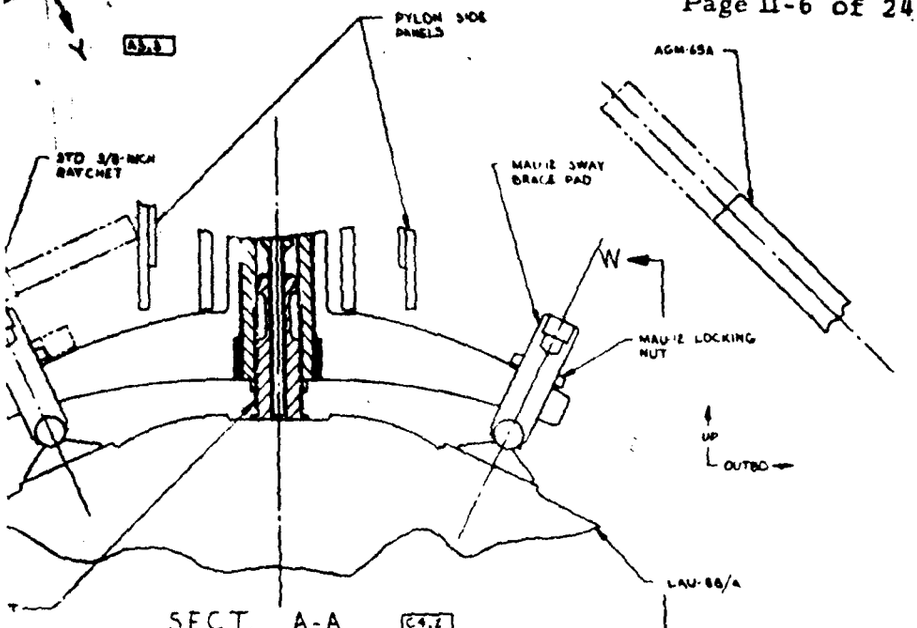
SECT C-C C3,3
SCALE: VR
MS 0.00 LOOKING AFT SHOWING TIGHTENING LAUNCHER SHEAF

FIGURE 1



SE

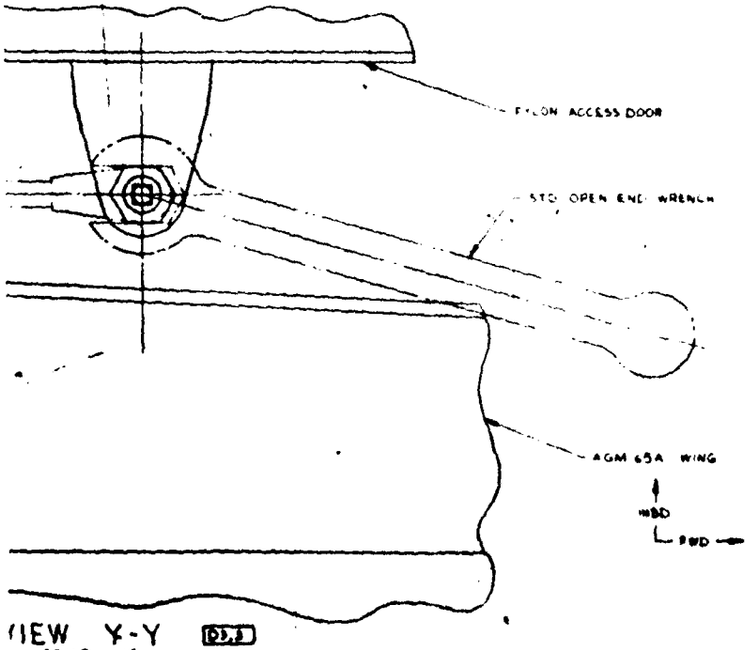
SECTION AT
ACCESS FOR
PINS



SECT. A-A

SCALE 1/1

SECT THRU C OF AFT SWAY-BRACE (MS 69.45) LOOKING AFT SHOWING SWAY-BRACE PADS AND LOCKING NUTS OF THE MAU-12 EJECTOR BOMB R/CK



VIEW Y-Y

SCALE 1/1

DOOR AT AFT SWAY BRACE SHOWING THE RATCHET & END WRENCH IN USE.

FIGURE 1

INTERFACE CONTROL
MECHANICAL
A-7D/ AGM-65A
FIGURE 1

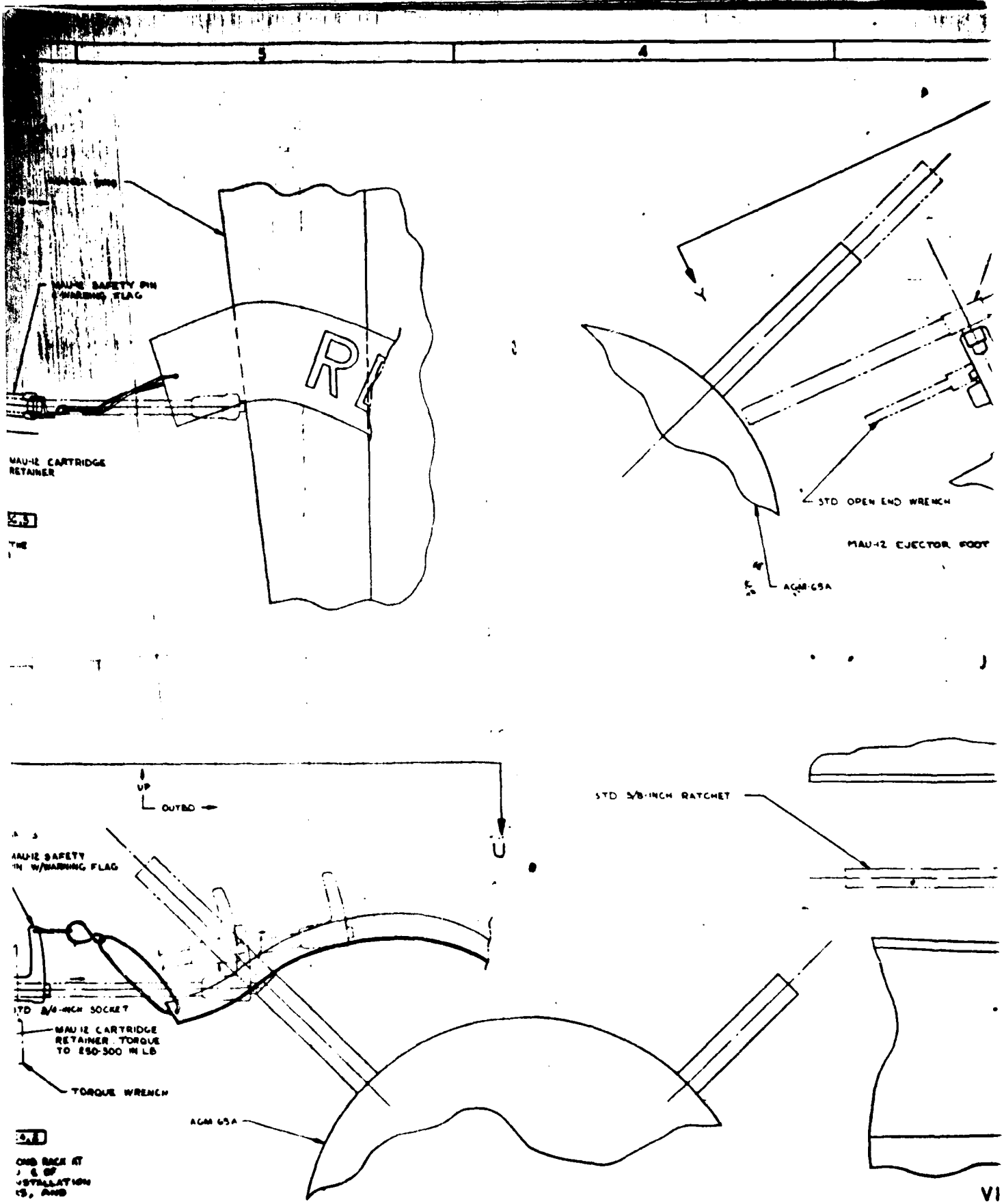
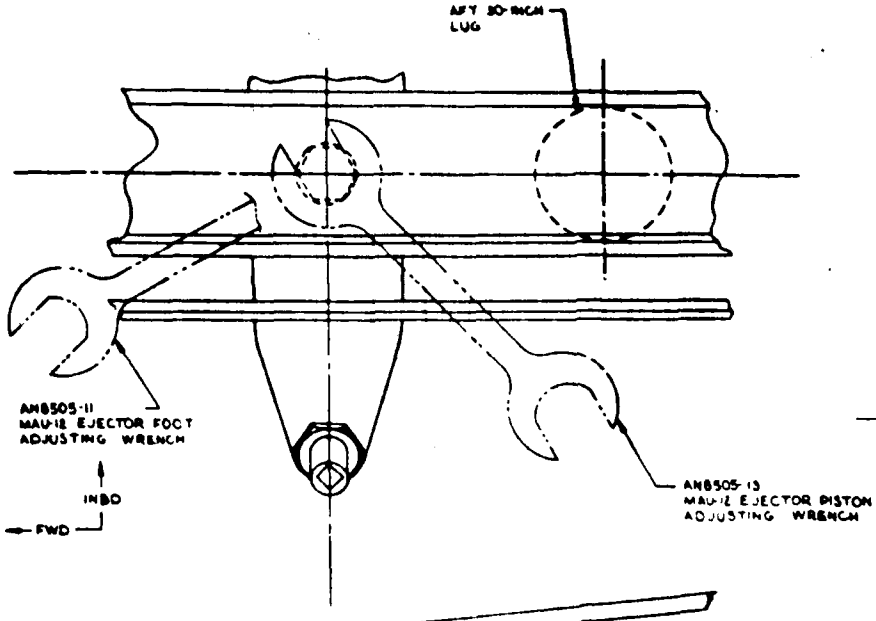

MAU-12 CARTRIDGE RETAINER
STD OPEN END WRENCH
MAU-12 EJECTOR FOOT
AGM-65A
UP
OUTBD
STD 3/8-INCH RATCHET
MAU-12 CARTRIDGE RETAINER TORQUE TO 250-300 IN LB
TORQUE WRENCH
AGM 65A

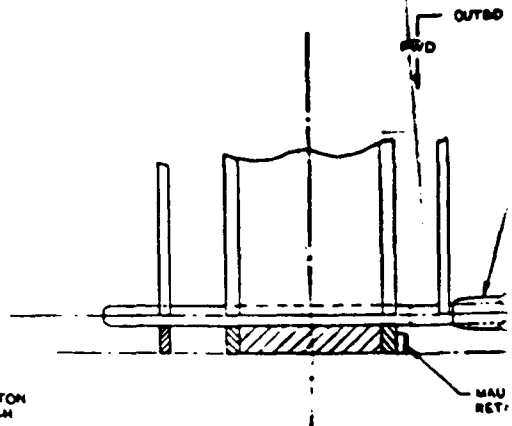
FIGURE 1



VIEW V-V D8,3

SCALE : 1/1

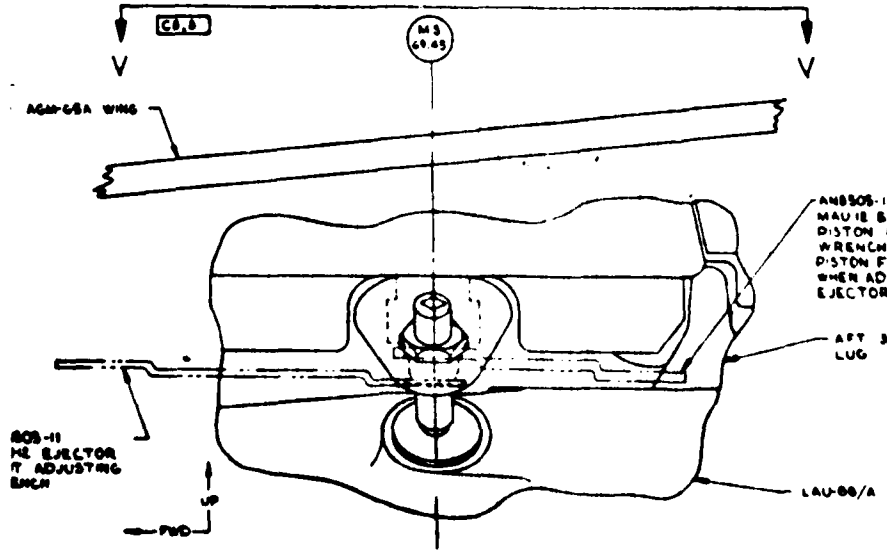
VIEW LOOKING DOWN ON AFT SWAY BRACE SHOWING ADJUSTMENT OF THE MAU-12 EJECTOR FOOT.



VIEW U-U B6,3

SCALE : 1/1

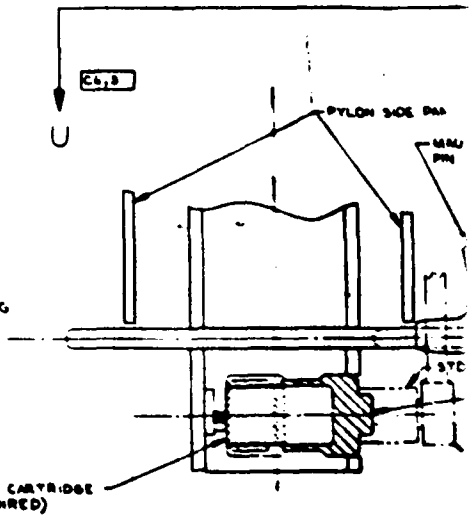
VIEW LOOKING DOWN THRU MAU-12 SHOWING THE INSTALLATION OF THE SAFETY PIN AND CARTRIDGE RETAINER.



VIEW W-W C1,3

SCALE : 1/1

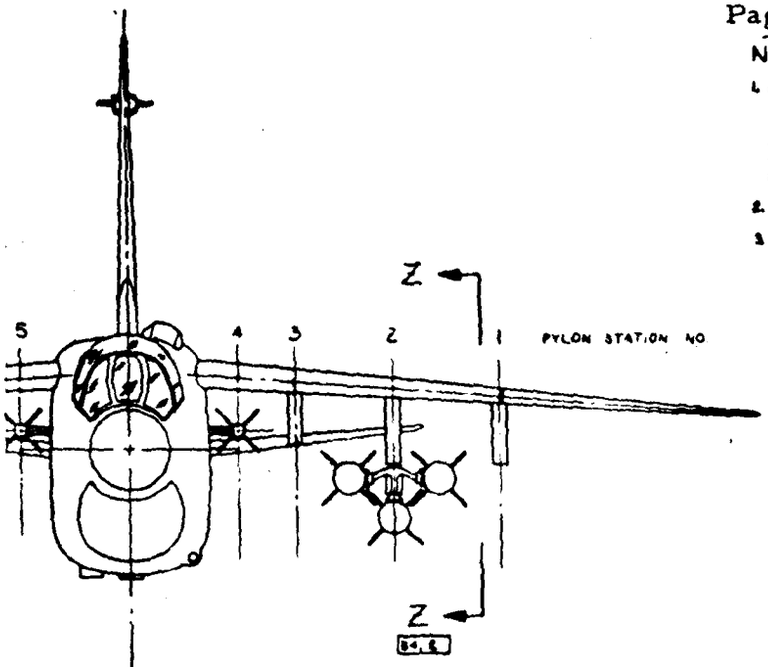
VIEW LOOKING INBOARD SHOWING ADJUSTMENT AND TIGHTENING OF THE MAU-12 EJECTOR FOOT.



SECT B-B C6,

SCALE : 1/1

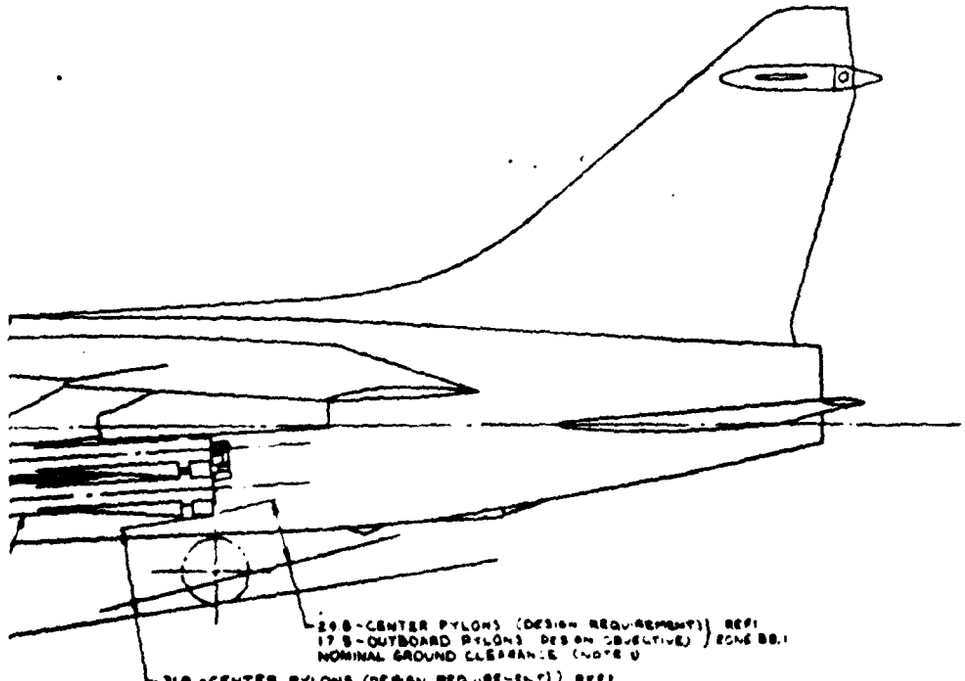
SECT LOOKING AFT THRU MAU-12 EJECTOR BODY & OF AFT CARTRIDGE RETAINER AND THRU SAFETY PIN ACCESS. SECTION SHOWS INSTALLATION OF CARTRIDGES, CARTRIDGE RETAINERS, SAFETY PIN.



NOTES:

1. ONE MAIN LANDING GEAR STRUT COMPRESSED AND TIRE FLAT, OTHER MAIN LANDING GEAR AND TIRE STATIC, TAIL CONE TOUCHING GROUND, AIRCRAFT ROLLED 2.5° ABOUT AIRCRAFT X
2. STATIC GROUND LINE FOR 38,800 POUND AIRCRAFT
3. ONE TRAINING GUIDED MISSILE (T&M) MAY BE CARRIED IN LIEU OF ALL AGM-65A MISSILES DEPICTED ON PYLON STATION 2 AND/OR 7. T&M AND AGM-65A MISSILES SHALL NOT BE CARRIED SIMULTANEOUSLY ON THE SAME PYLON STATION.

DESIGN REQUIREMENT
TA 188 AND 316 - EMPTY
TA 267 - 6 AGM-65A (3 PER PYLON)
TA 445 - 2 AIM-9B (1 PER PYLON) (OPTIONAL)



298 - CENTER PYLONS (DESIGN REQUIREMENT) } REF:
178 - OUTBOARD PYLONS (DESIGN OBJECTIVE) } ZONE BB.1
NOMINAL GROUND CLEARANCE (NOTE 1)

318 - CENTER PYLONS (DESIGN REQUIREMENT) } REF:
308 - OUTBOARD PYLONS (DESIGN OBJECTIVE) } ZONE BB.1
NOMINAL GROUND CLEARANCE (NOTE 2)

INTERFACE CONTROL-
MECHANICAL
A-7D/AGM-65A

FIGURE 1

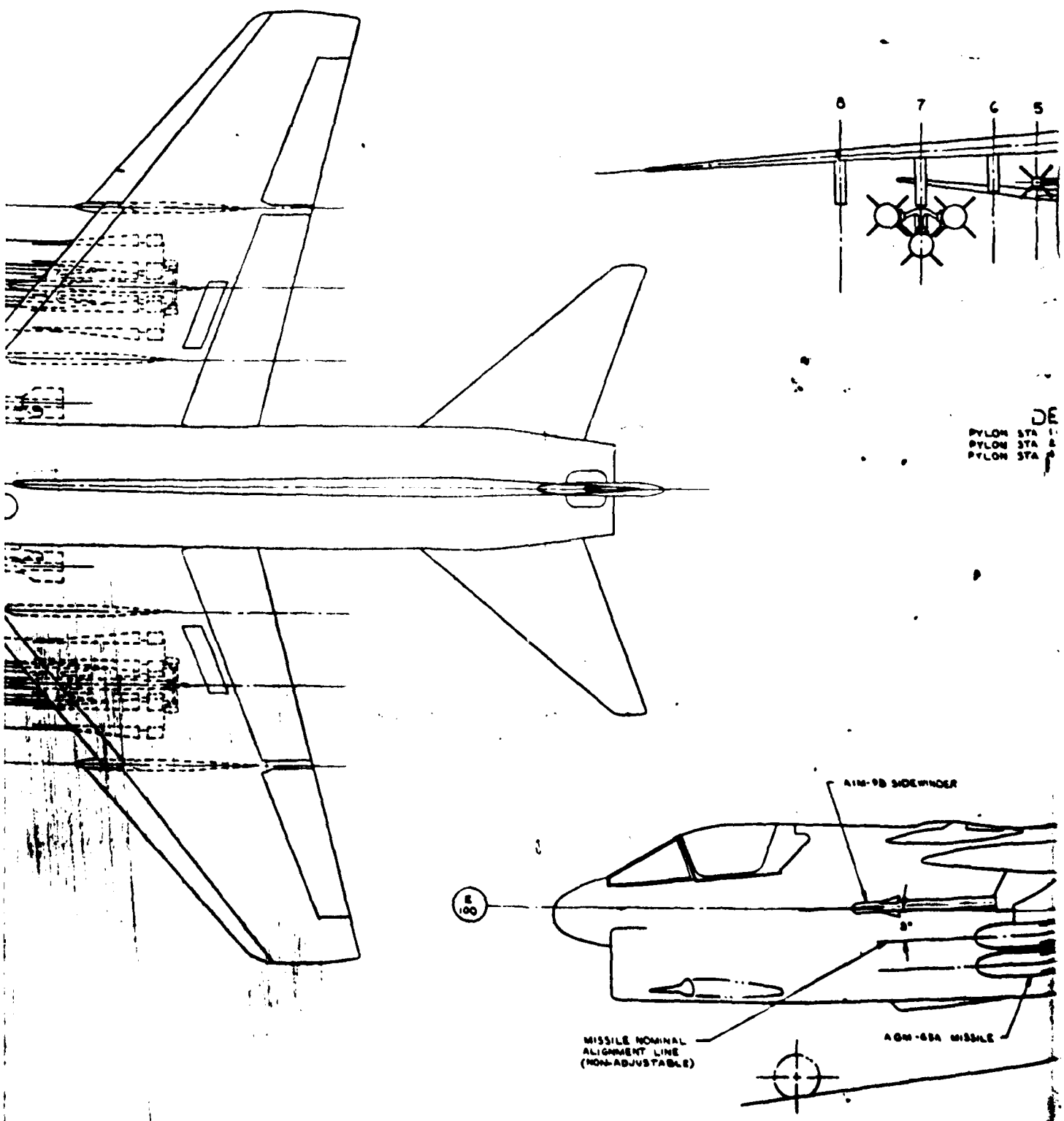
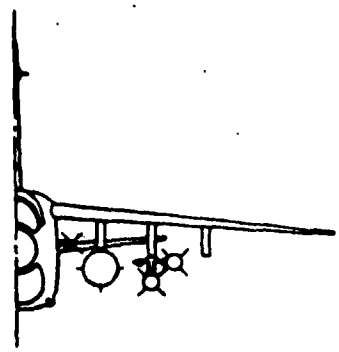
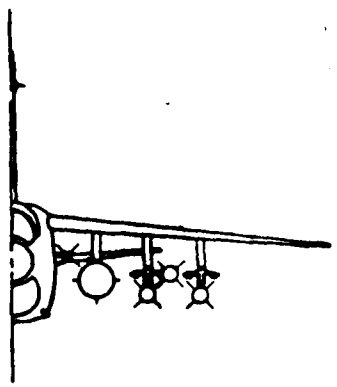

8
7
6
5
PYLON STA 1
PYLON STA 2
PYLON STA
AIM-9B SIDEWINDER
E 100
8°
MISSILE NOMINAL ALIGNMENT LINE (NON-ADJUSTABLE)
AGM-65A MISSILE

FIGURE 1



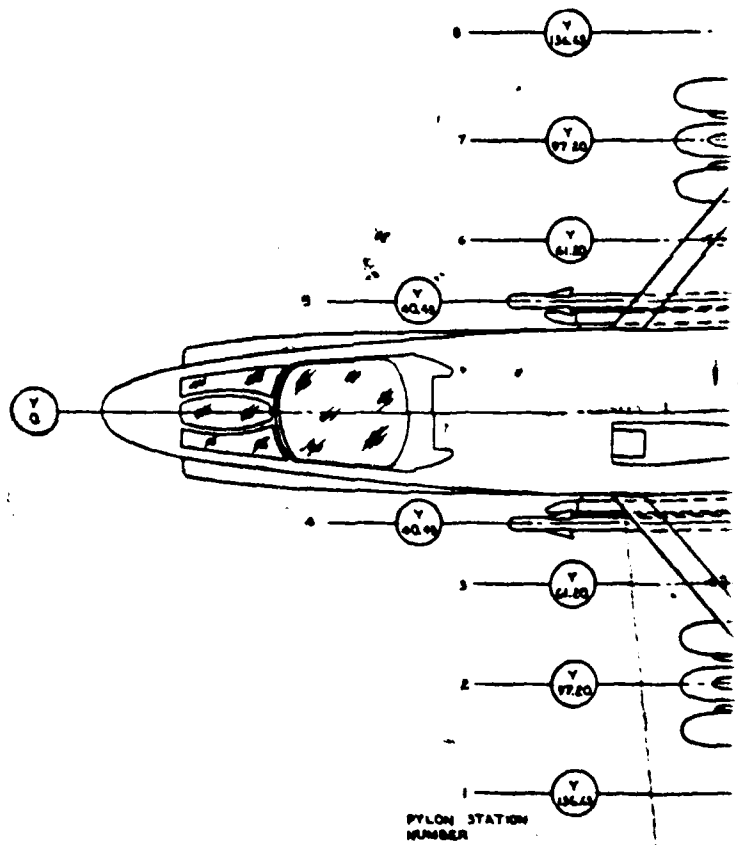
DESIGN REQUIREMENT

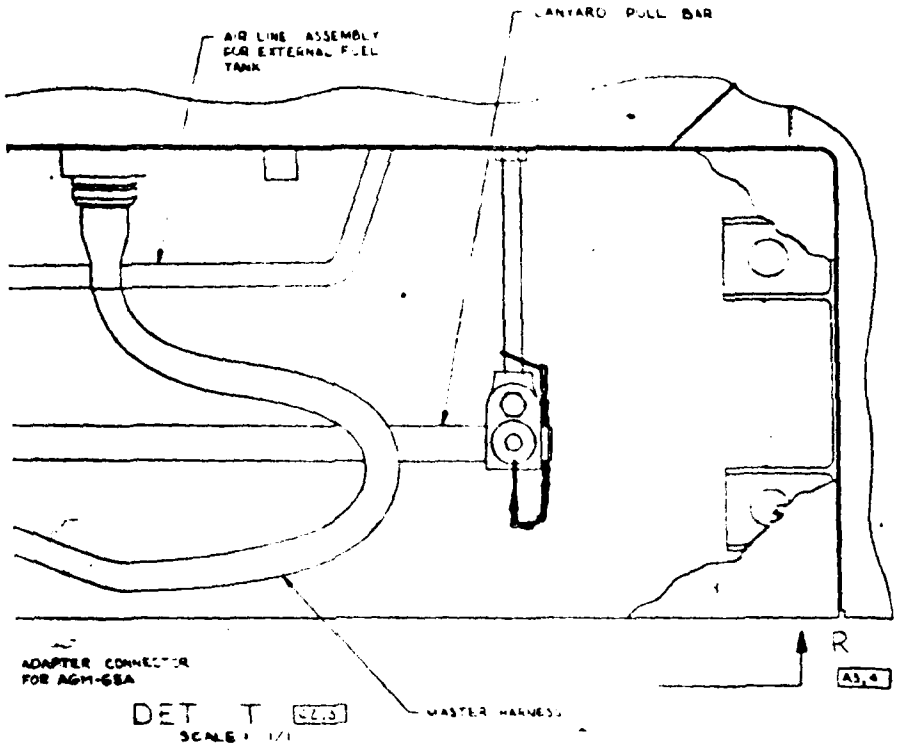
SCALE: 1/60
LH SHOWN RH OPPOSITE
PYLON STA 1 & 8 - EMPTY
PYLON STA 2 & 7 - 2 AGM-65A (LOADED ON OUTBD SHOULDER ϕ & STA OF LAU-88/A, LAUNCHER
PYLON STA 3 & 6 - AER NO 45-9534 (300-GAL EXTERNAL FUEL TANK)
FUSELAGE PYLON STA 4 & 5 - 1 (ONE) AIM-9B SIDEWINDER



DESIGN OBJECTIVE

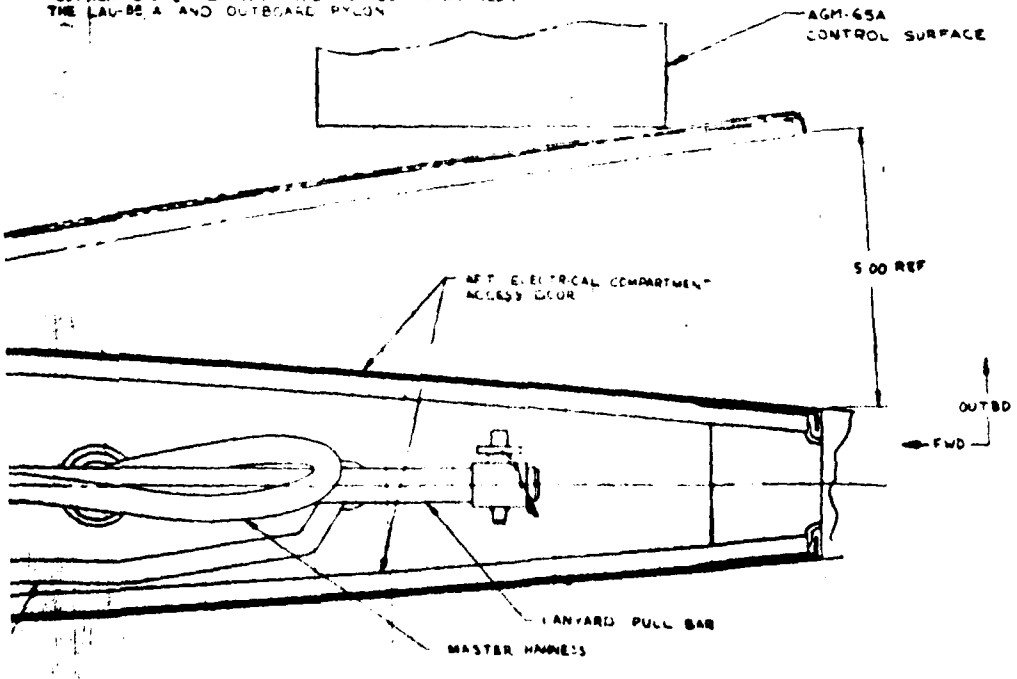
SCALE: 1/40
LH SHOWN RH OPPOSITE
PYLON STA 1 & 8 - 1 (ONE) AGM-65A (LOADED ON ϕ & STA OF LAU-88/A, LAUNCHER)
PYLON STA 2 & 7 - 2 AGM-65A (LOADED ON OUTBD SHOULDER ϕ & STA OF LAU-88/A, LAUNCHER)
PYLON STA 3 & 6 - AER NO 45-9534 (300-GAL EXTERNAL FUEL TANK)
FUSELAGE PYLON STA 4 & 5 - 1 (ONE) AIM-9B SIDEWINDER





DET T C2, 3
SCALE : 1/1

DETAIL LOOKING INBOARD WITH ELECTRICAL ACCESS DOOR CUTAWAY SHOWS THE ELECTRICAL CONNECTION BETWEEN THE LAU-88/A AND OUTBOARD PYLON

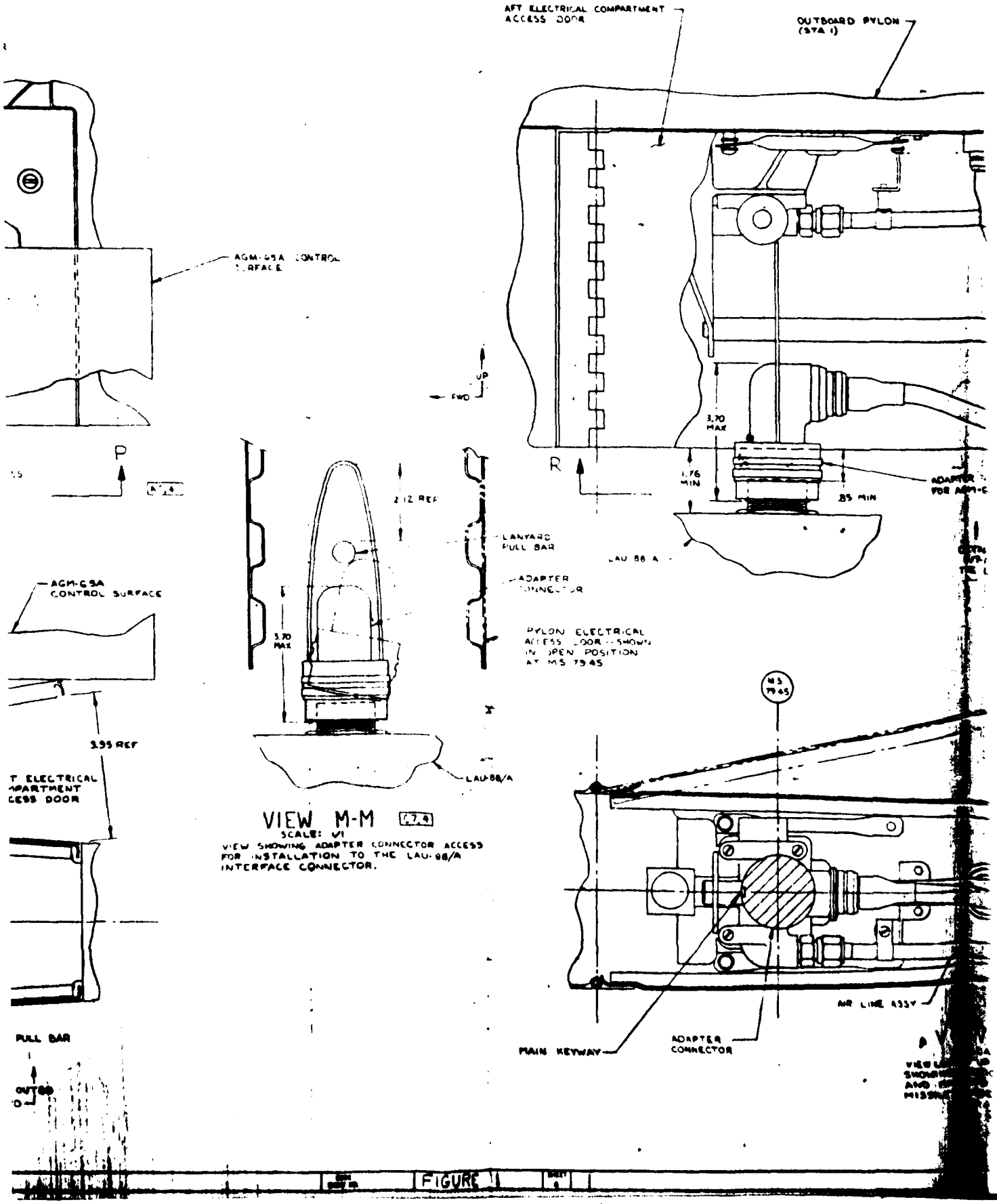


VIEW R-R C2, 4
SCALE : 1/1
LOOKING UP AT AFT ELECTRICAL COMPARTMENT INDICATING THE ADAPTER CONNECTOR POSITION WHEN OPENING OF ACCESS DOOR WITH RELEASE ON SHOULDER STATION OF LAU-88/A

INTERFACE CONTROL-
MECHANICAL
A-7D/AGM-65A

FIGURE 1

SPEC IS30873-13A/ SCALE 1/1 REV SHT 4

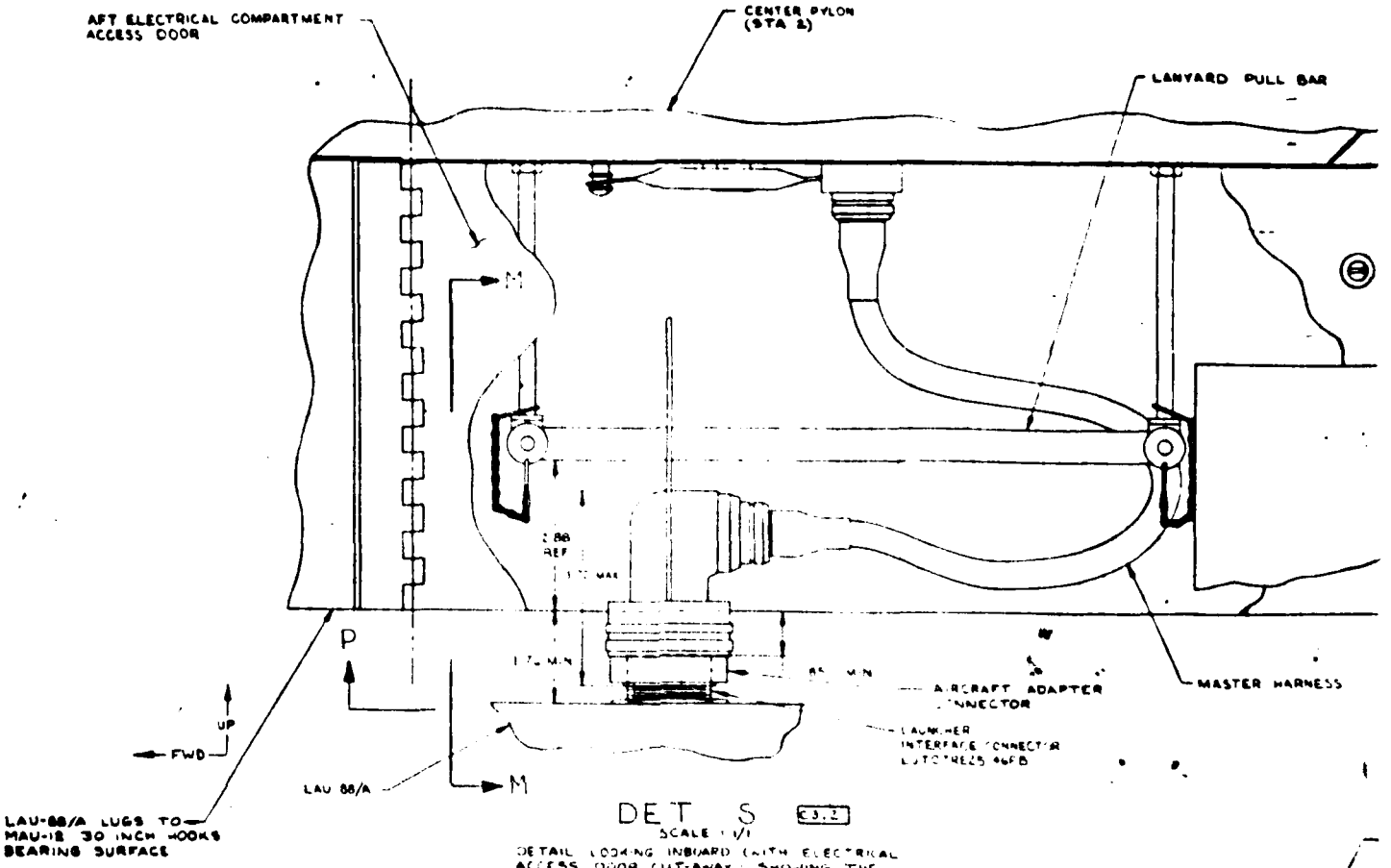


VIEW M-M

SCALE: VI

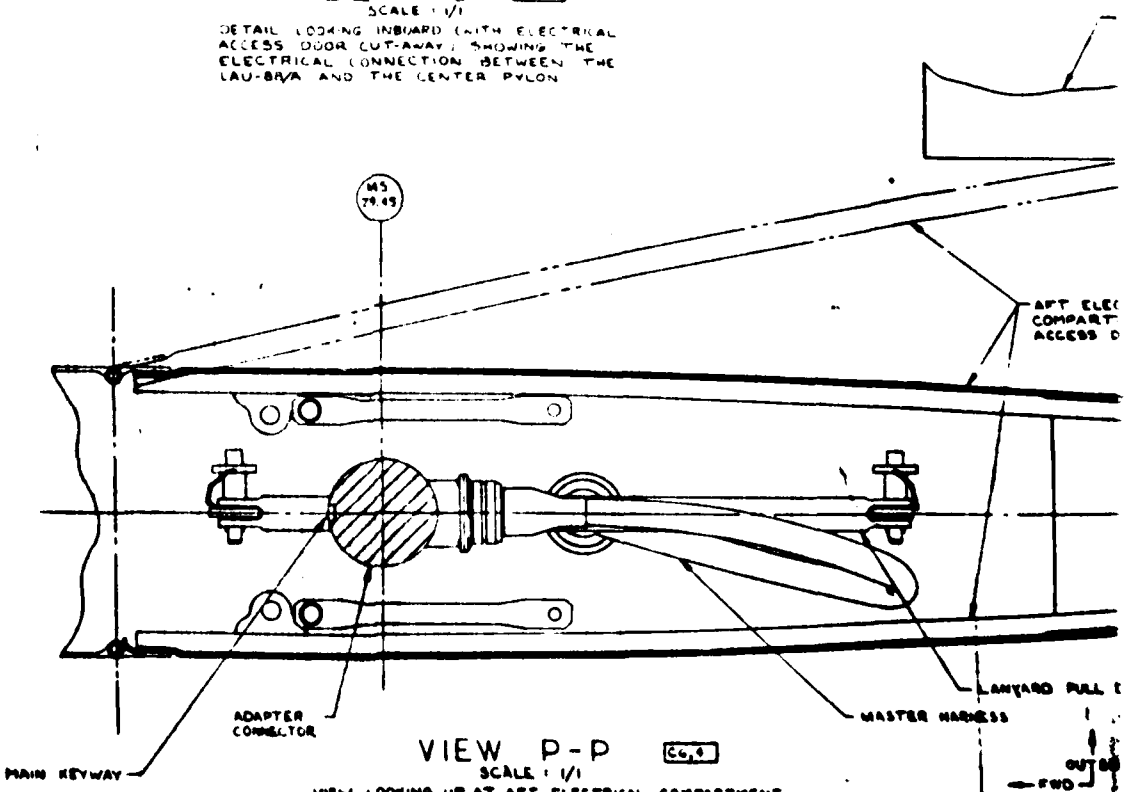
VIEW SHOWING ADAPTER CONNECTOR ACCESS FOR INSTALLATION TO THE LAU-88/A INTERFACE CONNECTOR.

FIGURE 1



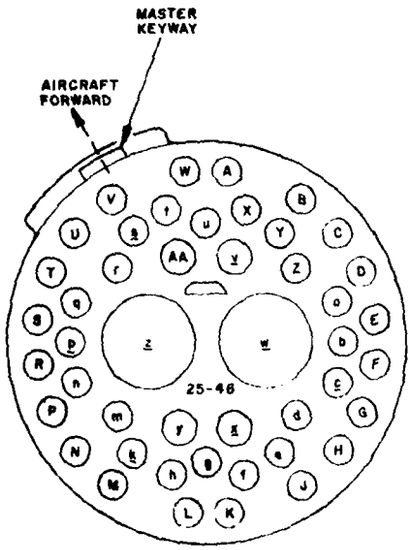
DET S (3.2)
SCALE : 1/1

DETAIL LOOKING INBOARD (WITH ELECTRICAL ACCESS DOOR CUT-AWAY) SHOWING THE ELECTRICAL CONNECTION BETWEEN THE LAU-88/A AND THE CENTER PYLON



VIEW P-P (6.6)
SCALE : 1/1

VIEW LOOKING UP AT AFT ELECTRICAL COMPARTMENT SHOWING SECTION THROUGH ADAPTER CONNECTOR AND MAXIMUM OPENING OF ACCESS DOOR WITH MISSILE LOADED ON SHOULDER STATION OF LAU-88/A



J1
(BENDIX CONNECTOR)
LJT07RE-25-46PB)
252962 (HAC)
REF
FRONT FACE OF PIN INSERT

AIRCRAFT SEGMENT	PIN	MISSILE SEGMENT
[2]	A	TEST FUNCTION
ADAPTER EXCITATION(+)	B	ADAPTER EXCITATION(+)
+28 VDC POWER	C	+28 VDC POWER
MANUAL SEQUENCE	D	MANUAL SEQUENCE
[3][2] SPARE	E	SPARE
STARBOARD IDENTIFIER	F	STARBOARD IDENTIFIER
STATION SELECT	G	STATION SELECT
[2]	H	LAUNCHER PRESENT
[2]	J	TEST FUNCTION
AZIMUTH COMMAND	K	AZIMUTH COMMAND
ELEVATION COMMAND	L	ELEVATION COMMAND
[2]	M	TEST FUNCTION
[2]	N	F-4 IDENTIFIER
+28 VDC POWER	P	DOME COVER POWER
[3][2] ISOLATION	R	ISOLATION
[3][2] ISOLATION	S	ISOLATION
[3][2] ISOLATION	T	ISOLATION
FRAME GROUND	U	FRAME GROUND
[3][2] SPARE	V	SPARE
[2]	W	TEST FUNCTION
[2]	X	F-4 UNCAGE
ADAPTER EXCITATION(-)	Y	ADAPTER EXCITATION(-)
TRACKING MODE	Z	TRACKING MODE
AGM-65A IDENTITY	a	AGM-65A IDENTITY
TRACK	b	TRACK
AGM-65A SELECT	c	AGM-65A SELECT
[3][2] SPARE	d	SPARE
[2]	e	TEST FUNCTION
[2]	f	TEST FUNCTION
3ø AC POWER, NEUTRAL	g	3ø AC POWER, NEUTRAL
SELECTED MISSILE READY	h	SELECTED MISSILE READY
[3][2] SPARE	j	SPARE
[3][2] SPARE	m	SPARE
DC ANALOG RETURN	n	DC ANALOG RETURN
SINGLE MISSILE JETTISON	p	SINGLE MISSILE JETTISON
[2]	q	LAUNCH
LAUNCH	r	LAUNCH
[2]	s	TEST FUNCTION
[2]	t	TEST FUNCTION
A-7 UNCAGE	u	A-7 UNCAGE
3ø AC POWER, øA	v	3ø AC POWER, øA
COMPOSITE VIDEO	w	COMPOSITE VIDEO
3ø AC POWER, øB	x	3ø AC POWER, øB
3ø AC POWER, ø C	y	3ø AC POWER, øC
[3][2] SPARE	z	SPARE
28 VDC RETURN	AA	28 VDC RETURN

NOTES:

1. THE ABOVE CONNECTOR IS USED ON THE ELECTRONICS UNIT, LAUNCHER, PART NO. 3102368
2. [2] NO CONNECTION TO THIS PIN IN AIRCRAFT SEGMENT
3. [3] NO CONNECTION TO THIS PIN IN MISSILE SEGMENT
4. PIN LETTERS THAT ARE UNDERLINED ARE LOWER CASE LETTERS

FIGURE 2. INTERFACE CONTROL- ELECTRICAL A-7D/AGM-65A

TABLE I. POWER FROM AIRCRAFT SEGMENT

SIGNAL NOMENCLATURE	INPUT PIN	RETURN PIN	SIGNAL FORM
THREE PHASE ENVIRONMENTAL AC POWER and Neutral			3-phase, 4 wire, 400 Hz 115 VAC Line-to-Neutral (fourth wire neutral grounded to aircraft frame and launcher frame).
Phase A	V		
Phase B	X		
Phase C	Y		
Neutral		g	
+28 VDC ENVIRONMENTAL DC POWER and +28 VDC Return	C	AA	+28 VDC Return grounded to aircraft frame and launcher frame.

TABLE II. LOGIC AND CONTROL SIGNALS FROM AIRCRAFT SEGMENT (SEE NOTE 1)

SIGNAL NOMENCLATURE	INPUT PIN	RETURN PIN	VOLTAGE	TOLERANCE	SIGNAL TYPE (NOTE 2)	MISSILE SEGMENT LOAD	SOURCE IMPEDANCE	OTHER REQUIREMENTS
AGM-65A SELECT TRUE FALSE	S	AA	+28 VDC 28 VDC RETURN THROUGH 6.19K OHMS NOMINAL RESISTANCE	+0.5,-3.0 VDC	A	NOT GREATER THAN 0.25 AMPERES		
STATION SELECT TRUE FALSE	G	AA	+28 VDC 28 VDC RETURN THROUGH 6.19K OHMS NOMINAL RESISTANCE	+0.5,-3.0 VDC	A	NOT GREATER THAN 0.25 AMPERES		
STARBOARD IDENTIFIER TRUE (STARBOARD WING) FALSE (PORT WING)	P	-	+28 VDC RETURN OPEN CIRCUIT (SEE 6.1.5)		C	NOT GREATER THAN 0.25 AMPERES		
TRACKING MODE STATES WHITE-ON-BLACK BLACK-ON-WHITE AUTOMATIC	Z	AA	+28 VDC 28 VDC RETURN OPEN CIRCUIT (SEE 6.1.5)	+0.5,-3.0 VDC		NOT GREATER THAN 0.25 AMPERES		
AZIMUTH COMMAND	K	n	0 TO ±15 VDC	±1.5 VDC	B	10K OHMS MINIMUM	550K OHMS MAXIMUM	LINEAR RANGE -10 TO +10 VDC
ELEVATION COMMAND	L	n	0 TO ±15 VDC	±1.5 VDC	B	10K OHMS MINIMUM	550K OHMS MAXIMUM	LINEAR RANGE -10 TO +10 VDC
SINGLE MISSILE JETTISON TRUE FALSE	R	AA	+28 VDC 28 VDC RETURN THROUGH 500 OHMS ±50 OHMS RESISTANCE	+0.5,-10.0 VDC		NOT GREATER THAN 15 AMPERES AT 18 VDC MINIMUM FOR NOT GREATER THAN 0.105 SECOND		

TABLE II. LOGIC AND CONTROL SIGNALS FROM AIRCRAFT SEGMENT (CONTINUED)

SIGNAL NOMENCLATURE	INPUT PIN	RETURN PIN	VOLTAGE	TOLERANCE	SIGNAL TYPE (NOTE 2)	MISSILE SEGMENT LOAD	SOURCE IMPEDANCE	OTHER REQUIREMENTS
A7 UNCAGE TRUE FALSE	u	AA	+28 VDC 28 VDC RETURN THROUGH 6.19K OHMS NOMINAL RESISTANCE	+0.5,-3.0 VDC	A	NOT GREATER THAN 0.25 AMPERES	(NOTE 3)	
MANUAL SEQUENCE TRUE FALSE	D	AA	+28 VDC 28 VDC RETURN THROUGH 2.43K OHMS NOMINAL RESISTANCE	+0.5,-3.0 VDC	A	NOT GREATER THAN 0.25 AMPERES	(NOTE 4)	
TRACK TRUE FALSE	b	AA	+28 VDC 28 VDC RETURN THROUGH 2.43K OHMS NOMINAL RESISTANCE	+0.5,-3.0 VDC	A	NOT GREATER THAN 0.25 AMPERES	(NOTE 4)	
LAUNCH TRUE FALSE	r	AA	+28 VDC (SEE NOTE 5) 28 VDC RETURN THROUGH 500 OHMS ±50 OHMS RESISTANCE	+0.5,-10.0 VDC	A	TWO PULSES EACH NOT GREATER THAN 15.0 AMPERES AT 18 VDC FOR NOT GREATER THAN 0.105 SECOND WHOSE LEADING EDGES HAVE A SEPARATION OF NOT LESS THAN 450 MILLISECONDS	(NOTE 4)	MUST REMAIN TRUE FOR A MINIMUM OF 0.78 SECONDS TO LAUNCH A MISSILE (SEE NOTE 6)
FRAME GROUND	U	AIRCRAFT FRAME	CONTINUITY TO AIRCRAFT FRAME (SEE 6.1.4)					
DOME COVER POWER TRUE FALSE	P	AA	+28 VDC 28 VDC RETURN THROUGH 3.32K OHMS NOMINAL RESISTANCE	+0.5,-10.0 VDC		NOT GREATER THAN 10 AMPERES AT 18 VDC MINIMUM FOR NOT GREATER THAN 0.905 SECOND	(NOTE 4)	

NOTE 1: For sequence of events, see 3.2.1.9.
NOTE 2: See Table III.
NOTE 3: See diode in Stations 2 and 7 only of aircraft segment to suppress inductive current in negative direction.
NOTE 4: Have diode in aircraft segment to suppress inductive current in negative direction.
NOTE 5: In TRUE state, +28 VDC is maintained and load is pulsed.
NOTE 6: Pilot control function.

TABLE III. SIGNAL AND NOISE CHARACTERISTICS

ITEM	SIGNAL TYPE	SIGNAL CHARACTERISTICS	NOISE CHARACTERISTICS
1	A	Two-state logic; logic True shall be nominal 28 VDC aircraft power as specified in MIL-STD-704, Category B. Logic False shall be 28 VDC return, through a 500±50 ohm resistor. The line voltage drop shall be in accordance with MIL-W-5088.	Ripple and transient voltages shall not exceed those specified in MIL-STD-704, Category B.
2	B	DC analog signal.	The noise shall be not greater than 0.1 VRMS with transients not greater than ±0.5 volts peak.
3	C	Two-state logic; logic True shall be 28 VDC return. Logic False shall be open circuit (see 6.1.5).	Ripple and transient voltages shall not exceed those specified in MIL-STD-704, Category B.

TABLE IV. RESPONSE SIGNALS FROM MISSILE SEGMENT

SIGNAL NOMENCLATURE	INPUT PIN	RETURN PIN	VOLTAGE	TOLERANCE	SIGNAL TYPE (NOTE 1)	LOAD	SOURCE IMPEDANCE
AGM-65A IDENTITY	a	AA			C	NOT GREATER THAN 0.25 AMPERES	
ADAPTER EXCITATION (+)	B	n	+15 VDC	±1.5 VDC		NOT LESS THAN 1750 OHMS BETWEEN PINS B AND Y	NOT GREATER THAN 10 OHMS
ADAPTER EXCITATION (-)	Y	n	-15 VDC	±1.5 VDC		NOT LESS THAN 1750 OHMS BETWEEN PINS B AND Y	NOT GREATER THAN 10 OHMS
SELECTED MISSILE READY TRUE FALSE	h	AA	28 VDC RETUPN OPEN CIRCUIT		C	NOT GREATER THAN 0.25 AMPERES	
DC ANALOG RETURN	n	n					

NOTE 1: SEE TABLE III.

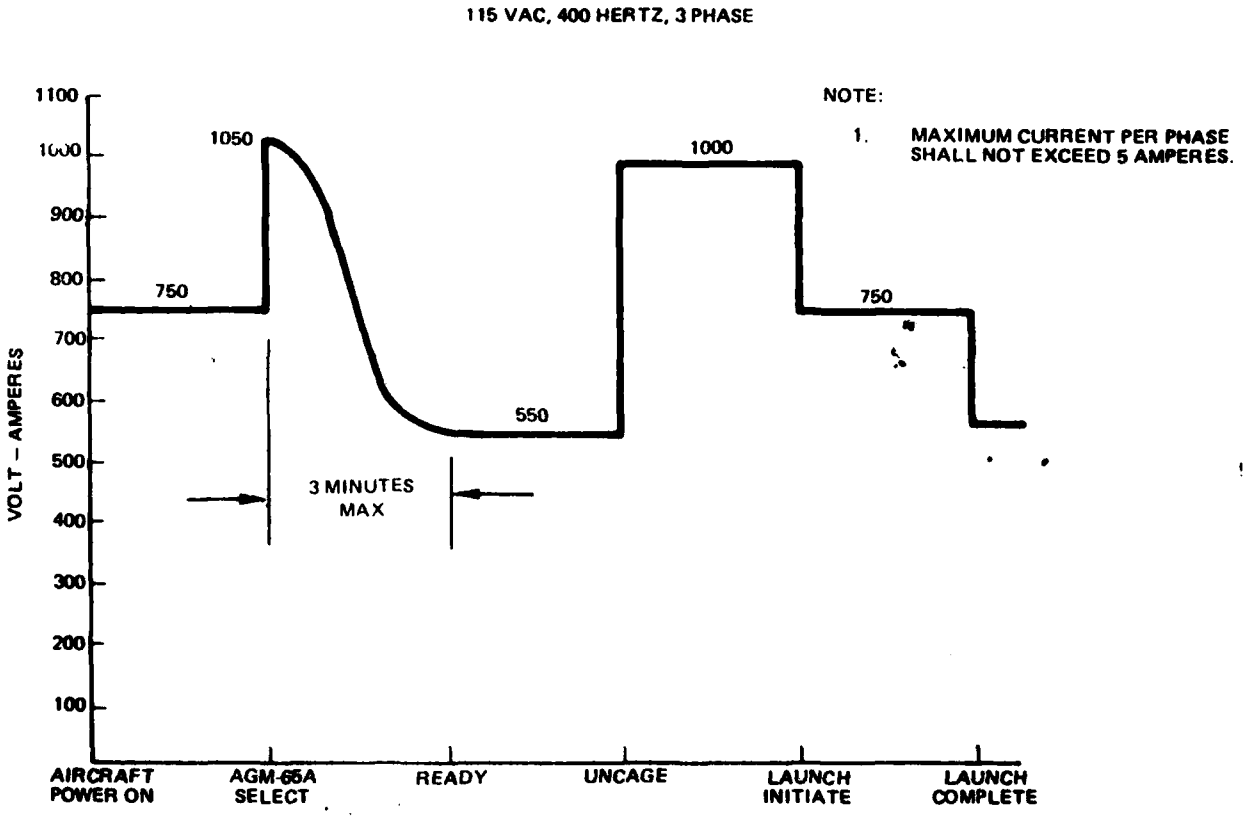


Figure 3. Maximum 3 Phase AC Power Demand (Pin v, x, y to Pin g)

3.2.1.3 Electronic interface. The electronic interface shall be at the aircraft adapter connector in the aircraft segment mated with the launcher interface connector in the missile segment as shown in Figure 2.

3.2.1.3.1 Logic and control signals. The aircraft segment shall provide at the interface, and the missile segment shall be capable of responding to, the signals listed in Table II having characteristics specified therein. Signal and noise characteristics shall be as specified in Table III.

3.2.1.3.2 Missile segment response signals. The missile segment shall provide at the interface, and the aircraft segment shall be capable of accepting, the signals listed in Table IV having the characteristics specified therein, and the COMPOSITE VIDEO signal having the characteristics specified below and in Figure 5. Signals and noise characteristics shall be as specified in Table III.

a. Load impedance - coaxial cable of 95±3 ohms characteristic impedance, terminated in 91±9.1 ohms.

b. Source impedance - 100 ohms maximum.

c. Signal form - a 525 line raster with 30 frames per second and two fields per frame with positive two-to-one interlace and 1:1 aspect ratio.

3.2.1.4 Hydraulic-pneumatic interface. Not applicable.

3.2.1.5 Environmental control interface. Not applicable.

3.2.1.6 Crew provisions, displays, and control interface.

3.2.1.6.1 Crew provisions. Not applicable.

3.2.1.6.2 A-7D aircraft video monitor display. The aircraft segment shall provide a television (TV) display compatible with the COMPOSITE VIDEO signal of Figure 5. The display shall provide a TV picture of equal height and width. The horizontal and vertical scans shall each start in the upper left hand corner of the display as seen by the pilot. Resolution, contrast, and persistence capability of the display shall be compatible with the COMPOSITE VIDEO signal of Figure 5. (See 6.1.6 and 6.2)

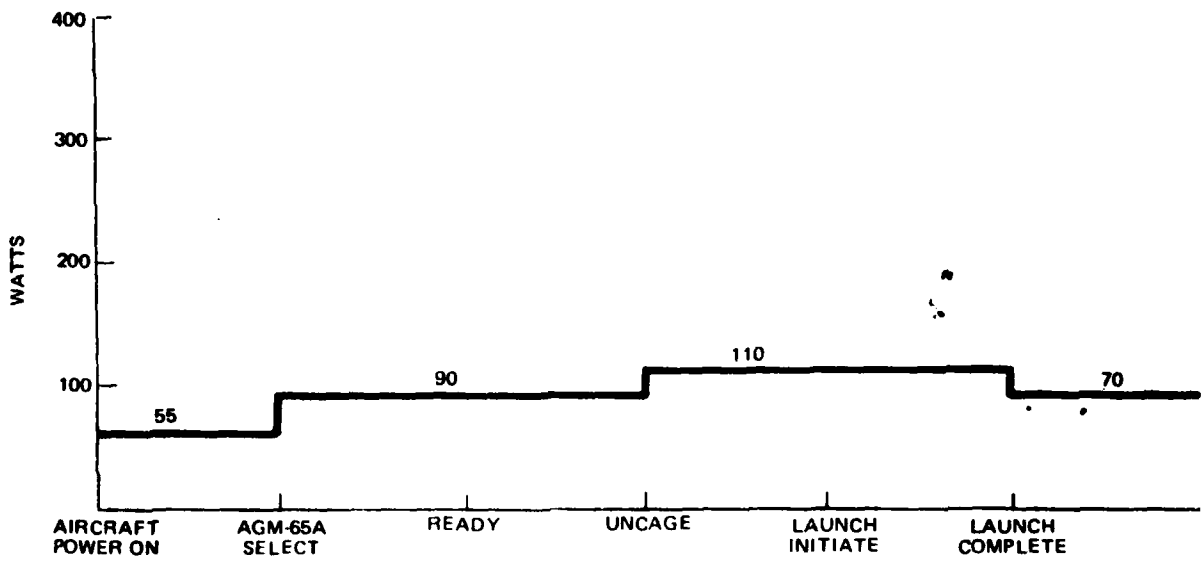
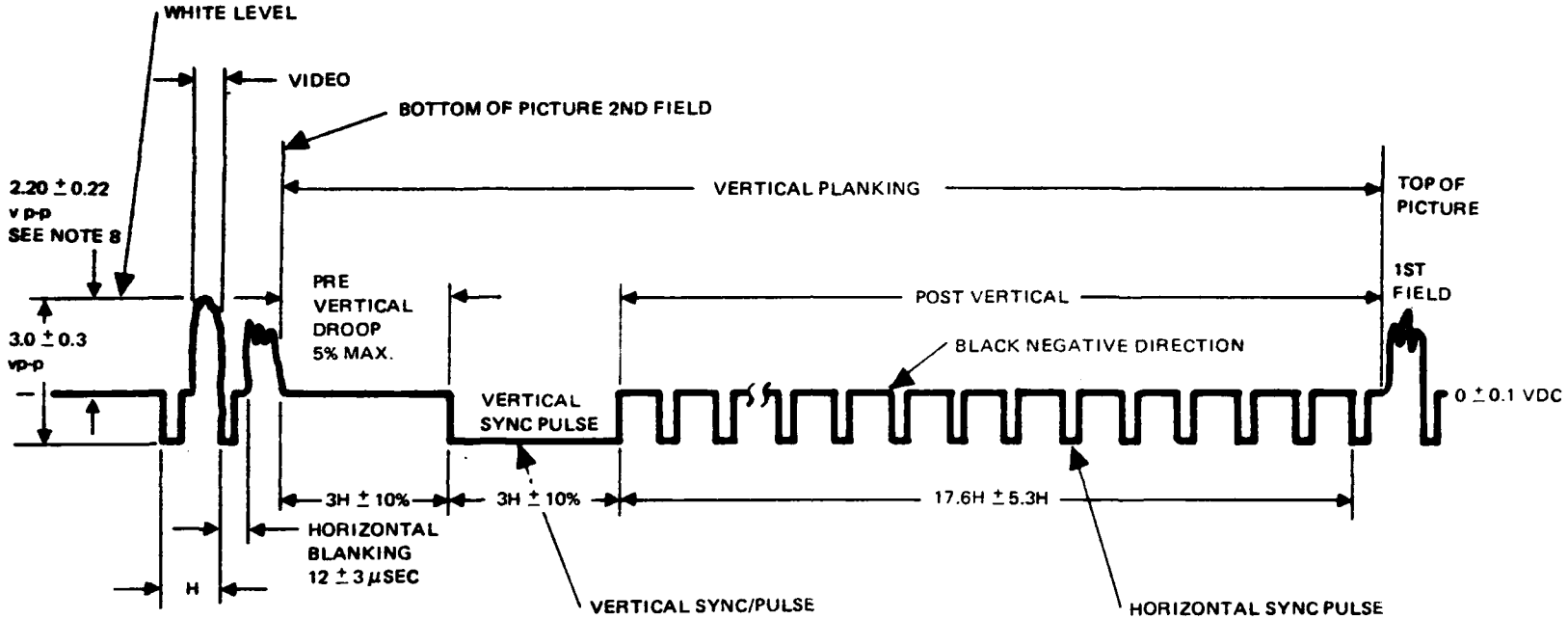


Figure 4. Maximum +28 Volt DC Power Demand (Pin C to Pin AA)



1. AMPLITUDE:	0.80 ± 0.08 vp-p
2. FALL TIME:	10 µsec max
3. RISE TIME:	5 µsec max
4. WIDTH:	3H ± 10%
5. OVERSHOOT:	10% max
6. DROOP:	5% max
7. UNDERSHOOT:	10% max

1. AMPLITUDE:	0.80 ± 0.08 vp-p
2. FALL TIME:	0.5 µsec max
3. RISE TIME:	0.5 µsec max
4. WIDTH:	7.2 ± 1.4 µsec
5. OVERSHOOT:	10% max
6. UNDERSHOOT:	10% max

NOTE:

1. H-HORIZONTAL PERIOD = 63.5 µSEC ± 0.25%
2. V-VERTICAL PERIOD = 16.67 mSEC ± 0.25%
3. HORIZONTAL PULSE TO PULSE JITTER 0.05 µSEC MAX
4. VERTICAL PULSE TO PULSE JITTER 2.0 µSEC MAX
5. THERE WILL BE NO SPURIOUS SIGNALS PRESENT DURING VERTICAL BLANKING PERIOD
6. INTERLACE SHALL BE 2:1
7. NOISE IN SYNC SHALL NOT EXCEED 20% OF SYNC AMPLITUDE
8. VIDEO WHITE LEVEL IS FOR RETMA CHART. VIDEO WHITE LEVEL AND CROSSHAIRS MAY REACH 4.3 VOLTS PEAK WHITE LEVEL. THE HORIZONTAL CROSSHAIR UTILIZES TWO HORIZONTAL LINES AND THE VERTICAL CROSSHAIR HAS A DURATION OF 0.1 TO 0.4 MICROSECOND.
9. LIMITING HORIZONTAL RESOLUTION 550 TV LINES

Figure 5. Composite Video Output Signal to Aircraft Interface Connector

3.2.1.6.3 A-7D aircraft target acquisition controls. A manually operable target acquisition control shall be provided in the aircraft cockpit to independently generate the AZIMUTH COMMAND and ELEVATION COMMAND (command signals) of Table II. This control shall generate the specified signals when excited by the ADAPTER EXCITATION (+) and ADAPTER EXCITATION (-) signals (excitation signals) of Table IV, provided by the missile segment. The magnitude of the command signals shall be proportional to the deflection of the control from its null position with a linearity error of not more than ten per cent. A positive AZIMUTH COMMAND shall be provided to the missile segment when the pilot desires to slew the seeker head toward a starboard (negative Y) direction (Figure 6). A positive ELEVATION COMMAND shall be provided to the missile segment when the pilot desires to slew the seeker head in an upward (positive Z) direction. The maximum values of either command signal shall be not less than ninety-eight per cent of the applied excitation signals. The voltage of either command signal, with the control in the null position, shall be not more than +0.6 volts and not less than -0.6 volts. The resistance of the control device, including the resistance of switching and wiring between the interface connector and the control presented to the excitation signals, shall be not less than the load impedance specified in Table IV. (See 6.2)

3.2.1.7 Weapon control interface. Not applicable.

3.2.1.8 Transient susceptibility. No temporary or permanent degradation of performance or malfunction shall be produced in the AGM-65A missile segment equipment when 600 volt pulses are induced on each ungrounded dc power line and 100 volt pulses are induced in each ungrounded 400 Hertz power line. Pulses shall be of positive and negative polarity, shall have a pulse width of 10 microseconds, and shall have a pulse repetition rate of 60 pps for dc power lines and 10 pps for ac power lines.

3.2.1.9 Armament preparation. The AGM-65A missile segment will respond to power and signals from the aircraft as specified herein.

3.2.1.9.1 Environmental conditioning. All AGM-65A missiles shall receive environmental conditioning power when the aircraft electrical system is activated.

3.2.1.9.2 System activation. The pilot readies AGM-65A weapons. The missile seeker gyros and vidicon cathode heaters are prepared. After a preparation time delay, an indication of weapon readiness may be observed.

3.2.1.9.3 Enable firing circuits. The pilot shall enable will-to-fire circuits.

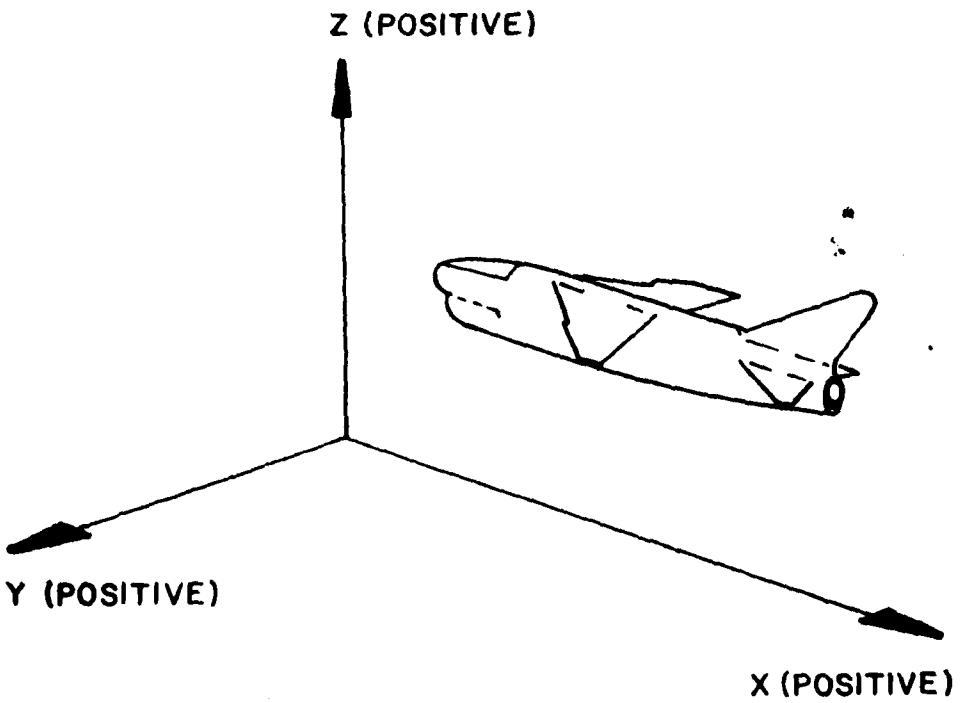


FIGURE 6. AIRPLANE REFERENCE AXES

3.2.1.9.3 Enable firing circuits. The pilot shall enable will-to-fire circuits.

3.2.1.9.4 Visual search. A visual search is made for a target. Upon target detection, the aircraft is placed on a flight path to align the HUD reticle with the target.

3.2.1.9.5 Uncage. The missile seeker in firing priority is electrically aligned to the armament reference line when the uncage switch is activated. Missile video with crosshairs is available at the time the seeker is electrically aligned.

3.2.1.9.6 Lock-on. The pilot finds the target on the TV display and slews the seeker head to acquire the target with the tracking gates. A lock-on is commanded when the target is within the tracking gates.

3.2.1.9.7 Launch. The pilot initiates launch after lock-on to the desired target.

3.2.1.9.8 Abort. If the missile in firing priority malfunctions, the pilot may select a succeeding missile on the same launcher. If the missile in firing priority did not track the desired target or the pilot did not gate the desired target, the uncage and lock-on, or lock-on only steps may be repeated.

3.2.1.9.9 Single missile jettison. Any missile in the firing priority may be jettisoned individually.

3.2.1.9.10 Select/salvo jettison. A selected launcher and its associated weapons can be individually jettisoned from the MAU-12 hooks, or all stores on the aircraft wing stations may be salvo jettisoned.

3.2.2 Government-furnished property list. Not applicable.

3.2.3 Standards of manufacture, manufacturing processes and production. Not applicable.

4. QUALITY ASSURANCE

4.1 Product performance and configuration requirements/ quality verification cross-reference index.

Characterisitcs	Section 3	Section 4
Physical interface	3.2.1	4.2
Electrical interface	3.2.1.2	4.2
Electronic interface	3.2.1.3	4.2
Crew provisions, displays, and control interface	3.2.1.6	4.2

4.2 Test verification. The A-7D aircraft segment and the AGM-65A missile segment shall be verified separately. The interface shall be verified in accordance with the quality assurance provisions of CEI specification CP30873-Q31 and the applicable provisions of ECP V0-A7-392.

5. PREPARATION FOR DELIVERY - Not applicable.

6. NOTES

6.1 Definitions.

6.1.1 AGM-65A missile segment. For the purpose of this interface specification, the AGM-65A missile segment shall be limited to the following elements:

a. AGM-65A Missile (CEI 506021A)

b. Launcher, Guided Missile, Aircraft, LAU-88/A (CEI 506031A)

c. Guided Missile, Training A/A37A-T1 (CEI 506041A)

6.1.2 Aircraft segment. For the purpose of this interface specification, the aircraft segment shall consist of that portion of the A-7D aircraft which makes a direct contribution to the carriage, control, and operation of the AGM-65A system, including the MAU-12C/A Bomb Rack (USAF drawing 69J13060), and the Master harness of Figure 1, sheet 4, which connects between the adapter connector, mating with the LAU-88/A and the pylon connector.

6.1.3 Tolerance range. Wherever there is a range of values specified herein, e.g., "108 to 121 VRMS," the range is defined to include the limiting values.

6.1.4 Continuity. Continuity is defined as a resistance not greater than 2 ohms.

6.1.5 Open circuit. Open circuit is defined as a resistance not less than one megohm.

6.1.6 Aircraft television display. The aircraft television display shall have a horizontal resolution capability of not less that 600 television lines for 10 percent square wave response, a contrast of at least 8 shades of gray at 750 foot-lamberts, and a persistence of not more than 15 percent on the fourth frame.

6.2 Verification of MAVERICK carrier aircraft displays and controls. During the Government conduct of MAVERICK (WS-319A) Category II testing, the following verifications were established:

a. The cockpit display of the AN/APQ-126 Forward-Looking Radar System as specified in document VAD 204-16-13 met the requirements of 3.2.1.6.2 herein.

b. The AN/ARW-77 BULLPUP Controller met the target acquisition control requirements of 3.2.1.6.3 herein.

10. APPENDIX - Not applicable.