

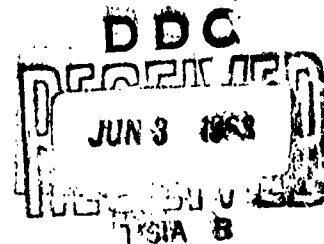
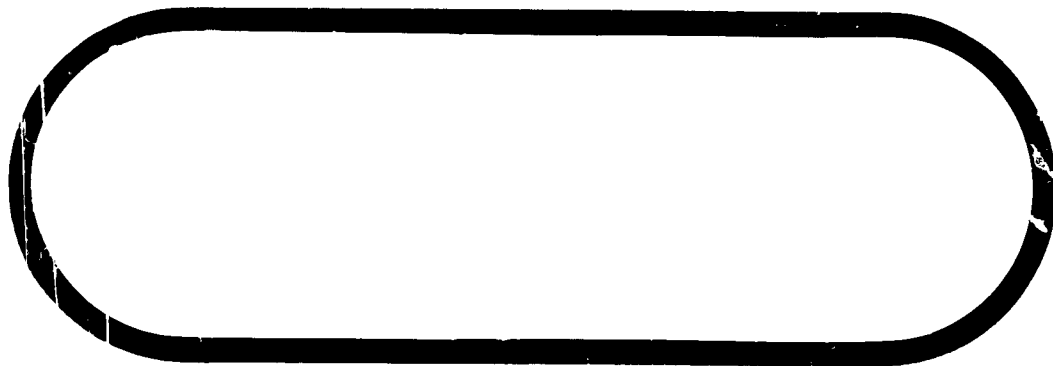
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BOEING



SEATTLE, WASHINGTON

MISSILE ASSEMBLY AND CHECKOUT SYSTEM REQUIREMENTS -
WING II, AF PLANT 77.

BOEING CO SEATTLE WA

1962

Plant 77
PREPARED BY Requirements Group

SUPERVISED BY *P.A. Andrade*

APPROVED BY *P.D. Thompson* 7/9

CLASS. & DISTR. APPROVED BY *P.B. Thompson* 7/9

RELIABILITY APPROVAL

RE-SP-Approval *W.B. Bant*

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PAGE B

REVISIONS			
Seet	DESCRIPTION	Page	Reason
	Added errata pages	6-1	BSQAP-16-10-125
	Changed "Substitute Figure A" to "Minuteman Requirement Control Number"	8	document congruity
A	Defined usage of illustrations	5	BSQAP 3-12-2
A	Corrected Model Specification Number and typing error.	8	document updating
B	Figure A no's in ground rule 9 were changed to reflect Wing II configured equipment	9	document updating
	Ground rules 10 & 13 were changed to comply with BSD direction.	9 10	BSQAP-29-8-114
	Added ground rule 14, use of Alarm Sets during transportation and handling of Missile/Motors	10	BSQAD-29-8-114
	Revised to reflect Wing II designated Figure A Numbers and added requirement to inspect nozzle support links	21	document updating
	Added Rocket Motor semitrailer to equipment column	22	BSQAP-3-12-2
	Added reference document numbers for receiving & inspection procedures.	23	document updating
	Added check for rotation of Stage II & III in their carriages	24	BSQAP-29-8-114
	Revised note to include all airborne components	26	BSQAP-20-7-125
	Revised ref. Fig. A numbers to reflect Wing II configured equipment	27	document updating
	Deleted the requirement for use of Alarm Sets during transfer of motors to storage	29	BSQAP-29-8-114
	Deleted the requirement for restraining motor carriages during single motor transfers from transporter to fixed rails	30, 31	1
	Added the requirement to monitor the temperature in the transporting vehicle	31	BSQAP-3-12-2
	Deleted reference MGE 4187 since there are different units available now (MGE 4187, FSE 7787 & FSE 7788)	31	document clarification
	Added requirement for a spacer to permit Stage II NCU alignment	35	document updating
	Revised reference document numbers to reflect Wing II required documents	38, 39	document updating

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REVISIONS			
SECT	DESCRIPTION	PAGE	REASON
B	The requirement for Alarm Sets was deleted. Changed Trailer to Ballistic Missile Trailer. Added equipment required to monitor temperature in transporting vehicle	42	BSQAP-29-8-144 BSQAP-3-12-2
B	Clarified requirement for restraining motor carriages during transfer of motors from fixed rails to SSCM.	43, 44	
	Deleted the reference to use of Alarm Sets during transfer of motors to storage	45	BSQAP-29-8-144
	Added the requirement for a preassembly functional test (ACO 10709)	56	document updating
	The following pages were revised to be consistent with the changes in the text and to reference documents required for Wing II equipment	46, 50, 58, 59, 67, 78, 86, 91, 93	51, 52, 57, 60, 63, 66, 69, 76, 77, 80, 81, 82, 88, 89, 90
C	Added reference documents	27, 17	Doc Updating
C	Added equipment callout to be consistent with the test	31	Doc Updating
C	Added asterisk to (PSE 7630) indicate a modification required	23	Doc Updating
D	The following pages were revised to be consistent with the changes in the text of section B and to update the reference document numbers to be consistent with Wing II requirements	10, 12, 16, 16a, 26, 27	13, 14, 15, 16b, 25, 28, 29, 29a
E		16a, 17, 19, 22	17a, 18, 23, 24, 16.
APP.	Changed Figure A to MRCN	4	
I	Reference MRCN forms were added and revised	33, 34, 96, 118, 119, 123, 39	40, 94, 95, 112b, 112c, 117, 120, 121, 122, 124, 125
	Revised MRCN 7667 per BSD TWX BSQAP 19-9-19 (Change CCP 844)		
	 Per telecon coordination with the following: Lt. Col. Carr (BSD), Ed Zack (AF Plant 77 A.F. Office) Rudy Reisz (Plant 77 STL), Don Malan (Boeing AFPR) and Jerry Roquet (Boeing).		
A	Replaced the term Substitute Fig A with Minuteman Requirement Control Number.	6	Document updating
	Added abbreviations and definitions	11	Document updating

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REVISIONS			
SECT	DESCRIPTION	PAGE	REASON
B	Revised Weight & Balance Data Form flow	22,24 25,60	Document updating
	Added the requirement to install Warning Tags on Safety Pins	24	Document updating
	Added an alternate method for motor transfers	15,45	Document updating
	Revised Electronic test	53	Doc updating
	Deleted requirement for missile squeeze	59	2-5513-20-293 BSQAP-14-12-86
B	The following pages were revised to be compatible with the text.	13,23, 28,30,8, 32,51, 61,75,78,86,87,88, 89,90	Doc updating
C	Deleted missile squeeze	26	2-5513-20-293 BSQAP-14-12-86 BCP 188 TR1
C	Added equipment for the MAB test position checkout	29	Doc updating
	Added note to use the 1st Wing II Configured Missile for E.I. test	30	Doc updating
C	The following pages were revised to be compatible with the text.	33,31, 35,36, 37	Doc updating
D	Added required equipment for maintenance	8	Doc updating
D	The following pages were revised to be compatible with the text of Sections B, C & E	10a, 13 15,16a,16 26,28, 29,29a, 31	Doc updating
E	The following pages were revised to reference new MRCN's for Wing II equipment	16,17, 17a.	BSQAP-16-1-16 2-6444-00-424
E	Added note to missile functional test	19	Doc updating
E	The following pages were revised to be compatible with the text.	16a,20, 21	22,23,24.
APP I	The following pages were revised to update the appendixes to be in accord with the text of sections B, C, D & E	2,3,11, 112b,112c.	12,32,71,82.
APP II	Replaced the term Substitute Fig A with Minuteman Requirement	43,42a, 57	43d,43e,43f
A	Replaced the term Substitute Fig A with Minuteman Requirement Control Number	6	Document updating
	Added abbreviations and definitions	11	Document updating

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REVISIONS			
SECT	DESCRIPTION	PAGE	REASON
B	Added Wing II designated MRCN.	39	Document Updating ↑
B	The following pages were revised to be consistent within the text of Section B.	30, 33 45, 46 54, 64 82	
C	The following pages were revised to correct typing errors.	26, 29 30, 31	
C	Revised identification number ACO 480 to ACO 4368.	35	
D	Revised identification number ACO 480 to ACO 4368.	10a	
D	Added maintenance document number.	16	Document Updating ↓
D	The following pages were revised to correct typing errors.	8, 14	
D	Corrected drawing number callout.	13	
D	The following pages were revised to be consistent with the text.	28, 29 29a	
E	Revised the following pages to include the requirements for pressure check of the 3rd Stage Motor.	16, 16a 17a, 23	
E	Revised FSE/MRCN 236 to FSE/MRCN 250	17, 23	GCP 3000-19
App. I	The following pages were revised to update MRCN's.	51, 51a 52, 53 54, 55 56, 78 112-4, 112c	Document Updating
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- B** **MISSILE ASSEMBLY AND CHECKOUT**
- C** **A/F PLANT 77 - ASSEMBLY AND CHECKOUT FSE AND AOD EQUIPMENT**
- D** **A/F PLANT 77 - ASSEMBLY AND CHECKOUT EQUIPMENT MAINTENANCE**
- E** **A/F PLANT 77 - MISSILE REPAIR AND REWORK**

APPENDIX I **MINUTE MAN REQUIREMENT CONTROL NUMBER FORMS - FACTORY SUPPORT EQUIPMENT (FSE)**

APPENDIX II **ASSEMBLY AND CHECKOUT EQUIPMENT REQUIREMENTS FORMS**

THE BOEING COMPANY

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SECTION TITLE PAGE US 4280 0000 REV. V/61

Plant 77
PREPARED BY Requirements Group
SUPERVISED BY P. A. Laveie
BI-MM
APPROVED BY W. J. Chalot
RELIABILITY
APPROVAL _____ (DATE)

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INTRODUCTION

I. PURPOSE AND SCOPE

The purpose of this document is to present the technical requirements for all functions necessary to activate Wing II and on missile assembly facilities, rework Wing I facilities to the Wing II and on configuration, maintain these facilities; and to assemble, checkout, and deliver Wing II and on configuration SM-80 Missiles less the Guidance and Control Section and the Re-entry Vehicle at A/F Plant 77. This facility which is located at Hill Air Force Base, Ogden, Utah, was activated for Minuteman Missile Production and is operated by The Boeing Company, WS-133 Assembly and Checkout Contractor.

II. DOCUMENT PRESENTATION

1. Section A (Introduction) defines the purpose and scope of the document, overall philosophy and ground rules for A/F Plant 77 operations, and the method of document presentation.
2. Section B (Missile Assembly and Checkout) defines the functions required and the supporting technical requirements (special facilities, equipment and procedures) to receive, handle, and test missile components; and to assemble, checkout, deliver and store Wing II and on SM-80 Missiles at A/F Plant 77.
3. Section C (A/F Plant 77 Assembly and Checkout-Factory Support Equipment and Assembly and Checkout Equipment) defines the functions required and the supporting technical requirements (special facilities, equipment and procedures) to assemble and checkout A/F Plant 77 for the Wing II and on configuration after receipt of the completed Wing I facilities and the new facilities

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(brick and mortar) which complete the scheduled buildup for processing of SM-80 Missiles.

4. Section D (A/F Plant 77 Assembly & Checkout Equipment Maintenance) defines the functions required and supporting technical requirements (special facilities, equipment, and procedures) to service and maintain FSE, and ACO Equipment used at A/F Plant 77.
5. Section E (Missile Repair and Rework) defines the functions required and supporting technical requirements (special facilities, equipment and procedures) to perform missile repair and rework at A/F Plant 77.
6. APPENDIX I - The Minuteman Requirement Control Number forms for the Factory Support Equipment required at A/F Plant 77 will be included in Appendix I for information.
7. APPENDIX II - The Assembly and Checkout forms for special facility contract/overhead equipment and equipment used in the operational weapon system as maintenance ground equipment will be included for information.

Each section of the document is organized in the following sequence and contains:

1. Objectives and ground rules pertaining to the section.
2. List of the equipment being assembled and checked out (or maintained in case of Sections D and E).
3. Functional Flow Drawings presenting the functions to be performed based on the ground rules established. Flow drawings of sub-

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functions for only the complex functions are included.

4. Assembly or Checkout Function and Technical Requirement Sheets presenting the technical requirements which define what must be done and the required facilities, equipment, and procedures necessary to perform the function.
5. List of the equipment and procedures documents or drawings required to accomplish assembly and checkout (or maintenance in the case of Sections D and E).

Each function in each document section is identified by a decimal number assigned in sequence from the flow drawings. Information contained on the above forms which is related, is linked through use of the function numbers. The type of information contained on each form is as follows:

EQUIPMENT LISTS

Identification Number - this column lists the Figure A number for

MGE; Minuteman Requirement Control Numbers are listed for Airborne and FSE items; and ACO numbers for SFC/OH and the MGE used as assembly and checkout equipment at Plant 77.

Equipment Nomenclature - this column lists the official nomenclature for all items (normally will be Figure A nomenclature).

Class - this column lists the classification of equipment, i.e., Airborne, MGE, FSE, SFC/OH, ACO or Facility.

Location and Function - these columns show function number and location (e.g., CPA, MAB, etc.) where function is performed. The function number listed corresponds to the function number on both the

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flow drawing and the analysis sheet concerning the equipment listed.

- The list at the front of each document section contains the equipment on which the functions are being performed. The list at the back of each section contains the equipment required to perform the function.

FUNCTION FLOW DIAGRAMS

The Functional Flow Diagrams present (in flow diagram format) the functions necessary to accomplish the assembly and checkout (or maintenance) tasks covered by each section of this document. The first flow diagram in each section is the master flow diagram for that task of that section. Each function on the flow diagram is identified by a decimal number located in the upper L.H. corner of each block with the top function number for each drawing also appearing in the lower R.H. corner of the drawing.

ILLUSTRATIONS

Illustrations shall be utilized for information only: Details are as specified in procedures documentation.

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENT SHEETS

These sheets provide technical analysis of the function requirements shown on the flow diagrams. These technical analysis outline assembly and tests required and present equipment and procedures or drawing requirements. The top function number and title for each sheet is listed at the top of that sheet. The column titled "Function Requirements" lists the function number and title followed by the technical analysis of the function requirements. The column at the right lists the equipment and/or documentation or

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drawings required to perform the function. All Function numbers are keyed to the flow drawings.

III. GENERAL GROUND RULES

1. Completed SM-80 Missiles, less the R/V and G&C Section, will be delivered to the Air Force at A/F Plant 77 for government shipment.
 - a. Boeing will load a Ballistic Missile Trailer with a SSCBM containing a missile on the railcar.
 - b. The Air Force will load the SSCBM containing a missile on the C-133 Airplane.
 - c. Airplane and/or railcars will be operated, maintained and supplied by the Air Force as required.
2. All associate contractor FSE and airborne components and all MSE items (except Boeing supplied FSE and A/B components) will be received at A/F Plant 77 as GFE/GFP after completion of all required and item acceptance testing at the manufacturers' plant.
3. All Boeing supplied FSE and missile components will be received at Plant 77 as GFE after completion of all required end item acceptance testing at the factory.
4. All GFE and GFP will be delivered to the A/F Plant 77 receiving area as part of the government shipping function.
5. The assembly and checkout requirements are based on the Wing II and on configuration SM-80 Missile as defined in specification S-133-1000-0-1 (D2-14286) and related component specifications. Tests performed

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at A/F Plant 77, are the minimum required to demonstrate compliance with specification requirements.

6. Existing MGE will be utilized, whenever possible, for assembly and checkout of the Missile at A/F Plant 77. (NOTE: Off-the shelf MGE type equipment will be provided by Facilities Procurement and manufactured MGE will be provided by procurement methods used to purchase FSE. These items will be identified as ACO.)
7. Functional tests of ACO and FSE, prior to installation, will be held at a minimum.
8. A/F Plant 77 stationary ACO and FSE equipment normally will be installed and tested in place.
9. A/F Plant 77 will have the capability for removal and replacement of malfunctioned components of missiles that have not been delivered as a part of the Weapon System (i.e. missile has not been delivered to the Air Force as part of a Launch Facility).
10. OOAMA (Hill AFB) will support A/F Plant 77 Cert/Cal Laboratory certification requirements. A/F Plant 77 Cert/Cal requirements shall be per Boeing documentation as agreed to by A/F Plant 77 and OOAMA.
11. A/F Plant 77 will have the capability of performing maintenance of ACO and FSE to the card (electronic) or to a comparable level. It will also have the capability of performing maintenance of ACO and FSE (mechanical/structural) to all levels.
12. Specific ground rules for an individual area will be tabulated in the appropriate document sections.

GLOSSARY

A/B	Airborne
A/T	Air Force
ACC	Assembly and Checkout Equipment
APU	Auxiliary Power Unit
Cert/Cal	Certification and Calibration
CPA	Component Processing Area
F/T	Functional Test
FSE	Factory Support Equipment
GAC	Guidance and Control
MAB	Missile Assembly Building
MGE	Maintenance Ground Equipment
MSB	Missile Storage Building
NCU	Nozzle Control Unit
OGE	Operational Ground Equipment
R/V	Re-Entry Vehicle
RAI	Receiving and Inspection
RFI	Radio Frequency Interference
S/N	Serial Number
SFC/OH	Special Facilities Contract/Overhead
SSCBM	Shipping and Storage Container, Ballistic Missile
OM	Operation and Maintenance
M	Maintenance
MRB	Material Review Board
P/N	Part Number
CFE	Contractor Furnished Equipment
GFE	Government Furnished Equipment
GFP	Government Furnished Property

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THE BOEING COMPANY

NUMBER D2-11162-1 MODEL NO. WS-133
TITLE SECTION "B" - Missile Assembly and Checkout

PREPARED BY Plant 77 Requirements Group
SUPERVISED BY P. R. Sveride
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APPROVED BY W. H. Chaslot
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drawings required to perform the function. All Function numbers are keyed to the flow drawings.

III. GENERAL GROUND RULES

1. Completed SM-80 Missiles, less the R/V and G&C Section, will be delivered to the Air Force at A/F Plant 77 for government shipment.
 - a. Boeing will load a Ballistic Missile Trailer with a SSCBM containing a missile on the railcar.
 - b. The Air Force will load the SSCBM containing a missile on the C-133 Airplane.
 - c. Airplane and/or railcars will be operated, maintained and supplied by the Air Force as required.
2. All associate contractor FSE and airborne components and all MGE items (except Boeing supplied FSE and A/B components) will be received at A/F Plant 77 as GFE/GFP after completion of all required end item acceptance testing at the manufacturers' plant.
3. All Boeing supplied FSE and missile components will be received at Plant 77 as GFE after completion of all required end item acceptance testing at the factory.
4. All GFE and GFP will be delivered to the A/F Plant 77 receiving area as part of the government shipping function.
5. The assembly and checkout requirements are based on the Wing II and on configuration SM-80 Missile as defined in specification S-133-1000-0-1 (D2-14286) and related component specifications. Tests performed

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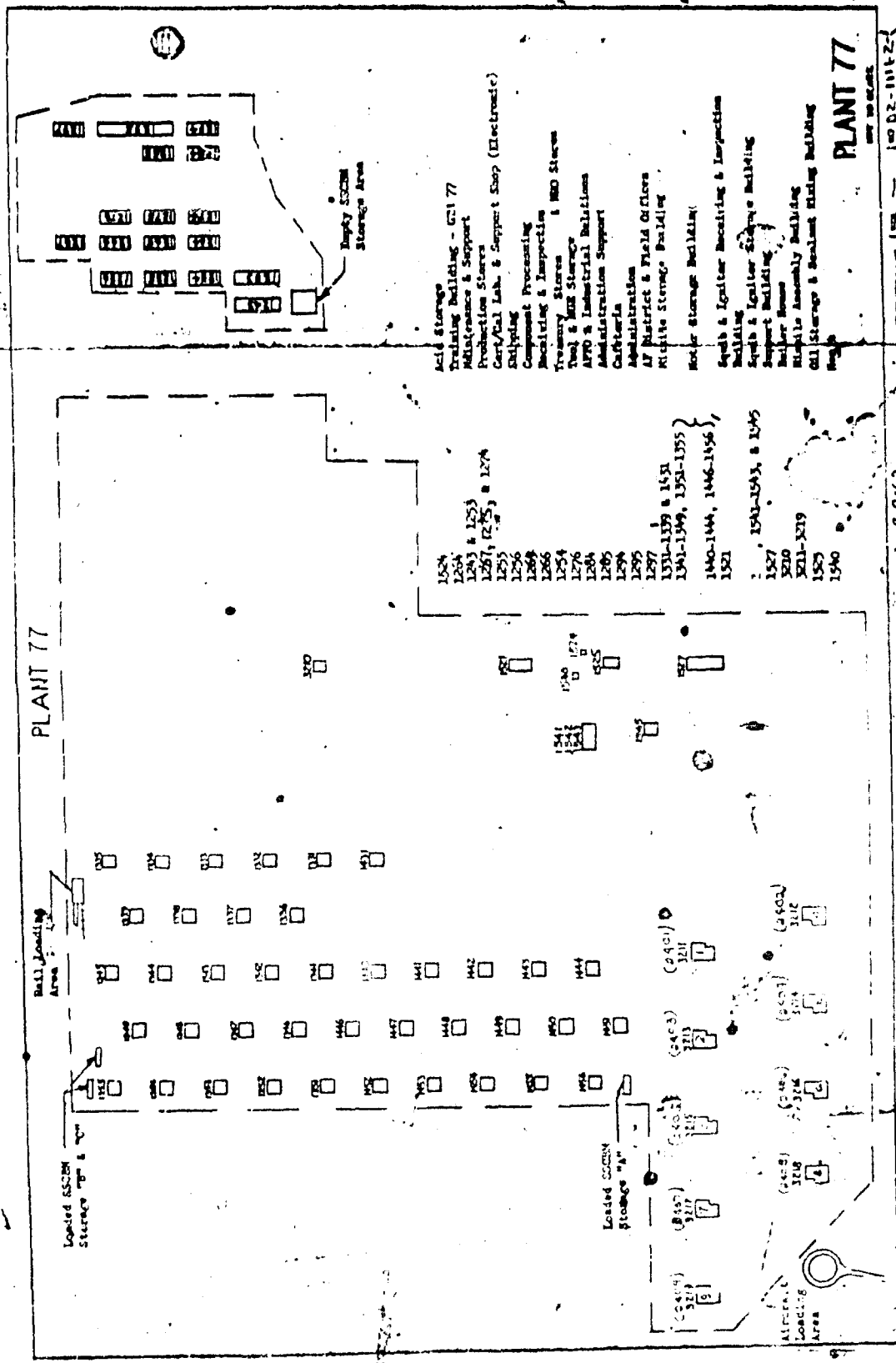
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INTRODUCTION

III. (CONT)

at A/F Plant 77, are the minimum required to demonstrate compliance with specification requirements.

6. Existing MGE will be utilized, whenever possible, for assembly and checkout of the Missile at A/F Plant 77. (NOTE: Off-the shelf MGE type equipment will be provided by Facilities Procurement and manufactured MGE will be provided by procurement methods used to purchase FSE. These items will be identified as ACO.)
7. Functional tests of ACO and FSE, prior to installation, will be held at a minimum.
8. A/F Plant 77 stationary ACO and FSE equipment normally will be installed and tested in place.
9. A/F Plant 77 will have the capability for removal and replacement of malfunctioned components of missiles that have not been delivered as a part of the Weapon System (i.e. missile has not been delivered to the Air Force as part of a Launch Facility).
10. OOAMA (Hill AFB) will support A/F Plant 77 Cert/Cal Laboratory certification requirements. A/F Plant 77 Cert/Cal requirements shall be per Boeing documentation as agreed to by A/F Plant 77 and OOAMA.
11. A/F Plant 77 will have the capability of performing maintenance of ACO and FSE to the card (electronic) or to a comparable level. It will also have the capability of performing maintenance of ACO and FSE (mechanical/structural) to all levels.
12. Specific ground rules for an individual area will be tabulated in the appropriate document sections.



SUMMARY

A/B	Airborne
A/T	Air Force
AOO	Assembly and Checkout Equipment
APU	Auxiliary Power Unit
Cert/Cal	Certification and Calibration
CPA	Component Processing Area
F/T	Functional Test
FSE	Factory Support Equipment
GAC	Guidance and Control
MAB	Missile Assembly Building
MGE	Maintenance Ground Equipment
MAB	Missile Storage Building
NCU	Nozzle Control Unit
OGE	Operational Ground Equipment
R/V	Re-Entry Vehicle
RAI	Receiving and Inspection
RFI	Radio Frequency Interference
S/N	Serial Number
SFC/OH	Special Facilities Contract/Overhead
SSCRM	Shipping and Storage Container, Ballistic Missile
OM	Operation and Maintenance
M	Maintenance
MRB	Material Review Board
P/N	Part Number
CPE	Contractor Furnished Equipment
GFE	Government Furnished Equipment
GFP	Government Furnished Property

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THE BOEING COMPANY

NUMBER D2-11162-1 MODEL NO. WS-133
TITLE SECTION "B" - Missile Assembly and Checkout

SECTION TITLE PAGE US 238 0000 REV. 1/61

PREPARED BY Plant 77 Requirements Group

SUPERVISED BY

BI-MM

APPROVED BY

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SECTION B
MISSILE ASSEMBLY AND CHECKOUT

SCOPE

This section presents the technical requirements for assembly and checkout of Wing II SM-80 Missiles at A/T Plant 77. These technical requirements are based on the delivery of SM-80 propulsion units from A/T Plant 77 in accordance with the Operational Missile Model Specification S-133-1000,-0-1.

GROUND RULES

In addition to the General Ground Rules in Section A, the following will apply specifically to this section:

1. All airborne equipment and all OGE/MGE items which are delivered with a missile will, upon receipt at A/T Plant 77, be visually inspected for possible damage incurred in shipping and handling. Inspection will be conducted from procedures defined in Manufacturing and Inspection Records (M&IR). Disposition of all damaged items will be handled in accordance with Quality Control Document D1979.
2. The interstage arm-disarm devices and the stage separation detonators will be functionally tested at A/T Plant 77 prior to assembly to the Missiles. The spark ignition safe and arm units and thrust termination switches will be functionally tested at A/T Plant 77 prior to storage. Testing will be limited to the minimum necessary to assure proper functioning of the item prior to assembly and integration into the missile. It is expected that the amount of testing will decrease with time as confidence in the system builds up.

SECTION B

GROUND RULES

(CONTINUED)

3. Rocket motors, installed on rocket motor carriages, will be received in rocket motor trucks and will have the ignition and thrust termination (Stage III only) devices installed complete with pins and red streamers. These devices will not be removed at A/T Plant 77 unless physical damage is incurred during rocket motor missile handling or assembly.
4. Storage ~~hldgs.~~ will be utilized for storage of either multiple stages (Stage I, II, and III), replacement rocket motors or for storage of the completed missiles.
5. Transport of rocket motors from storage ~~hldgs.~~ to the MAB will be by SSCBM or other approved vehicles.
6. The assembled missile will be transferred from the MAB Missile Joining Rails to a SSCBM for subsequent disposition.
7. All missile and rocket motor transfers will be accomplished by special handling crews, assigned to the Facilities and Services Unit, dispatched upon request to the Material Handling Dispatcher. These crews will report to the designated area with the appropriate transfer equipment.
8. Assembly of missile components and sections will be predicated on interchangeability in accordance with the requirements of MIL-I-8500A as implemented by associate contractor adherence to Assembly and Interface Control Drawing tolerances.

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AIRBORNE EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION AND FUNCTION NUMBER					MISC.
			CPA	HAB	ORDNANCE PROCESSING	MIS. & ENG. STORAGE	MISSILE TRANS. AREA	
6204	NCU Stage II (P71)	A/B		B5.2				
6205	NCU Stage III (P72)	A/B		B5.2				
6206	Electrical Cabling Unit-Separable Stage I (P81))	A/B		B7.1				
6207	Electrical Cabling Unit-Separable Stage II (P82)	A/B		B7.1				
6208	Electrical Cabling Unit-Separable Stage III (P83)	A/B		B7.1				
6210	Battery Assy - SE 13 (NCU)	A/B	B3.1					

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AIRBORNE EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION AND FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MIS. & ENG STORAGE	MISSILE TRANS. AREA
6401B	Engine-Rocket, Solid Propellant Operational (Stage III)	A/B		B7.4			
6501	Interstage Assy - Insulated, Stage II - III	A/B		B10.3 B7.4			
6503	Ordnance Assy's - Separation and Removal, Interstage II-III	A/B		B10.8			
6507	Bracket Components - Cable Interstage II-III	A/B		B10.2			
6601	Engine-Rocket, Solid Propellant, Operational (Stage II)	A/B		B7.4			
6701	Interstage Assy - Insulated, Stage I-II	A/B		B7.4 B10.3			

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IDENT. NO.	NOMENCLATURE	CLASS	LOCATION AND FUNCTION NUMBER			
			CPA	MAB	ORDNANCE PROCESSING STORAGE	MIS. & ENG. TRANS. AREA MISG.
6703	Ordnance Assy's - Separation and Skirt Removal Interstage I-II	A/B		B10.8		
6706	Bracket Components - Cable Dis- connect, Interstage I-II	A/B		B10.2		
6801	Engine-Rocket, Solid Propellant, Operational (Stage I)	A/B		B7.4		
6901	Skirt Assembly-Insulated, Stage I	A/B		B7.3		

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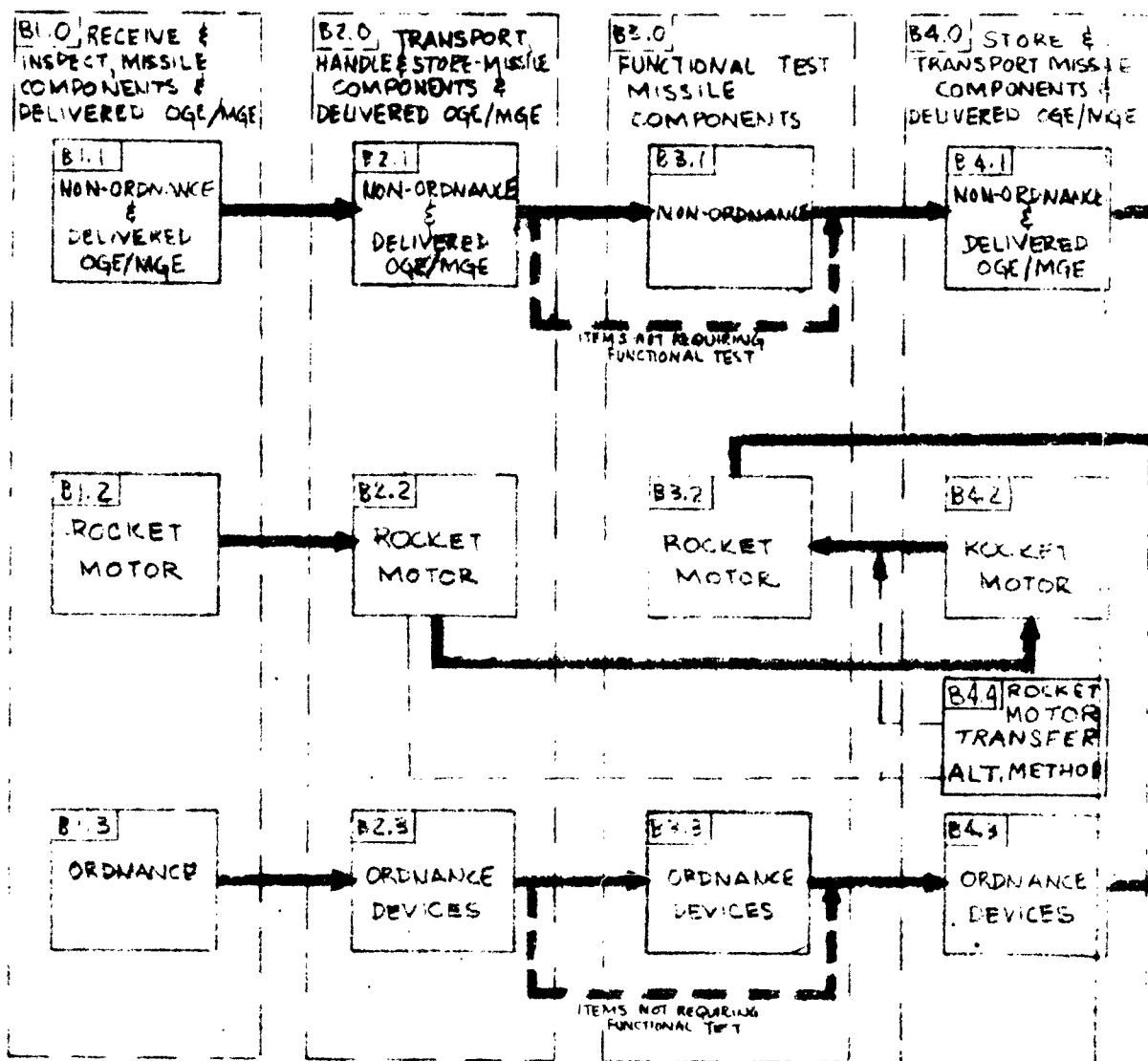
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B8.0
TEST
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ARM/DISARM
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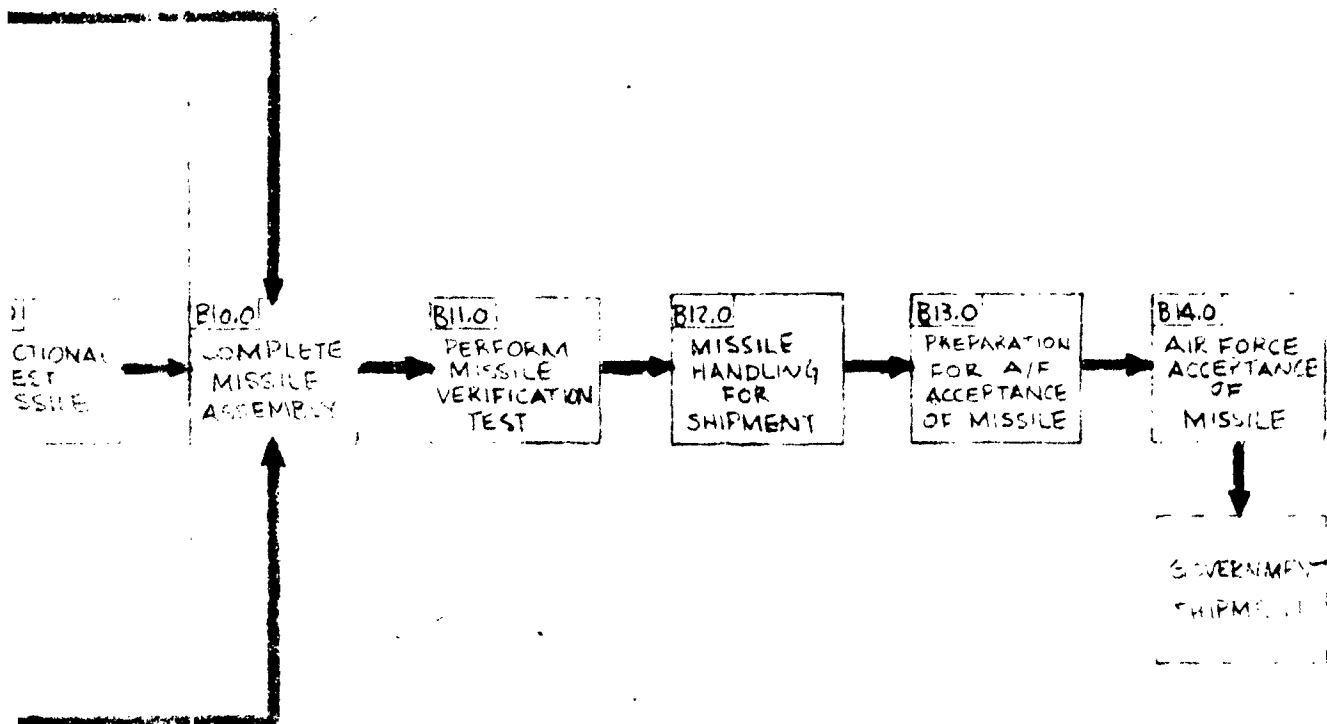
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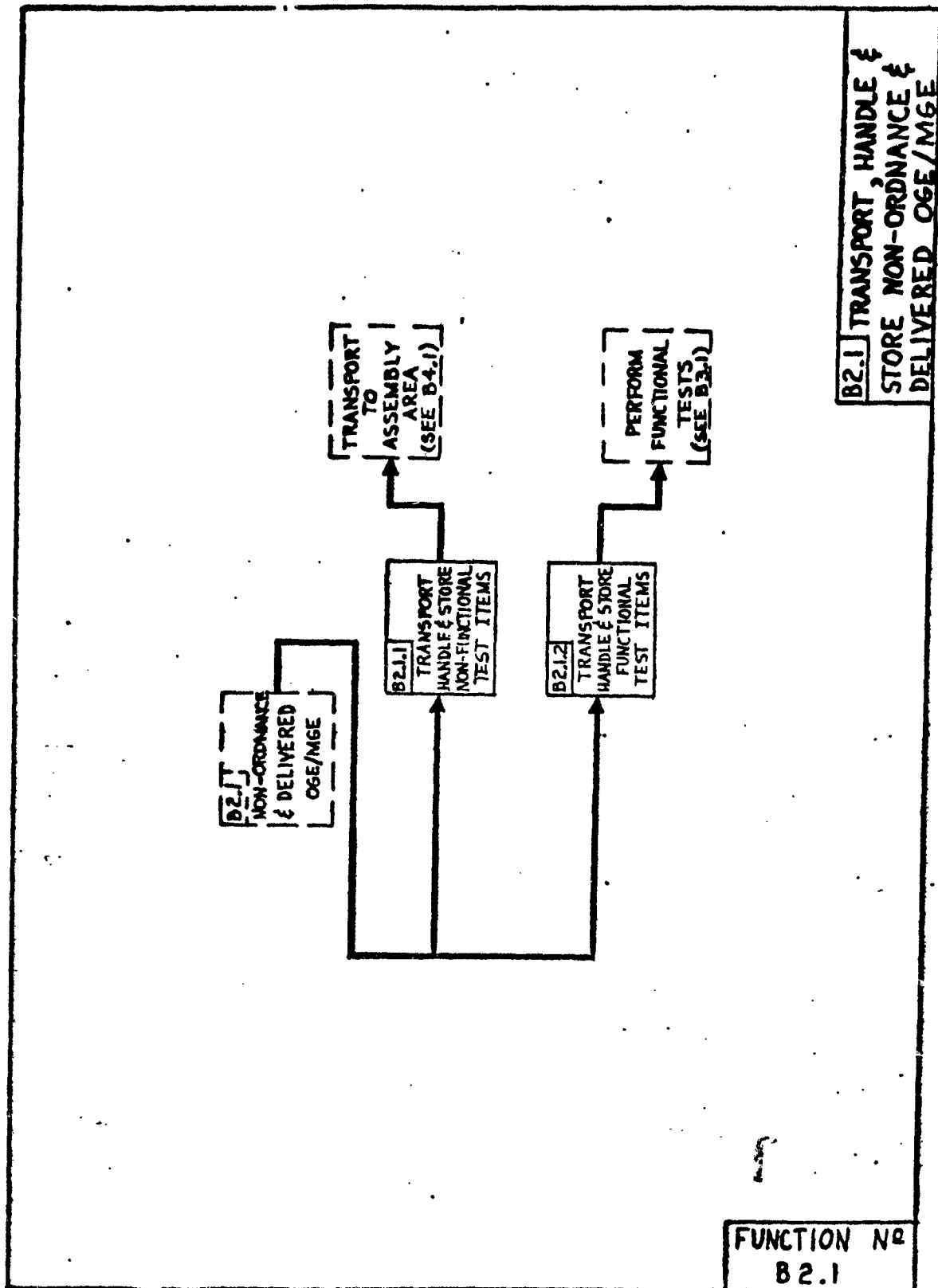
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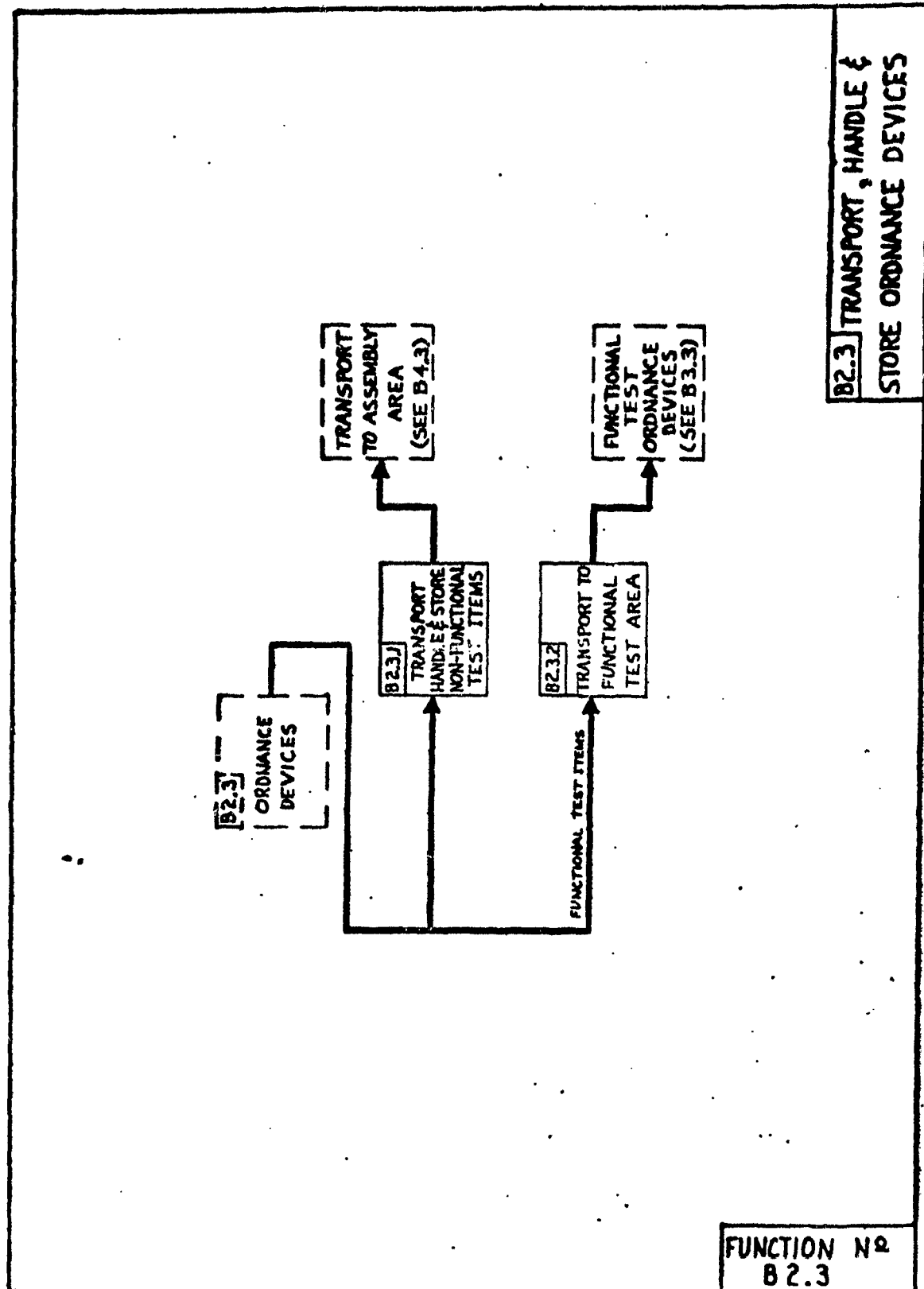
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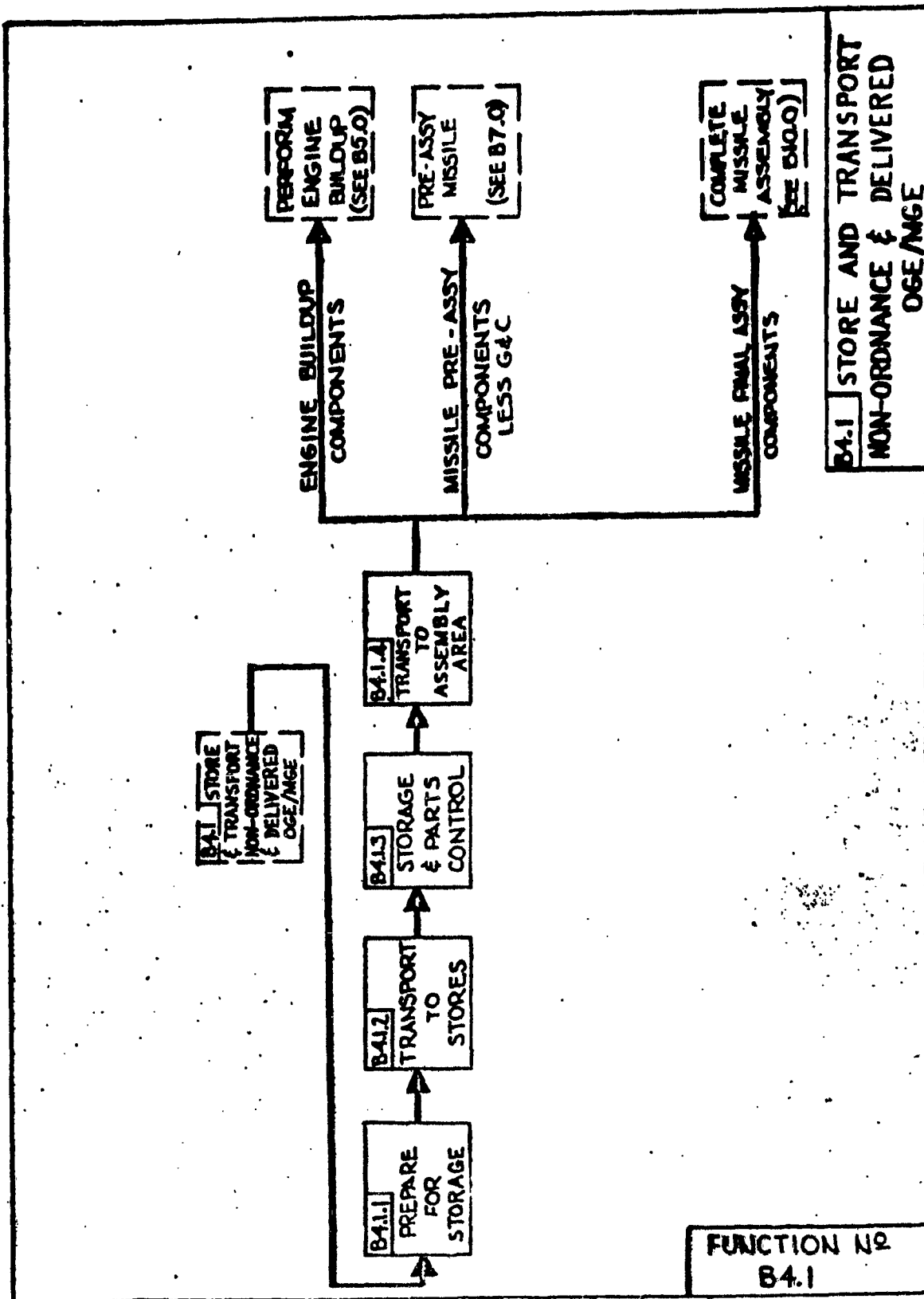
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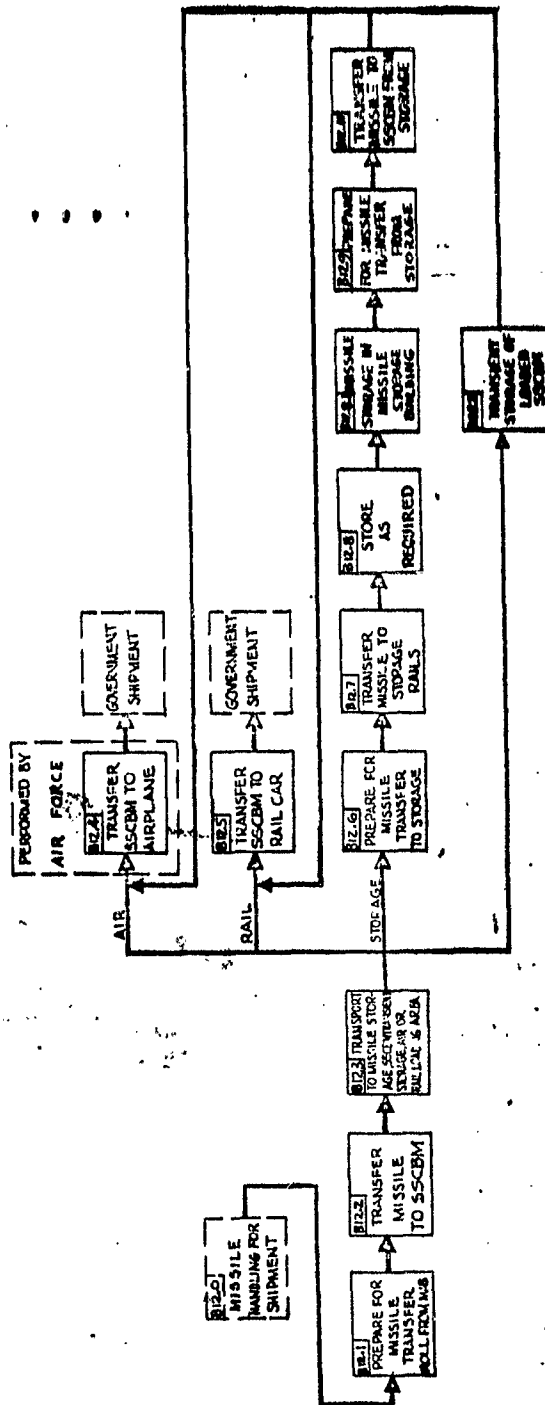
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MISSILE HANDLING
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FUNCTION	B1.0 RECEIVE AND INSPECT - MISSILE COMPONENTS AND DELIVERED OGE/MGE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.0 <u>RECEIVE AND INSPECT, MISSILE COMPONENTS AND DELIVERED OGE/MGE</u> All airborne equipment and OGE/MGE to be delivered with the missile shall be thoroughly inspected for physical integrity and possible damage incurred in shipping and handling. The receiving and inspection shall be accomplished in the following buildings: A. Building 1266 - All items except rocket motors and ordnance devices containing explosive charges. (See B1.1) B. Storage Iglsos - Stages I, II and III Rocket Motors. (See B1.2) C. Building 1521 - all small ordnance items. (See B1.3) Detailed Receiving and Inspection Procedures are required. 1.1 <u>PERFORM RECEIVING AND INSPECTION, NON-ORDNANCE AND DELIVERED OGE/MGE</u> Receiving and inspection of the following components are required: A. Angular Accelerometer B. Deflector Assemblies - Base Heating, Stage I, II and III. C. Insulation Components - Fastener and Assembly Joint D. Raceway Components-Sections 44 through 49		
	FUNCTION B1.0	

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FUNCTION B1.0 RECEIVE AND INSPECT - MISSILE COMPONENTS AND DELIVERED OGE/MGE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.1 <u>PERFORM RECEIVING AND INSPECTION,</u> <u>NON-ORDNANCE AND DELIVERED OGE/MGE</u> (CONTINUED) E. Battery Assemblies F. Interstage Assemblies-Insulated, Stages I-II and II-III G. Electrical Cabling Units-Separable Stage I, II and III H. Skirt Assembly-Insulated, Stage I I. Support Components-Electrical Cabling, Separable J. Bracket Components-Cable Disconnect Interstage I-II and II-III K. Interstage Separation Arm-Disarm Devices L. Adapter, Ring, Missile Support (OGE 1252.2) M. Clamp Set, Adapter Ring to Missile Skirt (MGE 4069.2) N. NCU I, II and III (including adapter frames) O. Stage I Nozzle Support Link (MGE 11306) Rail or highway shipments of the above items shall be delivered to the loading dock of Building 1266. The carrier shall present this shipment to Production Control personnel for acceptance. Military air shipments shall be picked up at the airfield and delivered to Building 1266.	
	FUNCTION B1.1

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FUNCTION BL.3 RECEIVE AND INSPECT - MISSILE COMPONENTS AND DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.1.1	<u>RECEIVE EQUIPMENT AT RECEIVING DOCK</u> Receiving operations shall be in accordance with D2-6610.	Camera and Tripod, Still Picture (ACO 448) Truck, Lift,Fork (ACO 453) Truck, Motor-Misc. Delivery (ACO 452) Truck, Lift-Jack (ACO 461) D2-6610 Missile Production Operating Logistics- A/F Plant 77 Semi Trailer, Rocket Motor, (FSE 101)
1.1.2	<u>HANDLE AND TRANSPORT TO R&I AREA</u> Move components from the carrier into the Receiving and Inspection Area. (See B2.1)	
1.1.3	<u>UNCRATE FOR INSPECTION</u> Components require uncrating to the extent necessary to provide accessibility to shipping documents, inspection for quantity and, identification and visual damage.	
1.1.4	<u>PERFORM INSPECTION</u> All Weight and Balance Data accompanying the components shall be forwarded to the Weights Group.	
		FUNCTION B1.1.1

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FUNCTION B1.0	RECEIVE AND INSPECT - MISSILE COMPONENTS AND DELIVERED OGE/MGE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.1.5 <u>REGRATE</u> After inspection, components shall be regrated and prepared for transporting to CPA or Store as required. (For Transport, Handle and Store, see B2.1) 1.2 <u>PERFORM RECEIVING AND INSPECTION - ROCKET MOTORS, STAGE I, II AND III</u> Receiving and inspection of the three rocket motors is required. All motors shall be delivered in rocket motor trucks by a commercial carrier under Government Bills of Lading. The motor Safe and Arm Devices, including Stage III Thrust Termination Arm-Disarm Device, will be received on the motors and shall not be removed for inspection or testing. 1.2.1 <u>RECEIVE ROCKET MOTORS</u> Receiving operations shall be in accordance with Document D2-6610. The rocket motor trucks shall be met at the gate of the Motor Storage Area and escorted to a designated storage bldg. 1.2.2 <u>PERFORM INSPECTION AND PROCESS RECORDS</u> Motor inspection shall include: A. recording alarm set data (if installed)		D2-6610 Missile Production Operating Logistics A/T Plant 77 D2-12369 D2-12214 D2-11777 FUNCTION B1.2.5

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ASSEMBLY OR CHECKOUT FUNCTION
AND TECHNICAL REQUIREMENTS

RECOMMENDED
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1.2.2 PERFORM INSPECTION AND PROCESS RECORDS (cont'd)

D2-9555

- B. checking for rotation of Stage I, Stage II and Stage III Motor in its rocket motor carriage, and centering of carriages.
- C. visual inspection of motor and carriage for damage
- D. obtaining accountability information on:
 - 1. rocket motor
 - 2. motor component and protective devices
 - 3. rocket motor carriages
 - 4. alarm set (if installed)
 - 5. horizontal restraint - rocket motor
- E. verifying availability of nozzle alignment data with each motor. All of the weight and balance data accompanying the motor shall be forwarded to the Weights Group.
- F. verify that the Ord. Safety Pins are installed on the rocket motor ordnance devices.

NOTE: Warning tags shall be installed on the Safety Pins.

1.3 PERFORM RECEIVING INSPECTION - ORDNANCE DEVICES

The Ordnance Assemblies - Separation and Skirt Removal (Interstage I-II and II-III), spare Motor Safe and Arm, spare Third Stage Thrust Termination Arm - Disarm and Interstage Arm-Disarm Devices shall be received and inspected in Building 1521. Safety requirements specified in D2-12872 shall be complied with.

FUNCTION B1.2.2

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FUNCTION B1.0 RECEIVE AND INSPECT - MISSILE COMPONENTS AND DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.3.1 <u>RECEIVE COMPONENTS AT ORDNANCE PROCESSING AREA</u> Receiving operations shall be in accordance with D2-6610. 1.3.2 <u>PERFORM VISUAL INSPECTION</u> Inspection of ordnance devices shall verify that all Safing Pins are properly installed. All Weight and Balance Data accompanying ordnance devices shall be forwarded to the Weights Group. (For Transport, Handle and Store, see B2.3.)	D2-6610 Missile Production Operating Logistics AF Plant 77
	FUNCTION B1.3.1

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FUNCTION B2.0 TRANSPORT, HANDLE AND STORE-MISSILE COMPONENTS AND DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.0 <u>TRANSPORT, HANDLE AND STORE-MISSILE COMPONENTS AND DELIVERED OGE/MGE</u> All missile components and OGE/MGE (to be delivered with the missile) must be transported, handled and stored until delivery to the appropriate CPA or MAB area for processing for installation. Detailed Transportation, Handling and Storage Procedures are required.	
2.1 <u>TRANSPORT, HANDLE AND STORE - NON-ORDNANCE AND DELIVERED OGE/MGE</u> Transportation, handling and storage procedures of non-ordnance items shall be in accordance with Document D2-13907.	D2-13907 Transportation, and Handling Procedure Plant 77
2.1.1 <u>TRANSPORT, HANDLE AND STORE-NON-FUNCTIONAL TEST ITEMS</u> The following items require no component testing and shall be delivered to the storage area. A. Deflector Assemblies-Base Heating, Stages I, II and III B. Insulation Components-Fastener and Assembly Joint C. Raceway Components - Sections 44 through 49 D. Skirt Assembly - Insulated, Stage I E. Interstage Assemblies - Insulated, Stage I-II and II-III	Truck, Lift-Fork (ACO 453) Truck, Motor-Misc. Delivery (ACO 452) Semitrailer, Rocket Motor * (FSE 10 1) *NOTE: For use in transporting Air's ~~Some Equipment~~ when outside environment exceeds specification limits. FUNCTION B2.0

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FUNCTION B2.0 TRANSPORT, HANDLE AND STORE - MISSILE COMPONENTS AND DELIVERED OGE/MGI

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.1.1 <u>TRANSPORT, HANDLE AND STORE - NON-FUNCTIONAL TEST ITEMS</u> (CONTINUED) F. Adapter, Ring, Missile Support (OGE 1252/2) G. Clamp Set, Adapter Ring to Missile Skirt (MGE 4069/2) H. Support Components & Electrical Cabling, Separable I. Bracket Components - Cable Disconnect, Interstages I-II and II-III J. Angular Accelerometer The following items do not require functional test and shall be delivered to the Component Processing Area: MCU I, II and III (For handling, storage and transportation to MAB for installation, See B4.0) 2.1.2 <u>TRANSPORT, HANDLE AND STORE - FUNCTIONAL TEST ITEMS</u> The following items require functional testing and shall be delivered to the Component Processing Area. (Building 1265) A. Battery Assemblies ~~B. <i>[illegible]</i>~~	
	FUNCTION B2.1.1

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FUNCTION B2.0 TRANSPORT, HANDLE AND STORE-MISSILE COMPONENTS & DELIVERED OGE/MGE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.1.2 <u>TRANSPORT, HANDLE AND STORE-FUNCTIONAL TEST ITEMS</u> (cont'd) The following items require functional testing and shall be delivered to the ordnance testing area (Bldg. 1521): A. Interstage Separation Arm-Disarm Devices. B. Interstage Separation Detonator (For functional testing of these items, see B3.1 & B3.3)	
2.2 <u>TRANSPORT, HANDLE AND STORE ROCKET MOTORS</u> For convenience of handling, Stage I, II and III motors shall be placed and stored in numerical order in the same Bldg. with nozzles pointed away from the door. Motor Transport, Handling and Storage Procedures are required and shall be in accordance with the respective motor manufacturer procedures and Document D2-12872. The motors shall arrive at the motor transfer positions (in front of each Motor Storage Bldg.) aboard rocket motor trucks.	D2-12214 Stage II Motor Storage D2-11777 Stage III Transportation and Handling Procedures D2-12216 Stage II Transportation & Handling Procedures D2-12369 Stage I Transportation and Handling Procedures D2-13907 Transportation & Handling Procedures Plant 77
2.2.1 <u>PREPARE FOR MISSILE MOTOR TRANSFER</u> The following defined equipment will be required to perform all operations necessary to prepare the motors for roll transfer into the storage Bldg.: A. A means to connect the rail system in the rocket motor truck to the rail system in the Motor	Rail Assembly, Bridge, Engine Transfer (FSB 7756)
	FUNCTION B2.1.2

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.2.1 <u>PREPARE FOR MOTOR TRANSFER</u> (CONTINUED) Storage Bldg. This connection must be of adequate strength to support any stage rocket motor. B. A means to provide the mode of power for moving the motors from the rocket motor trucks into the storage bldg. C. A means to provide rail positioning for rocket motor transfer capable of receiving, supporting and stabilizing the rocket motor trucks. D. A means of grounding the rocket motor truck to earth potential. E. A means of moving and positioning the transporter platforms. F. A means to receive and support the motors in their respective handling carriages in the Motor Storage Bldgs. This shall include permanently installed electric winches, grounding cables for motor trans-	(Part of FSE 7629 Jack, Leveling - Support (ACO 415) Platform, Portable Highway Trans- porters (FSE 7666 D2-11051 (O&M) 3 Electrical ground lead (ACO 352) Truck, Lift-Fork (ACO 453) Rails, Storage - Engine & Missile (FSE 7629) D2-10907 (O&M
	FUNCTION B2.2.1

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FUNCTION B2.0 TRANSPORT, HANDLE AND STORE-MISSILE COMPONENTS AND DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.2.1 <u>PREPARE FOR MOTOR TRANSFER</u> (CONT) Refer, snatch blocks for use with transfer cables, provisions for grounding rocket motor carriages and for receiving bridge rails. (G. A means to provide illumination for night transfer. H. A means to provide environmental protection of motors during transfer operations under adverse weather conditions is required in order to maintain motor environment within allowable tolerances. I. A means to connect the 1st Stage Rocket Motor Carriage to the Motor and Missile Storage Rails winch cable during rocket motor transfer to the storage building. J. A means to connect the 2nd or 3rd Stage Rocket Motor Carriage to the Motor and Missile Storage Rails winch cable during rocket motor transfer to the storage building.	Lamp, Incandescen Portable Flood (ACO 4425) Cable Assembly - Power Electrical, Portable Flood Lamps (ACO 449) Shelter, Missile and Motor Transfer: Environmental - Missile/Motor Stor Building (FSE 7687 D2-10997 (O&A Bridge, Rocket Motor Stage I (FSE 7689, D2-10933 (O&A Pulley Bracket Assembly, Trans- porter, Stage II & III (FSE 7760) FUNCTION B2.2.1

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FUNCTION B2.0 TRANSPORT, HANDLE AND STORE-MISSILE COMPONENTS AND DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.2.1 <u>PREPARE FOR MOTOR TRANSFER (Cont)</u> k. A means to control the operation of the permanent winch on the fixed rails during motor transfer. l. A means to monitor the ambient temperature within the transporting vehicle. 2.2.2 <u>TRANSFER ROCKET MOTOR TO STORAGE RAILS</u> All equipment required for actually moving the rocket motor from the rocket motor truck into the storage building has been described, listed and positioned in B2.2.1. The Alarm Set, if installed, must be operating and monitored, and the grounding cable must be installed on the rocket motor during the transfer. 2.2.3 <u>STORE AND SECURE EQUIPMENT</u> The rocket motor shall be secured in a storage building and all transfer equipment shall be removed and routed to the Dispatcher for storage. Heating equipment shall ensure that temperature	Winch Control FSE 7688 D2-10925 (O&M) Recorder, Temperature Portable (ACO 532)
	FUNCTION B2.2.2

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FUNCTION B2.0 TRANSPORT, HANDLE AND STORE-MISSILE COMPONENTS AND DELIVERED OOE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.2.3 <u>STORE AND SECURE EQUIPMENT (CONT)</u> conditions in the Motor Storage Bldg. are maintained as follows: Temperature $60^{\circ} \pm 20^{\circ}F$ with a dew point of $57^{\circ}F$ maximum. Temperature recorders shall indicate the temperature conditions in each Bldg; and humidity recorders installed in random Bldgs shall indicate a representative humidity in the Bldg. An external visual alarm shall indicate when adverse temperature conditions are encountered in the Bldg. Alarm Sets shall be removed from the carriages and sent to shipping for return to OOAMA.	Temperature Recorders (FACILITY) Humidity Recorder (FACILITY) Alarm System (FACILITY)
2.2.3.1 <u>INSTALL ROCKET MOTOR RESTRAINT DEVICES</u> It is required that the Restraint Devices be installed on all rocket motors. Rocket motor containment shall be installed as specified in Document D2-14380. Safety requirements specified in D2-12872 shall be complied with.	Device Restraint First Stage (FSE 7789) 62K31248 (Inst) Device Restraint Second Stage (FSE 7790) 62K31249 (Inst) Device Restraint Third Stage (FSE 7791) 62J31250 (Inst) D2-14380, Installation Procedure Restraint Band, Impaling and Puncturing Device
2.3 <u>TRANSPORT, HANDLE AND STORE-ORDNANCE DEVICES</u> Transportation, handling and storage procedures shall be in accordance with Document D2-9133. Safety requirements specified in documented D2-12872 shall be complied with.	FUNCTION B2.2.3

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FUNCTION B2.0 TRANSPORT, HANDLE AND STORE - MISSILE COMPONENTS AND DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.3.1 <u>TRANSPORT, HANDLE AND STORE-NON-FUNCTIONAL TEST ITEMS</u> The Linear Charges shall be transported from their Receiving and Inspection Area to the storage area. Transportation and handling to MAB for installation is required immediately prior to B10.8.2. 2.3.2 <u>TRANSPORT TO FUNCTIONAL TEST AREA</u> The Detonator Assemblies (Stage Separation), spare Engine Ignition Safe and Arm, spare Third Stage Thrust Termination Arm - Disarm and Interstage Arm-Disarm devices require functional testing and shall be delivered to the Ordnance Test Area. (For functional testing, see B3.3.)	Truck, Motor- Misco. Delivery (480 452) Shelving, Storage (400 462)
	FUNCTION B2.3.2

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FUNCTION B3.0	FUNCTIONAL TEST - MISSILE COMPONENTS	
	ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
3.0	<u>FUNCTIONAL TEST - MISSILE COMPONENTS</u> Functional tests of missile components shall be conducted in the Component Processing Area, Missile Assembly Buildings and Squib Ignitor Building. Detailed Functional Test Procedures are required.	
3.1	<u>FUNCTIONAL TEST - NON-ORDNANCE</u> Non-ordnance missile components requiring functional test shall be received in the Component Processing Area for testing. (See B2.1) Functional test and handling procedures are required and shall be in accordance with the appropriate associate contractor procedures. NOTE: To familiarize personnel and build confidence in the system, NCU's and Angular Accelerometers shall be functionally tested for a duration of (3) missiles. (See E1.3.2). Thereafter, only linkage adjustments will be made to the NCU's. NCU's and Angular Accelerometers shall be functionally tested when data obtained during missile testing in the MAB indicates testing to be required.	FUNCTION B3.0

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
3.1.1 <u>PREPARE FOR FUNCTIONAL TEST</u> The following missile components shall be received at the Component Processing Area in their shipping containers: A. The battery packages (Stages I & II NCU's) shall be removed from their containers, hand carried to the Battery Test Position (See Figure 2-B) and connected to the test equipment. B. The NCU's and Adapter Frames shall be removed from their containers and installed on their respective trailers. After removal of the NCU Sling, the trailer and NCU assembly shall be removed to a battery installation area where necessary disassembly, reassembly and electrical connections for installation of a functionally tested Battery Package shall be accomplished. (See function B3.1.1.1) The NCU's on their trailer, with battery package installed, shall be moved into the NCU Linkage Adjustment Test Position (See Figure 1-B), and the test equipment connected. NOTE A spacer is required between the Stage II NCU and handling frame to permit NCU linkage adjustment.	Truck, Lift-York (ACO 493) Truck, Motor-Misc. Delivery (ACO 452) Hoist, Portable (ACO 405) Test Set Assembly, Ordnance Circuit (FSE 7679) NCU (H9) Sling (FSE 610) NCU (H2) Trailer, Stage I (FSE 614) NCU (H8) Trailer, Stage II (FSE 615) NCU (H13) Trailer, Stage III (FSE 620) EM 2084 (O&M) NCU Linkage Adjustment Position Equipment List (See list at left of following page) Bracket, spacer Stage II NCU (FSE 7793) FUNCTION B3.F.1

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FUNCTION B3.0 FUNCTIONAL TEST - MISSILE COMPONENTS	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
3.1.1 <u>PREPARE FOR FUNCTIONAL TEST</u> (CONT) ----- <u>NCU LINKAGE ADJUSTMENT POSITION</u> Cable Assemblies, Interconnecting (FSE 7742) Linkage Adjustment, CPA Distribution Box, NCU Linkage adjustment (FSE 7743) Power Supply Group, NCU Linkage adjustment (FSE 7744) Test Set, NCU Zero alignment (FSE 7724) Cage, NCU alignment, Stage I (FSE 10151) Cage, NCU alignment, Stage II (FSE 10155) Cage, NCU alignment, Stage III (FSE 10159) Table, Work-Electronic Test (ACO 456) 3.1.1.1 <u>PERFORM FUNCTIONAL TEST</u> A. The battery package functional tests shall check the resistance of the battery squibs and the circuit continuity of the different elements of the battery. B. The NCU's testing shall consist of the mechanical adjustment of the actuator linkages to values prescribed for the individual rocket motors. The NCU and a rocket motor then become a matched set. (See B5.0)	D2-13445 Ordnance Component and Subsystem Test Procedures D2-13732 NCU Linkage Adjust- ment Procedures
	FUNCTION B3.0

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
3.2.1 <u>PREPARE FOR TEST</u>, (CONT) motor test position (See B4.2 and Figure 4-B) which utilize elevated work platforms with drop leaves and portable steps for personnel access. Nozzle supports shall be removed from all rocket motors. 3.2.2 <u>PERFORM FUNCTIONAL TEST</u> The nozzles shall be manually deflected to insure freedom of movement. 3.3 <u>FUNCTIONAL TEST - ORDNANCE DEVICES</u> The Stage Separation Detonator Assemblies, spare Motor Ignition Safe and Arm, spare Third Stage Thrust Termination Arm - Disarm and Interstage Arm - Disarm Devices shall be functionally tested in the Squib and Ignitor Building 1521. Functional Test Procedures, in accordance with the appropriate manufacturer's test procedures, are required. Requirements specified in Document D2-12872. shall be complied with. 3.3.1 <u>PREPARE FOR TEST</u> The approximate equipment layout of the required test position is shown in Figure 4-B.	Scaffolding-Missile Access (FSE 7630) D2-10989 (O&M) Test Set - Ordnance Electrical, 70143 (FSE 13) - D2-12205 (O&M)
	FUNCTION B3.0.1

FUNCTION B3.0 FUNCTIONAL TEST - MISSILE COMPONENTS

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
3.3.1 <u>PREPARE FOR TEST</u> (CONT) The ordnance devices shall be placed on the test fixture in the test chamber and the test equipment shall be verified by self-check prior to test connections. Test connections of the ordnance devices to the test set must be accomplished outside the test chamber. 3.3.2 <u>PERFORM FUNCTIONAL TEST</u> Functional tests shall include: A. Checking the resistance of the Stage Separation Detonator Assembly bridge wire circuits. B. Performing squib circuit continuity checks, contact resistance checks, fire checks, and motor activation on spare motor Ignition Safe and Arm Devices. C. Performing motor activation tests, squib circuit and continuity checks on spare Third Stage Thrust Termination Arm-Disarm and Interstage Arm-Disarm Devices. 3.3.3 <u>REMOVE FROM TEST POSITION</u> Verify that the device safing pin is in place and disconnect the test equipment. Remove the device from the test chamber and install in its container. (For Store and Transport, see B4.3)	Fixture, Test - Ordnance Device (FSE 7678) Wrench, Safing Pin Instl. & Removal (ACO 4047)2) D2-13483, Detonator Test Procedure D2-12217 Igniter Safe & Arm Functional Test Procedure D2-13432 Arm/Disarm Functional Test Procedure D2-11776 Thrust Termination Switch Functional Test Procedures FUNCTION B3.1

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
3.2.1 <u>PREPARE FOR TEST</u>, (CONT) motor test position (See B4.2 and Figure 4-B) which utilize elevated work platforms with drop leaves and portable steps for personnel access. Nozzle supports shall be removed from all rocket motors. 3.2.2 <u>PERFORM FUNCTIONAL TEST</u> The nozzles shall be manually deflected to insure freedom of movement. 3.3 <u>FUNCTIONAL TEST - ORDNANCE DEVICES</u> The Stage Separation Detonator Assemblies, spare Motor Ignition Safe and Arm, spare Third Stage Thrust Termination Arm - Disarm and Interstage Arm - Disarm Devices shall be functionally tested in the Squib and Ignitor Building 1521. Functional Test Procedures, in accordance with the appropriate manufacturer's test procedures, are required. Requirements specified in Document D2-12872. shall be complied with. 3.3.1 <u>PREPARE FOR TEST</u> The approximate equipment layout of the required test position is shown in Figure 18-B.	Scaffolding-Missile Access (FSE 7630) D2-10909 (O&M) Test Set - Ordnance Electrical, 70143 (FSE 13) - D2-12205 (O&M)
	FUNCTION B3.0.1

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
3.3.1 <u>PREPARE FOR TEST</u> (CONT) The ordnance devices shall be placed on the test fixture in the test chamber and the test equipment shall be verified by self-check prior to test connections. Test connections of the ordnance devices to the test set must be accomplished outside the test chamber. 3.3.2 <u>PERFORM FUNCTIONAL TEST</u> Functional tests shall include: A. Checking the resistance of the Stage Separation Detonator Assembly bridge wire circuits. B. Performing squib circuit continuity checks, contact resistance checks, fire checks, and motor activation on spare motor Ignition Safe and Arm Devices. C. Performing motor activation tests, squib circuit and continuity checks on spare Third Stage Thrust Termination Arm-Disarm and Interstage Arm-Disarm Devices. 3.3.3 <u>REMOVE FROM TEST POSITION</u> Verify that the device safing pin is in place and disconnect the test equipment. Remove the device from the test chamber and install in its container. (For Store and Transport, see B4.3)	Fixture, Test - Ordnance Device (FSE 7678) Wrench, Safing Pin Instl. & Removal (ACO 4047)2) D2-13483, Detonator Test Procedure D2-12217 Igniter Safe & Arm Functional Test Procedure D2-13482 Arm/Disarm Functional Test Procedure D2-11776 Thrust Termination Switch Functional Test Procedure
	FUNCTION B3.1

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FUNCTION B4.0 STORE AND TRANSPORT -MISSILE COMPONENTS AND DELIVERED OGE/MGE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.0 <u>STORE AND TRANSPORT - MISSILE COMPONENTS AND DELIVERED OGE/MGE</u> The requirement exists to store and transport missile components and delivered OGE/MGE after completion of B2.0 or B3.0 until they are issued and delivered to the receiving area in the MAB. <u>STORE AND TRANSPORT - NON-ORDNANCE AND DELIVERED OGE/MGE</u> Transportation, handling and storage procedures are required. 4.1.1 <u>PREPARE FOR STORAGE</u> A. The NCU's (Stages I, II and III), installed on their respective adapter frames, shall be removed from their trailers and repacked in their containers. B. The Angular Accelerometer shall be placed in its shipping container and resealed. (See B2.1.1.) C. The Battery Packages shall be placed in their respective containers for storage until required for installation in function B3.1.1.1 in the CPA.	D2-13907 Transportation and Handling Procedures Plant 77 Hoist, Portable Nozzle Control Unit Sling (H9) (FSE 610)
	FUNCTION B4.0

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FUNCTION B4.0 STORE AND TRANSPORT - MISSILE COMPONENTS AND DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.1.2 <u>TRANSPORT TO STORES</u> The functionally tested components shall be transported from the CPA to the storage building. (Utilize the Rocket Motor Semitrailer (FSE 101) when outside environment exceeds specification limits.	Truck, Motor-Misc. Delivery (ACO 452) Truck, Lift-Fork (ACO 453) Semitrailer, Rocket Motor (FSE 101)
4.1.3 <u>STORAGE AND PARTS CONTROLS</u> The missile components and delivered OGE/MGE shall be assigned to storage locations and control records shall be processed.	D2-12974 (Oper.) Shelving, Storage (ACO 462)
4.1.4 <u>TRANSPORT TO ASSEMBLY AREA</u> Missile Components and delivered OGE/MGE shall be transported to the CPA or MAB for installation as required.	
4.2 <u>STORE AND TRANSPORT - ROCKET MOTORS</u> Transportation, handling and storage procedures are required and shall be in accordance with the appropriate motor manufacturer's procedures and Document D2-11777.	D2-11777 Stage III Transportation and Handling Procedures Rocket Motor (Stage III) D2-12216 Stage II Transportation and Handling Procedures D2-12369 Stage I Transportation and Handling Procedures D2-13907 Transportation and Handling Procedures Plant 77
	FUNCTION B4.0

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FUNCTION 24.0 STORE AND TRANSPORT - MISSILE COMPONENTS AND DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.2.1 <u>PREPARE FOR TRANSFER TO SSCM</u> The requirement exists to transfer rocket motors singly or in sets from the Motor Storage Building to the SSCM for transport to the MAB. The storage building winch will provide restraint during transfer of motors in train. Provisions shall be made to insure against exposure of the rocket motors to environment exceeding the specified limits. Proper grounding shall be installed prior to transfer. Other equipment is required to provide the following: A. A means to receive, house, support, provide transfer and transport power, and provide environmental control to rocket motors singly and in sets (Stage I, II and III). B. A means to support and align the aft end of the Ballistic Missile Trailer in position for roll transfer. C. A means to connect the rail system in the motor storage building to the rail system in the SSCM. This connection must be of adequate strength to support any stage rocket motor.	Rails, Storage - Engine and missile (FSE 7629) D2-10907 (OM) Shelter, Missile and Motor (FSE 7687) Missile/Motor Storage Building D2-10997 (OM) Recorder, Temperature - Portable (ACO 532) Shipping and Storage Container, Ballistic Missile (MGE 4095) Trailer, Ballistic Missile (MGE 4129) Tractor, (MGE 4130) Skis, SSCM (MGE 4493) Air Conditioner (MGE 4115) Jack Set, Translating (ACO 4175) Rail Assembly, Bridge, Engine Transfer (FSE 7756)
	FUNCTION 24.2.1

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FUNCTION 24.0 STORE AND TRANSPORT - MISSILE COMPONENTS AND DELIVERED OGE/MOE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.2.1 <u>PREPARE FOR TRANSFER TO SSCM</u> (cont) D. A means to provide trailer electrical grounding during transfer operations. E. A means to connect the following for transfer of rocket motors singly and in sets. 1. Ballistic Missile Trailer winch cable to Stage I, Stage II and Stage III Rocket Motor Carriages. 2. Stage I Carriage to Stage II carriage 3. Stage II carriage to Stage III carriage. F. A means to provide electrical bonding between motor during transfer is required. G. A means to provide illumination for night transfer.	Lead, Electrical Grounding (ACO 352) Control-Winch MAB - Storage Bunker (FSE 7688) D2-10925 (OAM) Bridle-Rocket Motor Stage I (FSE 7689) D2-10933 (OAM) Bridle-Rocket Motor Stage III (FSE 7690) D2-10939 (OAM) Positioning Set, Rocket Motor Carriage (FSE 7691) D2-9555 (oper) Cable, Rocket Motor Bonding (ACO 253) Lamp, Incandescent Portable Flood (ACO 4425) Cable Assembly - Power Electrical, Portable Flood Lamp (ACO 440)
4.2.2 <u>TRANSFER ROCKET MOTORS TO SSCM</u> Ball transfer the rocket motors from the motor storage building into the SSCM, using the Ballistic Missile Trailer winch for propulsion and the Storage Rail winch for restraint when transferring motors in train, and secure for transportation. All transfer equipment except the positioning set, and the Ballistic Missile Trailer winch cable shall be removed and stowed or returned to dispatcher.	Tie Down, Rocket Motor Carriage to SSCM (part of SSCM)
	FUNCTION 24.2.1

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FUNCTION B4.0 STORE AND TRANSPORT - MISSILE COMPONENTS AND DELIVERED OGE/MOE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.2.3 <u>TRANSPORT ROCKET MOTORS TO MAB</u>	
4.2.4 <u>PREPARE FOR ROCKET MOTOR TRANSFER TO MAB</u> Position the SSCM at the MAB by leveling and aligning to the Missile Joining Rails and utilizing the transfer equipment previously described in B4.2.1. The Missile Joining Rails are required to support Rocket Motors on carriages in the MAB and to provide a means for roll transfer of rocket motors singly and in sets. These rails are positioned to match the transfer equipment and shall include grounding cables for rocket motor transfer, a power winch and necessary sheaves, wheel blocks to prevent movement of rocket motors and provisions for grounding rocket motor carriages and for relieving transfer bridge rails. Provisions shall be made to insure against exposure of the rocket motors to environment exceeding the specified limits.	Equipment required same as in B4.2.1 except Motor Storage Rails and Missile/Motor Shelter Rails, Missile Joining (FSE 7628) D2-10987 (O&M) Shelter, Motor & Missile Transfer - Environmental-MAB (FSE 7682) D2-10993 (O&M)
4.2.5 <u>TRANSFER ROCKET MOTORS TO MAB</u> Roll transfer the rocket motors from the SSCM onto the MAB Missile Joining Rails using the MAB Rails winch for propulsion. When transferring motors in train, the Ballistic Missile Trailer winch will be used for restraint.	Sling-Horizontal Restraint Ring, Engine (FSE 7632) D2-11012 (O&M)
	FUNCTION B4.2.3

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FUNCTION B4.0 STORE AND TRANSPORT - MISSILE COMPONENTS AND DELIVERED OGE/MGE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.2.5 <u>TRANSFER ROCKET MOTORS TO MAB (CONT)</u> After the rocket motors are positioned, the horizontal restraint rings shall be removed. (An MAB alarm system will indicate when environmental conditions in this assembly area are out of tolerance. The requirements for environment in the MAB assembly area are $80^{\circ} \pm 20^{\circ}F$ with a dewpoint of $57^{\circ}F$ maximum.)	Hoist, Overhead, Rail Type (Facility) D2-9555
4.2.5.1 <u>INSTALL ROCKET MOTOR CONTAINMENT TIEDOWNS</u> Rocket Motor containment devices shall be installed as specified in document D2-14380.	
4.3 <u>TRANSPORT AND STORE ORDNANCE DEVICES</u> The spare ordnance devices shall be transferred to the Squib and Igniter Storage Building for storage after receiving and inspection and testing.	Shelving Storage (ACO 462) Truck, Motor-Misc. Delivery (ACO 452)
4.4. <u>ROCKET MOTOR TRANSFER (ALTERNATE METHOD)</u> In the event that the SSCBM is not available to transport rocket motors between the Motor and Missile Storage Building and the Missile Assembly Building, rocket motors will be transported singly in the Rocket Motor Semi-Trailer. Equipment and procedures to transfer single rocket motors from the Motor and Missile Storage Building to these trucks are essentially the same as those presented in B2.2 with the following additions: A. A means is required to receive, support, transport and provide environmental control to individual rocket motors supported on carriages. B. A means to support and propel the Rocket Motor Semitrailer. NOTE: No alarm set is required. (See ground rule 14 page 10, this section.)	Semitrailer, Rocket Motor (FSE 101) D2-12974 (O&M) Truck, Tractor, Rocket Motor (GFP) Portable Temp. Recorder (ACO 532) FUNCTION B4.2.5

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FUNCTION B5.0 ROCKET MOTOR BUILDUP	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
5.0 <u>ROCKET MOTOR BUILDUP</u> The requirement exists to install the NCU's on the rocket motors. The positioning and securing of the rocket motors is described in B4.2 Detailed installation procedures shall be per engineering drawings.	
5.1 <u>PREPARE NCU'S FOR INSTALLATION</u> Verify by S/N that the NCU to be installed has been adjusted to the requirements of the S/N rocket motor. (See B3.1.2.1) The NCU's shall be removed from their containers and placed on a dolly that will roll on the missile joining rails to permit installation to the motors. An overhead hoist, capable of adjusting vertical position of an article within 1/8 inch, and a standard sling are required for lifting NCU container covers and NCU positioning dollies. A special sling with suitable adapters is required to hoist the NCU's. A device is required to spread and hold the Rocket Motor nozzles while installing NCU's on Stages I and II only. Stage III NCU amplifier shall be removed prior to NCU installation and reinstalled after NCU is bolted	Rails, Missile Joining (FSE 7628) D2-10981 (O&M) Dolly, Positioning-Final Assembly (FSE 7708) D2-10927 (O&M) Adapter, Joining - NCU, Stage I (FSE 7701) D2-10960 (O&M) Adapter, Joining - NCU, Stage II (FSE 7702) D2-10964 (O&M) Adapter, Joining - NCU, Stage III (FSE 7703) D2-10947 (O&M) NCU (H9) Sling (FSE 610) EM-2084 (O&M) Scaffolding-Missile Access (FSE 7630) D2-10989 (O&M)
	FUNCTION B5.0

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FUNCTION B5.0

ROCKET MOTOR BUILDUP

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
5.1 <u>PREPARE NCU'S FOR INSTALLATION</u> (CONT) Into place on the Stage III Rocket Motor.	Spreader Kit, Nozzle-Stage II (FSE 17) D2-12216 (Opr) Spreader Assy, Stage I Nozzles (FSE 114) Hoist, Overhead Rail Type (Facility)
5.2 <u>INSTALL NCU'S</u> The NCU's shall be installed per Engineering Drawing.	Drawings 25-27597 25-27598 25-27599
	FUNCTION B5.1

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FUNCTION B6.0 TEST-ROCKET MOTOR BUILDUP	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
6.0 <u>TEST-ROCKET MOTOR BUILDUP</u> The requirement exists to verify the installation of the NCU's to the rocket motors and verify that the electrical and mechanical nozzle zero positions coincide. (Ref. B3.1.2.)	
6.1 <u>PREPARE FOR TEST</u> The NCU Zero Alignment Test Set is required for this test. The test set shall include a switch control to turn on Electronic and Hydraulic Power, and an adapter to short out the NCU Signal Receptacle for zero signal simulation, and shall be used in conjunction with the MAB Test Position and appropriate NCU Verification Gage Sets.	Scaffolding-Missile Access (FSE 7630) Test Set, NCU Zero Alignment, MAB (FSE 7724) D2-12977 (O&M) Cable Assy, NCU Test MAB (FSE 7719) Gage, NCU Verification, Stage I (FSE 10153) Gage, NCU Verification, Stage III (FSE 10161) Test Position, MAB (See B9.1) Gage, NCU Verification, Stage II (FSE 10157) Test Adapter Cable, Stage I NCU P70B (FSE 7748)
	FUNCTION B6.0

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
6.2 <u>PERFORM TEST</u> Zero alignment of the nozzle, as established by the rocket motor associate contractor, shall be verified while electronic and hydraulic power and a zero signal is provided to the NCU. 6.3 <u>DISCONNECT TEST EQUIPMENT</u>	D2-9520 Missile Functional Test Procedures FUNCTION

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FIGURE 2-10	D2-11102-1
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FUNCTION

B7.0

PREASSEMBLE MISSILE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
7.0	<u>PREASSEMBLE MISSILE</u> The requirement exists to attain the configuration necessary to perform the Ordnance Safing and Arming Circuit Test per B8.0. Detailed Assembly procedures shall be per Engineering Drawings and Documents. NOTE: Mechanical interface discrepancies will be isolated to the discrepant component utilizing the fault isolation tool set (FSE 7746)	Fault Isolation Tooling Set (FSE 7746)
7.1	<u>POSITION RACEWAY CABLES</u> The Raceway Cables shall be hand-carried from their containers and manually placed loosely into position on their respective motor. The cables shall not be connected at this time.	D2-10944 (O&M) Drawing 25-27524 Rails-Missile Joining (FSE 7628) D2-10987 (O&M) Scaffolding-Missile Access (FSE 7630) D2-10989 (O&M)
7.2	<u>INSTALL HEAT SHIELDS</u> The following items shall be installed per drawings: A. Deflector Assembly - Base Heating, Stage I B. Deflector Assembly - Base Heating, Stage II C. Deflector Assembly - Base Heating, Stage III	Engineering Drawing 25-25879 25-25880 25-25881
7.3	<u>INSTALL STAGE I SKIRT</u> The skirt shall be installed per Engineering Drawing through the point of finger tightening of the motor-to-skirt attaching bolts.	Engineering Drawing 25-27208 Dolly, Joining-Skirt to Motor (FSE 7792) D2-10981 (O&M)
		FUNCTION 5

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FUNCTION

B7.0

PPEASSEMBLE MISSILE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
7.3	<u>INSTALL STAGE I SKIRT (CONT)</u> Equipment to hoist, position, assemble and install the skirt shall be required. Remove the joining dolly from the missile joining rails upon installation of the skirt.	Harness, Missile Skirt Cylindrical (FSE 7785) D2-10970 (O&M)
7.4	<u>PREPARE FOR JOINING ROCKET MOTORS</u> Position the necessary equipment (joining dollies, etc) for interstage installation.	Hoist Overhead, Rail Type (Capacity) Sling, Standard Factory-4 drop (ACO 454)
7.4.1	<u>INSTALL INTERSTAGE I - II</u> Remove the upper section of the interstage container and disassemble the interstage for installation. The R. H. Aft Section (including Aft Motor Adapter) Stage I motor and forward motor adapter (which is installed in two sections) to the Stage II motor with fasteners finger tight. A circular adapter fixture is attached to the R. H. aft panel and adapter ring to accomplish this installation. Move the forward motor into position for the remainder of interstage installation. Assemble the raceway cable support frame to the forward adapter and heat deflector support structure.	D2-11127 Dolly, Position Final Assembly (FSE 7708) D2-10927 Adapter, Joining Missile Interstage I-II (FSE 761) D2-10929 Hoist, Lever (FSE 450) Drawing 25-364, 25-2722 Harness, L. H. Missile Interstage I-II (FSE 7642) D2-10994
		FUNCTION

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
7.4.1 <u>INSTALL INTERSTAGE I - II (CONT)</u>	Harness, R. H. Panel Missile Interstage I-II (FSE 7641) D2-10949 (O&M)
7.4.1.1 <u>INSTALL INTERSTAGE I-II ARM-DISARM DEVICE</u> Install the stage separation arm-disarm device on the pad provided on the right-hand aft section of the interstage.	Drawing 25-27238
7.4.2 <u>INSTALL INTERSTAGE II-III</u> The requirements are the same as 7.4.1.	Drawing 25-27235 25-27237 Harness, L.H. Panel Missile Interstage II - III (FSE 7641) D2-11072 Harness, R.H. Panel Missile Interstage II-III (FSE 7641) D2-11074 Hoist Lever (25-27235)
7.4.2.1 <u>INSTALL INTERSTAGE II-III ARM-DISARM DEVICE</u> The requirements are the same as 7.4.1.1.	Drawing 25-27235
7.5 <u>INSTALL ACCELEROMETER</u> Install the accelerometer on the equipment support rack in the Stage II-III Interstage	Drawing 25-27235 FUNCTION 7.0

FUNCTION B7.0 PREASSEMBLY MISSILE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
7.6 <u>RACEWAY CABLE DIELECTRIC TEST</u> The raceway cables shall be tested for dielectric integrity between each of the squib and arming wires and all other wires and shields. Procedures are required to perform this test. 7.6.1 <u>PREPARE FOR TEST</u> Connect the raceway cables to each other. No connections shall be made to airborne components. A spanner wrench shall be required to complete the connections. 7.6.2 <u>PERFORM TEST</u> The test shall be accomplished by connecting the adapter cables to the appropriate raceway connectors and programming through the test sequence. 7.6.3 <u>DISCONNECT TEST EQUIPMENT</u>	Drawing 25-27524 Test Set and Adapter Cables, Raceway Cables (Fig. A 7696) D2-1116 Raceway Cable Test Procedures -MAB
7.7 <u>CONNECT RACEWAY CABLES TO AIRBORNE COMPONENTS</u> Connect the raceway cables to all airborne components <u>except</u> to the motor, stage separation, and thrust termination ordnance devices.	Drawing 25-27524
	FUNCTION B7.6

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
8.0 <u>TEST, ORDNANCE ARM-DISARM CIRCUIT</u> The motor Safe and Arm, Interstage ARM-DISARM and third stage, Thrust Termination Arm-Disarm circuits shall be tested to verify that the connections have been accomplished. Detailed test procedures are required and are contained in D2-13445. 8.1 <u>PREPARE FOR TEST</u> The missile test position defined in B9.0 is required. This test shall be performed: (1) with the missile cables connected to the Ordnance Cable Test Boxes in place of the Safe & Arm and Arm-Disarm devices and (2) with the missile cables connected to the Safe & Arm and Arm-Disarm devices. A "no voltage" check shall be made prior to connecting the NCU umbilical to the missile, and a "no voltage" check of the raceway cabling shall be made prior to connecting any raceway cabling to airborne ordnance devices. The configuration for test will be a missile completely assembled with the following exceptions: A. L. H. Interstage and Forward Interstage Panels <u>Not</u> installed. B. Raceway Covers and Caps <u>not</u> installed. C. Stage Separation Detonators and Linear Charges <u>not</u> installed. D. Motor Ignition Safe and Arm Devices <u>not</u> connected to	Missile Test Position (See B9.1) Test Set Assy. Ordnance Circuit (FSE 7679) D2-13445 Ordnance Component and Subsystem Test Procedures
	FUNCTION D8.0

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FUNCTION B8.0 TEST, ORDNANCE ARM-DISARM CIRCUIT

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
8.1 <u>PREPARE FOR TEST</u> (CONT) the raceway cable. (These connections shall be made as a part of the test.) E. Interstage Adapter Rings installed with fasteners finger tight. F. Interstage Arm-Disarm and Third Stage Thrust Termination Arm-Disarm Devices <u>not</u> connected. (These connections shall be made as a part of the test.) G. Safing Pins installed in all S&A and Arm-Disarm devices. (6 places). 8.2 <u>PERFORM TEST</u> The test shall be accomplished in two parts. Part 1 shall consist of a measurement of the resistance of each Safe and Arm and Arm-Disarm arming and safing circuit and a determination that the Safe and Arm Monitor Circuits are properly made. This resistance measurement shall be made using the Ordnance Circuit Test Set Assembly with the Ordnance Cable Test Box connected in the place of the airborne component. Part 2 shall consist of resistance measurements using the Ordnance Circuit Test Set Assembly to determine if the arming circuits of the airborne components are completed when the raceway cable connectors are connected to the devices.	
8.3 <u>DISCONNECT TEST EQUIPMENT</u>	FUNCTION B8.1

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FUNCTION B10.0

COMPLETE MISSILE ASSEMBLY

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
10.0 <u>COMPLETE MISSILE ASSEMBLY</u> Complete assembly of the missile per engineering drawings and documents. (NOTE: Mechanical interface discrepancies will be isolated to the discrepant component utilizing the fault isolation tool set, FSE 7746)	Fault Isolation Tooling Set (FSE 7746) D2-9555 D2-10944 (O&M)
10.1 <u>INSTALL SKIRT REMOVAL DETONATORS AND SAFE AND ARM DEVICES</u> The skirt removal safe and arm devices and detonators shall be installed to the L. H. interstage panels.	Dwg. 25-27238
10.2 <u>CLAMP AND SECURE CABLING</u> All internal cabling shall be secured.	Dwg. 25-27524
10.3 <u>INSTALL INTERSTAGE R. H. FORWARD AND L. H. PANELS</u> The right hand forward panels of each interstage shall be installed; then the left hand panels with the skirt removal detonators shall be installed. NOTE: Prior to installation of R. H. forward panels, ensure that Stage II and III nozzle covers are removed.	Harness, Missile-Interstage I-II R. H. Panel (FSE 7746) D2-11072 (O&M) Harness, Missile-Interstage II-III L. H. Panel (FSE 7746) D2-11074 (O&M) Harness, Missile-Interstage I-III L. H. Panel (FSE 7746) D2-10994 (O&M) Harness, Missile-Interstage II-III L. H. Panel (FSE 7746) D2-11072 (O&M)
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FUNCTION B10.0 COMPLETE MISSILE ASSEMBLY

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
10.4 <u>INSTALL ORDNANCE SAFETY-PIN LANYARDS AND STREAMERS</u> The red streamers with lanyards shall be installed to indicate the presence of ordnance safety pins. (See D2-9133.)	D2-9133
10.5 <u>INSTALL AND TORQUE STRUCTURAL FASTENERS</u> Detail procedures will be contained on the drawings. Torque bolts, check bolt installation per Engineering Drawings.	Drawings 25-26478 25-27205 25-27208 25-50150 21-51750 21-51725
10.6 <u>INSTALL RACEWAY COVERS AND CAPS</u> Install covers and caps per Engineering Drawing	Drawing 25-27211
10.7 <u>INSTALL MISSILE BASE SUPPORT ADAPTER RING AND CLAMPS</u> Install Missile Support Adapter Ring (OGE 1252.2) and Clamps (MGE 4069.2) per Engineering Drawing.	Sling-Adapter Ring, Missile Base (PSE 7631) D2-11014 (OAM) Drawing 25-27556
10.8 <u>INSTALL ORDNANCE DEVICES</u>	Drawing 25-27238

FUNCTION B10.4

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
10.8.1 <u>INSTALL STAGE SEPARATION AND SKIRT REMOVAL LINEAR CHARGES</u> The ordnance installation kit will include the necessary equipment for installing the linear charges in the groove in the interstages.	Installation Kit, Linear Explosive (FSE 7648) D2-11004 (OSM)
10.8.2 <u>INSTALL STAGE SEPARATION DETONATORS</u>	
10.9 <u>INSTALL CLOSEOUT AND ACCESS PANELS</u> Verify that safing pins are installed and all streamers are visible.	
10.10 <u>SEAL AND FAIR MISSILE</u> Install insulation caps and complete any sealing and/or fairing operations necessary as specified on engineering drawings. Perform any inspection required (within specified limits on drawings, or D2-7295. NOTE: The weight of materials added to the missile shall be measured and the location of application recorded on a weight and balance form. When missile outfit is complete, the form or forms shall be furnished to the weights group.	Kit, Ablative Interi (FSE 7665) Repair D2-11087 (OSM) D2-7295, Insulation Repair Procedures Scale, Weighing (Facility) Kit, Cork Insulation Repair, (FSE 7666) D2-10972
	FUNCTION B10.0 .1

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FUNCTION B11.0 PERFORM MISSILE ACCEPTANCE FUNCTIONAL TESTS	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
11.0 <u>PERFORM MISSILE ACCEPTANCE FUNCTIONAL TESTS</u> Testing is required to verify that the final assembly operation has not affected systems performance. Detailed test procedures are required and shall be covered in Document D2-9520.	D2-9520 SM-80 Functional Test Procedures
11.1 <u>CONNECT TEST EQUIPMENT</u> The testing and test equipment are identical to those defined in B9.1	See B9.1 for Missile Test Position
11.2 <u>PERFORM MISSILE TESTS</u> Same as B9.2	
11.3 <u>DISCONNECT TEST EQUIPMENT</u> Remove test power from console and disconnect the test umbilicals. NOTE: Shipping Links are required on the 1st Stage Rocket Motor Nozzles during missile transporting and handling. Install Nozzle Support Link Kit (MGE 11306) per Engineering Drawing.	Thiokol Drawing 8U34528, Nozzle Shipping Link, Instl.
	FUNCTION B11.0

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FUNCTION ~~B~~ 2.0 MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.0 <u>MISSILE HANDLING FOR SHIPMENT</u> The requirement exists for handling a completed missile by transferring, transporting, storing (as required) and loading for shipment at, or between, the various facilities at A/F Plant 77. Detailed procedures for storing, transferring, transporting and environmental protection of the missile are required and shall be covered in Document D2-13907. Operating procedures for the SSCBM, Ballistic Missile Trailer, Tractor, and the Air Conditioner shall be covered in Document D2-13907. The completed missile shall be transferred, by SSCBM, from the MAB to the Missile Storage Igloo, Missile Transient Storage Area or Airplane/Rail Loading Areas as required. All missile transfers will be accomplished by the motor and missile handling crew who will be dispatched through the material handling dispatcher. Environmental protection of missiles during transfer operations under adverse weather conditions, is required in order to maintain missile environmental control within allowable tolerances. NOTE: Rocket Motor Restraint Devices shall be removed prior to Missile loading for delivery.	D2-14380 (Instl.)
	FUNCTION B12.0

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS

RECOMMENDED EQUIPMENT OR DOCUMENT

12.1 PREPARE FOR MISSILE TRANSFER ROLL FROM MAB

Preparation for roll transfer involves preparing the transfer area, positioning the Ballistic Missile Trailer, removing Tractor, installing translating and alignment equipment, securing SSCBM to MAB Rails and providing for adverse weather conditions, as required. In addition, this function includes rigging and installing transfer equipment. (See Figure 15-B). The following is required:

- A. A means to support the missile on the Rocket Motor carriages and provide for missile roll transfer. These rails shall include a permanently installed electric winch, a grounding cable for missile transfer, snatch block for use with transfer cables, wheel blocks to prevent movement of missile, and provisions for grounding Rocket Motor carriages, for joining to SSCBM Rails and for mounting of alignment equipment.
- B. A means to provide electrical bonding between carriages during transfer is required.
- C. A means to connect trailer transfer cables and fixed winch cables to the Missile Support Adapter Ring for missile transfer.

D2-13907 Transportation & Handling Procedures Plant 77

Shelter, Missile and Motor Transfer-Environmental-MAB (FSE 7682)

D2-10993 (O&M)

Rails - Missile Joining (FSE 7628)

D2-10987 (O&M)

C blo, Rocket Motor Bonding (ACO 253)

Clamp Assy, Missile Transfer (FSE 7600)
D2-13907 (O&M)

FUNCTION B12

FUNCTION B12.0 MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.1 <u>PREPARE FOR MISSILE TRANSFER ROLL FROM MAB</u> (CONT) D. A means to support and align (dimensionally three ways) the Ballistic Missile Trailer to the Missile Joining Rails, for missile transfer to the SSCBM. E. A means to check alignment of SSCBM Rails to Missile Joining Rails preparatory to roll transfer. The rails must be aligned within specific limits to insure against imposing excessive loads on the missile during transfer. F. A means to provide conditioned air for control of temperature and humidity in the SSCBM; and a display to alert personnel when a signal is received from the transport monitor indicating the environment has exceeded specific limits. G. A means to discharge static electricity by grounding SSCBM to trailer and trailer to Ground terminal. H. A means in which the missile, on its rocket motor carriages will be environmentally protected and supported in a container which is capable of: 1. Being supported by trailer during missile transfers, transient storage and transportation.	Jack, Translating (ACO 4175) Alignment Set, Missile Transfer (ACO 4535) Air Conditioner (MGE 4115) Lead, Electrical Grounding (ACO 352) Shipping and Storage Container, Ballistic Missile (MGE 4095) D2-13907 (Oper.)
	FUNCTION B12.1

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FUNCTION B12.0		MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT	
12.1	<u>PREPARE FOR MISSILE TRANSFER ROLL FROM MAB</u> (CONT)		
2. Receiving and discharging a missile from the aft end. 3. Restraining the rocket motor carriages against vertical and side movement during transportation operations. 4. Receiving grounding leads from rocket motor carriages and trailer. 5. Accepting conditioned air from the air conditioner. 6. Receiving electrical power for Alarm Set . (MGE 4187) 7. Providing junctions for connecting the Alarm Set (MGE 4187) to the air conditioner panel.			
I. A means for supporting and transporting the SSCBM (with or without missile) which is capable of:		Trailer, Ballistic Missile (MGE 4129))	
1. Receiving the supporting and translating equipment used during transfer operations. 2. Allowing SSCBM transfer from one end. 3. Receiving tractor. 4. Receiving grounding leads. 5. Securing SSCBM and Air Conditioner. 6. Providing the means for Missile and SSCBM transferring, (power winches, cables, and pulleys.)			
		FUNCTION B12.1	

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FUNCTION B12.0 MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.1 <u>PREPARE FOR MISSILE TRANSFER ROLL FROM MAB</u> (CONT) 7. Receiving SSCBM Skis. J. A means for pulling and positioning Ballistic Missile Trailer during transportation and transfer operations which shall have provisions for the installation of the alarm set. K. A means for providing electrical grounding and power in the MAB transfer area which shall include the following: 1. Electrical outlets for portable flood lamps. 2. Grounding terminals for trailer electrical grounding leads. L. A means to support the SSCBM on the trailer. NOTE: This item must be compatible with the aircraft loading system for the C133B Aircraft. M. A means to control the fixed winches on the MAB assembly rails or storage rails when the portable transfer winch is not being used with the fixed winch.	Tractor, (MGE 4130) Cable Assembly-Power Electrical, Portable Flood Lamps (AGO 449) Lamps, Incandescent Portable Flood (AGO 4425) Skis, SSCBM (MGE 4493) Control-Winch, MAB & Storage Bunker (FSE 7688) D2-10925 (O&M)
	FUNCTION B12.1

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.2 <u>TRANSFER MISSILE TO SSCBM</u> Roll transfer shall be accomplished by using Ballistic Missile Trailer winches as the power source. This operation also includes securing the missile on its rocket motor carriages to the SSCBM by the tie-downs and restraint adapter, connecting grounding jumpers, removing transfer cables, clamp assembly, and translating jacks; connecting tractor to trailer; operating air conditioner and connecting the alarm set in the SSCBM to the air conditioner control panel. NOTE: The alarm set is not required for missile transfer from the HAB to the missile storage building. A means to secure missile in longitudinal direction inside SSCBM is required. 12.3 <u>TRANSPORT TO MISSILE STORAGE, SSCBM TRANSIENT STORAGE, OR RAIL LOADING AREA</u> Transport the missile by SSCBM, following a pre-determined route to the designated area. The air conditioner and Alarm Set (MGE 4187 if installed) must be operating and monitored. 12.4 <u>TRANSFER SSCBM TO AIRPLANE</u> The SSCBM transfer to the C-133B airplane will be direct and accomplished by the Air Force. Boeing will deliver the SSCBM to the Aircraft Transfer Area.	For installed equipment see B12.1 except Alignment Set Recorder, Temperature Portable (ACO 532) Adapter Restraint, Base Adapter Ring to SSCBM (Part of SSCBM)
	FUNCTION B12.2

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FUNCTION B12.0 MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.5 <u>TRANSFER SSCBM ON BALLISTIC MISSILE TRAILER TO RAIL CAR</u> The Ballistic Missile Trailer with a loaded SSCBM shall be transferred to a rail car. The tractor will be used to back the loaded trailer up the loading dock onto the rail car. The air conditioner will provide missile conditioning in the SSCBM. The tractor will be returned to the dispatcher. The Rail Transfer Area will include the following provisions: A. Loading dock to enable the Ballistic Missile Trailer to be driven onto the rail car. B. Apron for servicing the special rail car. NOTE: A means to lift the air conditioner from the rail car and place it on the Ballistic Missile Trailer is required when an empty SSCBM is received on the rail car at A/F Plant 77. The following equipment is also required: A means for transporting the SSCBM on commercial railroads which is capable of supporting and securing the loaded Ballistic Missile Trailer and providing the required shock mitigation for the railroad environment.	D2-13907 Transportation and Handling Procedures Plant 77 Truck, Lift Fork (Facility) Rail Car, Special
	FUNCTION B12.5

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FUNCTION B12.0 MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.5 <u>TRANSFER SSCBM ON BALLISTIC MISSILE TRAILER TO RAIL CAR</u> (Cont) A means to operate the rail car support for the Ballistic Missile Trailer fifth wheel. A means to retain the special rail car in a desired location at the loading dock.	Wrench, Portable Electric (ACO 4524) Stop, Railcar Wheel (ACO 4525)
12.6 <u>PREPARE FOR MISSILE TRANSFER TO STORAGE</u> Preparation for missile transfer to storage involves verifying the environmental condition in the Missile Storage Building, positioning Ballistic Missile Trailer, removing the tractor, installing electrical grounding leads, translating jacks and alignment equipment, connecting the SSCBM (on trailer) to storage rails, connect transfer equipment, installing trailer support jacks, removing SSCBM Restraint Adapter, rocket motor carriage tie-downs and grounding jumpers, disconnecting the Alarm Set, ~~if installed~~, from the SSCBM junction box and providing for adverse weather conditions, as required. A. Rails are required to support the missile on rocket motor carriages in the Missile Storage Building and provide the means for missile roll transfer. Rails	NOTE: See B12.1 and B12.2 for equipment. Same equipment will be used here except for Rails, Missile Joining and the MAB Environmental Shelter. D2-13907 Transportation and Handling Procedures, Plant 77 Shelter, Missile and Motor, Transfer, Environmental-M/MSB (FSE 7687) D2-10997 (O&M) Rails, Storage-Engine and Missile (FSE 7629) D2-10907 (O&M)
	FUNCTION B12.5

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FUNCTION B12.0 MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.6 <u>PREPARE FOR MISSILE TRANSFER TO STORAGE</u> (cont'd) shall include a permanently installed electric winch, a grounding cable for missile transfer, spatch block for use with transfer cables, wheel blocks to prevent movement of missile and have provisions for grounding of rocket motor carriages, joining to SSCBM rails and mounting of alignment targets. B. A means of recording temperature conditions in the Missile Storage Building is required. A means of recording humidity in random ingloos is required to indicate representative humidity. C. MSB Transfer Area shall include the following provisions: 1. Electrical outlet for Portable Flood Lamps. 2. Grounding terminal for Ballistic Missile Trailer.	Recorder, Temperature (Facility) Recorder, Humidity (Facility)
12.7 <u>TRANSFER MISSILE TO STORAGE RAILS</u> Roll transfer of the missile shall be accomplished by using the missile storage rail winch as a power source. The missile shall be secured in place by installing wheel blocks and attaching the rocket motor carriage grounding jumpers to grounding terminals. All transfer equipment and the alarm set, if installed, will be removed and returned to dispatcher.	Wheel Blocks (Are a part of Storage Rails) Grounding Jumpers (Are a part of rocket motor carriages) Use same equipment as called out in B12.6 except Alignment Set. D2-13907
	FUNCTION B12.6

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FUNCTION B12.0 MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.8 <u>STORE AS REQUIRED</u> Missile storage requirements are to store a missile inside an MSB or store a loaded SSCBM at the Transient Storage Area.	
12.8.1 <u>MISSILE STORAGE IN MSB</u> Storage requirements include the following: Verify that the temperature/humidity recorders (located outside of building) and the heating system are operating and secure the building against loss of conditioning. The following provisions in the Missile Storage Building are required: A. Temperature Recorder and (humidity recorder on random interval) B. Heating Unit; C. Alarm System.	Alarm System (Facility) Temperature Recorder (Facility) Humidity Recorder (Facility)
12.8.2 <u>TRANSIENT STORAGE OF LOADED SSCBM</u> Transient storage is accomplished by positioning a loaded ballistic missile trailer in the Transient Storage Area, disconnecting the tractor, and returning it to the dispatch area. Transient storage includes installing trailer electric grounding lead and connecting commercial power to the air conditioner and to the Alarm Set (MGE 4187)	Lamp, Incandescent Portable Flood (ACO 4425)
	FUNCTION B12.8

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FUNCTION	B12.0	MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT	
12.8.2 <u>TRANSIENT STORAGE OF LOADED SSCBM</u> (CONT) SSCBM Transient Storage Area shall include the following provisions: A. Electrical power outlet for supplying power to the air conditioner and the Alarm Set (MGE 4187) on the SSCBM. B. Electrical power outlet for supplying power to the portable flood lamps. C. Grounding terminal.		Cable Assembly- Power Electrical, Portable Flood Lamps (ACO 449) Lead, Electrical Grounding (ACO 352)	
12.9 <u>PREPARE FOR MISSILE TRANSFER FROM STORAGE</u> The preparation for missile transfer from storage is accomplished using the same equipment and procedures as shown in B12.6.		Use same equipment as shown in B12.6	
12.10 <u>TRANSFER MISSILE TO SSCBM FROM STORAGE</u> Missile transfer is accomplished using the same equipment and procedures as shown in B12.6; however, the roll transfer power source into the SSCBM will be the ballistic missile trailer winch with the storage rail winch providing restraint.		Use same equipment as shown in B12.6 D2-13907 Transportation and Handling Procedures, Plant 77	
		FUNCTION B12.0	

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FUNCTION B13.0 PREPARATION FOR AIR FORCE ACCEPTANCE OF MISSILE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
13.0 <u>PREPARATION FOR AIR FORCE ACCEPTANCE OF MISSILE</u> Operations required to sell the completed missile to Air Force Quality Control shall be performed. The historical record shall accompany the missile when it is delivered to the Air Force.	
13.1 <u>INSTALL REMAINING OGE/MGE</u> Install an Alarm Set (MGE 4187) and all covers required for delivery of the missile.	Alarm Set, Missile Storage-Transit Status (MGE 4187) D2-11172 Instl. D2-11173 Oper.
13.2 <u>RECORDS VERIFICATION</u> The Form DD250 and other applicable forms will be prepared for Air Force acceptance when missile assembly and testing is complete in the MAB.	Alarm Set, Charging Cable (FSE 7750)
	FUNCTION B13.0

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FUNCTION B14.0 AIR FORCE ACCEPTANCE OF MISSILE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
14.0 <u>AIR FORCE ACCEPTANCE OF MISSILE</u> The completed propulsion unit with attached OGE and MGE items shall be transported in the SSCBM to the aircraft or rail transfer area with the transfer forms (DD Form 250) and all required assembly and test records. 14.1 <u>TRANSFER OF DD FORM 250</u> Representatives of the Boeing Company shall present the transfer forms with the loaded SSCBM to the representatives of the Air Force for signature and transfer of responsibility for the completed missile. The DD Form 250 shall be signed at the Aircraft Transfer Area when the loaded SSCBM is delivered by Boeing personnel for Air Force loading into the C133B. The DD Form 250 shall be signed at the Rail Transfer Area when the loaded SSCBM on its trailer has been transferred to the rail car and secured for shipment.	
	FUNCTION B14.0

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FUNCTION B14.0 AIR FORCE ACCEPTANCE OF MISSILE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
14.0 <u>AIR FORCE ACCEPTANCE OF MISSILE</u> The completed propulsion unit with attached OGE and MGE items shall be transported in the SSCBM to the aircraft or rail transfer area with the transfer forms (DD Form 250) and all required assembly and test records. 14.1 <u>TRANSFER OF DD FORM 250</u> Representatives of the Boeing Company shall present the transfer forms with the loaded SSCBM to the representatives of the Air Force for signature and transfer of responsibility for the completed missile. The DD Form 250 shall be signed at the Aircraft Transfer Area when the loaded SSCBM is delivered by Boeing personnel for Air Force loading into the C133B. The DD Form 250 shall be signed at the Rail Transfer Area when the loaded SSCBM on its trailer has been transferred to the rail car and secured for shipment.	FUNCTION B14.0

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
13	Test Set - Ordnance, Electrical, 70143	FSE			B3.3		
17	Spreader Kit, Nozzle-Stage II	FSE		B5.1			
101	3850 Trailer, Rocket/Motor	FSE		B5.1			
114	Spreader Assy, Stage I Nozzles	FSE					
610	NCU(H9) Sling	FSE	B3.1, B4.1	B5.1			B2.1, B4.1, 2 B1.1 B4.4 R
614	NCU (H2) Trailer, Stage I	FSE	B3.1				
615	NCU (H8) Trailer, Stage II	FSE	B3.1				
620	NCU (H13) Trailer, Stage III	FSE	B3.1				
7613	Adapter, Joining-Missile Interstage I - II	FSE		B7.4			
7614	Adapter, Joining-Missile Interstage II-III	FSE		B7.4			
7620	Structure Pressure - Missile Assy	FSE		B7.2, B10.5			
7628	Rails-Missile Joining	FSE		B4.2, B5.1, B7.1, B12.1, B12.2			
7629	Rails-Storage, Engine & Missile	FSE		B2.2, B4.2, B12.6, B12.7, B12.9, B12.10			
7619	Fixture, Support-Undilocal Cabling	FSE		B6.1, B8.1, B8.2, B9.1, B11.1			

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IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER					
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA	MISC
7630	Scaffolding-Missile Access	FSE		B3.2, B5.1, B7.8, B6.1				
7631	Sling-Adapter Ring, Missile Base	FSE		B10.7				
7632	Sling-Horizontal Restraint Ring, Engine	FSE		B4.2				
7641	Sling - R. H. Panel, Missile Interstage I-II	FSE		B7.4, B10.3				
7642	Sling-L. H. Panel, Missile Interstage I-II	FSE		B7.4, B10.3				
7648	Installation Kit-Linear Explosive	FSE		B10.8				
7653	Winch, Portable-Rocket Motor Transfer	FSE				B2.2		
7665	Kit, Abandonment Material Repair	FSE		B10.10				
7666	Platform, Portable, Highway Transporters	FSE				B2.2		
7678	Fixture, Test-Ordnance Device	FSE			B3.3			
7679	Test Set Assembly, Ordnance Circuit	FSE	B3.1	B8.1, B8.2, B9.1, B11.1				
	Harness - Missile Skirt, Cylindrical	FSE		B7.3, B10.10				

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
7682	Shelter, Missile and Motor Transfer-Environmental, MAB	FSE		B4.2, B12.1 B12.2			
7686	Clamp Assembly, Missile Transfer	FSE		B12.1, B12.2		B12.6 B12.7 B12.9 B12.10	
7687	Shelter, Missile and Motor Transfer Environmental - Missile/Motor Storage Building	FSE				B2.2, B4.2, B12.6, B12.7 B12.9	
7688	Control-Winch, MAB-Storage Bldg	FSE		B12.1, B12.2		B12.6, B12.7 B12.9, B4.2 B12.10, B2.2	
7689	Bridle, Rocket Motor, Stage I	FSE				B2.2, B4.2	
7690	Bridle, Rocket Motor, Stage III	FSE				B4.2	
7691	Positioning Set, Rocket Motor Carriage	FSE				B4.2	
7698	Cable Assembly, Downstage Test	FSE		B6.1, B8.1 B8.2, B9.1 B11.1			

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER					
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA	MISC
7696	Test Set and Adapter Cables - Raceway Cables	FSE		B7.6				
7701	Adapter, Joining-MCU, Stage I	FSE		B5.1				
7702	Adapter, Joining-Nozzle Control Unit, Stage II	FSE		B5.1				
7703	Adapter, Joining-Nozzle Control Unit, Stage III	FSE		B5.1				
7708	Dolly, Positioning-Final Assembly	FSE		B7.4, B5.1				
7792	Dolly, Joining - Skirt to Matbar	FSE		B7.3				
7717	Power Supply Group, MAB	FSE		B6.1, B8.1, B8.2, B9.1, B11.1				
7718	Cable Assemblies, Equip., Inter-connecting, MAB	FSE		B6.1, B8.1, B8.2, B9.1, B11.1				
7719	Cable Assemblies, NEU Test, MAB	FSE		B6.1/				
7699	Adapter, Flight Control Test Set	FSE		B6.1, B8.1, B8.2, B9.1, B11.1				

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
7748 7720	Test Adapter Cable, Stage I NCU PFOB Cable Assemblies, Umbilical, MAB	FSE FSE		B6.1 B6.1, B8.1, B8.2, B9.1 B11.1			
7721	Junction Box, Test, MAB	FSE		B6.1, B8.1, B8.2, B9.1 B11.1			
7724	Test Set, NCU Zero Alignment, MAB	FSE	B3.1	B6.1			
7730	Harness-R. H. Panel, Missile Inter- stage II-III	FSE		B7.4, B10.3			
7731	Harness-L. H. Panel, Missile Inter- stage II-III	FSE		B7.4, B10.3			
7739	Junction Box, Auxiliary, MAB	FSE		B8.1, B6.1, B8.2, B9.1, B11.1			
7740	Box, Test, Ordnance Cable	FSE		B8.2			
7742	Cable Assemblies, Interconnecting, NCU Linkage Adjustment, CPA	FSE	B3.1				
7743	Distribution Box, NCU Linkage Adjustment, CPA	FSE	B3.1				
7744	Power Supply Group, NCU Linkage Adjustment, CPA	FSE	B3.1				
7745	~~Bridge, Carriage, 1st Stage (Rocket Motor Track)~~	~~FSE~~				B2.2, B4.2	
7782	Cable Assemblies, Flight Control Test Set Interconnect	FSE		B6.1, B8.1, B8.2, B9.1 B11.1			

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
7746	Set, Fault Isolation Tooling	FSE		B7.0 B10.0		B13.1	
7750	Charging Cable, Alarm Set	FSE				B2.2, B4.2	
7756	Rail Assembly, Bridge-Engine Transfer	FSE					
7760	Pulley Bracket Assembly, Transporter, II & III Stages	FSE				B2.2	
7786	Kit, Cork Insulation Repair	FSE					
7787	Alarm Set, Transit Status First Stage	FSE		B10.10		B2.2, B3.1	
7788	*Required as directed by The Boeing Company, A.F. Plant 77 Alarm Set, Transit Status Third Stage	FSE				B2.2, B3.1	
7789	Restraint Device First Stage Rocket Motor	FSE				B2.2	
7790	Restraint Device Second Stage Rocket Motor	FSE				B2.2	
7791	Restraint Device Third Stage Rocket Motor	FSE				B2.2	
7793	Spacer Bracket Stage II NCU	FSE	B3.1				
10151	Gage, NCU Alignment, Stage I	FSE	B3.1				
10153	Gage, NCU Verification, Stage I	FSE		B6.1			
10155	Gage, NCU Alignment, Stage II	FSE	B3.1				
10157	Gage, NCU Verification, Stage II	FSE		B6.1			
10159	Gage, NCU Alignment, Stage III	FSE	B3.1				
10161	Gage, NCU Verification, Stage III	FSE		B6.1			

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
4069.2	Clamp Set, Adapter Ring to Missile Skirt	MGE		B10.7			B1.1, B2.1
4095	Shipping and Storage Container, Ballistic Missile	MGE		B12.1.1, B12.2		B4.2, B12.6 B12.7 B12.9 B12.10	
4115	Air Conditioner	MGE		B12.1.1, B12.2		B12.6, B4.2 B12.7 B12.9 B12.10	
4129	Trailer, Ballistic Missile	MGE		B12.1.1, B12.2		B4.2, B12.6 B12.7 B12.9 B12.10	
4130	Tractor, ~~ascent~~	MGE		B12.1.1, B12.2		B4.2, B12.6 B12.7 B12.9 B12.10	
4187	Alarm Set, Missile Storage-Transit Status	MGE		B14.1		B2.2 *	
4493	Skis, SSCM	MGE		B12.1.1, B12.2		B4.2, B12.6 B12.7 B12.9 B12.10	
11306	Railway Car, Special Nozzle Support Link Kit	MGE		B11.3			B12.5
	* Required as directed by The Boeing Company, A.F. Plant 77						

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
ACO 4047	Wrench, Safing Pin Inst. & Removal	ACO			B3.3		
ACO 4175	Jack Set, Translating	ACO		B12.1 B12.2		B4.2, B12.6 B12.7 B12.9 B12.10	
ACO 4535	Alignment Set, Missile Transfer	ACO		B12.1, B12.2		B12.6 B12.7 B12.9 B12.10	
ACOL0709	Test Set, Flight Control Group	ACO		B11.1 B6.1, B8.1, B8.2, B9.1			
ACO 253	Cable, Rocket Motor Bonding	SFC/OH		B12.1, B12.2		B4.2, B12.6 B12.7 B12.9 B12.10	
ACO 532	Recorder, Temperature - Portable	SFC/OH		B12.2		B2.2.1, B4.2.1	

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER					MISC
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA	
ACO 352	Lead, Electrical Grounding	SFC/OH		B12.1, B12.2		B2.2, B4.2 B12.6, B12.7, B12.9 B12.10		B12.8
ACO 415	Jack, Leveling Support	SFC/OH				B2.2		
ACO 4425	Lamp, Incandescent - Portable Flood	SFC/OH		B12.1, B12.2		B2.2, B12.6 B12.7 B12.9 B12.10		B12.8
ACO 4524	Wrench, Portable Electric	SFC/OH					B12.5	
ACO 4525	Stop, Railcar Wheel	SFC/OH					B12.5	
ACO 449	Cable Assembly-Power Electrical, Portable Flood Lamps	SFC/OH		B12.1 B12.2		B2.2, B12.6 B12.7, B4.2 B12.9 B12.10		B12.8
ACO 448	Camera and Tripod, Still Picture	SFC/OH						B1.1
ACO 4D5	Hoist, Portable	SFC/OH	B3.1, B4.1					B1.1, B2.1
ACO 453	Truck, Lift-Fork	SFC/OH	B3.1, B4.1					B1.1
ACO 461	Truck, Lift - Jack	SFC/OH						
ACO 452	Truck, Motor-Misc. Delivery	SFC/OH	B3.1, B4.1 B4.3		B4.3	B2.3		B1.1, B2.1
ACO 450	Hoist, Lever (Come-A-Long)	SFC/OH		B7.4				

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

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3-8-1

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER					MISC
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA	
ACO 454	Sling-Standard, Factory-4 drop	SFC/OH		B7.4				B4.1
ACO 462	Shelving, Storage	SFC/OH			B2.3, B4.1 B4.3			
ACO 456	Table, Work-Electronic Test	SFC/OH	B3.1					
—	Scale, Weighing	FACILITY		B10.10				
	Work, Lift	FACILITY						B12.5

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

LOCATION & FUNCTION NUMBER							
IDENT. NO.	NOMENCLATURE	CLASS	CPA	MAB	ORDNANCE PROCESSING	MISSILE &	MISC
						Retent'l STORAGE	
	Recorder, Temperature	Facility				B2.2, B12.6 B12.7 B12.8 B12.9 B12.10	
	Recorder, Humidity	Facility				B12.6, B2.2 B12.7 B12.8 B12.9 B12.10	
	Alarm System	Facility				B2.2, B12.8	
	Hoist, Overhead Rail Type	Facility		B7.4, B5.1			

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SECTION B - REQUIRED DOCUMENTS

<u>DOC. NO.</u>	<u>TITLE</u>	<u>SECTION</u>
D2-6610	Missile Production Operating Logistics - A/F Plant 77	B1.1, B1.2, B1.3
D2-7295	Insulation Repair Procedures	B10.10
~~D2-7429~~	~~Transportation & Handling of 1st, 2nd and 3rd Stage Minuteman Engines~~	~~B2.2~~
~~D2-7429-1~~	~~Maintenance Instructions for Minuteman Rocket Engine Handling and Transportation Equipment~~	~~B2.2~~
D2-9133	Minuteman Standard Operating Procedures-Ordnance Devices	B10.4
D2-9520	SM-80 Functional Test Procedures - MAB-Plant 77	B6.2, B9.0 B11.0
D2-9555	Handbook of Operating Procedures-Engine Handling Harness and Horizontal Restraint and Bracket Assembly Sets	B4.2, B10.0 B1.2
B2-10907	Operation and Maintenance-Rails-Storage, Engine and Missile	B2.2, B4.2 ~~B12.6~~
D2-10925	Operation and Maintenance-Control-Winch, MAB & Storage Bunker	B2.2, B4.2
D2-10927	Operation and Maintenance-Dolly, Positioning- Final Assembly	B5.1, B7.4
D2-10929	Operation and Maintenance-Adapter, Joining - Interstage I-II	B7.4
D2-10931	Operation and Maintenance-Dolly, Joining- Skirt to Engine	B7.3
D2-10933	Operating and Maintenance-Bridle-Rocket Motor Stage I	B2.2, B4.2
D2-10939	Operating and Maintenance-Bridle-Rocket Motor, Stage III	B4.2
D2-10941	Operation and Maintenance-Bridle-Carriage 1st Stage (Rocket Motor Truck)	B2.2.1 B4.2.1
D2-10944	Operation and Maintenance-Fault Isolation Tooling Set Checking Fixture	B7.0, B10.0
D2-10947	Operation and Maintenance-Adapter, Joining NCU Stage III	B5.1

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SECTION B - REQUIRED DOCUMENTS (CONT)

<u>DOC. NO.</u>	<u>TITLE</u>	<u>SECTION</u>
D2-10949	Operation and Maintenance-Harness - R.H. Panel Missile Interstage I-II	B7.4, B10.3
D2-10958	Operation and Maintenance - Adapter, Hoisting Handling Frame, NCU Stage III	B5.1
D2-10960	Operation and Maintenance - Adapter, Joining NCU Stage II	B5.1
~~D2-10972~~	~~Operation and Maintenance-Fixture, Pressure Missile Assembly~~	~~B7.3, B10.5~~
D2-10964	Operation and Maintenance - Adapter Joining - NCU Stage III	B5.1
D2-10970	Operation and Maintenance Harness Missile Skirt Cylindrical	B7.3
D2-10974	Operating and Maintenance-Sling & Harness Engine Skirt	B7.3, B10.3
D2-10981	Operating and Maintenance, Dolly - Joining Skirt to Motor	B7.3
D2-10985	Operation and Maintenance-Fixture, Support-Umbilical Cabling, MAB	B9.1
D2-10987	Operation and Maintenance-Rails-Missile Joining	B4.2, B5.1 B7.1, B12.1
D2-10989	Operation and Maintenance-Scaffolding-Missile Access	B3.2, B5.1 B7.1
D2-10993	Operating and Maintenance-Shelter, Missile and Motor Transfer - Environmental, MAB	B4.2, B12.1
D2-10994	Operation and Maintenance-Harness - L.H. Panel, Missile Interstage I-II	B7.4, B10.3
D2-10997	Operating and Maintenance-Shelter, Missile and Motor Transfer-Environmental, Missile/Motor Storage Building.	B2.2, B4.2 B12.6
D2-11004	Operation and Maintenance-Installation Kit-Linear Explosive	B10.8
D2-11012	Operation and Maintenance-Sling-Horizontal Restraint Ring, Engine Stage I, II & III	B4.2
D2-11014	Operation and Maintenance-Sling - Adapter Ring, Missile Base	B10.7

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SECTION B - REQUIRED DOCUMENTS (CONT)

<u>DOC. NO.</u>	<u>TITLE</u>	<u>SECTION</u>
D2-11051	Operating and Maintenance-Platform Portable Highway Transporter	B2.2
D2-11072	Operation and Maintenance-Harness-L. H. Panel, Interstage II-III	B7.4, B10.3
D2-11074	Operation and Maintenance-Harness-R. H. Panel, Missile Interstage II-III	B7.4, B10.3
D2-11172	Installation Procedure and Installation Test Procedures - Transport Monitor System	B12.1, B13.1
D2-11173	Operation Procedure Alarm Set, Missile Storage - Transit Status	B12.1, B13.1
D2-11326	Preassembly Functional Test Flight Control Test Set	B9.1
D2-11776	Operation and Maintenance Instruction, Rocket Motor M-57	B3.3
D2-11777	Stage III Transportation and Handling Procedures	B2.2, B4.2
D2-12205	Ordnance Electrical Test Set - Operation and Maintenance	B3.3
D2-12214	M56- Rocket Motor Inspection Procedure and Maintenance	B1.2, B2.2
D2-12216	Handling, Operating, & Maintenance M56 Rocket Motor	B2.2, B4.2 B5.1
D2-12217	M56-Rocket Motor Post Assembly Test	B3.3
D2-12369	Transportation, Handling and Storage Instructions M-55 Rocket Motor	B2.2, B5.2 B1.2
D2-12789	Missile Handling and Transporting	B12.1
D2-12974	Operation and Safety Instructions, Rocket Motor Motor Semitrailer (Stage I, II and III)	B4.2.1 B4.4
D2-12977	Operation and Maintenance-Test Set, NCU Zero Electrical Alignment	B6.1
D2-13445	Ordnance Component and Subsystem Functional Testing of Operational Missiles, Plant 77	B3.1, B8.1 B8.2, B9.1
D2-13483	Functional Test Procedures, Detonator Assembly 10-20451, for Plant 77	B3.3
D2-13482	Functional Test Procedure, Arm/Disarm Mechanism, 10-20436, For Plant 77	B3.3

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SECTION B - REQUIRED DOCUMENTS (CONT)

<u>DOC. NO.</u>	<u>TITLE</u>	<u>SECTION</u>
AA0304-072	MCU Sealing Specification	B3.1
EM-2084	Utility Technical Manual - Operation and Service	B3.1, B5.1
D2-13962	MCU Linkage Adjustment Procedures	B3.1
D2-14116	Operating Procedures and Maintenance Instruction for Raceway Cable Test Set and Adapter Cables - MAB	B7.6
D2-13907	Transoperation and Handling Procedures, Plant 77	B2.1, B4.1, B4.2, B12.5 B15.6, B12.7 B12.6, B12.0 B12.10, B12.1
D2-14380	Installation Procedures Restraint Band, Impaling Puncturing Device	B2.2 B2.2, B12.0

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SECTION B - REQUIRED DRAWINGS

<u>DRAWING NO.</u>	<u>TITLE</u>	<u>SECTION</u>
21-50150	Assembly, Propulsion and Guidance Unit, Missile	B10.5
21-51750	Assembly, Propulsion and Guidance Unit, Missile	B10.5
21-51725	Assembly, Propulsion and Guidance Unit, Missile	B10.5
25-37396	Missile Support Adapter Ring and Clamps Installation	B10.7
25-27202	Interstage I-II Installation	B7.4, B10.5
25-27205	Interstage II-III Installation	B7.4, B10.5
25-27208	Skirt Installation, Stage I	B7.3, B10.5
25-27211	Raceway Components Installation to Sections 44-49	B10.6
25-27221	Cable Disconnect Bracket Components, Interstage I-II, Installation	B7.4
25-27227	Cable Disconnect Bracket Components, Interstage, II-III, Installation	B7.4
25-27238	Ordinance Installation, Joint Severance and Stage Separation Interstage I-II and II-III	B10.1, B10.8 B7.4
25-27524	Electrical Cabling Unit Support Components and Loose Equipment Installation, Sections 44-49	B7.1, B7.6, B7.7, B10.2
25-27597	Flight Control Unit and Battery Power Supply Installation, Stage I	B5.2, B3.1
25-27598	Installation, SEL3 Battery & Nozzle Control Unit, Stage II	B5.2, B3.1
25-27599	MCU Installation Stage III	B5.2
25-27617	Angular Accelerometer, Interstage II-III, Installation	B7.5
25-25879	Base Heat Deflector Installation, Stage I	B7.2
25-25880	Base Heat Deflector Installation, Stage II	B7.2
25-25881	Base Heat Deflector Installation, Stage III	B7.2
62K31248	Restraint Band Installation - Impaling and Puncturing Device Stage I	B2.2
62K31249	Restraint Band Installation - Impaling and Puncturing Device Stage II	B2.2
63J31250	Restraint Band Installation - Impaling and Puncturing Device Stage III	B2.2
8U34528	Nozzle Shipping Link Installation	B11.3

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B

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R

R

R

POWER SUPPLY GROUP
(FSE 7744)

ELECTRONIC WORK TABLE
(ACO 456)

JUNCTION BOX

DISTRIBUTION BOX
(FSE 7743)

NCU ZERO ALIGNMENT
TEST SET (FSE 7724)

NCU ON HANDLING
FRAME & TRAILER

NCU LINKAGE ADJUSTMENT COMPONENT PROCESSING BLDG.. FIGURE I-B

REVISED

11-1-62

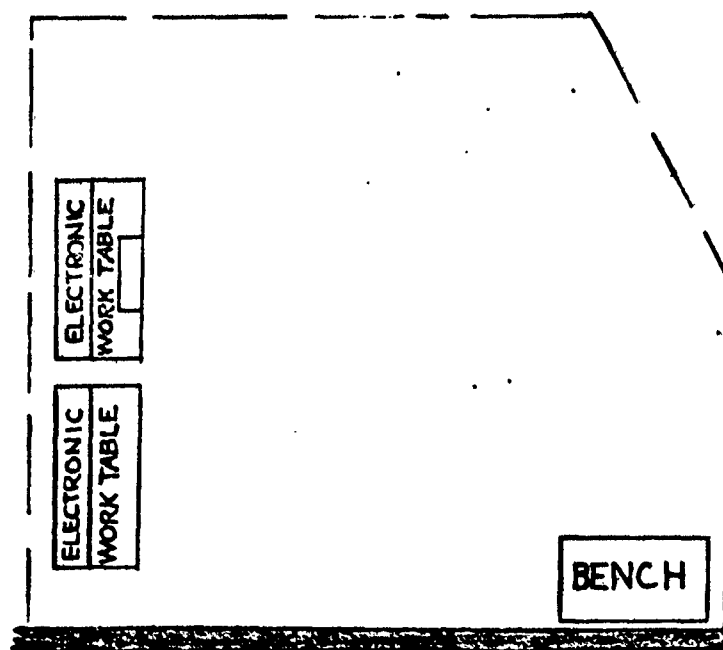
US 4286 2000

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BATTERY PACKAGE TEST AREA
COMPONENT PROCESSING BUILDING

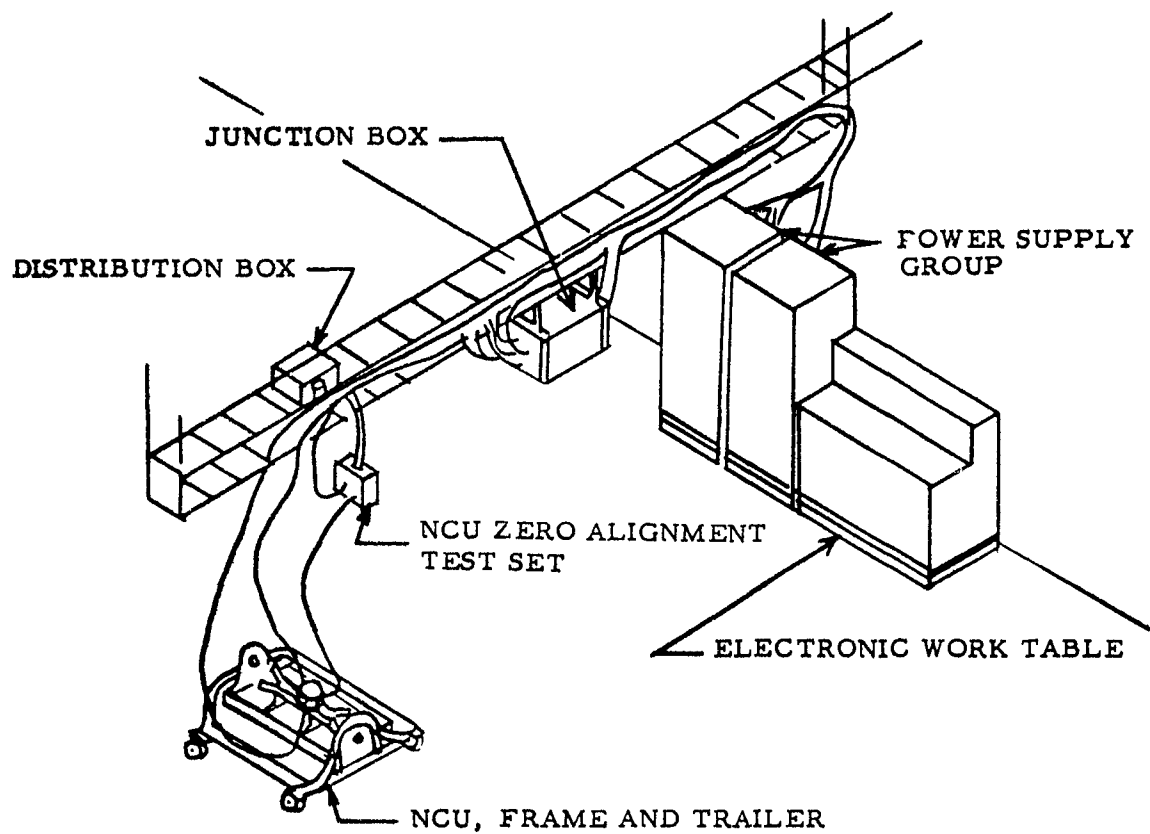
FIG 2-B

3-1-62

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JB 4200 2000 (WAS BAC 4131D)

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NCU LINKAGE ADJUSTMENT POSITION COMPONENT PROCESSING BLDG.
FIGURE 3-B

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U3 4288 2000

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MOTOR BUILDUP & TEST (INITIAL ASS'Y POSITION)

FRONT
OF BLDG.

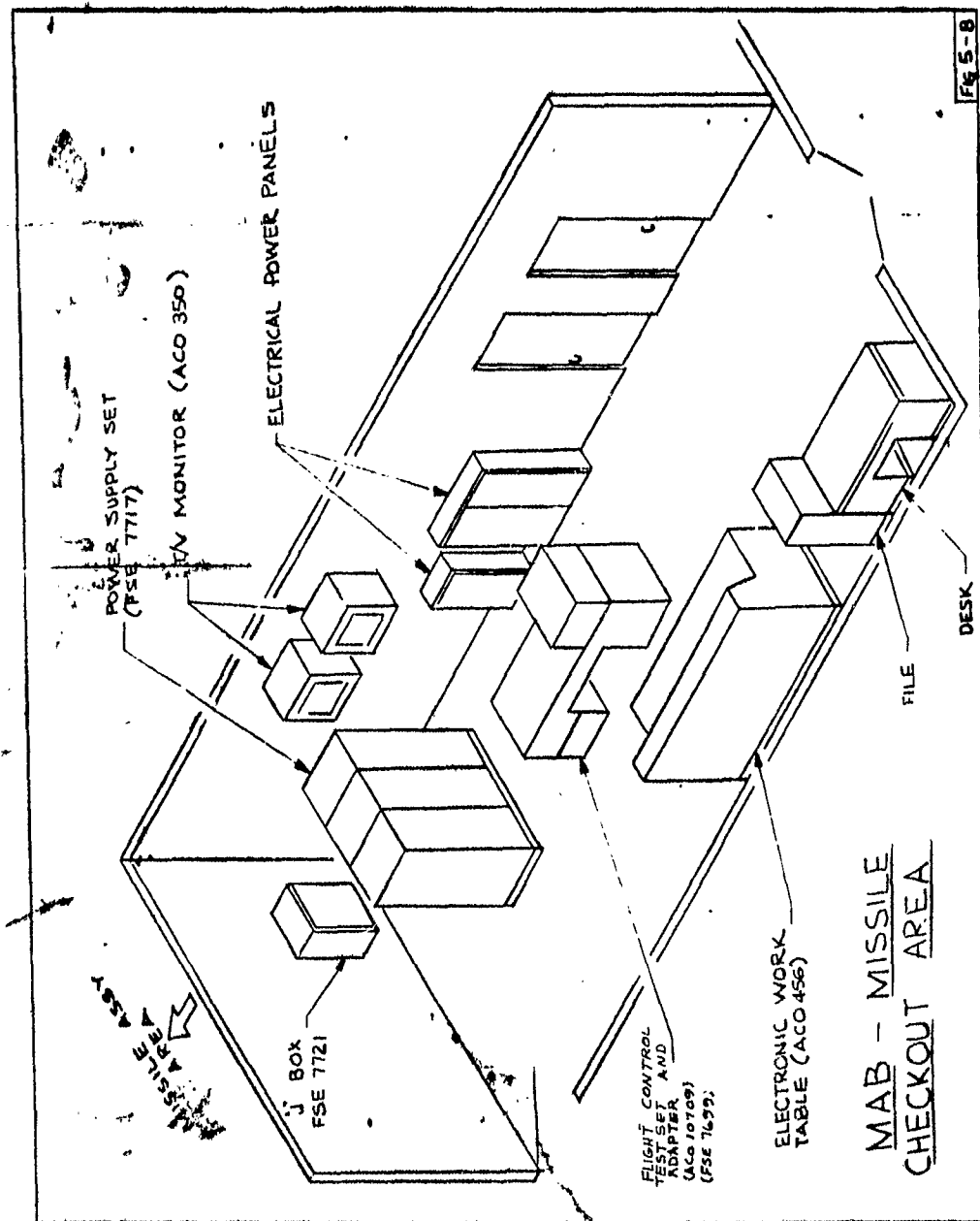
JUNCTION
BOX
(FSE 7721)

NCU ZERO
ALIGNMENT
(FSE 7721
TEST 7724)

NCU
VERIFICATION

FIGURE 4-B

211



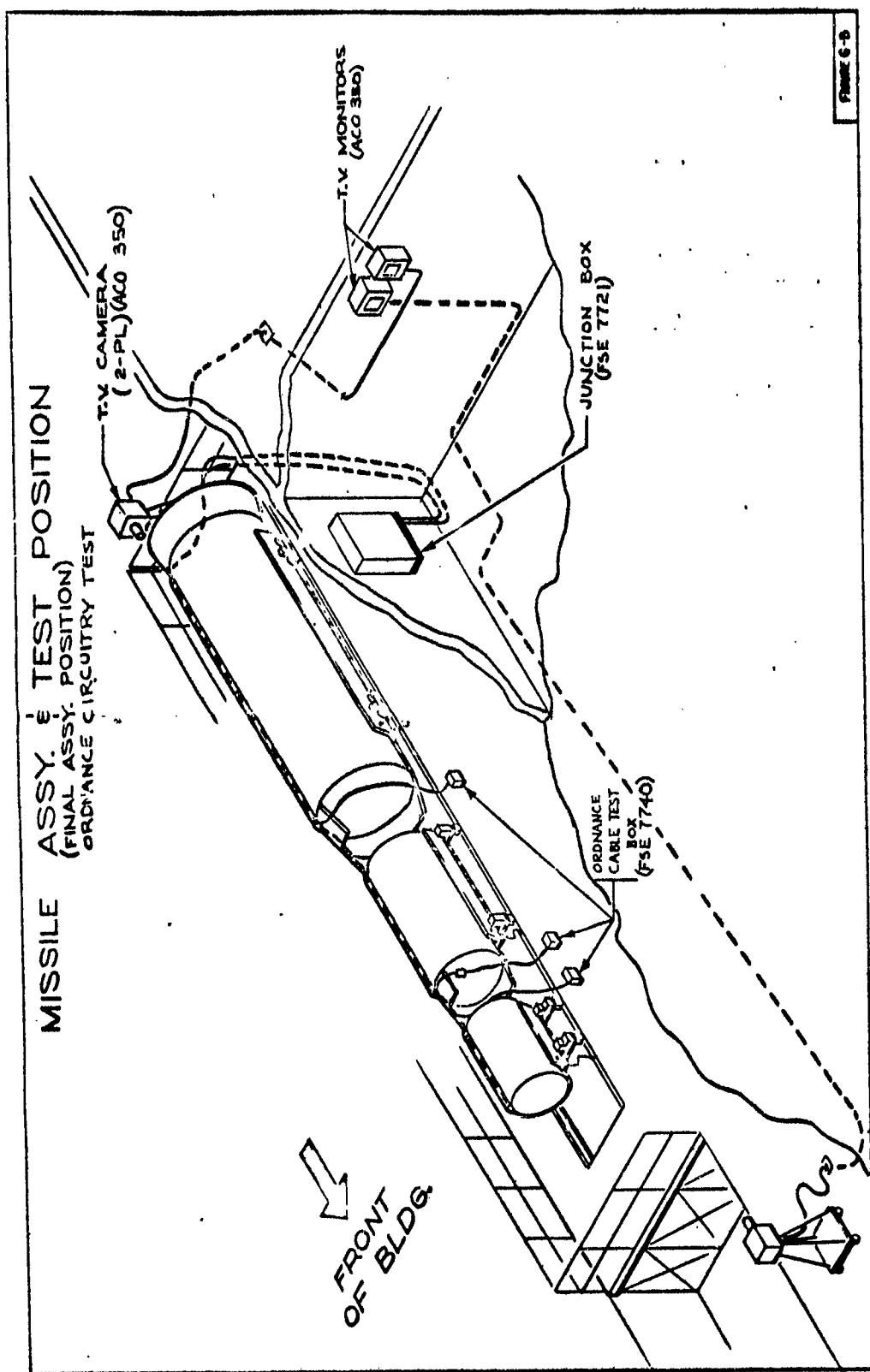


FIGURE 6-5

MISSILE ASSEMBLY & TEST POSITION (FINAL ASSEMBLY POSITION) MISSILE FUNCTIONAL TEST

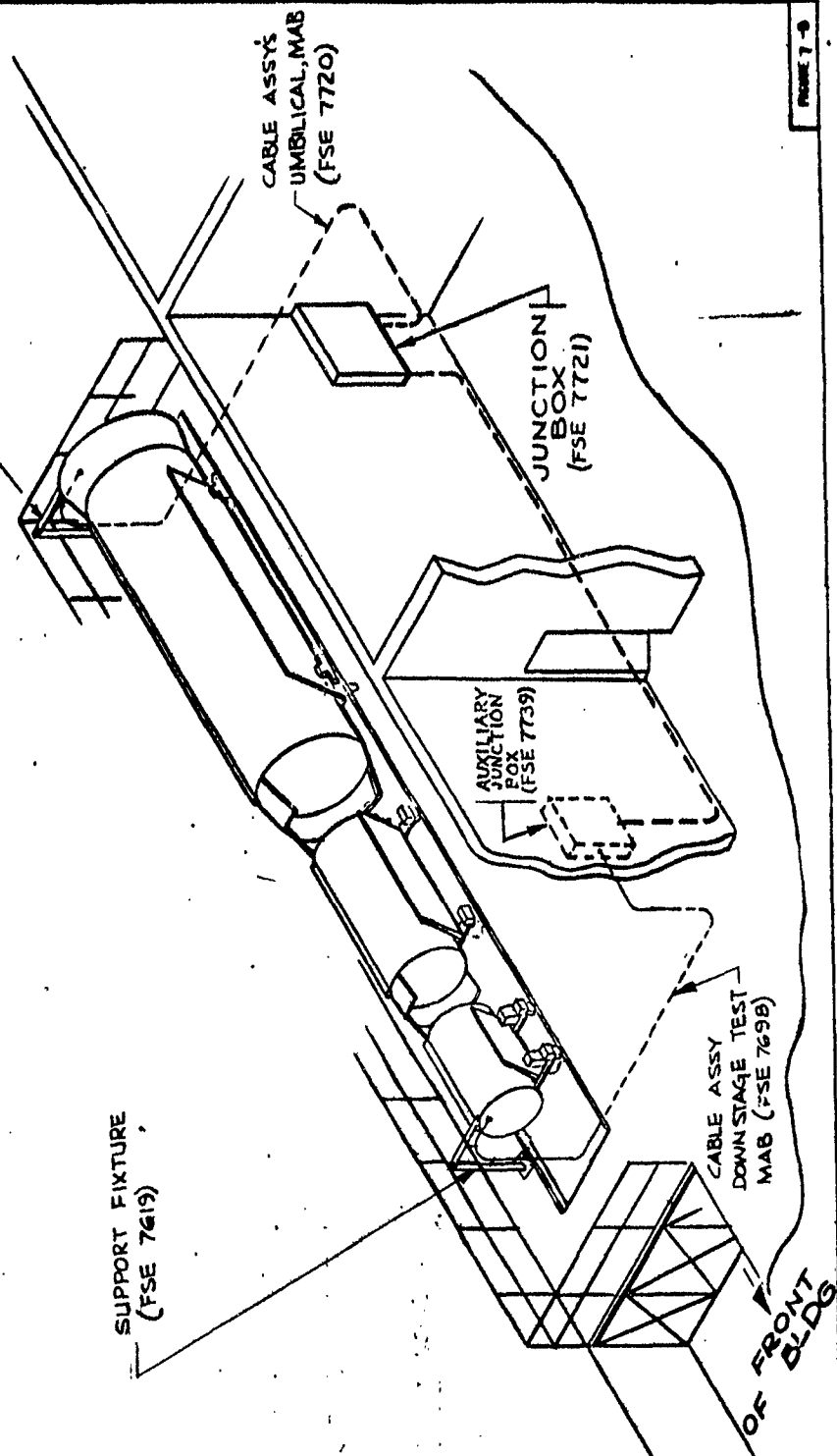


FIGURE 7-9

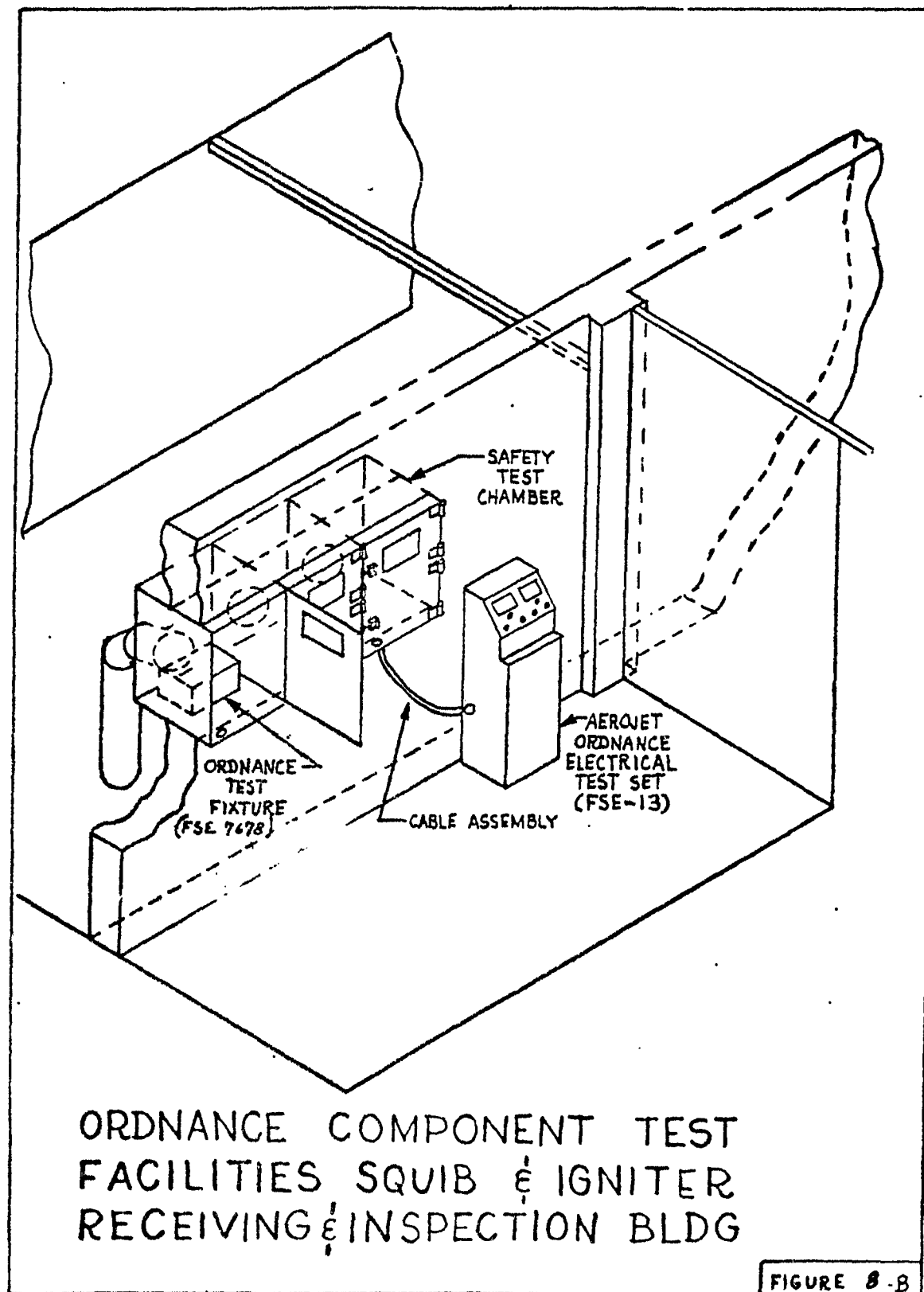


FIGURE 8-B

8-8-62

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US 4200 2000 (WAS BAC 4131D)

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AIR CONDITIONER
(MGE 4115)

TRACTOR
(MGE 4130)

SSCBM
(MGE 4095)

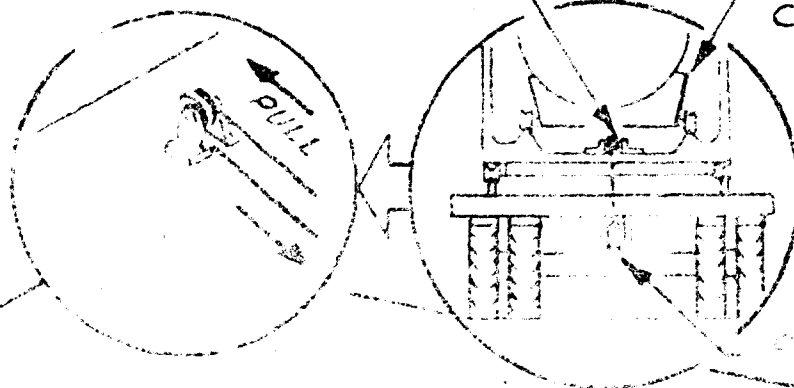
SSCBM (MGE 4095)

1

MOTOR TRANSFER FROM STOR.

PULLEY

MISSILE
CARRIAGE



2

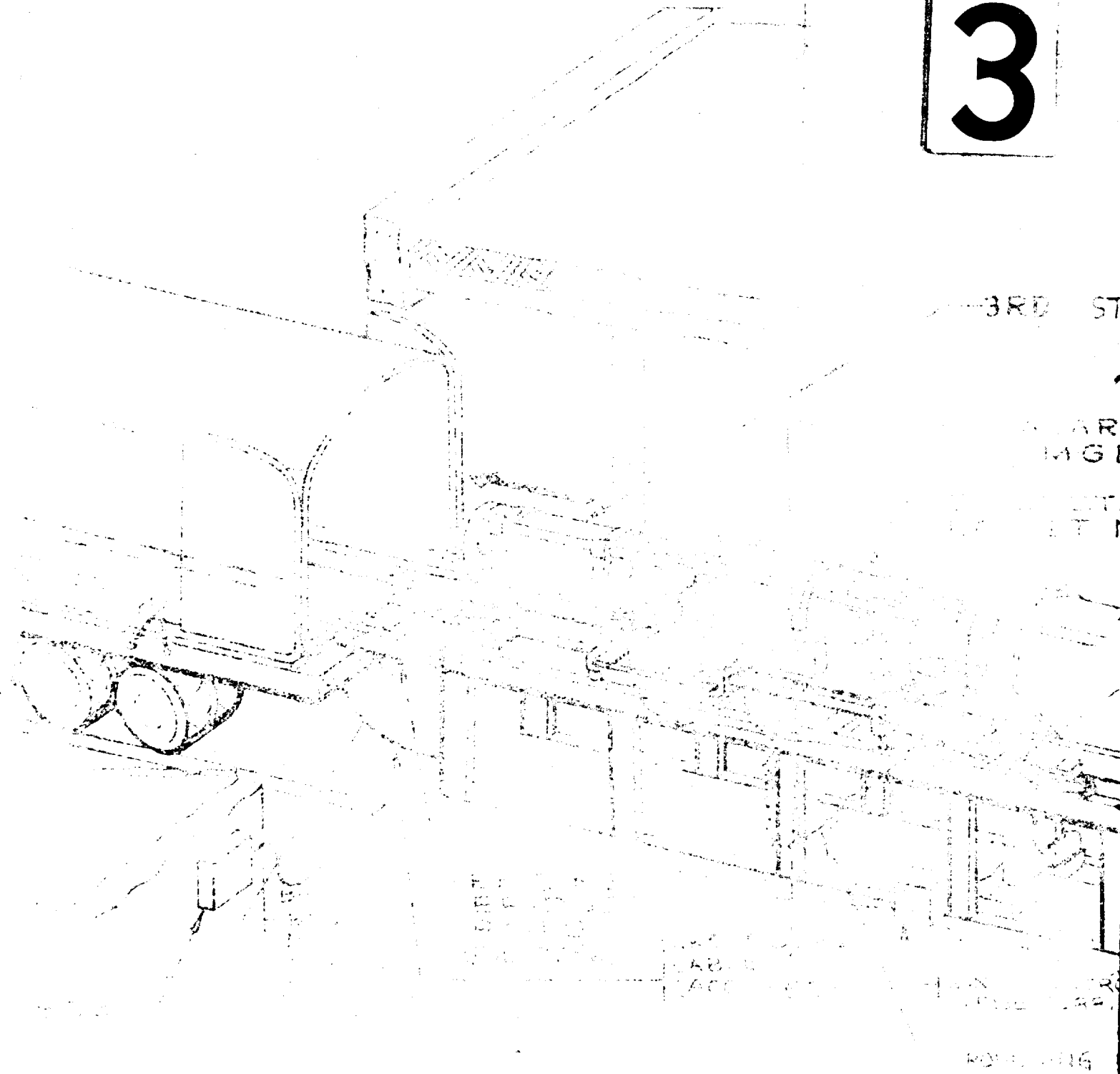
1. 1000
2. 1000

1000 1000

STORAGE BUILDING IN TO SSCBM

MOBILE
R-43E

3



3RD ST

AR
MGE

ST
IT M

EL
EL
S
S

AB
ACC

ROW 1116

IM

4

GR. ST. ST. RO. LEFT MOTOR

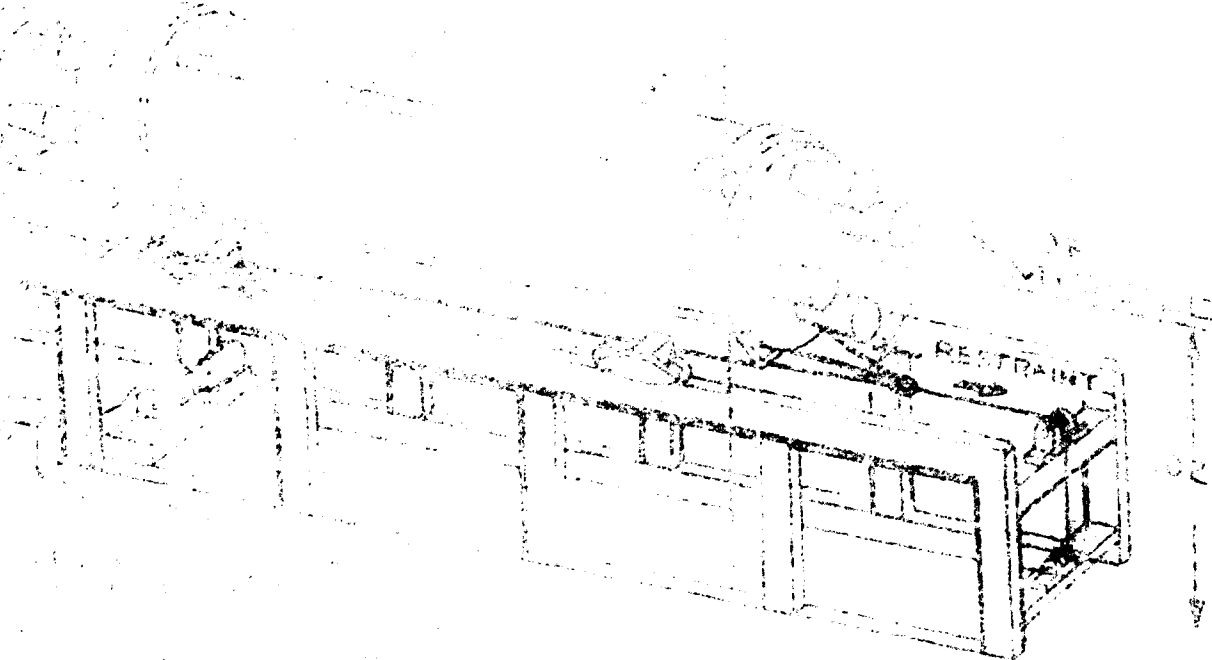
WELL POWERED MOTOR
3000 RPM (AC 200V)

POSITION SET
RIGHT (120°)

POSITION SET AND SET
WELL POWERED MOTOR 3000 RPM

WELL
POWERED

120° SET
WELL POWERED MOTOR



120° TO 0° TURN
WELL POWERED MOTOR

WELL POWERED MOTOR

WELL POWERED MOTOR

WELL POWERED MOTOR

WELL POWERED MOTOR

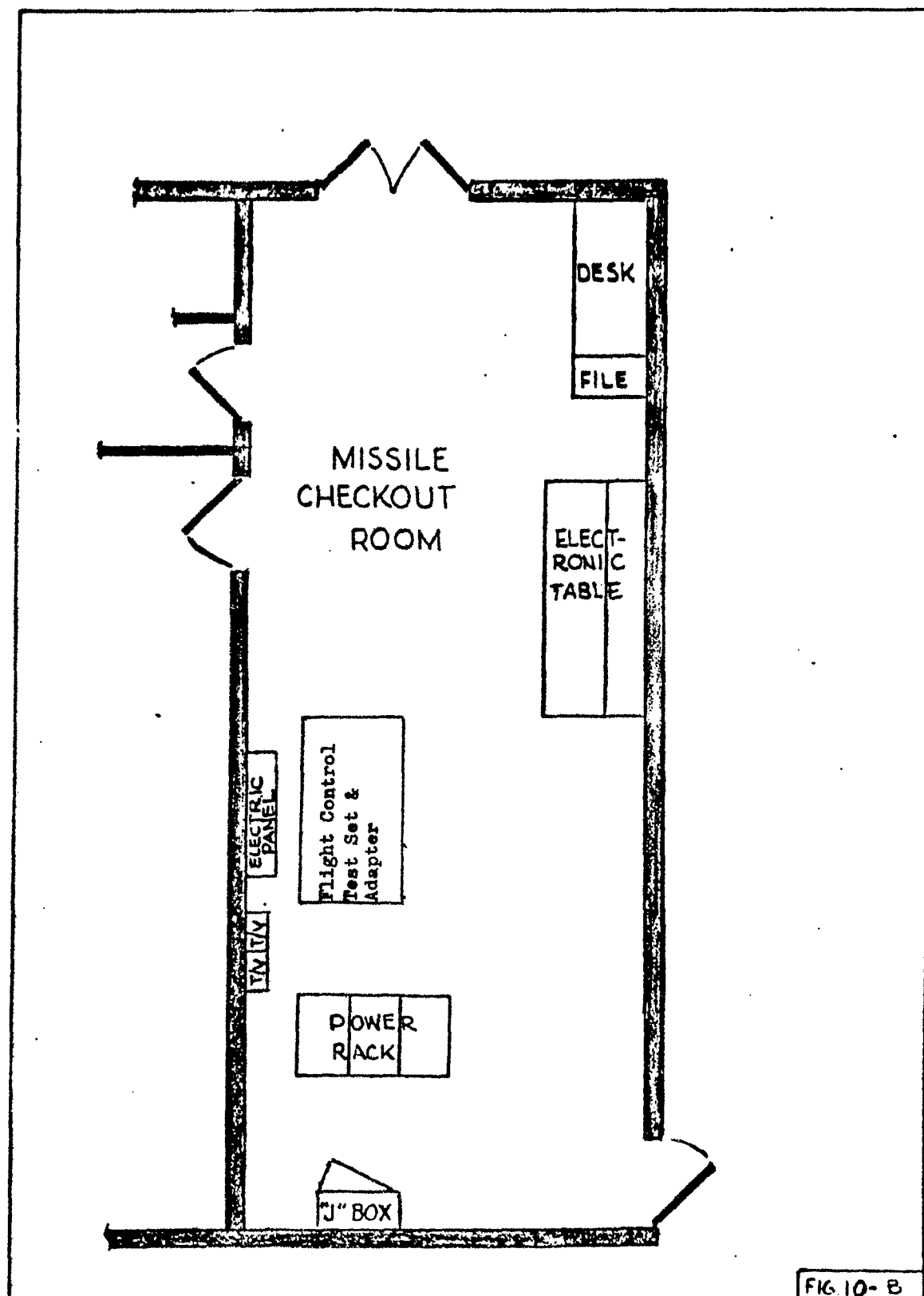


FIG 10-B

REVISED

3-1 62
6-29-62

U2 4200 2000 (WAS SAC 41310)

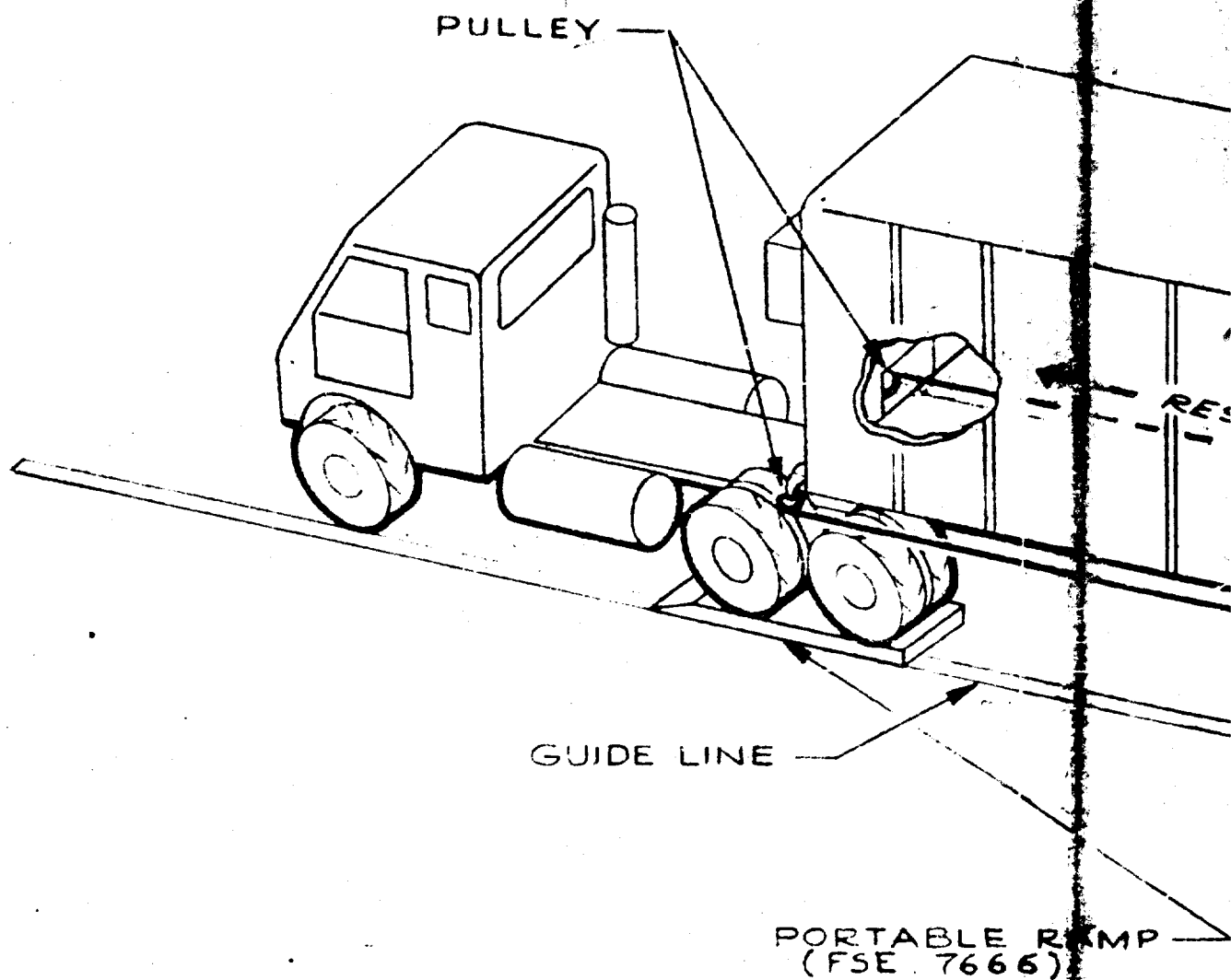
BOEING

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1ST STAGE MOTOR TRANSFER

ROCKET MOTOR SET
(FSE 7753)



1

TRANSFER FROM ROCKET MOTOR T

ROCKET MOTOR SEMITRAILER
(FSE 7753)

RESTRAINT

RAIL, BR
(FSE 77
BRIDLE CA
ROCKET MO
FSE 7748

TRANSPORTED
SUPPORT STAND

STABLE RAMP
(FSE 7666)

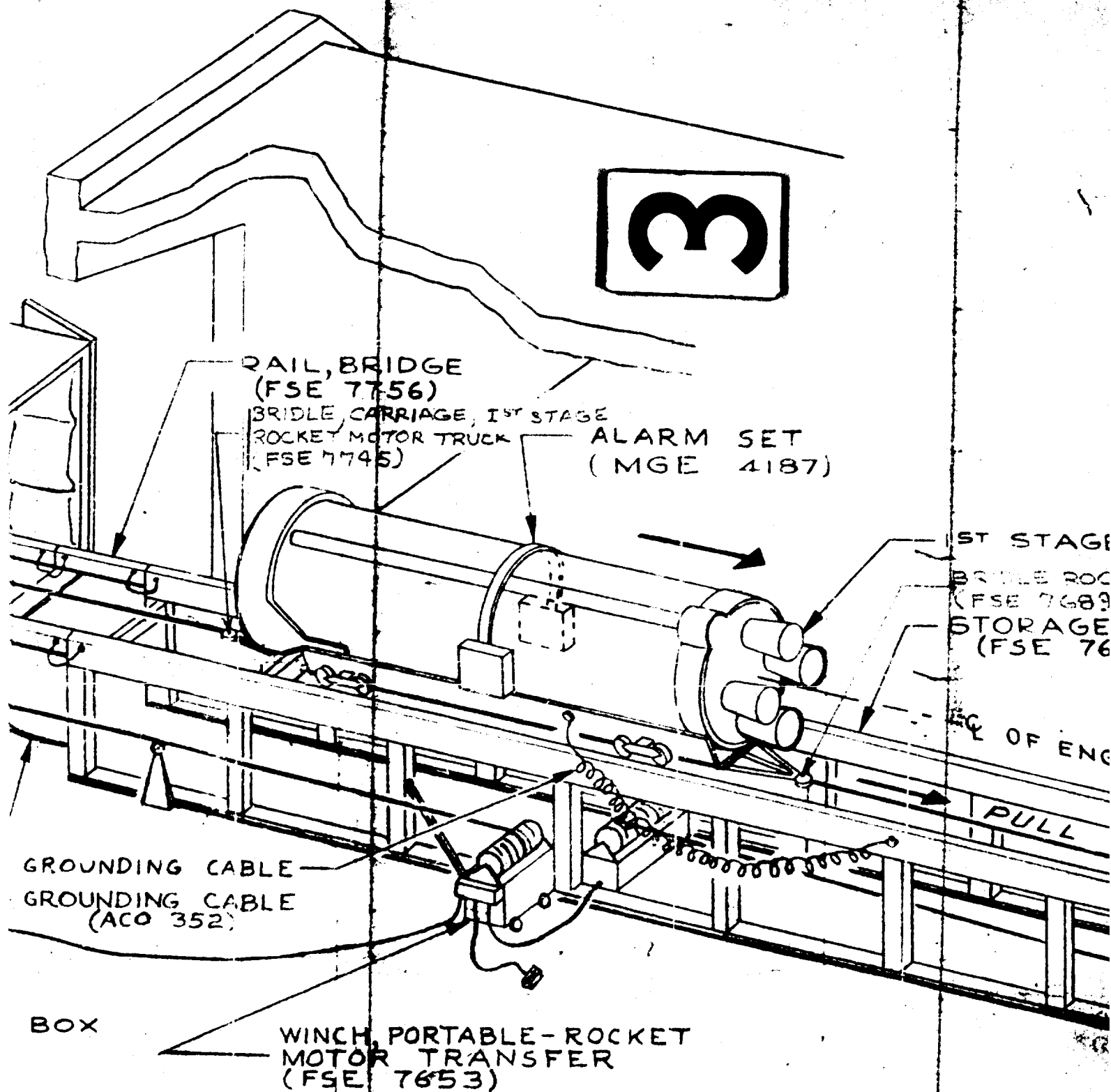
GROUNDING CABLE
GROUNDING CABLE
(ACO 352)

JUNCTION BOX

WINCH
MOTOR
(FSE

2

ET MOTOR TRUCK IN TO STORAGE E



6-27-62

BOEING

TRUCK IN TO STORAGE BUILDING

4

RIDGE
(756)

CARRIAGE IN STORAGE
MOTOR TRUCK
(45)

ALARM SET
(MGE 4187)

1ST STAGE ROCKET MOTOR

BRIDGE ROCKET MOTOR STAGE 1
(FSE 1489)

STORAGE RAILS
(FSE 7629)

PULLEY

— C OF ENGINE —

PULL

102"
TO
OUTSIDE
APRON

H. PORTABLE-ROCKET
OR TRANSFER
(7653)

FIGURE 4-B

6-29-62

BOEING

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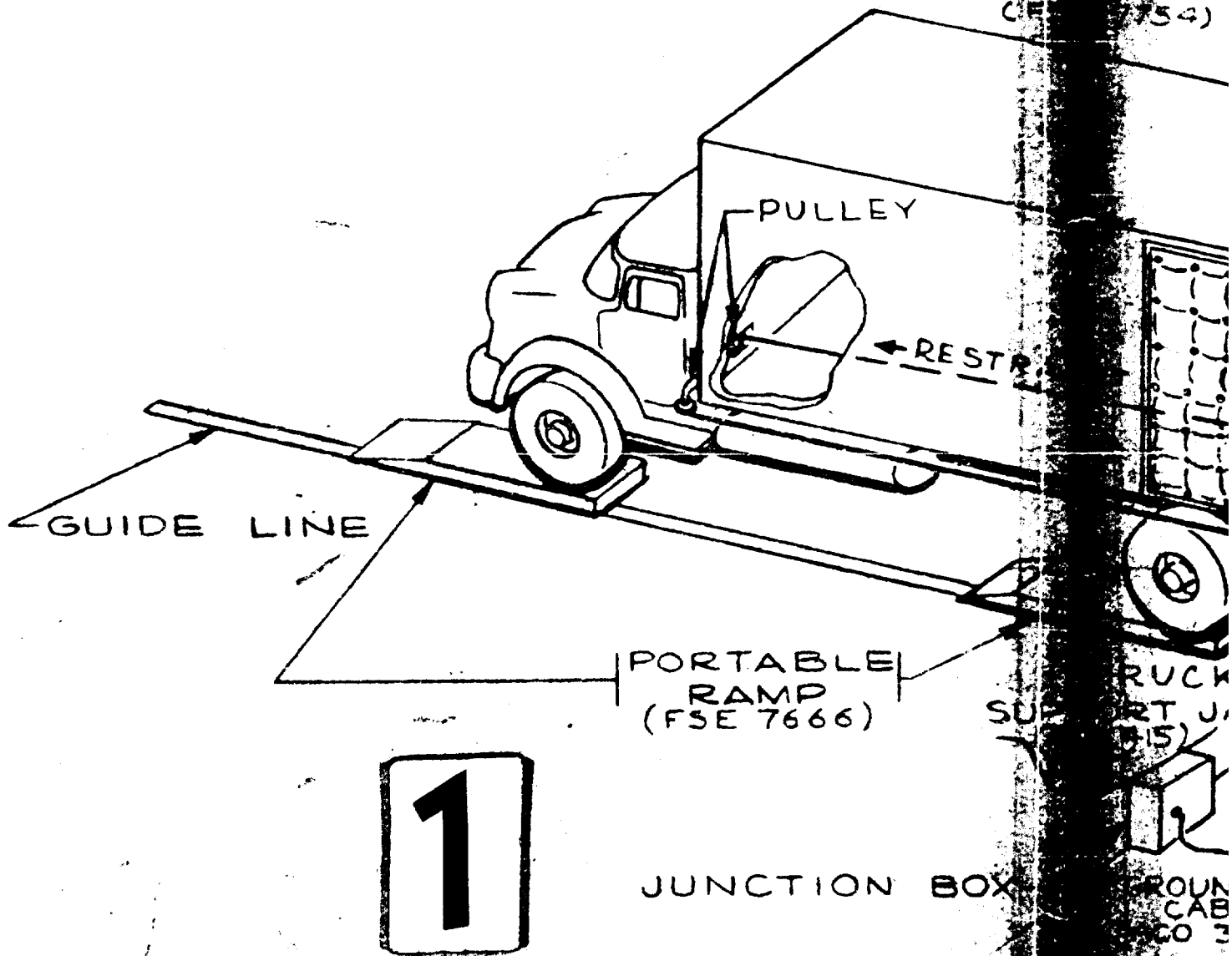
8

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2ND STAGE

OTO

2ND STAGE
ROCKET MOTOR TRUCK
(FSE 754)



STAGE

MOTOR TRANSFER FROM RO
IN TO STORAGE BUILDI

2

2ND STAGE
ET MOTOR TRUCK
(FSE 7754)

ULLEY

RESTRA

BRIDGE
RAILS
(FSE 7756)

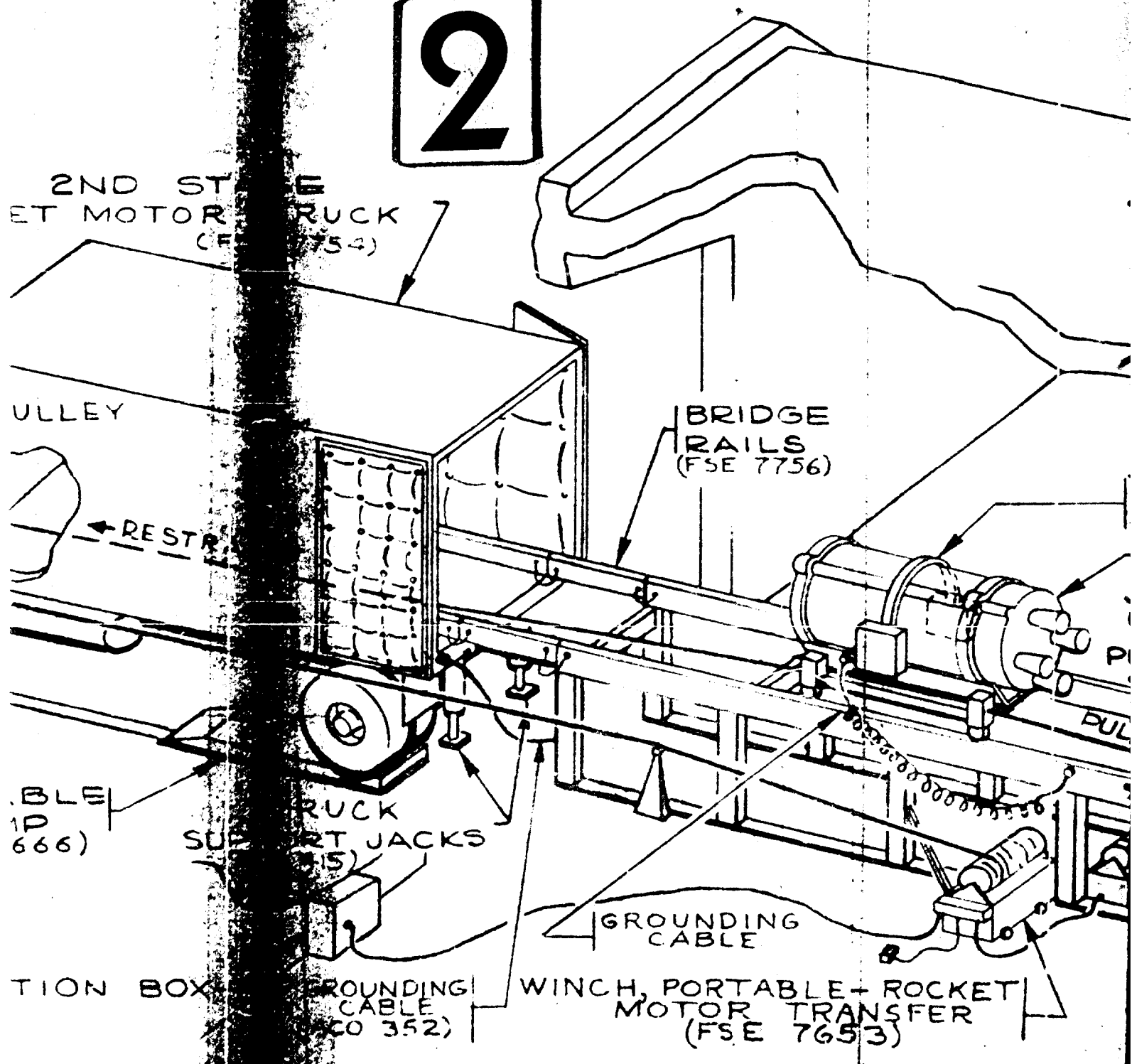
BLE
ID
666)

TRUCK
SUPPORT JACKS
(FSE 7755)

TION BOX
GROUNDING
CABLE
(FSE 7652)

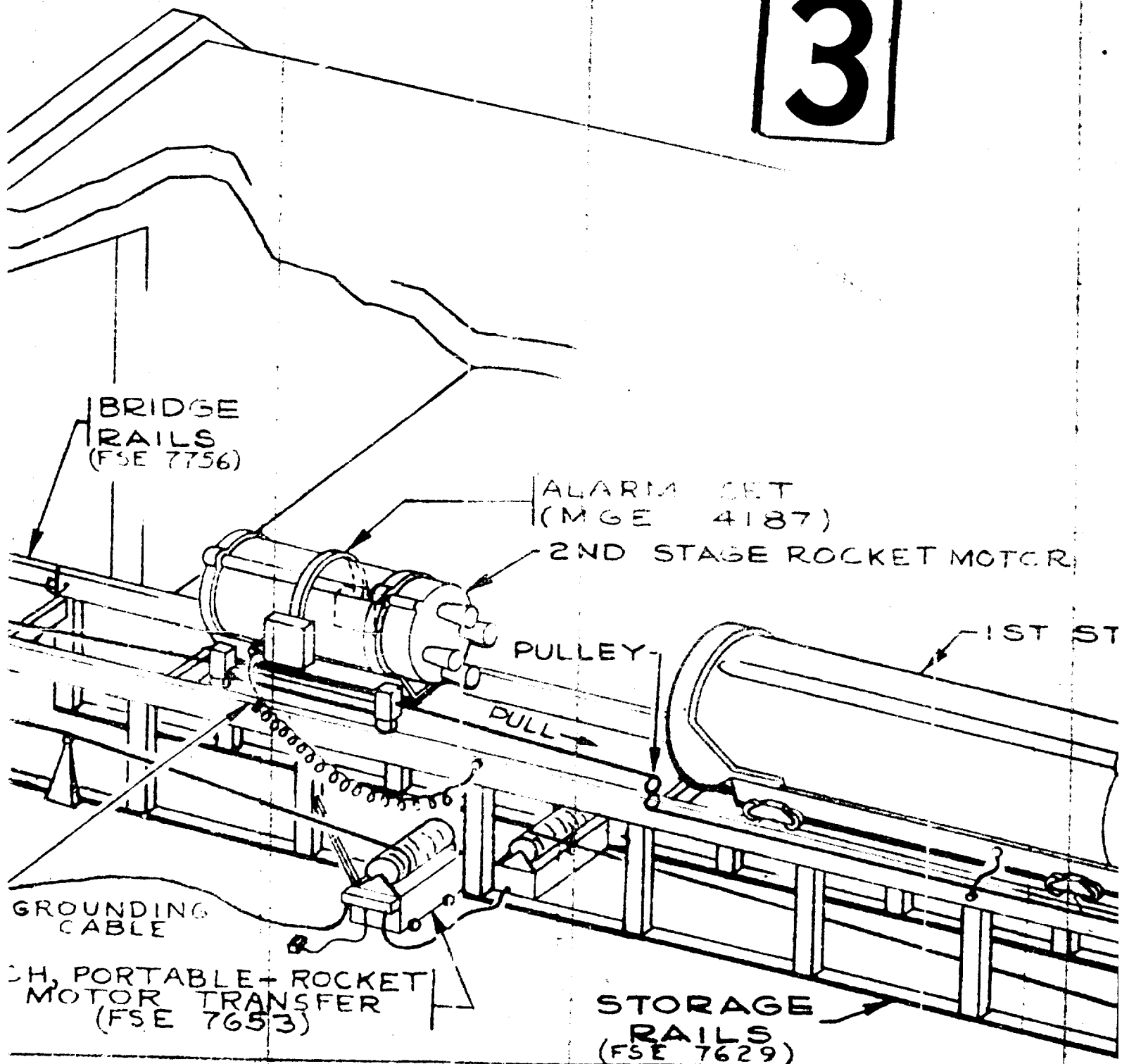
GROUNDING
CABLE

WINCH, PORTABLE + ROCKET
MOTOR TRANSFER
(FSE 7653)



TRANSFER FROM ROCKET MOTOR TRUCK STORAGE BUILDING

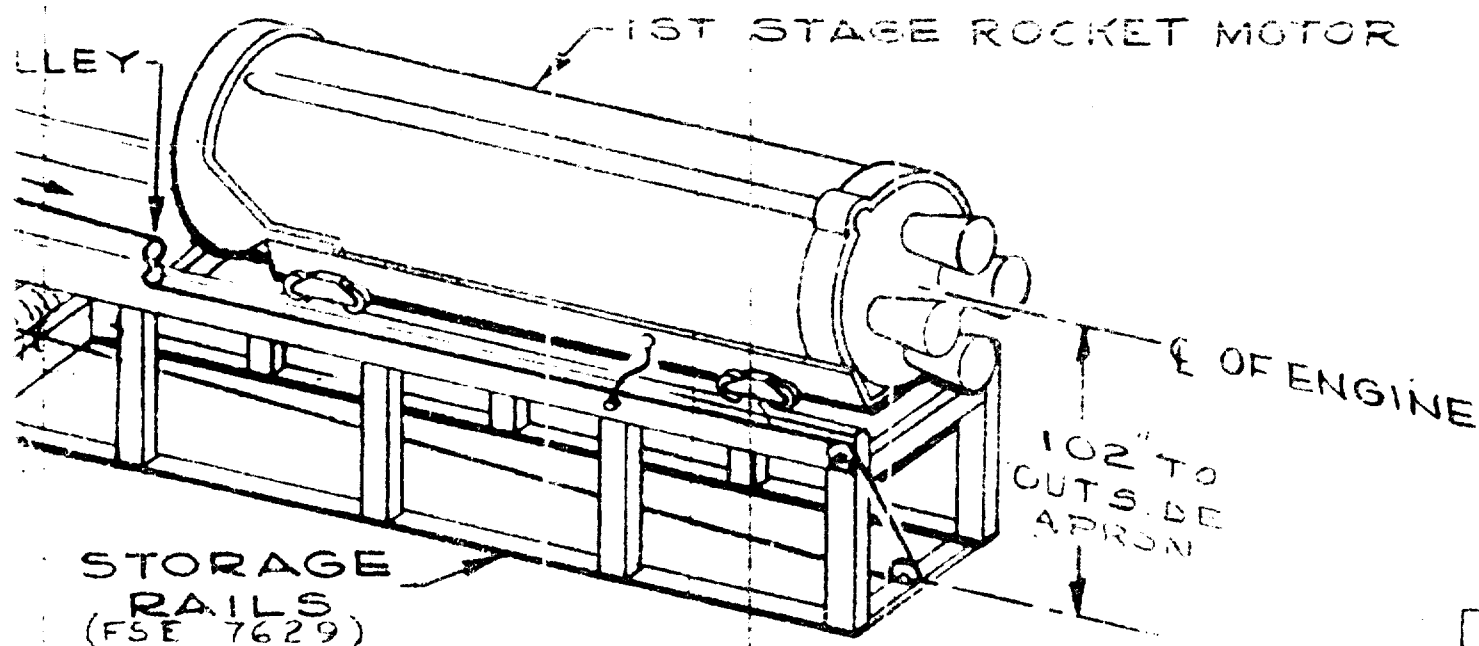
3



ROCKET MOTOR TRUCK NO. 1

4

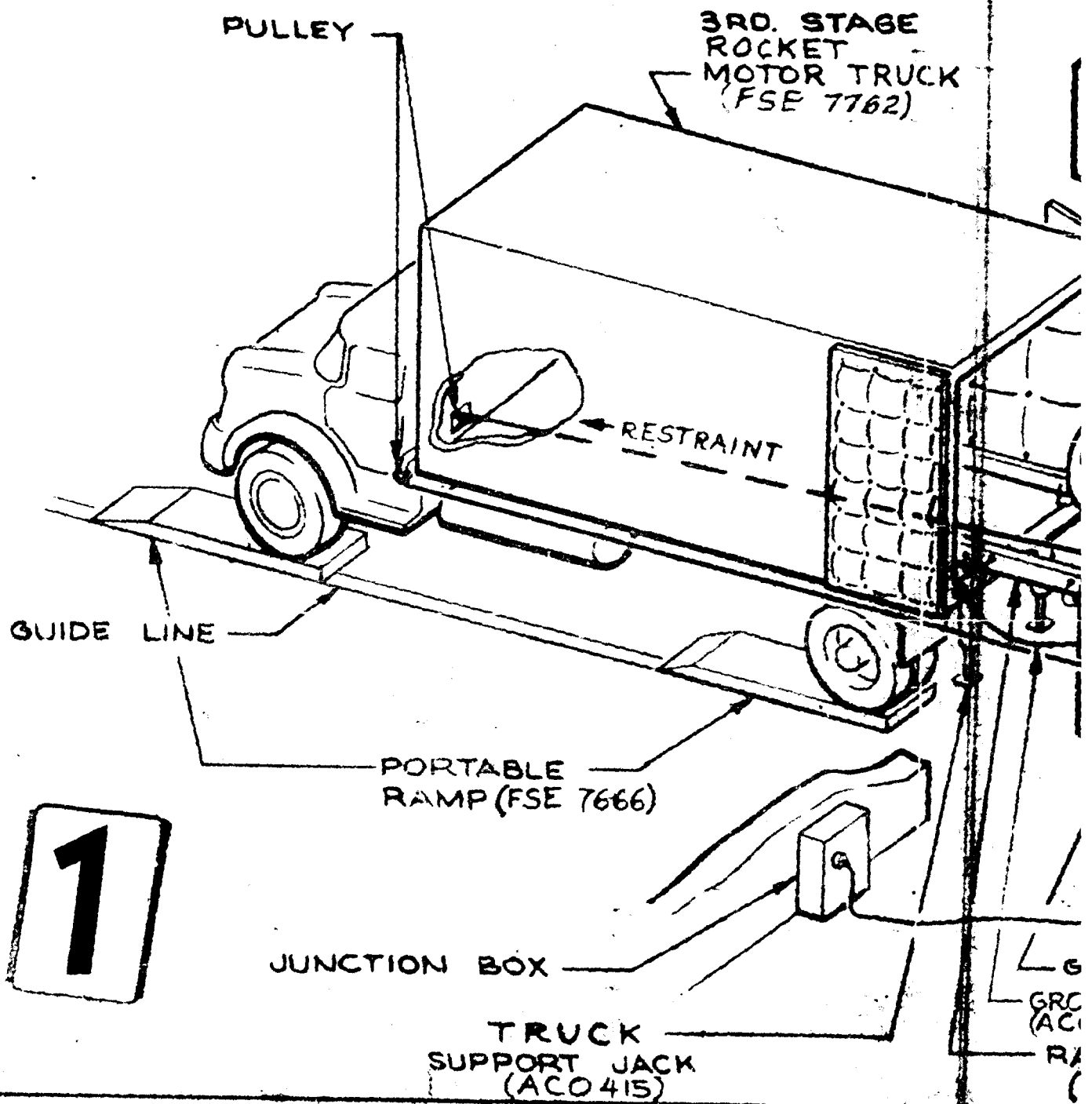
CLARK SET
MGE 4187)
2ND STAGE ROCKET MOTOR



FIGURE

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	SEC	B	page	102

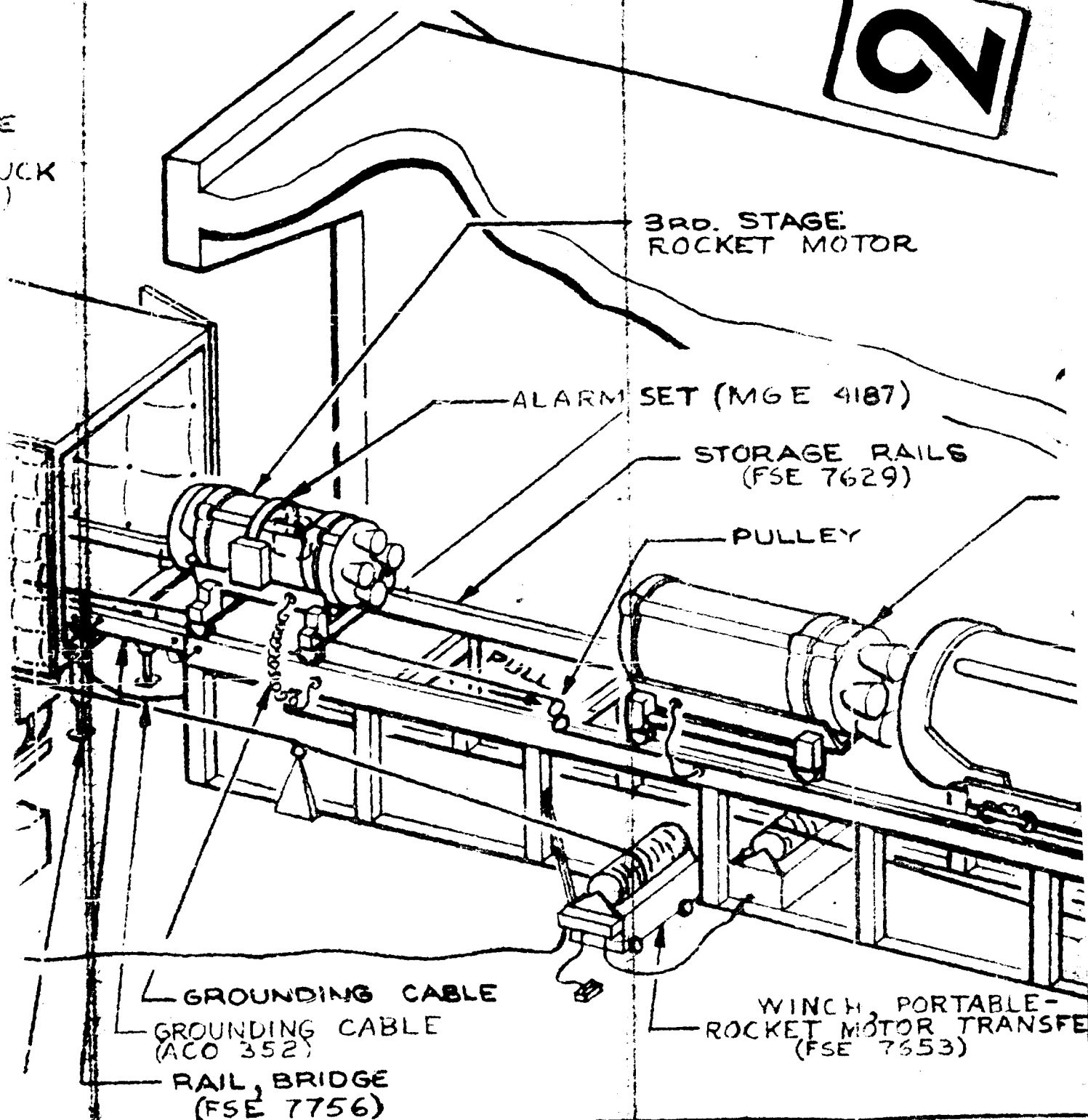
3RD. STAGE MOTOR TRUCK IN T



OR TRANSFER FROM ROCKET MOTO IN TO STORAGE BUILDING



E
UCK
)



ROCKET MOTOR TRUCK LOADING

3

3RD. STAGE
ROCKET MOTOR

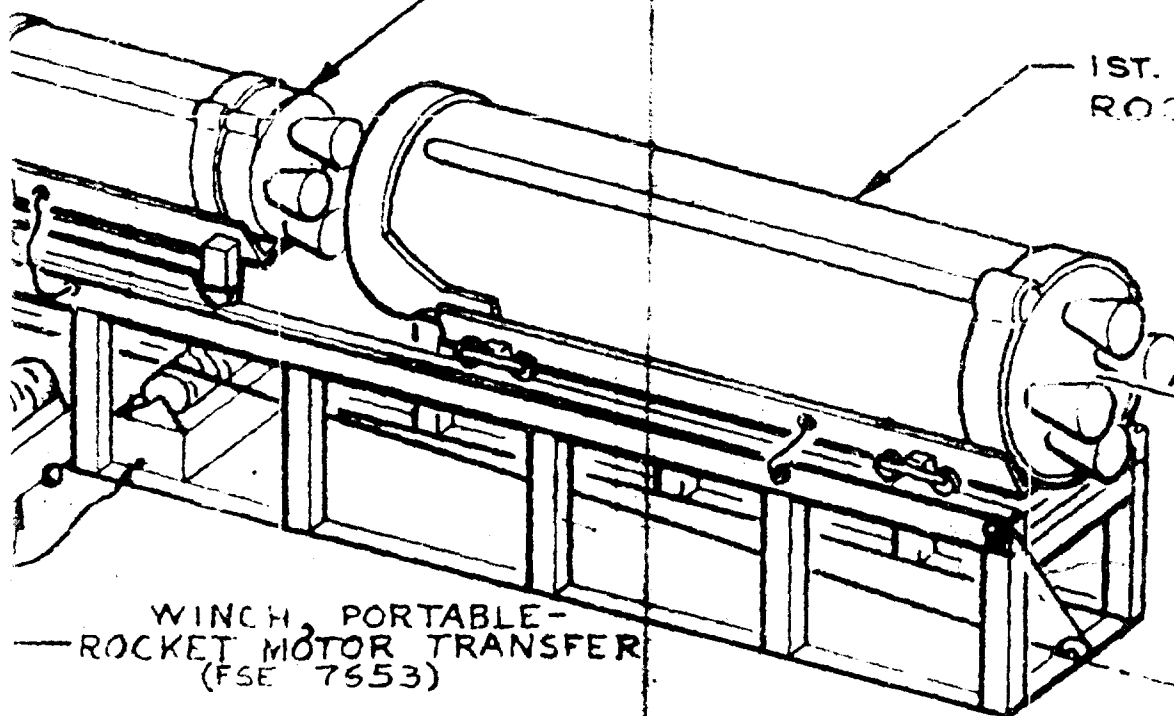
SET (MGE 4187)

— STORAGE RAILS
(FSE 7629)

— PULLEY

2ND. STAGE
ROCKET MOTOR

1ST. STAGE
ROCKET MOTOR



102"
TO OUTSIDE FRAME

WINCH, PORTABLE—
ROCKET MOTOR TRANSFER
(FSE 7653)

REELS

VOL.

SEC.

TOR TRUCK

2ND. STAGE
ROCKET MOTOR

1ST. STAGE
ROCKET MOTOR

4

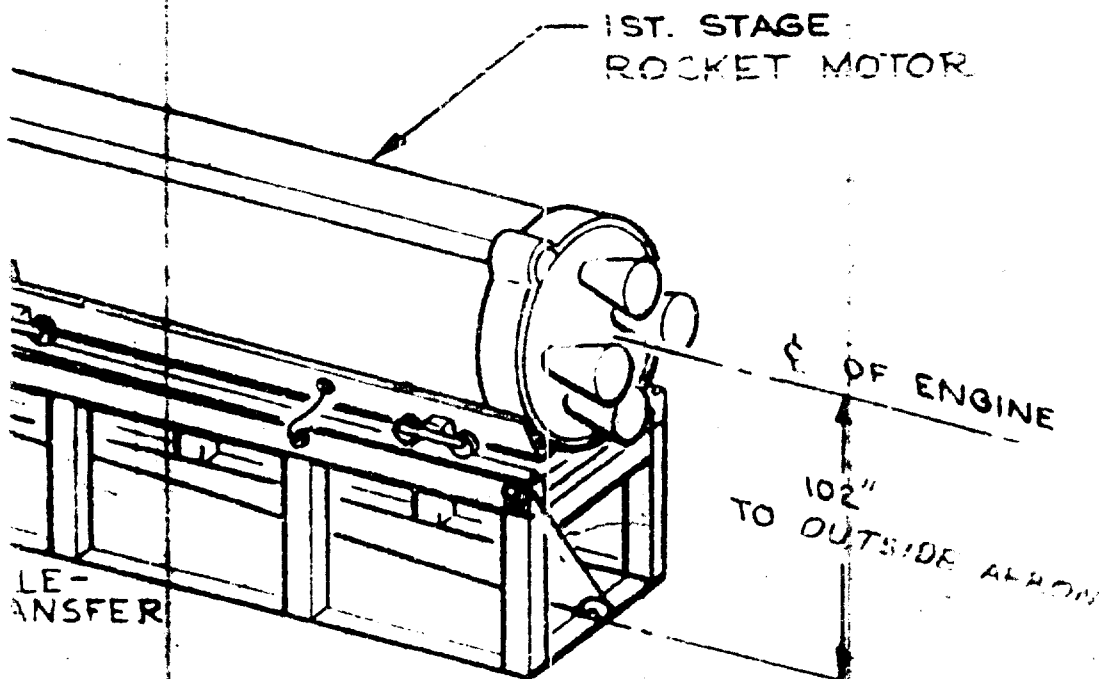
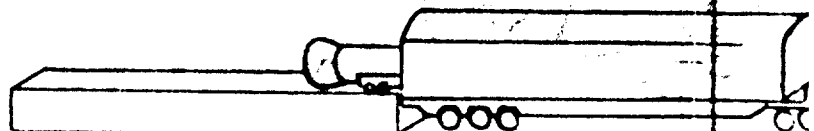
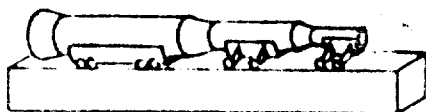


FIGURE 13-B

MISSILE ASSEMBLY BLDG.



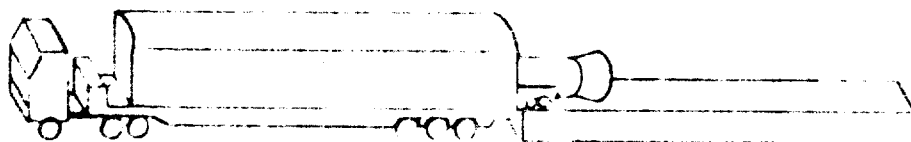
12.0 MISSILE HANDLING
FOR SHIPMENT

12.2 TRANSFER MISS
SSCBM

12.1 PREPARE MISSILE
FOR TRANSFER (ROLL)

12.3 TRANSPORT TO
STORAGE, AIR
LOADING AREA

STORAGE BLD



12.6 PREPARE FOR MISSILE TRANSFER
TO STORAGE

12.9 PR
TR

12.7 TRANSFER MISSILE TO
STORAGE RAILS

12.10 TR
SSC

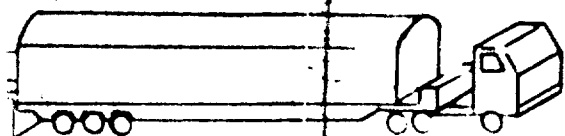
12.8 STORE AS REQUIRED.

1

MISSILE

SHIPMENT

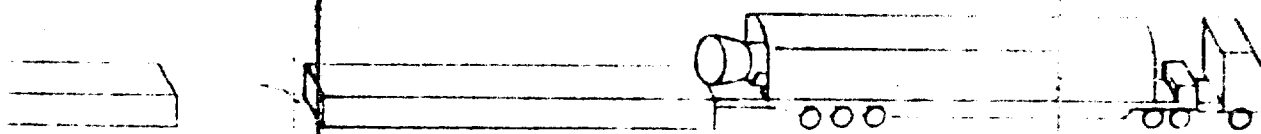
Y BLDG.



TRANSFER MISSILE TO
SSCBM

TRANSPORT TO MISSILE
STORAGE, AIR OR RAIL
LOADING AREA

SE BLDG.



3FER 12.9 PREPARE FOR MISSILE
TRANSFER TO SSCBM

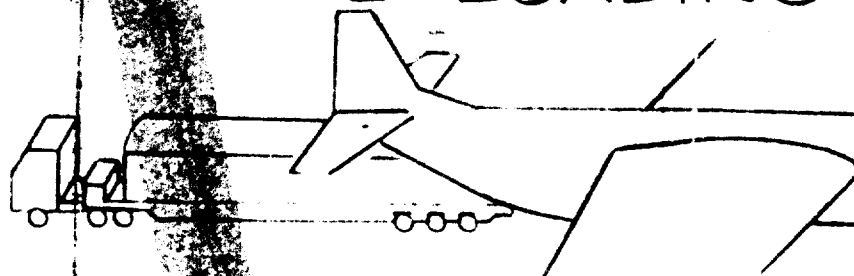
12.10 TRANSFER MISSILE TO
SSCBM FROM STORAGE

2

IPMENT

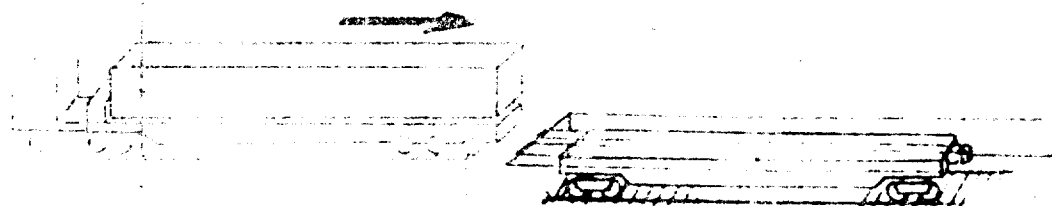
SEQUENCE

AIRPLANE LOADING AREA



12.4 TRANSFER SSCBM TO AIRPLANE
(PERFORMED BY AIR FORCE)

RAILROAD LOADING AREA

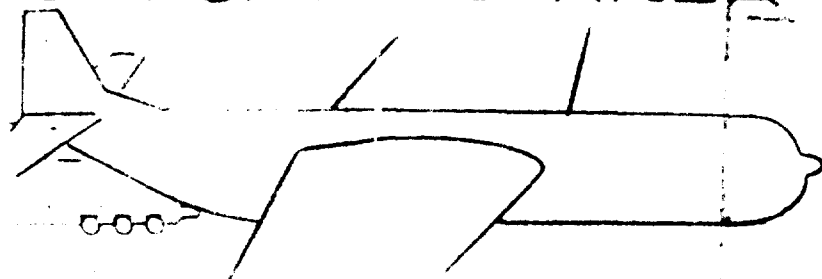


12.5 TRANSFER SSCBM & BALLISTIC
MISSILE TRAILER TO RAIL CAR



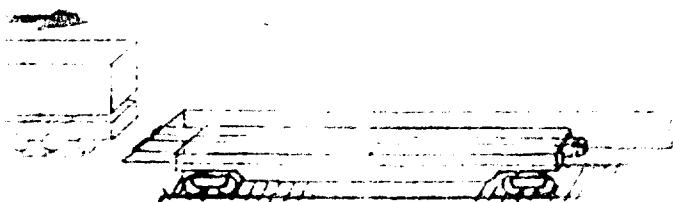
ICE

IE LOADING AREA



ER SSCBM TO AIRPLANE
ED BY AIR FORCE)

LOADING AREA



ER SSCBM & BALLISTIC
TRAILER TO RAIL CAR

GOVERNMENT
SHIPMENT

4

FIGURE 14

BOEING

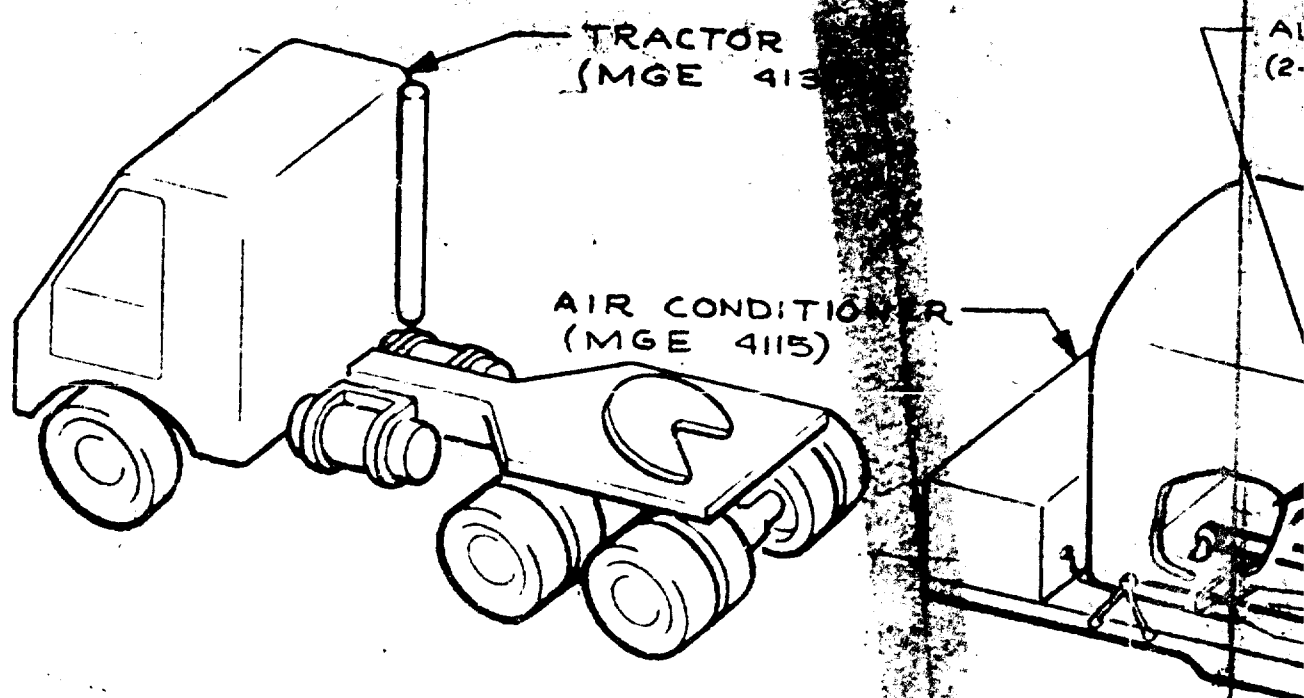
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(2)



GUIDELINE

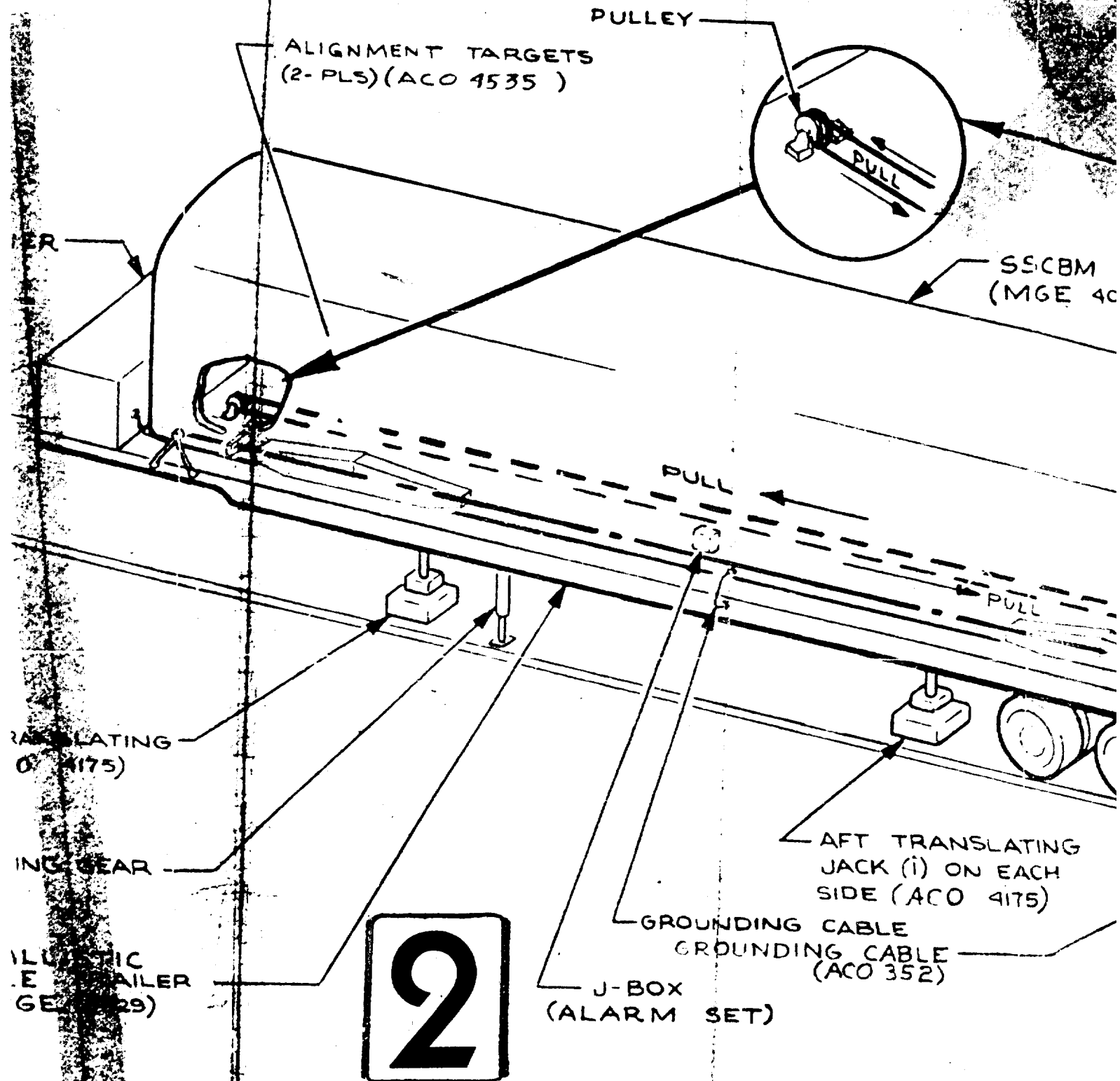
(1) FWD TRANSLATING
JACK (ACG 4175)

TRAILER LANDING GEAR

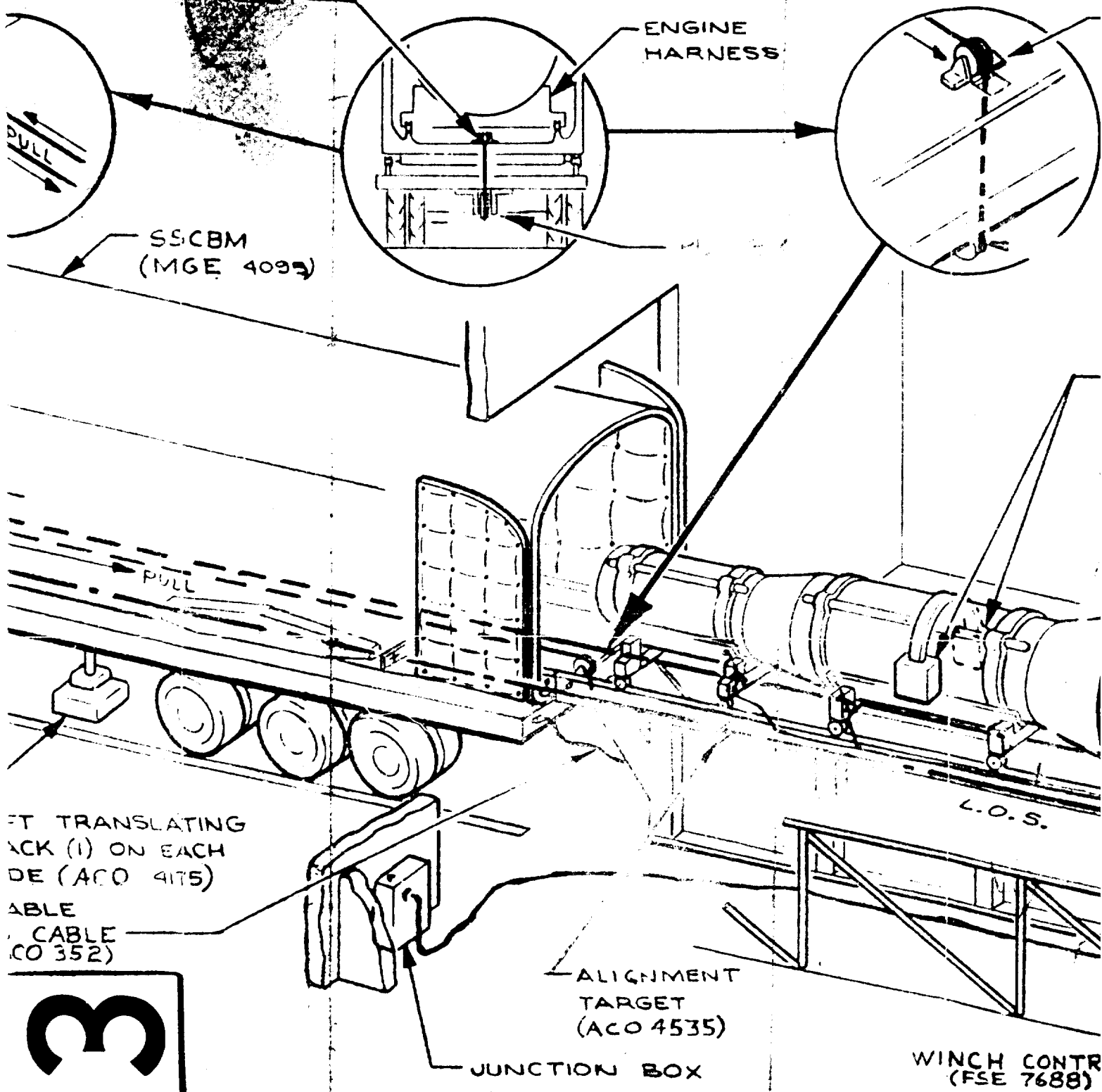
1

BALLISTIC
MISSILE TRAILER
(MGE 4129)

MISSILE TRANSFER FROM MISSILE

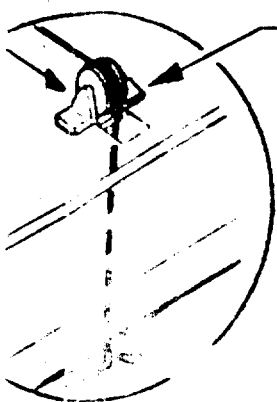


1 MISSILE ASSEMBLY BUILDING IN TO S



TO SSCBM

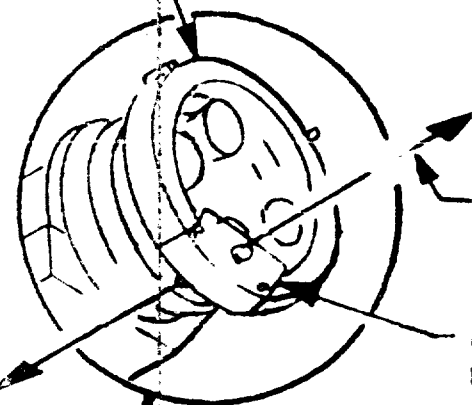
4



PULLEY

CABLE ROCKET MOTOR
BONDING (ACO 253)

TRAILER PULLEY



BASE ADAP

PULL

ALARM SET
(MGE 4187)

GROUNDING
CABLE

ALIGNMENT SLOPE
(ACO 4535)

WOF

M
(F)

L.O.S.

RESTRAIN

WINCH CONTROL
(FSE 7688)

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BOEING

5

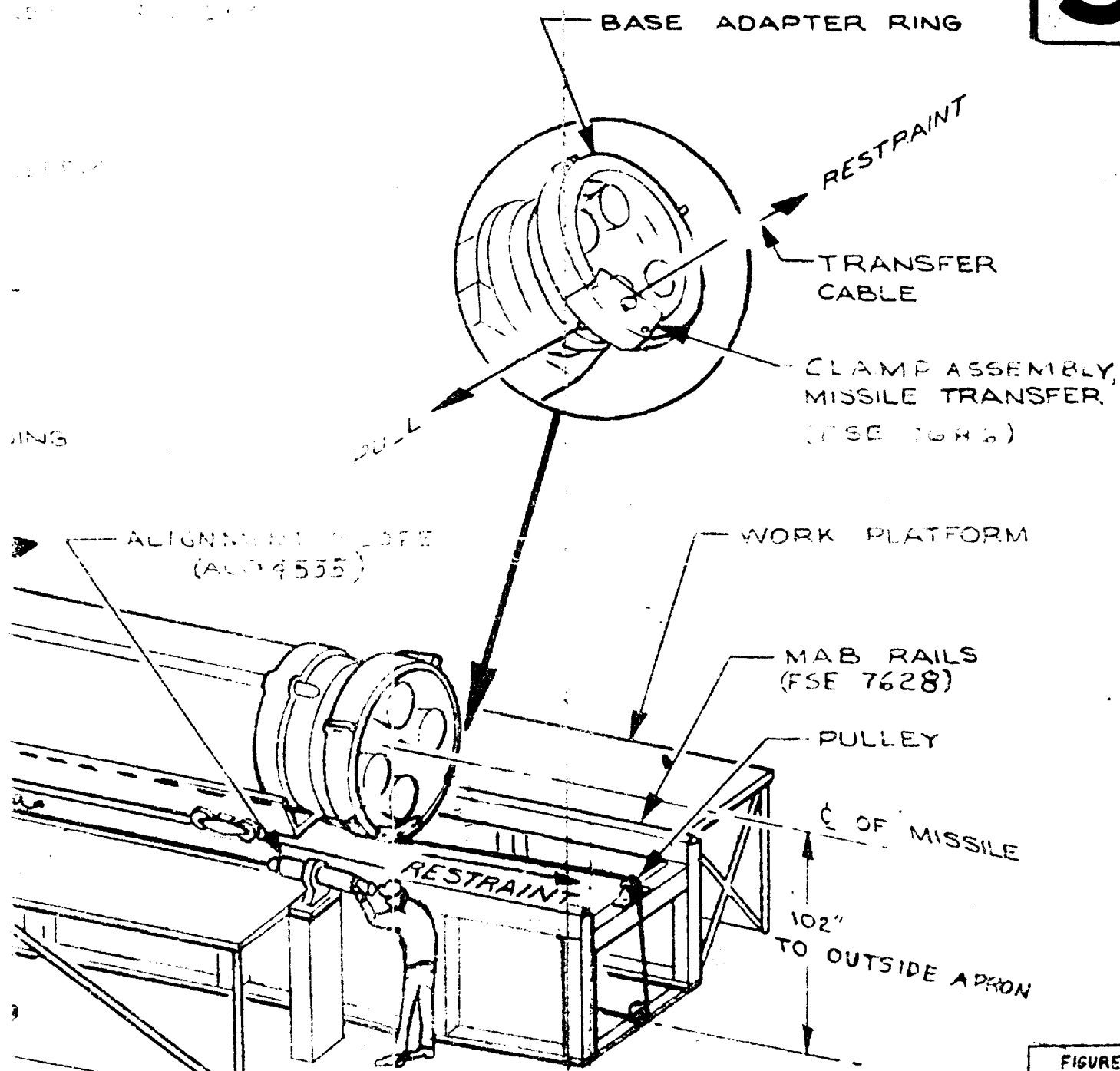


FIGURE 5 B

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AIR CONDITIONER
(MGE 4115)

TRACTOR
(MGE 4130)

ALARM SET
(MGE 4187)

SSCBM
(MGE 4095)

RAIL CAR

TRAILER
(MGE 4129)

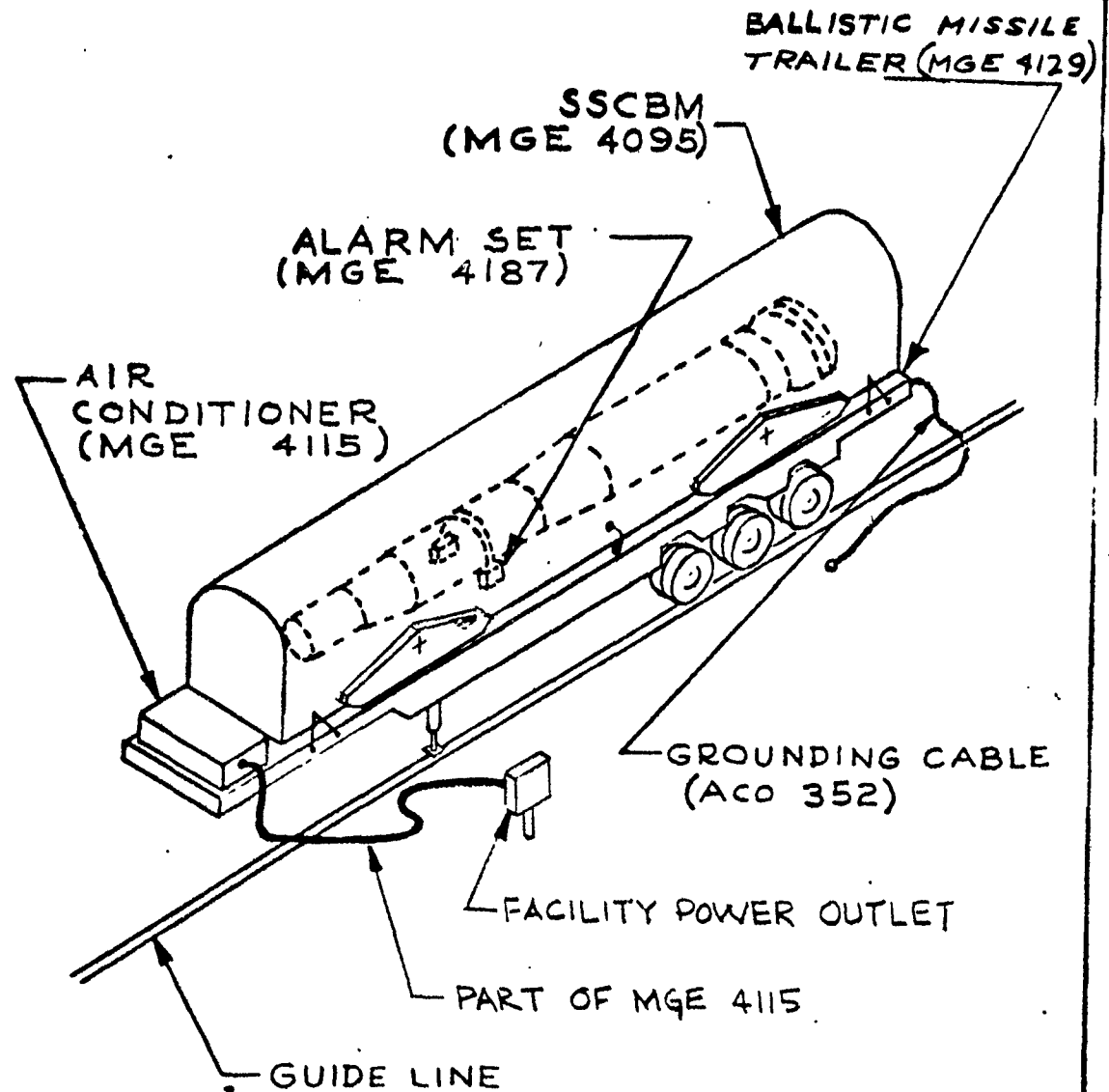
SSCBM AND TRAILER TRANSFER ON TO RAIL CAR

FIGURE 16-3

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SSCBM TRANSIENT STORAGE AREA



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THE BOEING COMPANY

NUMBER D2-11162-1 MODEL NO. WS-133
TITLE SECTION "C" - Factory Support Equipment and
Maintenance Ground Equipment Assembly and Checkout - Wing II,
A/F Plant 77

2-5142

SECTION TITLE PAGE U3 4288 0000 REV. 1/61

PREPARED BY Plant 77 Requirements Group

SUPERVISED BY *O. A. Severide*

BI-MM

APPROVED BY *W. H. Christ*

RELIABILITY
APPROVAL

(DATE)

AT04(647)-580
CONTRACT NO.

5-78200-5120-68226
CHARGE NUMBER

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				REVISED	ADDED	DELETED						REVISED	ADDED	DELETED			
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	4	3-1-62		18								30					
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	7	8-2-62		21								36					
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	9	9-21-62		23												1-18-63	
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	14	3-1-62		28								31					
	15	6-29-62		29								35					4-15-63
	16	6-29-62		30													
	17	11-1-62		31													
	18	6-29-62		32													
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SECTION "C"

FACTORY SUPPORT EQUIPMENT AND ASSEMBLY AND CHECKOUT EQUIPMENT ASSEMBLY AND CHECKOUT

SCOPE

This section is the technical portion of the complete plan for assembly, modification and checkout of A/F Plant 77 for processing Wing II and on Missiles. The assembly and checkout will be accomplished in two basic phases.

Phase I will consist of installing and testing equipment in the new Missile Assembly Buildings. Portable equipment will be processed through the Calibration/Certification Laboratory or Maintenance Support Shop for testing as required. Permanently installed equipment will normally be installed first, calibrated with calibration/certification equipment and then tested as installed.

Phase II consists of modifying existing Missile Assembly Buildings, Component Processing Area and Maintenance Support Shop. The modification will include adding new and modified equipment and deleting certain equipment (See C6.0, C8.0, and C9.0).

(It should be noted that individual equipment which has been installed and checked previously will not be rechecked).

The material in this section is organized as follows:

1. Tabulated list (C1) of Factory Support Equipment and Assembly and Checkout Equipment required to complete the basic facility.
2. Master Functional flow drawing.
3. Function Requirements Technical Analysis Sheets, in numerical order by function number.

SECTION C - SCOPE (CONTINUED)

4. Tabulated list (C2) of Factory Support Equipment and Assembly and Checkout Equipment used to install and checkout support equipment.
5. List of documents required to provide test procedures.

GROUND RULES

The General Ground Rules in Section A and the following specific ground rules apply to this section:

1. Factory Support Equipment and Assembly and Checkout Equipment items received will be thoroughly inspected for physical integrity and possible damage incurred in shipping and handling.
2. Some major items of permanently installed equipment will be installed first and calibrated and tested in position.
3. Maintenance Equipment will be covered in Section D.
4. The assembly and checkout operations at A/F Plant 77 and their acceptance by Quality Control will be accomplished by use of the integrated record system (M&IR). Accordingly, a specific function or reference will not be called out in describing the requirements for each functional test.
5. Common hand tools will be required to support the equipment installation and checkout functions. It is assumed that they will normally be provisioned to support the skill levels involved; and therefore, are not listed as a specific requirement in this document.
6. All test equipment used to assemble and checkout the Air Force Plant 77 Equipment requiring callout shall be certified by the Certification/Calibration Laboratory.

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CL-C/O EQUIPMENT FOR A/L. FORMENTS

PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION				
			CPA	MAB	Missile & MOTOR Storage	Maint. Support Area	Missile Transfer Area
789	Functional Test Console, Nozzle Control Unit	FSE	C8.1, C8.2				
7619 *	Fixture, Support-Umbilical Cabling, MAB	FSE		C9.1			
7628	Rails, Missile Joining	FSE		C9.1			
7630	Scaffolding - Missile Access	FSE		C9.1			
7679	Test Assembly, Ordnance Circuit	FSE		C9.1			
7698	Cable Assembly, Downstage Test, MAB	FSE		C9.1, C9.2			
7699	Adapter, Flight Control Test Set, MAB	FSE		C9.1, C9.2			
7717 *	Power Supply Group, MAB	FSE		C9.1, C9.2			
7718 *	Cable Assembly, Interconnecting, MAB	FSE		C9.1			
7719	Cable Assembly, MCU Test, MAB	FSE		C9.1			
7720 *	Cable Assembly, ~~Test~~ ^{Calibrated} , MAB	FSE		C9.1			
7721 *	Junction Box, Test, MAB	FSE		C9.1			
7724	Test Set, MCU Zero Alignment	FSE		C9.1			
7739	Junction Box, Auxiliary, MAB	FSE		C9.1			

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CL- CHECKOUT EQUIPMENT FOR B COMPONENTS

PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION				
			CPA	MAB	Missile & Motor Storage	Maint. Support Area	Missile Transfer Area
7740	Box, Test, Ordnance Cable	FSE		C9.1			
7782	Cable Assemblies, Flight Control Test Set Interconnect, MAB	FSE		C9.1, C9.2			
10651	Functional Test Console, AAU	FSE	C8.1, C8.2				
ACD-10709	Test Set, Flight Control, C153	AGE		C9.1		C7.1	
ACO 350	T. V. Monitor, Closed Circuit	SFC/OH		C9.1			
7749	Test Fixture, Drawer Tester, Flight Control Test Set Adapter	FSE		6.2			
* Equipment marked with an asterisk is to be modified.							

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CL#CHECKOUT EQUIPMENT FOR 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION				MISC
			CPA	MAB	Missile & Warhead Storage	Maint. Support Area	Missile Transfer Area
	The equipment listed below is not referenced in this section, but is required and has been previously installed and tested.						
13	Test Set - Ordnance, Electrical, 70143	FSE					X
614	NCU (H2) Trailer, Stage I	FSE	X				
615	NCU (H8) Trailer, Stage II	FSE	X				
620	NCU (H13) Trailer, Stage III	FSE	X				
7629	Rails-Storage, Missile and Engine	FSE			X		
7678	Fixture, Test-Ordnance Device	FSE					
7696	Test Set & Adapter Cable Raceway Cables FSE	FSE	X				X
7685	Rails - Storage, Missile - GTM 77	FSE			X		
7715	Adapter Cables, Test Set, Raceway Cables	FSE	X				
7724	Test Set, NCU Zero Alignment	FSE	X			X	
7743	Distribution Box, NCU Linkage Adjustment, CPA	FSE	X				
7744	Power Supply Group, NCU Linkage Adjustment, CPA	FSE	X				

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2-6240-2-4

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CL-CHECKOUT EQUIPMENT P. 1/B COMPONENTS

PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION					
			CPA	MAB	Missile & Rocket Storage	Maint. Support Area	Missile Transfer Area	MISC
7756	Rail Assembly, Bridge - Engine Transfer	FSE				X		
ACO 402	Cable Tester	SFC/OH	X					
ACO 4425	Lamp, Incandescent-Portable Flood	SFC/OH			X			
	Recorder, Temperature	Facility			X			
	Recorder, Humidity	Facility			X			
	Alarm System	Facility			X			
ACO 449	Cable Assembly, Power Electric Portable Flood Lamps	SFC/OH			X			
ACO 480	Decade Box	SFC/OH	X					

R R

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FUNCTION C1.0 ASSEMBLY AND CHECKOUT OF A/F PLANT 77 FOR OPERATION	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.0 <u>ASSEMBLY AND CHECKOUT OF A/F PLANT 77 FOR OPERATION</u> The Minuteman Base Installation Department will have received the facility at Hill Air Force Base designated as Air Force Plant 77 upon USAF approval of the grounds, buildings, and equipment to the design specifications which govern the A & E contractors.	
1.1 <u>Facilities Equipment Acceptance</u> Boeing Quality Control shall perform the receiving inspection of the Special Facilities Contract Equipment per Document D1979, Quality Control Operating Procedures, and appropriate Manufacturing Manuals.	
1.2 <u>Facilities Equipment Installation</u> The Special Facilities Contract Equipment and Facilities Support Equipment shall be installed in appropriate locations per appropriate Facilities Installation Drawings.	Installation Drawings 177-00-112 177-00-108
1.3 <u>Activation</u> The necessary equipment required to initiate the operation of the new MAB's, modify the existing MAB's and the CPA of A/F Plant 77 shall be moved into the receiving and inspection areas. See Function C2.0.	Truck, Lift-Fork (ACO 453) Truck, Motor-Misc. Delivery (ACO 452)
	FUNCTION C1.0

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FUNCTION C2.0 RECEIVING AND INSPECTION, FSE AND ACO EQUIPMENT

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.0 <u>RECEIVING AND INSPECTION, FSE, AND ACO EQUIPMENT</u> Receiving and inspection of support and checkout equipment is required to activate the new MAB's and modify existing MAB's, and the CPA of A/F Plant 77. See equipment list C1 and C2. Procedures are required to receive and inspect the Factory Support Equipment. ACO equipment is received and inspected per manufacturers manuals.	
2.1 <u>RECEIVE EQUIPMENT AND PROCESS SHIPPING PAPER</u> Equipment shall be received at the loading dock of Bldg. 1266. Delivery shall be made to this area by commercial rail or motor freight under government bill of lading. Photographs of damaged containers shall be taken as necessary to provide proof of damage.	Camera and Tripod Still Picture (ACO 448)
2.2 <u>MOVE TO INSPECTION AREA</u> Equipment shall be transported from the unloading dock to the R&I area in Bldg. 1266.	Truck, Lift-Fork (ACO 453) Truck, Lift-Jack (ACO 461)
2.3 <u>UNCRATE</u> Equipment shall be uncrated as required to provide accessibility for inspection.	
2.4 <u>PERFORM INSPECTION</u> All items shall be inspected for identification, overages, shortages and damage by use of appropriate inspection procedures.	D1979 Inspection Procedures
2.5 <u>RECRATE AS REQUIRED</u>	FUNCTION C2.0

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FUNCTION C3.0 TRANSPORT, HANDLE AND STORE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
3.0 <u>TRANSPORT, HANDLE AND STORE</u> The transporting, handling and storing of FSE and ACO equipment are required during the initial activation of Plant 77 and for spare equipment during operation of the plant. 3.1 <u>TRANSPORT TO CALIBRATION</u> Equipment requiring certification and calibration shall be routed direct from the R&I to the Certification/Calibration Laboratory, see C5.0. 3.2 <u>TRANSPORT TO AREA OF INSTALLATION</u> Equipment initially requiring functional test after installation shall be transported to the area of installation, installed, then tested. 3.3 <u>TRANSPORT TO STORES</u> That equipment not requiring installation or specifically provided as spares shall be transported to stores and retained until required.	Truck, Lift-Fork (ACO 453) Truck, Motor- Misc. Delivery (ACO 452)
	FUNCTION C3.0

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FUNCTION C4.0 ASSEMBLY & C/O OF CERTIFICATION/CALIBRATION LABORATORY	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.0 <u>ASSEMBLY AND C/O OF CERTIFICATION/CALIBRATION LABORATORY</u> The Certification/Calibration Laboratory has been checked out previously. (See Document D2-11162).	
	FUNCTION C4.0

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FUNCTION C5.0	EQUIPMENT CERTIFICATION	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
5.0 <u>EQUIPMENT CERTIFICATION</u> FSE and ACO equipment which requires certification shall be calibrated per applicable procedures. Portable equipment (electrical, electronic or mechanical) requiring certification and calibration shall be routed through Cert/Cal Laboratory. Subcomponents of installed equipment requiring calibration may be calibrated at its permanent location or in the Cert/Cal Laboratory. Periodic recertification will be required as specified in D2-12075.		1. Cert/Cal equipment as defined in D2-9918, Cal. Requirements Summary A/T Plant D2-12075 Cal/Cert and Test Equipment Index. FUNCTION C5.C

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
6.0 <u>ASSEMBLY AND CHECKOUT MAINTENANCE SUPPORT SHOP</u> The Maintenance Support Shop shall be capable of performing modification, maintenance and functional testing of mechanical and electronic FSE and ACO to a component or card level. The existing configuration shall be modified as follows. 6.1 <u>EQUIPMENT DELETIONS</u> A. Tape Perforator and Verifier (ACO 268) B. Test Set, Cooler, Liquid, Guidance Section (ACO 3035) C. Test Fixture, Missile Checkout Drawer Tester. (FSE 7781) 6.2 <u>EQUIPMENT INSTALLATION</u> A. Test Fixture, Drawer Tester, Flight Control Test Set Adapter (FSE 7749)	FUNCTION C6.0



FUNCTION C7.0	FUNCTIONALLY TEST EQUIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
7.0	<u>FUNCTIONALLY TEST EQUIPMENT</u>	
	The equipment - electrical, electronic or mechanical - requiring an operating test, shall be routed through the Maintenance Support Shop. Detailed test procedures are required.	
7.1	<u>CHECKOUT OF INDIVIDUAL UNITS</u>	
	The following FSE, which requires test, shall be tested in the support shop. Detailed test procedures are required.	
	A. <u>Test Set, Flight Control C153 (ACO 10709)</u>	D2-11326
	-----	Functional Test
	Multimeter (ACO 4001)	Procedures, Flight
	Voltmeter, Differential (ACO 422)	Control Test Set
	Oscilloscope (ACO 4004)	See equipment list
	Plug-in Unit, Oscilloscope (ACO 4172)	at left.

	B. <u>Test Set, Flight Control Test Set Adapter</u>	D2-11307 Vol V
	<u>And Missile Test Equipment, MAB (FSE7783)</u>	Functional Test
		Procedures, Test
		Set Adapter Test Set
		Same equipment as
		Function 7.1 A above
		Voltbox, AC Power
		Supply (ACO 391)
		Power Supply (ACO 35
		Power Supply, DC
		(ACO 463)
		Stop Watch
		(ACO 3059)
		FUNCTION C7.0

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FUNCTION C8.0	ASSEMBLY AND CHECKOUT OF CPA	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
8.0	<u>ASSEMBLY AND CHECKOUT OF CPA</u> The assembly and checkout of the Component Processing Area shall consist of installation and test of all FSE and ACO equipment required to test airborne components. There are five (5) test areas in Building 1265: 1. One (1) Nozzle Control Unit Linkage Adjustment Test Area. 2. One (1) Cable Test Area 3. One (1) Battery Test Area. 4. One (1) Nozzle Control Unit Test Area. 5. One (1) Angular Accelerometer Unit Test Area Areas 1, 2, and 3 above have been checked out in D2-11162. Areas 4 and 5 above will be checked out.	
8.1	<u>EQUIPMENT INSTALLATION AND REMOVAL</u> The existing Component Processing Area Building shall be modified as follows to conform to Wing II requirements:	Installation Drawings 177-00-10 (Facilities Dwgs) Megger, Ground (ACO 365) Ohmmeter (ACO 4381)
8.1.1	<u>EQUIPMENT DELETIONS</u> A. Test Fixture, Facilities (ACO 0565) B. Kit, Purging and Drying (ACO 466) C. Junction Box, G&C Test (Part of C89)	
		FUNCTION C8.0

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
Sub 1.1 <u>EQUIPMENT DELETIONS (CONT)</u> D. Junction Box, NCU Test (Part of C89) E. Sling and Cover, Hoisting (ACO 0608) F. Test Group C89 (ACO 0622) G. Test Group Ground Electronic System, C90 (ACO 0623) H. Test Set, Programming (ACO 0624) I. Power Supply, Portable, C95 (ACO 0667) J. Simulator, Load (ACO 0599) K. Assembly, Dust Cover (ACO 687) L. Cooling Equipment, G&C Ground Liquid (ACO 9278) M. Cable Assembly, G&C Test Position Interconnecting (FSE 7726) N. Cable Assembly, NCU Test Position Interconnecting- (FSE 7727) O. Power Supply Group, G&C Test, CPA (FSE 7728) P. Power Supply Group, NCU Test, CPA (FSE 7729) Q. Cable Assemblies, C90-C91 Test Position (FSE 7736) R. Hose Assemblies, G&C Section Cooling (FSE 7741) S. Distribution Box, NCU Test (FSE 7683) T. Adapter, Spanner Wrench (ACO 3119) U. Manometer, Inclined (ACO 308) V. Meter, Flow Rate Indicating (ACO 4190)	
	FUNCTION C8.1.1

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
8.1.2 <u>EQUIPMENT ADDITIONS</u> A. <u>Nozzle Control Unit Test Area, CPA</u> Functional Test Console, Nozzle Control Unit (FSE 789) B. <u>Angular Accelerometer Unit Test Area, CPA</u> Functional Test Console, Angular Accelerometer Unit (FSE 10651) 8.2 <u>CHECKOUT OF INDIVIDUAL UNITS</u> The requirement exists to functional test each individual unit installed. Individual units that can be operated alone shall be checked out as units. Those that must be operated with other equipment shall be checked out as a part of a sub-system. When all units and subsystems are checked out they shall be interconnected and checked out as a system. A. <u>Functional Test Console, NCU, CPA (FSE 789)</u> B. <u>Functional Test Console, Angular Accelerometer Unit, CPA (FSE 10651)</u>	D2-11329 Functional Test Procedures Function Test Console, NCU, CI Multimeter (ACO 40X Voltmeter, Differ- ential (ACO 422) Oscilloscope (ACO 404) Plug-in Unit, Oscilloscope (ACO 4172) D2-11331 Functional Test Procedures AAU Test Console FUNCTION C8.2

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
8.2 <u>CHECKOUT OF INDIVIDUAL UNITS (CONT)</u> 8.3 <u>SYSTEM CHECKOUT</u> The requirements exists to checkout and verify the compatibility of the test position with the airborne equipment. 8.3.1 <u>ANGULAR ACCELEROMETER TEST AREA</u> The Accelerometer Test Position shall be verified by the normal test program in E1.3 using an Airborne Angular Accelerometer Unit. 8.3.2 <u>NOZZLE CONTROL UNIT TEST AREA</u> The NCU Test Position shall be verified by the normal test program in E1.3 using a Stage I or Stage III NCU and a Stage II NCU.	Multimeter (AOO 4001) Voltmeter, Differential (AOO 422) Oscilloscope (AOO 4004) Plug-in Unit, Oscilloscope (AOO 4172) D2-13817, Functional Test Procedures, Angular Accelerometer, D2-13814, Functional Test Procedures-NCU, Stage I, D2-13815, Functional Test Procedures-NCU, Stage II, D2-13816, Functional Test Procedures-NCU, Stage III, FUNCTION C8.2

FUNCTION C8.0	ASSEMBLY AND CHECKOUT OF C8	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
8.4 <u>ELECTRO-INTERFERENCE TEST</u> The requirement exists to verify that the test positions will meet EI compatability requirements. This test shall be accomplished using the airborne components. Detailed test procedures are required. 8.4.1 <u>PERFORM EI COMPATIBILITY TEST</u>		D2-10025, Electro-Interference Test Plan for WS-133A System, A/T Plant 7 The equipment required to conduct the Electro-Interference Tests will be listed in the EI Test Procedure Document. FUNCTION C8.4

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FUNCTION	C9.0 ASSEMBLY AND CHECKOUT OF MAB	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
9.0 <u>ASSEMBLY AND CHECKOUT OF MAB</u> The assembly and checkout of the Missile Assembly Building shall consist of installation and testing of all FSE and ACO equipment required to assemble and test the missile. Certification of equipment can be done either in the cert/cal Laboratory or at equipment location. Detail test procedures and installation drawings are required. 9.1 Some of the missile assembly buildings will be activated to the configuration required for processing of Wing I missiles and will require modification for processing of Wing II on missiles. The remaining missile assembly buildings will be initially activated to support processing of Wing II and on missiles. 9.1.1 <u>NEW MISSILE ASSEMBLY BUILDINGS</u> The following equipment shall be required in the new MAB's to assemble and test the missile as defined in B5 through B11. Install the equipment by uncrating and positioning. A. <u>Scaffolding, Missile Access (FSE 7630):</u>		Meqger, Ground (ACO 365) Ohmmeter (ACO 4381) Truck, Lift Fork (ACO 453) Installation Drawings 177-00-109 (Facility Drawings) Hoist, Overhead, Rail Type (Facilities) Truck, Lift-Fork (ACO 453) Alignment Set-Missile Transfer (ACO 4535) Truck, Lift-Fork (ACO 461) FUNCTION C 9. 1

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
9.1.1 <u>NEW MISSILE ASSEMBLY BUILDINGS</u> (C NT) B. <u>Rails, Missile Joining (FSE 7628)</u> C. <u>Power Supply Group, MAB (FSE 7717)*</u> D. <u>Box Test, Ordnance Cable (FSE 7740)</u> E. <u>Junction Box, Test, MAB (FSE 7721)*</u> F. <u>Cable Assembly, ACU, Test, MAB (FSE 7719)</u> G. <u>Cable Assemblies, Flight Control Test Set Interconnect, MAB (FSE 7782)</u> H. <u>Cable Assembly, Umbilical, MAB (FSE 7720)*</u> I. <u>Cable Assembly, Interconnecting, MAB (FSE 7718)*</u> J. <u>Fixture, Support-Umbilical Cabling, MAB (FSE 7619)*</u> K. <u>T. V. Monitor, Closed Circuit (ACO 350)</u> The system consists of T. V. cameras located in MAB to view the assembly and checkout operation and consists of camera control unit and T. V. monitor. L. <u>Auxiliary Junction Box, MAB (FSE 7739)</u> M. <u>Test Set Assembly, Ordnance Circuit (FSE 7679)</u> N. <u>Cable Assembly, Downstage Test, MAB (FSE 7698)</u> O. <u>Test Set, Flight Control, C153 (ACO 10709)</u> *Equipment marked with an asterisk is to be modified.	
	FUNCTION C9.1.

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
9.1.1 <u>NEW MISSILE ASSEMBLY BUILDINGS (CONT)</u> P. <u>Adapter, Flight Control Test Set, MAB (FSE 7699)</u> Q. <u>Test Set, NGU Zero Alignment (FSE 7724)</u> R. <u>Simulators, Airborne Components (FSE 7695)</u> 9.1.2 <u>OLD MISSILE ASSEMBLY BUILDINGS</u> The following equipment shall be added, deleted or modified as listed, to conform to Wing II requirements. Any equipment contained in 9.1.1 and not listed below, will remain unchanged. 9.1.2.1 <u>EQUIPMENT DELETIONS</u> A. Console, Missile Checkout (FSE 7723) B. Cooling Equipment, Liquid, Ground G&C (ACO 9278) C. Dummy Load, R/V (FSE 7722) D. Test Set, Missile Checkout Console (FSE 7675) ~~_____~~ E. Cover, G&C Section End (FSE 7600) F. Power Supply, Portable C95 (ACO 0667) G. Kit, Purging and Drying (ACO 466) H. Sling and Harness, G&C Section (FSE 7634) I. Dolly, G&C Section Positioning (FSE 7707) J. Load Simulator (ACO 0599) K. Adapter, Spanner Wrench (ACO 3119)	FUNCTION C9.1.2.

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
9.1.2.2 <u>EQUIPMENT ADDITIONS</u> A. Cable Assembly, Downstage Test, MAB (FSE 7698) B. Test Set, Flight Control, C153 (ACO 10709) C. Adapter, Flight Control Test Set, MAB (FSE 7699) D. Cable Assemblies, Flight Control Test Set Interconnect, MAB (FSE 7782) 9.1.2.3 <u>EQUIPMENT MODIFICATIONS</u> A. Cable Assemblies, Umbilical MAB (FSE 7720) Remove the G&C Umbilical Cable. B. Cable Assemblies, Equipment Interconnecting, MAB (FSE 7718) Remove unused cables. C. Power Supply Group, MAB (FSE 7717) Eliminate unused functions. D. Junction Box, Test, MAB (FSE 7721) Include the additional wiring and connectors to connect the Flight Control Test Set, (C153), to the missiles. E. Umbilical Support, MAB (FSE 7619) Modify to properly support new cables. F. Auxilliary J-Box, MAB (FSE 7739) 9.2 <u>CHECKOUT OF INDIVIDUAL UNITS</u> The requirement exists to checkout each individual unit installed. Decoded Test Procedures are required.	
	FUNCTION C9.2

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FUNCTION C9.2 ASSEMBLY AND CHECKOUT OF MAB		RECOMMENDED EQUIPMENT OR DOCUMENT
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		
CHECKOUT OF INDIVIDUAL UNITS (CONT)		
A.	<u>Adapter, Flight Control Test Set, MAB (FSE 7699)</u> Tests will include: 1. Timer Operation 2. Interlock circuitry 3. Safe and arm circuitry 4. Squib Test 5. Voltage monitor circuitry.	D2-14313 Vol V Functional Test Procedures, Flight Control Test Set Adapter Flight Control Test Set Adapter Test 1 (FSE 7783) D2-14308 (O & M)
B.	<u>Cable Assembly, Downstage Test, MAB (FSE 7698)</u> No test required.	
C.	<u>Cable Assemblies, Flight Control Test Set Interconnect, MAB (FSE 7782)</u> No test required.	
D.	<u>Power Supply Group, MAB (FSE 7717)</u> Testing shall include: 1. No load voltage regulation; 2. Full load voltage regulation; 3. Relay operation; 4. Ripple checks.	D2-7828 Functional Test Procedures Power Supply Group Multimeter (ACO 4C Test Fixture, Power Supply, MAB CPA (FSE 7780) Voltmeter, Differ- ential (ACO 422) Oscilloscope (ACO 4004) Ammeter -0500 ampe (ACO 347) shun Load Banks 0-350 s (ACO 388) Power Supply (ACO 4127) Oscilloscope, Plug Unit (ACO 4172)
		FUNCTION C9.2

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
9.3 <u>SYSTEM CHECKOUT</u> The requirement exists to checkout the MAB Test Position. The system checkout shall be accomplished by connecting the test equipment and conducting a test program. 9.3.1 <u>NCU TEST POSITION</u> The NCU test position, consisting of a Stage I, Stage II and Stage III test station, shall be integrated by connecting the NCU test cables to laboratory test equipment. The tests at each test station shall include: 1. Timer operation. (The timer shall start running when the hydraulic power is turned on and shall terminate the power when the timer indicates 3 minutes have elapsed.) 2. Power application at the power plug terminals. (The electronic and hydraulic power shall be applied to the proper terminals when the appropriate switch is activated on the FSE 7724) NOTE: The procedures shall be similar to the operating test procedures.	MAB Equipment (See C9.1.1) Multimeter (ACO 4001) D2-9262, Vol. 9 Site Acceptance Test Procedures Plant 77 Test Set, Flight Control Test Set Adapter & Missile Test Equipment (FSE 7783) Set, Connector (ACO 267)
9.3.2 <u>MISSILE TEST POSITION</u> The missile test position shall be integrated by connecting the skirt umbilical and downstage test cables to the adapter test set and programming the normal and secondary test programs to insure proper operation of the ground equipment.	D2-9262, Vol. 9 Site Acceptance Test Procedures Plant 77 Test Set, Flight Control Test Set Adapter and Missile FUNCTION C9.3

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
9.3.2 <u>MISSILE TEST POSITION (CONT)</u> 1	Cont. Test Equipment, MAB (PSE 7783) MAB Equipment (See C9.1) Test Set Assembly, Ordinance Circuit (PSE 7679) For Gage Sets, Procedures, and Equipment see B6.0 Test Equipment List at left.
9.4 <u>MAB COMPATIBILITY AND ELECTRO INTERFERENCE TESTS</u> The requirement exists to establish that test equipment will perform the required tests on the airborne equipment, and verify that the E. I. Requirements are met. Detail test procedures are required. (See B5 through B9 for test requirements).	See Equipment List on Left.
<u>TEST POSITION</u> Angular Accelerometer Unit, P68B (MRCN 6202) Nozzle Control Unit, P70B Stage I (MRCN 6203) Nozzle Control Unit, P71B Stage II (MRCN 6204) Nozzle Control Unit, P72B Stage III (MRCN 6205) Separable Cable Assembly P81B Stage I (MRCN 6206) Separable Cable Assembly P82B Stage II (MRCN 6207) Separable Cable Assembly P83B Stage III (MRCN 6208) Battery Assembly SE 130 (MRCN 6210) Arm & Disarm Mechanism, Stage Separation and Skirt Removal (MRCN 6020) Igniter Safe & Arm Device (Part No. KR 81000-01) Third Stage Thrust Termination Arm & Disarm Mechanism (Part No. 7300-9)	
	FUNCTION C9.3.2

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
9.4.1 <u>PERFORM COMPATIBILITY TEST</u> The compatibility tests are accomplished by connecting the ground equipment to the airborne equipment and conducting the test as delineated in D2-14069. ----- Multimeter (ACO 4001) Oscilloscope (ACO 4004) Plug-in-unit, Oscilloscope (ACO 4172) Voltmeter, Differential, AC-DC (ACO 422) Recording Station (ACO 273) Camera (ACO 416) 9.4.2 <u>PERFORM ELECTRO-INTERFERENCE TEST</u> The Electro-Interference test shall be accomplished using the first Wing II configured missile.	D2-14069 Compatibility Test NSIQ System & Plant 77 Elec/Elect. e/e Equip. Equipment See 25 thru 29 D2-13449 Ordnance Comp. and Subsystem Test Procedures. D2-10025 EI Test Procedures The equipment required to conduct the Electro Interference tests will be listed in the EI Test Procedures Document.
	FUNCTION C9.4.1

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C2 - Support or Maintenance equipment for A/B Checkout Equipment

PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION				MISC
			CPA	MAB	Missile & Motor Storage	Missile Support Area	Missile Transfer Area
ACO 347	Ammeter, Model 901, Weston with 500 amp-ammeter Shunt	SFC/OH		C9.2			
ACO 365	Megger, Ground	SFC/OH	C8.1	C9.1			
ACO 388	Load Banks, 0-350 amps	SFC/OH		C9.2			
ACO 391	Voltbox, AC Power Supply	SFC/OH					
ACO 393	Power Supply, DC	SFC/OH					
ACO 422	Differential Voltmeter AC-DC	SFC/OH	C8.2	C9.4			
ACO 448	Camera and Tripod, Still Picture	SFC/OH					
ACO 452	Truck, Motor-Misc. Delivery	SFC/OH					
ACO 453	Truck, Lift-Fork	SFC/OH		C9.1			
ACO 461	Truck, Lift-Jack	SFC/OH		C9.1			
ACO 463	Power Supply DC	SFC/OH					
ACO 3059	Stopwatch	SFC/OH					
ACO 4001	Multimeter	SFC/OH	C8.2	C9.4			
ACO 416	Camera	SFC/OH		C9.2, C9.3			
ACO 4004	Oscilloscope	SFC/OH	C8.2	C9.4			
ACO 273	Recording Station	SFC/OH		C9.4			
ACO 4127	Power Supply	SFC/OH	C8.2	C9.2, C9.4			
ACO 4172	Plug-in Unit, Oscilloscope	SFC/OH	C8.2,	C9.2, C9.4			
ACO 4361	Ohmmeter	SFC/OH	C8.1	C9.1			
ACO 4535	Alignment Set	ACO		C9.1			
ACO 267	Hoist, Overhead, Rail Type Set, Connector	Facilities SFC/OH		C9.1			

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PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION					
			CPA	MAB	Missile & Motor Storage	Maint. Support Area	Missile Transfer Area	MISC
7780	Test Fixture, Power Supplies, MAB & CPA	FSE		C9.2				
7783	Test Set, Flight Control Test Set Adapter	FSE		C9.2		C7.1		
10153	Gage, Verification, MCU Stage I	FSE		C9.4				
10157	Gage, Verification, MCU, Stage II	FSE		C9.4				
10161	Gage, Verification, MCU Stage III	FSE		C9.4				

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PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION					
			CPA	MAB	Missile & Motor Storage	Maint. Support Area	Missile Transfer Area	MISC
	The following equipment is not referenced in this section, but it is required for the operation of Plant 77.							
10151	Gage, NCU Alignment, Stage I	FSE	X					
10155	Gage, NCU Alignment, Stage II	FSE	X					
10159	Gage, NCU Alignment Stage III	FSE	X					
10163	Gage, Nozzle Alignment, Stage I	FSE	X	X				
10165	Gage Nozzle Alignment, Stage II	FSE	X	X				
10167	Gage, Nozzle Alignment, Stage III	FSE	X	X				
7	Tester, Leakage	FSE	X	X				
11452	Spreader Assy, Nozzle	FSE		X				
P/N T 16090	Turnbuckle, YZ Cable	FSE		X				

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C2 - Support or Maintenance Equipment for A/B Checkout Equipment
PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION				
			CPA	MAB	Missile & Motor Storage	Maint. Support Area	Missile Transfer Area
ACO 323	Tester, Transistor	SFC/OH				X	
ACO 324	Test Set, Multipurpose Portable Radio	SFC/OH				X	
ACO 325	Generator, Signal, F-M	SFC/OH				X	
ACO 326	Generator, Video Sweep to 20 Megacycles	SFC/OH				X	
ACO 327	Tester, Vacuum Tube, Mutual Conductance Type	SFC/OH				X	
ACO 328	Microphone	SFC/OH				X	
ACO 330	EIA Resolution Chart	SFC/OH				X	
ACO 331	Wattmeter, Radio Frequency	SFC/OH				X	
ACO 332	Monitor, Radio Station (M)	SFC/OH				X	
ACO 334	Load, Dummy	SFC/OH				X	
ACO 335	Probe, Detector Attenuator	SFC/OH				X	
ACO 336	High Voltage DC Probe	SFC/OH				X	
ACO 337	Voltmeter, Vacuum Tube	SFC/OH				X	
ACO 345	Power Supply, Type 128, Tektronix	SFC/OH				X	

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**C2-Support or Maintenance Equipment for A/B Checkout Equipment
PLANT 77 ASSEMBLY & CHECKOUT EQUIPMENT LIST**

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION					
			CPA	MAB	Missile & Motor Storage	Missile Support Area	Missile Transfer Area	AMSC
ACO 362	Megohmmeter	SFC/OH				X		
ACO 376	Power Supply	SFC/OH				X		
ACO 987 ACO 4581	Decade Register Diameter	SFC/OH SFC/OH			X	X		X X
ACO 4535	Alignment Set	ACO			X			
ACO 929	Test Set Power Supply	ACO				X		
ACO 975	Test Tool - Test Set, Explosive Set Circuitry	SFC/OH				X		
ACO 4568	Decade Box	SFC/OH				X		X

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SECTION C - REQUIRED DOCUMENTS

<u>DOC. NO.</u>	<u>TITLE</u>	<u>SECTION</u>
D2-7828	Assembly Functional Test Procedures-Power Supply Group, Plant 77, MAB and CPA	C9.2
D2-9262 Vol. 9	Site Acceptance Test Procedures, Plant 77	C9.3
D2-9520	Acceptance Functional Test Procedures SM-80 Missile, MAB-Plant 77	C9.4
D2-9918	Calibration Equipments Summary, A/F Plant 77	C5.0
D2-10025	Electro-Interference Test Plan for W-133A System for Plant 77	C8.4, C9.4
D2-11162	Missile Assembly and Checkout System Requirements A/F Plant 77	C4.0
D2-12075	Calibration/Certification and Test Equipment Index	C5.0
D2-13445	Ordnance Component and Subsystem Functional Testing of Operational Missiles - Plant 77	C9.4
D2-11326	Functional Test Procedures, Flight Control Test Set	C7.1
D2-11329	Functional Test Procedures, Flight Control Test Set Adapter Test Set	C7.1
D2-11331	Functional Test Procedures, Functional Test Console NGU, CPA	C8.2
D2-11331	Functional Test Procedures, AAU Test Console	C8.2
D2-13817	Functional Test Procedures, Angular Accelerometer, M-600	C8.3
D2-14069	Compatibility Test NS10Q System & Plant 77 Electrical/Electronic Checkout Equipment.	C9.4.1

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SECTION C - REQUIRED DOCUMENTS (CONT)

DOC. NO.	TITLE	SECTION
D1979	Inspection Procedures	C1.1, C2.4
D2-13814	Functional Test Procedures - NCU Stage I,	C8.3
D2-13815	Functional Test Procedures - NCU Stage II,	C8.3
D2-13815	Functional Test Procedures - NCU Stage III,	C8.3
D2-14313 Vol. V	Functional Test Procedures, Flight Control Test Set Adapter	C9.2

The documents listed below are not referenced in Section C, but are required for the operation of Plant 77.

D2-10096	Functional Acceptance Test Set, NCU Zero Alignment	
D2-10977	Preinstallation Functional Test Procedure- Adapter Cables, Test Set - Raceway Cables	C8.2
D2-12054	Functional Test Procedure - Ordnance Circuit Test Set	C7.1
D2-12196	Pre-Assembly Test - Leakage Tester	C7.1
D2-12206	Safety and Arming Device Test Set, A/E-24E-10 ~~Preassembly~~ Test Document	
D2-13732	NCU Linkage Adjustment Procedures	

SECTION C - REQUIRED DRAWINGS

177-90-109	FSE/MGE Equipment Installation, Air Force Plant 77	C8.1, C9.1
177-00-108	FSE/MGE Support Equipment Installation- Air Force Plant 77	C1.2
177-00-112	Facilities Installation Drawing, Air Force Plant 77	C1.2
29-21442	Functional Test Procedures - Test Box, Ordnance	(Req'd but not referenced in text)

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THE BOEING COMPANY

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TITLE SECTION "D" - Assembly and Checkout Equipment
Maintenance - Wing II, A/T Plant 77

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SECTION TITLE PAGE 123 4280 0000 REV. V/61

PREPARED BY Plant 77
Requirements Group
SUPERVISED BY C. A. Linnick
BI-MM
APPROVED BY W. K. Eckert
RELIABILITY
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ASSEMBLY AND CHECKOUT EQUIPMENT MAINTENANCE
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SECTION "D"

ASSEMBLY AND CHECKOUT EQUIPMENT MAINTENANCE

A/F PLANT 77

SCOPE

This section presents the technical requirements to maintain the Factory Support Equipment (FSE), and Assembly and Checkout Equipment (ACO) in an operational status. The functions of this section will be effective and accomplished after initial installation and checkout of the above support equipment. Maintenance functions on Special Facility equipment (SFC/OH) are not depicted or described in the functional block diagrams or technical functional analysis of their section. This category of equipment will be maintained in an operational status per established Boeing and Air Force operating procedures.

GROUND RULES

In addition to the General Ground Rules in Section "A", the following will apply specifically to this section:

1. All FSE and ACO which requires certification/calibration and/or function testing during its initial installation in Section "C", will be revalidated and/or functionally tested at periodic intervals as called for in D2-12075 and D2-9918. This testing will be performed per appropriate test procedures.
2. Mechanical FSE and ACO requiring repair (which does not effect its configuration or function) will be repaired with existing SFC/OH equipment per D2-10885-3, Tool Repair and Maintenance Plan.

SECTION D (CONT)

3. Routine preventative maintenance functions will be accomplished per appropriate operating and maintenance procedures.
4. FSE and AGO modification work will be accomplished per engineering drawings. Facilities and support equipment established in Sections "B" and "C" will be used to support this function.

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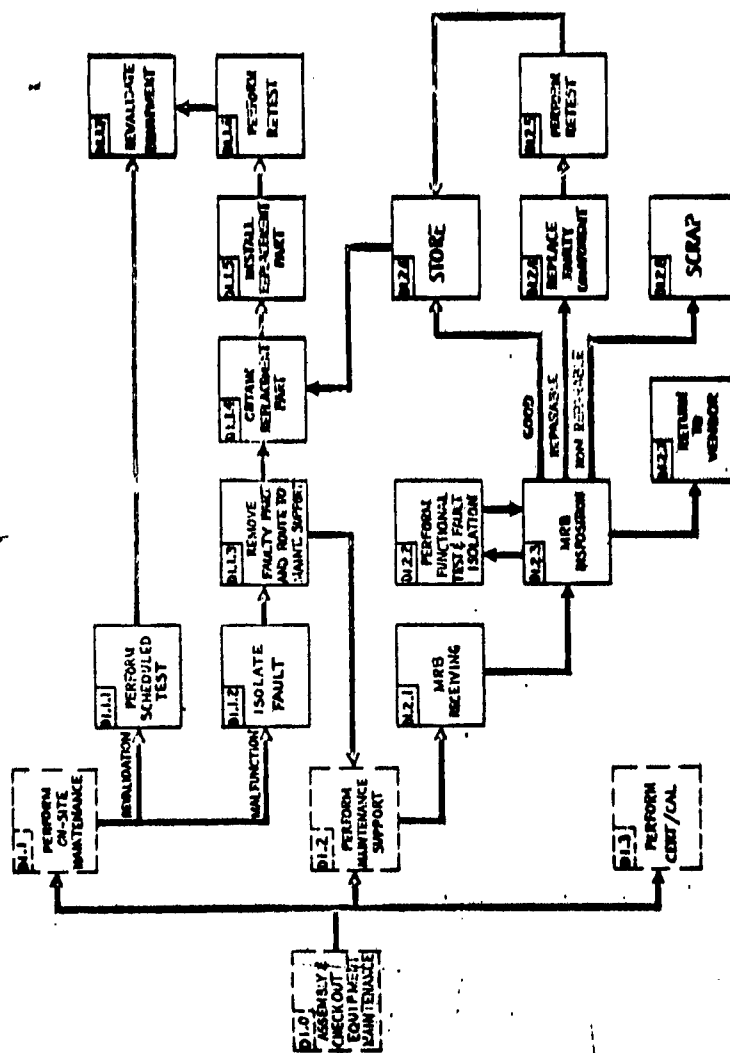
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FUNCTION D1.0		ASSEMBLY AND C/O EQUIPMENT MAINTENANCE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT	
1.0	<u>ASSEMBLY AND C/O EQUIPMENT MAINTENANCE</u> This operation will consist of all functions necessary to maintain the missile A & C/O equipment in an operational status. It is broken down into three major sub-functions: (a) Perform on-site maintenance (consists of functions necessary to perform scheduled and unscheduled tests and/or repair on A & C/O equipment). (b) Perform Maintenance Support (consists of functions required to support (a) above in repair of malfunctioned equipment). (c) Perform Cert/Cal. (Consists of functions required to certify and revalidate A & C/O equipment to support (a) and (b) above).		
1.1	<u>PERFORM ON-SITE MAINTENANCE</u> This function consists of performing the operations required to functionally test and maintain the missile assembly and check-out equipment along with its support equipment. The missile assembly and checkout equipment required to support the missile assembly and checkout equipment is divided into the following three categories: (a) The electronic equipment used to test the missile and the support electronic test equipment which requires both maintenance and periodic revalidation. (b) The mechanical equipment used to assemble and checkout the missile which requires maintenance and periodic revalidation. (c) The mechanical and electronic equipment which requires maintenance but does not require periodic revalidation.		
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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.1	(Continued)	
	8. Power Supply (ACO 376)	Mfr's Manual
	9. Generator, Signal, Frequency Modulation (ACO 325)	Mfr's Manual
	10. Power Supply, (ACO 345)	Mfr's Manual
	11. Voltmeter, Differential AC-DC (ACO 422)	Mfr's Manual
	12. Load, Dummy (ACO 334)	Mfr's Manual
	13. Generator, Video Sweep to 20 Megacycles (ACO 326)	Mfr's Manual
	14. Monitor, Radio Station, Frequency Modulation (ACO 332)	Mfr's Manual
	15. Megger, Ground (ACO 365)	Mfr's Manual
	16. Wattmeter, Radio Frequency (ACO 331)	Mfr's Manual
	17. DC Power Supply (ACO 463)	Mfr's Manual
	18. Vacuum Tube Tester, Mutual Conductance Type (ACO 327)	Mfr's Manual
	19. Voltmeter Vacuum Tube (ACO 337)	Mfr's Manual
	20. Megohmmeter, (ACO 362)	Mfr's Manual
	21. Oscilloscope, Plug-In-Unit (ACO 4172)	Mfr's Manual
	22. Volt Box, AC Power Supply (ACO 391)	Mfr's Manual
		FUNCTION D1.1

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ASSEMBLY AND Q/O EQUIPMENT MAINTENANCE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT	
1.1	A. (CONT)		
	23. Junction Box, Test MAB (FSE 7721)	D2-10125 25-29338	FTP
	24. Power Supply (ACO 393)	Mfr's Manual	
	25. Ohmmeter (ACO 4381)	Mfr's Manual	
	26. Adapter Cables, Test Set - Raceway Cables (FSE 7715)	D2-10976 D2-10977	
	27. Power Supply Group MAB (FSE 7717)	D2-7828 Mfr's. Manual	FTP
	28. Test Set, NCU Zero Alignment, MAB (FSE 7724)	D2-10096, Vol. IV D2-12977	FTP O&M
	29. Box, Test, Ordnance Cable (FSE 7740)	29-21442	FTP
	30. Installation Kit, Linear Explosive (FSE 7648)	D2-11004	O&M
	31. Tester, Leakage (FSE 7) (Aerojet)	D2-12196 D2-12195	FTP O&M
	32. Functional Test Console, NCU (FSE 789) (A/N)	D2-11329 D2-14277	FTP O&M
	33. Functional Test Console, AAU (FSE 10651) (A/N)	D2-11331 D2-14278 Card Extender (ACO	FTP O&M
	34. Test Set, Flight Control (C153) (ACO 10709) (A/N)	D2-11326 D2-14279	FTP O&M
	35. Adapter, Flight Control Test Set (FSE 7699)	D2-14313 Vol I D2-14314 D2-14313 Vol I Cards D2-14313 Vol II Drawer	FTP O&M
	36. Test Set, Flight Control Test Set Adapter (FSE 7783)	D2-14307 Vol V D2-14308 D2-14307 Vol I Cards D2-14307 Vol II Drawer	FTP O&M
	37. Test Set, Raceway Cable (ACO 402)	Mfr's Manual	
	38. Test Set and Adapter Cables - Raceway Cables, MAB (FSE 7696)	D2-14116	O&M
	39. Test Fixture, Drawer Tester, Flight Control Test Set Adapter (FSE 7749)	25-35755	
		FUNCTION DL.1	

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.1 A. (CONT) 40. Tester Transistor (ACO 323) 41. Test Set Power Supply (ACO 929) 42. Decade Box (ACO 4623) 43. Power Supply Group NGU Linkage and Adjustment, CPA (PSE 7744) 44. Recording Station (ACO 273) 45. Decade Resistor (ACO 907)	Mfr's Manual
	FUNCTION D1.1

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FUNCTION D1.0 ASSEMBLY AND C/O EQUIPMENT MAINTENANCE													
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT												
1.1 <u>PERFORM ON-SITE MAINTENANCE</u> (CONT) B. The following mechanical equipment is used to assemble and checkout the missile and will require periodic revalidation or functional checkout as called for in documents D2-9918 and D2-12075 Calibration/certification, functional test, and operation and maintenance procedures used for activation of Plant 77 C. are required for equipment revalidation and maintenance. For standard off-the-shelf test equipment, functional test will be in accordance with applicable certification procedures. Maintenance will be in accordance with the applicable manufacturer's manuals. 1. Indicator Nozzle Deflection and Torque Stage II (FSE 15) Aerojet 2. Tester, Nozzle Deflection and Torque Stage III (FSE 202) (Hercules) 3. Gage, NCU Alignment, Stage I (FSE 10151) 4. Gage, Verification, NCU Stage I (FSE 10153) 5. Gage, NCU Alignment, Stage II (FSE 10155)	<table> <tr> <td>D2-12209</td><td>FTP</td></tr> <tr> <td>D2-12208</td><td>O&M</td></tr> <tr> <td>D2-11772</td><td>O&M</td></tr> <tr> <td>D2-11316</td><td>FTP</td></tr> <tr> <td>D2-11316</td><td>FTP</td></tr> <tr> <td>D2-11317</td><td>FTP</td></tr> </table>	D2-12209	FTP	D2-12208	O&M	D2-11772	O&M	D2-11316	FTP	D2-11316	FTP	D2-11317	FTP
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D2-12208	O&M												
D2-11772	O&M												
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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.1 <u>PERFORM ON-SITE MAINTENANCE</u> (CONT)	
B. 6. Gage Verification, NGU Stage II (FSE 10157)	D2-11317 FTP
7. Gage, NGU Alignment, Stage III (FSE 10159)	D2-11318 FTP
8. Gage, Verification, NGU Alignment, Stage III (FSE 10161)	D2-11315 FTP
9. Tester, Nozzle Deflection and Torque, Stage I (FSE 123) (Thickol)	D2-12365 FTP & O&M
10. Air Conditioner (MGE 4115)	Mfr's Manual
11. Hoist, Lifting - Hydraulic Portable (ACO 405)	Mfr's Manual
12. Sling-Standard Factory, Four Drop (ACO 454)	:
13. NGU (H9) Sling (FSE 610)	EM 2084 O&M
14. Sling-Adapter Ring, Missile Base (FSE 7631)	D2-11014 O&M D2-11015 FTP
15. Sling-Horizontal Restraint Ring, Engine Stage I, II, & III (FSE 7632)	D2-11012 O&M D2-11013 FT
16. Harness - Missile Skirt, Cylindrical (FSE 7785)	D2-10969 O&M D2-10970 FTP
	FUNCTION D1.1

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FUNCTION D1.0 ASSEMBLY AND C/O EQUIPMENT MAINTENANCE

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1.1	<u>PERFORM ON-SITE MAINTENANCE</u> (CONT)		
B.	17. Harness - R. H. Panel, Missile Interstage I-II (FSE 7641)	D2-10949 D2-10950	O&M FTP
	18. Harness - L. H. Panel, Missile Interstage I-II (FSE 7642)	D2-10994 D2-10995	O&M FTP
	19. Harness - R. H. Panel, Missile Interstage II-III (FSE 7730)	D2-11073 D2-11074	FTP O&M
	20. Harness - L. H. Panel, Missile Interstage II-III (FSE 7731)	D2-11071 D2-11072	FTP
	21. Jack Set, Translating (ACO 4175)	25-23581	
	~~22. Pinture, Pressure Missile Assembly (FSE 7622)~~	~~D2-10979~~ ~~D2-10978~~	~~O&M~~ ~~FTP~~
	23. Rails - Missile Joining (FSE 7628)	D2-10987 D2-10986	O&M FTP
	24. Clamp Assy - Missile Transfer (FSE 7686)	25-27632	
	25. Rails, Storage - Engine and Missile (FSE 7629)	D2-10907 D2-10908	O&M FTP
	26. Winch, Portable - Rocket Motor Transfer (FSE 7653)	D2-11027 D2-11028	O&M FTP
	27. Rail Assembly-Bridge-Engine Transfer (FSE 7756)	25-17299	
	28. Recorder, Temperature (Facility)	Mfr's Manual	
	29. Recorder, Humidity (Facility)	Mfr's Manual	
	30. Platform, Portable-Highway Transporter (FSE 7666)	D2-11050 D2-11051	FTP O&M
	31. Rails-Storage, Missile GTM 77 (FSE 7685)	D2-11100 D2-10909	FTP O&M
	32. Bridle, Rocket Motor, Stage III (FSE 7690)	D2-10934 D2-10939	FTP O&M
		FUNCTION D1.1	

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1.1	<u>PERFORM ON-SITE MAINTENANCE (CONT)</u>		
B.	33. Pulley Bracket Assembly, Transporter, Stage II and III (FSE 7760)	25-20209 D2-7429-1	M
	34. Bridle, Rocket Motor, Stage I (FSE 7689)	D2-10926 D2-10933	FTP OAM
	35. Alignment Set, Missile Transfer (ACO 4535)	25-27486	
	36. Gage, Nozzle Alignment, Stage I (FSE 10163)	D2-11316	
	37. Gage, Nozzle Alignment, Stage II (FSE 10165)	D2-11317	
	38. Gage, Nozzle Alignment, Stage III (FSE 10167)	D2-11318	
	39. Bridle, Carriage, 1st Stage (Rocket Motor truck, FSE 7745)	D2-10940 D2-10941	FTP OAM
	40. Recorder, Temperature - Portable (ACO532)		
C.	The following mechanical and electric equipment does not require periodic revalidation or function- al tests. The following items of equipment will receive maintenance as required.		
	1. Spreader Kit, Nozzle, Stage II (FSE 17)		
	2. Spreader Assy, Stage I Nozzles (FSE 114)	D2-12364	
	3. NGU (H2) Trailer, Stage I (FSE 614)	EM-2084	
	4. NGU (H8) Trailer, Stage II (FSE 615)	EM-2084	
	5. NGU (H13) Trailer, Stage III (FSE 620)	EM-2085	
	6. Hoist, Lever, (Come-Along) (ACO450)	Mfr's Manual	
	7. Pulley, Printed Circuit Remover (ACO 3009)		
	8. Lead, Electrical Ground (ACO 352)		
	9. Jack, Leveling Support (ACO 415)	Mfr's Manual	
	10. Positioning Set, Carriage, Rocket Motor (FSE 7691)	25-32273	
	11. Adapter, Joining-Missile Interstage I-II (FSE 7613)	D2-10929	
		FUNCTION D1.1	

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1.1 <u>PERFORM ON-SITE MAINTENANCE (CONT)</u> C. 12. Distribution Box NCU Linkage Adjustment CPA (FSE 7745) 13. Fixture, Support Umbilical Cabling, MAB (FSE 7619) 14. Scaffolding-Missile Access (FSE 7630) 15. Adapter, Joining NCU Stage I (FSE 7701) 16. Adapter, Joining NCU Stage II (FSE 7702) 17. Alarm Set Charging Cable (FSE 7750) 18. Cable Assembly, Downstage Test (FSE 7698) 19. Dolly, Positioning-Final Assembly (FSE 7708) 20. Joining Dolly - Skirt to Engine (FSE 7722) 21. Cable Assembly NCU Test (FSE 7719) 22. Cable Assembly Equip. Interconnecting MAB (FSE 7718) 23. Cable Assembly Umbilical MAB (FSE 7720) 24. Probe, Detector Attenuator (ACO 335) 25. Camera and Tri-pod, Still Picture (ACO 448) 26. Table Work - Electronic Test (ACO 456) 27. Microphone (ACO 328) 28. Probe-High Voltage DC (ACO 336) 29. T. V. Monitor, Closed Circuit (ACO 350) 30. Kit, Installation and Removal, Ordnance Devices, Stage II (FSE 31) 31. Plug Kit, Nozzle, Stage II (FSE 35)	D2-10945 D2-10945 D2-10960 D2-10964 D2-10927 D2-10980 FTP D2-10981 O & M Mfr's Manual Mfr's Manual Mfr's Manual Mfr's Manual Mfr's Manual 366892-9
	FUNCTION D1.1



ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.1	<u>PERFORM ON-SITE MAINTENANCE</u> (CONT)	
	C. 32. Kit, Hydrogen Installation & Removal Stage I (FSE 119)	D2-12363
	33. Device Restraint, 1st Stage (FSE 7789)	
	34. Kit, Ablative Material Repair (FSE 7665)	D2-11087
	35. Control, Winch, MAB & Storage Bunker (FSE 7688)	D2-10925
	36. Shelter Missile and Motor Transfer - Environmental - MAB (FSE 7682)	D2-11093
	37. Test Fixture, Power Supply, MAB & CPA (FSE 7780)	MTR's Manual
	38. Portable Flood Lamp (ACO 4425)	
	39. Shelter Missile and Motor Transfer - Environmental - Missile/Motor Storage Bldg. (FSE 7687)	D2-11097
	40. Fixture, Test - Ordnance Device (FSE 7678)	
	41. Cable Assemblies, Flight Control Test Set Interconnect (FSE 7782)	
	42. ~~Nozzle Positioning Tool Assy. (FSE 7687)~~	
	43. Turnbuckle, YZ Cable (FSE)	
	44. Simulators, Airborne Components, Missile Test (FSE 7695)	D2-13848
	45. Plug Kit, Engine, Stage I (FSE 126)	D2-13510
	46. Kit, Installation and Removal, Ordnance Device (Stage III) (FSE 201)	D2-11762
	47. Junction Box, Auxiliary, MAB (FSE 7739)	
	48. Cable Assemblies, Interconnecting NCU Linkage Adjustment, CPA (FSE 7742)	
	49. Set, Fault Isolation Tooling (FSE 7746)	D2-10944
		FUNCTION D1.1

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.1 <u>PERFORM ON-SITE MAINTENANCE</u> (CONT) C. 50. Test Adapter Cable, Stage I, NCU, Model 70B (FSE 7748) 51. Cable, Rocket Motor Bonding (ACO 253) 52. Set Connector (ACO 267) 53. Cable Assembly, Power Electrical, Portable Flood Lamps (ACO 449) 54. Container, Raceway Cables, Stage III (ACO 457) 55. Container, Raceway Cables, Stage II (ACO 458) 56. Container, Raceway Cables, Stage I (ACO 459) 57. Wrench Portable, Electric (ACO 4524) 58. Device, Restraint, 2nd Stage (FSE 7790) 59. Stop, Railcar Wheel (ACO 4525) 60. Stop Watch (ACO 3059) 61. Extender Circuit Card Universal (ACO 285) 62. Chart EIA Resolution (Initial Retma Linearly Chart) (ACO 330) 63. Shelving Storage (ACO 462) 64. Wrench Safing Pin Installation & Removal (ACO 4047) 65. Device, Restraint Third Stage (FSE 7791) 66. Kit Cork Insulation Repair (FSE 7786) 67. Adapter, Joining - NCU Stage III (FSE 7703) 68. Spacer Bracket, Stage II NCU (FSE 7793) 69. Camera (ACO 416) 70. Nozzle Insulation Repair Kit (FSE 36) 71. Test Tool - Test Set, Explosive Set Circuitry (ACO 935)	D2-10972 D2-10947 Mfr's Manual
	FUNCTION D1.0



FUNCTION		D1.0	ASSEMBLY AND C/O EQUIPMENT MAINTENANCE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS			RECOMMENDED EQUIPMENT OR DOCUMENT	
1.1	<u>PERFORM ON-SITE MAINTENANCE</u> (CONT)			
	The following mechanical equipment requires scheduled maintenance.			
B.	D.	SSCBM (MGE 4095)	Drawing 25-29553 Mfr's Manual	
	2.	Trailer, Ballistic Missile (MGE 4129)	Mfr's Manual	
	3.	Tractor (MGE 4130)	Mfr's Manual	
	4.	Truck, Motor Miscellaneous Delivery (ACO 452)	Mfr's Manual	
	5.	Truck Lift-Jack (ACO 461)	Mfr's Manual	
	6.	Truck Lift - Fork (ACO 453)	Mfr's Manual	
	7.	Semitrailer, Rocket Motor (FSE 101)	D2-12976	
			FUNCTION	

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FUNCTION D1.1	PERFORM ON-SITE MAINTENANCE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.1.1	<u>PERFORM SCHEDULED TEST</u> Perform the operations necessary to revalidate the missile C/O equipment. Appropriate functional test procedures and test equipment will be required. These are listed and described in section C of this document. The frequency of revalidation will be per Boeing documents D2-9913 or D2-12075. The commercial standards will be certified by the Cert/Cal. Lab., and the functional equipment that does not contain commercial standards will be revalidated by Manufacturing and Quality Control personnel.	
1.1.2	<u>ISOLATE FAULT</u> Perform the initial operations required to isolate a fault in the missile assembly and C/O test equipment. Authorized personnel will initiate the appropriate forms required for MRB action.	
1.1.3	<u>REMOVE FAULTY PART AND ROUTE TO MAINTENANCE SUPPORT</u> This function consists of the removal and routing of missile C/O components requiring scheduled recertification and calibration or repair as authorized. Manufacturing personnel will initiate a removal order and obtain Quality Control approval. Protective covers or containers, as required, will be provided during transfer.	
		FUNCTION D.1.1.

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FUNCTION D1.1	PERFORM ON-SITE MAINTENANCE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.1.4 <u>OBTAIN REPLACEMENT PART</u> This function consists of obtaining replacement part or assembly required to correct a malfunction or to revalidate equipment. The procurement of the part or assembly will be accomplished by established Boeing procedures.		
1.1.5 <u>INSTALL REPLACEMENT PART</u> This function consists of the necessary procedures and operations required to replace a part or assembly which replaces one that has been removed due to a malfunction or revalidation requirement. Component or assembly installations will be in accordance with the appropriate detail or assembly drawings.	Appropriate Equipment Detail or Assembly Drawings	
1.1.6 <u>PERFORM RE-TEST</u> This function consists of the operations required to perform a retest of the missile checkout equipment after installation of a component. Appropriate functional test documentation and test equipment required are defined in function C6 of this document.	Equipment and Procedures (See Function C6.0)	
		FUNCTION D1.1.4

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ASSEMBLY OR CHECKOUT FUNCTION
AND TECHNICAL REQUIREMENTSRECOMMENDED
EQUIPMENT
OR DOCUMENT1.1.7 RE-VALIDATE EQUIPMENT

Operations are required to revalidate the missile checkout equipment periodically or after malfunction has been repaired. This function follows sub functions 1.1.1 and 1.1.4.

Revalidations procedures are contained in D2-9918, Calibration Requirements Summary, AF Plant 77, and D2-12075.

D2-9918

FUNCTION D1.0

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FUNCTION	D1.2	PERFORM MAINTENANCE SUPPORT	RECOMMENDED EQUIPMENT OR DOCUMENT
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS			
1.2	<u>PERFORM MAINTENANCE SUPPORT</u>	This function covers the disposition of all items of test equipment which have been rejected because of damage or have malfunctioned during their operational function. Detailed support procedures for disposition of equipment is included in the appropriate sub-functions. Equipment required to support this function is listed and described in the appropriate function of Section C, which initially installs and qualifies the equipment in question. Maintenance of equipment being repaired or used to test equipment being repaired, will be according to instructions noted in function 1.1.	
1.2.1	<u>MRS RECEIVING</u>	This function will consist of all operations necessary to receive and process rejected missile A & C/O and support equipment.	
1.2.2	<u>PERFORM FUNCTIONAL TEST (AND FAULT ISOLATION)</u>	Perform all operations necessary to isolate the malfunction to a faulty card or component. Detail functional test documents are required.	
FUNCTION			D1.

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FUNCTION	D1.2	PERFORM MAINTENANCE SUPPORT	RECOMMENDED EQUIPMENT OR DOCUMENT
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS			
1.2.3	<u>MRB DISPOSITION</u> This function will consist of all operations required to determine disposition necessary for rejected equipment. This function will be per established Air Force and Boeing Quality Control procedures. Function D1.2.2 will support this function by performing tests and fault isolation as directed by the MRB. Equipment which is proven acceptable in this function will be routed directly to stores. (see function D1.2.6). Repairable equipment will be routed to function D1.2.4 for repairs. Non-repairable equipment will be scrapped. (See function D1.2.8). Equipment under vendor warranty will be returned to the vendor for proper disposition. (See function D1.2.7.) Reliability personnel will analyze all failures which require reliability reporting and will initiate corrective action as required for reliability improvement.		
1.2.4	<u>REPLACE FAULTY COMPONENT</u> This function consists of replacing the faulty components within the equipment that has been received from MRB with repair instructions. This function will be performed on the portable equipment in the Maintenance Support Area, and on the permanently installed equipment at the installed location. The equipment required to perform this function will be standard hand tools as normally used by a technician qualified to make repairs.		
			FUNCTION D1.2.3

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.2.5 <u>PERFORM RETEST</u> This function consists of performing functional tests on equipment after it has been repaired. The post-assembly test or portions thereof will be performed to revalidate the repaired component. Test equipment in function C-6 will be utilized for this function. Functional test procedures for the spare parts and subassemblies will be required. NOTE: Should any equipment in the Missile Assembly building, which supports the Missile Functional Test (Function B10.0) receive maintenance or periodic revalidation, perform function C9.3.2 (Missile Test Position Integration Test) after completion of unit tests.	See Function C-6 for test equipment. Functional Test procedures for Spares level part and subassemblies.
1.2.6 <u>STORE</u> This function will consist of all operations required to receive, process control records, store and issue subject equipment. These operations will be accomplished per established Boeing equipment storage and accountability procedures.	BIMM Manual -9914, (Field Production Control Manual)
1.2.7 <u>RETURN TO VENDOR</u> Equipment which has been rejected, and the cause has been determined as a manufacturer's defect, will be returned to the vendor for adjustment per the warranty on the equipment. This function consists of all packaging, shipping, and accountability control operations necessary to accomplish this.	
	FUNCTION D1.2.5



ASSEMBLY OR CHECKOUT FUNCTION
AND TECHNICAL REQUIREMENTSRECOMMENDED
EQUIPMENT
OR DOCUMENT

1.2.8

SCRAP

This function consists of the preparation of scrap orders and the actual disposition of the equipment to be scrapped.

This function will be accomplished per existing Boeing procedures.

FUNCTION D1.2.8

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FUNCTION D1.3	PERFORM CERTIFICATION/CALIBRATION	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.3 <u>PERFORM CERTIFICATION/CALIBRATION</u> This function covers the operations required to recertify and recalibrate the equipment, which due to its functions and limitations requires periodic certification. This will include torque wrenches, scopes, meggers, gauges, meters, etc. The frequency of certification and calibration will be found in document D2-9918 and D2-12075. The operations required for removal transporting, storing, and reinstallation are contained in previous sub-functions in this section.		D2-9918 Calibration Requirements Summary, AF Plant 77 D2-12075 FUNCTION D2.3

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SECTION D - REQUIRED PROCEDURE DOCUMENTS

<u>DOC. NO.</u>	<u>TITLE</u>
D2-7429-1	Transportation and Handling of Rocket Motors
D2-7828	Assembly Functional Test Procedures - Power Supply Group - Plant 77, MAB
D2-9555	Handbook of Operating Procedures - Engine Handbook Harness and Horizontal Restraint and Bracket Assy Sets.
BIM: Manual 9914	Field Production Control Manual
D2-9918	Calibration Equipments Summary, A/F Plant 77
D2-10096 Vol. IV	Functional Acceptance, Test Set, NCU Zero Alignment
D2-10125	Acceptance Functional Test Requirements and Procedures, Main J-Box-MAB
D2-10885-3	Tool Repair and Maintenance Plan
D2-10907	Operation and Maintenance - Rails-Storage, Engine and Missile
D2-10908	Functional Acceptance-Rails, Storage-Engine and Missile.
D2-10909	Operation & Maintenance - Rails, Storage-Missile GTM 077
D2-10925	Operation and Maintenance-Control-Winch, MAB & Storage Bunker
D2-10926	Functional Acceptance - Bridle Rocket Motor, Stage I
D2-10927	Operation and Maintenance-Dolly, Positioning-Final Assembly
D2-10929	Operation & Maintenance - Adapter, Joining-Interstage I-II
D2-10933	Operating and Maintenance-Bridle-Rocket Motor Stage I

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<u>DOC. NO.</u>	<u>TITLE</u>
D2-10934	Functional Acceptance-Bridle Rocket Motor, Stage III
D2-10939	Operating and Maintenance-Bridle-Rocket Motor, Stage III
D2-10940	Functional Test Procedure-Bridle-Carriage 1st Stage (RMT)
D2-10941	Operation and Maintenance-Bridle-Carriage 1st Stage (RMT)
D2-10944	Operation Fault Isolation Tooling Set, Checking Fixture
D2-10947	Operation and Maintenance-Adapter, Joining NCU Stage III
D2-10949	Operation and Maintenance-Harness-R. H. Panel Missile Interstage I-II
D2-10950	Functional Acceptance-Harness-R. H. Panel, Missile Interstage I-II
D2-10960	Operation and Maintenance Adapter-Joining - NCU Stage I
~~D2-10969~~	~~Operation and Maintenance, Fixture, Pressure Missile Assembly~~
D2-10964	Operation and Maintenance Adapter, Joining - NCU Stage II
D2-10970	Operation and Maintenance-Harness, Missile Skirt, a Cylindrical
D2-10976	Adapter Cables, Test Set-Raceway Cables Operation and Maintenance
D2-10977	Preinstallation Functional Test Procedure - Adapter Cables, Test Set-Raceway Cable
D2-10980	Functional Test Procedure, Dolly Joining - Skirt to Motor
D2-10981	Operation and Maintenance, Dolly Joining - Skirt to Motor
D2-10985	Operation and Maintenance Fixture, Support Umbilical Cabling - MAB
D2-10994	Operation and Maintenance - Harness - L. H. Panel, Missile Interstage I-II
D2-10995	Functional Acceptance-Harness-L. H. Panel, Missile Interstage I-II
D2-11004	Operation and Maintenance-Installation Kit-Linear Explosive
D2-10987	Operation and Maintenance - Rails - Missile Joining
D2-10986	Functional Acceptance - Rails, Missile Joining
D2-10989	Operation and Maintenance-Scaffolding - Missile Access

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D2-11012	Operation and Maintenance - Sling-Horizontal Restraint Ring, Engine Stage I, II & III
D2-11013	Functional Acceptance-Sling-Horizontal Restraint Engine
D2-11014	Operation and Maintenance - Sling-Adapter Ring, Missile Base
D2-11015	Functional Acceptance - Sling - Adapter Ring, Missile Base
D2-11027	Operating and Maintenance - Winch, Portable - Rocket Motor Transfer
D2-11028	Functional Acceptance-Winch, Portable-Rocket Motor Transfer
D2-11030	Functional Acceptance - Platform, Portable - Highway Transfer
D2-11031	Operating and Maintenance - Platform Portable, Highway Transporter
D2-11071	Functional Acceptance - Harness - L. H. Panel, Interstage II-III
D2-11072	Operation and Maintenance-Harness-L. H. Panel, Interstage II-III
D2-11073	Functional Acceptance - Harness - R. H. Panel, Interstage II-III
D2-11074	Operation and Maintenance-Harness-R. H. Panel, Missile Interstage II-III
D2-11093	Operating and Maintenance-Shelter, Missile and Motor Transfer - Environmental, MAB
D2-11087	Operating and Maintenance-AVCOAT Repair Kit
D2-11097	Operating and Maintenance-Shelter, Missile and Motor Transfer-Environmental, MAB
D2-11100	Functional Acceptance - GTM 77 Storage Rails
D2-11326	Functional Test Procedures, Flight Control Test Set
D2-11329	Functional Test Procedures, Functional Test Console NCU, CPA

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D2-11316	Operation and Maintenance-Gage Set-Nozzle and NCU Alignment Stage I
D2-11317	Operation and Maintenance-Gage Set-Nozzle and NCU Alignment Stage II
D2-11318	Operation and Maintenance-Gage Set-Nozzle and NCU Alignment Stage III
D2-11762	Operation Instrumentation Kit Installation and Removal, Ordnance Device (Stage III)
D2-11331	Functional Test Procedures, AAU Test Console
D2-11772	Operation and Maintenance Instructions, Tester Nozzle Deflection and Torque, M-57 Rocket Motor
D2-12054	Ordnance Circuit Test Set - Functional Test Procedure
D2-12075	Calibration/Certification and Test Equipment Index
D2-12195	Operation and Maintenance Procedures for Leakage Tester
D2-12196	Preassembly Test - Leakage Tester
D2-12205	Ordnance Electrical Test Set - Operation and Maintenance
D2-12206	Preassembly Test - Test Set, Ordnance Electrical
D2-12208	Operation and Maintenance-Indicator, Nozzle Deflection and Torque, Stage II
D2-12209	Functional Acceptance-Indicator, Nozzle Deflection and Torque, Stage II
D2-12363	Operation and Maintenance Instructions - Igniter Holding Tool Installation Kit (Stage I)
D2-12364	Operation and Maintenance - Spreader, Assembly, Stage I Nozzles
D2-12365	Nozzle Deflection and Torque Tester Preassembly Test Calibration/Certification, Operation and Maintenance Instructions (WS-133 Stage I)
D2-12977	Operation and Maintenance-Test Set, NCU Zero Electrical Alignment
EM-2084	Utility Technical Manual - Operation and Service
D2-12976	Maintenance Instructions, Rocket Motor Semitrailer
D2-13510	Operation and Maintenance - Nozzle Plug Kit Stage I
D2-13848	Operation and Maintenance - Simulators, Airborne Components Missile Test

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D2-14116	Operating Procedures and Maintenance Instructions for Raceway Cable Test Set and Adapter Cables, MAB
D2-14277	Calibration and Alignment-Functional Test Console, NCU
D2-14278	Calibration and Alignment-Functional Test Console, AAU
D2-14279	Calibration and Alignment-Test Set, Flight Control, C153
D2-14307 Vol I	Functional Test Procedures - Test Set, Flight Control Test Set Adapter (Cards)
D2-14307 Vol II	Functional Test Procedures - Test Set, Flight Control Test Set Adapter (Drawers)
D2-14307 Vol V	Functional Test Procedures - Test Set, Flight Control Test Set Adapter
D2-14308	Operation and Maintenance - Test Set, Flight Control Test Set Adapter
D2-14313 Vol I	Functional Test Procedures - Adapter, Flight Control Test Set Adapter (Cards)
D2-14313 Vol II	Functional Test Procedures - Adapter, Flight Control Test Set Adapter (Drawers)
D2-14313 Vol V	Functional Test Procedures - Adapter, Flight Control Test Set Adapter
D2-14314	Operation and Maintenance - Adapter, Flight Control Test Set Adapter

SECTION D - REQUIRED DRAWINGS

25-17299	Rail Bridge Assembly, Engine Transfer
25-20209	Pully Bracket Assembly, Truck, Rocket Motor, Stage II and Stage III
25-25381	Jack Set, Translating
25-27486	Alignment Set, Missile Transfer
25-27632	Clamp Assembly, Missile Transfer
25-29338	Schematic - Junction Box, Test, MAB
29-21442	Test Box Assembly, Ordnance Cable
25-29553	Shipping and Storage Container, Ballistic Missile
366892-9	Missile Plug Kit (AOC)(FSE 35)

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DWG. NO.

TITLE

~~25-34559~~ ~~Simulators Airborne Components~~

25-32273 Carriage Positioning Set

25-35755 Test Fixture, Drawer Tester Flight Control Test Set Adapter

SECTION D - REQUIRED EQUIPMENT

The following items are required for equipment maintenance:

1. Set Connector (ACC 267)
2. Puller, Printed Circuit Remover (ACC 3009)
3. Extender Circuit Card, Universal (ACC 285)
4. Tester Transister (ACC323)
5. VARIAC (ACO 487)
6. Tester, S/A Device Test Set (PHE : 83)

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MANUFACTURER'S MANUALS

Ordnance Circuit Test Set (FSE 7679)

DC Power Supply, Sorenson Model OR-40 or Equiv. (ACO 463)

Voltbox, AC Power Supply (ACO 391)

Jack, Leveling Support (ACO 415)

Recorder, Humidity (Facility)

Test Set, Multipurpose Portable Radio (ACO 324)

Generator, Signal (Frequency Modulation) (ACO 325)

Tester, Vacuum Tube (Mutual Conductance Type) (ACO 327)

Generator, Video Sweep to 20 Megacycles (ACO 326)

Microphone (ACO 328)

Power, Supply (ACO 393)

Wattmeter, R. F. (ACO 331)

Monitor, Radio Station (Frequency Modulation) (ACO 332)

Load, Dummy (ACO 334)

Probe, Detector Attenuator (ACO 335)

Probe, High Voltage D. C. (ACO 336)

Voltmeter, Vacuum Tube (ACO 337)

Power Supply, (ACO 345)

Ammeter 500 Ampe (ACO 347)

T. V. Monitor, Closed Circuit (ACO 350)

Tractor, Rocket Motor Truck (ACO 447)

Megohmmeter (ACO 362)

Megger, Ground (ACO 365)

Power Supply DC (ACO 4127)

Camera and Tripod, Still Picture (ACO 448)

Load Banks (ACO 388)

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MANUFACTURER'S MANUALS (CONTINUED)

Voltmeter, Differential AC-DC (ACO 422)
Thermometer (ACO 3076)
Multimeter (ACO 4001)
Oscilloscope (ACO 4004)
Oscilloscope, Plug-In-Unit (ACO 4172)
Ohmmeter, (ACO 4381)
Power Supply (ACO 376)
Hoist, Lever (Come Along) (ACO 450)
Recorder, Temperature (Facility)
Work Table, Electronic Test (ACO 456)
Hoist, Portable (ACO-4053) 1)
Truck, Lift-Jack (ACO 461)
Truck, Lift, Fork (ACO 453)
Truck, Motor Misc. Delivery (ACO 452)
Test Set, Raceway Cable (ACO 402)
Test Set Assy., Ordnance Hydraulic (FSE 13)
Test Fixture, Power Supply MAB & CPA (FSE 7780)
Power Supply Group MAB (FSE 7717)
Camera (ACO 416)
Recording Station (ACO 273)

THE BOEING COMPANY

NUMBER D2-11162-1 MODEL NO. WS-133

TITLE SECTION "E" - Missile Repair and Rework

2-5142

SECTION TITLE PAGE U3 4288 0000 REV. 1/61

PREPARED BY Plant 77 Requirements Unit

SUPERVISED BY *O. A. Lemerde*

BI-MM
APPROVED BY *W. H. Charlat*

RELIABILITY
APPROVAL _____ (DATE)

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CONTRACT NO.

5-78200-5120-68226

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16a	~~4-15-63~~			9			↑						16a			↑				
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17a	~~4-15-63~~			17									17a							
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See revision description page, preceding document table of contents.

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SECTION E
MISSILE REPAIR AND REWORK

SCOPE

This section presents the technical requirements for reworking malfunctioned Wing II and on missiles which require rework prior to completion for Air Force acceptance at Air Force Plant 77 or those returned from the launch site prior to acceptance of the missile in its launch tube by the Air Force.

GROUND RULES

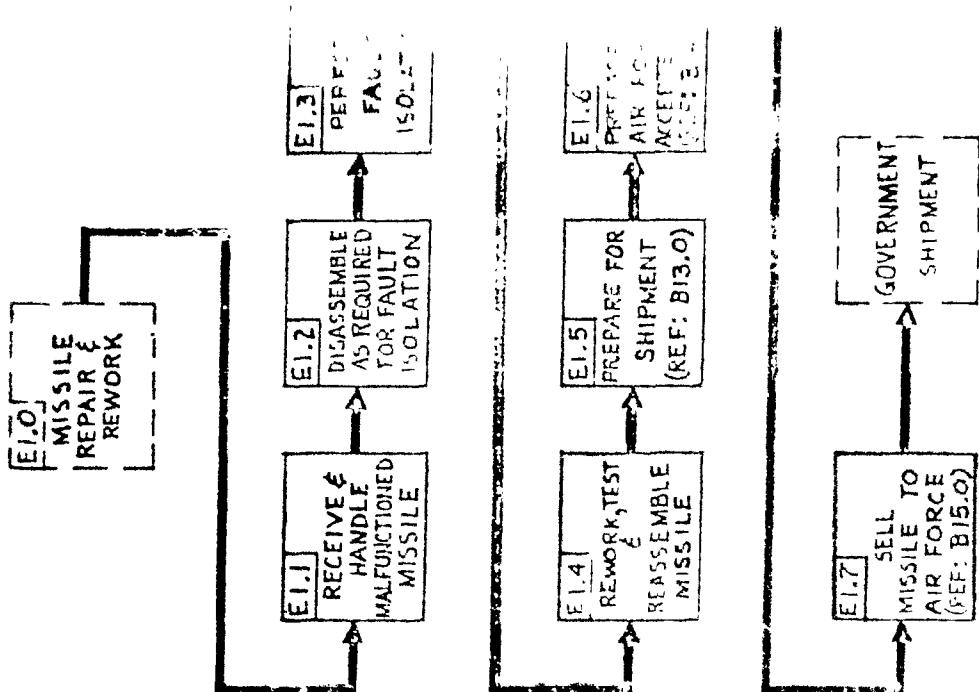
In addition to the general ground rules in Section "A", the following will apply specifically to this section.

1. The Air Force will determine the mode of transportation (rail or air) of the missile (in SSCRM) between A/F Plant 77 and the designated unloading area for the operational base. The Air Force will provide the air transportation; and will be responsible for and will accomplish the loading and unloading of the missile air shipments. Boeing will be responsible for loading and unloading rail shipments.
2. For Wing II and on the missiles will be returned to Plant 77 from the launch site less the R/V and N-10 sections.
3. Replacement components required for missile rework will be provided through normal production control functions and will have been properly tested and inspected per Section "B" of this document.
4. The functions required in this section, which are the same as those required in section "B", are referenced to the appropriate function of that section. The equipment and procedures required in the referenced section "B" function will apply equally to this section.
5. As a normal operation throughout this section, recording of test data and its acceptance by the Quality Control Department will be accomplished through

GROUND RULES**(CONTINUED)**

The use of the Integrated Record System. Accordingly, a specific function or reference to this requirement will not be called out in describing the requirements for each functional test.

6. Documentation requirements will include the documents required in Section "3" in addition to those itemized in this section.
7. Required missile rework will be accomplished by removing and replacing end item components or subassemblies for which spares have been specifically provided. (Maintenance of the Airborne items is listed in Document D2-10885-3, Maintenance Analysis and Description - Depot Level Reparoables - WS-133 and Weapon System - H&D).

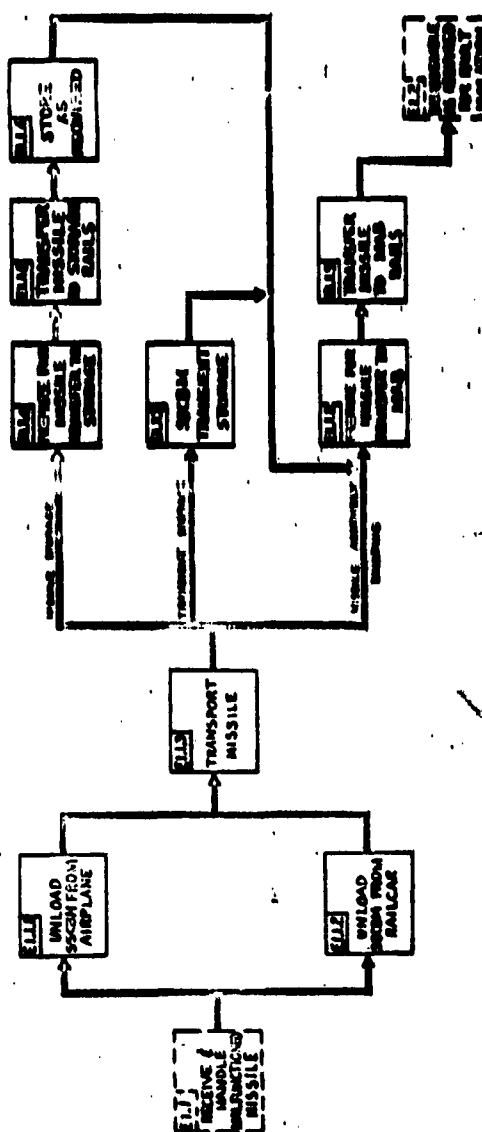


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FUNCTION EL.0 MISSILE REPAIR AND REWORK	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.0 <u>MISSILE REPAIR AND REWORK</u> Repair and rework of missiles returned from the launch site prior to Air Force acceptance will involve accomplishment of the following steps: A. Receive and handle malfunctioned missile. B. Disassemble as required for fault isolation. C. Perform fault isolation. D. Rework, test, and reassembly. E. Record data and sell to Air Force. F. Prepare for shipment. 1.1 <u>RECEIVE AND HANDLE MALFUNCTIONED MISSILE</u> A requirement exists to receive and handle the missiles upon return to A/T Plant 77. The handling shall be accomplished by unloading the SSCBM (containing the missile) and Ballistic Missile Trailer from the rail car or the SSCBM (containing the missile) from the airplane onto the Ballistic Missile Trailer and transporting to either an MAB, an SSCBM transient storage area or a missile storage igloo. 1.1.1 <u>UNLOAD SSCBM FROM AIRPLANE</u> Unloading SSCBM from C-133 Airplane will be directed and accomplished by the Air Force. OOAMA will provide the Ballistic Missile trailer and tractor to the airplane transfer area.	
FUNCTION EL.0	

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FUNCTION E1.0 MISSILE REPAIR AND REWORK		RECOMMENDED EQUIPMENT OR DOCUMENT
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		
1.1.2	<u>UNLOAD SSCM FROM RAIL CAR</u> The car-to-ramp bridges shall be placed between unloading ramp and rail car, and the tractor backed up the ramp to the ballistic missile trailer on the rail car. The loaded ballistic missile trailer shall be connected to the tractor and towed from the rail car.	Required Equipment See Function E12.5
1.1.3	<u>TRANSPORT MISSILE TO LAB. SSCM TRANSIENT STORAGE OR MISSILE STORAGE</u> The missile shall be transported by SSCM, Ballistic Missile Trailer and Tractor to a designated area. No additional equipment will be required to perform this function.	
1.1.4	<u>PREPARE FOR MISSILE TRANSFER TO STORAGE</u> Missile transfer to storage shall be accomplished by positioning the Ballistic Missile Trailer to the storage igloo and removing tractor, installing electrical grounding lead, translating jacks and alignment equipment, installing transfer equipment, storage rail grounding cable to missile and connecting transfer cable to missile support adapter ring. Environmental control shelter shall be used if required. NOTE: Rocket Motor Restraint Devices shall be installed prior to transfer of missile to storage.	Required Equipment See Function E12.6
		Required Equipment See function E2.2
		FUNCTION E1.1.2

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FUNCTION E1.0 MISSILE REPAIR AND REWORK	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.1.5 <u>TRANSFER MISSILE TO STORAGE RAILS</u> The missile shall be transferred by motor and missile storage rail winch from SSCBM into the MAB and secured in place by installing wheel blocks to rocket motor carriages. The rocket motor carriages shall be grounded by attaching grounding jumpers to grounding terminals. All equipment used in preparing missile for transfer shall be removed or disconnected. The Alarm Set (MOE 4187) shall be disconnected and sent to storage.	Required Equipment See Function B12.7
1.1.6 <u>STORE AS REQUIRED</u> Technical requirements for this sub-function are the same as described in function B12.8.	Required Equipment See Function B12.8
1.1.7 <u>SSCBM TRANSIENT STORAGE</u> Technical requirements for this sub-function are the same as described in function B12.8.2.	Required Equipment See Function B12.8.2
1.1.8 <u>PREPARE MISSILE FOR TRANSFER TO MAB</u> Technical requirements for this sub-function are the same as described in function B12.1 .	Required equipment See function B12.1
1.1.9 <u>TRANSFER MISSILE TO MAB RAILS</u> The missile shall be transferred by the missile assembly rail winch from SSCBM into MAB, and secured to the missile assembly rails by installing wheel blocks to rocket motor carriages and attaching rocket motor	
	FUNCTION E1.1.5

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FUNCTION EL.0		MISSILE REPAIR AND REWORK
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.1.9	<u>TRANSFER MISSILE TO MAB RAILS</u> (CONT) ~~Remove~~ ~~grounding~~ jumpers to grounding terminals. After transfer, all equipment used in preparing missile for transfer will be removed or disconnected including the Alarm Set (MGE 4187). The alarm set shall be returned to stores.	
1.2	<u>DISASSEMBLE AS REQUIRED FOR FAULT ISOLATION</u> Disassembly shall be initiated by the appropriate forms for missile disassembly as required to accomplish testing necessary to isolate the fault.	
1.3	<u>PERFORM FAULT ISOLATION</u> The missile shall be tested to determine whether a downstage malfunction exists by performing the missile functional tests per function B9.0. Perform the following test to determine which component is faulty. The end item which is faulty shall then be removed. (See Function EL.4.1). Detailed fault isolation shall be performed only when required by written MRB instructions, and shall be performed in the appropriate area. Authorized personnel will initiate the appropriate forms required for MRB action.	
		FUNCTION EL.1.9

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FUNCTION El.O		MISSILE REPAIR AND REWORK	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT	
1.3.1	<u>PERFORM FAULT ISOLATION TESTS</u> This testing shall consist of removing the connectors from the NCU or AAU, which was suspected to have malfunctioned, and connecting the airborne cabling to the component simulators. Fault isolation procedures will be conducted to establish which component either airborne or ground caused the malfunction to be indicated. If the ground equipment proves to operate properly, the fault will be isolated to either the airborne cabling or NCU or AAU. When the fault has been isolated the component simulator will be disconnected and returned to stores.	For equipment see Section B9.1 Simulators, Airborne Components, Missile Test (FSE 7695) Oscilloscope (ACO 4004) Oscilloscope, Plug-In Unit (ACO 4172) D2-13849, Airborne Component Fault Isolation Procedure.	
1.3.2	<u>PERFORM MISSILE COMPONENT TESTS</u> Non-ordnance missile components requiring functional test shall be removed from the missile, installed in appropriate containers and transported to the Component Processing Area for testing. (See B2.1) Functional test and handling procedures are required and shall be in accordance with the appropriate procedures. ----- D2-13814, Functional Test Procedures, NCU, Stage I, . D2-13815, Functional Test Procedures, NCU, Stage II, D2-13816, Functional Test Procedures, NCU Stage III, . D2-13817, Functional Test Procedures, Angular Accelerometer, . D2-11312, Fault Isolation Test Procedures-Raceway Cable Assemblies, Stage I, II, & III	See document list at left.	
			FUNCTION El.3.)

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FUNCTION EL.0

MISSILE REPAIR AND REWORK

ASSEMBLY OR CHECKOUT FUNCTION
AND TECHNICAL REQUIREMENTS

RECOMMENDED
EQUIPMENT
OR DOCUMENT

1.3.2.1 PREPARE FOR TEST (CONT)

A. The NCU's and adapter frames shall be removed from their containers and installed on their respective trailers. After removal of the NCU sling, the trailer and NCU assembly shall be moved to the Nozzle Control Unit Test Position (See Figure 1-E) and connected to the Nozzle Control Unit Functional Test Console (Figure A 789)

NOTE: If the 1st or 2nd stage NCU is received directly from the receiving and inspection area, a functionally tested battery package shall be installed and the necessary reassembly and sealing accomplished. (The 3rd stage NCU has no provisions for batteries). If the NCU is returned from the MAB for test, the battery package will have been installed.

The trailer and the NCU shall then be removed to the NCU test position.

B. The angular accelerometer unit shall be removed from the container, handcarried to the angular accelerometer test position in the Component Processing Area (Figure 2-E), positioned on the test bench and connected to the Angular Accelerometer Unit, Functional Test Console (Fig. A 10651).

NCU Sling (H9)
(FSE 610)
NCU Trailer (H2)
Stage I (FSE 614)
NCU Trailer (H8)
Stage II (FSE 615)
NCU Trailer (H13)
Stage III (FSE 620)
AA-0304-072
NCU Sealing Specification

Drawing
25-27597
25-27598
Functional Test
Console, NCU
(FSE 789)

Functional Test
Console, Angular
Accelerometer
(Fig. 10651)

FUNCTION EL.3.2

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FUNCTION EL.0		MISSILE REPAIR AND REWORK	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT	
1.3.2.1 <u>PREPARE FOR TEST</u> (CONT)		C. The Raceway Cables, Stage I, II and III, shall remain in their containers during testing; however, the container cover shall be removed and the connectors shall be exposed for easy accessibility. The cables shall be moved to the Raceway Cable Test Position (see Figure 3-B, Section B) and connected to the test equipment. Standard tools shall be used to connect the raceway cables to the test set.	
1.3.2.2 <u>PERFORM COMPONENT TEST</u>		A. Testing of the NCU shall consist of manually performing: 1. Electronic power check 2. Open loop nozzle test 3. Closed loop nozzle test 4. Discrete switch and ignition separation tests 5. Battery circuitry test B. Testing of the Angular Accelerometer Unit shall consist of manually performing: 1. Pitch and yaw thermistor test 2. Pitch scale factor and linearity test 3. Yaw scale factor and linearity test	
		Adapter Cables, Test Set, Raceway Cables (FSE 7715) Cable Tester (ACO 402) B2-10976 (OAM) Container, Raceway Cable, Stage I (ACO 459) Container, Raceway Cable, Stage II (ACO 458) Container, Raceway Cable, Stage III (ACO 457)	
		FUNCTION 1.3.2.2	

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FUNCTION	MISSILE REPAIR AND REWORK	RECON EQUIP OR DO
	ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	
1.3.2.2	<u>PERFORM COMPONENT TEST</u> (CONT) B. 4. Pitch Frequency Response Test 5. Yaw Frequency Response Test 6. Pitch and Yaw Threshold and Resolution Test C. The testing of the raceway cable shall consist of measuring continuity and insulation resistance. Test results shall be determined by readings on the raceway cable test set.	
1.3.2.3	<u>DISCONNECT TEST EQUIPMENT</u>	
1.3.2.4	<u>PREPARE FOR STORAGE</u>	
	For repackaging and transportation to storage, see function B4.1.1.	
1.4	<u>REWORK, TEST AND REASSEMBLE MISSILE</u>	
	This function consists of repairing and replacing the faulty component, running a sub-system test, completing the missile assembly and running a complete missile system test, per appropriate functions of Section B.	
		FUNCTION

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FUNCTION E1.0

MISSILE REPAIR AND REWORK

ASSEMBLY OR CHECKOUT FUNCTION
AND TECHNICAL REQUIREMENTS

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1.4.1 REPAIR MISSILE COMPONENTS

The faulty component shall be removed in accordance with removal procedures and shall receive proper MEB disposition. Minor repairs will be accomplished as follows.

1.4.1.1 PERFORM MISSILE INTERSTAGE AND SKIRT REPAIR

Repair of the minor scratches, cracks, or crazing of work on the interstages and skirt may be accomplished.

1.4.1.2 PERFORM ROCKET MOTOR REPAIR

The following rocket motor repairs may be accomplished at Air Force Plant 77:

- a. Remove and replace damaged rocket motor igniters, safe and arm ordnance devices, or the 3rd stage thrust termination switch. The damaged device will be placed in an empty container and returned to the appropriate rocket motor associate contractor.

NOTE: A low-pressure leakage check of the Stage I, II and III rocket motors shall be performed subsequent to the removal and replacement of either the igniter, igniter, S&A, or both.

WARNING

It is required that a 60 PSI fail-safe blow out plug be installed downstream of the nitrogen pressure regulator in the supply line to prevent excessive pressure within the rocket motors during leakage testing. Excessive pressure would cause a personnel safety problem without high-pressure motor restraining facilities.

Kit, Repair
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D2-7
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D2-12
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Stage
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SECTION

1.0

MISSILE REPAIR

ASSEMBLY OR CHECKOUT AND TECHNICAL

1.4.1.2 ~~PERFORM~~ FORM ROCKET MOTOR REPAIR

D2- 12363. Igniter Holding
and Maintenance

D2- 11762. Operation Instr
Removal Ordnance

D2- 11776. Operation and M
Rocket Motor

D2- 12216. M56 Rocket Motor

D2- 12368. M55 Rocket Motor
Instructions

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FUNCTION EL.0 MISSILE REPAIR AND REWORK	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.4.1.2 <u>PERFORM ROCKET MOTOR REPAIR</u> b. Repair minor cracks, crases, or chips in the external AVCOAT insulation. c. Repair minor cracks, crases, or chips in the base external insulation. d. On Stage II and III Rocket Motors remove and replace damaged nozzle insulation zipper cover or boot. e. On Stage II motor only, remove and replace raceway retaining pins, bushings, or adapter keys. f. Should it be determined during normal inspection that a nozzle is stuck or extremely difficult to actuate, perform a nozzle deflection and torque test to determine acceptability of motor for assembly. g. Straighten bent raceway brackets. NOTE: Should it become necessary to return a rocket motor to the Associate Contractor as a result of being subjected to excessive environment,	Kit, Ablative Material Repair (FSE 7665) D2-11087 D2-7295 Kit, Base Insulation Repair, Stage I (FSE 133) D2-12365 . . . Kit, Base Insulation Repair, Stage II (FSE 30) Kit, Cork Repair, Stage III (FSE 250) D2-11775 Nozzle Insulation Repair Kit (FSE 36) Indicator, Nozzle Deflection and Torque, Stage I (FSE 123) Indicator, Nozzle Deflection and Torque, Stage II (FSE 15) Tester, Nozzle Deflection and Torque Stage III (FSE 202) D2-12365 (Stage I) D2-11772 (Stage III) D2-12208 (Stage II) Winch, Portable Rocket Motor Transfer (FSE 7653) D2-11087 (QAM)
	FUNCTION EL.4.1.2

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FUNCTION EL.0	MISSILE REPAIR AND REWORK	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT
1.4.1.2 <u>PERFORM ROCKET MOTOR REPAIR</u> (CONT) NOTE: (CONT) insulation damage beyond A/F Plant 77 repair capability, or damage requiring Associate Contractor repair, the horizontal restraint rings shall be replaced on the rocket motor prior to loading in the appropriate highway transporter for return delivery to the Associate Contractor Facility. h. Should a Nozzle Alignment Verification Test in the MAB indicate that the alignment of the nozzles is improper, and the linkage adjustments to the recommended setting for the specific motor are correct; perform a nozzle alignment check to determine the linkage adjustment values. i. Remove and replace damaged operational pressure transducer on Stages I, II and III. NOTE: A low-pressure leakage check of the Stage I, II & III rocket motors shall be performed subsequent to the removal and replacement of the operational pressure transducer.,		Sling, Horizontal Restraint Ring, Engine Stage I, II & III (FSE 7632) Horizontal Restraint Engine, 1st Stage (FSE 7763) Horizontal Restraint Engine, 2nd Stage (FSE 7764) Horizontal Restraint Engine, 3rd Stage (FSE 7765) D2-9555 Bridle, Carriage 1st stage, Rocket Motor Trucks (FSE 7795) D2-10941 (O&M) Gage, Nozzle Alignment, Stage I (FSE 10163) Gage, Nozzle Alignment, Stage II (FSE 10165) Gage, Nozzle Alignment, Stage III (FSE 10167) D2-13849 Nozzle Positioning (FSE 114) P/N 4220439 (TCC) Turn Buckle, YZ Cable P/N T416090 (AGC) Tester, Leakage (FSE 7) D2-12195 Plug Kit, Nozzle Stage II, (FSE 35) Plug Kit, Nozzle Stage III (FSE 251) Mfr's. Manual HPC 133-03-1-20
		FUNCTION EL.4.1.2

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FUNCTION B1.0 MISSILE REPAIR AND REWORK	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.4.3 <u>PERFORM FUNCTIONAL TEST OF MISSILE</u> The assembled missile shall receive functional testing to verify that subsystem performance satisfies the requirements of the Operational Missile Model Specification S-133-1000-0-1 (D2-14286). This functional test shall consist of the applicable subfunctions defined in function B6.0, B8.0 and B9.0. NOTE: If any raceway cable is replaced, conduct the dielectric test per Section B7.6 1.4.4 <u>COMPLETE MISSILE ASSEMBLY</u> Missile Assembly shall consist of required subfunctions defined in function B10.0. 1.5 <u>PREPARE FOR SHIPMENT</u> Same requirements apply to this function as described in function B12.0 1.6 <u>RECORD DATA AND PREPARE FOR AIR FORCE ACCEPTANCE</u> Same requirements apply to this function as described in function B13.0. 1.7 <u>SKILL MISSILE TO AIR FORCE</u> Same requirements apply to this function as described in Function B14.0.	Required Equipment see functions B6.0, B8.0, and B9.0 D2-9380, Acceptance Functional Test Procedures-SM-80 Missile, MAB-A/F Plant 77 Required Equipment See Function B10.0 Required Equipment See Function B12. Required Equipment See Function B13.0
FUNCTION B1.4.5	

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
	The following equipment is required in addition to the Missile Assembly and Checkout Equipment listed in Section B.						
7	Tester, Leakage	FSE		EL.4.1.1.2			
34	Container, Igniter, Stage II	FSE		EL.4.1.1.2			
15	Indicator, Nozzle Deflection and Torque, Stage II	FSE		EL.4.1.1.2			
35	Plug Kit, Nozzle, Stage II	FSE		EL.4.1.1.2			
30	Repair Kit, Base External Insulation, Stage II	FSE		EL.4.1.1.2			
31	Kit, Installation and Removal, Ordnance Devices (Stage II)	FSE		EL.4.1.1.2			
36	Nozzle Insulation Repair Kit	FSE		EL.4.1.1.2			
108	Container, Igniter S&A Device, Stage I, II & III	FSE		EL.4.1.1.2			
110	Kit, Pyrogen Installation and Removal (Stage I)	FSE		EL.4.1.1.2			
123	Indicator, Nozzle Deflection and Torque, Stage I	FSE		EL.4.1.1.2			
124	Container, Shipping and Storage, Igniter, Stage I	FSE		EL.4.1.1.2			
126	Plug Kit-Nozzle Stage I	FSE		EL.4.1.1.2			
133	Repair Kit, Base External Insulation, Stage I	FSE		EL.4.1.1.2			
202	Tester, Nozzle Deflection and Torque, Stage III	FSE		EL.4.1.1.2			

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
252	Container, Igniter, Stage III	FSE		El.4.1.2			
206	Container, Thrust Termination Switch	FSE		El.4.1.2			
251	Nozzle Plug Kit, Stage III	FSE		El.4.1.2			
207	Kit, Installation and Removal, Ordnance Device (Stage III)	FSE		El.4.1.2			
789	Functional Test Console, MCU	FSE	El.3.2.1				
7715	Adapter Cables, Test Set, Recovery Cables	FSE	El.3.2.1				
7695	Simulators, Airborne Components, Missile Test	FSE		El.3.1			
10651	Functional Test Console, Angular Accelerometer Unit	FSE	El.3.2.1				
10163	Gage, Nozzle Alignment, Stage I	FSE		El.4.1.2			
10165	Gage, Nozzle Alignment, Stage II	FSE		El.4.1.2			
10167	Gage, Nozzle Alignment, Stage III	FSE		El.4.1.2			
250	Repair Kit, Test Insulation, Stage III	FSE		El.4.1.2			

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
ACC 402	Cable Tester	SFC/UM	EL.3.2.1				
ACO 459	Container, Raceway Cable, Stage I	SFC/UM	EL.3.2.1				
ACO 458	Container, Raceway Cable, Stage II	SFC/UM	EL.3.2.1				
ACO 457	Container, Raceway Cable, Stage III	SFC/UM	EL.3.2.1				
114	Spreader Assy, Nozzle			EL.4.1.2			
	Nozzle, Modified w/ Tool Assy.	WSE		EL.4.1.2			
P/NT 416090	Turn Buckle, YZ Cable	WSE		EL.4.1.2			
7763	Horizontal Restraint Engine 1st Stage	FSE		EL.4.1.2			
7764	Horizontal Restraint Engine 2nd Stage	FSE		EL.4.1.2			
7765	Horizontal Restraint Engine 3rd Stage	FSE		EL.4.1.2			
7786	Kit Cork Insulation Repair	FSE		EL.4.1.2			
7745	Bridle Carriage 1st Stage Rocket Motor Truck	WSE		EL.4.1.2			
7653	Winch Rocket Motor Transfer	WSE		EL.4.1.2			

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SECTION I - REQUIRED DOCUMENTS

<u>DOC. NO.</u>	<u>TITLE</u>	<u>SECTION</u>
AA-0304-072	NCU Sealing Specification	El.3.2.1
D2-7295	Insulation Repair Procedures	El.4.1
D2-9520	S460 Functional Test Procedures - MAB-Plant 77	El.4.3
D2-9555	Handbook of Operating Procedures - Motor Handling Harness	El.4.1.2
D2-10885-3	Tool Repair and Maintenance Plan	—
D2-10941	Operation and Maintenance-Bridle-Carriage 1st Stage	El.4.1.2
D2-10972	Operation and Maintenance - Cork Insulation Repair Kit	El.4.1.2
D2-10976	Adapter Cables, Test Set - Raceway Cables Operation and Maintenance	El.3.2.1
D2-11027	Operation and Maintenance-Winch Portable	El.4.1.2
D2-11087	Operation and Maintenance Instructions for Avocoat Repair Kit	El.4.1.2
D2-11312	Fault Isolation Test Procedures, Raceway Cables Assemblies, Stage I, II, and III	El.3.2
D2-11762	Operation Instructions, Kit, Installation and Removal, Ordnance Device (Stage III)	El.4.1.2
D2-11772	Operation and Maintenance Instructions, Tester, Nozzle Deflection and Torque, M-57 Rocket Motor	El.4.1.2
D2-11775	Operating Instructions, Repair Kit, Base External Insulation, Rocket Motor M-57	El.4.1.2
D2-11776	Operation and Maintenance Instruction, Rocket Motor M57	El.4.1.2
D2-12195	Operation and Maintenance Procedures for Leakage Tester	El.4.1.2
D2-12208	Operation and Maintenance Procedures for Nozzle Deflection and Torque Tester (Stage II)	El.4.1.2
D2-12216	M56 Rocket Motor Maintenance Procedures	El.4.1.2
HPC 133-03-1-20	Operation & Maintenance - Plug Kit, Nozzle	El.4.1.2

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SECTION E - REQUIRED DOCUMENTS (CONT'D)

<u>DOC. NO.</u>	<u>TITLE</u>	<u>SECTION</u>
D2-12363	Igniter Holding Tool Installation Kit, Operation and Maintenance Instructions (WS-133 Stage I)	El.4.1.2
D2-12365	Nozzle Torque and Deflection Tester Preassembly Test, Calibration/Certification, Operation and Maintenance Instructions (WS-133 Stage I)	El.4.1.2
~~D2-12367~~	~~_____~~	~~El.4.1.2~~
D2-12368	M55 Rocket Motor Maintenance and Repair Instructions	El.4.1.2
D2-13510	Operation and Maintenance Instructions Nozzle Pressure Test Maintenance Kit	El.4.1.2
D2-13814	Functional Test Procedures, NCU, Stage I	El.3.2
D2-13815	Functional Test Procedures, NCU Stage II	El.3.2
D2-13816	Functional Test Procedures, NCU Stage III	El.3.2
D2-13817	Functional Test Procedures, Angular Accelerometer	El.3.2
D2-13849	Fault Isolation Procedures, Assembled Missile, Plant 77	El.4.1.2

SECTION E REQUIRED DRAWINGS

DRAWING NO.

TITLE

SECTION

25-27597 Flight Control Unit & Battery Pwr Supply Instl, Stage I El. J.1.1
25-27598 Instl.-SE 13 Battery & Nozzle Control Unit, Stage II El. J.1.1

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NOZZLE CONTROL UNIT TEST POSITION

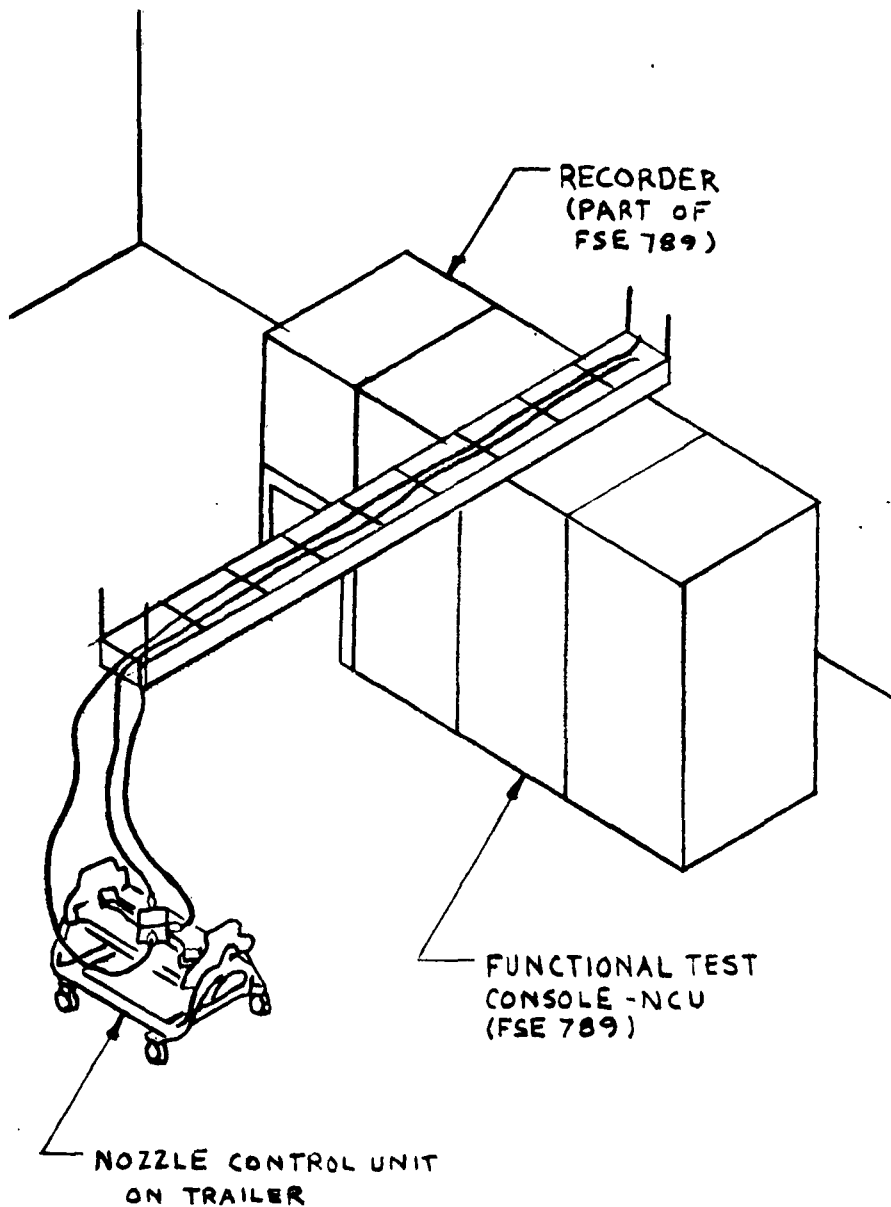


FIGURE 1-E

U3-4871-1000 (was BAC 1646-L-83)

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ANGULAR ACCELEROMETER UNIT FUNCTIONAL TEST POSITION

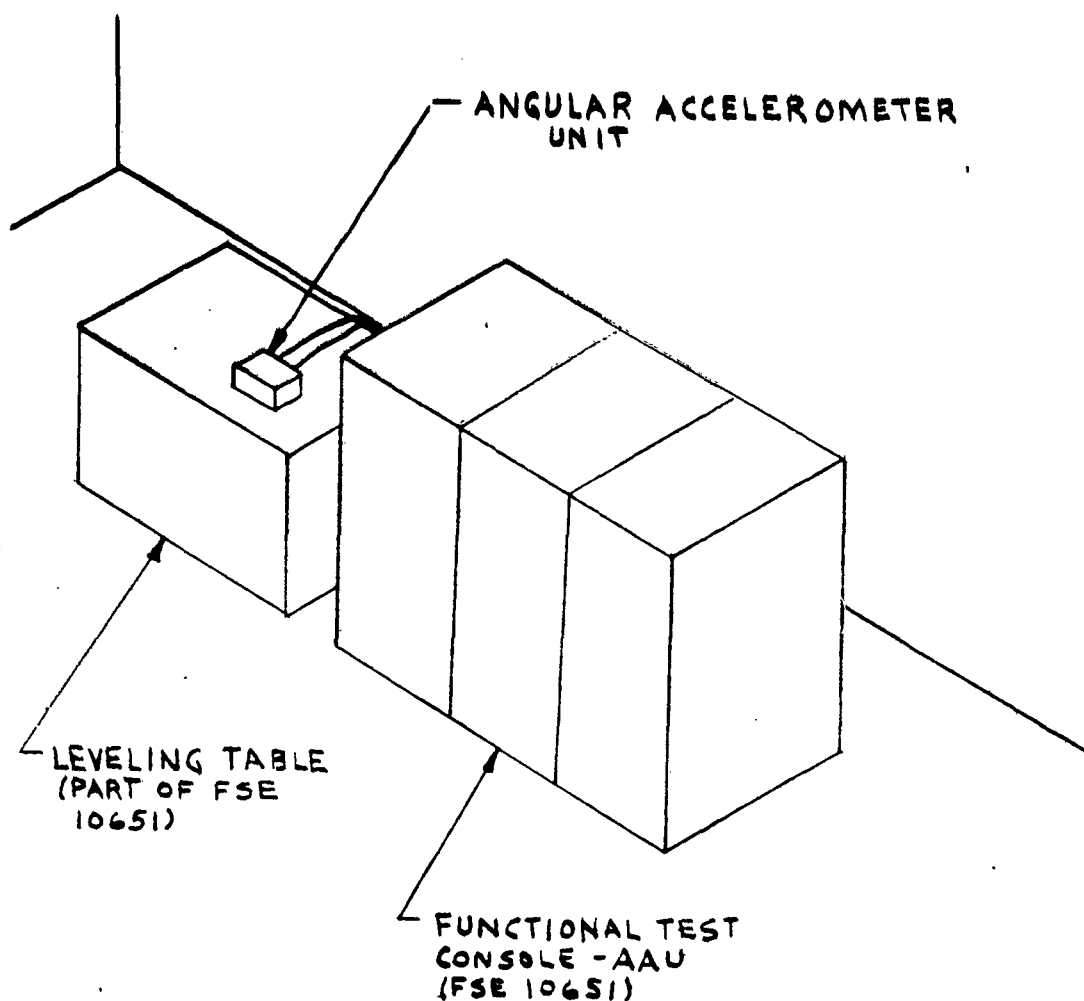


FIGURE 2-E

U3-4071-1000 (was BAC 1544-L-R3)

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THE BOEING COMPANY

NUMBER D2-11162-1 MODEL NO. WS-133

TITLE Substitute Figure "A" Forms - Factory Support
Equipment (FSE)

PREPARED BY Plant 77 Requirements Unit

SUPERVISED BY

BI-MH

APPROVED BY

RELIABILITY
APPROVAL

(DATE)

AF04(647)-580

CONTRACT NO.

5-78200-5120-68226

CHARGE NUMBER

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	32	1-18-63						75	11-1-62				
	33	11-1-62						76	3-1-62				
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See revision description page, preceding document table of contents.

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APPENDIX I

The following MRCN (Minuteman Requirement Control Number) forms for Factory Support Equipment are included to show the basic description of these items.

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PAGE 4

DEPT. RESP. - Manufacturer

ENGINEERING BASE INSTALLATIONS MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item SM-80 WEAPON SYSTEM	Revision No. 0-13-61 and Date
Contractor BOEING	
Contract No. AF 04(247)-500	
Item No. 7613	
Nomenclature Adapter, Joining, Missile Interstage I-II	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21626	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists for a means to support and position the R.H. aft panel and aft adapter ring of Interstage I-II on the assembly rails for joining to the 1st Stage engine. 2. Functions in D2-11162 are wiring this capability are: P7.4 <u>Description</u> The adapter consists of a circular spoke-type structural assembly and will be used in conjunction with the dolly, positioning-Final Assembly (NAS 7708). The adapter's central hub shall be compatible with the dolly's main shaft on which it is supported.	

(continued page 2)

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FACTORY SUPPORT EQUIPMENT

ITEM NO. 7613

NOMENCLATURE: Adapter, Joining, Missile Interstage I-II

Description: Continued

The joining adapter supports the aft adapter ring through the skin attachment holes. This aft adapter ring is bolted to the joining adapter on a workbench after which both are lifted into place by using a swivel hook provided on the joining adapter. The joining adapter shall be made of formed aluminum members bolted to a welded steel tube frame.

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-62
Model Designation and Name of End Item HAD SM-80 WEAPON SYSTEM	Revision No. A and Date
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7619	
Nomenclature Fixture, Support-Umbilical Cabling, MAB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21660	
Specification No.	
Specification Date	
Description Function 1. A means must be provided to support the G&C and Skirt Umbilical cables in an overhead suspended position (Wing I). 1.1 Functions in D2-11162 requiring this capability are: B6.1, B8.1, B8.2, B12.1. 2. A means must be provided to support the Downstage Test and Skirt Umbilical cables in an overhead suspended position (Wing II). 2.1 Functions in D2-11162-1 requiring this capability are: B6.1, B8.1, B8.2, B9.1, B11.1 Description Supports shall be provided for each of the following: 1. G&C Umbilical Cabling (Wing I) 2. Downstage Test Cabling (Wing II) (see page 2)	

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FACTORY SUPPORT EQUIPMENT

ITEM 7619

NOMENCLATURE: Fixture, Support-Umbilical Cabling, MAB

Description (cont'd)

3. Skirt Umbilical Cabling.

Bend radii of supports shall be in conformance with minimum bend radii requirements of cable assemblies. Suitable hoisting provisions shall be provided for ease of positioning umbilical cabling at test position.

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TYPE OF LIST	DATE
FACTORY SUPPORT EQUIPMENT	3-15-61
Model Designation and Name of End Item	Revision No. and Date
E & D SM-80 WEAPON SYSTEM	8-1-61
Contractor	
BOEING	
Contract No.	
AFOL (617) -580	
Item No.	
7620	
Nomenclature	
Fixture, Pressure - Missile Assembly	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
25-21645	
Specification No.	
Specification Date	
Description	
Function	
1. A requirement exists for a means to apply pressure to the G & C Section, Interstage and Skirt joints to obtain Interface Joint gap tolerances.	
2. Functions in D2-11162 requiring this capability are: B7.3 B10.5	
Explanation	
The fixture shall consist of three (3) parts as follows:	
1. The Aft End Gate shall consist of a structural frame with a	
(continued - page 2)	

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BOEING D2-11162-1
APP. I 11

Item No. 7620

Nomenclature: Fixture, Pressure - Missile Assembly

Description

suitable adapter to attach to the missile skirt. The Aft Adapter will be actuated by a hydraulic cylinder. V-groove rollers shall be utilized to support the fixture on the assembly rails and to provide longitudinal travel when the fixture is being installed on the assembly rails.

2. The Forward End Gate shall consist of a structural frame and a suitable adapter. This adapter shall attach either to the forward ring of the O & C Section or to the O & C Harness Ring. The Adapter will allow equal pressure to be applied to periphery of the O & C section forward ring. V-Groove Rollers shall be utilized to support the fixture on the assembly rails and to provide longitudinal travel when the fixture is being installed on the assembly rails.
3. A hydraulic system shall be provided to actuate the Aft Adapter Ring. The Hydraulic System shall be portable and consist of a pump, gauges and necessary plumbing. The Hydraulic System shall include a safety provision which will limit the load applied to the missile, within the allowable limits.

During fixture operation, both End Gates shall be fixed to the Rails - Missile Joining (FSE 7628). The only movable part shall be the skirt adapter, actuated by the hydraulic cylinder, which will provide the joining force.

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BOEING	D2-11162-1
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DEPT. RESP. -	MANUFACTURING
ENGINEERING	BASE INSTALLATIONS
<i>W. H. B. [Signature]</i>	
<i>3-15-61</i>	

TYPE OF LIST	DATE
FACTORY SUPPORT EQUIPMENT	3-15-61
Model Designation and Name of End Item	Revision No. and Date
HAD SM-80 WEAPON SYSTEM	8-30-61
Contractor	
BOEING	
Contract No.	
AF04(647)-580	
Item No.	
7628	
Nomenclature	
Rails - Missile Joining	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
25-21643	
Specification No.	
Specification Date	
<u>Description</u> <u>Function:</u> 1. A requirement exists for a means of supporting the missile component while assembling and testing the missile. 2. Functions in D2-111624 requiring this capability are: B4.2, B5.1, B7.1, B12.1, B12.2. <u>Description</u> The rails consist of two guide tracks spaced at the proper height and width with structural braces and brackets to accommodate the various sections of the missile and respective assembly equipment. They will include provisions for grounding; tie-down, attachment of optical devices and transferring engine stages, and the entire missile. The rails will include: (see page 2)	

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FACTORY SUPPORT EQUIPMENT

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Item No. 7628

Nomenclature: Rails - Missile Joining

Description: (continued)

- (1) Wheel Chocks**
- (2) Bridge rails fittings for highway transporters**
- (3) Winches for Engine and Missile Transfers**
- (4) Fixed Extension of rails for ASCM Transfers**

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DEPT. RESP. - MANUFACTURING	BASE INSTALLATIONS	MANUFACTURING
ENGINEERING		
<i>M. L. Bunker</i> <i>8-22-61</i> <i>8/30/11</i>		

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-13-61
Model Designation and Name of End Item H4D SM-80 WEAPON SYSTEM	Revision No. and Date 8-30-61
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7629	
Nomenclature Rails - Storage, Engine and Missile	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21678	
Specification No.	
Specification Date	
<u>Description</u> 1. A Requirement exists for supporting Stage I, II & III engines and completed missiles on the engine harnesses in the storage building. 2. Functions in D2-11162 requiring this capability are: B2.2, B4.2, B12.6, B12.7, B12.9, B12.10. <u>Description</u> The rails consist of two guide tracks spaced at the proper height and width with structural braces and brackets to accommodate various sections of the missiles. They will include provisions for grounding, tie-down, attachment of optical devices, and transferring engine stages and the entire missile. The rails will include: (1) Wheel Chocks; (2) Swing-out Extension of rails for SSCM (3) Bridge Rail Fittings for Highway Transporters; (4) Winches for engine and missile transfers.	

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ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
1.11.11.11.11.11	7-22-11	11-11-11-11-11-11

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FACTORY SUPPORT EQUIPMENT

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Item No. 7630

Nomenclature: Scaffolding - Missile Access

Description (continued)

The platforms between the rails will be removable. The platforms between the rails and the assembly dock will be hinged on the assembly dock side for stowage when not in use.

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DEPT. RESP. - Manufacturing
ENGINEERING

BASE INSTALLATIONS

MANUFACTURING

TYPE OF LIST	DATE
FACTORY SUPPORT EQUIPMENT	3-15-61
Model Designation and Name of End Item	Revision No. and Date
SM-80 WEAPON SYSTEM	6-15-61
Contractor	
Contract No.	
AFOM(647)-510	
Item No. 7631	
Nomenclature	
Sling - Adapter Ring, Missile Base	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21682	
Specification No.	
Specification Date	
Description	
Function	
1. A requirement exists for a means to hold the missile base adapter ring while removing from shipping container and joining to the missile. 2. Functions in D2-11162 requiring this capability are: B10.7	
Description	
The sling consists of a spreader bar assembly with drop cables, which bolt onto 2 ears provided on Base Adapter Ring by means of shackles.	

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DEPT. RESP. - Manufacturing	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING

R

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-19-61
Model Designation and Name of End Item E & D SM-80 WEAPON SYSTEM	Revision No. and Date 7-21-61
Contractor BAC	
Contract No. APO4 (647) - 580	
Item No. 7632	
Nomenclature Sling-Horizontal Restraint Ring, Engine, Stage I, II & III	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21681	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists for a means of holding the horizontal restraint ring while removing or installing from the engine. 2. Functions in D2-11162 requiring this capability are: B4.2 <u>Description</u> Sling shall consist of a spreader bar assembly with drop cables, which can be adjusted to suit individual restraint rings.	

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DEPT. RESP.	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
1	11.1.1	7/31/1	11.1.1

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 4-1-61
Model Designation and Name of End Item E D SM-80 WEAPON SYSTEM	Revision No. and Date 8-1-61
Contractor BAC	
Contract No. AFC 647 - 580	
Item No. 7641	
Nomenclature Harness - R. H. Panel, Missile Interstage I - II	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21630	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists for a means to lift and hold the forward panel when installing the panel on the missile, or when assembling or disassembling the interstage in the vertical position. 2. Functions in D2-11162 requiring this capability are: B7.4, B10.3 <u>Description</u> The Harness shall consist of a contoured strongback which can be attached to the R. H. Panel of Interstage I - II. The Harness (continued - page 2)	

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FACTORY SUPPORT EQUIPMENT

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Item No. 7641

Nomenclature: Harness - R. H. Panel, Missile Interstage I - II

Description (continued)

will include provisions for overhead crane lifting. Harness attach holes will be provided in the panel.

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DEPT. RESP. - Manufacturing
ENGINEERING
BASE INSTALLATIONS
MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item H & D SM-89 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AFO4 (6-7) - 580	
Item No. 7648	
Nomenclature Installation Kit - Linear Explosive	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21572	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists for a means to accomplish the installation of linear explosive on interstage I - II and II-III. 2. Functions in D2-11162 requiring this capability are: E10.8. <u>Description</u> The kit will consist of the following items: pull wire, pressure sensitive tape, knife, adhesive, adhesive brush, crimping tool and suitable container.	

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DEPT. RESP. - Manufacturing	ENGINEERING	MANUFACTURING
	BASE INSTALLATIONS	MANUFACTURING

TYPE OF LIST FACTORY SU. PORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item SM-80 WEAPON SYSTEM	Revision No. and Date 9/19/61
Contractor BOEING	
Contract No. D2-11162-1	
Item No. 7653	
Nomenclature Winch, Portable-Rocket Motor Transfer	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21658	
Specification No.	
Specification Date	
Description Function: 1. A requirement exists for a means of accomplishing transfer of Rocket Motor, Stage I, II and III between Trucks, Rocket Motor and fixed storage rails in the igloos and the joining rails in the VAB's. 2. In addition, capability has to be provided to winch Rocket Motors at a slow rate of travel and close-tolerance movement during the joining cycle. 3. Functions in D2-11162 requiring this capability are: B2.2.	

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FACTORY SUPPORT EQUIPMENT

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Item No. 7653

Nomenclature: Winch, Portable - Rocket Motor Transfer

Description

Equipment includes movable, electrically driven winch equipped with castor wheels and suitable brake. This winch shall have the capability to be used in conjunction with Joining Rails (FSE 7628), to move Rocket Motors at a slow rate of speed (5 feet/max. per minute), during joining operations. Winch shall also be used in conjunction with winch provided on the Storage Rail (FSE 7629).

Also included in this equipment are miscellaneous portable sheaves used in conjunction with above listed items.

Controls shall be an integral part of this winch and shall have the capability to control winches of FSE 7628 and 7629.

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g h

TYPE OF LIST FACTORY SUPPORT EQUIPMENT		DATE 4-1-61	
Model Designation and Name of End Item H & D SM-80 WEAPON SYSTEM		Revision No. and Date 11-22-61	
Contractor BOEING			
Contract No. AFOL(647)-580			
Item No. 7665			
Nomenclature R Kit, Ablative Material Repair			
Quantity			
Total On Order			
Estimated Production Lead Time			
List Number			
R Manufacturer's Part Number 25-21695			
Specification No.			
Specification Date			
Description R Function 1. A requirement exists for a means to repair minor damage to the AVCOAT insulation on the Rocket Motors, interstages or skirt of the missile during assembly. 2. Functions in D2-11162 requiring this capability are: B10.10 R Description This kit consists of required chemicals, mixing and application tools for making repairs to the AVCOAT insulation. The kit shall be packaged in a container suitable for ease of handling. This kit is used in conjunction with "dangerous materials" not included in the kit. These materials are: Aliphatic Naphtla, Type II (TT-N-95) and Presealing Cleaning Solvent, BMS 11-7.			

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DEPT. RESP. MANUFACTURING

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Item No. 7666

Nomenclature: Platform, Portable - Highway Transporters

Description: (continued)

1. Wheel restraining block to restrain the highway transporter while on the platform.
2. Lift provisions to make platform portable.
3. Provisions for ramping the highway transporters up to the platform elevation.
4. The platform will be fabricated in equal segments and will include interlocking provisions and means for attaching the ramp. Each platform segment will be of proper length and width to support the rear tandem wheels of the Stage I Engine Transporter. Each set of platforms will include enough platform segments to support the entire Stage I Engine Transporter. The Stage II or Stage III Transporters will use any required number of the platform segments to enable them to be supported in a level plane.

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DEPT. RESP. - ENGINEERING
ENGINEERING
BASE INSTALLATIONS
MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT		DATE 6-1-61
Model Designation and Name of End Item B&D SM-80 WEAPON SYSTEM		Revision No. and Date
Contractor BOEING		
Contract No. AF04(647)-580		
Item No. 7678		
Nomenclature Fixture, Test - Ordnance Device		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number		
Specification No.		
Specification Date		
<u>Description</u> <u>Function</u> 1. A requirement exists for a means to support ordnance device in the Ordnance Test Chamber of the Squib and Ignition Building during functional test with the Aerojet Ordnance Electronic Test Set (FIG. A. 13) 2. Functions in D2-11162 requiring this capability are: B3.3 <u>Description</u> 1. The test fixture shall be a steel framework table with a flat level top. The fixture shall supply mounting provisions for the operational missile Interstage Arm - Disarm Device, the operational third stage Engine Thrust Termination Arm and Disarm Switch, the operational missile Interstage Separation Detonators, and the operational missile (see page 2)		

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FACTORY SUPPORT EQUIPMENT

Page 2 of 2

Item No. 7678

Nomenclature: Fixture, Test - Ordnance Device

Description (Continued)

Engine Ignition Safe and Arm Devices in the Ordnance Test Chamber. The fixture shall be fastened to the floor of the Test Chamber and shall be capable of having the ordnance devices fastened securely to it during testing.

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 6-9-61
Model Designation and Name of End Item SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor Boeing	
Contract No. AF04(647)-580	
Item No. 7679	
Nomenclature Test Set, Assembly, Ordnance Circuit	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-37396-1	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. A requirement exists for a means to accomplish a No Voltage check on the umbilical cables prior to connection to the missile receptacles in the Missile Assembly Building. 2. Functions in D2-11162 requiring this capability are: B8.1, B8.2, B12.1 3. Functions in D2-11162-1 requiring this capability are: B8.1, B8.2, B9.1, B11.1 <u>Description</u> The Test Set Assembly consists of an Explosive Set Circuitry, Test Set (10-20994-1 or 10-20994-11) and adapter cables for self test.	

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REVISED 1-18-63

BOEING VOL NO D2-11162-1
APP I PAGE 32

FACTORY SUPPORT EQUIPMENT

ITEM NO. 7682

**Nomenclature: Shelter, Missile and Motor Transfer-
Environmental, MAB**

Function: (Continued from page 1)

B. Transfer of Missile from

**1. Missile Assembly Building to Ballistic Missile Shipping
and Storage Container or Transporter-Erector**

**2. Functions in D2-11162 requiring this capability are B4.2,
B13.1, B13.2, B16.1, B16.6**

Physical Description:

1. The shelter must:

- a. Allow for vehicle movement to allow normal alignment per
D2-11162.**
- b. Permit movement of personnel and equipment as required to
accomplish transfer operations per D2-11162.**
- c. Protect the motor or missile from all types of precipitation,
including blowing sand, and excessive solar effects.**

2. The following basic criteria for external conditions are:

- a. Minimum outside temperature will be -5° F.**
- b. Maximum outside wind velocity will be 38 knots.**
- c. The building and vehicle doors will be open up to 3 hours.**

REVISED

11-1-62

BOEING

APPROVED

NO. 2-11162-1

PAGE 3

DEPT. RESP. - Manufacturing Engineering	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
<i>W. H. Butler S.S.</i> <i>W. H. Butler S.S.</i> <i>W. H. Butler S.S.</i>			

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 8-1-61
Model Designation and Name of End Item R&D SM-80 WEAPON SYSTEM	Revision No. and Date B-2-61
Contractor BOEING	
Contract No. AFO4(647)-580	
Item No. 7665	
Nomenclature Rails - Storage, Missile - GTM-77	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21697	
Specification No.	
Specification Date	
Description <u>Function & Requirements</u> 1. Provisions must be made to store GTM-77 after the initial checkout of the Missile Assembly Building. 2. GTM-77 may be used as a training device and mockup; minor modifications may be made during this storage period. 3. The missile will be placed on storage rails in the north end of Building 1264; the nose of the missile will be toward the north door. 4. The north end of the storage rails will be placed approximately 3 inches from the door. 5. The external roadway to floor elevation is 28.8 inches. 6. GTM-77 is included as a portion of AFO4(647)-580 contract (refer to MM Operating Directives numbers 9 and 36A dated June 5, 1961 and July 21, 1961 respectively. (see page 2)	

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FACTORY SUPPORT EQUIPMENT

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ITEM NO. 7685

NOMENCLATURE Rails - Storage, Missile - GTM-77

DESCRIPTION:

The rails provide two 80 foot metal guide tracks, spaced at proper width and height to match the operational handling harness and maintain a missile centerline transfer height of 102 inches from ground level. The guide tracks are supported by structural bracing. Included in the rails are attach blocks and grounding cables for missile transfer, wheel blocks, provisions for engine hails to grounding and rail extensions with provisions to match with the SSCM rails.

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DEPT. RESP. - 2052-100-14	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
	<i>H. E. Dineen</i>		
	<i>H. E. Dineen</i>		

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE
Model Designation and Name of End Item R&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AFO4(647)-580	
Item No. 7686	
Nomenclature Clamp Assembly, Missile Transfer	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
<u>Description</u> <u>Function:</u> 1. A requirement exists to provide a means of attachment between the Missile Base Adapter Ring and winch cables for missile roll transfer between the SSCBM and fixed rails. 2. Functions in D2-11162 requiring this capability are: B12.1, B12.2, and B12.6, B12.9, B12.10. <u>Description</u> This device is attachable to the lower center of the Missile Base Adapter Ring and provides for attachment to swaged end winch cables.	

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Department Responsible *Engineering*
W.D. Bunker
 Facilities *R. E. Ewing*
 Manufacturing *R. E. Ewing*

TYPE OF LIST FACTORY SUPPORT EQUIPMENT		DATE 9-8-61
Model Designation and Name of End Item EAD SM-80 WEAPON SYSTEM		Revision No. 1 and Date 9-28-62
Contractor BOEING		
Contract No. AF04(647)-580 (CCP 844)		
Item No. 7687		
Nomenclature Shelter, Missile and Motor Transfer - Environmental, Missile/Motor Storage Building		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number 25-21709		
Specification No.		
Specification Date		
Description Function: 1. The requirement exists for an environmental shelter during the following transfer operations: 1. Transfer of motors from: a. Highway Transporter to Missile/Motor Storage Building (MMSB) b. MMSB to Multistage Transporter c. Ballistic Missile Shipping and Storage Container to MMSB		

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DEPT. REP. - MANUFACTURING
ENGINEERING
BASE INSTALLATIONS
MANUFACTURING

TYPE OF LIST	DATE
FACTORY SUPPORT EQUIPMENT	9-18-61
Model Designation and Name of End Item	Revision No. and Date
SM-80 WEAPON SYSTEM	
Contractor	
BORTON	
Contract No.	
AF 04(547)-580	
Item No.	
7688	
Nomenclature	
Control - Winch - Store & Launcher	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
25-27267	
Specification No.	
Specification Date	
Description	
<u>Function:</u> (1) Means are required to control the operation of engine and missile transfers in and out of SSCM, using the following equipment: (A) Missile Joining Rail winch (part of FSE item 7626). (B) Engine and Missile Storage Rail winch (part of FSE item 7629). when used in conjunction with either A or B above. (2) Functions in D2-11162 requiring this capability are: B4.2, B12.1, B12.6, B12.7, B12.9, B12.10. <u>Description</u> This equipment shall consist of motor controls as required to operate 1A and 1B above, with associated cables and connectors.	

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BOEING | D2-11162-1
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FACTORY SUPPORT EQUIPMENT

PAGE 2 OF 2

Item No. 7688

Nomenclature: Control Assembly, Transfer Winches

Descriptions: (Continued)

Also included is a hand held operator's panel with sufficient cable to permit observation of the various transfer operations. Stowage provisions for the operator's pendant will be provided.

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DEPT. RESP. - MANUFACTURING
ENGINEERING BASE INSTALLATIONS
M. H. Carter

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 10/19/61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7689	
Nomenclature Bridle-Rocket Motor, Stage I	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-26113	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists to connect the 1st Stage Rocket Motor Carriage to the following for various transfer operations. A. Engine & Missile Storage Rails winch cable (part of FSE 7629). B. Missile Joining Rails winch cable (part of FSE 7628). C. Ballistic Missile Trailer winch cable (part of MGE 4129) ** * Connection to rear towing lugs of 1st Stage Rocket Motor Carriage (for transfer of a single 1st Stage Rocket Motor or rocket motors in adjacent sets). **Connection to front towing lugs of 1st Stage Rocket Motor Carriage (for transfer of a single 1st Stage Rocket Motor only).	

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FACTORY SUPPORT EQUIPMENT

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ITEM No. 7689

Nomenclature: Bridle-Rocket Motor, Stage I

Function: (Continued)

2. The propulsive load must be transmitted from a point midway between the transfer rails to the towing lugs of the 1st Stage Rocket Motor Carriage.
3. The connecting device must be capable of transmitting the load required to transfer a 1st, 2nd and 3rd Stage Rocket Motor in train.
4. Functions in D2-11162 requiring this capability are: B2.2.1, B4.2.1 and B4.2.4.

Description:

The above requirements will be fulfilled by a bridle consisting of a spreader bar and cables with suitable end fittings for attachment to the 1st Stage Rocket Motor Carriage and the various winch cables.

NOTE: For transfer of Rocket Motors in trains, this bridle is used in conjunction with FSE 7691 and FSE 7690.

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ENGINEERING
BASE INSTALLATIONS
MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 10/19/61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AFO4(647)-580	
Item No. 7690	
Nomenclature Bridle-Rocket Motor, Stage III	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-23068	
Specification No.	
Specification Date	
Description Function: 1. A requirement exists to transfer a single 3rd Stage Rocket Motor or rocket motors in adjacent sets between fixed rails and the SSCBM. A device is required to connect the front towing lugs of the 3rd Stage Rocket Motor Carriage to the Ballistic Missile Trailer winch cable. 2. A requirement exists to connect the front towing lugs of the 2nd Stage Rocket Motor Carriage to the Ballistic Missile Trailer winch cable for transfer of a single 2nd Stage Rocket Motor between fixed rails and the SSCBM.	

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ITEM NO. 7690

Nomenclature: Bridle-Rocket Motor, Stage III

Function: (Continued)

3. The propulsive load must be transmitted from a point midway between the transfer rails to the towing lugs on the Rocket Motor Carriage.
4. The connecting device must be capable of transmitting the load required to transfer a 1st, 2nd and 3rd Stage Rocket Motor in train.
5. Functions in D2-11162 requiring this capability are:
B4.2.1 and B4.2.4.

Description:

The above requirements will be fulfilled by a bridle with suitable end fittings for attachment to the 2nd or 3rd Stage Rocket Motor Carriage front towing lugs and the Ballistic Missile Trailer winch cables.

NOTE: For transfer of Rocket Motors in train, this bridle is used in conjunction with FSE 7691 and FSE 7689.

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 9-26-61
Model Designation and Name of End Item BAD SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7691	
Nomenclature Positioning Set-Rocket Motor Carriage	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-23760	
Specification No.	
Specification Date	
<u>Description</u> 1. The requirement exists to position rocket motor carriages during the transfer of Rocket Motors-Stage I, II, and III, in Shipping and Storage Container-Ballistic Missile (MGE 4095) 2. Functions in D2-11162 requiring this capability are: B4.2 <u>Description:</u> Positioning set consists of positioning rod assemblies which are a part of MGE 4280. Specifically, the following assemblies shall be used: 25-25004-1 and 25-25004-2. These assemblies will space Rocket Carriage, Stage I and Stage II, as well as, Rocket Carriage, Stage I and Stage II, as well as, Rocket Carriage, Stage II and III. Rocket Motors are secured to the vehicles mentioned above when transferring Rocket Motors in a train. <u>NOTE:</u> Only the positioning rod assemblies of 25-23760 shall be used.	

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Manufacturing

Basic Installations

Facilities

Engineering

W. H. Butler
W. H. Butler
W. H. Butler

Assigned to Engineering.

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 1-16-62
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date 3-22-6
Contractor BOEING	
Contract No. A701(547)-580	
Item No. 7695	
Nomenclature Simulators, Airborne Components, Missile Test	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-34559	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. A requirement exists for a means to isolate faulty airborne components on the missile when the missile checkout console indicates that a downstage failure exists. The following simulators are required: First, second, third, stage NCU signal input loads, G&C Signal output loads, angular accelerometer signal input loads, Stage I and Stage II NCU Battery Squibs and 1st Stage Ignition squibs. 2. Functions in D2-11162 requiring this capability: El.3 3. Functions in D2-11162-1 requiring this capability are: El.3	

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Description (continued)

The simulators consist of the appropriate mating raceway cable connectors, internal circuitry, external cables, switches, and test points. The external cables shall have a minimum length of twelve feet to allow for accessibility to control switches and test points. The necessary test adapters to prevent probing of the connectors during functional testing of the simulators shall be provided. The simulators shall be packaged in five portable configurations:

One containing the simulated loads for the G&C section; one containing the loads to simulate the NCU's and AAU; the other 3 configurations shall be shorting plugs. The circuits on pages 4, 5, and 6 shall be combined to provide the most economical packaging.

BOEING

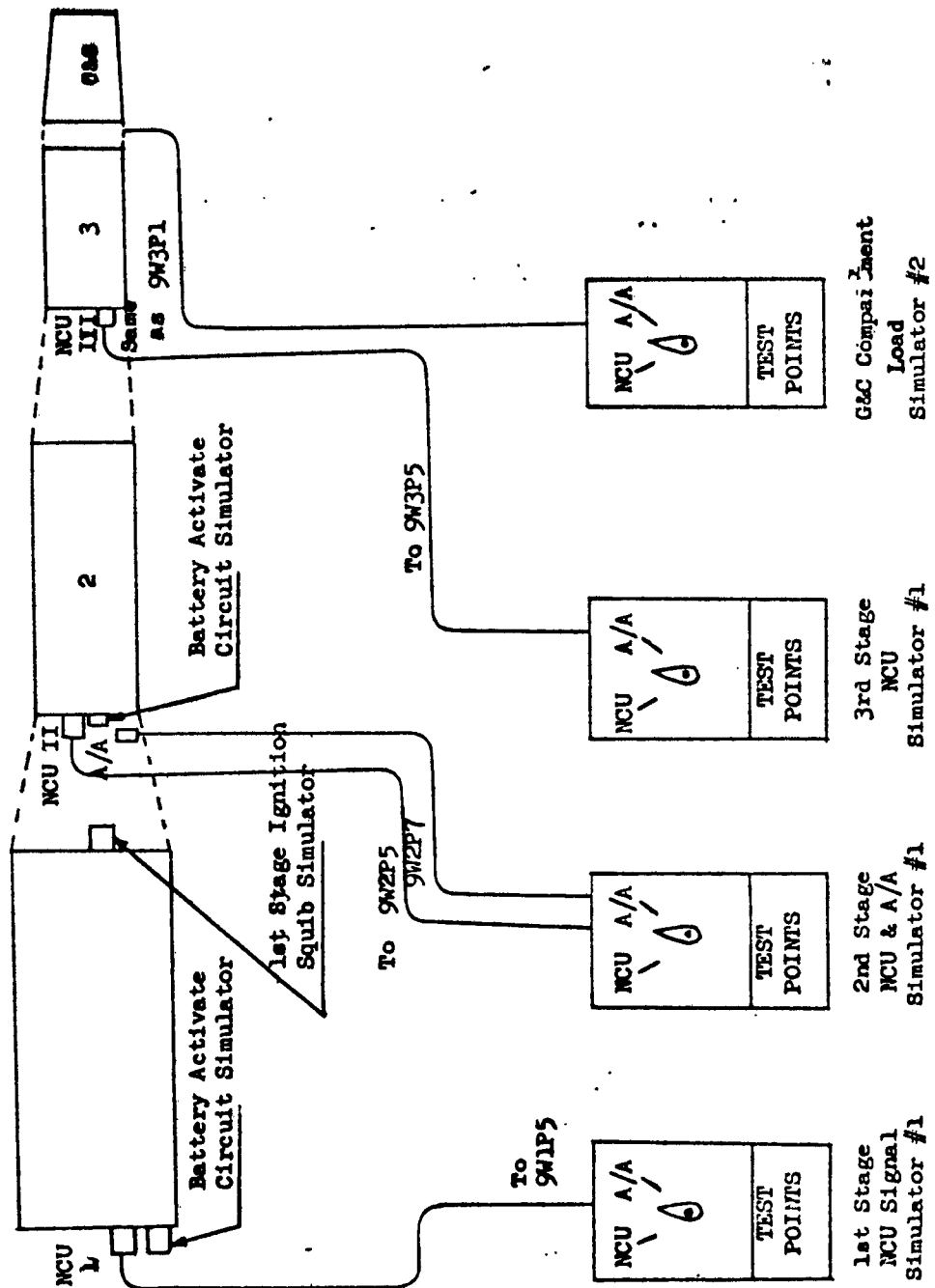
D2-11162-1

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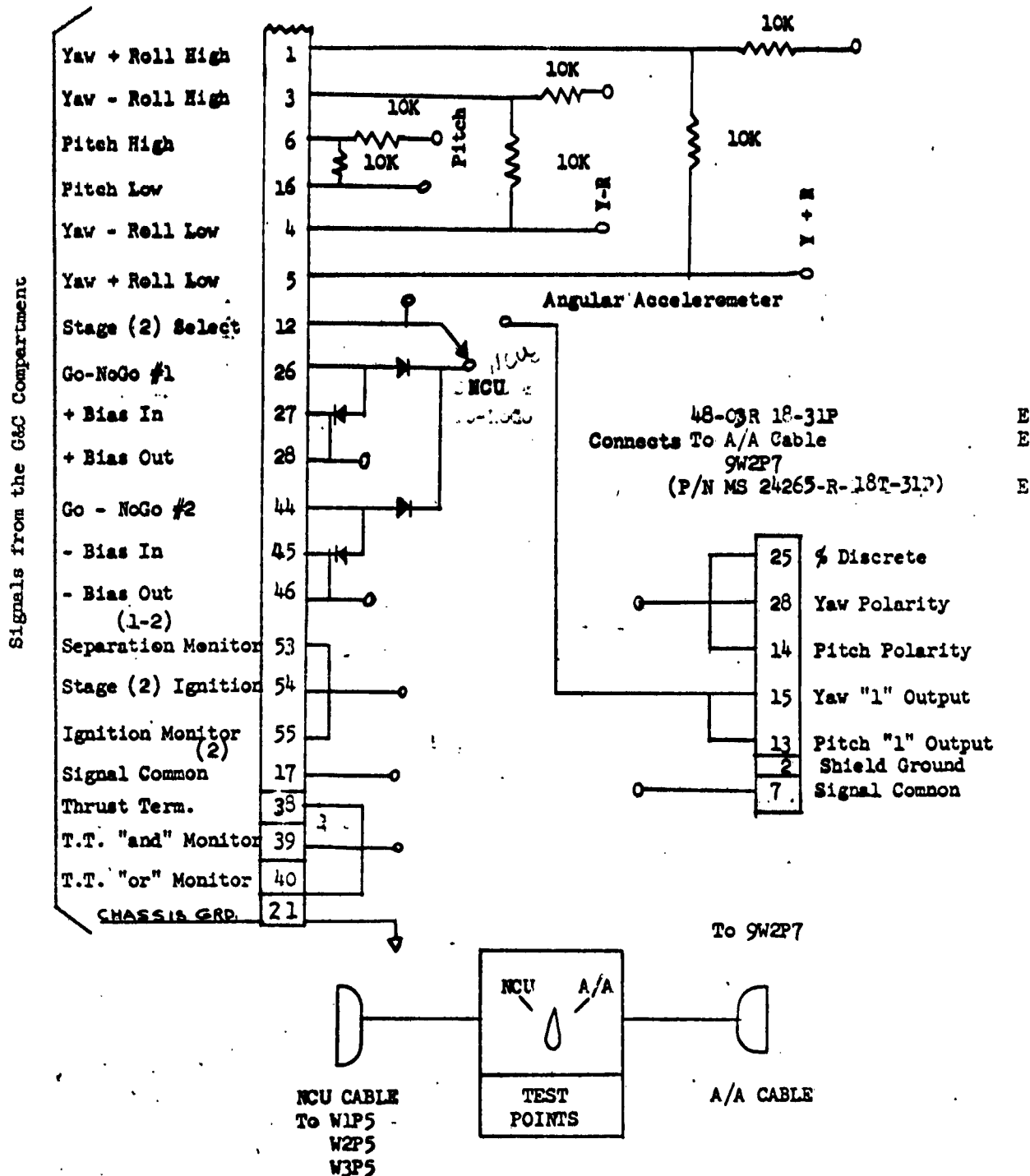
SIMULATORS, AIRBORNE COMPONENTS



4-15-63

SIMULATOR # 1 STAGE NCU'S AND AAU

Connects to NCU Cable W1P5, W2P5 and W3P5
P/N 414-580-002



BOEING

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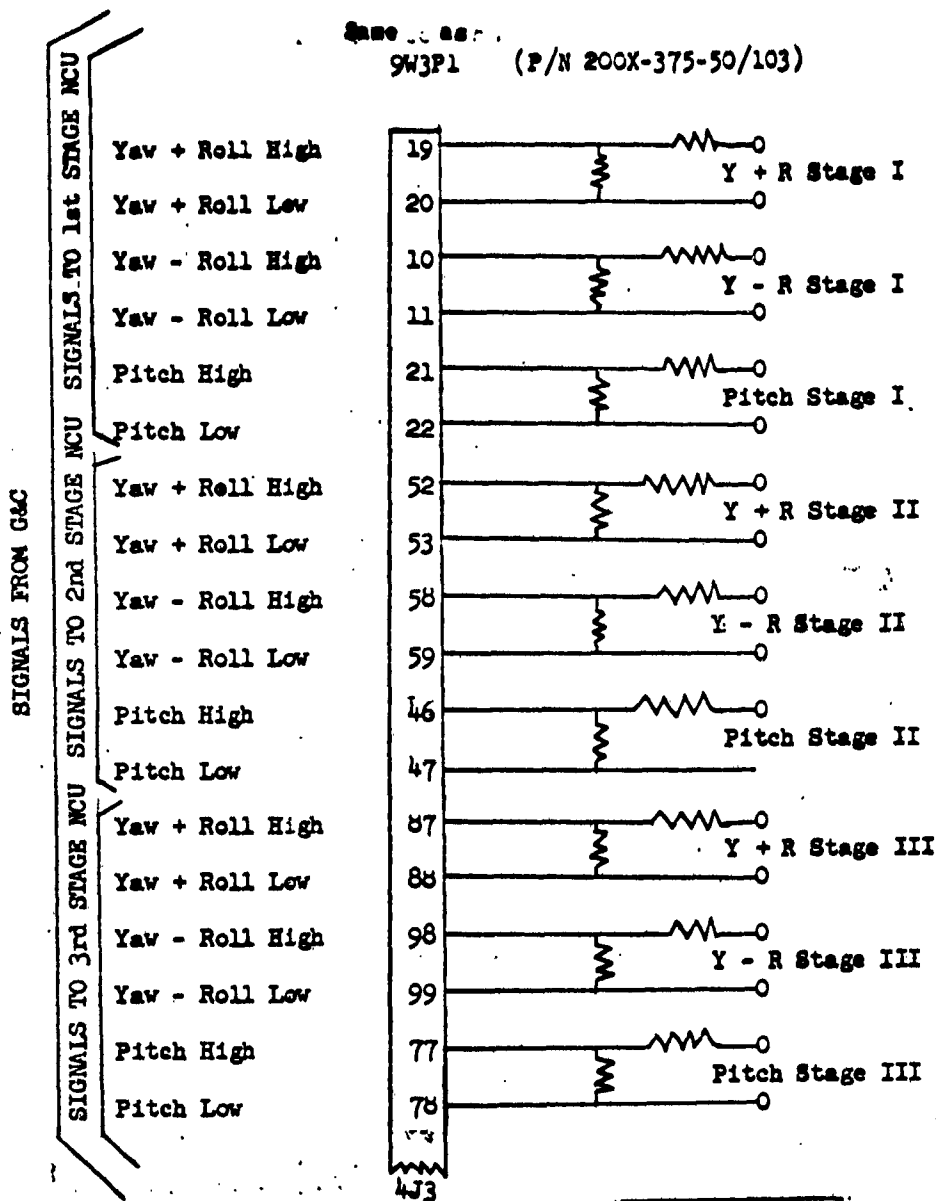
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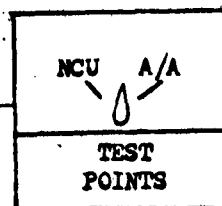
LOAD SIMULATOR #2 - G&C COMPARTMENT

Same as 9W3P1 (P/N 200X-375-50/103)



NOTE: All resistors are 10K Ω 1/8 watt

Same as 9W3P1



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BOOKING

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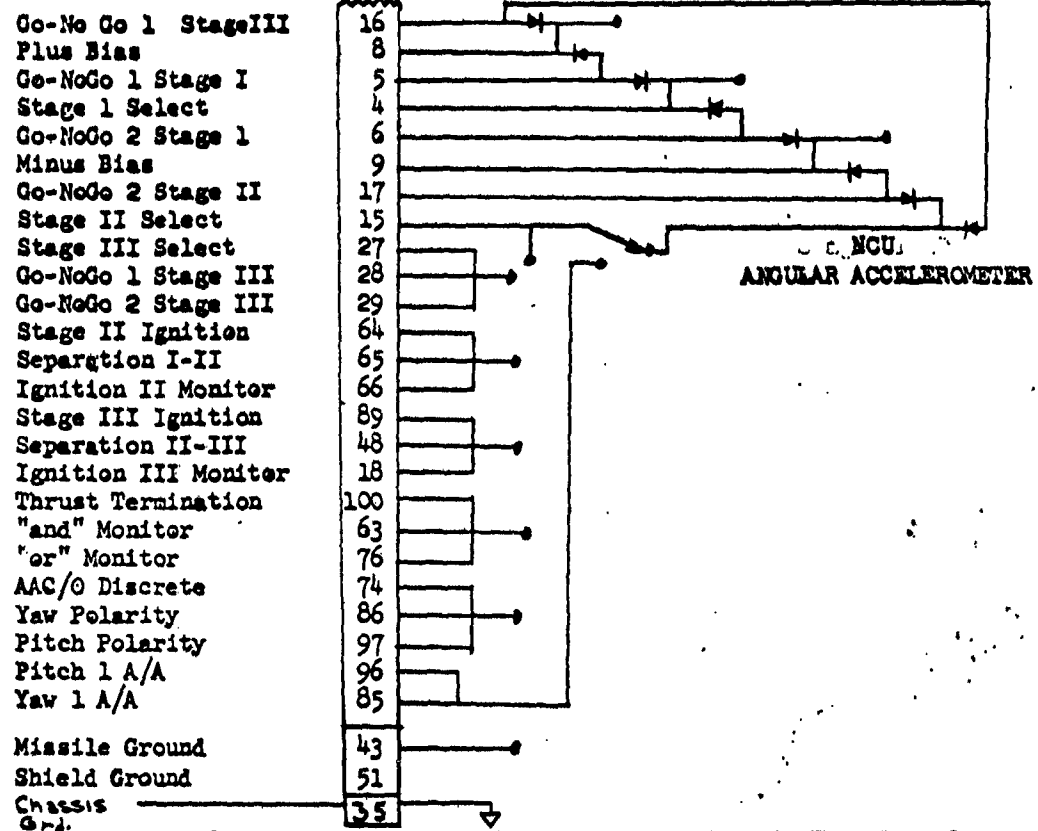
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LOAD SIMULATOR # 2 - G&C COMPARTMENT

E

Connect at a 3P1 (P/N 200X-375-50(103))

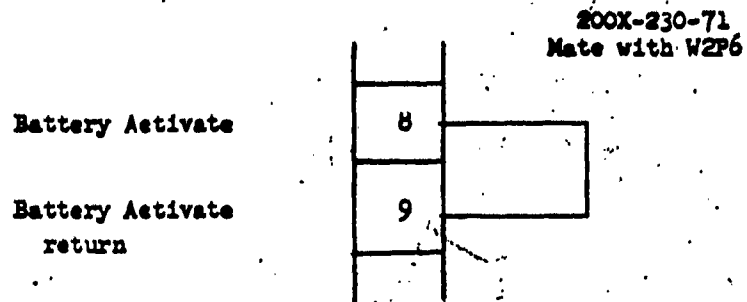


NOTE: Diodes must be able to stand 10 MA and PIV = 15 volts.

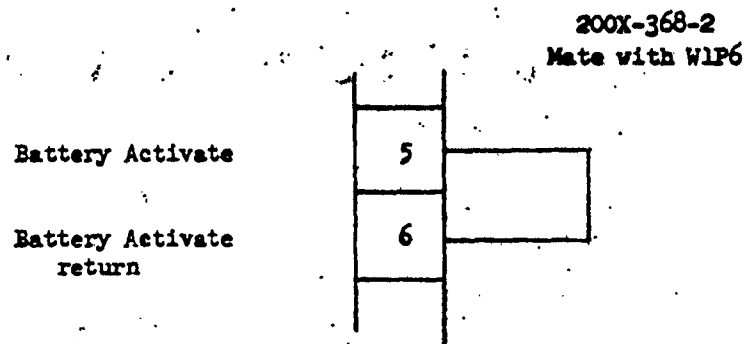
Diode PS520M P/N 479-0003-001

4-15-63

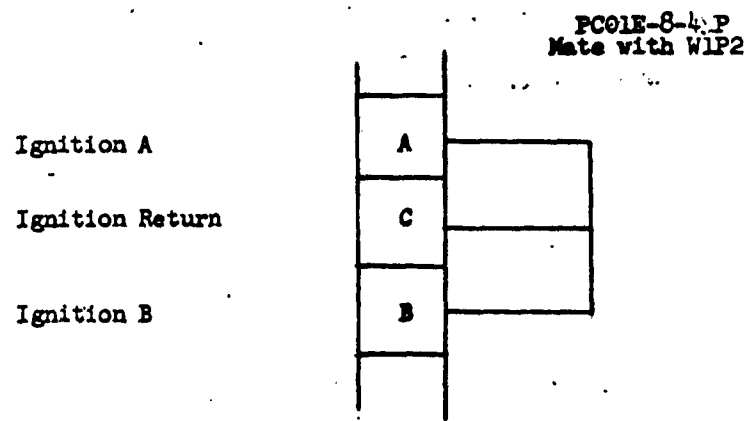
Stage II - NCU Battery Activate



Stage I - NCU Battery Activate



1st Stage Ignition S&A



275-4-15-63

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 2-20-62
Model Designation and Name of End Item HAD SM-80 WEAPON SYSTEM	Revision No. B and Date
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7696	
Nomenclature Test Set and Adapter Cables - Raceway Cables	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists for a means to test dielectric integrity of ordnance circuits of operational raceway cables after the cables have been installed onto the missile, but prior to connection of airborne devices. 2. Function in D2-11162 & D2-11162-1 requiring this capability is: B7.6 <u>Description</u> The test set shall (a) be automatic; (b) use a 28 V DC power source, fused at 100 milliamperes, to supply test voltage; (c) contain the necessary circuitry to test the insulation between each of the squib (see page 2)	

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REVISED

BOEING

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FACTORY SUPPORT EQUIPMENT

ITEM 7696

NOMENCLATURE: Test Set and Adapter Cables - Raceway Cables

Description (cont'd)

and arming wires and all other wires and shields; (d) provide an indication when the measured insulation resistance is less than 1 megohm; (e) include the necessary cables to connect to the raceway cables during testing; (f) include the necessary test adapter to allow functional testing the test set without probing the connectors.

DEPT. RESP.	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
	W.P. C. [Signature]	[Signature]	[Signature]

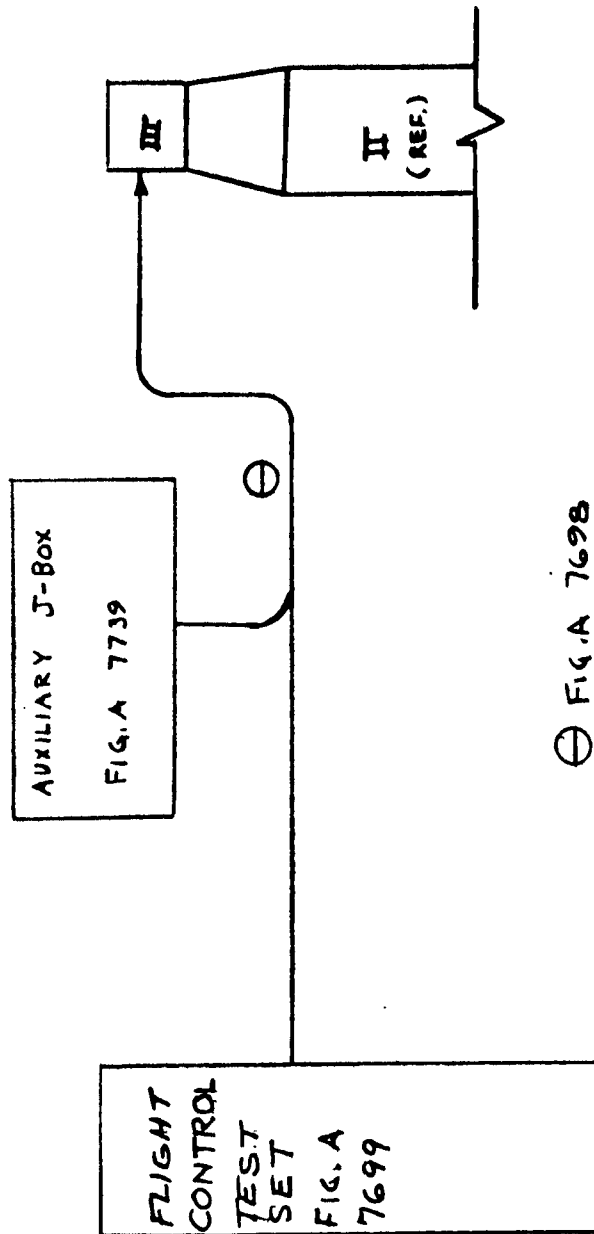
TYPE OF LIST FACTORY SUPPORT EQUIPMENT		DATE 2-23-62
Model Designation and Name of End Item HED SM-80 WEAPON SYSTEM		Revision No. and Date A
Contractor BOEING		
Contract No. AF04(647)-580		
Item No. 7698		
Nomenclature Cable Assembly, Downstage Test, MAB		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number 25-35888-1		
Specification No.		
Specification Date		
Description Function 1. A requirement exists to provide electrical connections between the ground test equipment and the upper connector of the third stage raceway cable. 2. Functions in D2-11162-1 requiring the capability are: BG.1, BG.1, BG.2, BG.1, B11.1. Description The assembly consists of cables equipped with connectors at each end to connect the ground test equipment to the upper connector of the third stage raceway cable, installed on the missile in the MAB. The necessary test adapters to prevent probing of the connector, during testing of cables shall be provided. Note: For Win II only.		

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⊖ FIG. A 7698

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R

DEPT. RESP. - Engineering

ENGINEERING

W.R. Blair

BASE INSTALLATIONS

MANUFACTURING

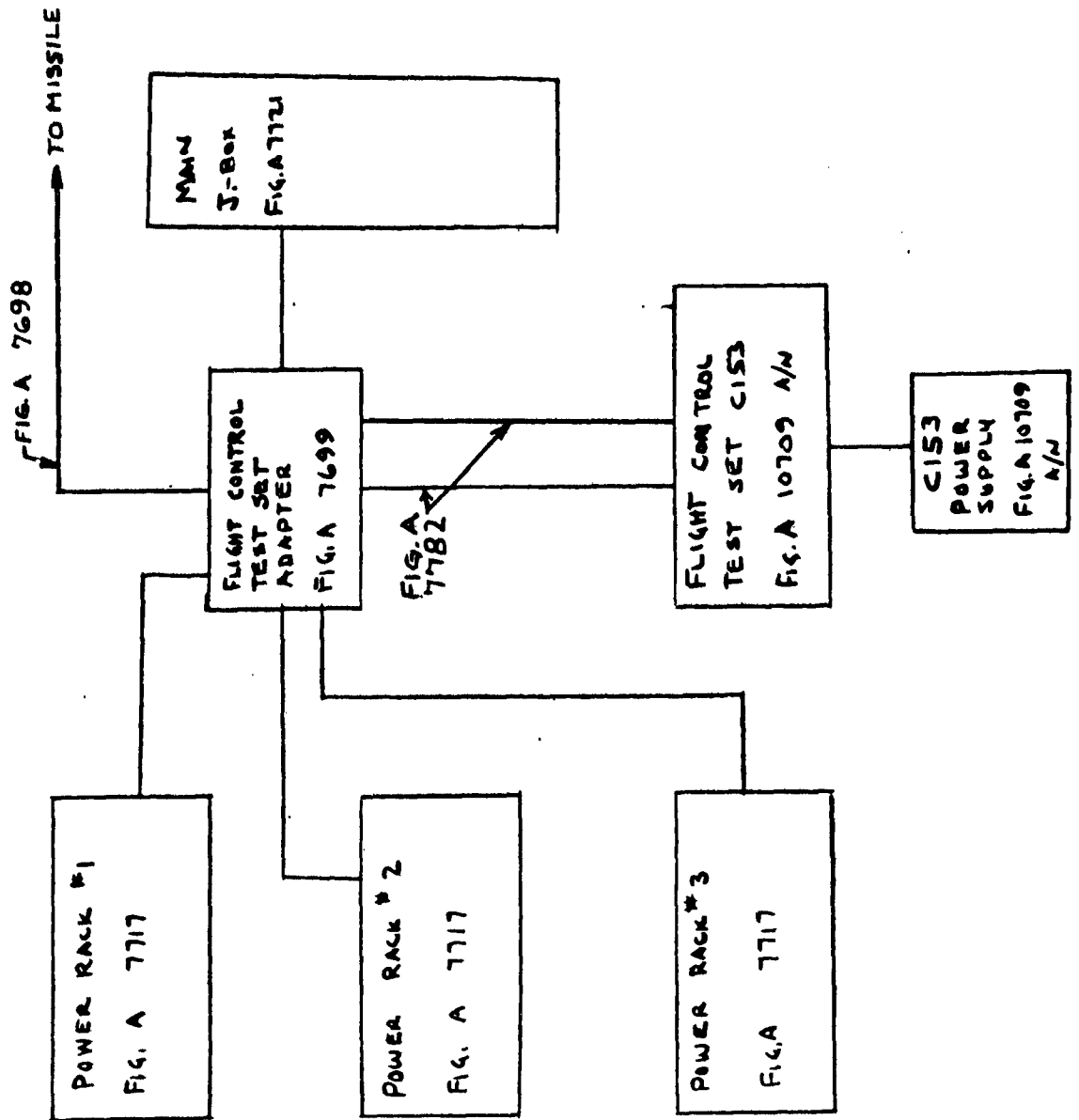
R.C. Johnson

TYPE OF LIST		DATE
FACTORY SUPPORT EQUIPMENT		2-23-62
Model Designation and Name of End Item		Revision No. A and Date
H&D SM-80 WEAPON SYSTEM		
Contractor BOEING		
Contract No. AF04(647)-580		
Item No. 7699		
Nomenclature Adapter, Flight Control Test Set, MAB		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number		25-35735
Specification No.		
Specification Date		
<u>Description</u> 1. A requirement exists to provide a suitable interface between the Flight Control Test Set, C153 (Fig. "A" 10709) and Boeing ground test equipment, and to provide those functions required in the MAB that are not provided by the C153. 2. Functions in D2-11162-1 requiring the capability are: B6.1, B8.1, B8.2, B9.1, B11.1. <u>Description</u> The adapter shall be capable of power switching sequencing, voltage monitoring, and ordnance circuit monitoring. Detailed design requirements are provided in the Design Requirements Document D2-13189. Note: For Wing II only.		

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FACTORY SUPPORT EQUIPMENT

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Item No. 7701

Nomenclature: Adapter, Joining - Nozzle Control Unit, Stage I

Description (continued)

on the positioning dolly. The adapter will attach to the flame deflector ring nutplates in the NCU cover casting.

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BOEING D2-11162-1
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DEPT. RESP. -	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item E & D SM-80 WEAPON SYSTEM	Revision No. and Date 8-1-61
Contractor BAC	
Contract No. AF04 (647) - 580	
Item No. 7702	
Nomenclature Adapter, Joining - Nozzle Control Unit, Stage II	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21509	
Specification No.	
Specification Date	
Description Function 1. A requirement exists for an adapter to be used in conjunction with the final assembly positioning dolly, (Ref. Figure A 7708), to position and join the NCU to the engine. 2. Functions is D2-11162 requiring this capability are: B5.1 Description The joining adapter is to be designed to mount on the final assembly positioning dolly to support the NCU. All adjustments for positioning the NCU are to be controlled by the adjusting mechanism on (continued - page 2)	

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BOEING DP-11162-1
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Monomelature: Adapter, Joining - Nozzle Control Unit, Stage II

Description (continued)

the positioning dolly. The adapter will attach to the flame deflector ring nutplates in the NCU cover casting.

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DEPT. RESP. :

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BOEING	DZ-11162-1
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FACTORY SUPPORT EQUIPMENT

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Item No. 7703

Nomenclature: Adapter, Joining - Nozzle Control Unit, Stage III

Description (continued)
adjustment mechanism on the positioning dolly. The adapter will attach to the flame deflector ring nutplates in the NCU cover casting.

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BOEING | D7-11162-1
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DEPT. RESP. - *Manufacturing*

ENGINEERING	BASE INSTALLATIONS	MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT		DATE 3-15-61
Model Designation and Name of End Item II & D SM-PO WEAPON SYSTEM		Revision No. and Date A-1-61
Contractor BOEING		
Contract No. AF 02(117)-580		
Item No. 7708		
Nomenclature Dolly, Positioning - Final Assembly		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number 25-21606		
Specification No.		
Specification Date		
Description <u>Function</u> 1. A requirement exists for a means of supporting, positioning, and aligning NCU's and Interstages during joining operations. 2. Functions in D2-11162-requiring the capabilities are: B5.1, B7.4 <u>Description</u> A V-Groove wheeled dolly shall be provided with sling attach points to facilitate handling and placing on the assembly rails. Vertical, lateral, roll, pitch and yaw adjustments shall be provided. The dolly will be provided with a spindle to support and secure all Interstage and NCU adapters (FEE 7701) (continued - next 2)		

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Item No. 7708

Nomenclature: Dolly, Positioning - Final Assembly

Description (continued)

(FSE 7702) (FSE 7703) (FSE 7613) (FSE 7614). A suitable brake shall be an integral part of the dolly to locate the dolly firmly in the operating position on the assembly rails.

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DEPT. RESP. - 11/11/61	BASE INSTALLATIONS	MANUFACTURING
ENGINEERING		

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 1-15-61
Model Designation and Name of End Item H & D SM-80 WEAPON SYSTEM	Revision No. and Date -1-61
Contractor BAC	
Contract No. AFO4 (647) - 530	
Item No. 7709	
Nomenclature Dolly, Joining - Skirt to Engine	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21637	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A means must be provided to support the skirt during joining to the aft end of the first stage engine. Dolly will be used in conjunction with skirt sling (see 7.3) 2. Functions in D2-11162 requiring the capabilities are: 37.3 <u>Description</u> This equipment is a wheeled crane mounted on rails and is adjustable in both horizontal and vertical direction.	

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BOEING D2-11162-1
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DEPT. RESP. - Misc. Eng.
ENGINEERING
BASE INSTALLATIONS
MANUFACTURING
J.C. Grier
J.H. Koster

TYPE OF LIST FACTORY SUPPORT EQUIPMENT		DATE 3-15-61
Model Designation and Name of End Item SM-80 WEAPON SYSTEM		Revision No. and Date 11-16-61
Contractor BOEING		
Contract No. AF04(647)-580		
Item No. 7715		
Nomenclature Adapter Cables, Test Set - Raceway Cables		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number 25-21663		
Specification No.		
Specification Date		
Description		
<u>Function</u>		
1. A requirement exists for a means to test the raceway cables for an insulation effectiveness, and continuity. 2. Functions in D2-11162 requiring this capability are: E1.3.2.		
<u>Description</u>		
This equipment consists of adapter cables to be used in conjunction with ACQ-02. The raceway cables will be connected to the adapter cables while making the continuity and insulation tests. For design requirements see Document D2-11580.		

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BOEING D2 11162-1
APP. I 72

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DEPT. RESP. - ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
ENGINEERING		

TYPE OF LIST	DATE
FACTORY SUPPORT EQUIPMENT	3-15-61
Model Designation and Name of End Item	Revision N and Date
H&D SM-60 WEAPON SYSTEM	8-1-61
Contractor BOEING	
Contract No. AFO4(647)-580	
Item No. 7717	
Nomenclature Power Supply Group-MAB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. A requirement for a DC Power Supply Group to perform missile tests in the Missile Assembly Building. 2. Functions in D2-11162 requiring this capability are: B6.1, B8.1, B8.2, B9.1, B11.1. <u>Description</u> The DC Power Supply Group consists of T-R units, power switching panels and cooling blower. Due to the current requirement for performing the test in Function 11. above, the power supplies are designed to operate specifically in the Missile Assembly Building. For detailed design information see specifications 10-20937-1, -2, and D2-20938-1. For detailed design requirements see document D2-11261.	

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT		DATE 3-15-61
Model Designation and Name of End Item HAD SM-80 WEAPON SYSTEM		Revision No. A and Date
Contractor BOEING		
Contract No. AF04(647)-580		
Item No. 7718		
Nomenclature Cable Assemblies, Equipment Interconnecting, MAB		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number 21-51012		
Specification No.		
Specification Date		
Description Function 1. A requirement exists to provide interconnection and the necessary ground cables for the Power Supply Group, Missile Checkout Console (MRCN 7723), G&C Cooling Unit, Test Junction Boxes, and Electrical Power Panel. 1.1 Functions in D2-11162 requiring this capability are: B6.1, B8.1, B8.2, B12.1. 2. A requirement exists to provide interconnection and the necessary ground cables for the Power Supply Group, Flight Control Test Set (ACO 10709), Test Junction Boxes, and Electrical Power Panel. 2.1 Functions in D2-11162-1 requiring this capability are: B6.1, B8.1, B8.2, B9.1, B11.1. (see page 2)		

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FACTORY SUPPORT EQUIPMENT

Item No. 7718

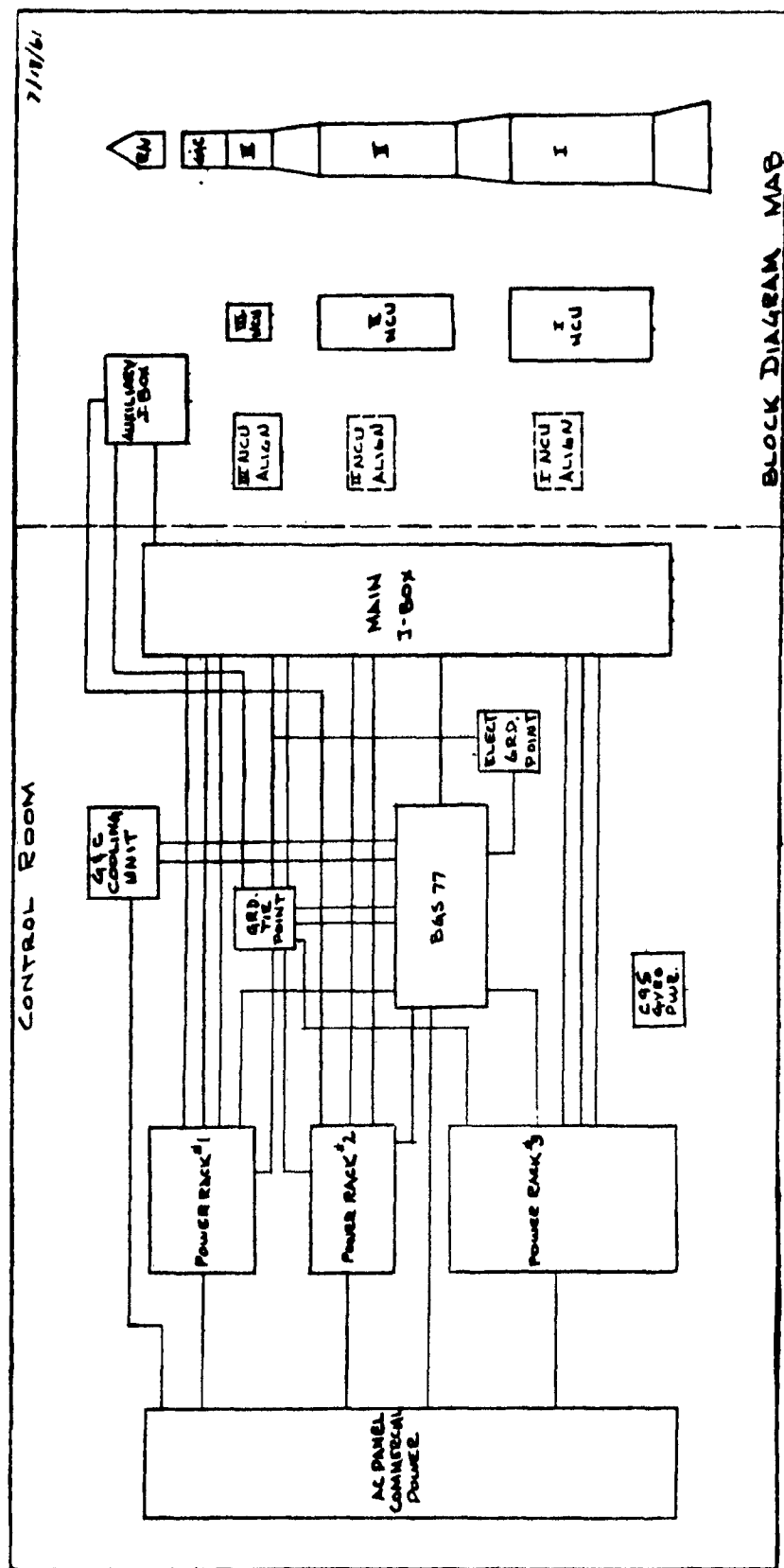
Nomenclature: Cable Assemblies, Equipment Interconnecting, MAB

Description

The cable assemblies consist of cables equipped with connectors at each end which allow each cable to connect to its proper receptacle. Ground cables are equipped with ground lug connectors to ground the equipment listed in Function 1 above to a common ground point.

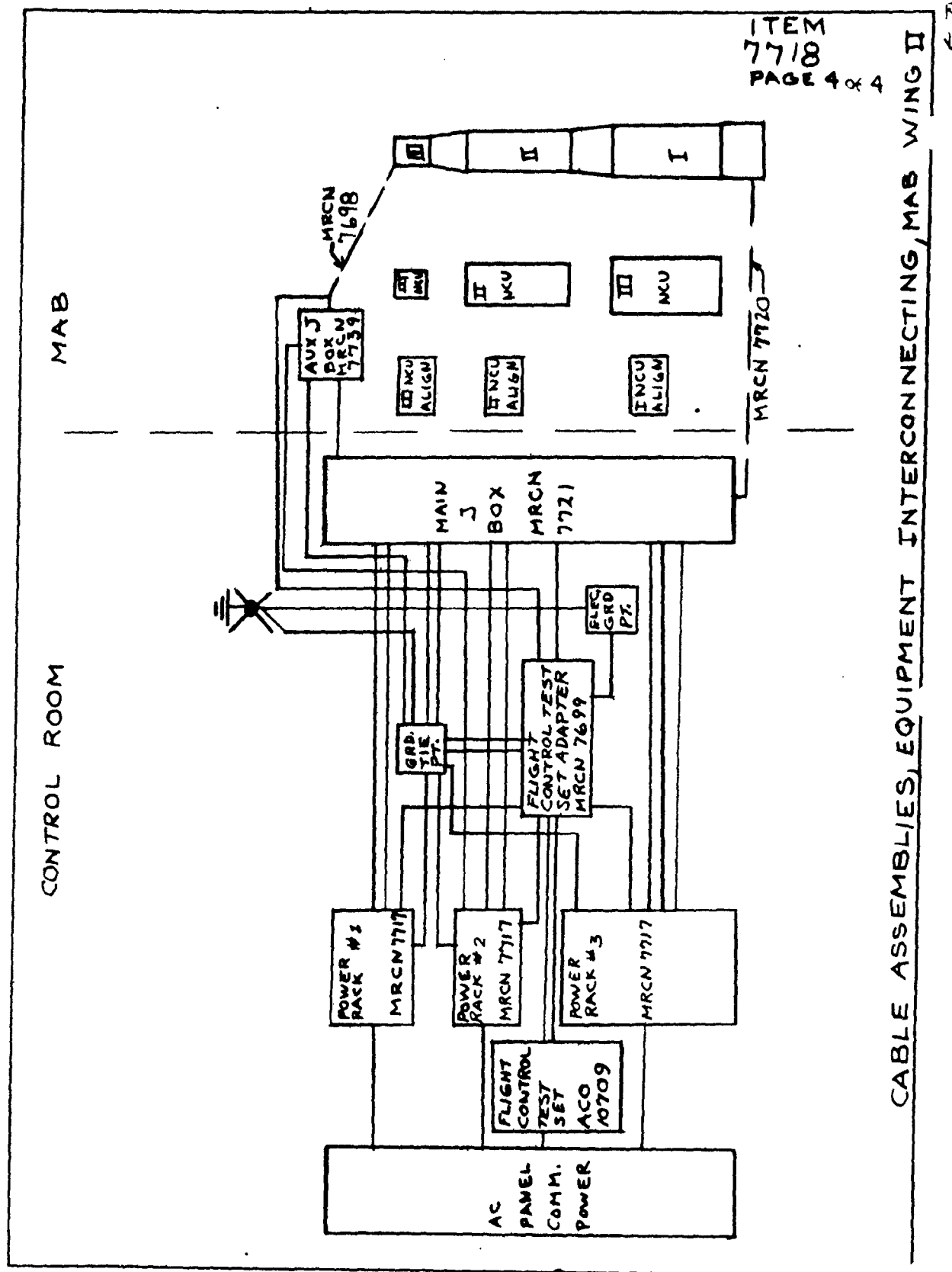
For cable layout of test area see drawing 21-51012. For detail design requirements refer to document D2-11261.





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CABLE ASSEMBLIES, EQUIPMENT INTERCONNECTING, MAB WING II

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US 4286 2000

DEPT. RESP. - ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
ENGINEERING		

R

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item R&D SM-80 WEAPON SYSTEM	Revision No. and Date 8-4-61
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7719	
Nomenclature Cable Assemblies, NCU Test	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 21-51012	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. A requirement exists to provide electrical connections between the junction box and missile components and the NCU Zero Alignment Test Set in the "J" Box. 2. Functions in D2-11162 requiring this capability are: B6.1 <u>Description</u> Cable assemblies provide connection of: 1. Test "J" Box & NCU I 2. Test "J" box & NCU II 3. Test "J" Box & NCU III 4. NCU Zero Alignment and "J" box. For detailed design requirements see document D2-11261	

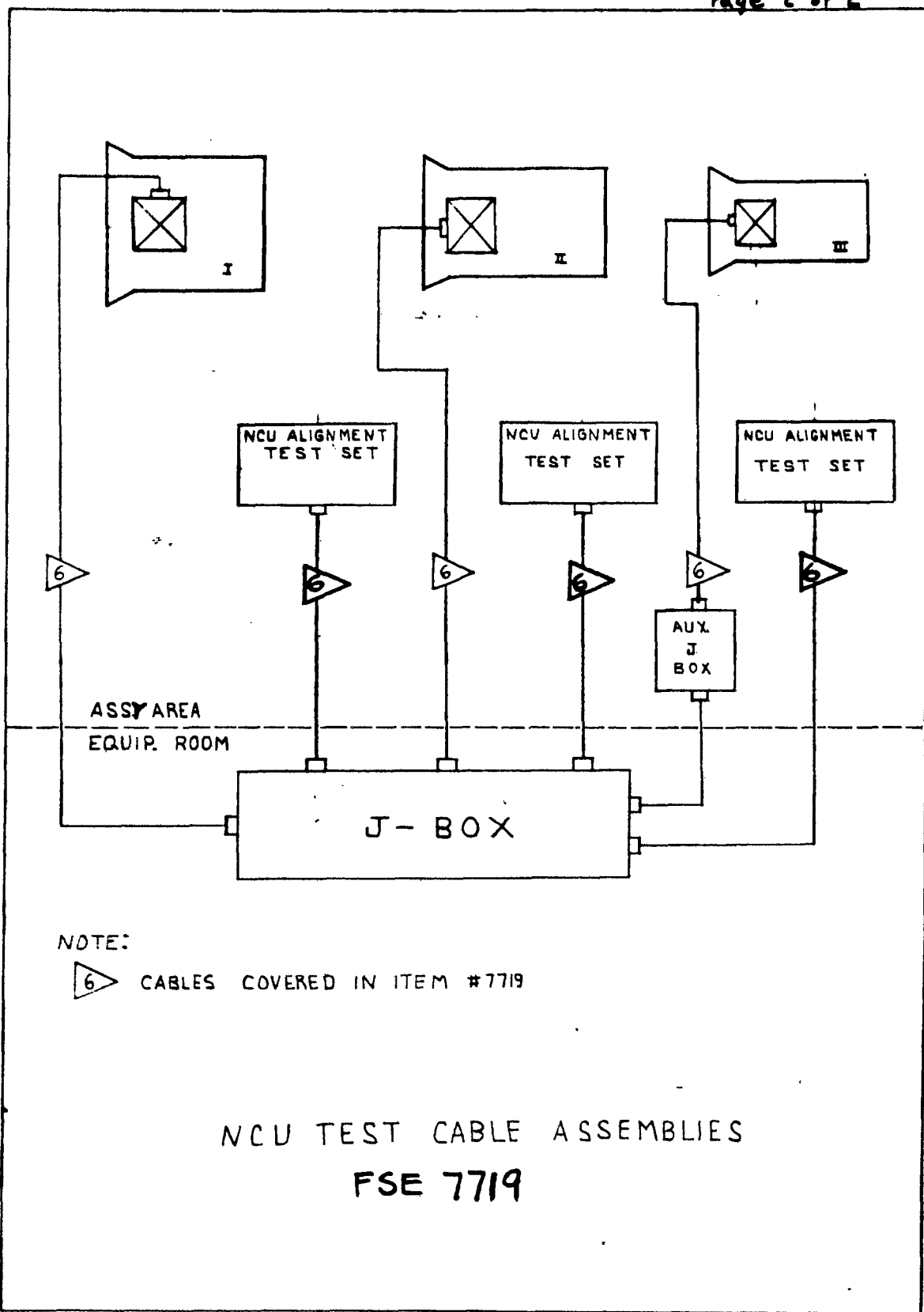
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BOEING	D2-11162-1
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U3-8871 1000 (Rev. BAC 1546-L-R3)

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TYPE OF LIST		DATE
FACTORY SUPPORT EQUIPMENT		3-15-62
Model Designation and Name of End Item		Revision No. A and Date
H&D SM-80 WEAPON SYSTEM		
Contractor		
BOEING		
Contract No.		
AF04(647)-580		
Item No.		
7720		
Nomenclature		
Cable Assemblies, Umbilical, MAB		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number		
26-12081		
Specification No.		
Specification Date		
Description		
Function		
1. A requirement exists to provide electrical connection between the junction box and the missile skirt and the Missile G&C Section, and provide coolant transmission between G&C Cooling Unit and the Missile G&C Section. 1.1 Sections in D2-11162 requiring this capability are: B6.1, B8.1, B8.2, B12.1. 2. A requirement exists to provide electrical connection between the junction box and the missile skirt. 2.1 Sections in D2-11162-1 requiring this capability are: B6.1, B8.1, B8.2, B9.1, B11.1.		
Description		
1. Cable assemblies provide connection of: (1) Test "J" box to skirt.		

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(see page 2)

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FACTORY SUPPORT EQUIPMENT

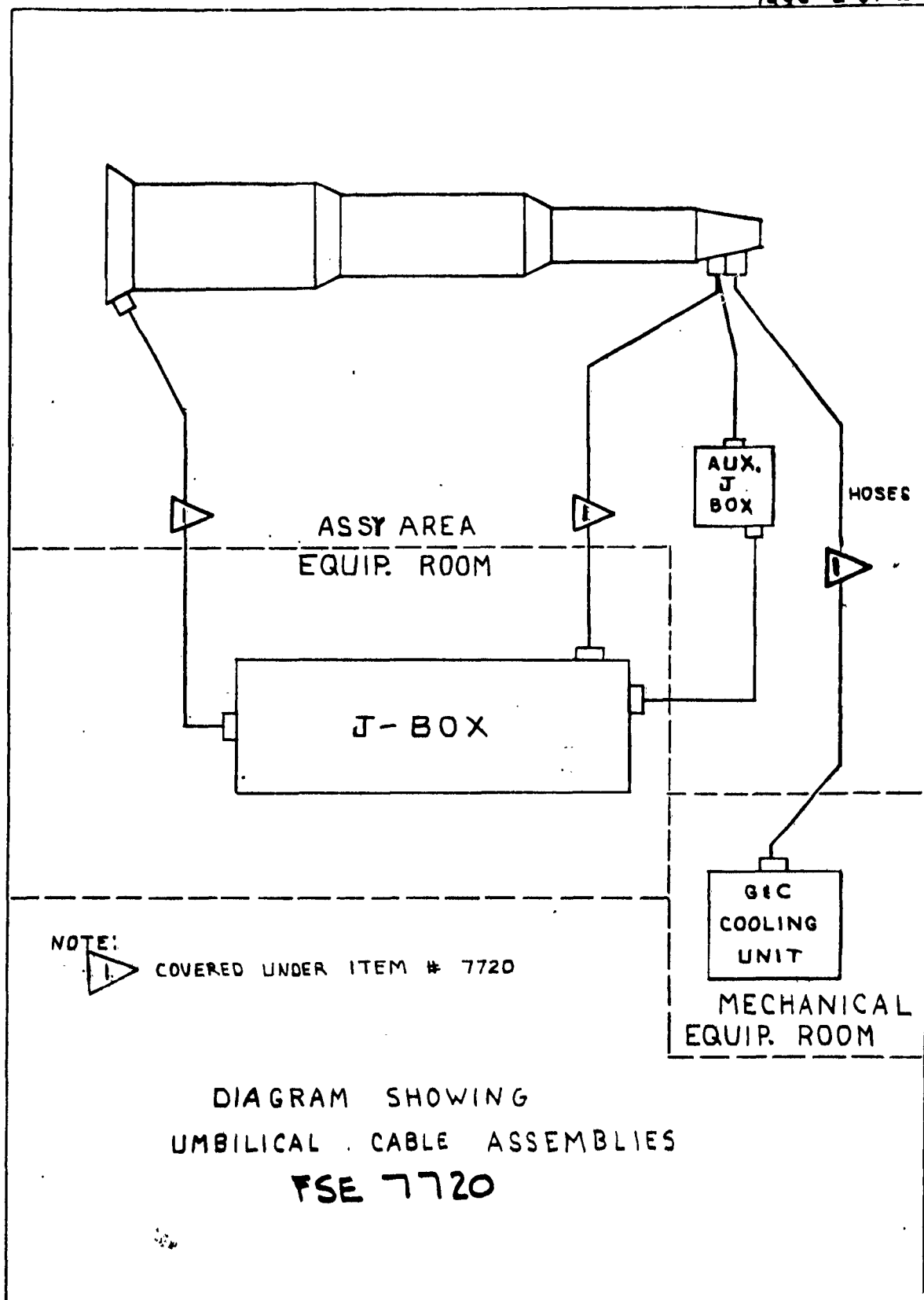
ITEM 7720

NOMENCLATURE: Cable Assemblies, Umbilical, MAB

Description (cont'd)

(2) Test "J" box to G&C Section, and (3) Cooling Unit to G&C Section, (Wing I).

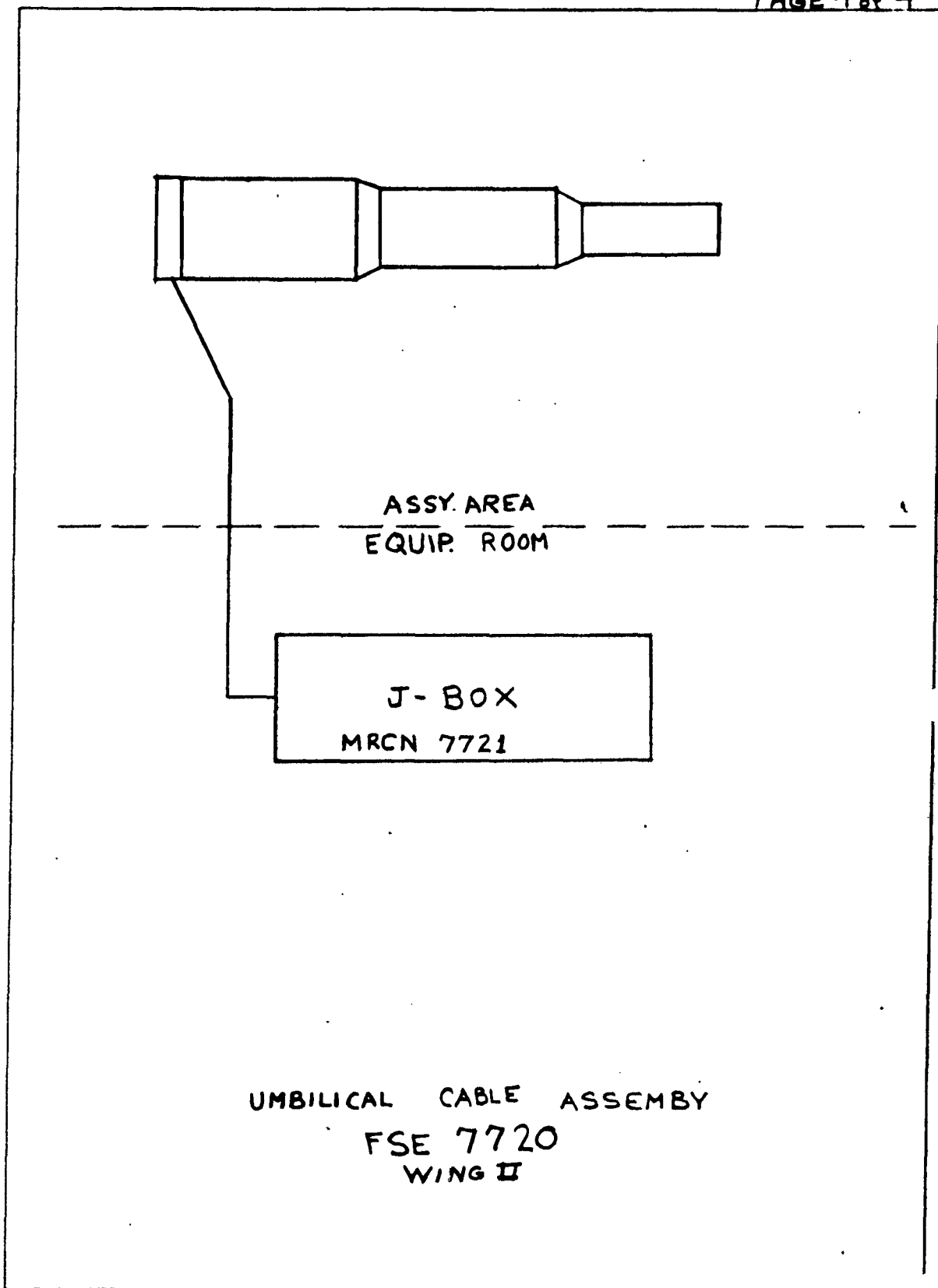
2. Cable assembly provides connection between test "J" box to skirt (Wing II).



U3-4071-1000 (was BAC 1546-L-R3)

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U3 4288 2000

BOEING	VOL -	NO D2-11162-1
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DEPT. RESP. - ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
<i>L. R. Miller</i>	<i>H. C. Miller</i>	<i>W. H. Miller</i>

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date 8-1 -61
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7721	
Nomenclature Junction Box, Test, MAB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. A requirement exists for a junction box between test equipment and missile components in the MAB. 2. Functions in D2-11162 requiring this capability are: B6.1, B8.1, B8.2, B9.1, B11.1 <u>Description</u> The junction box provides a means for interconnecting the cable assemblies in the MAB. The design of the junction box is such that it is used specifically for the missile test area. The following cable assemblies are connected to the box; Equipment Interconnecting Cable Assemblies, Sub. Fig. "A" 7718; NCU Test Cable Assembly, Sub. Fig. "A" 7719; Umbilical Cable Assembly Sub. Fig. "A" 7720. For detail design requirements see document D2-10125.	

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BOEING	D2-11162-1
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DEPT. RESP. - Engineering	ENGINEERING	MANUFACTURING
	BASE INSTALLATIONS	

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date 11-22-61
Contractor BOEING	
Contract No. AF04(642)-580	
Item No. 7724	
Nomenclature Test Set, NCU Zero Alignment	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-26801-1 or -17	
Specification No.	
Specification Date	
Description Function: 1. A requirement exists for a means of applying an electrical zero signal to the NCU's while hydraulic and electronic power is applied. 2. Functions in D2-11162 requiring this capability are: B6.1, B3.1 Description: The test set is a portable device which has the capabilities of applying hydraulic and electronic power to the NCU's while providing zero electrical signals. The test set is designed to operate in the NAB in conjunction with the power supply group, the missile checkout console and the main junction box; and in the CPA in conjunction with the power supply group and the distribution box. For detailed design requirements see document D2-11579.	

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DEPT. RESP. - *Manufacturing*
 ENGINEERING
 BASE INSTALLATIONS
 MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 6-1-61
Model Designation and Name of End Item H & D SM-80 WEAPON SYSTEM	Revision No. and Date 6-1-61
Contractor BOEING	
Contract No. AFO4 (647) - 580	
Item No. 7730	
Nomenclature Harness - R. H. Panel, Missile Interstage II - III	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21797	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists for a means to lift and hold the panel (R.H.) when installing the panel on the Missile. 2. Functions in D2-11162 requiring this capability are: B7.4, B10.3 <u>Description</u> The harness consists of a contoured strongback which can be attached to the R. H. Panel of Interstage II - III. Harness attach holes will be provided in the panel. The harness will include provisions for overhead crane lifting.	

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BOEING D2-11162-
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DEPT. RESP. - <i>Manufacturing</i>	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
	<i>1. 111162</i>	<i>111162</i>	<i>111162</i>

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 4-1-61
Model Designation and Name of End Item SM-60 WEAPON SYSTEM	Revision No. and Date 8-1-61
Contractor BOEING	
Contract No. APOL (647) - 580	
Item No. 7731	
Nomenclature Harness - L. H. Panel, Missile Interstage II - III	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-21796	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists for a means to lift and hold the panel (L.H.) when installing the panel on the Missile. 2. Functions in D2-11162 requiring this capability are: 27.4, 810.3 <u>Description</u> The Harness consists of a contoured strongback which can be attached to the L. H. Panel of Interstage II-III. Harness attach holes will be provided in the panel. The Harness will include provisions for overhead crane lifting.	

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DEPT. RESP.	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 6-16-61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. 2304 (647) - 520	
Item No. 7739	
Nomenclature Junction Box, Auxiliary, MAB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. A requirement exists to provide an auxiliary junction box to interconnect cables from the G&C umbilical to the main junction box and the power supply rack in the Missile Assembly Building. Reference drawing 21-51012, item #507. 2. Functions in D2-11162 requiring this capability are B6.1, B8.1, B8.2, B9.1, B11.1. <u>Description</u> Junction box to interconnect cable and connectors.	

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DEPT. RESP.	ENGINEERING	BASE INSTALLATIONS	MANUFACTURING

TYPE OF LIST	DATE
FACTORY SUPPORT EQUIPMENT	August 1, 1961
Model Designation and Name of End Item	Revision No. and Date
SM-80 WEAPON SYSTEM	
Contractor	
BOEING	
Contract No.	
AFD4(647)-530	
Item No.	
7740	
Nomenclature	
Box, Test - Ordnance Cable	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
Description	
Function	
1. A requirement exists in the MAB to permit measuring the actual cable resistance of the arming and disarming circuits and to detect excessive resistance in cabling or connectors without the use of live STA's and Arm-Disarm Devices. 2. Functions in D2-111624 requiring this capability are: B8.2	
Description	
Box, Test-Ordnance Cable consists of a seven pin connector and circuitry to short pins 4-5 and pins 6-7. Pins 1-2 and 1-3 will be shorted through a low resistance switch which can be opened.	

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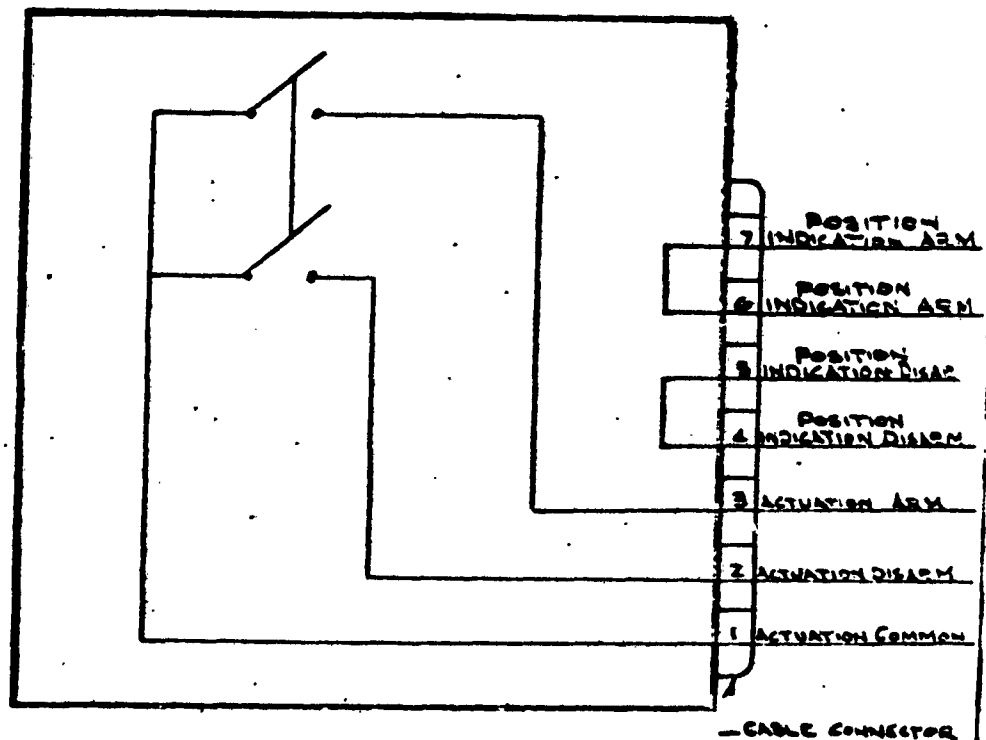
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FACTORY SUPPORT EQUIPMENT

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ITEM NO. 7740

Description: continued



WIRING DIAGRAM - ORDNANCE
CABLE TEST BOX

7/21/61
MRM

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DEPT. RESP. - Project Engineering
 ENGINEERING BASE INSTALLATIONS MANUFACTURING
W.D. Burton *W.D. Burton* *Q.C. Greiner*

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE October 12, 1961
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AFO4(647)-580	
Item No. 7742	
Nomenclature Cable Assemblies, Interconnecting, NCU Linkage Adjustment, CPA	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists to provide for interconnecting power cables and ground cables for the NCU linkage alignment test area in the CPA. These cables interconnect: 60 cycle junction box, power supplies, distribution box, test set (BGS 116), and NCU's. Ground cables connect equipment to equipment ground. 2. Functions in D2-11162 requiring this capability are: B3.1 <u>Description</u> The cable assemblies consist of cables equipped with connectors at each end to mate with connectors on the associated equipment above. (See attached sketch.) For detail information see D2-12581.	

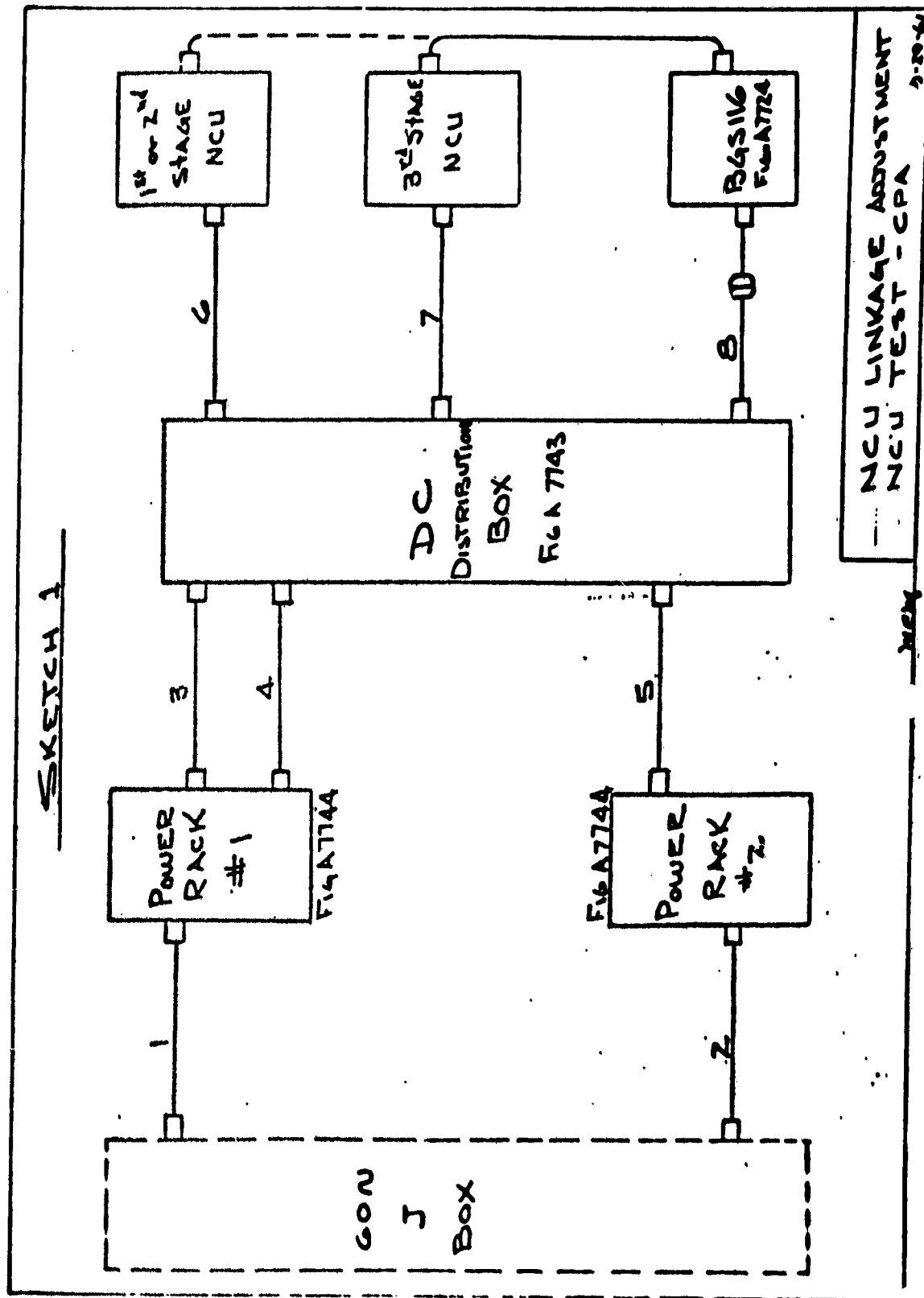
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SKETCH 1



NCU LINKAGE ADJUSTMENT
NCU TEST - CPA

NEW

2-20-61

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BOEING D2-11162-1 FSE ITEM 7742
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DEPT. RESP. - Project Engineering

ENGINEERING	BASE INSTALLATIONS	MANUFACTURING
<i>Ed. H. Bester</i>	<i>Ed. H. Bester</i>	<i>Ed. H. Bester</i>

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 10-19-61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AFO4(647)-580	
Item No. 7743	
Nomenclature Distribution Box, NCU Linkage Adjustment, CPA	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. A requirement exists to provide a distribution box for cable interconnections for the NCU linkage adjustment test site in the CPA. The distribution box interconnects cables, power supplies, test set (BGS 116) and the NCU's. 2. Functions in D2-111624 requiring this capability are: 83A.	
<u>Description</u> The distribution box is equipped with proper external receptacles, internal wiring, and terminal connectors to provide for cable interconnections. (See Figure A "4" for diagram). Reference D2-12581. NOTE: This item is similar to Fig. A 7083; however, contains modifications required to adapt to the NCU linkage adjustment.	

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DEPT. RESP. - Project Engineering
ENGINEERING
BASE INSTALLATIONS
MANUFACTURING
C.F. [Signature]

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 10-19-61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7744	
Nomenclature Power Supply Group, NCU Linkage Adjustment, CPA	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. A requirement exists for a DC power supply group to be used in the NCU linkage adjustment in the CPA. 2. Functions in D2-11162 requiring this capability are: 63.1.	
<u>Description</u> The DC power supply group consists of transformer rectifier units, power switching panel, cooling blower and timer. (See Figure A 77-2 for diagram). For detail information see D2-12581. Reference: Boeing specifications 10-20937-3, 10-20938-2. NOTE: This power supply is similar to Fig. A 7729; however, contains modifications required to adapt to NCU linkage adjustment.	

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DEPT. RESP. - Manufacturing Engineering
 ENGINEERING
 BASE INSTALLATIONS
 MANUFACTURING
 Q. C. Hansen

TYPE OF LIST		DATE
FACTORY SUPPORT EQUIPMENT		11-2-61
Model Designation and Name of End Item		Revision No. and Date
H2D SM-80 WEAPON SYSTEM		
Contractor		
BOEING		
Contract No.		
AF04(647)-580		
Item No.		
7745		
Nomenclature		
Bridle, Carriage, 1st Stage (Rocket Motor Truck)		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number		
Specification No.		
Specification Date		
Description		
Function		
1. A requirement exists to transfer a single 1st stage rocket motor between fixed rails and the 1st stage rocket motor truck. A device is required to connect the front of the 1st stage rocket motor carriage to the portable rocket motor transfer winch cable. 2. The propulsive load must be transmitted from a point midway between the carriage support rails to the front of the 1st stage rocket motor carriage. 3. Functions in D2-11162 requiring this capability are: B2.2.1		

FACTORY SUPPORT EQUIPMENT

PAGE 2

Item NO. 7745

Nomenclature: Bridle, Carriage, 1st Stage (Rocket Motor Truck)

Description:

The above requirements will be fulfilled by a bridle with suitable end fittings for attachment to the 1st stage rocket motor carriage and the portable rocket motor transfer winch cable. The bridle must be compatible with the equipment located in the forward end of the 1st stage rocket motor truck. (additional information will be supplied when study has been completed)

NOTE: For transfer of the 1st stage rocket motor between fixed rails and the 1st stage rocket motor truck, this bridle is used in conjunction with FSE 7689.

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Department Responsible
Engineering
J.H. Bunker

Basic Installations
R

Facilities
R

Manufacturing
R

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 12-12-61
Model Designation and Name of End Item HAD SM-80 WEAPON SYSTEM	Revision No. and Date D 10-23-62
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7746	
Nomenclature SET, FAULT ISOLATION TOOLING	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
Description Function 1. A requirement exists for a means to check both items of airborne equipment which interface during assembly or installation at Air Force Plant 77 to determine which does not meet the drawing requirements should a misfit occur during the missile assembly in the MAB. The means will be required to check only those interface dimensions which cannot be checked conveniently and accurately with conventional measuring devices and methods. 2. Functions in D2-11167 requiring this capability are: B7.0, B9.0, B11.0 Description - This set consists of a number of tools each of which will be used to check a particular interface of an item of airborne equipment.	

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Nomenclature: Set, Interchangeability-Replaceability Checking
Fixture

Description: Continued

The list of interfaces to be checked by the tools are as follows:

Angular Accelerometer to Interstage II-III

Interstage II-III to Angular Accelerometer

First Stage Rocket Motor to Section 49 Skirt

First Stage Rocket Motor to Section 49 Skirt &
Section 49 Skirt to First Stage Rocket Motor

First Stage Rocket Motor to Section 47 Interstage

First Stage Rocket Motor to Section 47 Interstage &
Section 47 Interstage to First Stage Rocket Motor

Second Stage Rocket Motor to Section 47 Interstage

Second Stage Rocket Motor to Section 47 Interstage &
Section 47 Interstage to Second Stage Rocket Motor

Second Stage Rocket Motor to Section 45 Interstage

Second Stage Rocket Motor to Section 45 Interstage &
Section 45 Interstage to Second Stage Engine

Third Stage Rocket Motor to Section 45 Interstage

Third Stage Rocket Motor to Section 45 Interstage &
Section 45 Interstage to Third Stage Rocket Motor

Third Stage Rocket Motor to Section 42 G&C

Third Stage Rocket Motor to Section 42 G&C &
Section 42 G&C to Third Stage Rocket Motor

Heat Protection to NCU - First Stage & NCU to
Heat Protection - First Stage

Heat Protection to NCU - Second Stage & NCU to
Heat Protection - Second Stage

Heat Protection to NCU - Third Stage & NCU to
Heat Protection - Third Stage

FIG NO. 1746 Description (Continued)

NCU to First Stage Rocket Motor
 First Stage Rocket Motor to NCU
 NCU to Second Stage Rocket Motor
 Second Stage Rocket Motor to NCU
 NCU to Third Stage Rocket Motor
 Third Stage Rocket Motor to NCU
 Raceway Cap and Chute to Skirt
 Skirt to Raceway Cap & Chute
 Raceway Cap and Chute to Section 47 Aft
 Section 47 Aft to Raceway Cap and Chute
 Raceway Cap and Chute to Section 47 Fwd.
 Section 47 Fwd. to Raceway Cap and Chute
 Raceway Cap and Chute to Section 45 Aft
 Section 45 Aft to Raceway Cap and Chute
 Raceway Cap and Chute to Section 45 Fwd.
 Section 45 Fwd. to Raceway Cap and Chute
 Raceway Cap and Chute to 3rd Stage Rocket Motor
 First Stage Engine to Raceway Cover
 Raceway Cover to Second Stage Rocket Motor
 Second Stage Rocket Motor to Raceway Cover
 Raceway Cover to Third Stage Rocket Motor
 Third Stage Rocket Motor to Raceway Cover

For detailed description of the tools see Drawing 21-51991.

REVISED 8-8-62

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE
Model Designation and Name of End Item JED SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AFD4(647)-580	
Item No. 7748	
Nomenclature Test Adapter Cable, Stage I, NCU Model P70B	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
Description Function 1. The requirement exists to provide an electrical connection between cable number W031 of Figure A 7719 and the Stage I NCU P70B as installed on the missile. 2. The function in D2-11162 requiring this capability is B6.1. Description: The cable assembly will consist of one cable of the appropriate length with connector BAC C45FC28806P3 on one end and amphenol 200X-368-1 on the other. The interface with the NCU shall be shown on ICD 25-26431.	

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ENGINEERING
BASE INSTALLATIONS
MANUFACTURING

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TYPE OF LIST		DATE
FACTORY SUPPORT EQUIPMENT		4-10-62
Model Designation and Name of End Item		Revision No. A and Date
H&D SM-80 WEAPON SYSTEM		5-15-62
Contractor BOEING		
Contract No. A704(604)-107		
Item No. 7749		
Nomenclature Test Fixture, Drawer Tester, Flight Control Test Set Adapter		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number		
Specification No.		
Specification Date		
Description Function 1. A requirement exists for a test fixture which will permit manually testing of the drawers of the Test Set Adapter (Fig. A 7699) and the Test Set Adapter Test Set (Fig. A 7783). The test fixture permits the drawers to be tested and faults isolated to a card level. Individual drawers are tested prior to installation in Fig. A 7699 and Fig. A 7783. 2. Functions in D2-11162-1 requiring this capability are: D1.1 Description The test set consists of test plugs, switches, lights, push buttons, drawer extender, and card extenders. The details of test fixtures are contained in the Drawer Functional Test Documents, D2-6 of Fig. A 7699 and D2- of Fig. A 7783.		

Winc II Only

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Facilities
Ray Lyman

Manufacturing
J. J. McInnis

Department Responsible

Engineering
J. J. McInnis

Manufacturing
J. J. McInnis

James Hull for J. S. Rotherford

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 9-5-62
Model Designation and Name of End Item RAD SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AF04(647)-580 (OCP 798)	
Item No. 7750	
Nomenclature Cable, Alarm Set Charging	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 29-25265-1	
Specification No.	
Specification Date	
Description <u>Function:</u> 1. A requirement exists for a means to supply commercial 110 volt 60 cycle single phase ac power to the battery charger (part of: Figure A 4187, MRCN 7787 & MRCN 7788) for charging the batteries of the Alarm Set (Figure A 4187, MRCN 7787 & MRCN 7788). Battery charging is required at the maintenance area when the Alarm Set is returned from use in the field and at the Associate Rocket Motor Contractor's plants prior to rocket motor shipments. 2. <u>Description:</u> The cable assembly shall consist of three conductors, two used for the 110 volt power supply and one for the ground lead, with a Pyle-National	

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FACTORY SUPPORT EQUIPMENT

ITEM 7750

NOMENCLATURE: Cable, Alarm Set Charging

Description: Continued

7-pin female connector on one end to mate with the battery-battery charger (Part of: Figure A 4187, MRCN 7787 & MRCN 7788) and a Standard Hubble 3-pin male connector on the other end to mate with a facility provided 110 volt 60 cycle, single phase AC power outlet. The grounding conductor shall be split into two leads at the Pyle-National connector end, one to be connected to the battery-battery charger case (part of: Figure A 4187, MRCN 7787 & MRCN 7788) and the other to the recorder case (part of: Figure A 4187, MRCN 7787 & MRCN 7788).

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9-21-62

BOEING

NO D2-11162-1

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MANUFACTURING

BASE INSTALLATIONS

ENGINEERING

R

R

R

TYPE OF LIST		DATE
FACTORY SUPPORT EQUIPMENT		3-15-61
Model Designation and Name of End Item		Revision No. and Date
H2D S/M-80 WEAPON SYSTEM		7-07-61
Contractor		
BOEING		
Contract No.		
AFOL(647)-580		
Part No.		
7753		
Nomenclature		
Highway Transporter - Engine Stage I		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number		
25-15779		
Specification No.		
Specification Date		
Description		
Function		
1. A requirement exists for a transportation vehicle to transport the stage I engine by highway from the Engine Associate to Plant 77 and support the engine for transfer to Engine Storage Building. The vehicle must be compatible with the Transport Monitor System. 2. For a detail technical specification see F10-20437 (Rear Carriage) and D10-20452 (Container) and D2-5879 (Tractor)		
Description		
The transporter is a semi-trailer with internal rails compatible with the engine harness. The trailer shall be equipped with King pin,		

(Continued on next page)

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FACTORY SUPPORT EQUIPMENT

BOEING

AFO4(647)-580

Item No. 7753

Nomenclature - Highway Transporter - Engine Stage I

Description

shock mount devices to isolate the engine from shock, environmental control and engine tie-downs. Included shall be provisions for attaching transfer equipment.

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DEPT. RESP. -
ENGINEERING

BASE INSTALLATIONS

MANUFACTURING

TYPE OF LIST	DATE
FACTORY SUPPORT EQUIPMENT	2-15-61
REVISION No.	7-07-61
and Date	
HED SYSTEM WEAR ONLY SYSTEM	
BOEING	
AFOL(647)-530	
7754	
Highway Transporter - Engine Stage II	
Quantity	
Total C. Order	
Engine Production	
List Number	
Manufacturer's	
Part Number 25-20426-1	
Specification No.	
Specification Date	
Description	
1. A requirement exists for a transportation vehicle to transport the engine by highway from the Engine Associate to Plant 77, and support the engine for transfer to Engine Storage Building. The vehicle must be capable to be compatible with the Transport Monitor System. 2. For a detailed Technical Criteria see D2-7107 (Van) and D2-7103 (Truck)	
Description	
The transporter is a multi-axle truck van with rails compatible with the engine harness. The van is equipped with environmental control,	

(Continued on next page)

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FACTORY SUPPORT EQUIPMENT

AFOL(647)-500

Item No. 7754

Nomenclature - Highway Transporter - Engine Stage II

Description

R shock mount devices to isolate the engine from shock, and engine tie downs. Include provisions for attaching transfer equipment.

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DEPT. RESP. - Engineering	BASE INSTALLATIONS	MANUFACTURING
ENGINEERING		

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item R&D SM-80 WEAPON SYSTEM	Revision No. and Date 3-29-61
Contractor BOEING	
Contract No. AF04(647)-530	
Item No. 7756	
Nomenclature Rail Assembly, Bridge, Engine Transfer	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-17299	
Specification No.	
Specification Date	
Description Function 1. A requirement exists for a means to connect Engine Transporter Rails and SSCM Rails with Storage Rails during transfer of Engines into and out of Engine Storage Buildings. The same requirement exists for engine transfers at the Missile Assembly Building. The device must be capable to support engines and their harnesses during transfer operation. 2. Functions in D2-11162 requiring this capability are: B2.2, B4.2	

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Item No. 7756

Nomenclature: Rail Assembly, Bridge, Engine Transfer

R Description:

Rail assembly consists of a set of rigidly supported guide rails with attaching provisions on each end, compatible with Engine Harness v-groove wheels, vehicle rails, Engine Storage rails and joining rails. Grounding jumpers shall be provided on each end.

Approx. length- 4 feet.

A locking device shall be incorporated for safety reasons.

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ENGINEERING
BASE INSTALLATIONS
MANUFACTURING

TYPE OF LIST FACTORY-SUPPORT EQUIPMENT		DATE
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM		Revision No. and Date
Contractor BOEING		
Contract No. AF 04(627)-500		
Item No. 7760		
Nomenclature Pulley Bracket Assembly-Transporters, Stage II & III		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number 25-20209		
Specification No.		
Specification Date		
<u>Description</u> 1) A requirement exists for a removable pulley bracket assembly used during engine transfer operations. 2) Functions in D2-11162 requiring this capability are E2.2 <u>Description</u> A pulley bracket assembly shall be used with engine transporters, Stage II and Stage III. This assembly consists of a suitable bracket, holding two 6" diameter sheaves.		

Continued on Form 2

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TYPE OF LIST: FSE
CONTRACTOR: BOEING
ITEM NO. 7760
NOMENCLATURE: Pulley Bracket Assembly-Transporters,
Stage II & III

DESCRIPTION: (Continued)

This pulley bracket assembly is mounted at the forward L. E. Side on the outside of the transporter-container. It fits into a suitable bracket.

During Engine loading operations, the pulley bracket assembly will act as the pivot, transmitting transfer forces from engine harness to the transporter-container via a 1/2 " diameter cable.

During engine unloading operations, the cable running over the sheaves will act as the restraining force, holding the engine harness back.

A suitable storage container shall be provided to store assembly when not in use. Approximate size of container: 15" long X 6" wide X 8" high.

Approximate weight: 35 lbs. (loaded)

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DEPT. RESP. ENGINEERING	BASE INSTALLATIONS	MANUFACTURING	TYPE OF LIST	DATE
			FACTORY SUPPORT EQUIPMENT	3-15-62
			Model Designation and Name of End Item	Revision No. and Date
			7762 SM-80 WEAPON SYSTEM	7-07-62
			Contractor	
			BOEING	
			Contract No.	
			AFOL(617)-580	
			Item No.	
			7762	
Nomenclature				
Highway Transporter - Engine Stage III				
Quantity				
Total On Order				
Estimated Production Lead Time				
List Number				
Manufacturer's Part Number	25-20127-1			
Specification No.				
Specification Date				
Description				
Function				
R	1. A requirement exists for a transportation vehicle to transport the Stage III engine by highway from the Engine Associate to Plant 77, and support the engine for transfer to Engine Storage Building. The vehicle must be compatible with the Transport Monitor System.			
R	2. For a detail Technical Criteria see D2-7107 and D2-7108.			
R	Description The transporter is a multi-axle truck van with integral rails compatible with the engine harness. The van shall be equipped with environmental control, shock mount devices to isolate the engine from shock and			

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(Continued on next page)

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FACTORY SUPPORT EQUIPMENT

BOEING

AFOU(647)-580

Item No. 7762

Nomenclature - Highway Transporter - Engine Stage III

Description:

engine tie downs. Included shall be provisions for attaching transfer equipment.

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ENGINEERING
BASE INSTALLATIONS
MANUFACTURING

TYPE OF LIST FACTORY SUPPORT EQUIPMENT		DATE 11/10/61
Model Designation and Name of End Item M&D SM-80 WEAPON SYSTEM		Revision No. and Date
Contractor BOEING		
Contract No. AF04(647)-580		
Item No. 7780		
Nomenclature Test Fixture, Power Supply, MAB and CPA		
Quantity		
Total On Order		
Estimated Production Lead Time		
List Number		
Manufacturer's Part Number		
Specification No.		
Specification Date		
<u>Description</u> <u>Function</u> 1. A requirement exists to test the operation of the power supplies in the MAB and CPA Buildings before the power supplies are integrated into missile component test positions. 2. Functions in D2-11162 requiring this capability are: C9.2. <u>Description</u> 1. The test fixture contains indicating lights, switches, test points, and cables which are necessary to operationally test the power supplies and switching racks. NOTE: A 5 ampere power supply is required which operates in conjunction with the above test fixture. (See ACO 4127)		

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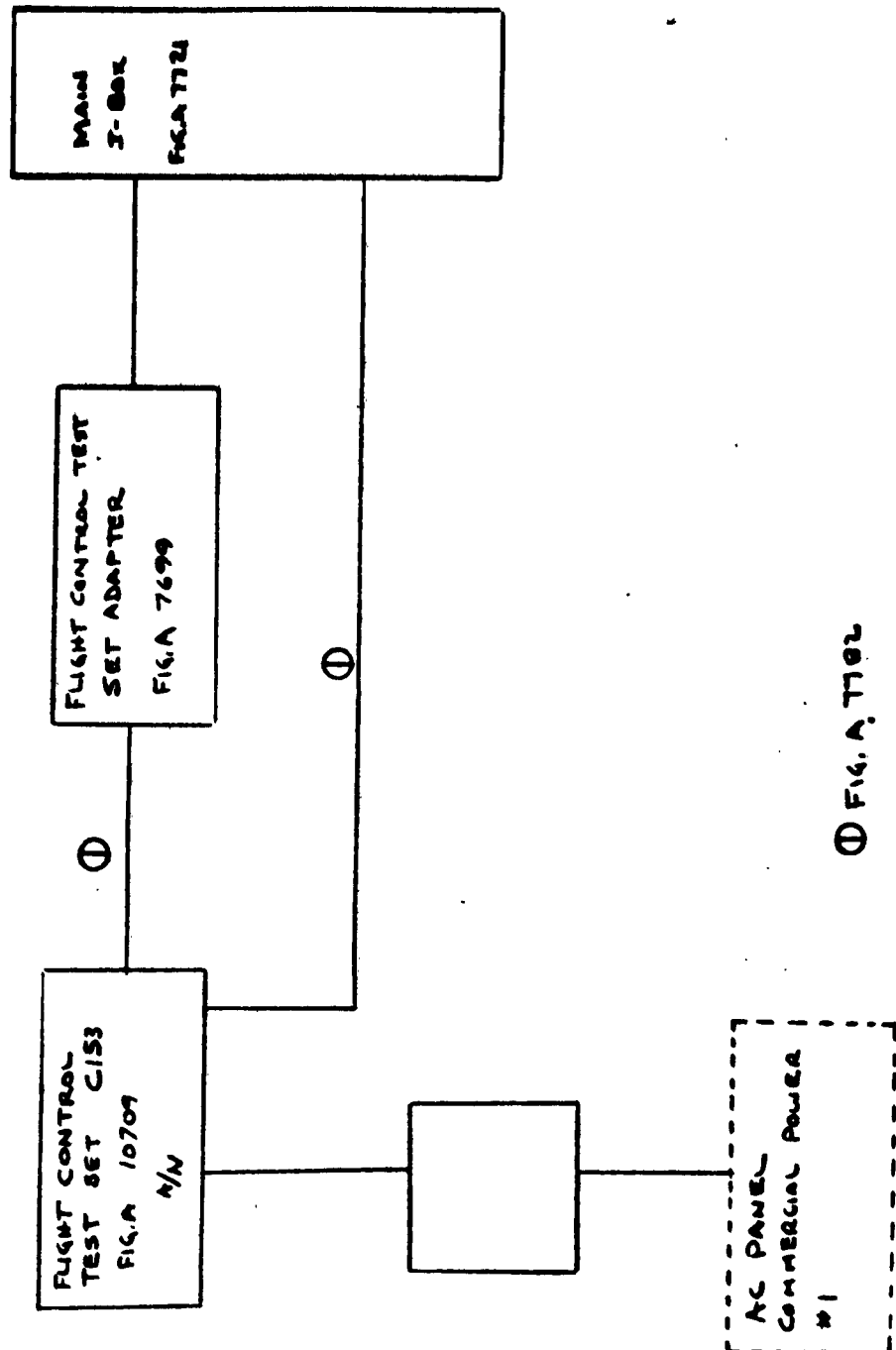
DEPT. REP. - Engineering
 ENGINEERING
 BASE INSTALLATIONS
 MANUFACTURING
 W.P. Blair
 J.E. Green

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 2-23-62
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. D2-11162-1	
Item No. 7782	
Nomenclature Cable Assemblies, Flight Control Test Set Interconnect, MAB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists to provide electrical connections between the Flight Control Test Set C153, Fig. A 10709, the Flight Control Test Set Adapter, Fig. A 7699, and to the Test Junction Box, Fig. A 7721, in the MAB. 2. Functions in D2-11162-1 requiring this capability are: BG 1, BG.1, BG.2, BG.3, BG.4. <u>Description</u> The cable assemblies provide connection of: (1) Flight Control Test Set Adapter and Test "J" Box; (2) Flight Control Test Set Adapter and Flight Control Test Set C153; and (3) Flight Control Test Set C153 and Test "J" Box. The necessary test adapters to prevent probing of the connectors during testing of the cables shall be provided. Note: For Wing II Only.	

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① FIG. A 7702

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BASE INSTALLATION MANUFACTURING
W. C. C. C.

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 2-23-62
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. A904(647)-380	
Item No. 7781	
Nomenclature Test Set, Flight Control Test Set Adapter and Missile Test Equipment, MAB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
<u>Description</u> Note: For Wing II Only. <u>Function</u> 1. A requirement exists to perform a post-installation test on the Flight Control Test Set Adapter (Fig. A 7699) and the missile test equipment (Figure A's 7717, 7718, 7720, 7721, 10709) which is used to perform final missile acceptance tests in the MAB. 2. Functions in D2-11162-1 requiring this capability are: C 9.2 <u>Description:</u> The test set will accept the command signals of the Flight Control Test Set Adapter (Fig. A 7699) and respond in the same manner as the airborne downstage equipment. The capability is provided to accept cables from the Flight Control Test Set Adapter (Fig. A 7699), from the Skirt Umbilical (Fig. A 7720), and the Downstage Test Cable Assembly (Fig. A 7698). The necessary test adapters to prevent probing of connectors during testing shall be provided. Detailed requirements shall be contained in the Design Requirements Document D2-15578	

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DEPT. RESP. - Manufacturing	BASE INSTALLATIONS	MANUFACTURING
ENGINEERING		

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 6-22-62
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AF 04 (647)-580	
Item No. 7785	
Nomenclature Harness - Missile Skirt, Cylindrical	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-30836	
Specification No.	
Specification Date	
<u>Description</u> 1. A requirement exists for a means of handling and installing the two halves of the cylindrical skirt to the 1st Stage Rocket Motor. (NOTE: The skirt is divided into two halves diagonally.) 2. Function in D2-11162-1 requiring this capability are: B7.3 <u>Description</u> The skirt harness consists of two sections; each section is fastened to a skirt half during handling and installation. The right hand harness section mates with the skirt joining dolly (Figure A 7709) to hold the right hand section of the skirt in place while the other harness section is used to position the remaining skirt section in place for bolt installation. WING II only.	

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BOEING | NO D2-11162-1
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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 7-31-62
Model Designation and Name of End Item SM-80 WEAPON SYSTEM	Revision No. C and Date 4-10-63
Contractor THE BOEING COMPANY	
Contract No. AF04(647)-580	
Item No. MRCN 7786	
Nomenclature Kit, Cork Insulation Repair	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-30837	
Specification No.	
Specification Date	
Description <u>FUNCTION</u> 1. (a) A requirement exists for a means of repairing small areas (no larger than 4" x 4") of damaged and/or faulty cork insulation on the rocket motors, interstages and skirt of the missile during assembly. (b) A requirement exists for a means of installing the ring splice insulation on the missile skirt (29-27118) during assembly to the Stage I Motor. 2. Functions in D2-11162-1 requiring this capability are: B10, E1.4.2.	

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BOEING | VOL | NO D2-11162-1
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FACTORY SUPPORT EQUIPMENT
Item No. 7786

DESCRIPTION

The kit shall contain the following:

1. Containers for adhesives.
2. Mixing tools for preparation of adhesives.
3. Tools for applying adhesives.
4. Special clamps for applying pressure to the ring splice insulation during installation.
5. Protective equipment for maintaining the cleanliness of the surfaces to be repaired, and for protecting personnel making repairs.
6. Tools and miscellaneous items required to remove damaged and/or faulty cork insulation, cut cork patches to size and prepare the underlying surfaces for application of adhesives. Tools and miscellaneous items include cutters, e.g. router, hole saw, counter bore, scraper, sandpaper, etc. The cutters will be so designed that, when used with proper care, they will not damage the surfaces underlying the cork insulation.
7. A vacuum type pressure device to hold the cork patch in place while the adhesive is curing. (Oenaberg cloth, aspirator, plastic sheeting and other miscellaneous items to be used with the pressure device shall also be included.)
8. BMS - 8-70 fungicide-coated cork sheeting, protected by a desiccant and enclosed in containers such as polyethylene bags. The cork shall be provided in a range of thicknesses and quantities such that most repairs may be made during missile assembly.
9. A container for the kit which can be carried by one man. If necessary, due to the weight of the kit components, more than one container may be furnished. No one container with contents in any case shall exceed the weight which one man can carry.

This kit is used in conjunction with, but shall not contain:

1. The explosive or volatile chemicals, or temperature controlled materials required for repairing the cork insulation, such as, methyl,ethyl ketone, fungicide mixture, epoxy polyamide ablative resin and hardener (BMS 8-78 AAB) epoxy polyamide 4 component adhesive (BMS 5-29D), and BMS 8-103 trowelable ablative insulation material.
2. Tools considered to be standard "tool room" equipment at missile assembly facilities.

It should be noted that insulation .30 inches and thicker may have to be repaired during the missile assembly. Repairs on insulation .30 and thicker requires that the cork be preformed. This kit, however, shall not contain the equipment necessary for that operation.

Department Responsible Engineering	Basic Installations	Facilities	Manufacturing

TYPE OF LIST Factory Support Equipment	DATE 7-20-62
Model Designation and Name of End Item HAD SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor Boeing	
Contract No. AF04(647)-580	(BCP 178 R1)
Item No. 7787	
Nomenclature Alarm Set, Transit Status, First Stage Motor	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 26-15085	
Specification No.	
Specification Date	
Description Function: 1. A requirement exists to sense, record and display the number of times an out of tolerance condition of temperature and shock environment occurs to a first stage Rocket Motor during transportation and handling. (The out of tolerance conditions require equipment capability to sense, record, and display the total number of occurrences. At levels of 10, 20 and 30 and temperature occurrences falling below 60°F, 40°F and 30°F or rising above 100°F, 120°F and 130°F). 2. Functions in DC-1102-1 requiring this capability are: B2.2, B4.2 Functions in DC-1102-1 requiring this capability are: B2.2, B4.2	

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change group

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BOEING

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Factory Support Equipment

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Item No. 7707

**Nomenclature: Alarm Set, Transit Status,
First Stage Motor**

Descriptions:

The set shall consist of the following:

- a. An Alarm Set, Missile Storage - Transit Status, Part Number 16191 (one 10-20496-1 and one 10-20496-4).
- b. Temperature Transducer Belt Assembly, Part Number 25-34376.
- c. Miscellaneous Standard Mounting Hardware to be utilized in mounting the equipment contained in the Alarm Set to the First Stage Rocket Motor Carriage (Figure A 4078) and First Stage Rocket Motor Horizontal Restraint Ring (MCHN 7763), and the temperature Transducer Belt Assembly to the First Stage Rocket Motor (MCHN 6801 or 6802).

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BOEING

NO D2-11162-1

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Department Responsible	Engineering	Facilities	Manufacturing
Sub-Department	Basic Installations		
Project No.	20110000		
Project Name			

TYPE OF LIST Factory Support Equipment	DATE 7-20-62
Model Designation and Name of End Item RAD SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor Boeing	
Contract No. AF04(647)-580 (BCF 178 R1)	
Item No. 7768	
Nomenclature Alarm Set, Transit Status, Third Stage Motor	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 26-15087	
Specification No.	
Specification Date	
<u>Description</u> <u>Function:</u> 1. A requirement exists to sense, record and display the number of times an out of tolerance condition of temperature and shock environment occurs to a Third Stage Rocket Motor during transportation and handling. (The out of tolerance conditions requires equipment capability to sense, record and display the total number of occurrences at levels of 1g, 2g, and 3g and temperature occurrences falling below 60°F, 40°F and 32°F or rising above 100°F, 120°F and 130°F). 2. Functions in D2-11162 requiring this capability are: B2.2, B4.2 Functions in D2-11162-1 requiring this capability are: B2.2, B4.2	

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BOEING

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Factory Support Equipment

Page 2

Item No. 7705

**Nomenclature: Alarm Set, Transit Status,
Third Stage Motor**

Description:

The Set shall consist of the following:

- a. An Alarm Set, Missile Storage-Transit Status, Part Number 16191 (one 10-20496-1 and one 10-20496-4).
- b. Temperature Transducer Support Assembly, Part Number 25-30976.
- c. Miscellaneous Standard Mounting Hardware to be utilized in mounting the equipment contained in the Alarm Set to the Third Stage Rocket Motor Carriage (Figure A 4121) and Third Stage Rocket Motor Horizontal Restraint Ring (MRCN 7765), and the temperature Transducer Support Assembly to the Third Stage Rocket Motor (MRCN 6401 or 6402).

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BOEING

APR 3

NO DISSEMINATION
PAGE TWO

Department Responsible: *Boeing*
 Engineering: *Boeing*
 Design: *Boeing*
 Production: *Boeing*
 Inspection: *Boeing*
 Testing: *Boeing*
 Assembly: *Boeing*
 Shipping: *Boeing*
 Receiving: *Boeing*
 Storage: *Boeing*
 Maintenance: *Boeing*
 Disposal: *Boeing*

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 9-11-62
Model Designation and Name of End Item SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor OOAKA	
Contract No.	
Item No. 7789	
Nomenclature Device - Restraint, 1st Stage Rocket Motor	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 62J 31127	
Specification No.	
Specification Date	
Description <u>Function:</u> 1. A requirement exists for a means to restrain the 1st stage rocket motor when located in its handling carriage on fixed rails. 2. The function in D2-11162 requiring this capability are: B2.2 B13.0 3. The functions in D2-11162-1 requiring this capability are: B2.2 B12.0 <u>Description:</u> This device consists of a yoke which fits over the rocket motor and attaches to its carriage. Impaling knives are housed in containers mounted on each side of the yoke and have cable lanyards which attach to the fixed rail support. Should the motor ignite, the forward thrust of the motor will cause the impalers to puncture the motor	

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FACTORY SUPPORT EQUIPMENT

ITEM No. 7709

Nomenclature: Device - Restraint, 1st Stage Rocket Motor

Description: (cont'd)

case and render the motor non-propulsive.

Note: This device is designed and built by COAMA at Hill AFB, Ogden, Utah and is provided to Plant 77 for their use.

REVISED 11-1-62

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Department Responsible: Engr. Tech. Serv.
 Engineering: [Signature]
 Manufacturing: [Signature]
 Inspection: [Signature]
 Test: [Signature]
 Distribution: [Signature]

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 9-28-62
Model Designation and Name of End Item EAD SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor OOANA	
Contract No.	
Item No. 7790	
Nomenclature Device - Restraint, 2nd Stage Rocket Motor	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 62J 31128	
Specification No.	
Specification Date	
Description Function: 1. A requirement exists for a means to restrain the 2nd stage rocket motor when located in its handling carriage on fixed rails. 2. The function in D2-11162 requiring this capability are: B2.2 B13.0 3. The functions in D2-11162-1 requiring this capability are: B2.2 B12.0 Description: This device consists of a yoke which fits over the rocket motor and attaches to its carriage. Impaling knives are housed in containers	

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REVISED 11-1-62

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 NO D2-11162-1
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FACTORY SUPPORT EQUIPMENT

ITEM No. 7790

Nomenclature: Device - Restraint, 2nd Stage Rocket Motor

Description: (cont'd)

mounted on each side of the yoke and have cable lanyards which attach to the fixed rail support. Should the motor ignite, the forward thrust of the motor will cause the impalers to penetrate the motor case and render the motor non-propulsive.

Note: This device is designed and built by OCAMA at Hill AFB, Ogden, Utah and is provided to Plant 77 for their use.

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1. PREPARED BY 2. DATE 3. PROJECT ADDRESS 4. PROJECT NAME 5. PROJECT NO. 6. PROJECT LOCATION 7. PROJECT DESCRIPTION 8. PROJECT SCOPE 9. PROJECT OBJECTIVES 10. PROJECT BENEFITS 11. PROJECT RISKS 12. PROJECT CHALLENGES 13. PROJECT OPPORTUNITIES 14. PROJECT CONSTRAINTS 15. PROJECT ASSUMPTIONS 16. PROJECT DELIVERABLES 17. PROJECT MILESTONES 18. PROJECT BUDGET 19. PROJECT RESOURCES 20. PROJECT STAKEHOLDERS 21. PROJECT COMMUNICATION 22. PROJECT MONITORING 23. PROJECT EVALUATION 24. PROJECT CLOSURE 25. PROJECT LEGAL 26. PROJECT ETHICS 27. PROJECT SOCIAL 28. PROJECT ENVIRONMENTAL 29. PROJECT ECONOMIC 30. PROJECT POLITICAL 31. PROJECT CULTURAL 32. PROJECT HISTORICAL 33. PROJECT FUTURE 34. PROJECT CONCLUSION 35. PROJECT RECOMMENDATIONS 36. PROJECT REFERENCES 37. PROJECT APPENDICES 38. PROJECT GLOSSARY 39. PROJECT INDEX 40. PROJECT COVER 41. PROJECT TITLE 42. PROJECT SUBTITLE 43. PROJECT AUTHOR 44. PROJECT EDITOR 45. PROJECT REVIEWER 46. PROJECT APPROVER 47. PROJECT SIGNATURE 48. PROJECT DATE 49. PROJECT PAGE 50. PROJECT TOTAL	1. PROJECT ADDRESS 2. PROJECT NAME 3. PROJECT NO. 4. PROJECT LOCATION 5. PROJECT DESCRIPTION 6. PROJECT SCOPE 7. PROJECT OBJECTIVES 8. PROJECT BENEFITS 9. PROJECT RISKS 10. PROJECT CHALLENGES 11. PROJECT OPPORTUNITIES 12. PROJECT CONSTRAINTS 13. PROJECT ASSUMPTIONS 14. PROJECT DELIVERABLES 15. PROJECT MILESTONES 16. PROJECT BUDGET 17. PROJECT RESOURCES 18. PROJECT STAKEHOLDERS 19. PROJECT COMMUNICATION 20. PROJECT MONITORING 21. PROJECT EVALUATION 22. PROJECT CLOSURE 23. PROJECT LEGAL 24. PROJECT ETHICS 25. PROJECT SOCIAL 26. PROJECT ENVIRONMENTAL 27. PROJECT ECONOMIC 28. PROJECT POLITICAL 29. PROJECT CULTURAL 30. PROJECT HISTORICAL 31. PROJECT FUTURE 32. PROJECT CONCLUSION 33. PROJECT RECOMMENDATIONS 34. PROJECT REFERENCES 35. PROJECT APPENDICES 36. PROJECT GLOSSARY 37. PROJECT INDEX 38. PROJECT COVER 39. PROJECT TITLE 40. PROJECT SUBTITLE 41. PROJECT AUTHOR 42. PROJECT EDITOR 43. PROJECT REVIEWER 44. PROJECT APPROVER 45. PROJECT SIGNATURE 46. PROJECT DATE 47. PROJECT PAGE 48. PROJECT TOTAL



FACTORY SUPPORT EQUIPMENT

ITEM No. 7791

Nomenclature: Device - Restraint, 3rd Stage Rocket Motor

Description: (cont'd)

mounted on each side of the yoke and have cable lanyards which attach to the fixed rail support. Should the motor ignite, the forward thrust of the motor will cause the impalers to puncture the motor case and render the motor non-propulsive.

Note: This device is designed and built by OQAMA at Hill AFB, Ogden, Utah and is provided to Plant 77 for their use.

REVISED

11-1-62

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 11-29-62
Model Designation and Name of End Item R&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7793	
Nomenclature SPACER BRACKET, STAGE II NCU	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
Description <u>Functions:</u> 1. A requirement exists for a spacer bracket which will secure the NCU in a elevated position above the Nozzle Control Unit Fixture allowing for the installation and use of the Stage II NCU Alignment Cage for NCU linkage adjustments in the CPA. 2. Function in D2-11162 and D2-11162-1 requiring this capability is B3.1.1. <u>Description:</u> A tubular box frame with four quick release pins for attachment to the NCU and four quick release pins for attachment to the NCU Fixture. This item is designed and fabricated at Plant 77.	

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►

THE BOEING COMPANY

NUMBER D2-11162-1 MODEL NO. WA-133

TITLE Assembly and Checkout Equipment Requirement Form

See 11162-1 Contract for details

2-5142

PREPARED BY Plant 77 Requirements Group

SUPERVISED BY

P. A. Seweride

BI-MH

APPROVED BY

W. H. Chislat

RELIABILITY
APPROVAL

(DATE)

SECTION TITLE PAGE U3 4288 0000 REV. 1/61

AFO4(647)-580

CONTRACT NO.

5-78200-5120-68226

CHARGE NUMBER

3-1-62

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	18	4q				59	3-1-62								
	19	4r				60	3-1-62								
	20	4s				61	3-1-62								
	21	4t				62	3-1-62								
	22	4u				63	3-1-62								
	23	4v				64	3-1-62								
	24	4w				65	3-1-62								
	25	4x				66	3-1-62								
	26	4y				67	3-1-62								
	27	4z				68	3-1-62								
	28	4aa				69	3-1-62								
	29	4ab				70	3-1-62								
	30	4ac				71	3-1-62								
	31	4ad				72	3-1-62								
	32	4ae				73	3-1-62								
	33	4af				74	3-1-62								
	34	4ag				75	3-1-62								
	35	4ah				76	3-1-62								
	36	4ai				77	3-1-62								
	37	4aj				78	3-1-62								
	38	4ak				79	3-1-62								
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See revision description page, preceding document Table of Contents.

REVISED

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VOL.

NO. D2-11162-1

U3 4286 1000

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APPENDIX II

The following Assembly and Checkout forms for the Special Facility Contract items, Facilities Overhead items, and Maintenance Ground Equipment used at Air Force Plant 77 as Factory Support Equipment are included for information.

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REVISED _____

U3 4200 2000 (WAS BAC 4131D)

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WS 133A

**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 240
 APPROVAL DATE 6-19-62
 REVISION _____ DATE _____

EQUIPMENT TITLE Leak Standard
 (Basic Name First)

RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION SFC/OH

DESIGN REQMTS DOCUMENT _____ DWG NO. _____

TO BE USED AT:

BASE	MAPS	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION

A requirement exists for a Leak Standard to be used to calibrate the leak detector on leakage test set (Figure "A" 7). This test will consist of a visual inspection, installation tests, pressure test, leak check, and depressurisation for Stage II rocket motor. This test set may also be used for Stage I and III rocket motors with consent of engine contractors.

Ref: DQ-12196, "Test Set Leakage, Rocket Motor, Functional Test Of".

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

A portable test set with increase control, decrease control, probe and leak rate meter.

The following equipment will satisfy this requirements:

Halogen Leak Standard General Electric
 Type LS-20

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

24340-0-1
 REV. 6-29-62

BOEING NO. D2-11162-1
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NOTE: Also form 10-4971-1000
 if additional details are required.

ORIGINATING GROUP SUPERVISOR: _____

TELEPHONE: _____

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WS 133A ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

ACO NUMBER 253

APPROVAL DATE _____

REVISION _____ DATE _____

EQUIPMENT TITLE Cable, Rocket Motor Bonding
(Basic Name First)

RESPONSIBLE DEPT. BI-MH EQUIP. CLASSIFICATION SFO/OE

DESIGN REQMTS DOCUMENT None DWG NO. _____

TO BE USED AT:

BASE	MAPS	EAPB	VAPB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7671	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION

A requirement exists to provide a means of electrically bonding the 1st, 2nd, and 3rd Stage Rocket Motor Carriages together to prevent an electrical potential difference between rocket motors when roll transferred in a train using Fig. A 7691.

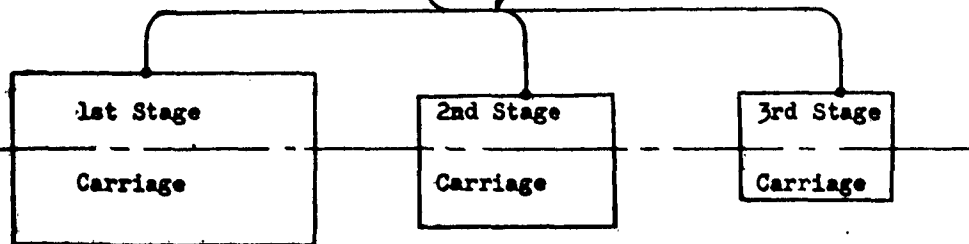
DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that an electrical bonding cable assembly with alligator clips be provided. The assembly shall consist of wire with a maximum resistance of 0.7 ohms per 1000 ft. at 20° C; this is equivalent to B&S 13-5D Type I, Class A, Size 8 wire.

(NOTE: This item may be designed and fabricated locally.)

TO GROUND
ON RAILS (SFA
7628 or 7629

CABLE, ROCKET MOTOR BONDING



PLAN VIEW

SHT 1 of 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

2-6340-0-1 6-29-62
REV.

BOEING NO. D2-11162-1
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NOTE: Use form 12-4971-1000
if additional sheets are required.

ORIGINALING GROUP SUPERVISOR: O. A. Severide
TELEPHONE: 5-5022 Submitted 4-4-62

WS 133A
ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS

ACO NUMBER 267
 APPROVAL DATE 4-27-62
 REVISION _____ DATE _____

EQUIPMENT TITLE: Set, Connector

RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION SFC/CE
 DESIGN REQTS DOCUMENT ND2 DWG NO. D2-11162
 TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION: During integration of the NCU Test Position, consisting of Stage I, Stage II, and Stage III Test Stations in the MAB, it is necessary to connect the NCU Test Cables to Laboratory Test equipment in this NCU Test Position (Reference D2-11162, Section c, paragraph 9.3.1). This particular Test Position requires the use of three (3) items: (a) Multimeter (Figure "A" 4001) (b) Amphenol 200X-230-71 Connector (c) Amphenol 200X-368-2 Connector to breakout test points without probing connectors on the equipment.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Figure "A" 4001 Multimeter, above, has already been provided. However, the two (2) Amphenol Connectors have not yet been provided. This ACO will furnish one (1) each of the following items:

Amphenol 200X-230-71 Connector, complete with all applicable pins and inserts.

Amphenol 200X-368-2 Connector, complete with all applicable pins and inserts.

These Connectors have a dual purpose during the tests:

1. They will provide mechanical protection of the NCU Cable Plugs.
2. They will provide more accessible points for non toring voltage during continuity testing.

One (1) set of these Connectors will suffice for the entire MAB complex at Air Force Plant 77. No optional items may be substituted.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

2-4340-0-1

REV. 8-8 62

ORIGINATING GROUP SUPERVISOR: _____
 TELEPHONE: _____

WS 133A

ACO NUMBER 323

ASSEMBLY & CHECKOUT

APPROVAL DATE August 4, 1961

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: Tester, TransistorRESPONSIBLE DEPT. Base InstallationsEQUIP. CLASSIFICATION STC/OKDESIGN REQMS DOCUMENT NoneDWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To provide a means to measure the characteristics of a transistor and to determine if a transistor, N.P.N or P.N.P., is sub-standard. This instrument will be used on both Mobile Radio and Closed Circuit Television Systems.

DESCRIPTION:

The tester will measure the ICBO (Collector to Base Leakage current), the current gain, and determine whether or not the transistor under test has opened or shorted.

Recommend Hickok-Model 850A, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>Ch. Lawrence</i>	<i>R. P. C. C. C. C.</i>	<i>Ch. Lawrence</i>

6-29-62

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WS 133A

ACO NUMBER 324ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTSAPPROVAL DATE August 4, 1961

REVISION _____ DATE _____

EQUIPMENT TITLE: Test Set, Multipurpose Portable RadioRESPONSIBLE DEPT. Base InstallationsEQUIP. CLASSIFICATION ARG/OMDESIGN RQMTS DOCUMENT NoneDWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

This test set will be used; as an AC voltmeter, to measure a receiver's 20 db quieting sensitivity, for IF peaking, to check activity of crystals between 280 KCPS and 13 MCPS, as a speaker to permit audio reception, as a field intensity meter, and as an RF Wattmeter.

DESCRIPTION:

A battery operated, transistorized portable test set with a calibrated AC and DC meter.

Meter full scale accuracy is: $\pm 2\%$
 AC Voltmeter Ranges: 0-0.2V and 0-2V
 Frequency Response: ± 1 db from 35 to 50,000 CPS.
 Input Impedance: 400 K ohms on 2 volt range
 40 K ohms on 0.2 volt range
 Stability: $\pm$ db from 022° F to 113° F.

Recommend Motorola Portable Test Set - Model TU 546, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>J. A. Lawrence</i>	<i>R. P. Kelley</i>	<i>Robert L. Brown</i>

2-6340-0-1

3-1-62

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ACO NUMBER 325

ASSEMBLY & CHECKOUT

APPROVAL DATE Aug 14, 1962

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: Generator, Signal (Frequency Modulation)RESPONSIBLE DEPT. Base InstallationsEQUIP. CLASSIFICATION SFC/ON

DESIGN REQTS DOCUMENT _____

DWG NO. NA

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7071	D2-9942	D2-11162			
					X			

PURPOSE:

To provide a means of checking; receiver sensitivity, discriminator slope, audio recovery and audio output, and I. F. strip for defective stages. Other purposes are, to supply I. F. frequencies for alignment, provide accurately metered increments of carrier frequency, and to provide other frequency modulated signals using external source.

DESCRIPTION:

Accuracy: $\pm 0.5\%$

Tuning: Vernier Tuning with dial having 100 divisions.

R.F. Range: 140 MC to 175 MC

R.F. Output: Output voltage is continuously variable from 0.1 microvolts to 100,000 microvolts, and is calibrated from -3 to -128 dbm.

Modulation: A modulating signal producing 0 to 15 KCPS deviation.

I. F. Range: 4 ranges 2.9-4.2, 4.1-610, 6.8-9.4 and 69.0-76.0 MC.

I. I. Output: Maximum output voltage is greater than 0.5 volts into a 50 ohm resistive load.

Recommend Motorola F.M. Signal Generator-Model T1034-A, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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ACO NUMBER 26

ASSEMBLY & CHECKOUT

APPROVAL DATE 8-4-61

EQUIPMENT REQUIREMENTS

REVISION DATE

EQUIPMENT TITLE: Generator, Video Sweep to 20 Megacycles

RESPONSIBLE DEPT. STD

EQUIP. CLASSIFICATION STG/OM

DESIGN REQTS DOCUMENT None

DWG NO. NA

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To provide a signal for obtaining the frequency response curve of video amplifiers on an oscilloscope for alignment and testing purposes.

DESCRIPTION:

A video sweep generator that will cover the whole video band in one sweep. In conjunction with an oscilloscope, it will display the frequency response curve of video amplifiers, as well as provide markers at several frequencies for identification purposes.

R. F. Output:

0.2V rms into nominal 70 ohms.
Flat within ± 0.5 db over widest sweep width.

Sweep Rate:

Variable around 60 CPS; locks to line frequency

Markers:

Sharp, Pulse-Type, crystal-positioned markers; usable singly or collectively.

Marker Amplitude:

Positive pulse, continuously variable, zero to 5 volts approximately.

Recommend Kay Electric Corporation, Marka-Sweep Model Video, Catalog #150-B, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.

INSTALLATION DEPT.

MANUFACTURING DEPT.

O. A. Savard

K. C. Williams

R. H. Reiser

2-6340-0-1

3-1-62

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ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS

ACO NUMBER 327

APPROVAL DATE 8-4-62

REVISION DATE

EQUIPMENT TITLE: Tester, Vacuum Tube (Mutual Conductance Type)

RESPONSIBLE DEPT. BID

EQUIP. CLASSIFICATION SFC/ON

DESIGN RQMTS DOCUMENT None

DWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

This tester provides a means to determine if a given vacuum tube is either up to or below a fixed standard. This instrument will be used on the Mobile Radio and Closed Circuit Television Systems.

DESCRIPTION:

The tester shows that a vacuum tube is shorted, opened, or compares either favorably or unfavorably with the mutual conductance of a nominal standard.

Recommend Hickok - Model 537-B, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>D. A. Lawrence</i>	<i>R. P. Bellamy</i>	<i>W. B. T. Bellamy</i>

2-6310-0-1

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ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

EQUIPMENT TITLE: MicrophoneACQ NUMBER 328APPROVAL DATE 8-1-62

REVISION _____ DATE _____

RESPONSIBLE DEPT BID _____

EQUIP. CLASSIFICATION SEC/CRDESIGN REQMS DOCUMENT NoneDWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

This microphone will be used when bench testing radio equipment.

DESCRIPTION:

A dynamic transistorized microphone using "talking current" as a power source for the built-in transistorized amplifier.

Output impedance: 500 ohms

The control switch is a "push-to-talk" type.

Recommend Motorola Transistorized Mobile Dynamic Microphone - TU 351A, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>J. P. Lawrence</i>	<i>R. B. Collins</i>	<i>W. H. Brown</i>

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ACO NUMBER 330

ASSEMBLY & CHECKOUT

APPROVAL DATE 8-4-61

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: Chart, EIA Resolution (Initial Retma Linearity Chart)

RESPONSIBLE DEPT. BTM

EQUIP. CLASSIFICATION SEC/OH

DESIGN RQMTS DOCUMENT None

DWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

This chart provides a target consisting of lines, circles, and numbers of known pattern, for a television camera to focus on. From this, the linearity circuits in the camera and the monitor can be aligned, by insuring that the objects on the chart are clear, in focus and with no distortion.

DESCRIPTION:

A paper or cardboard chart with lines, circles, and numbers in black and white.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>J. D. Lawrence</i>	<i>H. E. G. G.</i>	<i>Bob B. B.</i>

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ACO NUMBER 331

ASSEMBLY & CHECKOUT

APPROVAL DATE 8-4-61

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: Wattmeter, R. F.RESPONSIBLE DEPT. BIDEQUIP. CLASSIFICATION SPC/OMDESIGN REQTS DOCUMENT NoneDWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To provide a means of measuring radio transmitter output power.

DESCRIPTION:

Frequency Range: Approximately 150 MC to 180 MC
 Power Range: 0 to 50 watts
 Impedance: 50 ohms
 Accuracy: 5% of full scale
 VSWR: Not greater than 1.05

Recommend Bird 43 R. F. Wattmeter, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>P. A. Lewis</i>	<i>H. E. Olson</i>	<i>Robert R. Jones</i>

2-6340-0-1

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ACO NUMBER 132

ASSEMBLY & CHECKOUT

APPROVAL DATE 2-1-62

EQUIPMENT REQUIREMENTS

REVISION DATE

EQUIPMENT TITLE: Monitor, Radio Station (Frequency Modulation)

RESPONSIBLE DEPT. RTD

EQUIP. CLASSIFICATION SEC/011

DESIGN REQMTS DOCUMENT None

DWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To provide a means of monitoring, the RF carrier displacement, modulation deviation, relative signal strength, and indicate "carrier-on" conditions. Another purpose of the monitor is to provide a speaker for listening to remote radio units.

DESCRIPTION:

The F. M. Station Monitor will; read directly the R. F. carrier displacement from assigned center frequency, measure modulation deviation, meter relative signal strength, monitor aural communications with a speaker, and indicate "carrier-on" conditions. The monitor must be compatible with radio equipment transmitting between 152 to 174 megacycles.

Recommend Motorola F. M. Station Monitor - Model T1130A, or equivalent.

SHT 1 OF 1

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<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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WS 133A

ACO NUMBER 336

ASSEMBLY & CHECKOUT

APPROVAL DATE 8-1-61

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: Load, DummyRESPONSIBLE DEPT. BIDEQUIP. CLASSIFICATION SEC/DHDESIGN REQMTS DOCUMENT NoneDWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To provide a means of simulating a radio antenna when measuring transmitter output power, or when trouble-shooting the transmitter.

DESCRIPTION:

This is a device which is capable of dissipating 60 watts for R. F. power, through a frequency range of 150 MC to 180 MC.

Recommend Motorola Dummy Load-Model P7208, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>J. A. Swartz</i>	<i>H. E. Linn</i>	<i>W. J. Swartz</i>

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ACQ NUMBER 135

ASSEMBLY & CHECKOUT

APPROVAL DATE 8-1-62

EQUIPMENT REQUIREMENTS

REVISION DATE

EQUIPMENT TITLE: Probe, Detector Attenuator

RESPONSIBLE DEPT. BTD

EQUIP. CLASSIFICATION STG/CR

DESIGN REQTS DOCUMENT None

DWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To provide a means of measuring a voltage which is greater than the maximum voltage an oscilloscope can display without distortion. This instrument is used with the television camera and television monitor.

DESCRIPTION:

A probe which has designed into it, a 10:1 attenuator and a frequency compensation adjustment.

Recommend Tektronix Detector Probe - Model PR500CF, or equivalent.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>P. O. Severide</i>	<i>H. E. Glen</i>	<i>B. J. Fries</i>

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ACO NUMBER 336

ASSEMBLY & CHECKOUT

APPROVAL DATE 8-1-62

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: Probe, High Voltage D. C.

RESPONSIBLE DEPT. PED

EQUIP. CLASSIFICATION SEC/OH

DESIGN REQMTS DOCUMENT None

DWG NO. 11/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To provide a means to measure the high voltage on television picture tubes (approximately 25 KV DC) for purposes of trouble-shooting.

DESCRIPTION:

A high input impedance voltage divider probe, which is an accessory to the vacuum tube voltmeter.

Accuracy:	5%
Division Ratio:	100:1
Input Impedance:	12,000 Meg Ohms
Maximum Voltage:	30 KV DC
Maximum Current Drain:	2.5 micro amps

Recommend Hewlett-Packard - Model 459A DC Voltage Divider Probe to be used in conjunction and as an accessory of the Hewlett-Packard - Model 410B Vacuum Tube Voltmeter, or equivalent.

SHT. 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>J. A. Swenson</i>	<i>H. E. Glan</i>	<i>Bob Brown</i>

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NO. D2-11162-1

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NOTE: Use form U3-4071-1000 if additional sheets are required.

ORIGINATING GROUP SUPERVISOR: J. E. Hansen
TELEPHONE: 2-1231

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ACO NUMBER 337

ASSEMBLY & CHECKOUT

APPROVAL DATE 8-4-61

EQUIPMENT REQUIREMENTS

REVISION A DATE 10-26-61

EQUIPMENT TITLE: Voltmeter, Vacuum Tube
(Basic Noun First)

RESPONSIBLE DEPT. BID

EQUIP. CLASSIFICATION SEC/OH

DESIGN RQMTS DOCUMENT none

DWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X		X			

PURPOSE & JUSTIFICATION:

To provide a means to measure resistance, AC and DC voltages. Used to measure power supply output voltage while trouble shooting.

Used for testing of HF/UHF Radio System at CSA.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Ranges: AC 1 to 300 volts AC, full scale in 6 ranges
DC 1 to 1000 volts DC, full scale in 7 ranges
Ohms Mid-Scale reading of 10,000, 1K, 10K, 100K, and 1M ohms

Accuracy: DC 3% full scale all ranges
Ohms 1 ohm at mid-scale of R X 1 Range 5% at mid-scale of all other ranges
AC 3% full scale 60 cps to 400 mc

Input Impedance DC Approximately 122 M ohms
AC at 50 Kcps, approximately 2.35 M ohms

Recommend Hewlett-Packard - Model 410B or equivalent.

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ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

ACO NUMBER 318

APPROVAL DATE 8/25/61

REVISION _____ DATE _____

EQUIPMENT TITLE: Power Supply, Type 128, Tektronix

RESPONSIBLE DEPT. Base Installations EQUIP. CLASSIFICATION APC/DH

DESIGN REQTS DOCUMENT None DWG NO. None

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To supply DC power to the Detection Probe P500C to checkout TV Monitor System.

DESCRIPTION:

A power supply unit Model Type 128 with power requirements 105 V to 125 V or 210 V to 250 V, 50-60 cycle, 25 watts is recommended.

Power Supply Unit shall have DC output voltage + 120 V regulated at 25 ma, + 6.3 V unregulated at 150 ma.

Dimensions are approximately 4 3/4" wide, 7 3/4" high, 9 " over all depth, weight is six pounds.

SHT 1 OF 1

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<i>Chas. Butler</i>	<i>H. E. Lee 8/25</i>	<i>J. H. G. 8/25/61</i>

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ACO NUMBER 347

ASSEMBLY & CHECKOUT

APPROVAL DATE 9-8-62

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: AMMETER 500 AMPSRESPONSIBLE DEPT. BIDEQUIP. CLASSIFICATION SPG/OKDESIGN REQTS DOCUMENT NONEDWG NO. NONE

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To measure the Power Supply Current in the MAB and CPA under No-Load to Full Load conditions. Full load condition is about 350 amps.

DESCRIPTION:

An Ammeter capable of measuring up to 500 amps.

The following is recommended or the equivalent of:

A Weston, Model 901, P/N 2904001 with Ammeter Shunt Model 9992 P/N 0025251 and Ammeter Leads Model 9958 P/N 004516.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>M. H. P. ante 9/8</i>	<i>A. H. P. ante 9/8/1</i>	<i>Ante 9/8/1</i>

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ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

ACO NUMBER 350

APPROVAL DATE 9-8-61

REVISION DATE

EQUIPMENT TITLE: TELEVISION MONITOR, CLOSED CIRCUIT

RESPONSIBLE DEPT. RTD

EQUIP. CLASSIFICATION RTD/DR

DESIGN REQTS DOCUMENT NONE

DWG NO. NONE

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To allow visual remote monitoring of the missile during test.

DESCRIPTION:

A closed circuit television system consisting of (2) two T. V. cameras, one at each end of MAB, two T. V. monitors and necessary cabling. Allows monitoring of the missile in the control room.

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ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>A. H. Porter</i>	<i>Chapman</i>	<i>W. T. Davis</i>

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ASSEMBLY & CHECKOUT

EQUIPMENT REQUIREMENTS

ACO NUMBER 352APPROVAL DATE 9-8-61

REVISION _____ DATE _____

EQUIPMENT TITLE: LEAD, ELECTRICAL (GROUNDING)RESPONSIBLE DEPT. BIDEQUIP. CLASSIFICATION SPC/ONDESIGN REQTS DOCUMENT NoneDWG NO. None

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To protect the engines and missiles against an inadvertent firing caused by static electricity during transfer of the missile and engines both to and from a vehicle and from one vehicle to the other and during transient storage.

DESCRIPTION:

A standard electrical ground cable approximately 8' long with a connector plug on one end to match the T. E., SSCM, and 1st, 2nd, and 3rd stage transporter grounding connectors; and a clamp on the other end for fastening to a fixed earth potential grounding device.

This item is identical to former Fig. A 4176 cancelled, operational items to be provided in ECL 258.

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ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS

ACO NUMBER 362
APPROVAL DATE 9-12-61
REVISION 1 DATE 11-8-61

EQUIPMENT TITLE: MEG OHMMETER
(What's New? Add)

RESPONSIBLE DEPT. BID-MM EQUIP. CLASSIFICATION SFC/OH
DESIGN REQTS DOCUMENT NONE DWO NO. N.A.
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X		X			

PURPOSE & JUSTIFICATION:

A requirement exists during the Assembly and Checkout for a general purpose high resistance insulation tester to check Electrical cables for insulation breakdown. Items such as the Electrical cables in the Maintenance Support Shop in the CPA and the RF Coaxial Cables used with HF/UHF Radio System require insulation tests.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that a General Radio Model 1862-B Megohmmeter or equivalent be furnished.

Range 0.5 to 2,000,000 MEGO 500 VDC.

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TELEPHONE: _____

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ASSEMBLY & CHECKOUT					APPROVAL DATE <u>9-8-61</u>				
EQUIPMENT REQUIREMENTS					REVISION _____ DATE _____				
EQUIPMENT TITLE: _____ <u>MEGGER, GROUND</u>									
RESPONSIBLE DEPT. _____ <u>BID</u>					EQUIP. CLASSIFICATION <u>SCF/ON</u>				
DESIGN REQTS DOCUMENT <u>NONE</u>					DWG NO. <u>NONE</u>				
TO BE USED AT:									
BASE	MAFB	EAFB	VAFB	STP III	PLT 77				
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162				
					X				

PURPOSE:

To check and verify the ground plane of the CPA, MAB and Support Building, meet resistance requirements. This Ground Megger measures very low resistance in contrast to the megger which measures very high electrical insulation resistance.

DESCRIPTION:

A Ground Megger which uses the 3-pole method of evaluating the earth ground resistance. A Biddle Model 600 Ground Megger or equivalent is recommended.

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ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

ACO NUMBER 376APPROVAL DATE 10-11-61

REVISION _____ DATE _____

EQUIPMENT TITLE: Power SupplyRESPONSIBLE DEPT. BI-MMEQUIP. CLASSIFICATION ATC/ONDESIGN REQTS DOCUMENT NoneDWG NO. None

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

To provide D. C. power source for the Mobile Radio Equipment when it is being bench tested and/or aligned.

See D2-11162 Section C, Paragraph C6.1.

DESCRIPTION:

A filtered DC Power Supply, with two voltage output ranges, and two meters, (current and voltage).

DC Output 0-15 and 0-35 V DC

Ripple Content: 100 millivolts maximum at 5 amps

Metering Accuracy: + 2% full scale

Current Capacity: 6-12V DC Operation

Continuous - 30 amps

Intermittent - 40 amps

24-35 V DC Operation

Continuous - 20 amps

Intermittent - 30 amps

Input Voltage: 110-120 Volts, 50-60 Cycles AC

Power Consumption: Approximately 700 Watts with 30 Amp, 12 VDC Load.

Regulation: Maximum 3 volt drop (Receiver standby to full load
12 VDC Operation)

Overall Dimensions: 13½" high x 8" wide x 13" deep

Weight: 56 lbs.

It is recommended the D.C Motorola, Model T1012A, or equivalent, be provided.

This replaces ACO 0550, dated 8/1/1.

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ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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JERRY BOQUET

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ACO NUMBER 388

ASSEMBLY & CHECKOUT

APPROVAL DATE 11-8-61

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: LOAD BANKRESPONSIBLE DEPT. BIDEQUIP. CLASSIFICATION STC/OHDESIGN REQMS DOCUMENT NONEDWG NO. N.A.

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE:

A requirement exists for a load bank to be used during test and adjusting the DC power supplies used in the GPA and MAB.

Used for Figure A 7728, 7729, and 7717, all DC loads.

7728 28 V @ 50 A, 28 V @ 30 A

1400 W, 840 W

7729 28 V @ 350 A, 28 V @ 30 A

9.8 KW, 840 W

7717 28 V @ 350 A, 28 V @ 125 A, 28 V @ 30 A, 28 V @ 50 A

9.8 KW, 3.5 KW,
1.4 KW

DESCRIPTION:

A resistive load variable from no load to full load, 0 to 350 amps at 28+ volts DC, (approximately 15,000 watts), with provisions for current and voltage measurements.

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H. Fogg

WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACQ NUMBER 131
APPROVAL DATE 11-10-61
REVISION _____ DATE _____

EQUIPMENT TITLE: VOLT BOX, AC POWER SUPPLY
(Make Name First)

RESPONSIBLE DEPT. STD EQUIP. CLASSIFICATION STC/ON
DESIGN REQTS DOCUMENT None DWG NO. N. A.
TO BE USED AT:

BASE	MAFB	SAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for varying the line voltage (115 VAC, 60 CPS, single phase) to the test set, missile checkout console, BCS-140, during post-installation testing. Variations of 90 to 130 VAC are required.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that a volt box, AC power supply 0 to 140 VAC, 7.5 AMP capacity, 50/60 CPS, single phase, Superior Electric type UCIM be provided. This is a self contained instrument containing power stat, power cord, fused output receptacles and a line/load meter for rough indication.

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<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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ORIGINATING GROUP SUPERVISOR: Paul Long
TELEPHONE: 5-1310

WS 133A
ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS

ACO NUMBER 393
APPROVAL DATE 11-10-61
REVISION _____ DATE _____

EQUIPMENT TITLE: Power Supply
(State Name First)

RESPONSIBLE DEPT. BID EQUIP. CLASSIFICATION SFC/OR

DESIGN REQMS DOCUMENT None DWG NO. N.A.
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists during post-installation testing of Fig. A #7723 (Console Missile Checkout BGS-77) for a power supply capable of 0 to 30 VDC, current limitation at (25) (100) and 250MA) isolated output, 0.3% regulation and 150 MV RMS or less ripple & Noise.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that an HP 721A be provided.

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**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 402
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Cable Tester
(Make From Part)

RESPONSIBLE DEPT. Base Installations EQUIP. CLASSIFICATION STC/OR

DESIGN REQTS DOCUMENT _____ DWG NO. _____
TO BE USED AT: _____

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			

PURPOSE & JUSTIFICATION:

Used in conjunction with SFA 7715 "Test Set, Raceway Cables" for conducting continuity and leakage resistance tests prior to installation of the raceway.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The adaptor cables provided in SFA 7715 are designed for usage with a specific cable tester.

It is recommended that a California Technical Industries 165A test set be used to fulfill the above requirements.

▶ One unit procured by Manufacturing Engineering on EAMR MEFT/663-1
Revision "B"

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TELEPHONE: _____

REV. 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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NOTE: Use form US-4071-1000
if additional sheets are required

ORIGINATING GROUP SUPERVISOR:

TELEPHONE:

WS 133A ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS						ACO NUMBER <u>405</u> APPROVAL DATE <u>4-24-61</u> REVISION <u>C</u> DATE _____	
EQUIPMENT TITLE <u>Hoist, Portable</u> (Basic Noun First)							
RESPONSIBLE DEPT. <u>BID</u>				EQUIP. CLASSIFICATION <u>SFC/OH</u>			
DESIGN REQMTS DOCUMENT <u>None</u>				DWG NO. <u>None</u>			
TO BE USED AT:							
BASE	MAFB	EAFB	VAFB	STP III	PLT 77		
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162		
X	X	X	X		X		
PURPOSE & JUSTIFICATION 1. To lift and move the G&C section within the G&C section test area at the CSA. 2. To lift and move the G&C section from its container to the Autonavigator Hand Truck (ACO 0565) in the Component Processing Area, (Bldg. 1265) at AF Plant 77. DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS: The G&C section weighs approximately 350 pounds, is approximately 31 inches high and 37 1/2 inches in diameter. The H7B transfer fixture in which the G&C section is positioned for test at the CSA is approximately 30 inches high. The autonavigator hand truck is approximately 36 inches high. The portable hoist will be used in conjunction with the G&C assembly. Hoistin Adapter, Figure A-4028, to lift the G&C section from the shipping container, and position it on the transfer fixture in the CSA. The portable hoist will be used in conjunction with the Hoisting Sling & Cover (H6A) (ACO 0608), to lift the G&C section from the shipping container and position it on the Autonavigator Hand Truck at AF Plant 77. To be capable of performing the above tasks, the portable hoist must (1) not exceed in over all height of 8 feet 11 inches (2) be equipped with hard rubber castors which will prevent damage to the test area floor tile (3) be capable of being disassembled to enter the test area through the door provided.							
SHT <u>1</u> OF <u>1</u>							
ENGINEERING DEPT.		BASE INSTALLATION DEPT.		MANUFACTURING DEPT.		FACILITIES DEPT.	

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**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 115
APPROVAL DATE 12-12-61
REVISION _____ DATE _____

EQUIPMENT TITLE: Jack, Leveling Support
(Include Name First)

RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION SFC/OK

DESIGN REQTS DOCUMENT None DWG NO. None
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

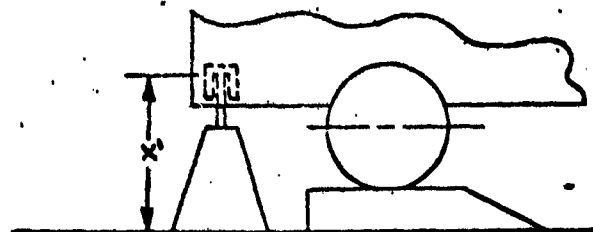
PURPOSE & JUSTIFICATION:

A requirement exists for a means of stabilizing a 2nd or 3rd stage engine transporter while on portable ramps 11 1/2" high, by raising the aft end off of its suspension and supporting it rigidly in the proper position relative to the engine storage rails during engine transfer.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Leveling support jacks shall have approximately 12,000 pounds capacity and be either manually or hydraulically operated. The internal pressure shall not exceed 5,000 PSI. A minimum jacking stroke of 4 inches is required.

The operating range of jacks (X' for the 2nd or 3rd stage) shall be 43.50 to 51.50 or 41.50 to 49.50, respectively, if jacked from ground level while highway transporters are located on portable ramps.



SHT. 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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REV.

BOEING NO. D2-11162-1
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ORIGINATING GROUP SUPERVISOR: J. ROQUET
TELEPHONE: 5-4797

WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 422
APPROVAL DATE 6-23-61
REVISION B DATE 11-9-61

EQUIPMENT TITLE: VOLTMETER, DIFFERENTIAL AC-DC

RESPONSIBLE DEPT. RID EQUIP. CLASSIFICATION STC/OH
DESIGN REQTS DOCUMENT NONE DWG NO. N. A.
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X	X	X			

PURPOSE & JUSTIFICATION:

A precision DC-AC Differential Voltmeter is required for shop and field use during assembly and checkout. This instrument is also required as a calibration standard for Plant 77. Among items which require precision voltage measurements are: Fig. A's 695, 4490, 1296, 3092, 4169, 1283, 1284, 1201, 1289, 1282, 3013, 1288, 599, 4018, 1379, ACO-101 & 129, and for Missile Targeting and in adjustment of the Security System.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that a portable Voltmeter capable of measuring 0-500 Volts AC and DC, with an accuracy of .05% on DC ranges and .2% on AC ranges be provided.

The John Fluke Model 803 is recommended.

REV 2 OF 2

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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REV.

BOEING | NO. D2-11162-1
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ORIGINATING GROUP APPROVED: Paul Laps
TELEPHONE: 5-3300

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WS 193A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 448
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Camera and Tripod, Still Picture
(Photo from Photo)

RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION SEC/OW

DESIGN RIGHTS DOCUMENT _____ DWG NO. _____
TO BE USED AT:

BASE	MAFB	EAFA	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for a means of photographing damaged containers and/or airborne equipment in the receiving area. See D2-11162-1, Section B, Function 1.1.1.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The Camera and Tripod shall be standard equipment. The Camera shall be of negative producing variety.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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REV.

BOEING NO. D2-11162-1
APP. II PAGE 30

ORIGINATING GROUP SUPERVISOR: _____
TELEPHONE: _____

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WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 449
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Electrical Cable Assy - Portable Flood Lamps
(Make Name First)

RESPONSIBLE DEPT. BI-HM EQUIP. CLASSIFICATION STC/OE

DESIGN REQMS DOCUMENT _____ DWG NO. _____
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for a means to provide electrical power to the Portable Flood Lamps in the Igloo and the MAB Transfer Areas. See D2-11162-1, Section B, Functions 2.2, 4.2, 13.1, 13.6, 13.7, 13.8, 13.9, and 13.10.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The Electrical Cable Assembly shall be of suitable length to provide adequate lighting for transfer functions at night and shall provide 110 volt, 60 cycle AC power to the Portable Flood Lamps (ACO 4425).

ORIGINATING GROUP SUPERVISOR: _____
TELEPHONE: _____

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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REV.

BOEING NO. D2-11162-1
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WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 150
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Hoist, Lever (Come-Along)
(State Main Part)

RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION SFC/OR

DESIGN REQMS DOCUMENT _____ DWG NO. _____
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for a means of repositioning the engines longitudinally along the Missile Joining Rails during missile assembly, see D2-11162-1, Section B, Functions 7.4.1.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

A standard lever hoist (come-along) shall be used, capable of providing a minimum of 1500 lbs. force.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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REV.

BOEING

NO. D2-11162-1

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ORIGINATING GROUP SUPERVISOR: _____
TELEPHONE: _____

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WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 452
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Truck, Motor Misc. Delivery
(State Name First)

RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION SFC/OH
DESIGN RIGHTS DOCUMENT _____ DWO NO. _____
TO BE USED AT: _____

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					E			

PURPOSE & JUSTIFICATION:

A requirement exists for a means to transport Airborne and Handling Equipment from R&I to CPA and MAB, and from CPA to storage. See D2-11162-1, Section B, Functions 1.1.1, 2.1.1, 2.3.1, 3.1.1, 4.1.2 and 4.3.1.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The truck will be standard equipment, approximately 1 ton, flat bed.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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REV.

BOEING NO. D2-11162-1

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ORIGINATING GROUP SUPERVISOR: _____
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WS 133A
ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS

ACO NUMBER 453
 APPROVAL DATE _____
 REVISION _____ DATE _____

EQUIPMENT TITLE: Truck, Lift - Fork
(Should Follow First)

RESPONSIBLE DEPT. BI-MH EQUIP. CLASSIFICATION STC/OH

DESIGN BOMBS DOCUMENT _____ DWO NO. _____
 TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7671	D2-7942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for a means of moving Airborne & Handling Equipment, in the Receiving, CPA, MAB and Storage Areas. See D2-11162-1, Section B, Functions 1.1.1, 2.1.1, 2.2.1, 3.1.1 and 4.1.2.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The Fork Lift will be standard equipment capable of lifting 2000 lbs.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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BOEING NO. D2-11162-1
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ENGINEERING GROUP SUPERVISOR
 TELEPHONE: _____

WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 454
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Sling - Standard, Factory (4 drop)

RESPONSIBLE DEPT. BI-MH EQUIP. CLASSIFICATION STG/DE

DESIGN REQTS DOCUMENT _____ SWG NO. _____
TO BE USED AT:

BASE	MAFS	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7671	D2-7742	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for a means to secure miscellaneous equipment to hoists to allow lifting and moving to or from inspection (R&I Area), component testing (CPA Bldg.) and Missile Assembly Positions (MAB). See D2-11162-1 Section B, Functions 1.1, 3.1, 4.1, 5.1, 7.4, and 9.2.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Sling of standard cable construction with appropriate attach points for fastening to the hoist (ring) and various equipments (snaps or hooks) is recommended.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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REV.

ORIGINATING GROUP SUPERVISOR: _____
TELEPHONE: _____

WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 456
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Table, Work - Electronic Test
(Indicate Name Plate)

RESPONSIBLE DEPT. BI-KH EQUIP. CLASSIFICATION STC/OE

DESIGN REQTS DOCUMENT _____ DWG NO. _____
TO BE USED AT:

BASE	MAFB	BAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-7942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for a work table for electronic testing of NCU's in the Component Processing Area. See D2-11162-1, Section B, Functions 3.1.1.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The work table, electronic test, shall be standard level wooden table or equivalent.

DESIGNATING GROUP SUPERVISOR: _____
TELEPHONE: _____

SHT 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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REV.

BOEING NO. D2-1116
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ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

ACO NUMBER 457
APPROVAL DATE 2-2-62
REVISION _____ DATE _____

EQUIPMENT TITLE Container, Raceway Cables, Stage III
(Book Name First)

RESPONSIBLE DEPT. Manufacturing EQUIP. CLASSIFICATION BATE

DESIGN REQMTS DOCUMENT _____ DWG NO. KX 13186

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION

During the missile repair and rework phase at Plant 77, a requirement exists a container which can be used to transport the Stage III raceway cable from missile assembly building to the component processing area for fault isolation testing. It is also required that this container be provided with adapter cutouts to allow connecting the SFA 7715 cable adapters to the cable connect for testing without removing the raceway cable from the container.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that the container be built from the Autonetics Drawings KX 13186 and sketches.

1. Container will have a mounting bulkhead for attachment of breakaway receptacles, umbilical receptacle and special G&C connector. The bulk shall be open to the exterior of the container when the container cover is removed, so that connectors other than those listed in item 1 above will be exposed for connection of test equipment.
2. Space will be provided for connecting test cable adapters to the raceway cable connectors other than those listed in item 1 above.
3. Raceway cables will be free of any obstructions above the level of the cable after the cover is removed.
4. Container will have fork lift brackets for transporting.
5. Container will have four (4) lift handles and hoist hooks.

SHT 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

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REV.

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NOTE: Use Form 12-4971-1000
if additional sheets are required.

ORIGINATING GROUP SUPERVISOR:

TELEPHONE:

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ACO NUMBER 458

ASSEMBLY & CHECKOUT

APPROVAL DATE 2-2-62

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE Container, Raceway Cable, Stage II
(Book Name First)RESPONSIBLE DEPT. Manufacturing EQUIP. CLASSIFICATION BATEDESIGN REQMS DOCUMENT None DWG NO. _____

TO BE USED AT:

BASE	MAFB	BAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION

During the missile repair and rework phase at Plant 77, a requirement exists for a container which can be used to transport the Stage II raceway cable from the missile assembly building to the component processing area for fault isolation testing. It is also required that this container be provided with adapter outlets to allow connecting the SPA 7715 cable adapters to the cable connectors for testing without removing the raceway cable from the container.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that the container be built from the Autonetics Drawings MX-13185 and sketches.

1. Container will have a mounting bulkhead for attachment of breakaway receptacles, umbilical receptacle and special G&C connector. Bulkhead will open to exterior of container when container cover is removed, so that connectors can be directly attached.
2. Space will be provided for connecting test cable adapters to the raceway cable connectors other than those listed in item 1 above.
3. Raceway cables will be free of any obstructions above the level of the cable after the cover is removed.
4. Container will have fork lift brackets for transporting.
5. Container will have four (4) lift handles and hoist hooks.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

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ACO NUMBER 459

ASSEMBLY & CHECKOUT

APPROVAL DATE 2-2-62

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE Container, Raceway Cable, Stage I
(Book Name First)

RESPONSIBLE DEPT. _____ EQUIP. CLASSIFICATION _____

DESIGN REQMTS DOCUMENT _____ DWG NO. _____

TO BE USED AT:

BASE	MAFB	BAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION

During the missile repair and rework phase at Plant 77, a requirement exists for a container which can be used to transport the Stage I raceway cable from the missile assembly building to the component processing area for fault isolation testing. It is also required that this container be provided with adapter cutouts to allow connecting to SFA 7715 cable adapters to the cable connectors for testing without removing the raceway cable from the container.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that the container be built from the Autonetics Drawings 19289-204, NX-10014, and NX-13184.

1. Container will have a mounting bulkhead for attachment of breakaway receptacles, umbilical receptacle and special G&C connector. Bulkhead will open to exterior of container when container cover is removed, so that connectors can be directly attached.
2. Space will be provided for connecting test cable adapters to the raceway cable connectors other than those listed in item 1 above.
3. Raceway cables will be free of any obstructions above the level of the cable after the cover is removed.
4. Container will have fork lift brackets for transporting.
5. Container will have four (4) lift handles and hoist hooks.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

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1957a Use form 10-487-1-1000
if additional sheets are required.

ORIGINATING GROUP NUMBER: _____

TELEPHONE: _____

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WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

AGO NUMBER 461
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Truck, Lift - Jack
(State Main Item)

RESPONSIBLE DEPT. BI-MH EQUIP. CLASSIFICATION STC/OK

DESIGN REQTS DOCUMENT _____ DWG NO. _____
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-7742	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for a Truck Lift - Jack for transporting tub skids within the area. See D2-11162-1, Section B, Function 1.1.1.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The Truck Lift - Jack is to be standard equipment.

SHY 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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ORIGINATING GROUP SUPERVISOR: _____
TELEPHONE: _____

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WS 133A

ACO NUMBER 462
APPROVAL DATE _____
REVISION _____ DATE _____ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTSEQUIPMENT TITLE: Shelving, Storage
(State Name First)RESPONSIBLE DEPT. BI-MH EQUIP. CLASSIFICATION STC/OE
DESIGN RIGHTS DOCUMENT _____ DWG NO. _____
TO BE USED AT: _____

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7671	D2-7742	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for a means to store delivered OGE/MGE and Special Facilities items. See D2-11162-1, Section B, Paragraphs 2.3.1, 4.1.3, and 4.3.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Standard metal shelving shall be used.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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ORIGINATING GROUP SUPERVISOR: _____
TELEPHONE: _____

WS 133A
 ASSEMBLY & CHECKOUT
 EQUIPMENT REQUIREMENTS

ACO NUMBER 463
 APPROVAL DATE _____
 REVISION _____ DATE _____

EQUIPMENT TITLE: Power Supply, DC
(State Name First)

RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION STC/OR
 DESIGN REQMTS DOCUMENT _____ DWG NO. _____
 TO BE USED AT: _____

BASE	MAFS	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A requirement exists for providing 40 volts of DC power to BGS 140 (TSE 7675) during its functional test.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that a Sorenson Model QR-40 DC power supply or equivalent be provided.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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BOEING NO. D2-11162-1
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ORIGINATING GROUP SUPERVISOR: O. A. Sayeride
 TELEPHONE: 5-5022

WS 133A

ASSEMBLY & CHECKOUT

EQUIPMENT REQUIREMENTS

ACO NUMBER 907

APPROVAL DATE 4-20-62

REVISION B DATE 11-20-62

EQUIPMENT TITLE Resistor Decade
(Basic Name First)

RESPONSIBLE DEPT. BID EQUIP. CLASSIFICATION STC/OH

DESIGN REQMTS DOCUMENT _____ DWG NO. _____

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X		X		X			

PURPOSE & JUSTIFICATION

The decade resistor is required to furnish simulated loads for separate functional tests of the following items:

- Safety and Arming Device Test Set (Figure A 13)
- Explosive Set Circuitry Test Set and Test Leads (Figure A 9207)
- CTLI Downstage Electrical System Test Set (Figure A 9116) (Ref: D2-9835)
- Test Set Alarm AN/GSM-59 (Fig. A 3109) (Ref: D2-9833)

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The functional test document for the Aerojet-General Test Set (Figure A 13) requires a range of 0.01 ohms to 1000 ohms.

The following listed equipment will satisfy this requirement.

Shallcross Manufacturing Co., P/N 817B
Gray Instrument Model E1144A
General Radio Model 1432-T

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

NOTE: Use form U2-4871-1000
if additional sheets are required.

ORIGINATING GROUP SUPERVISOR: _____

TELEPHONE: _____

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ACO NUMBER 929

ASSEMBLY & CHECKOUT

APPROVAL DATE 5-22-62

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE TEST SET, POWER SUPPLY
(Basic Name First)RESPONSIBLE DEPT. ManufacturingEQUIP. CLASSIFICATION BATEDESIGN REQMTS DOCUMENT NoneDWG NO. N.A.

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X	X	X			

PURPOSE & JUSTIFICATION

It is required that a power supply test set be provided to facilitate functional testing of the portable batteries supplied with the Explosive Set Circuitry Test Set (Figure A #3007 and #7679). This test fixture shall have the capability of simulating no-load and full load condition and shall provide points by which the battery performance can be monitored during load testing.

The functional test requirements using this equipment are shown in D2-12054 (all bases.)

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Tooling Drawing MISC 10-20994 has been provided for use to satisfy this same requirement during in-plant testing.

A part identical to Tooling Drawing MISC 10-20994 will satisfy this requirement.

This item is a small portable metal box containing switches, jacks, and resistors as shown on Sheet 2 and 3 of this ACO. A switch connects jack "A" to jack "B" through either a 100 or a 400 resistor and an "on-off" switch.

SHT 1 OF 3

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

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NOTE: Use form 10-607-1000
if additional sheets are required.ORIGINATING GROUP SUPERVISOR: _____
TELEPHONE: _____

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WS 133A

ACO NUMBER 929

ASSEMBLY & CHECKOUT

APPROVAL DATE 5-22-62

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE TEST SET, POWER SUPPLY
(Basic Name First)RESPONSIBLE DEPT. Manufacturing EQUIP. CLASSIFICATION BATEDESIGN REQMTS DOCUMENT None DWG NO. N.A.

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7671	D2-9942	D2-11162			
	X	X	X	X	X			

PURPOSE & JUSTIFICATION

It is required that a power supply test set be provided to facilitate functional testing of the portable batteries supplied with the Explosive Set Circuitry Test Set (Figure A #3007 and #7679). This test fixture shall have the capability of simulating no-load and full load condition and shall provide points by which the battery performance can be monitored during load testing.

The functional test requirements using this equipment are shown in D2-12054 (all bases.)

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Tooling Drawing MISC 10-20994 has been provided for use to satisfy this same requirement during in-plant testing.

A part identical to Tooling Drawing MISC 10-20994 will satisfy this requirement.

This item is a small portable metal box containing switches, jacks, and resistors as shown on Sheet 2 and 3 of this ACO. A switch connects jack "A" to jack "B" through either a 100 or a 400 resistor and an "on-off" switch.

SHT 1 OF 3

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

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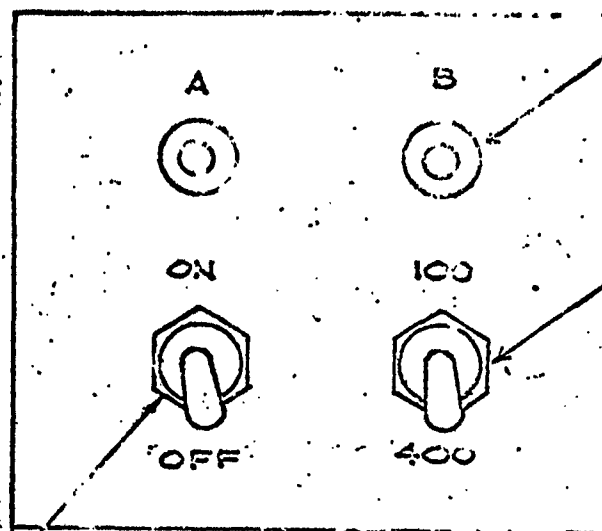
BOEING NO. D2-11162-1
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NOTE: Use form 12-4873-1000
If additional sheets are required.

ORIGINATING GROUP SUPERVISOR: _____

TELEPHONE: _____

COPI



STANDARD
BANANA JACKS
(2 PLACES)

MS 35053-23
(S-2)

MS 35053-22.
(S-1)

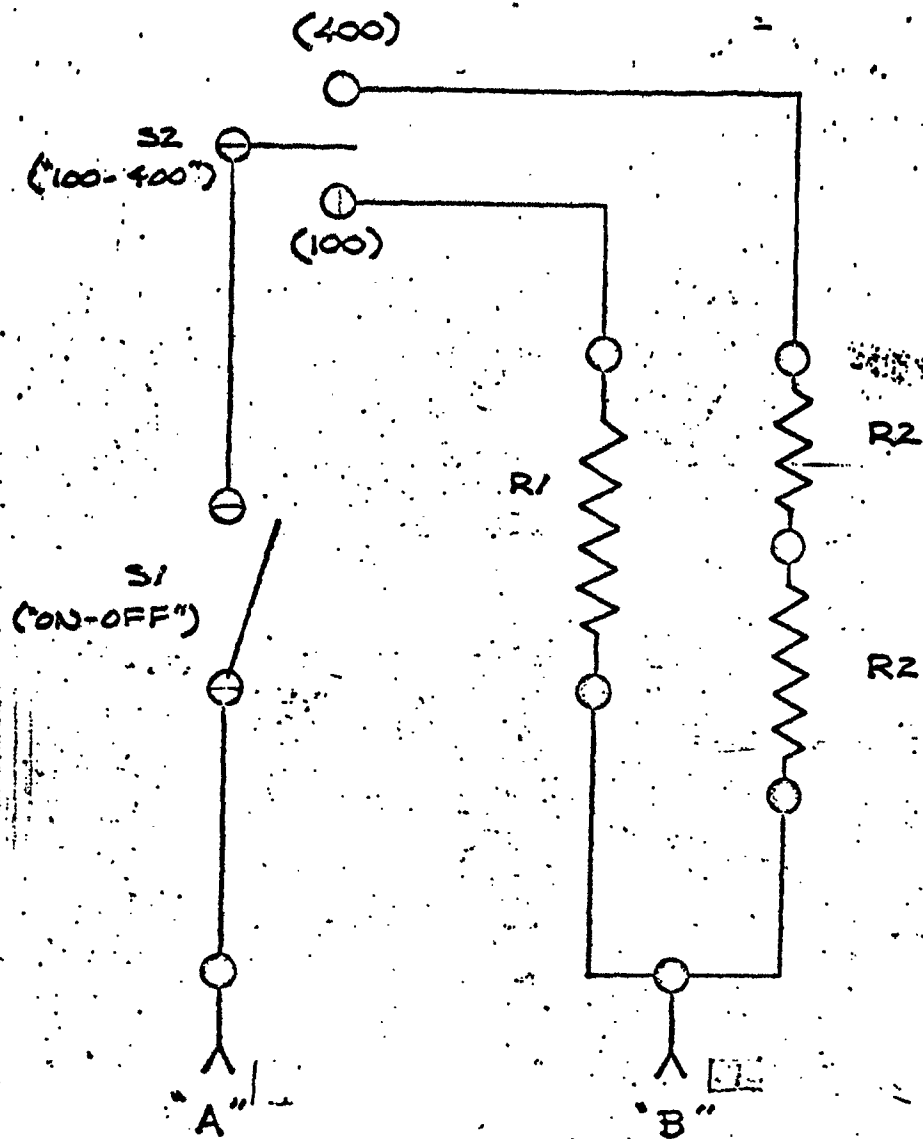
POWER SUPPLY TEST SET

ACC 929
GNT 1 OF 3

U3-271-101

921-62

DEFENSE	NO D2-11162-1
APP II	PAG. 43b



WIRING DIAGRAM

S₂ MS35058-23
 S₁ MS35058-22 SPDT
 R₂ 200 Ω $\pm$ 3%
 R₁ 100 Ω $\pm$ 1% 10 WATT

ACC 929
 SUT 3 OF 3

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DEJING NO. D2-11162-1
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REV A W. H. HART
5-4563

NOTE: See form 12-487-1-1000
If additional sheets are required.

ORIGINATING GROUP SUPERVISOR: STAPLES
TELEPHONE: 5-6434

WS 133A				ACO NUMBER 935			
ASSEMBLY & CHECKOUT				APPROVAL DATE 5-22-62			
EQUIPMENT REQUIREMENTS				REVISION A DATE 7-31-62			
EQUIPMENT TITLE TEST TOOL, TEST SET, EXPLOSIVE SET CIRCUITRY (Book Name First)							
RESPONSIBLE DEPT. Engineering				EQUIP. CLASSIFICATION BATE			
DESIGN REQMS DOCUMENT None				DWG NO. N.A.			
TO BE USED AT:							
EASE	MAFS	EAFS	VAFS	STP III	PLT 77	AFB ST-1	
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162	D2-9833	
	X	X	X	X	X	X	

PURPOSE & JUSTIFICATION

It is required that test tool for the Test Set, Explosive Set Circuitry (Figure A 3007 and 7679) be provided to facilitate the periodic calibration of the test set. This test tool shall have the capability of providing the input and output measuring equipment access to monitor any pair combination of pins on the test set connectors.

The functional test requirements using this equipment are shown in D2-12054 (all bases).

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Tooling drawing TSJ 10-20994 has been provided for use to satisfy this same requirement during in-plant testing.

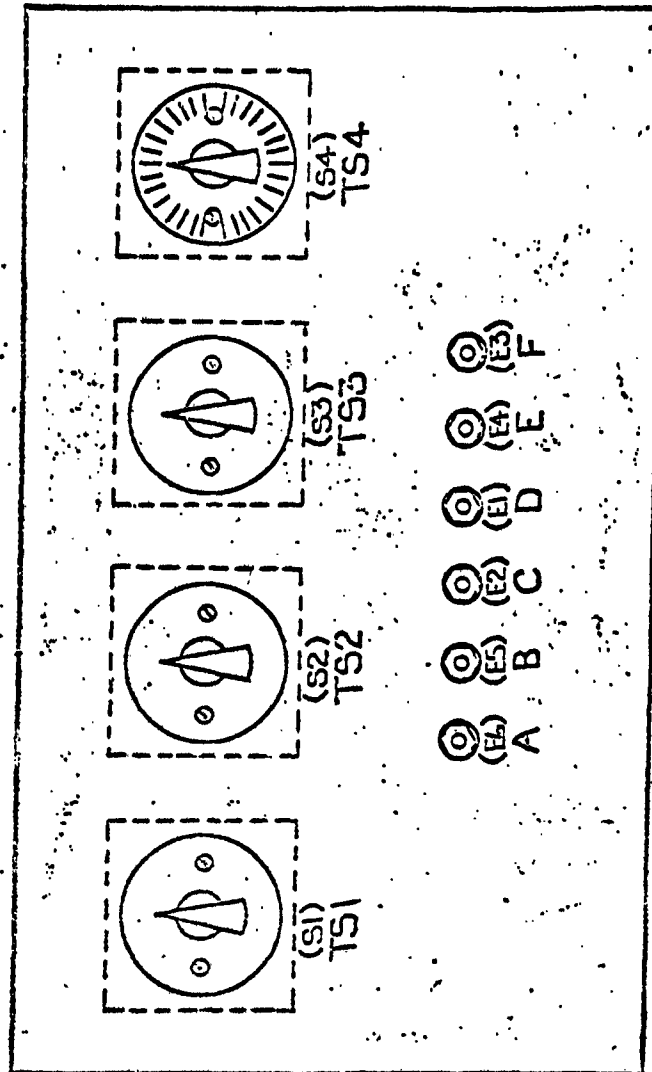
A part similar to TSJ 10-20994 will satisfy this requirement.

This item is a small portable metal box with 2 connectors, four selector switches and 6 jacks, as shown on sheets 2 and 3. It is wired so jacks E and F are connected to pins 36 and 37 respectively of P1, jacks A & B can be connected through switches S4 and S3 respectively to any other pin on P1, and similarly jacks C and D can be connected through S2 and S1 to any pin on P2.

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ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.
Edmund Halliwell	W. H. Hart	A. E. Greiner	N. Carter

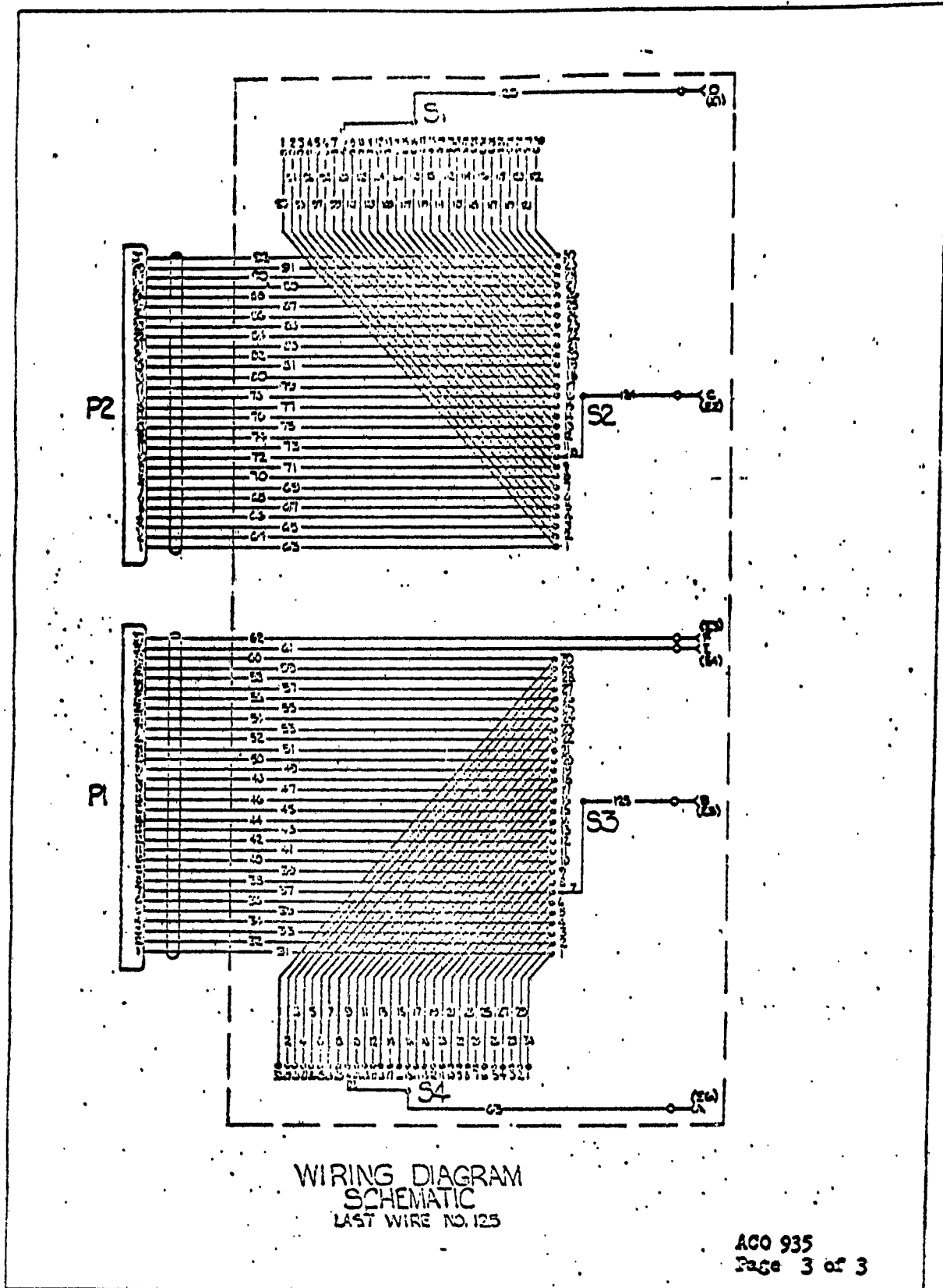
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U2-4021 1070 (W-1) SAC (544-L-R3)

407 1-18-63

COBINS NO D2-11162-1
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ATC CHECKOUT EQUIPMENT REQUIREMENTS

ACO NUMBER 3009
APPROVAL DATE 1-25-62
REVISION _____ DATE _____

Equipment Name Fuller, Printed Circuit Card
Description Removal EQUIP. CLASSIFICATION ACO/ATE-Peculiar
DESIGN RIGHTS DOCUMENT None DWG NO. 25-2742L
TO ACROSS AT _____

ITEM	QTY	UNIT	QTY	UNIT	PLT 77			
001	01-246	02-700	02-707	02-9942	02-11162			
	X	X	X		X			

PURPOSE & USAGE NOTES

A requirement exists for means to remove and install Printed Circuit Assembly cards without damaging assemblies or subjecting personnel to physical injury. Used to remove printed circuit assemblies from their connectors when repairing drawers etc in the following Fig A items: 1201, 1218, 1284, 1289, 1243, 1296 and 1210.

Used in the O&M drawer maintenance area during A&CO task.

DESCRIPTION, RECOMMENDATIONS

It is recommended that a hand tool be provided which will mate with the Printed Circuit Assembly Card to ensure proper insertion and extraction without bending cards.

A force of 30 pounds may be required to remove cards from all items except Fig A 1201. i.e. A 1201 will require a force of 95 pounds.

This item is identified to Fig A 3009.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

ORIGINATING GROUP SUPERVISOR: J. K. Sherron
TELEPHONE: AT-4-5860

BOEING
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NOTE: Use form U3-4071-1000
if additional sheets are required.

ORIGINATING GROUP SUPERVISOR: J. K. Sheron
TELEPHONE: AT 4-5860

WS 133A

ASSEMBLY & CHECKOUT

EQUIPMENT REQUIREMENTS

EQUIPMENT TITLE: Stop Watch
(Basic Noun First)

ACO NUMBER 3059

APPROVAL DATE 11-14-62

REVISION _____ DATE _____

RESPONSIBLE DEPT. BID EQUIP. CLASSIFICATION ACO/NGE-SFC/OH

DESIGN REQMTS DOCUMENT None DWG NO. U.I.

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X					

PURPOSE & JUSTIFICATION:

To determine the accuracy of the Running Time Meter on the Auxiliary Environmental Control Unit (Fig. A 4115).

To calibrate and check Recorder, Launch Events (ACO 372) at the CSA.

A general purpose timing tool.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The accuracy of the Running Time Meter must be maintained within $\pm 5\%$ full scale. It is recommended that a Jaquet #300 stop watch capable of measuring one hour, $\pm 0.1\%$ be provided.

This item is identical to Fig. A 3059.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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BDEING NO. D2-11162-1
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NOTE: Use form U3-4071-1000
if additional sheets are required.

ORIGINATING GROUP SUPERVISOR: Paul Long
TELEPHONE: 5-3310

WS 133A
ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS

ACO NUMBER 4001
APPROVAL DATE 8-1-61
REVISION 1 DATE 11-2-61

EQUIPMENT TITLE: MULTIMETER
(Basic Noun First)

RESPONSIBLE DEPT. BID EQUIP. CLASSIFICATION STC/OM
DESIGN REQTS DOCUMENT NONE DWG NO. N. A.
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X	X	X			

PURPOSE & JUSTIFICATION:

A general purpose electrical measurement instrument is required for use in the field and in the shops during assembly and checkout. The instrument is required to trace continuity and perform AC/DC voltage and current and resistance measurements where tolerances and impedance matching are not critical.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The instrument selected should be a hand portable, battery powered and serviceable for continuous shop and field use.

The following models or their equivalents are suggested:

Triplet Model 630A
Simpson Model 260
AN/PSM-6

This item is identical to Figure A 4001.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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NOTE: Use form U3-4071-1000
if additional sheets are required.

ORIGINATING GROUP SUPERVISOR: L. A. Bergen
TELEPHONE: 5-1281

WS 133A
ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS

ACO NUMBER 4004
APPROVAL DATE 8-1-61
REVISION A DATE 10-26-61

EQUIPMENT TITLE: Oscilloscope
(Basic Noun First)

RESPONSIBLE DEPT. BID EQUIP. CLASSIFICATION STC/DH
DESIGN RQMTS DOCUMENT None DWG NO. N.A.
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X		X			

PURPOSE & JUSTIFICATION:
To check the output wave from the adapter C91 Electronic Programming Test Center and Power Supply. To check for transients under no load, full load and nominal load conditions of the power supply.
See D2-11162, Sec. C, para. C6.1, C8.2, C8.4, and C9.2
To provide a means to observe and measure voltage waveforms in both television camera and monitor. To measure frequency, power supply ripple, and use as a test instrument to display frequency curves of video amplifiers, when used (see insert below)
DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

This is identical to that specified by Fig. A 4004

(insert)

in conjunction with a video sweep generator.
To provide a means to observe audio distortion in HF/IMF Radio System at CSA.

SHT. 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<u>A. H. Bacter</u>	<u>A. H. Bacter</u>	<u>A. E. Bacter</u>

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WS 133A

ACO NUMBER 4461ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTSAPPROVAL DATE 2-13-62REVISION A DATE 2-23-62EQUIPMENT TITLE Ammeter, AC/DC
(List Name First)RESPONSIBLE DEPT. BI-MHEQUIP. CLASSIFICATION ACO/AGE/TC/OHDESIGN REQMTS DOCUMENT Memo

DWG NO. _____

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7371	D2-9942	D2-11162			
	X	X	X	X	X			

PURPOSE & JUSTIFICATION

This item is required for pre-assembly and periodic testing of Figure A items 623, 1201, 4018, 4115, and 1214, and 9278.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

An AC/DC ammeter having a dual range capability, measuring up to 20 AMPS AC and DC. A Weston Model 370 (Cat. Number 370-250,00) with ranges of 0-10 and 0-20 Amps AC and DC $\pm 0.25\%$ (one quarter of one percent) or equivalent will satisfy this requirement.

This item is intended to be equivalent to, and functionally interchangeable with Figure A (MOM) 4461 including those physical dimensions and features necessary for proper functioning and use.

1-26-62: A change request has been submitted to revise Figure A 4461 to show the same recommended equipment as noted above.

SHT 1 OF 1

ENGINEERING DEPT.

BASE INSTALLATION DEPT.

MANUFACTURING DEPT.

FACILITIES DEPT.

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NOTE: Use form DA-671-100
If additional sheets are required

ORIGINATING GROUP SUPERVISOR: T. HART
TELEPHONE: 5-3310

WS 133A

ASSEMBLY & CHECKOUT

EQUIPMENT REQUIREMENTS

ACO NUMBER 4127

APPROVAL DATE 11-2-61

REVISION D DATE 6-19-62

EQUIPMENT TITLE Power Supply
(Basic Name First)

RESPONSIBLE DEPT. BID EQUIP. CLASSIFICATION ACO/MGE-SFC/OH

DESIGN REQMTS DOCUMENT None DWG NO. N/A

TO BE USED AT:

BASE	MAFB	EAFF	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-111162			
	X	X	X		X			

PURPOSE & JUSTIFICATION

A requirement exists at the CSA and at Plant 77 for a general purpose precision power supply which can be used as comparison for checking out power supply drawers or can be used to provide precision power during Functional Testing of disconnected components. For general checkout, a capability is needed in the range -35 to +35 VDC with a current capacity of 15 amperes and 18 millivolt regulation. During Functional Testing, this power supply is used with such equipment as the following Figure "A"'s: 599, 604, 1201, 1213, 1228, 1289, 1243, 1296, 3013, 3092, 3109, 4490, 7721, and 7723. This item is required to support the Fig. A 4018 W/A which results DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS: from PRR 10396 and OSB 301.

This item is intended to be equivalent to, and functionally interchangeable with Fig. "A" 4127, and supersedes ACO 382.

The following equipment is acceptable to fulfill this requirement:

1. Dressen Barnes - Model 62-121
2. Trygon Elect. - Model S-36-15
3. Depco SM36-15MX
4. Sorensen - QR36-15A
5. Electronic Measurements - TO-36-15M (Available at Plant 77)
6. Lambda - Model LA200-03AM

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.

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REV. 6-29-62

NOTE: Use form US-871-1000 if additional sheets are required.

ORIGINATING GROUP SUPERVISOR:

TELEPHONE:

413

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, ACO NUMBER 4172

ASSEMBLY & CHECKOUT

APPROVAL DATE 8/1/61

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE: Oscilloscope, Plug-In UnitRESPONSIBLE DEPT. BID EQUIP. CLASSIFICATION ARO/DRDESIGN REQTS DOCUMENT _____ DWG NO. None

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			

PURPOSE: To be used in conjunction with the oscilloscope for checking the output waveform of the Adapter C91 Electronic Programming Test Center and Power Supply. To check for transients under no load, full load, and nominal load conditions of the power supply. See D2-11162 Section C, Paragraphs C6.1, C8.2, C8.4, and C9.2.

To provide a means for displaying voltage waveforms simultaneously on an oscilloscope for purposes of testing, calibrating, aligning and trouble shooting the Closed Circuit Television System.

DESCRIPTION:

This is identical to that specified by Fig. "A" 4172.

SHT 1 OF 2

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>C. R. [Signature]</i>	<i>R. C. [Signature]</i>	<i>[Signature]</i>

3-1-62

BOEING

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WS 133A
**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 4175
APPROVAL DATE 1-23-62
REVISION _____ DATE _____

EQUIPMENT TITLE: Jack Set - Translating
(Include Name First)

RESPONSIBLE DEPT. Engineering EQUIP. CLASSIFICATION ACO/MST-Peculiar

DESIGN REQTS DOCUMENT _____ DWG NO. _____
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X	X	X			

PURPOSE & JUSTIFICATION:

A means to provide accurate alignment, levelling, stabilizing and supporting the Ballistic Missile Trailer and/or the Transporter Erector during the transfer operation of a missile or SSCBM without damaging the missile or SSCBM in the maintenance support area, Missile and Engine Storage Area and MAB.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The translating jack will consist of a jack (standard GFP item) with a translating pad (peculiar item). The translating jack will be capable of a vertical movement of 9 inches, lateral and forward and aft alignment movement of 6 inches, positive locking devices to maintain the desired settings. The translating pad will be approximately 36 inches square and 12 inches deep and will be castor mounted on four corners.

This item is identical to Fig. A 4175

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>A. H. Boster</i>	<i>A. E. Green</i>	<i>A. E. Greiner</i>

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ORIGINATING GROUP SUPERVISOR: J. A. Roquet
TELEPHONE: 5-4797

4/12/62

NOTE: Use form U3-4071-1000
if additional sheets are required.

ORIGINATING GROUP SUPERVISOR: J. J. Blaney
TELEPHONE: AT 1-106

WS 133A

ASSEMBLY & CHECKOUT

EQUIPMENT REQUIREMENTS

EQUIPMENT TITLE: Ohmmeter
(Basic Noun First)

ACO NUMBER 4381

APPROVAL DATE 8-1-61

REVISION 1 DATE 11-7-61

RESPONSIBLE DEPT. BID EQUIP. CLASSIFICATION SFC/OR

DESIGN REQMS DOCUMENT None DWG NO. N.A.

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLY 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X	X	X			

PURPOSE & JUSTIFICATION:

A requirement exists for an instrument to measure electrical bond resistance during assembly and checkout of Minuteman ground equipment. Refer to Boeing Procedure 5117 for Electrical Bonding Procedure for all Minuteman items.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

This is identical to that specified by Fig. A 4381.

It is recommended that an AVTRON T-207, Type W Bonding Meter be used. Refer to Boeing Procedure 5117 for equivalent item and limitations.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

ACO NUMBER 4425

APPROVAL DATE _____

REVISION _____ DATE _____

EQUIPMENT TITLE: Flood Light, Electric

RESPONSIBLE DEPT. _____ EQUIP. CLASSIFICATION _____

DESIGN REQTS DOCUMENT _____ DWG NO. _____
TO BE USED AT:

BASE	MAFB	SAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X		X			

PURPOSE & JUSTIFICATION:

There is a need for a general area illumination while repairing faults in the SCN cable system. This means of illumination must be operable from 115 V. 60 cycle, single phase power and must be suitable for use in a non-controlled environment, i.e., wind, snow, rain, dust, etc. Positioning of the lighting to cover the general work area is necessary.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

Four (4) portable lights, of 150 watts each and equipped with adjustable stands is recommended to be provided to satisfy the above requirements. The lights must withstand rough transportation handling and inclement weather. Each light will include an extension cord approximately 15 feet long.

This item is identical to Fig. A 4425.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

2-434-1

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ORIGINATING GROUP SUPERVISOR: _____
TELEPHONE: _____

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**ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS**

ACO NUMBER 4524
APPROVAL DATE _____
REVISION _____ DATE _____

EQUIPMENT TITLE: Wrench, Portable, Electric
(Write Name First)

RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION SFC/OH
DESIGN REQTS DOCUMENT None DWG NO. None
TO BE USED AT:

BASE	MAFB	BAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A device is required which is capable of applying 600 ft-lb torque for rotating the actuator of the fifth wheel support to the extended and retracted positions on the T-E/SSCEM railcar.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that a powered, non-impact, portable rotary tool be utilized similar to commercially available Thor EN-PB-75 Model 8770 115 V single phase which utilizes an adjustable overload clutch. The device should be light weight for ease of handling and be equipped with a 50 ft. flexible cord which meets industrial standards.

To satisfy greater torque capability than normal, the unit must include the following:

1. Gear Head Model TD-1000 (X-4 Corp.) FSN 5120-574-9318
2. Adapter-5854 (Proto Tools) FSN 5120-227-8103

SHT 1 OF 2

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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BOEING NO. D2-11162-1
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ORIGINATING GROUP SUPERVISOR: O. A. Severide
TELEPHONE: 5-5022

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WS 133A
ASSEMBLY & CHECKOUT
EQUIPMENT REQUIREMENTS

ACO NUMBER 4525
 APPROVAL DATE _____
 REVISION _____ DATE _____

EQUIPMENT TITLE: Stop, Railcar Wheel
(Must Name Part)

RESPONSIBLE DEPT. BT-MM EQUIP. CLASSIFICATION SEC/OH
 DESIGN RIGHTS DOCUMENT None DWG NO. None
 TO BE USED AT:

BASE	MAFB	EAFA	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-7942	D2-11162			
					X			

PURPOSE & JUSTIFICATION:

A Requirement exists for a wheel stop to prevent the railcar from rolling, once positioned. This device must be readily visible and easily disengaged by operating personnel.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that a device similar to a type six, Hinged type Wheel Stop, Part number 20177 as manufactured by C. M. Lovsted and Co. or approved equal be used.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.

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REV.

ORIGINATING GROUP SUPERVISOR: O. A. Severide
 TELEPHONE: 5-5022

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WS 133A

ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

ACO NUMBER 435
APPROVAL DATE 1-23-62
REVISION _____ DATE _____

EQUIPMENT TITLE: Alignment Scope, Model 381-S
(State Model First)

RESPONSIBLE DEPT. BT-MM EQUIP. CLASSIFICATION ACO - Misc - Peculiar
DESIGN REQTS DOCUMENT None DWG NO. 25-27486
TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X	X	X			

PURPOSE & JUSTIFICATION:

A requirement exists for aligning the rails of the SSCBM, the Transporter Erector and/or fixed rails to assure that the rails are in the same horizontal and vertical plane during roll transfer of the missile from each vehicle to fixed rails.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that targets and an alignment scope plus other devices be provided to accomplish the aligning tasks. Mounting brackets and attachments are required to mount the targets and scope to the vehicles. The following equipment or equivalent is recommended to be used in the set.

- (1) Alignment Telescope, Model 381-S (1 required)*
- (2) Alignment Target, Model 395-60 (3 required)*
- (3) Telescope Mount, Model 381-S-1 (1 required)*
- (4) Light, Model 515B (1 required)*
- (5) Brackets to support (1) through (4) above
- (6) A device, such as a spirit level, to establish rail alignment in the roll mode.
- (7) Suitable container(s) for all alignment equipment.

This item is identical to Figure A 4535 and replaces SFA 7779 and ACO 381.

*Brunson Instrument Co.

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

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ORIGINATING GROUP SUPERVISOR: O. A. Seyeride
TELEPHONE: 5-4292

WS 133A

ACO NUMBER 10709

ASSEMBLY & CHECKOUT

APPROVAL DATE 1-1-3

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE Test Set, Missile Control Group, AN/DJX-20 (C-153a)
(Basic Name First)RESPONSIBLE DEPT. Engineering EQUIP. CLASSIFICATION ACQ/AGE - Peculiar

DESIGN REQMS DOCUMENT _____ DWG NO. _____

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77	Wing III	Wing IV	Wing V
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	X	X		X			

PURPOSE & JUSTIFICATION

During the ACO period at the base, any NO-GO of the missile downstage should be verified by use of a test set. This would preclude removal of a good downstage with the attendant loss of time and expense.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

A means of verifying a missile downstage NO-GO exists. The following missile downstage components are checked:

- Accelerometer Assembly
- Exhaust nozzle control
- Ordinance Discrete Lines Continuity

set

Tests shall be capable of performing above tests whether or not a downstage NO-GO exists.

Power - The set shall operate on 120 ± 6 VAC, 60 ± 3 cycles and on single phase.

The set shall be portable and limited to two-man carry, and shall traverse a 40-inch opening.

The test set shall have self-test capabilities.

The set shall interface the downstage control system at the third stage raceway.

This item is identical to Fig. A 10709.

Engineering responsible for technical coordination only. BID will provision under normal organizational responsibility

SHT 1 OF 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FACILITIES DEPT.
<i>Bill Benton</i>	<i>W. J. Jones</i>	<i>W. J. Jones</i>	<i>R. E. Jones</i>

2-4340-0-1

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100709, Use form 10-4871-1000
If additional sheets are required.

ORIGINATING GROUP SUPERVISOR: R. W. Ormsbee
TELEPHONE: 5-6696

ACTIVE-CHANGED PAGE

FROM MS 45-50 406 893
TO *Chalera* DEPT. MS.
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ACTIVE			CHANGED				ACTIVE			CHANGED					
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SECT	DESCRIPTION	PAGE	REASON
B ↑	Revised motor storage callouts	8, 28	Document up-dating
	Revised Missile/Motor Containment callouts	32, 45 62	↑
	Deleted transfer of Motors in train	42, 43 44	↓
	Deleted reference to MRCN 7746	50, 58	Document up-dating
	Added ACO 4662 Lead, Electrical Assembly (Missile bonding test)	57	ECP 620
	Added the requirement for MRCN 7794	63	Document up-dating
B ↓	The following pages were revised to be consistant with the text	77, 80 82, 86 89, 90	↑
D	The following pages were revised to be compatible - with Section B	10a, 14 16, 16a 26, 29a	↑
E		13, 17 17a, 22, 14	↑
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App. I	Revised MRCN 7720	79, 79a 80, 80a	ECP 590
App. II	The following pages were revised to be compatible with Section B	4a, 48 42b	Document up-dating
App. II	Added ACO 4662	58	ECP 620

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SECTION B

GROUND RULES (CONTINUED)

3. Rocket motors, installed on rocket motor carriages, will be received in rocket motor trucks and will have the ignition and thrust termination (Stage III only) devices installed complete with pins. These devices will not be removed at A/F Plant 77 unless physical damage is incurred during rocket motor missile handling or assembly.
4. Storage buildings will be utilized for storage of Stage I, II, and III motors or missiles.
5. Transport of rocket motors from storage buildings to the MAB will be by SSCBM or other approved vehicles.
6. The assembled missile will be transferred from the MAB Missile Joining Rails to a SSCBM for subsequent disposition.
7. All missile and rocket motor transfers will be accomplished by special handling crews, assigned to the Facilities and Services Unit, dispatched upon request to the Material Handling Dispatcher. These crews will report to the designated area with the appropriate transfer equipment.
8. Assembly of missile components and sections will be predicated on interchangeability in accordance with the requirements of MIL-I-8500A as implemented by associate contractor adherence to Assembly and Interface Control Drawing tolerances.

FUNCTION B2.0 TRANSPORT, HANDLE AND STORE-MISSILE COMPONENTS & DELIVERED OGE/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.1.2 <u>TRANSPORT, HANDLE AND STORE-FUNCTIONAL TEST ITEMS</u> (Cont.) The following items require functional testing and shall be delivered to the ordnance testing area (Bldg. 1521): A. Interstage Separation Arm-Disarm Devices. B. Interstage Separation Detonator (For functional testing of these items, see B3.1 & B3.3) 2.2 <u>TRANSPORT, HANDLE AND STORE ROCKET MOTORS</u> Stage I, II and III motors shall be placed and stored in the Motor Storage Bldg. with nozzles pointed away from the door. Motor Transport, Handling and Storage Procedures are required and shall be in accordance with the respective motor manufacturer's procedures and Document D2-12872. The motors shall arrive at the motor transfer positions (in front of each Motor Storage Bldg.) aboard rocket motor trucks. 2.2.1 <u>PREPARE FOR MISSILE MOTOR TRANSFER</u> The following defined equipment will be required to perform all operations necessary to prepare the motors for roll transfer into the storage bldg.: A. A means to connect the rail system in the rocket motor truck to the rail system in the Motor	D2-12214 Stage II Motor Storage D2-11777 Stage III Transportation and Handling Procedures D2-12216 Stage II Transportation and Handling Procedures D2-12369 Stage I Transportation and Handling Procedures D2-13907 Transportation and Handling Procedures Plant 77 Rail Assembly, Bridge, Motor Transfer (FSE 7756)
	FUNCTION B2.1.2

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FUNCTION B2.0 TRANSPORT, HANDLE AND STORE-MISSILE COMPONENTS AND DELIVERED OGE/MGE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
2.2.3 <u>STORE AND SECURE EQUIPMENT</u> (Cont.) conditions in the Motor Storage Bldg. are maintained as follows: Temperature $80^{\circ} \pm 20^{\circ}\text{F}$ with a dew point of 57°F maximum. Temperature recorders shall indicate the temperature conditions in each Bldg.; and humidity recorders installed in random Bldgs. shall indicate a representative humidity in the Bldg. An external visual alarm shall indicate when adverse temperature conditions are encountered in the Bldg. Alarm Sets shall be removed from the carriages and sent to shipping for return to COAMA.	Temperature Recorders (FACILITY) Humidity Recorder (FACILITY) Alarm System (FACILITY)
2.2.3.1 <u>INSTALL MISSILE/MOTOR IMPALER</u> It is required that the Impaler be installed on the rails. The Impaler shall be positioned as specified in Document D2-13907. Safety requirements specified in D2-12872 shall be complied with.	Impaler, Missile/Motor (FSE 7789)
2.3 <u>TRANSPORT, HANDLE AND STORE-ORDNANCE DEVICES</u> Transportation, handling and storage procedures shall be in accordance with Document D2-9133. Safety requirements specified in document D2-12872 shall be complied with.	
	FUNCTION B2.2.3

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FUNCTION B4.0 STORE AND TRANSPORT - MISSILE COMPONENTS AND DELIVERED O&M/MGE

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.2.1 <u>PREPARE FOR TRANSFER TO SSCBM</u> The requirement exists to transfer rocket motors from the Motor Storage Building to the SSCBM for transport to the MAB. Provisions shall be made to insure against exposure of the rocket motors to environment exceeding the specified limits. Proper grounding shall be installed prior to transfer. NOTE: The Impaler shall be lowered prior to roll transfer of the motors as specified in D2-13907. Other equipment is required to provide the following: A. A means to receive, house, support, provide transfer and transport power, and provide environmental control to rocket motors (Stage I, II and III). B. A means to support and align the aft end of the Ballistic Missile Trailer in position for roll transfer. C. A means to connect the rail system in the motor storage building to the rail system in the SSCBM. This connection must be of adequate strength to support any stage rocket motor.	Rails, Storage - Motor & Missile (FSE 7629) D2-10907 (O&M) Shelter, Missile & Motor (FSE 7687) Missile/Motor Storage Building (D2-10997 (O&M)) Recorder, Temperature - Portable (ACO 532) Shipping & Storage Container, Ballistic Missile (MGE 4095) Trailer, Ballistic Missile (MGE 4129) Tractor (MGE 4130) Skis, SSCBM (MGE 4493) Air Conditioner (MGE 4115) Jack Set, Translating (ACO 4175) Rail Assembly, Bridge Motor Transfer (FCE 7756)
	FUNCTION B4.2.1

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.2.1 <u>PREPARE FOR TRANSFER TO SSCBM (Cont.)</u> D. A means to provide trailer electrical grounding during transfer operations. E. A means to connect the Ballistic Trailer winch cable to Stage I, Stage II and Stage III Rocket Motor Carriages. F. A means to provide illumination for night transfer.	Lead, Electrical Grounding (ACO 352) Control-Winch MAB - Storage Bunker (FSE 7688) D2-10925 (O&M) Bridle-Rocket Motor Stage I (FSE 7689) D2-10933 (O&M) Bridle-Rocket Motor Stage III (FSE 7690) D2-10939 (O&M) Lamp, Incandescent Portable Flood (ACO 4425) Cable Assembly - Power Electrical, Portable Flood Lamps (ACO 449)
4.2.2 <u>TRANSFER ROCKET MOTORS TO SSCBM</u> Roll transfer the rocket motors from the motor storage building into the SSCBM, using the Ballistic Missile Trailer winch for propulsion, and secure for transportation. All transfer equipment except the Ballistic Missile Trailer winch cable shall be removed and stowed or returned to dispatcher.	Tie Down, Rocket Motor Carriage to SSCBM (part of SSCBM)
	FUNCTION B4.2.1

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.2.3 <u>TRANSPORT ROCKET MOTORS TO MAB</u>	
4.2.4 <u>PREPARE FOR ROCKET MOTOR TRANSFER TO MAB</u> Position the SSCBM at the MAB by leveling and aligning to the Missile Joining Rails and utilizing the transfer equipment previously described in B4.2.1. The Missile Joining Rails are required to support Rocket Motors on carriages in the MAB and to provide a means for roll transfer of rocket motors. These rails are positioned to match the transfer equipment and shall include grounding cables for rocket motor transfer, a power winch and necessary sheaves, wheel blocks to prevent movement of rocket motors and provisions for grounding rocket motor carriages and for relieving transfer bridge rails. Provisions shall be made to insure against exposure of the rocket motors to environment exceeding the specified limits.	Equipment required same as in B4.2.1 except Motor Storage Rails and Missile/Motor Shelter Rails, Missile Joining (FSE 7628) D2-10987 (O&M) Shelter, Motor & Missile Transfer - Environmental-MAB (FSE 7682) D2-10993 (O&M)
4.2.5 <u>TRANSFER ROCKET MOTORS TO MAB</u> Roll transfer the rocket motors from the SSCBM onto the MAB Missile Joining Rails using the MAB Rails winch for propulsion.	Sling-Horizontal Restraint Ring, Engine (FSE 7632) D2-11012 (O&M)
	FUNCTION B4.2.3

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ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
4.2.5 <u>TRANSFER ROCKET MOTORS TO MAB (Cont.)</u> After the rocket motors are positioned, the horizontal restraint rings shall be removed. (An MAB alarm system will indicate when environmental conditions in this assembly area are out of tolerance. The requirements for environment in the MAB assembly area are 80° ± 20°F with a dewpoint of 57°F maximum.)	Hoist, Overhead, Rail Type (Facility) D2-9555
4.2.5.1 <u>INSTALL MISSILE/MOTOR IMPALER</u> The Missile/Motor Impaler shall be installed on the rails. The Impaler shall be positioned as specified in document D2-13907.	Impaler, Missile/ Motor (FSE 7789)
4.3 <u>TRANSPORT AND STORE ORDNANCE DEVICES</u> The spare ordnance devices shall be transferred to the Squib and Igniter Storage Building for storage after receiving and inspection and testing.	Shelving Storage (ACO 462) Truck, Motor-Misc. Delivery (ACO 452)
4.4 <u>ROCKET MOTOR TRANSFER (ALTERNATE METHOD)</u> In the event that the SSCBM is not available to transport rocket motors between the Motor and Missile Storage Building and the Missile Assembly Building, rocket motors will be transported singly in the Rocket Motor Semi-Trailer. Equipment and procedures to transfer single rocket motors from the Motor and Missile Storage Building to these trucks are essentially the same as those presented in B2.2 with the following additions: A. A means is required to receive, support, transport and provide environmental control to individual rocket motors supported on carriages. B. A means to support and propel the Rocket Motor Semitrailer. NOTE: No alarm set is required. (See ground rule 14 page 10, this section.)	Semitrailer, Rocket Motor (FSE 101) D2-12974 (O&M) Truck, Tractor, Rocket Motor (GFF) Portable Temp. Recorder (ACO 532) FUNCTION B4.2.5

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FUNCTION B7.0 PREASSEMBLE MISSILE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
7.0 <u>PREASSEMBLE MISSILE</u> The requirement exists to attain the configuration necessary to perform the Ordnance Safing and Arming Circuit Test per B8.0. Detailed Assembly procedures shall be per Engineering Drawings and Documents. NOTE: Mechanical interface discrepancies will be isolated to the discrepant component utilizing the fault isolation tool set.	
7.1 <u>POSITION RACEWAY CABLES</u> The Raceway Cables shall be hand-carried from their containers and manually placed loosely into position on their respective motors. The cables shall not be connected at this time.	D2-10974 (O&M) Drawing 25-27524 Rails-Missile Joining (FSE 7628) D2-109 87 (O&M) Scaffolding-Missile Access (FSE 7630) D2-10983 (O&M)
7.2 <u>INSTALL HEAT SHIELDS</u> The following items shall be installed per drawing: A. Deflector Assembly - Base Heating, Stage I B. Deflector Assembly - Base Heating, Stage II C. Deflector Assembly - Base Heating, Stage III	Engineering Drawings: 25-25879 25-25880 25-25881
7.3 <u>INSTALL STAGE I SKIRT</u> The skirt shall be installed per Engineering Drawing through the point of finger tightening of the motor-to-skirt attaching bolts.	Engineering Drawing 25-27208 Dolly, Joining-Skirt to Motor (FSE 7722) D2-10981 (O&M)
	FUNCTION B7.0

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FUNCTION B9.0		FUNCTIONAL TEST MISSILE	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT	
9.1	<u>MISSILE TEST POSITION (CONT'D)</u> Adapter, Flight Control Test Set, MAB (7699) Junction Box, Test, MAB (FSE 7721) Cable Assemblies, Equipment, Interconnecting, MAB (FSE 7718) Cable Assembly, Downstage Test, MAB (FSE 7698) Cable Assemblies, Umbilical MAB (FSE 7720) Cable Assemblies, Flight Control Test Set Interconnect MAB (FSE 7782) Fixture, Support-Umbilical Cabling, MAB (FSE 7619) <u>Lead, Electrical Assy, (Missile Bonding Test) (ACO 4662)</u>	D2-14314 (O&M) D2-10985 (O&M)	R
9.2	<u>PERFORM MISSILE TESTS</u> The Flight Control Test Set (ACO 10709) shall be manually programmed to checkout the Stage I, II, and III Nozzle Control Units and the Angular Accelerometer Unit. Manually controlled tests shall be conducted to verify continuity of Stage I Motor Ignition Circuitry and Stage I, and II Battery Activation Circuits.		
9.3	<u>DISCONNECT TEST EQUIPMENT</u> Remove test power from console and disconnect the test umbilical. The missile is now ready for final assembly and sealing operations.		
		FUNCTION B9.1	

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FUNCTION B10.0 COMPLETE MISSILE ASSEMBLY	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
10.0 <u>COMPLETE MISSILE ASSEMBLY</u> Complete assembly of the missile per engineering drawings and documents. (NOTE: Mechanical interface discrepancies will be isolated to the discrepant component utilizing the fault isolation tool set,	D2-9555
10.1 <u>INSTALL SKIRT REMOVAL DETONATORS AND SAFE AND ARM DEVICES</u> The skirt removal safe and arm devices and detonators shall be installed to the L. H. interstage panels.	Dwg. 25-27238
10.2 <u>CLAMP AND SECURE CABLING</u> All internal cabling shall be secured.	Dwg. 25-27524
10.3 <u>INSTALL INTERSTAGE R. H. FORWARD AND L. H. PANELS</u> The right hand forward panels of each interstage shall be installed; then the left hand panels with the skirt removal deconators shall be installed. NOTE: Prior to installation of R. H. Forward panels, ensure that Stage II and III nozzle covers are removed.	Harness, Missile-Interstage I-II R. H. Panel (FSE 7641) D2-10949 (O&M) Harness, Missile Interstage II-III R. H. Panel (FSE 7730) D2-11074 (O&M) Harness, Missile Interstage I-II L. H. Panel (FSE 7642) D2-10994 (O&M) Harness, Missile Interstage II-III L. H. Panel (FSE 7730) D2-11072 (O&M)
	FUNCTION B10.0

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FUNCTION B12.0		MISSILE HANDLING FOR SHIPMENT	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS		RECOMMENDED EQUIPMENT OR DOCUMENT	
12.0		<u>MISSILE HANDLING FOR SHIPMENT</u>	
The requirement exists for handling a completed missile by transferring, transporting, storing (as required) and loading for shipment at, or between, the various facilities at A/F Plant 77. Detailed procedures for storing, transferring, transporting and environmental protection of the missile are required and shall be cover in Document D2-13907. Operating procedures for the SSCM, Ballistic Missile Trailer, Tractor, and the Air Conditioner shall be covered in Document D2-13907. The completed missile shall be transferred, by SSCM, from the MAB to the Missile Storage Bldg., Missile Transient Storage Area or Airplane/Rail Loading Areas as required. All missile transfers will be accomplished by the motor and missile handling crew who will be dispatched through the material handling dispatcher. Environmental protection of missiles during transfer operations under adverse weather conditions, is required in order to maintain missile environmental control within allowable tolerances. NOTE: Missile/Motor Impaler shall be lowered prior to Missile loading for delivery.			
		D2-13907	
		FUNCTION B12.0	

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FUNCTION B12.0 MISSILE HANDLING FOR SHIPMENT

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
12.1 <u>PREPARE FOR MISSILE TRANSFER ROLL FROM MAB</u> Preparation for roll transfer involves preparing the transfer area, positioning the Ballistic Missile Trailer, removing Tractor, installing translating and alignment equipment, securing SSCBM to MAB Rails and providing for adverse weather conditions, as required. In addition, this function includes rigging and installing transfer equipment. (See Figure 15-B.) The following is required: A. A means to support the missile on the Rocket Motor carriages and provide for missile roll transfer. These rails shall include a permanently installed electric winch, a grounding cable for missile transfer, snatch block for use with transfer cables, wheel blocks to prevent movement of missile, and provisions for grounding rocket motor carriages, for joining to SSCBM Rails and for mounting of alignment equipment. B. A means to provide electrical bonding between carriages during transfer is required. C. A means to connect trailer transfer cables and fixed winch cables to the Missile Support Adapter Ring for missile transfer.	D2-13907 Transportation & Handling Procedures, Plant 77 Shelter, Missile and Motor Transfer - Environmental-MAB (FSE 7682) D2-10993 (O&M) Rails - Missile Joining (FSE 7628) D2-10987 (O&M) Spacer, Rail Ends, SSCBM, MAB & MSB (FSE 7794) Clamp Assy, Missile Transfer (FSE 7686) D2-13907 (Oper.)
	FUNCTION B12.1

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IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER					
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA	MISC
7682	Shelter, Missile and Motor Transfer-Environmental, MAB	FSE		B4.2, B12.1 B12.2				
7686	Clamp Assembly, Missile Transfer	FSE		B12.1, B12.2		B12.6 B12.7 B12.9 B12.10		
7687	Shelter, Missile and Motor Transfer Environmental - Missile/Motor Storage Building	FSE				B2.2, B4.2, B12.6, B12.7 B12.9		
7688	Control-Winch, MAB-Storage Bldg	FSE		B12.1, B12.2		B12.6, B12.7 B12.9, B4.2 B12.10, B2.2		
7689	Bridle, Rocket Motor, Stage I	FSE				B2.2, B4.2		
7690	Bridle, Rocket Motor, Stage III	FSE				B4.2		
7698	Cable Assembly, Downstage Test	FSE		B6.1, B8.1 B8.2, B9.1 B11.1				

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER					
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA	MISC
7750	Charging Cable, Alarm Set	FSE				B13.1		
7756	Rail Assembly, Bridge-Motor Transfer	FSE				B2.2, B4.2		
7760	Pulley Bracket Assembly, Transporter, II & III Stages	FSE				B2.2		
7786	Kit, Cork Insulation Repair	FSE		B10.10				
7787	Alarm Set, Transit Status First Stage	FSE				B2.2, 3*		
	*Required as directed by The Boeing Company, AF Plant 77							
7788	Alarm Set, Transit Status Third Stage	FSE				B2.2, 3*		
7789	Impaler, Missile/Motor	FSE		B4.2.5		B2.2 B4.2.1		
7793	Spacer Bracket Stage II NCU	FSE	B3.1					
10151	Gage, NCU Alignment, Stage I	FSE	B3.1					
10153	Gage, NCU Verification, Stage I	FSE		B6.1				
10155	Gage, NCU Alignment, Stage II	FSE	B3.1					
10157	Gage, NCU Verification, Stage II	FSE		B6.1				
10159	Gage, NCU Alignment, Stage III	FSE	B3.1					
10161	Gage, NCU Verification, Stage III	FSE		B6.1				
7794	Spacer, Rail Ends, SSCBM, MAB & NSB	FSE		B12.1		B12.6		

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IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER					
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA	MISC
ACO 4047	Wrench, Safing Pin Inst. & Removal	ACO			B3.3			
ACO 4175	Jack Set, Translating	ACO		B12.1 B12.2		B4.2, B12.6 B12.7 B12.9 B12.10		
ACO 4535	Alignment Set, Missile Transfer	ACO		B12.1, B12.2		B12.6 B12.7 B12.9 B12.10		
AC010709	Test Set, Flight Control Group	ACO		B11.1 B6.1, B8.1, B8.2, B9.1				
ACO 532	Recorder, Temperature - Portable	SFC/OH		B12.2		B2.2.1, B4.2.1		
ACO 4662	Lead, Electrical Assy. (Missile Bonding, Test)	ACO		B9.1, B11.1				

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<u>DOC. NO.</u>	<u>TITLE</u>	<u>SECTION</u>
D2-6610	Missile Production Operating Logistics - A/F Plant 77	B1.1, B1.2, B1.3
D2-7295	Insulation Repair Procedures	B10.10
~~D2-7429~~	~~Transportation & Handling of 1st, 2nd and 3rd Stage Minuteman Engines~~	~~B2.2~~
~~D2-7429-1~~	~~Maintenance Instructions for Minuteman Rocket Engine Handling and Transportation Equipment~~	~~B2.2~~
D2-9133	Minuteman Standard Operating Procedures-Ordnance Devices	B10.4
D2-9520	SM-80 Functional Test Procedures - MAB-Plant 77	B6.2, B9.0 B11.0
D2-9555	Handbook of Operating Procedures-Engine Handling Harness and Horizontal Restraint and Bracket Assembly Sets	B4.2, B10.0 B1.2
D2-10907	Operation and Maintenance-Rails-Storage, Engine and Missile	B2.2, B4.2 B12.6
D2-10925	Operation and Maintenance-Control-Winch, MAB & Storage Bunker	B2.2, B4.2
D2-10927	Operation and Maintenance-Dolly, Positioning- Final Assembly	B5.1, B7.4
D2-10929	Operation and Maintenance-Adapter, Joining - Interstage I-II	B7.4
D2-10931	Operation and Maintenance-Dolly, Joining- Skirt to Engine	B7.3
D2-10933	Operating and Maintenance-Bridle-Rocket Motor Stage I	B2.2, B4.2
D2-10939	Operating and Maintenance-Bridle-Rocket Motor, Stage III	B4.2
D2-10941	Operation and Maintenance-Bridle-Carriage 1st Stage (Rocket Motor Truck)	B2.2.1 B4.2.1
D2-10947	Operation and Maintenance-Adapter, Joining NCU Stage III	B5.1

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AA0304-072	NCU Sealing Specification	B3.1
EM-2084	Utility Technical Manual - Operation and Service	B3.1, B5.1
D2-13932	NCU Linkage Adjustment Procedures	B3.1
D2-14116	Operating Procedures and Maintenance Instruction for Raceway Cable Test Set and Adapter Cables - MAB	B7.6
D2-13907	Transporation and Handling Procedures, Plant 77	B2.1, B4.1, B4.2, B12.5 B15.6, B12.7 B12.6, B12.0 B12.10, B12.1 B2.2

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SECTION B - REQUIRED DRAWINGS

<u>DRAWING NO.</u>	<u>TITLE</u>	<u>SECTION</u>
21-50150	Assembly, Propulsion and Guidance Unit, Missile	B10.5
21-51750	Assembly, Propulsion and Guidance Unit, Missile	B10.5
21-51725	Assembly, Propulsion and Guidance Unit, Missile	B10.5
25-37536	Missile Support Adapter Ring and Clamps Installation	B10.7
25-27202	Interstage I-II Installation	B7.4, B10.5
25-27205	Interstage II-III Installation	B7.4, B10.5
25-27208	Skirt Installation, Stage I	B7.3, B10.5
25-27211	Raceway Components Installation to Sections 44-49	B10.6
25-27221	Cable Disconnect Bracket Components, Interstage I-II, Installation	B7.4
25-27227	Cable Disconnect Bracket Components, Interstage, II-III, Installation	B7.4
25-27238	Ordinance Installation, Joint Severance and Stage Separation Interstage I-II and II-III	B10.1, B10.8 B7.4
25-27524	Electrical Cabling Unit Support Components and Loose Equipment Installation, Sections 44-49	B7.1, B7.6, B7.7, B10.2
25-27597	Flight Control Unit and Battery Power Supply Installation, Stage I	B5.2, B3.1
25-27598	Installation, SE13 Battery & Nozzle Control Unit, Stage II	B5.2, B3.1
25-27599	NCU Installation Stage III	B5.2
25-27627	Angular Accelerometer, Interstage II-III, Installation	B7.5
25-25879	Base Heat Deflector Installation, Stage I	B7.2
25-25880	Base Heat Deflector Installation, Stage II	B7.2
25-25881	Base Heat Deflector Installation, Stage III	B7.2
8U34528	Nozzle Shipping Link Installation	B11.3

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		FUNCTION D1.1

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FUNCTION D1.0 ASSEMBLY AND C/O EQUIPMENT MAINTENANCE

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1.1 <u>PERFORM ON-SITE MAINTENANCE (CONT)</u>			
B.	33. Pulley Bracket Assembly, Transporter, Stage II and III (FSE 7760)	25-20209 D2-7429-1	M
	34. Bridle, Rocket Motor, Stage I (FSE 7689)	D2-10926 D2-10933	FTP O&M
	35. Alignment Set, Missile Transfer (ACO 4535)	25-27486	
	36. Gage, Nozzle Alignment, Stage I (FSE 10163)	D2-11316	
	37. Gage, Nozzle Alignment, Stage II (FSE 10165)	D2-11317	
	38. Gage, Nozzle Alignment, Stage III (FSE 10167)	D2-11318	
	39. Bridle, Carriage, 1st Stage (Rocket Motor truck, FSE 7745)	D2-10940 D2-10941	FTP O&M
	40. Recorder, Temperature - Portable (ACO532)		
C.	The following mechanical and electric equipment does not require periodic revalidation or functional tests. The following items of equipment will receive maintenance as required.		
	1. Spreader Kit, Nozzle, Stage II (FSE 17)		
	2. Spreader Assy, Stage I Nozzles (FSE 114)	D2-12364	
	3. NOU (H2) Trailer, Stage I (FSE 614)	EM-2084	
	4. NCU (H8) Trailer, Stage II (FSE 615)	EM-2084	
	5. NCU (H13) Trailer, Stage III (FSE 620)	EM-2085	
	6. Hoist, Lever, (Come-Along) (ACO450)	Mfr's Manual	
	7. Pulley, Printed Circuit ^{Card} Remover (ACO 3009)		
	8. Lead, Electrical Ground (ACO 352)		
	9. Jack, Leveling Support (ACO 415)	Mfr's Manual	
	10. ~~Positioning Sec, Carriage, Rocket Motor (FSE 7691)~~	~~25-32273~~	
	11. Adapter, Joining-Missile Interstage I-II (FSE 7613)	D2-10929	
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1.1 <u>PERFORM ON-SITE MAINTENANCE</u> (Cont.)	
C. 32. Kit, Pyrogen Installation & Removal Stage I (FSE 110)	D2-12363 63TOGD199
33. Impaler, Missile/Motor (FSE 7789)	
34. Kit, Ablative Material Repair (FSE 7665)	D2-11087
35. Control, Winch, MAB & Storage Bldg. (FSE 7688)	D2-10925
36. Shelter Missile and Motor Transfer - Environ- mental - MAB (FSE 7682)	D2-10993
37. Test Fixture, Power Supply, MAB & CPA (FSE 7780)	MFR's Manual
38. Portable Flood Lamp (ACO 4425)	
39. Shelter Missile and Motor Transfer - Environmental - Missile/Motor Storage Bldg. (FSE 7687)	D2-10997
40. Fixture, Test - Ordnance Device (FSE 7678)	
41. Cable Assemblies, Flight Control Test Set Interconnect (FSE 7782)	
42. Spacer Rail Ends - SSCBM - MAB/MSB (FSE 7794)	
43. Turnbuckle, YZ Cable (FSE)	
44. Simulators, Airborne Components, Missile Test (FSE 7695)	D2-13848
45. Plug Kit, Motor , Stage I (FSE 126)	D2-13510
46. Kit, Installation and Removal, Ordnance Device (Stage III) (FSE 201)	D2-11762
47. Junction Box, Auxiliary, MAB (FSE 7739)	
48. Cable Assemblies, Interconnecting NCU Linkage Adjustment, CPA (FSE 7742)	
49. Lead Assy., Electrical (Missile Bonding Test) (ACO 4662)	
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1.1	<u>PERFORM ON-SITE MAINTENANCE (CONT)</u> C. 50. Test Adapter Cable, Stage I, NCU, Model 70B (FSE 7748) 51. ~~Cable, Rocket Motor Bonding (ACO 255)~~ 52. Set Connector (ACO 267) 53. Cable Assembly, Power Electrical, Portable Flood Lamps (ACO 449) 54. Container, Raceway Cables, Stage III (ACO 457) 55. Container, Raceway Cables, Stage II (ACO 458) 56. Container, Raceway Cables, Stage I (ACO 459) 57. Wrench Portable, Electric (ACO 4524) 58. ~~Device, Restraint, 2nd Stage (FSE 7790)~~ 59. Stop, Railcar Wheel (ACO 4525) 60. Stop Watch (ACO 3059) 61. Extender Circuit Card Universal (ACO 285) 62. Chart EIA Resolution (Initial Retma Linearly Chart) (ACO 330) 63. Shelving Storage (ACO 462) 64. Wrench Safing Pin Installation & Removal (ACO 4047) 65. ~~Device, Restraint Third Stage (FSE 7791)~~ 66. Kit Cork Insulation Repair (FSE 7786) 67. Adapter, Joining - NCU Stage III (FSE 7703) 68. Spacer Bracket, Stage II NCU (FSE 7793) 69. Camera (ACO 416), (ACO 407) 70. Nozzle Insulation Repair Kit (FSE 36) 71. Test Tool - Test Set, Explosive Set Circuitry (ACO 935) 72. ~~Kit Cork Insulation Repair (FSE 7786)~~		
			D2-10972 D2-10947 Mfr's Manual FUNCTION D1.0

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SECTION D - REQUIRED PROCEDURE DOCUMENTS

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D2-10934	Functional Acceptance-Bridle Rocket Motor, Stage III
D2-10939	Operating and Maintenance-Bridle-Rocket Motor, Stage III
D2-10940	Functional Test Procedure-Bridle-Carriage 1st Stage (RMT)
D2-10941	Operation and Maintenance-Bridle-Carriage 1st Stage (RMT)
~~D2-10944~~	~~Operation Fault Isolation Tooling Set, Checking Fixture~~
D2-10947	Operation and Maintenance-Adapter, Joining NCU Stage III
D2-10949	Operation and Maintenance-Harness-R. H. Panel Missile Interstage I-II
D2-10950	Functional Acceptance-Harness-R. H. Panel, Missile Interstage I-II
D2-10960	Operation and Maintenance Adapter-Joining - NCU Stage I
~~D2-10972~~	~~Operation and Maintenance, Fixture, Pressure Missile Assembly~~
D2-10964	Operation and Maintenance Adapter, Joining - NCU Stage II
D2-10970	Operation and Maintenance-Harness, Missile Skirt, Cylindrical
D2-10976	Adapter Cables, Test Set-Raceway Cables Operation and Maintenance
D2-10977	Preinstallation Functional Test Procedure - Adapter Cables, Test Set-Raceway Cable
D2-10980	Functional Test Procedure, Dolly Joining - Skirt to Motor
D2-10981	Operation and Maintenance, Dolly Joining - Skirt to Motor
D2-10985	Operation and Maintenance Fixture, Support Umbilical Cabling - MAB
D2-10994	Operation and Maintenance - Harness - L. H. Panel, Missile Interstage I-II
D2-10995	Functional Acceptance-Harness-L. H. Panel, Missile Interstage I-II
D2-11004	Operation and Maintenance-Installation Kit-Linear Explosive
D2-10987	Operation and Maintenance - Rails - Missile Joining
D2-10986	Functional Acceptance - Rails, Missile Joining
D2-10989	Operation and Maintenance-Scaffolding - Missile Access

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SECTION D - REQUIRED DRAWINGS (CONTINUED)

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~~25-31559 Simulators Airborne Components~~

63TQGD199 Impaler, Missile/Motor Set

25-35755 Test Fixture, Drawer Tester Flight Control Test Set Adapter

SECTION D - REQUIRED EQUIPMENT

The following items are required for equipment maintenance:

1. Set Connector (ACO 267)
2. Puller, Printed Circuit Remover (ACO 3009)
3. Extender Circuit Card, Universal (ACO 285)
4. Tester Transister (ACO323)
5. VARIAC (ACO 487)
6. Tester, S/A Device Test Set (FSE 0033)

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FUNCTION E1.0	MISSILE REPAIR AND REWORK
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.3.2.1 <u>PREPARE FOR TEST</u> (CONT) A. The NCU's and adapter frames shall be removed from their containers and installed on their respective trailers. After removal of the NCU sling, the trailer and NCU assembly shall be moved to the Nozzle Control Unit Test Position (See Figure 1-E) and connected to the Nozzle Control Unit Functional Test Console (FSE 789). NOTE: If the 1st or 2nd stage NCU is received directly from the receiving and inspection area, a functionally tested battery package shall be installed and the necessary reassembly and sealing accomplished. (The 3rd stage NCU has no provisions for batteries). If the NCU is returned from the MAB for test, the battery package will have been installed. The trailer and the NCU shall then be removed to the NCU test position. B. The angular accelerometer unit shall be removed from the container, handcarried to the angular accelerometer test position in the Component Processing Area (figure 2-E), positioned on the test bench and connected to the Angular Accelerometer Unit, Functional Test Console (FSE 10651).	NCU Sling (H9) (FSE 610) NCU Trailer (H2) Stage I (FSE 614) NCU Trailer (H8) Stage II (FSE 615) NCU Trailer (H13) Stage III (FSE 620) AA-0304-072 NCU Sealing Specification Drawing 25-27597 25-27598 Functional Test Console, NCU (FSE 789) Functional Test Console, Angular Accelerometer (FSE 10651)
	FUNCTION E1.3.2.1

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FUNCTION E1.0 MISSILE REPAIR AND REWORK	
ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
<u>1.4.1.2. PERFORM ROCKET MOTOR REPAIR</u> b. Repair minor cracks, crazes, or chips in the external AVCOAT insulation on Stage I & II or minor damage to external cork insulation on Stage III. c. Repair minor cracks, crazes, or chips in the base external insulation. d. On Stage II and III Rocket Motors remove and replace damaged nozzle insulation zipper cover or boot. e. On Stage II motor only, remove and replace raceway retaining pins, bushings, or adapter keys. f. Should it be determined during normal inspection that a nozzle is stock or extremely difficult to actuate, perform a nozzle deflection and torque test to determine acceptability of motor for assembly. g. Straighten bent raceway brackets. NOTE: Should it become necessary to return a rocket motor to the Associate Contractor as a result of being subjected to excessive environment,	Kit Cork Repair Stage III (FSE 250) Kit, Ablative Material Repair (FSE 7665) D2-11087 D2-7295 Kit, Base Insulation Repair, Stg. I (FSE 133) D2-12368 Kit, Base Insulation Repair, St. II (FSE 30) Kit, Base Insulation Repair, St. II (FSE 30) Kit Cork Repair, Stage III (FSE 250) D2-11775 Nozzle Insulation Repair Kit (FSE 36) Indicator, Nozzle Deflection & Torque, Stage I (FSE 123) Indicator, Nozzle Deflection & Torque, Stage II (FSE 15) Tester, Nozzle Deflection & Torque, Stage III (FSE 202) D2-12365 (Stage I) D2-11772 (Stage III) D2-12208 (Stage II) Winch, Portable (FSE 7653) D2-11027 (O&M)
	FUNCTION E1.4.1.2

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MISSILE REPAIR AND REWORK

ASSEMBLY OR CHECKOUT FUNCTION AND TECHNICAL REQUIREMENTS	RECOMMENDED EQUIPMENT OR DOCUMENT
1.4.1.2 <u>PERFORM ROCKET MOTOR REPAIR</u> (CONT) NOTE: (CONT) insulation damage beyond A/F Plant 77 repair capability, or damage requiring Associate Contractor repair, the horizontal restraint rings shall be replaced on the rocket motor prior to loading in the appropriate highway transporter for return delivery to the Associate Contractor Facility. h. Should a Nozzle Alignment Verification Test in the MAB indicate that the alignment of the nozzles is improper, and the linkage adjustments to the recommended setting for the specific motor are correct; perform a nozzle alignment check to determine the linkage adjustment values. i. Remove and replace damaged operational pressure transducer on Stages I, II and III. NOTE: A low-pressure leakage check of the Stage I, II & III rocket motors shall be performed subsequent to the removal and replacement of the operational pressure transducer, or both.	Sling, Horizontal Restraint Ring, Engine Stage I, II & III (FSE 7632) Horizontal Restraint Engine, 1st Stage (FSE 7763) Horizontal Restraint Engine, 2nd Stage (FSE 7764) Pulley Bracket Assy. (FSE 7760) Horizontal Restraint Engine, 3rd Stage (FSE 7765) D2-9555 Bridle, Carriage 1st stage, Rocket Motor Trucks (FSE 7795) D2-10941 (O&M) Gage, Nozzle Alignment, Stage I (FSE 10163) Gage, Nozzle Alignment, Stage II (FSE 10165) Gage, Nozzle Alignment, Stage III (FSE 10167) D2-13849 Spreader Assy. Nozzle (FSE 114) P/N 0223439 (TCC) Turn Buckle, YZ Cable P/N T416090 (AGC) Tester, Leakage (FSE 7) D2-12195 Plug Kit, Nozzle Stage II, (FSE 35) Plug Kit, Nozzle Stage III (FSE 251) Mfr's. Manual HPC 133-03-1-20 FUNCTION EL.4.1.2

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SEC. E

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MISSILE ASSEMBLY & CHECKOUT EQUIPMENT

IDENT. NO.	NOMENCLATURE	CLASS	LOCATION & FUNCTION NUMBER				
			CPA	MAB	ORDNANCE PROCESSING	MISSILE & MOTOR STORAGE	MISSILE TRANSFER AREA
ACO 402	Cable Tester	SFC/OH	El.3.2.1				
ACO 459	Container, Raceway Cable, Stage I	SFC/OH	El.3.2.1				
ACO 458	Container, Raceway Cable, Stage II	SFC/OH	El.3.2.1				
ACO 457	Container, Raceway Cable, Stage III	SFC/OH	El.3.2.1				
114	Spreader Assy, Nozzle	FSE		El.4.1.2			
P/NT 416090	Turn Buckle, YZ Cable	FSE		El.4.1.2			
7763	Horizontal Restraint Motor 1st Stage	FSE		El.4.1.2			
7764	Horizontal Restraint Motor 2nd Stage	FSE		El.4.1.2			
7765	Horizontal Restraint Motor 3rd Stage	FSE		El.4.1.2			
7786	Kit Cork Insulation Repair	FSE		El.4.1.2			
7745	Bridle Carriage 1st Stage Rocket Motor Truck	FSE				El.4.1.2	
7653	Winch Rocket Motor Transfer	FSE				El.4.1.2	
7760	Pulley Bracket Assembly	FSE				El.4.1.2	

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				REVISED	ADDED	DELETED						REVISED	ADDED	DELETED	
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	2	6-14-63		3			↑		45	3-1-62		3			↑
	3	6-14-63		14					46	3-1-62		4			
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	5	3-1-62		27					48	DELETED		10			
	6	3-1-62		33					49	DELETED		33			
	7	DELETED		34		35			50	DELETED		34			
	8	DELETED		37					51	4-15-63		39			
	9	11-1-62		38					52	↑		40			
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	12	1-18-63		41					55	DELETED		59	80a		
	13	3-1-62		97		48			56	11-1-62		60	112b		
	14	6-29-62		98		49			57	11-1-62		61	112c		
	15	6-29-62		98					58	11-1-62		62	117		
	16	3-1-62		103			6-29-62		59	11-1-62		74	118		
	17	↑	APP I	2			8-8-62		60	11-1-62		75	119		
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	19	DELETED		51	51a				62	11-1-62		77	121		
	20			52					63	3-1-62		94	122		
	21			53					64	3-1-62		95	123		
	22			54					65	3-1-62		96	124		
	23			55					66	3-1-62		97	125		
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	25			56a					68	3-1-62		99			
	26	3-1-62		57					69	3-1-62		100			
	27	6-29-62		58					70	3-1-62		101			
	28	3-1-62		94					71	1-18-63		102			
	29	↑		95	112a				72	3-1-62		103			
	30			96	113				73	3-1-62		104			
	31	3-1-62		114			8-8-62		74	11-1-62		105			
	32	1-18-63		115					75	11-1-62		106			
	33	11-1-62		116					76	3-1-62		107			
	34	11-1-62		2		7	9-21-62		77	11-1-62		108			
	35	DELETED		3			↑		78	3-1-62		109			
	36	3-1-62		51		50			79	4-15-63		110			
	37	6-29-62		52					80	6-14-63		111			
	38	6-29-62		53					81	6-14-63		112			
	39	11-1-62		54					82	6-14-63		113			
	40	11-1-62		55					83	1-18-63		114			
	41	6-29-62		56					84	3-1-62		115			
	42	3-1-62		56a			↓		85	↓		116			
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	88	↑		3			↑								
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	92			80											
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	96	6-14-63		95											
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	102	3-1-62													
	103	6-29-62													
	104	3-1-62													
	105	↑													
	106														
	107														
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	109														
	110														
	111	3-1-62													
	112	3-1-62													
	112a	8-8-62													
	112b	4-15-63													
	112c	4-15-63													
	113	8-8-62													
	114	8-8-62													
	115	8-8-62													
	116	8-8-62													
	117	6-14-63													
	118	DELETED													
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	120	6-14-63													
	121	6-14-63													
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PAGE 3

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 9-26-61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date
Contractor BOEING	
Contract No. AF04(647)-580	
Item No. 7691	
Nomenclature Positioning Set-Rocket Motor Carriage	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-23760	
Specification No.	
Specification Date	
<u>Description</u> <u>Function</u> 1. The requirement exists to position rocket motor carriages during the transfer of Rocket Motors-Stage I, II, and III, in Shipping and Storage Container-Ballistic Missile (MGE 4095) 2. Functions in D2-11162 requiring this capability are: B4.2 Description: Positioning set consists of positioning rod assemblies which are a part of MGE 4280. Specifically, the following assemblies shall be used: 25-25004-1 and 25-25004-2. These assemblies will space Rocket Carriage, Stage I and Stage II, as well as, Rocket Carriage, Stage I and Stage II, as well as, Rocket Carriage, Stage II and III. Rocket Motors are secured to the vehicles mentioned above when transferring Rocket Motors in a train. <u>NOTE:</u> Only the positioning rod assemblies of 25-23760 shall be used.	

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. and Date B
Contractor BOEING	
Contract No. ATO4(647)-580 (ECP 590)	
Item No. 7720	
Nomenclature CABLE ASSEMBLIES, UMBILICAL, MAB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 26-12081-4	
Specification No.	
Specification Date	
Function 1. A requirement exists to provide electrical connection between the junction box and the Missile Skirt Connector and the G&C Section and coolant transmission between the Ground G&C Cooling Unit and the Missile G&C Section. (a) provide a straight thru adapter at the Skirt Umbilical Connector to shunt pins 34 and 38 (b) Sections in D2-11162 requiring this capability are: B6.1, B8.1, B8.2 and B12.1 2. A requirements exists to provide electrical connection between the junction box and the Missile Skirt Umbilical Connector. Sheet 1 of 4	

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Factory Support Equipment

Item: 7720

Nomenclature: Cable Assembly, Umbilical, MAB

Function (Cont'd)

2. (cont'd)

- (a) provide a straight thru adapter at the Skirt Umbilical Connector to shunt pins 34 and 38
- (b) Sections in D2-11162-1 requiring this capability are: B6.1, B8.1, B9.1 and B11.1.

Description

- 1. Cable assemblies provide connection of:
 - (a) test "J" box to Missile Skirt Connector (Wing I-V)
 - (b) an Adapter which will mate with the Missile Skirt Umbilical Connector and the MAB Umbilical Cable Connector and shunt pins 34 and 38 (Wing I-V)
 - (c) Ground Cooling Unit to the G&C Section (Wing I only).

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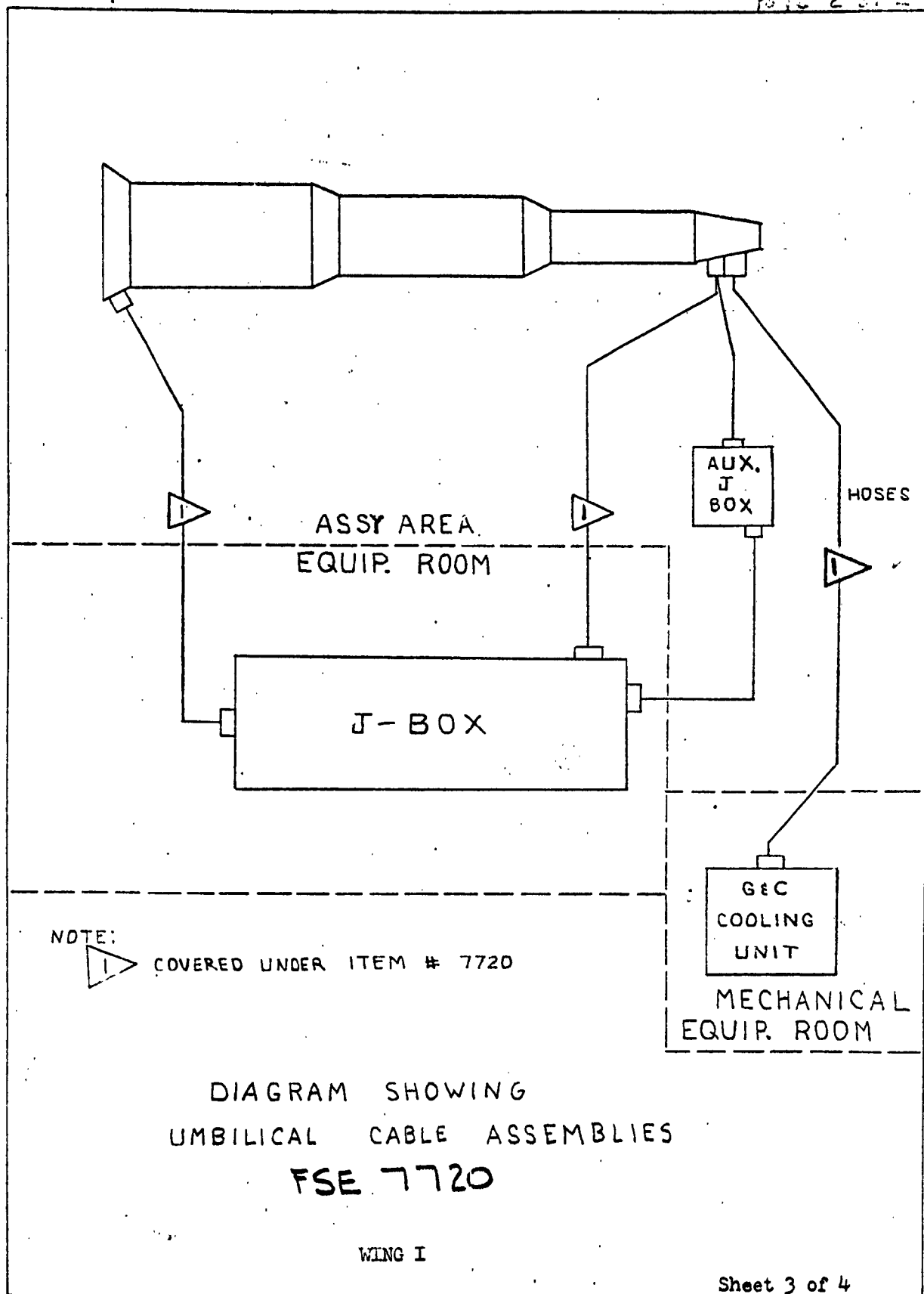
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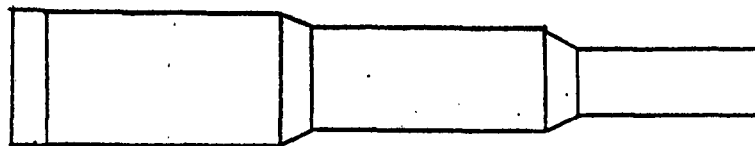
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ASSY. AREA
EQUIP. ROOM

J-BOX
MRCN 7721

UMBILICAL CABLE ASSEMBLY
FSE 7720
WING II

Sheet 4 of 4

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 3-15-61
Model Designation and Name of End Item H&D SM-80 WEAPON SYSTEM	Revision No. B and Date
Contractor BOEING	
Contract No. AFO4(647)-580	
Item No. 7721	
Nomenclature Junction Box, Test, MAB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 25-27518	
Specification No.	
Specification Date	
FUNCTION 1. A requirement exists for a junction box between test equipment and missile components in the MAB. 2. Functions in D2-11162-1 requiring this capability are: B6.1, B8.1, B8.2, B9.1 and B11.1 DESCRIPTION The junction box provides a means for interconnecting the cable assemblies in the MAB. The design of the junction box is such that it is used specifically for the missile test area. The following cable assemblies are connected to the box; Equipment Interconnecting Cable Assemblies, MRCN 7718; NCU Test Cable Assembly, MRCN 7719; Umbilical Cable Assembly MRCN 7720. For detail design requirements see document D2-10125.	

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Department Responsible	Engineering	Basic Installations	Facilities	Manufacturing
H. H. Butler			R. E. Taylor	C. C. Taylor

TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE 12-12-61
Model Designation and Name of End Item HAD SM-80 WEAPON SYSTEM	Revision No. and Date D 10-23-62
Contractor BOEING	
Contract No. AFD4(647)-580	
Item No. 7746	
Nomenclature SET, FAULT ISOLATION TOOLING	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number	
Specification No.	
Specification Date	
Description <u>Function</u> 1. A requirement exists for a means to check both items of airborne equipment which interface during assembly or installation at Air Force Plant 77 to determine which does not meet the drawing requirements should a misfit occur during the missile assembly in the MAB. The means will be required to check only those interface dimensions which cannot be checked conveniently and accurately with conventional measuring devices and methods. 2. Functions in D2-11162 requiring this capability are: B7.0, B9.0, B11.0 <u>Description</u> - This set consists of a number of tools each of which will be used to check a particular interface of an item of airborne equipment.	

CANCELLED

Nomenclature: Set, Interchangeability-Replaceability Checking
Fixture

Description: Continued

The list of interfaces to be checked by the tools are as follows:

Angular Accelerometer to Interstage II-III

Interstage II-III to Angular Accelerometer

First Stage Rocket Motor to Section 49 Skirt

First Stage Rocket Motor to Section 49 Skirt &
Section 49 Skirt to First Stage Rocket Motor

First Stage Rocket Motor to Section 47 Interstage

First Stage Rocket Motor to Section 47 Interstage &
Section 47 Interstage to First Stage Rocket Motor

Second Stage Rocket Motor to Section 47 Interstage

Second Stage Rocket Motor to Section 47 Interstage &
Section 47 Interstage to Second Stage Rocket Motor

Second Stage Rocket Motor to Section 45 Interstage

Second Stage Rocket Motor to Section 45 Interstage &
Section 45 Interstage to Second Stage Engine

Third Stage Rocket Motor to Section 45 Interstage

Third Stage Rocket Motor to Section 45 Interstage &
Section 45 Interstage to Third Stage Rocket Motor

Third Stage Rocket Motor to Section 42 G&C

Third Stage Rocket Motor to Section 42 G&C &
Section 42 G&C to Third Stage Rocket Motor

Heat Protection to NCU - First Stage & NCU to
Heat Protection - First Stage

Heat Protection to NCU - Second Stage & NCU to
Heat Protection - Second Stage

Heat Protection to NCU - Third Stage & NCU to
Heat Protection - Third Stage

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FSE NO. 7746 Description (Continued)

NCU to First Stage Rocket Motor
 First Stage Rocket Motor to NCU
 NCU to Second Stage Rocket Motor
 Second Stage Rocket Motor to NCU
 NCU to Third Stage Rocket Motor
 Third Stage Rocket Motor to NCU
 Raceway Cap and Chute to Skirt
 Skirt to Raceway Cap & Chute
 Raceway Cap and Chute to Section 47 Aft
 Section 47 Aft to Raceway Cap and Chute
 Raceway Cap and Chute to Section 47 Fwd.
 Section 47 Fwd. to Raceway Cap and Chute
 Raceway Cap and Chute to Section 45 Aft
 Section 45 Aft to Raceway Cap and Chute
 Raceway Cap and Chute to Section 45 Fwd.
 Section 45 Fwd. to Raceway Cap and Chute
 Raceway Cap and Chute to 3rd Stage Rocket Motor
 First Stage Engine to Raceway Cover
 Raceway Cover to Second Stage Rocket Motor
 Second Stage Rocket Motor to Raceway Cover
 Raceway Cover to Third Stage Rocket Motor
 Third Stage Rocket Motor to Raceway Cover

For detailed description of the tools see Drawing 21-51991.

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APP.I

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TYPE OF LIST	DATE 9-18-62
Model Designation and Name of End Item SM-80 WEAPON SYSTEM	Revision No. and Date A
Contractor	
Contract No. OOAMA	
Item No. 7789	
Nomenclature IMPALER, MISSILE/MOTOR	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 63TOGD199	
Specification No.	
Specification Date	
Function To provide containment of the missile or motors installed in Rocket Motor Carriages on the Missile Assembly Rails (MRCN 7628) in the Missile Assembly Building, or on the Missile/Motor Storage Rails (MRCN 7629) in the Missile/Motor Storage Building. Description The impaler consists of a motor puncturing device mounted on a frame which bolts to the rail support structure between the rails. NOTE: This device is designed and built by OOAMA at Hill AFB, Ogden, Utah, and is provided to Plant 77 for their use.	

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DEVICE - RESTRAINT, 2ND STAGE ROCKET MOTOR

FSE 7790

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REV SYM 6-14-63

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FSE 7790

~~CANCELLED~~

Sheet 2 of 2

U3 4288 2000 REV. 8/82

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5. REV SYM 6-14-63

BOEING

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DEVICE - RESTRAINT, 3RD STAGE ROCKET MOTOR

FSE 7791

~~CANCELLED~~

Sheet 1 of 2

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REV SYM 6-14-63

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FSE 7791

~~CANCELLED~~

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REV SYM 6-14-63

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TYPE OF LIST FACTORY SUPPORT EQUIPMENT	DATE
Model Designation and Name of End Item SM-80 WEAPON SYSTEM	Revision No. and Date 3-1-3
Contractor The Boeing Company	
Contract No. AF04(647)-580	
Item No. 7794	
Nomenclature Spacer, Rail Ends, SSCBM, MAB and MSB	
Quantity	
Total On Order	
Estimated Production Lead Time	
List Number	
Manufacturer's Part Number 29-29598	
Specification No.	
Specification Date	
Description Function: 1. Used to prevent deformation of rail end fittings of the SSCBM, MAB and MSB rails. They are to be used for every transfer, using the SSCBM, not requiring bridge rails. 2. Functions in D2-11162 requiring this capability are B4.2, B13.1, B13.2, B13.6 and B13.7. 3. Functions in D2-11162-1 requiring this capability are B4.2, B12.1, B12.2, B12.6 and B12.7. Description: A metal block to fit into the rail end fittings of the SSCBM, MAB and MSB.	

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▷ See revision description page, preceding document Table of Contents.

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WS 133A

ACO NUMBER 253

ASSEMBLY & CHECKOUT

APPROVAL DATE _____

EQUIPMENT REQUIREMENTS

REVISION _____

DATE _____

EQUIPMENT TITLE Cable, Rocket Motor Bonding
(Basic Name First)RESPONSIBLE DEPT. BI-MMEQUIP. CLASSIFICATION SFC/OHDESIGN REQMS DOCUMENT None

DWG NO. _____

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION

A requirement exists to provide a means of electrically bonding the 1st, 2nd, and 3rd Stage Rocket Motor Carriages together to prevent an electrical potential difference between rocket motors when roll transferred in a train using Fig. A 7691.

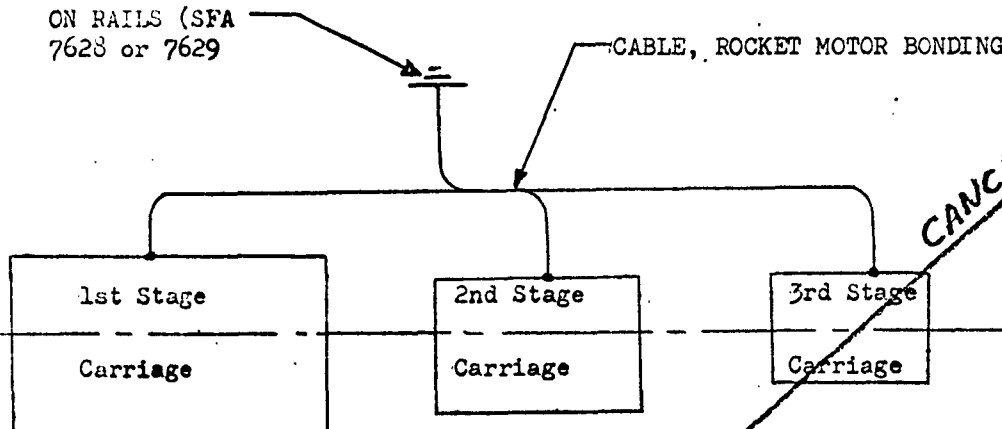
DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that an electrical bonding cable assembly with alligator clips be provided. The assembly shall consist of wire with a maximum resistance of 0.7 ohms per 1000 ft. at 20° C; this is equivalent to B&S 13-5D Type I, Class A, Size 8 wire.

(NOTE: This item may be designed and fabricated locally.)

TO GROUND
ON RAILS (SFA
7628 or 7629

CABLE, ROCKET MOTOR BONDING



PLAN VIEW

SHT 1 OF 1

ENGINEERING DEPT.

BASE INSTALLATION DEPT.

MANUFACTURING DEPT.

FACILITIES DEPT.

2-340-0-1 6-14-63
REV.

BOEING

NO. D2-11162-1

APP. II

PAGE 4aNOTE: Use form U3-4371-1000
if additional sheets are required.O. A. Severide
ORIGINATING GROUP SUPERVISOR:TELEPHONE: 5-5022 Submitted 4-4-62

CANCELLED

WS 133A

ACO NUMBER 532

ASSEMBLY & CHECKOUT

APPROVAL DATE 12-11-62

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE RECORDER, TEMPERATURE, PORTABLE
(Basic Name First)RESPONSIBLE DEPT. BI-MM EQUIP. CLASSIFICATION SFC/OHDESIGN REQMTS DOCUMENT None DWG NO. None

TO BE USED AT:

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
					X			

PURPOSE & JUSTIFICATION

A requirement exists to record the ambient temperature within the transporting vehicle during transportation of missiles and motors at A/F Plant 77, when the Alarm Set (MGE 4187, FSE 7787 or FSE 7788) is not used.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

It is recommended that a commercial recorder be supplied.

The following equipment is acceptable to satisfy this requirement:

BRISTOL Model 4069TH, Thermo-Humid Graph

(These units are available at Plant 77 stores)

This unit is required to record temperature in a permanent form for future reference. Range required is 30°F to 130°F. It must be self-powered for a period up to 24 hours.

SHT 1 of 1

ENGINEERING DEPT.	BASE INSTALLATION DEPT.	MANUFACTURING DEPT.	FAC TIES DEPT.

2-6340-0-1

REV.

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NOTE: Use form U3-4071-1000
if additional sheets are required.

ORIGINATING GROUP SUPERVISOR: _____

TELEPHONE: _____

WS 135A

ACO NUMBER 4047.2ASSEMBLY WRENCHAPPROVAL DATE 1-14-63

EQUIPMENT REQUIREMENTS

REVISION _____ DATE _____

EQUIPMENT TITLE Wrench Assembly, Socket, Safing Pin
(Circle Item First)RESPONSIBLE DEPT. Engineering EQUIP. CLASSIFICATION ACO/MGE-PeculiarDESIGN REQMS DOCUMENT None DWG NO. 25-25276

TO BE USED AT:

BASE	MAFB	FO	MAFB	STP III	PLT 77			
DOC	D2-7443	D2-7443	D2-7443	D2-7443	D2-11162			
	None	None	X	X	X			

Results from ECP-188
PURPOSE & JUSTIFICATION

A means to provide a tool for installing safing pins in all safe and arm devices to assure that the missile cannot be inadvertently armed and will remain in a safe condition during ordnance devices functional test in the MAB. The tool must be capable of being inserted into the safing pin when misalignment exists between the ignitor and the access door in the missile skin.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

The wrench will consist of a one-half inch diameter aluminum tube mounted in a pistol grip type stock. The other end will contain a one-quarter inch square for inserting into the safing pin or into an extension of the same material and diameter as the tube. The tube extension will have a retainer for locking the extension of the wrench. The S&A pin will be removable from the wrench or extension by a straight axial pull, a trigger mechanism will be operated in the pistol grip to release the extension from the basic wrench. A light source will be provided as an integral part of the wrench, to illuminate the S&A indicator. The wrench, including the extension, excepting the light and driver will be coated with an insulating material to prevent static arcing. The drive end of the tube extension will incorporate a universal type joint to provide for insertion into the safing pin when misalignment exists between the ignitor and the access door in the missile skin.

This item is identical with Figure A 4047.2

SHT 1 OF 1

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<i>Chas. B. Borton</i>	<i>W. J. Wilson</i>	<i>W. E. Spitzer</i>	<i>W. J. Wilson</i>

2-042-1-1

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APP. II PAC 48

NOTE: Use form DS-201-100
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TELEPHONE: 5-6696

WS 133A

ACO NUMBER 4662

ASSEMBLY & CHECKOUT EQUIPMENT REQUIREMENTS

APPROVAL DATE 5-3-3

REVISION _____ DATE _____

EQUIPMENT TITLE Lead Assembly, Electrical
(Basic Noun First)RESPONSIBLE DEPT. Engineering EQUIP. CLASSIFICATION ACO/-MGE PeculiarDESIGN REQMTS DOCUMENT _____ DWG NO. 29-30451

TO BE USED AT:

This ACO Result of ECP 620

BASE	MAFB	EAFB	VAFB	STP III	PLT 77			
DOC	D2-7648	D2-7648	D2-7871	D2-9942	D2-11162			
	X	—	X	—	X			

PURPOSE & JUSTIFICATION

To provide a means of connecting ACO 3007 (Test Set, Explosive Set Circuitry), in order to conduct static bonding tests immediately following assembly and emplacement of Wing II missiles.

DESCRIPTION, REQUIREMENTS & RECOMMENDATIONS:

This lead assembly must be capable of mating with J1 of 10-20994-11 (part of IERON 7679 or ACO 3007), with one lead capable of attachment to the bonding strap located on the first stage skirt, and another lead capable of electrical contact with the structure of the raceway caps and covers. These leads must have sufficient length to conduct an end-to-end electrical continuity test of a completely assembled missile.

This item is identical to Fig. A 4662.

SHT 1 OF 1

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ORIGINATING GROUP SUPERVISOR: Dow Martin
TELEPHONE: 5-6174