

206

PROGRAM REPORT



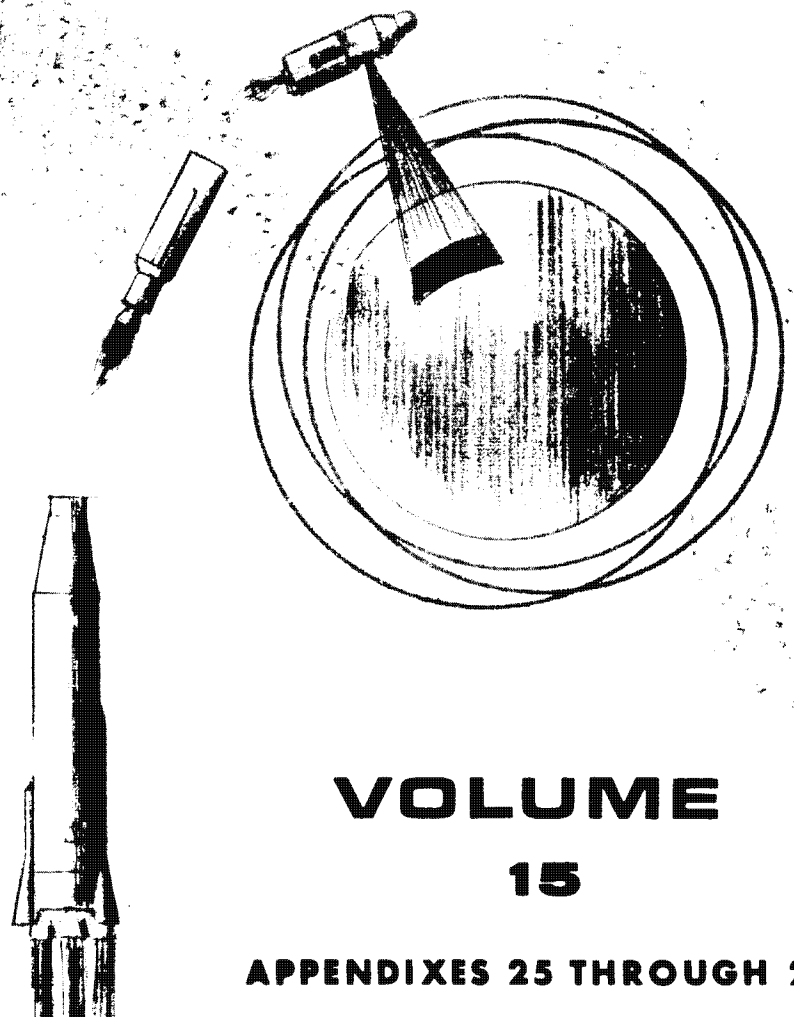
VOLUME
15

APPENDIXES 25 THROUGH 27

THIS DOCUMENT CONTAINS 334 PAGES
NOVEMBER 1967

206

PROGRAM REPORT



VOLUME
15

APPENDIXES 25 THROUGH 27

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AEROSPACE GROUND EQUIPMENT LIST

(FIGURE "A" OF SAFSP-EX-64-5)

GENERAL ELECTRIC**MISSILE AND SPACE DIVISION**
SPECIAL MILITARY SPACE PROJECTS**AEROSPACE GROUND EQUIPMENT LIST**

LIST NO. 62SD340 (REV E)	CONTRACT NO. AF04(695)-580	DATE 7 NOVEMBER 1966
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DOCUMENT NO. 62SD340 (REV E)

THIS DOCUMENT CONTAINS 185 PAGES

AEROSPACE GROUND EQUIPMENT LIST
(FIGURE "A" OF SAFSP-EX-64-5)
CONTRACT AF04(695)-580

Prepared for
SAFSP - 206

UNITED STATES AIR FORCE
AIR FORCE UNIT POST OFFICE
LOS ANGELES 45, CALIFORNIA

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MISSILE AND SPACE DIVISION
SPECIAL MILITARY SPACE PROJECTS
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GENERAL ELECTRIC MISSILE AND SPACE DIVISION

AEROSPACE GROUND EQUIPMENT LIST

LIST NO.		CONTRACT NO.		DATE	
62SD340 (REV E)		AF04(695)-580		7 NOVEMBER 1966	
TABLE OF ACTIVE AGE END ITEMS					
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4	Adapter Section Assembly Carriage	11	52	Portable Gas Servicing Unit	117
5	Forward Section Shipping Container	13	53	Propellant Carrier (N ₂ O ₄)	119
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7.1	Upper Blanket	21	58	High Pressure Nitrogen Supply	129
7.2	Adapter Internal Cooling Disconnect	23	59	High Pressure Helium Supply	131
8.1	OC/V Temperature Control Blanket	27	60	Battery Leak Rate Detector	133
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10	OC/V Cradle	31	62	Propellant Servicing Unit (N ₂ O ₄)	137
10.1	Heater Control Unit	33	63	Propellant Servicing Unit (N ₂ H ₄)	139
10.2	SV Non-Magnetic Cradle	35	67.1	Propellant Handler's Suit	145
11	OC/V Assembly Carriage	37	68.1	Manual Vapor Detector Set	149
12	AGE Pairing Set	39	70	Gantry Fuel Equipment	153
14	OC/V Shipping Container	41	71	Gantry Oxidizer Equipment	155
15	OC/V Vertical Support Stand	43	78	Controller Test Set	163B
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17	Personnel Work Stand	47	82	SV System Test Set	171
18	Battery Handling Fixture	49	83	SV Adapter Cables	173
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20	Inertial Platform Test Table	55	86	Test Battery Charger	177
21	Inertial Platform Shipping Container	57	88	Satellite Instrumentation Ground Monitor Equipment (SIGME)	181
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23.3	IR Sensor Simulator	65A	88.2	Time Correlation Unit	185
24	Orbit Adjust Nozzle Alignment Set	67	89	Command Signal Generator	187
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26	SV Work and Assembly Truck	75	90	SV Simulated Flight Kit	189
27	SV Mating Sling	77	90.2	Squib Simulator Current Monitor	191
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28	SV Vertical Transport Tie-Down Ring	79	95	Forward Section Test Set	197
29	SV Transporter	81	96	BUSS Subsystem Checkout Test Set	199
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38	OC/V Alt End Lifting Fixture	105	118	LOB Signal Distribution Unit	229

62SD340 REV. E

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GENERAL

ELECTRIC

MISSILE AND SPACE DIVISION

AEROSPACE GROUND EQUIPMENT LIST

DATE
7 NOVEMBER 1966

LIST NO 62SD340 (REV E)		CONTRACT NO. AFO4(695)-580	
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125		Satellite Digital Data Encoder	
126		SV Manual Control Console	
127		Ground Tracking Station Test Set	
130		Telemetry Monitor Console	
131		Time Monitor Unit	
132		Monitor Test Set	
133		Battery Simulation Console	
		PAGE NO.	
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		ITEM NO.	
		NOMENCLATURE	
		PAGE NO.	

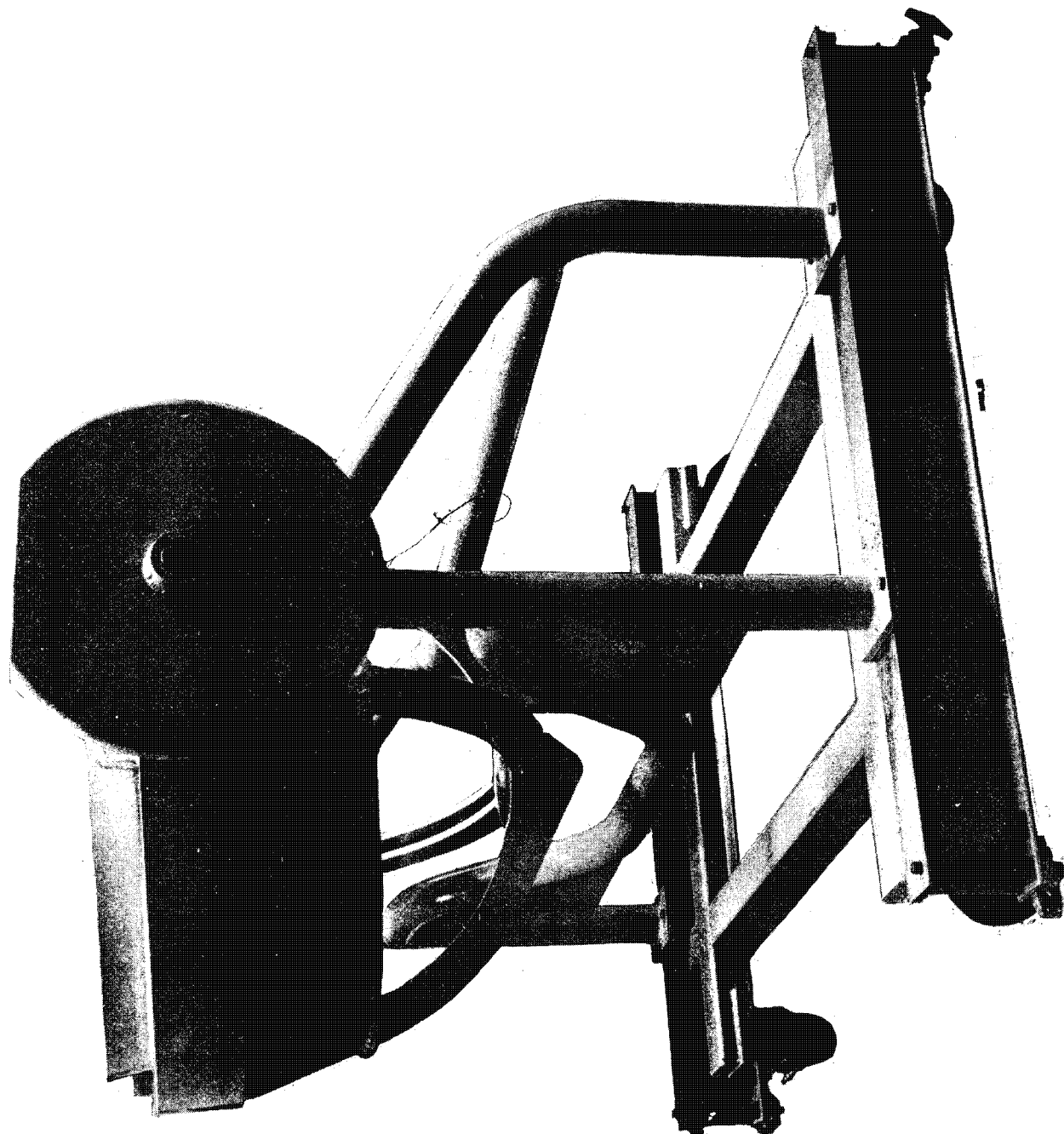
GENERAL ELECTRIC MISSILE AND SPACE DIVISION		AEROSPACE GROUND EQUIPMENT LIST	
LIST NO	CONTRACT NO.	DATE	
62SD340 (REV E)	AFO4(695)-580	7 NOVEMBER 1966	
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37	Protective Covers	166	
43	SV Non-Magnetic Support Stand	113	
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AEROSPACE GROUND EQUIPMENT LIST

REVISION E*

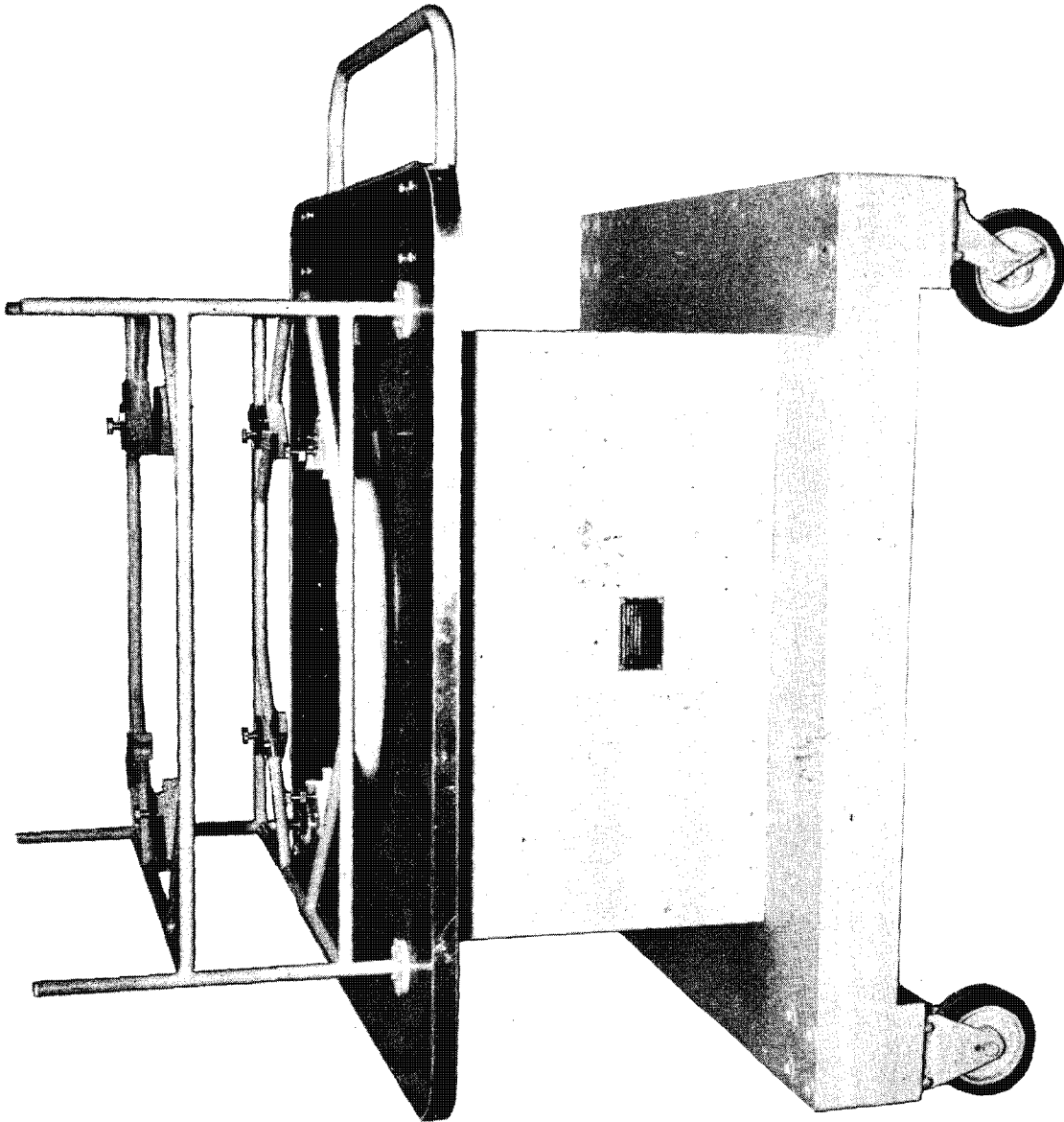
*THIS ISSUE INCLUDES REVISION D FOR COMPLETENESS

PAGE NO. 1



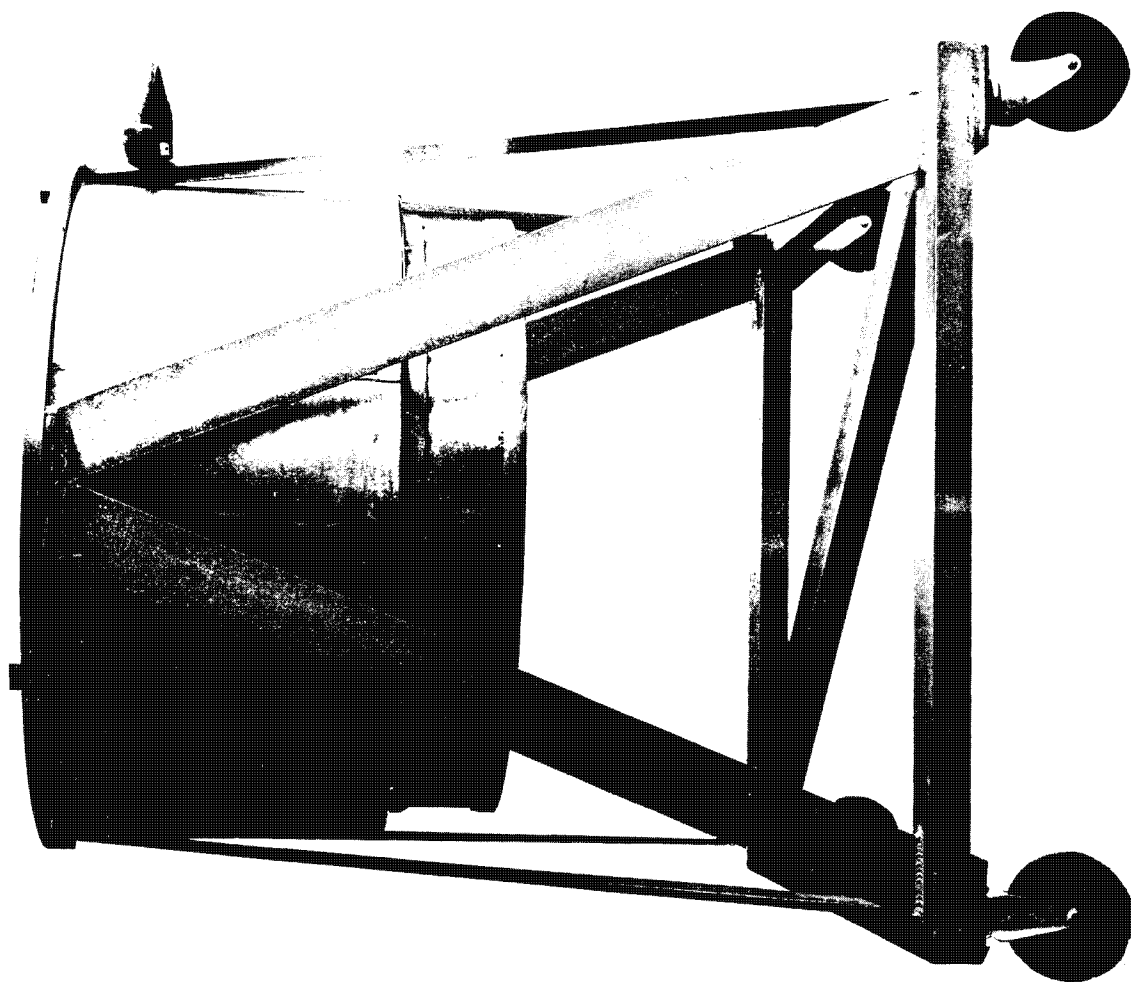
END ITEM NO. 1.1
FORWARD SECTION CRADLE AND CARRIAGE

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LIST NO 62SD340			
MISSILE AND SPACE DIVISION										CONTRACT NO AF 04(695)-580	REVISION E			
GENERAL ELECTRIC														
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(17)	(16)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB. AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT LAB	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED
1.1	-	254ER90 SVS 4423	CRADLE AND CARRIAGE, FORWARD SECTION	-	1	4.735	9.470	SSD	NON STD	CFE	-	UNCLASS	10	-
(4) NOMENCLATURE														
The FORWARD SECTION CRADLE AND CARRIAGE is an integral assembly of aluminum fabricated parts consisting of a cradle, a carriage, and a dolly. The cradle is shaped to the configuration of the Forward Section and is lined with protective material. The carriage is an aluminum tubular weldment, supports the cradle, and is mounted on four roller assemblies. The dolly is of aluminum fabrication and is equipped with longitudinal rails supported by four lock-type swivel casters. The cradle and carriage is positioned manually and all adjustment, assembly, and disassembly operations are performed with common hand tools.														
The cradle and carriage measures approximately 70 inches long, 56 inches wide, and 57 inches high.														
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :														
A cradle and carriage is required to rigidly restrain the Forward Section in either the horizontal or vertical position during handling and mating operations. Horizontal mating and demating of the Forward Section is accomplished by joining and locking the rails of the dolly to the SV WORK AND ASSEMBLY TRUCK (Item 26) in order to roll-transfer.														
BASIS OF USE														
SPECIAL TEST EQUIPMENT:														
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS														
Q. C. ACCEPTANCE														
SYSTEM CHECKOUT														
STRUCTURE LAB														
Q. C. OPER. ASSURANCE														
OPERATIONAL AGE:														
MISSILE ASSEMBLY BUILDING 2														
VEHICLE SUPPORT BUILDING														
LAUNCH PAD														
LAUNCH SERVICE BUILDING														
LAUNCH OPERATIONS BLDG. -														
AF TRACKING STATIONS														
DELIVER WITH SV														
TOTAL OPERATIONAL AGE 2														



END ITEM NO. 1.2
FORWARD SECTION MAINTENANCE SET

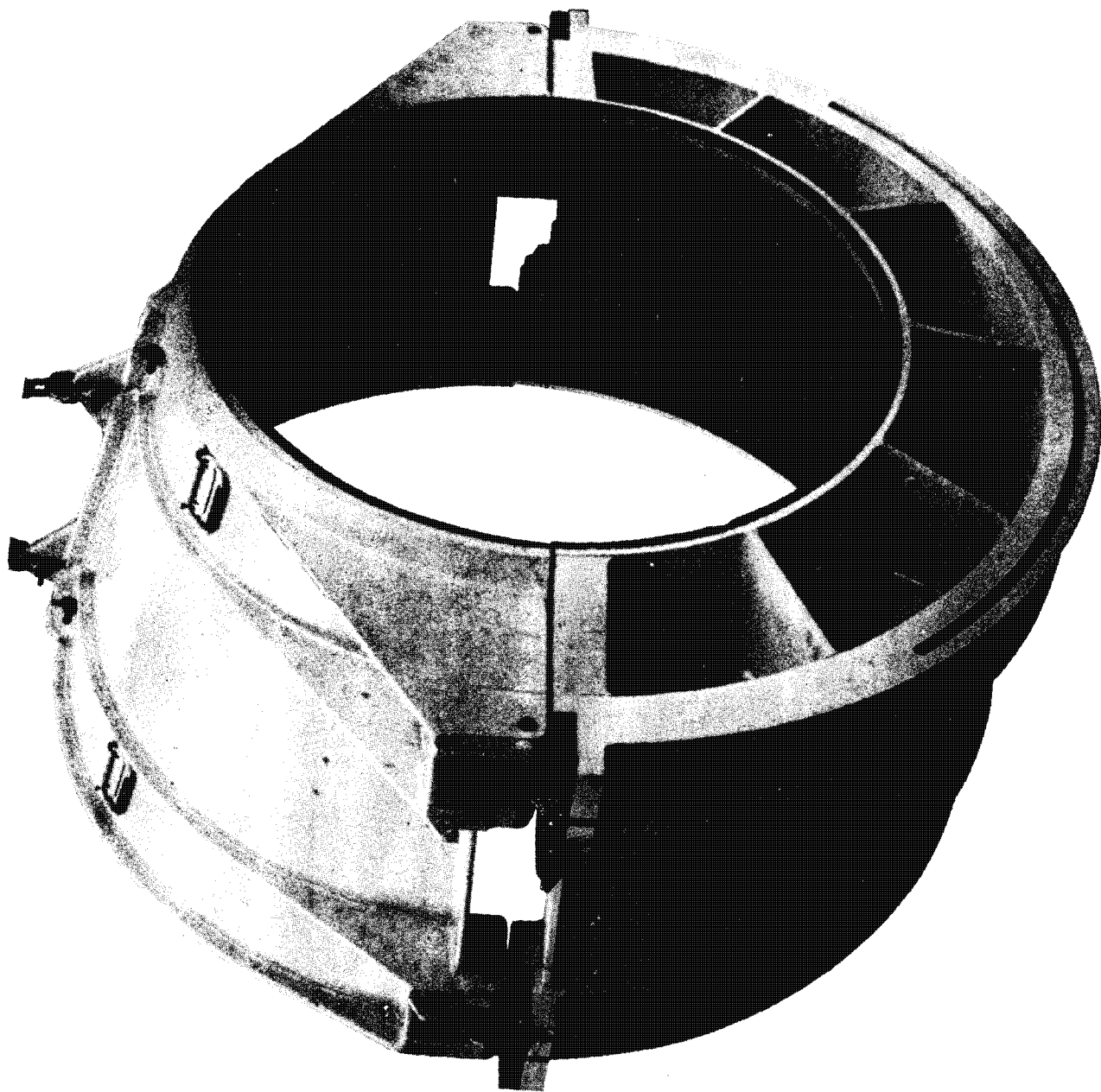
AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LISTING 62SD340							
GENERAL ELECTRIC										CONTRACT NO. AF 04(695)-580	REVISION E							
MISSILE AND SPACE DIVISION																		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	CONTRACT NO.	CLASS	TYPE	CLASS	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST DATE AVAILABLE	BASIS OF USE
1.2	-	25-EE24 SVS 4428	MAINTENANCE SET, FORWARD SECTION	-	1	1,357	2,714	SSD	NON STD	CFE	-	UNCLASS	-	UNCLASS	8	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE																		
The FORWARD SECTION MAINTENANCE SET is an assemblage of aluminum weldments and plywood consisting of a cone support fixture, a cover support fixture, and a plywood capsule stand mounted to a wooden dolly with two swivel casters and two fixed casters. The cone support fixture contains provisions for bolt-clamping and supporting the thrust cone and the thermal cover at separate locations on the fixture. The capsule stand contains a ring support to which the capsule of the Forward Section can be suspended.																		
The set measures approximately 57-inches long, 48-inches wide, and 53-inches high.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																		
A maintenance set is required at the MAB to support the capsule of the Forward Section in a vertical position, with provisions for separately supporting the thrust cone and the thermal cover, during checkout operations of the capsule. A cast-rod dolly provides the capability for moving the capsule, the thrust cone, and the thermal cover into the checkout area.																		
TOTAL OPERATIONAL AGE																	2	



END ITEM NO. 1.3
SRV FOREBODY DOLLY

AEROSPACE GROUND EQUIPMENT LIST																		
DATE 7 NOVEMBER 1966		LISTING 62SD340		REVISION E														
CONTRACT NO. AF04(695)-580																		
MISSILE AND SPACE DIVISION																		
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX NUMBER	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB. AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(7) BASIS OF USE	(8)	
1.3		895D664G1	Dolly, SRV Forebody		1			SSD	NON STD	CPE	---	Unclass					SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE The SRV Forebody Dolly is an assembly of aluminum rods, shapes, and plates on casters for mobility. Four brackets padded with sponge rubber are mounted on the dolly frame and support the forebody. A cover suspended from the dolly frame encloses the lower portion of the forebody. A handle is attached to the dolly frame.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A dolly is required to support the SRV forebody in the vertical position during assembly or disassembly of the forward section. The dolly positions the forward section near ground level to allow maximum personnel access from above. The dolly provides capability to move the forebody about the test area.																		
TOTAL OPERATIONAL AGE																2		

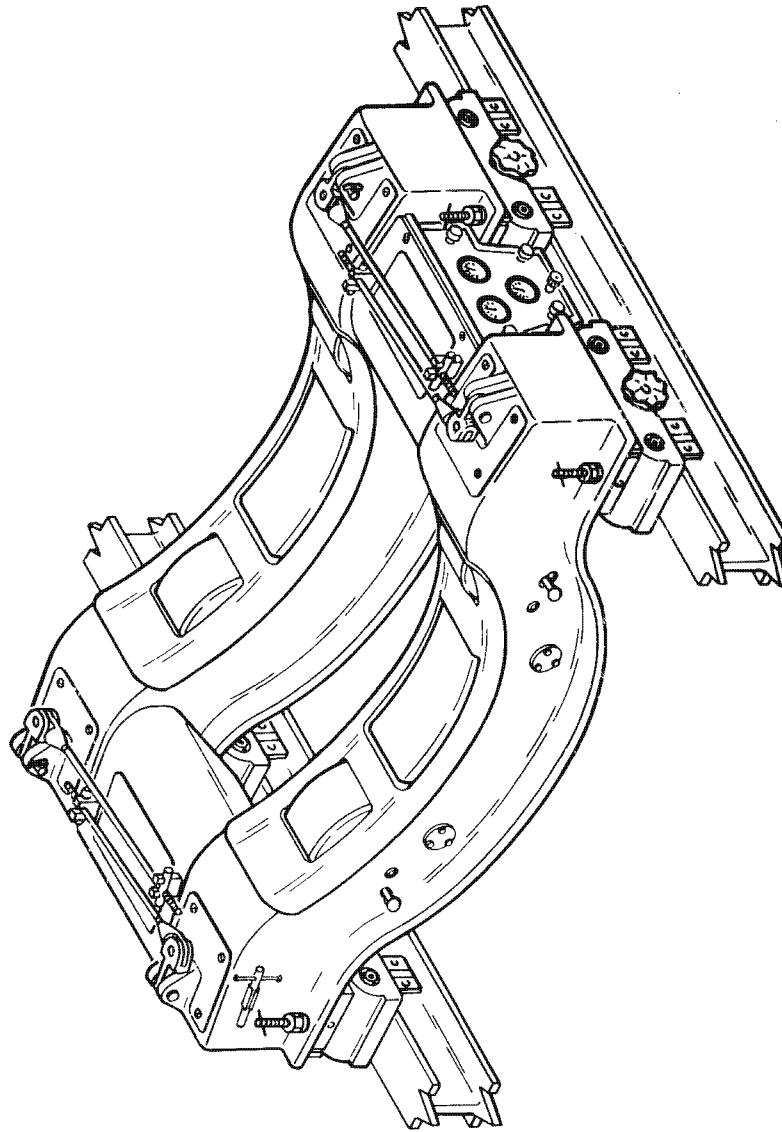
AEROSPACE GROUND EQUIPMENT LIST																		
GENERAL ELECTRIC				MISSILE AND SPACE DIVISION				DATE 7 NOVEMBER 1966		LIST NO 62SD3340		REVISION E						
CONTRACT NO. AF04(695)-580																		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART / DWS NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME	DATE AFSC APPROVED	FIRST AVAILABLE DATE	BASIS OF USE		
1.4		895D865G1	Maintenance Set, SRV Capsule		1			SSD	NON STD	CITE	-	Unclass						
(4) NOMENCLATURE The SRV Capsule Maintenance Set is an assemblage of aluminum shapes and rods consisting of a cone support fixture, a support assembly, and a truck assembly. The truck assembly consists of a frame supported on two swivel and two fixed casters. The frame contains a ring support from which the SRV is suspended. The support assembly is fastened to the truck assembly and supports the thermal cover and the cone support fixture. The thermal cover and the thrust cone are clamped in their respective fixtures.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A maintenance set is required at the MAB to support the capsule of the forward section in a vertical position with provisions for separately supporting the thrust cone and the thermal cover during checkout operations of the capsule. Mobility is provided to move the capsule, the thrust cone, and the thermal cover about the test area.																		
OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV																		
TOTAL OPERATIONAL AGE 2																		



END ITEM NO. 3
ADAPTER SECTION CRADLE

62SD340 REV. D

GENERAL ELECTRIC										AEROSPACE GROUND EQUIPMENT LIST										LIST NO. 62SD340	
MISSILE AND SPACE DIVISION										DATE 7 NOVEMBER 1966										REVISION E	
CONTRACT NO. AF 04(695)-580																					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)				
ITEM SEQUENCE	FUNCTIONAL AREA AND EX	STOCK NO	NOMENCLATURE	DESCRIPTION PROB. AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS.	PROPOSED SUPPLY	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE					
3	-	248E912 SYS 4295	CRADLE, ADAPTER SECTION	-	1	14,003	28,006	SSD	NON STD	CFE	-	UNCLASS	12	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE					
(4) NOMENCLATURE The ADAPTER SECTION CRADLE is an assemblage of aluminum castings consisting of a lower section casting and two upper quarter-section castings. The upper castings are joined to each other by a pair of swing bolts and to the lower section castings by removable pin hinge fittings. Each of the upper quarter-section castings contain one half of the split pair of sling fittings; the lower section casting includes two semicircular bearing surfaces with segmental grooves on the side which mate with the ADAPTER SECTION ASSEMBLY CARRIAGE (Item 4). The interior surface of the cradle is lined with protective materials. An Adapter collar ring is attached at both ends of the cradle. All cradle adjustment, assembly, and disassembly operations are performed with common hand tools. The cradle measures approximately 33 inches long, 65 inches wide, 68 inches high, and weighs approximately 1200 pounds.																					
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A cradle is required to rigidly restrain the Adapter Section in a horizontal position during handling, assembly, and checkout operations performed in conjunction with the ADAPTER SECTION ASSEMBLY CARRIAGE (Item 4) on the SV WORK AND ASSEMBLY TRUCK (Item 26), and during movement on the SV TRANSPORTER (Item 29). The assembled cradle can be lifted by the UNIVERSAL SLING (Item 31). The cradle with the Adapter Section can be positioned by means of the ADAPTER SECTION ASSEMBLY CARRIAGE (Item 4) to facilitate the mating of the Forward Section to the OC/V borne on the OC/V CRADLE (Item 10) and the OC/V CARRIAGE (Item 11), as well as the mating of the Adapter Section to the Forward Section borne on the FORWARD SECTION CRADLE AND CARRIAGE (Item 1.1).																					
TOTAL OPERATIONAL AGE 2																					



END ITEM NO. 4
ADAPTER SECTION ASSEMBLY CARRIAGE

DATE
7 NOVEMBER 1966

CONTRACT NO
62SD340

REVISION
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AF 04(695)-580

GENERAL ELECTRIC

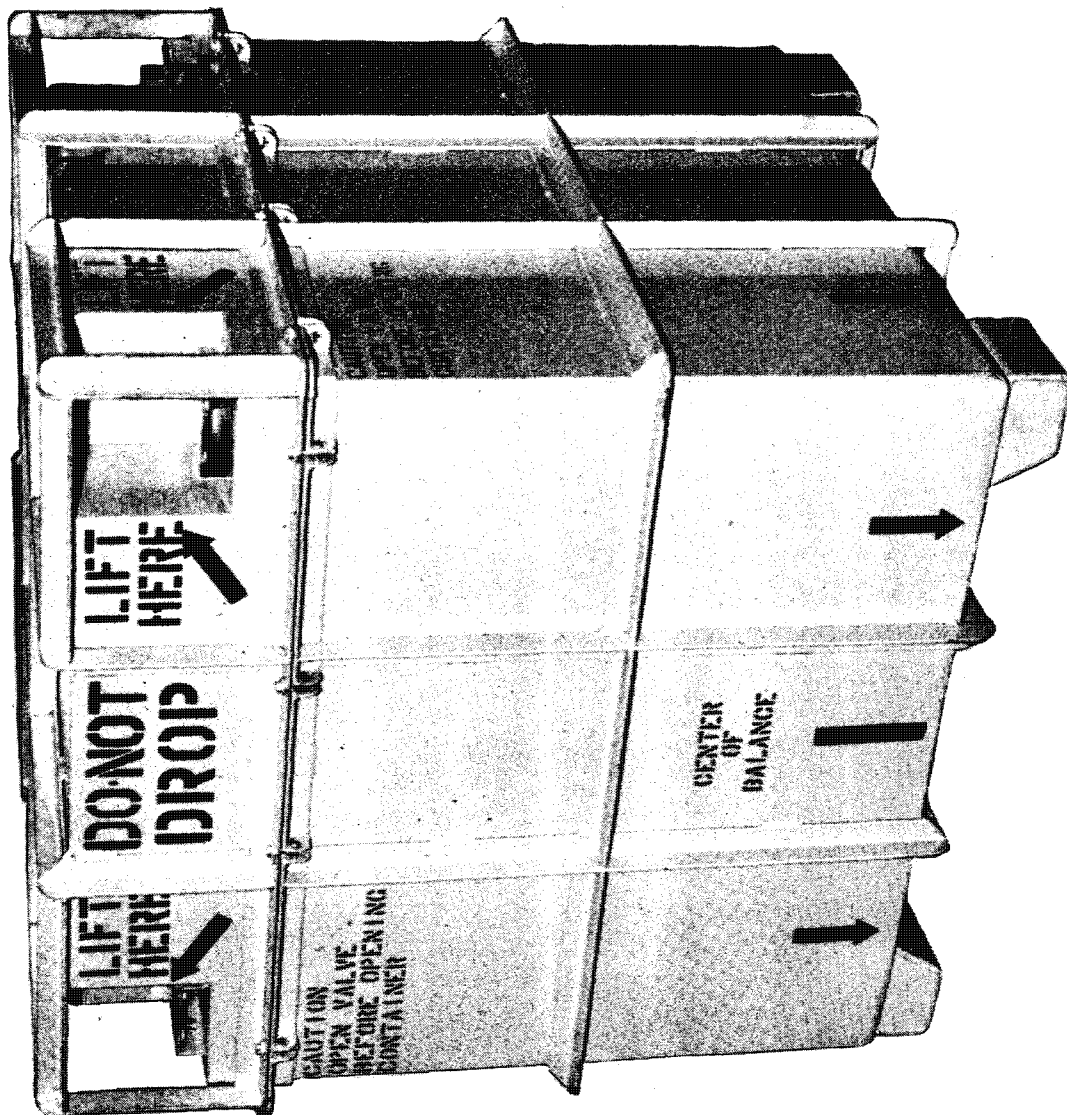
MISSILE AND SPACE DIVISION

AEROSPACE GROUND EQUIPMENT LIST

(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) LAB COGNIZANT	(12) TYPE CLASS	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(8) BASIS OF USE
4	-	241R752 SVS 4208-A	CARRIAGE, ADAPTER SECTION ASSEMBLY	-	1	11,365	22,730	SSD	NON STD	CFE	-	UNCLASS	12	-	11-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE The ADAPTER SECTION ASSEMBLY CARRIAGE is an assemblage of aluminum castings, shapes, and components in the form of a rectangular frame and consists of two saddle-shaped cross members and two connecting side panels. Each cross-member includes two sets of rail rollers with integral rail clamps attached to the end of the cross member by means of air springs, two tie rods for attaching the carriage to the ADAPTER SECTION CRADLE (Item 3), two retractable rollers on which one of the cradle bearing surfaces may roll, a retractable panel for engaging the segmental groove on one of the cradle bearing surfaces, a hydraulically driven pad for raising the cradle off the retractable rollers, two gas pressure vessels, and all associated hydraulic and pneumatic tubing. One of the connecting side panels contains a high pressure gas pressure cylinder and a hand-operated hydraulic pump which drives the two lift pads. The other connecting side panel also contains a high pressure gas storage cylinder, as well as the air spring suspension system control valves, gauges, and inlet. The pair of air springs on each cross member is controlled separately from the pair on the other cross member. Both hydraulic pads are actuated simultaneously. The cross members are lined with protective material on the bearing surface. All functions of the carriage are manually controlled and adjusted with common hand tools. The carriage measures 73 inches long, 27 inches wide, 27 inches high, it weighs approximately 950 pounds, and has a design load of approximately 6300 pounds.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A carriage is required to restrain and position the ADAPTER SECTION CRADLE (Item 3) during handling, checkout, assembly, and transportation on the SV WORK AND ASSEMBLY TRUCK (Item 26) and the SV TRANSPORTER (Item 20). The carriage is compatible with the 60-inch rail sets on Items 26 and 29 and mates with Item 3. The ADAPTER SECTION CRADLE (Item 3) either rests on the carriage members and is secured to the carriage by tie-rods, or it rests on the retractable rollers and is restrained by an integral cradle-clamping device, since the Adapter Section when mounted on the carriage must be able to roll 15 degrees in either direction. The carriage is supported on air springs which can be partially deflated to make minor corrections for section alignment and mating. The high pressure nitrogen supply for the air springs is directly charged from the PORTABLE GAS SERVICING UNIT (Item 52). The cradle and its load are unloaded from the bed of the carriage by hydraulic lift pads so that the roll-axis rollers can be extended or retracted.																
TOTAL OPERATIONAL AGE															2	

ITEM SEQUENCE NO. 4

PAGE NO. 11



END ITEM NO. 5
FORWARD SECTION SHIPPING CONTAINER

AEROSPACE GROUND EQUIPMENT LIST															DATE 1 APRIL 1964	LIST NO 62SD340	
GENERAL ELECTRIC															CONTRACT NO. AF04(695)-76	REVISION D	
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT																	
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	CLASS TYPE	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE	
5	-	254E670 P1 SVS 4315	CONTAINER, FORWARD SECTION SHIPPING	-	1	2.087	6.261	SSD	NON STD	CFE	-	UNCLASS	18	-	3-63		
(4) NOMENCLATURE																	
The FORWARD SECTION SHIPPING CONTAINER is a rectangular, top-opening, reusable metal container. The container top includes stacking brackets and a humidity indicator. The container bottom includes skids, fork lift provisions, vacuum and pressure relief valves, internal desiccant receptable and access plate, and a foam cavity protective lining section shaped to the configuration of the Forward Section. The Forward Section is carried in a nose-down position and is equipped with an aft end lifting bracket. The foam cavity enclosure serves as a protective lining as well as an insulating agent.																	
The container measures 45 inches long, 45 inches wide, 50 inches high, and weighs approximately 700 pounds unloaded.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
A container is required to protect the Forward Section during shipping and storage. The container is reusable and capable of limited temperature and humidity control. A lifting hoist can remove the container top and then remove the Forward Section from the container by directly attaching to the aft end lifting bracket. The container protects the Forward Section from all hazards attendant to limited shipping by air and truck.																	
TOTAL OPERATIONAL AGE																	3



END ITEM NO. 5.1
ADAPTER SECTION SHIPPING CONTAINER

AEROSPACE GROUND EQUIPMENT LIST																				
GENERAL ELECTRIC			MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT				DATE 1 APRIL 1964		LIST NO. 62SD340		REVISION D									
CONTRACT NO. AF04(695)-76																				
(1) ITEM	(2) SEQUENCE	(3) FUNCTIONAL AREA NUMBER	(4) STOCK NO	(5) WFG PART/OWG NUMBER	(6) SPECIFICATION	(7) NOMENCLATURE	(8) DESCRIPTION	(9) PROB AREA	(10) UNITS	(11) UNIT PRICE	(12) TOTAL PRICE	(13) COORDINANT	(14) TYPE CLASS	(15) PROPOSED SOURCE	(16) SOURCE CODE	(17) CLASS AND REMARKS	(18) LEAD TIME (WEEKS)	(19) DATE APPROVED	(20) FIRST AVAILABLE DATE	(21) BASIS OF USE
5.1	-	255E523G1 SVS 441	CONTAINER, ADAPTER SECTION SHIPPING	-	1	3.664	11.592	SSD	NON STD	CFE	UNCLASS	12	-	3-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. -	AF TRACKING STATIONS	DELIVER WITH SV	3	TOTAL OPERATIONAL AGE	
3																				

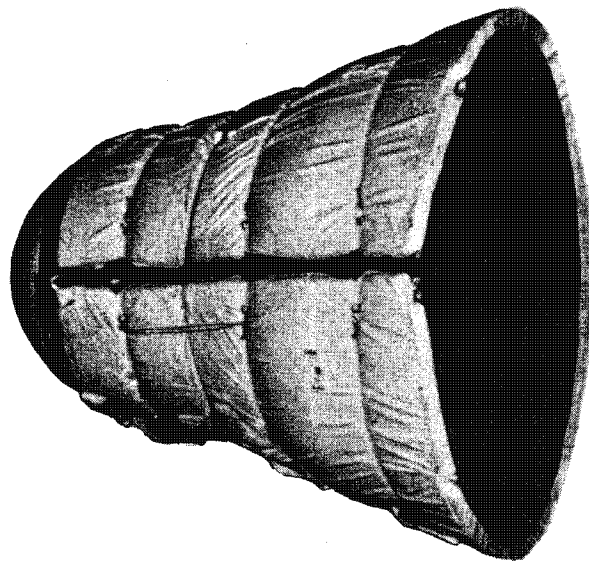
(4) NOMENCLATURE

The ADAPTER SECTION SHIPPING CONTAINER is a cylindrical, top-opening, reusable metal container. The container top includes stacking brackets and a humidity indicator. The container bottom includes skids, fork lift provisions, vacuum and pressure relief valves, internal desiccant receptacle and access plate, passive heat of fusion radiator, and shock-isolated mounting brackets. The Adapter Section is stowed in the container in a vertical axis and is removed from the container by hoist-lift attachment to a fixture provision affixed off-center to the container base.

The container measures 80 inches in diameter, 60 inches high, and weighs approximately 480 pounds unloaded.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A container is required to protect the Adapter Section during shipping and storage. The container is reusable and capable of passive temperature and humidity control. A lifting hoist in conjunction with the UNIVERSAL SLING (Item 31) can remove the container top and then remove the Adapter Section from the container by directly attaching to a fixture provision affixed to the bottom container. The off-center location of this lifting fixture enables the Adapter Section to swing to an immediate horizontal position for placement. The container protects the Adapter Section from all hazards attendant to limited shipping by air and truck.



END ITEM NO. 7.1
UPPER BLANKET

GENERAL ELECTRIC										MISSILE AND SPACE DIVISION										AEROSPACE GROUND EQUIPMENT LIST		DATE	LIST NO	REVISION
																						7 NOVEMBER 1966	62SD340	E
																						AF 04(695)-580		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)					
ITEM	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE AFSC APPROVED	FIRST AVAILABLE DATE	BASIS OF USE								
7.1	-	489L312 SVS 4429	BLANKET, UPPER	-	1	1,527	30,540	SSD	NON STD	CFE	-	UNCLASS	10	-	2-63									
(4) NOMENCLATURE																								
The UPPER BLANKET consists of three sections which include a skull-cap section, a Forward Section, and an Adapter Section. The blanket is constructed of synthetic material and contains three components: an insulation, an inner-skin, and a heavy-duty outer-skin. Each section is equipped with a tear-open zipper for quick attachment and quick separation. The complete blanket is formed to the configuration of the Forward and Adapter Sections, is manually installed on the assembled vehicle, and has attaching provisions for a retractable lanyard.																								
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																								
A blanket arrangement is required at the Launch Pad as a protective enclosure for the Forward and Adapter Sections when the SV is mated to the Agena. The blanket is passive, without air supply, and is constructed and assembled in three sections. The skull-cap section of the blanket can be manually removed at the gantry roll-back. The Forward Section and the Adapter Section of the blanket are equipped with tear-open zippers to enable quick removal prior to flight.																								
SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV																								
																TOTAL OPERATIONAL AGE								



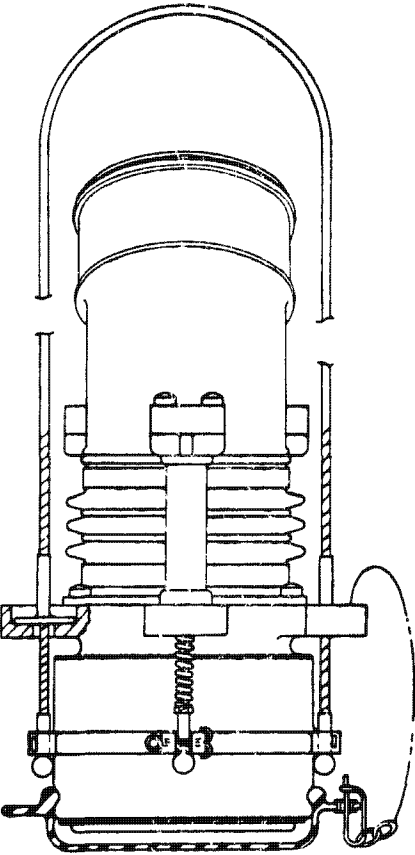
END ITEM NO. 7.2
ADAPTER SECTION INTERNAL COOLING DISCONNECT

62SD340 REV. E

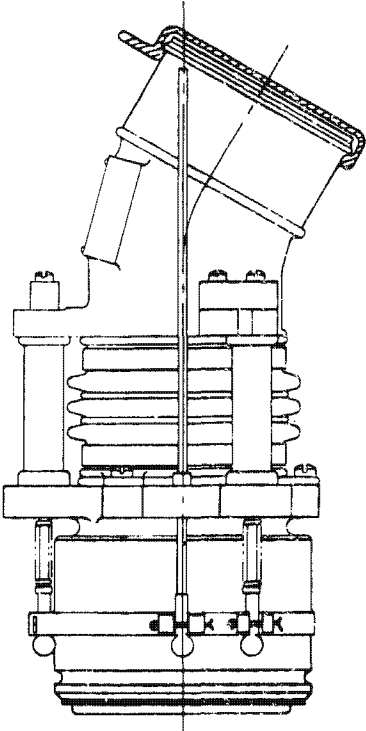
PAGE NO. 22

AEROSPACE GROUND EQUIPMENT LIST																			
GENERAL ELECTRIC								MISSILE AND SPACE DIVISION											
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE	BASIS OF USE			
7.2	-	115C7018 SVS 4416A	DISCONNECT, ADAPTER SECTION INTERNAL COOLING	-	1	3,621	10,863	SSD	NON STD	CFE	-	UNCLASS	10	-	3-63				
																(4) NOMENCLATURE			
																The ADAPTER SECTION INTERNAL COOLING DISCONNECT is an insulated flexible hose. One end of the hose is terminated in a coupling which mates with the cooling air coupling on the umbilical boom, while the opposite end is terminated in a quick-disconnect which mates with the Adapter cooling air inlet. The quick-disconnect is equipped with a lanyard attachment fitting.			
																The hose measures approximately 200 inches long and is approximately 12 inches in diameter.			
																(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:			
																An insulated hose is required at the launch pad to continuously connect the umbilical boom cooling air supply with the vehicle Adapter Section internal cooling air inlet whenever the SV is mated to the Agena. The hose can be quickly disconnected from the vehicle and retracted from the launch pad.			
																TOTAL OPERATIONAL AGE			
																3			

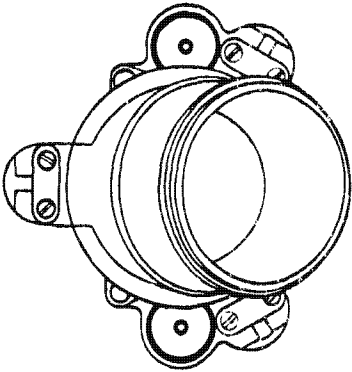
AEROSPACE GROUND EQUIPMENT LIST										DATE	7 NOVEMBER 1966	CONTRACT NO.	62SD340					
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION				REVISION				
										AF 04(695)-580				E				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE FIRST AVAILABLE	BASIS OF USE		
8.1	-	489L316 SVS 4493	BLANKET, ORBITAL CONTROL VEHICLE TEMPERATURE CONTROL	-	1	5,013	100,260	SSD	NON STD	CPE	-	UNCLASS	10	-	9-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV		
(4) NOMENCLATURE																TOTAL OPERATIONAL AGE		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																		
The ORBITAL CONTROL VEHICLE TEMPERATURE CONTROL BLANKET is constructed of double-wall synthetic material consisting of a heavy-duty outer skin, insulation material, resistance heating elements, internal air passages, temperature sensors, and an inner skin. The blanket is provided with an integral cooling air supply duct, electrical signal and power leads which mate directly with umbilical fittings, and a solar shield. Two protrubances in the blanket accommodate the magnetometer and antenna fairings on the OC/V skin; the antenna protrubance is provided with a zippered access opening to permit antenna erection during testing operations. A tear-open zipper closure, sewn diagonally across the full length of the blanket, is attached to a pull-away lanyard and bungee cords to enable quick release and removal from the vehicle.																		
A temperature control blanket is required at the PAD to provide protective enclosure to maintain OC/V skin temperature, and to remove heat generated in the OC/V by electrical ground checkout equipment. This blanket replaces the OC/V portion of the SV TRANSPORTATION BLANKETS (Item 29.1) after mating of the SV to the Agena booster. The blanket is manually installed, connected to umbilical boom fittings for electrical and cooling air supply, and remains in place during the entire period preceding SV lift-off. A tear-open zipper and pull-away lanyard ensures quick blanket release and removal prior to launch.																		
③Note: Quantity is one unit per vehicle																		
62SD340 REV. E																		



TOP VIEW



SIDE VIEW

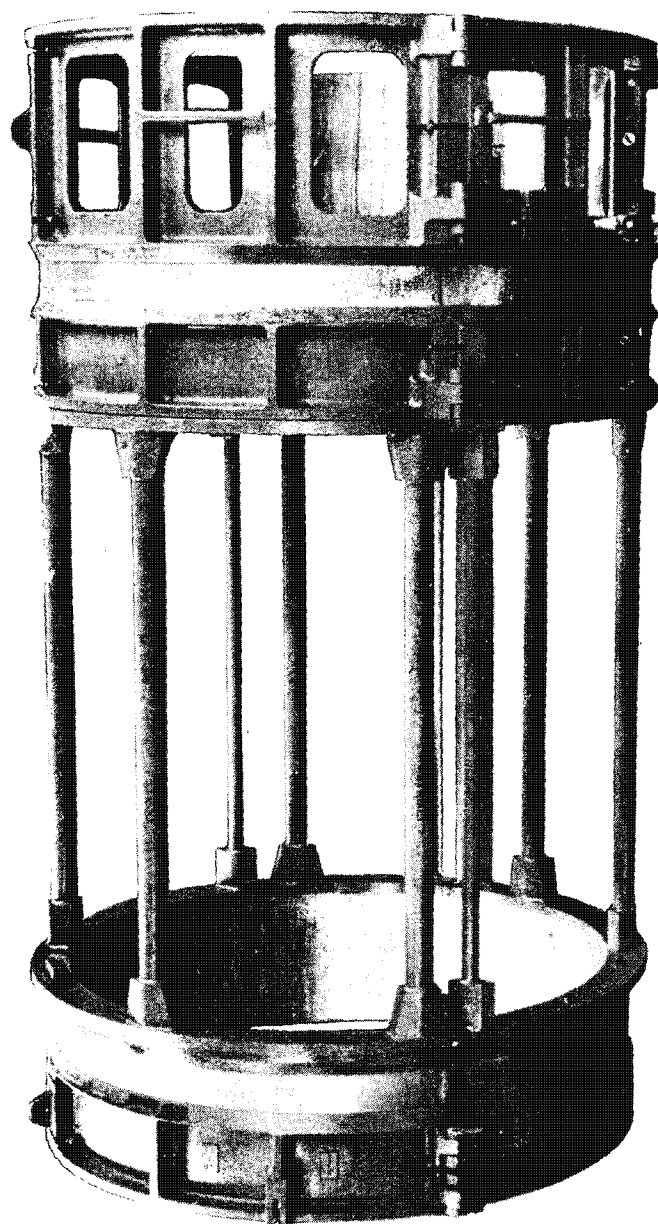


END VIEW

ART698-21

END ITEM NO. 9
OC/V INTERNAL COOLING DISCONNECT

AEROSPACE GROUND EQUIPMENT LIST													DATE 7 NOVEMBER 1966		LIST NO. 62SD340	
MISSILE AND SPACE DIVISION													CONTRACT NO. AF 04(695) -580		REVISION E	
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART /DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS.	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED DATE	(15) FIRST AVAILABLE DATE	(18) BASIS OF USE
9	-	111C4185G1 SVS 4213 A	DISCONNECT, ORBITAL CONTROL VEHICLE INTERNAL COOLING	-	1	2,508	2,508	SSD	NON STD	CFE	-	UNCLASS	12	-	12-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE																
The OC/V INTERNAL COOLING DISCONNECT is an insulated flexible hose. One end of the hose is terminated in a coupling which mates with the 3-inch cooling air coupling on the umbilical boom, while the other end is terminated in a quick-disconnect coupling which mates with the OC/V cooling air inlet. The quick-disconnect is equipped with a lanyard attachment fitting.																
The hose is of sufficient capacity to carry 10 lb/min of air at 1.0 -0.5 psig, and measures 10-feet long with a 3-inch inside diameter.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
An insulated hose is required at the launch pad to continuously connect the umbilical boom cooling air supply with the OC/V internal cooling air inlet whenever the OC/V is mated to the Agena. The hose can be quickly disconnected from the vehicle and retracted from the launch pad.																
TOTAL OPERATIONAL AGE															1	



END ITEM NO. 10
OC/V CRADLE

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DATE
7 NOVEMBER 1966

LIST NO
62SD340

MISSILE AND SPACE DIVISION

AEROSPACE GROUND EQUIPMENT LIST

CONTRACT NO
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REVISION
E

(1) ITEM SEQUENCE	(2) FUNCTIONAL INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) LAB COGNIZANT	(12) TYPE CLASS	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) REMARKS AND CLASS	(16) LEAD TIME (WEEKS)	(17) DATA APPROVED	(15) FIRST DATE AVAILABLE	(7) BASIS OF USE	(8) SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRAINING STATIONS DELIVER WITH SV TOTAL OPERATIONAL AGE
10	-	248E973 SVS 4214A	CRADLE, ORBITAL CONTROL VEHICLE	-	1	16,922		SSD	NON STD	CFE	-	UNCLASS	-	-	1-63		

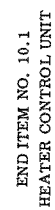
(4) NOMENCLATURE

The ORBITAL CONTROL VEHICLE CRADLE is constructed of aluminum castings and components and is composed of three basic sections: the forward cradle, the aft cradle, and a connecting cage. The three sections are bolted together; each section consists of a lower section casting or assembly and two upper quarter-section castings in order that the various portions of the sections may be ganged or moved separately. The forward cradle section includes the three basic castings: the upper quarter-section castings joined to each other by swing bolts and to the lower casting by hinges; two bearing pads for the mating sling main suspensors; two lugs for the mating sling stabilizing cables; two fittings for the OC/V carriage tie-rods; a horizontal universal sling fitting; and a circumferential bearing surface. The aft cradle section includes the three basic castings: the upper quarter section castings joined to each other by swing bolts and to the lower casting by hinges; four clevises for the transport tie-down ring tie-rods; a horizontal universal sling fitting; and a circumferential bearing surface. The connecting cage consists of two 3-segment rings joined by eight bars; the upper quarter-segments are joined to each other by swing bolts and the lower segments by removable hinges. The inside surface of the cradle is lined with protective material and cradle adjustments are made with common hand tools.

The cradle measures 121 inches long, is 71 inches in diameter, and weighs approximately 1500 pounds.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A cradle is required to support the OC/V during handling, alignment, assembly, and checkout, and to support the SV during mating with the Agena. The cradle is normally borne on the OC/V ASSEMBLY CARRIAGE (Item 11); it is either rigidly mated to the carriage or it may have 360° roll freedom on the carriage rollers. The cradle is so constructed as to provide access for the installation of the OC/V batteries. For mating to the Agena, the cradle is mated with the SV VERTICAL TRANSPORT TIE-DOWN RING (Item 28) and lifted by the SV MATING SLING (Item 27). The cradle may be moved in a horizontal position by the use of the UNIVERSAL SLING (Item 31). The cradle also has an interface relationship with the HEATER CONTROL UNIT (Item 10.1), the SV TRANSPORTER (Item 29), and the SV TRANSPORTATION BLANKET (Item 29.1).

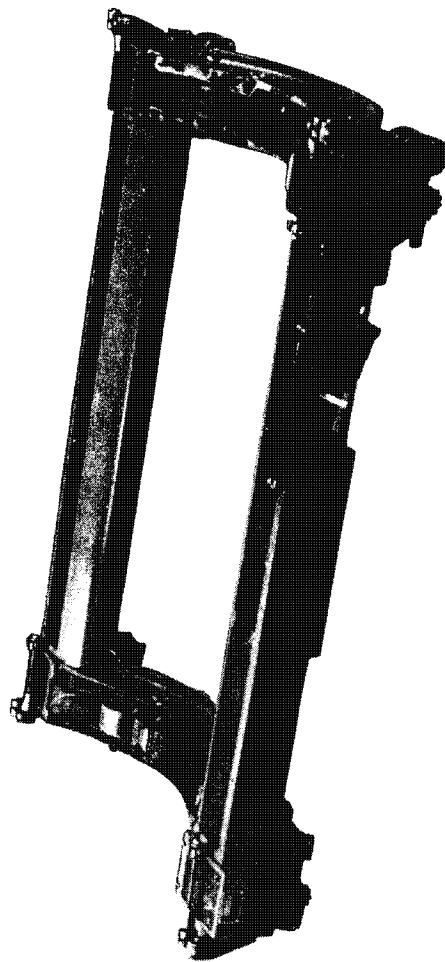


GENERAL ELECTRIC										AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966		LISTING 62SD340	
MISSILE AND SPACE DIVISION										CONTRACT NO. AF 04(695)-580										REVISION E			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)					
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	PROPOSED SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE	BASIS OF USE							
10.1	-	255E302 SVS 4473A	CONTROL UNIT, HEATER	-	1	3,828	7,656	SSD	NON STD	CFE	-	UNCLASS	12	-	4-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV							
(4) NOMENCLATURE																							
The HEATER CONTROL UNIT is a metal control/junction box containing a temperature meter, a series of pointer knobs, indicator lamps, and rotary and toggle switches. Connector fittings are side-mounted to the unit to afford ease of connection to various input and output cable assemblies. The outer enclosure of the unit contains a clamp support fixture for attachment to the horizontal bars of the ORBITAL CONTROL VEHICLE CRADLE (Item 10). Relays, resistors, capacitors, and transformers are internally mounted.																							
The unit measures 15 inches wide, 15 inches deep, 30 inches high, and weighs approximately 57 pounds.																							
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																							
A control unit is required to supply thermostatically controlled standby heater power to the two axis reference system (TARS) gyros, and to maintain the gyro temperature at 155 (+ 10) degrees F. The unit is also required to serve as a junction box for either an a-c or d-c power supply to the SATELLITE VEHICLE TRANSPORTATION BLANKETS (Item 29.1). The unit provides continuous control and monitoring functions at the MAB, and during transport of the SV to the launch area. At a facility location, the control unit operates from an a-c power source; during actual transport, it operates from the d-c power source provided by the SV TRANSPORTER, (Item 29).																							
TOTAL OPERATIONAL AGE																							

AEROSPACE GROUND EQUIPMENT LIST													LIST NO	62SD340		
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT													DATE	1 APRIL 1964		
GENERAL ELECTRIC													CONTRACT NO.	AFO4(695)-76		
													REVISION	D		
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(8)	
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS.	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE
10.2	-		255E790 G1 SVS 5026	NON-MAGNETIC CRADLE, SATELLITE VEHICLE	-	1	17,923	35,846	SSD	NON STD	CFE	-	UNCLASS	12	-	11-63
(4) NOMENCLATURE																
The SATELLITE VEHICLE NON-MAGNETIC CRADLE is an assembly consisting of two segmented rings, which are connected by longitudinal tubes. The cradle is approximately 7 feet long, 5 1/2 feet in diameter, and weighs 500 pounds. The forward ring consists of four 90° aluminum segments, with accommodation for tie-downs, lifting plates, magnetometer fairings and antenna fairings. The rear ring consists of four stainless steel segments with accommodation for carriage tie-downs, magnetometer alignment pins and umbilical disconnect. The aluminum connecting tubes are bolted to the forward and aft rings. The inside surface of both rings is lined with protective material.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
A non-magnetic cradle is required to support the SV during transport to and from the Magnetometer Checkout Building and during the compensation and calibration of the magnetometer. The cradle is normally borne on the OCV ASSEMBLY CARRIAGE (Item 11) which permits the cradle to be rigidly secured or rotated 360°. The cradle is used in conjunction with the SV INSTALLATION SLING (Item 30) for lifting the SV and used with the SV NON-MAGNETIC SUPPORT STAND (Item 43) during compensation and calibration of the magnetometer. The non-magnetic cradle also can be used for vertical erection and mating to the Agena when used in conjunction with the SV VERTICAL TRANSPORT TIE-DOWN RING (Item 28) and the SV MATING SLING (Item 27).																
SPECIAL TEST EQUIPMENT:																
ENGINEERING PROTOTYPE AND																
SYSTEM COMPATIBILITY																
TESTS																
Q. C. ACCEPTANCE																
SYSTEM CHECKOUT																
STRUCTURE LAB																
Q. C. OPER. ASSURANCE																
OPERATIONAL AGE:																
MISSILE ASSEMBLY BUILDING 2																
VEHICLE SUPPORT BUILDING																
LAUNCH PAD																
LAUNCH SERVICE BUILDING																
LAUNCH OPERATIONS BLDG. -																
AF TRACKING STATIONS																
DELIVER WITH SV																

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A non-magnetic cradle is required to support the SV during transport to and from the Magnetometer Checkout Building and during the compensation and calibration of the magnetometer. The cradle is normally borne on the OCV ASSEMBLY CARRIAGE (item 11) which permits the cradle to be rigidly secured or rotated 360°. The cradle is used in conjunction with the SV INSTALLATION SLING (item 30) for lifting the SV and used with the SV NON-MAGNETIC SUPPORT STAND (item 43) during compensation and calibration of the magnetometer. The non-magnetic cradle also can be used for vertical erection and mating to the Agena when used in conjunction with the SV VERTICAL TRANSPORT TIE-DOWN RING (item 28) and the SV MATING SLING (item 27).



END ITEM NO. 11
OC/V ASSEMBLY CARRIAGE

GENERAL ELECTRIC

MISSILE AND SPACE DIVISION

AEROSPACE GROUND EQUIPMENT LIST

DATE 7 NOVEMBER 1966
CONTRACT NO. AF 04(695)-580
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REVISION E

(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT	(12) TYPE CLASS	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) REMARKS AND CLASS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(7) BASIS OF USE	(8)
11	-	241R753 SVS 4215	CARRIAGE, ORBITAL CONTROL VEHICLE ASSEMBLY	-	1	13,619	13,619	SSD	NON STD	CFE	-	UNCLASS	16	-	12-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TFST Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV TOTAL OPERATIONAL AGE	1

(4) NOMENCLATURE

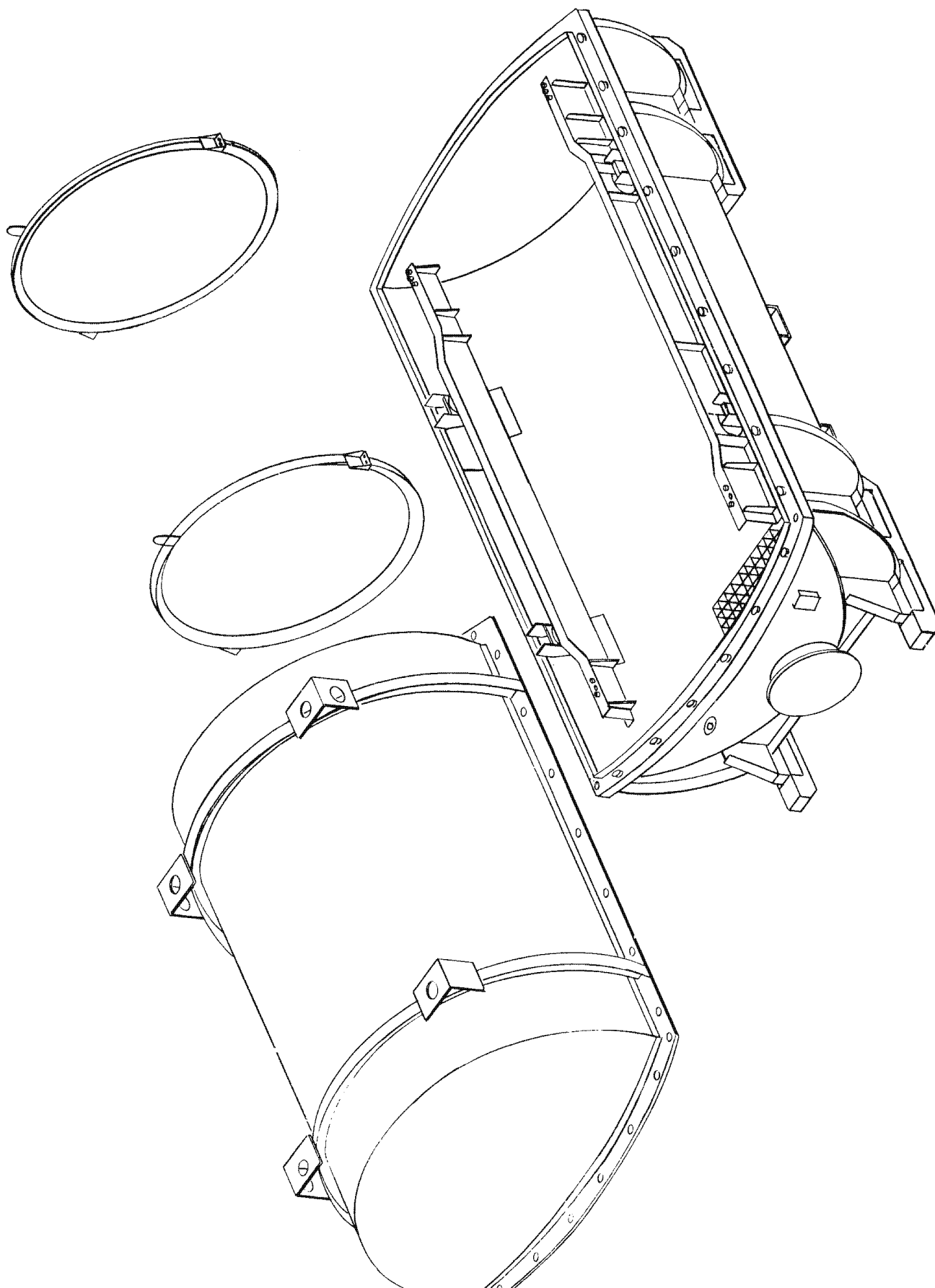
The ORBITAL CONTROL VEHICLE ASSEMBLY CARRIAGE is an assemblage of aluminum casting, shapes, and components in the form of a rectangular frame consisting of two saddle-shaped cross members and two connecting side panels. Each cross member includes two sets of rail rollers with integral rail clamps attached to the ends of the cross members by means of air springs, two tie-rods for attaching the carriage to the OC/V cradle, two retractable rollers on which one of the cradle bearing surfaces may roll, a hydraulically driven pad for raising the cradle off the retractable rollers, two gas pressure vessels, and all associated hydraulic and pneumatic tubing. One of the connecting side panels contains a high-pressure gas storage cylinder and a hydraulic pump which drives the two lift pads. The other connecting side panel also contains a high-pressure gas storage cylinder, as well as the air spring suspension system control valves, gauges, and inlet. The pair of air springs on each cross member is controlled separately from the pair on the other cross member. Both hydraulic pads are actuated simultaneously. The cross members are lined with protective material on the bearing surface. All functions of the carriage are manually controlled and adjusted with common hand tools.

The carriage measures 73 inches long, 73 inches wide, 27 inches high, and weighs approximately 1000 pounds.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :

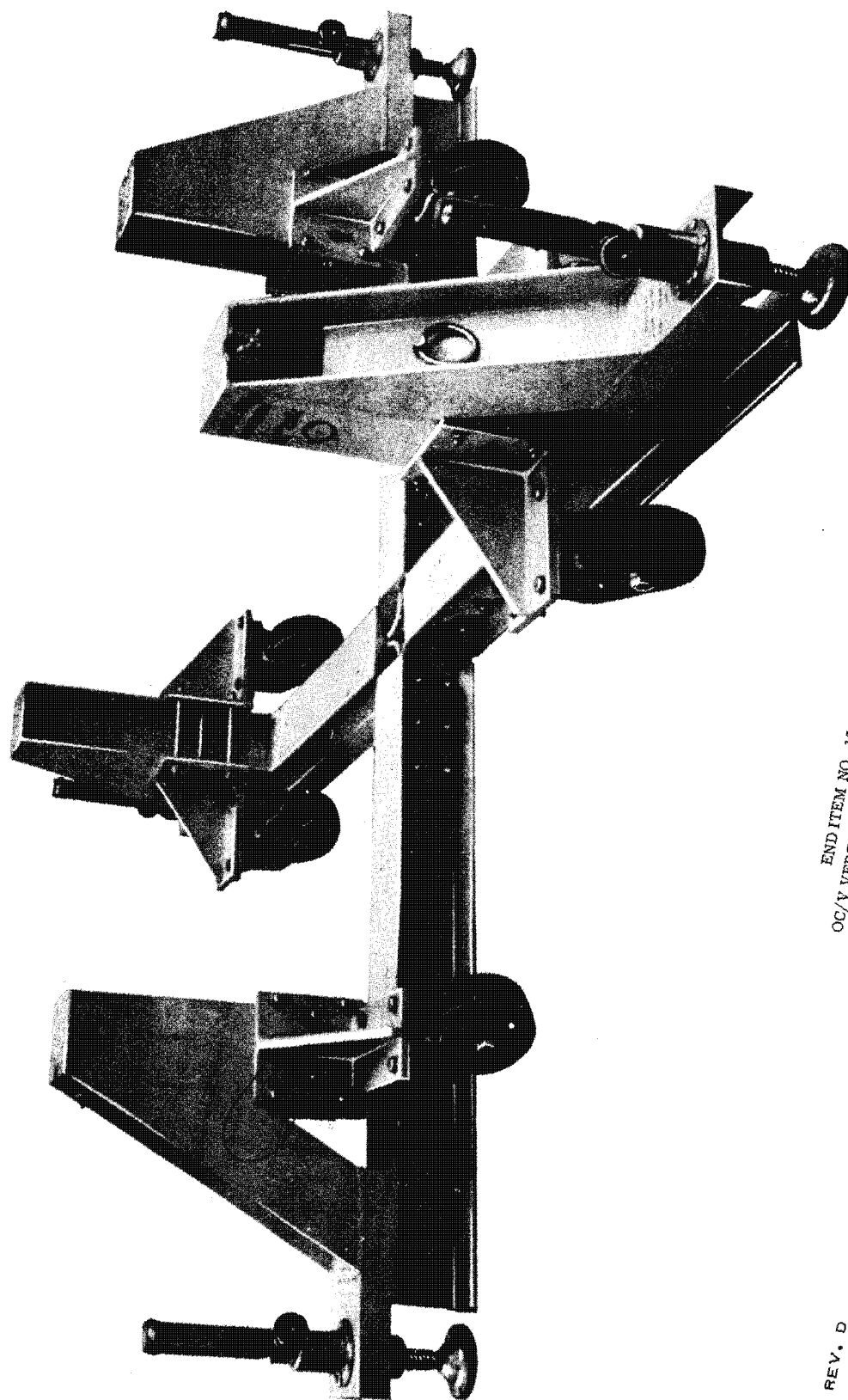
A carriage is required to restrain and position the OC/V CRADLE (Item 10) or the SV Non-Magnetic Cradle (Item 10.2) containing the OC/V during handling, checkout, assembly, and transportation on the SV WORK AND ASSEMBLY TRUCK (Item 26) and the S/V TRANSPORTER (Item 29). The carriage is compatible with the 60-inch rail sets on Items 26 and 29, and it mates with Item 10 or 10.2. Either cradle rests on the carriage cross members and is secured to the carriage by tie-rods, or rests on the retractable rollers and is capable of 360° rotation. The carriage is supported on air springs which can be partially deflated to make minor corrections for section alignment and mating. The integral high-pressure nitrogen supply for the air springs is directly charged from the PORTABLE GAS SERVICING UNIT (Item 52). The cradle and OC/V are unloaded from the bed of the carriage by hydraulic lift pads so that the roll-axis rollers can be extended or retracted.

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LIST NO 62SD340						
GENERAL ELECTRIC										CONTRACT NO. AF 04(695)-580	REVISION E						
MISSILE AND SPACE DIVISION																	
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/OWC NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) CONCERNANT LAB	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRST DATE AVAILABLE	(7) BASIS OF USE	(8)
12	-	115C7528 SVS 5012	FAIRING SET, AEROSPACE GROUND EQUIPMENT	-	1 pr	1,100		SSD	NON STD	CFE	-	UNCLASS	10	-	9-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE The AEROSPACE GROUND EQUIPMENT FAIRING SET consists of two separate sets of protective covers similar in design configuration to the antenna and magnetometer flight fairings of the OC/V. A handling fairing set is constructed of aluminum and consists of two components which bolt fasten at the antenna and magnetometer locations on the OC/V skin. These are undersized to allow close tolerance fit when the OC/V is mounted to its cradle during all handling and transport operations.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A set of AGE fairings is required to protect the antenna and magnetometer during handling and transporting, at the factory. This set of fairings is used during handling and transporting operations when the OC/V is restrained in the OC/V CRADLE (Item 10).																	
TOTAL OPERATIONAL AGE																	
0																	



END ITEM NO. 14
OC/V SHIPPING CONTAINER

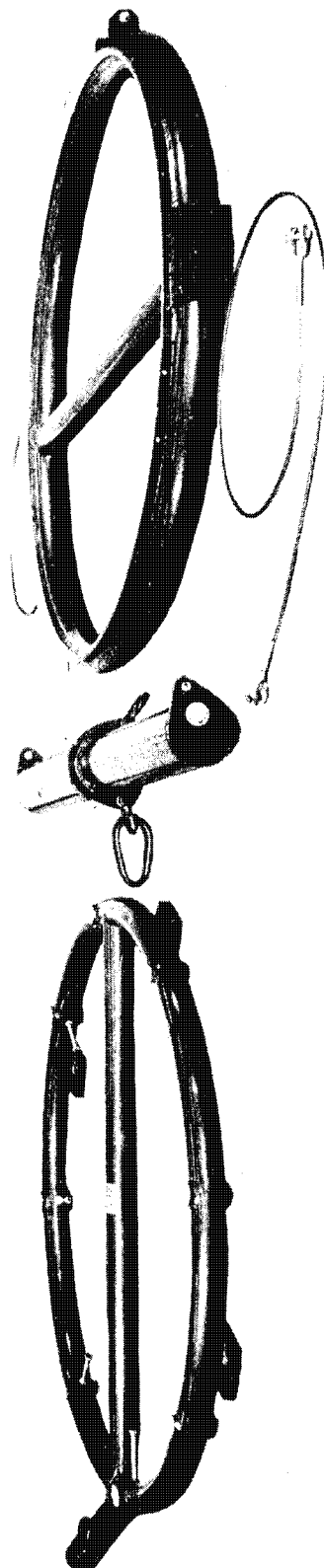
AEROSPACE GROUND EQUIPMENT LIST													DATE	1 APRIL 1964	LIST NO	62SD340								
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT													CONTRACT NO.		REVISION									
GENERAL ELECTRIC													AFO4(695)-76		D									
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(17)	(15)	(7)	(8)								
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	LAB COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE FIRST AVAILABLE	BASIS OF USE							
14	-	254E671G1 SVS 4316		SHIPPING CONTAINER, ORBITAL CONTROL VEHICLE	-	1	11,168	33,504	SSD	NON STD	CFE	-	UNCLASS	18	-	3-63		SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV						
(4) NOMENCLATURE																								
The ORBITAL CONTROL VEHICLE SHIPPING CONTAINER is a cylindrical, top-opening, reusable metal container. The container top includes stacking brackets, humidity indicator, and cam bolt slots. The container bottom includes skids, fork lift provisions, vacuum and pressure relief valves, internal desiccant receptacle and access plate, cam bolts, passive heat of fusion radiator, and shock-isolated mounting brackets. The OC/V is carried in forward and aft mounting rings which are attached to the mounting brackets by support brackets. The rings include sling fittings. The container is, in large part, lined with insulating material.																								
The container measures 200 inches long, 83 inches wide, 85 inches high, and weighs approximately 2500 pounds unloaded.																								
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																								
A container is required to protect the OC/V during shipping and storage. The container is reusable and capable of passive temperature and humidity control. The UNIVERSAL SLING (Item 31) is used to remove the container top and then remove the OC/V from the container by directly attaching to the container OC/V mounting rings. The container protects the OC/V (less batteries, propellant, shaped charges and GFE) from all hazards attendant to limited shipping by air and/or truck.																								
TOTAL OPERATIONAL AGE																					3			



END ITEM NO. 15
OC/V VERTICAL SUPPORT STAND

62SD340 REV. D

AEROSPACE GROUND EQUIPMENT LIST														
GENERAL ELECTRIC			MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT											
DATE 1 APRIL 1964		LIST NO 62SD340		CONTRACT NO AF04(695)-76		REVISION D								
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(16)	(17)	(18)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/OWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED DATE AFSC
15	-	24SE923G1 SVS 4317	STAND, ORBITAL CON- TROL VEHICLE VERTICAL SUPPORT	-	1	2,212	2,212	SSD	NON STD	CFE	-	UNCLASS	10	11-63
(4) NOMENCLATURE														
The ORBITAL CONTROL VEHICLE VERTICAL SUPPORT STAND is a bolted assemblage of aluminum shapes and components. The base, which normally rests directly on the work floor, is a cross frame of "I" beam sections. There is a braced vertical support on each leg of the frame termination in teflon pads with wing-nut bolts so spaced as to engage and carry the OC/V positioning sling aft ring. Each support carries two 2-position free-castering wheels for manhandling. On each vertical support brace is a hoisting ring. At the base of each vertical support is a member which extends beyond the base and supports a manual leveling jack.														
The stand measures 72 inches long, 72 inches wide, 24 inches high; it weighs approximately 400 pounds, and has a design load of approximately 3400 pounds.														
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:														
A stand is required to support the OC/V in a vertical position for installation or removal of the vehicle GFE. The stand is of low construction to provide maximum headroom for hoist operation. Manual leveling provisions are included since gravity is the sole restraining force on the OC/V. The stand mates with the aft support ring assembly of the OC/V VERTICAL POSITIONING SLING (Item 16) which places the OC/V on the stand.														
BASIS OF USE														
SPECIAL TEST EQUIPMENT:														
ENGINEERING PROTOTYPE AND *														
SYSTEM COMPATIBILITY TESTS														
Q. C. ACCEPTANCE *														
SYSTEM CHECKOUT														
STRUCTURE LAB *														
Q.C. OPER. ASSURANCE														
OPERATIONAL AGE:														
MISSILE ASSEMBLY BUILDING 1														
VEHICLE SUPPORT BUILDING														
LAUNCH PAD														
LAUNCH SERVICE BUILDING														
LAUNCH OPERATIONS BLDG. -														
AF TRACKING STATIONS														
DELIVER WITH SV														

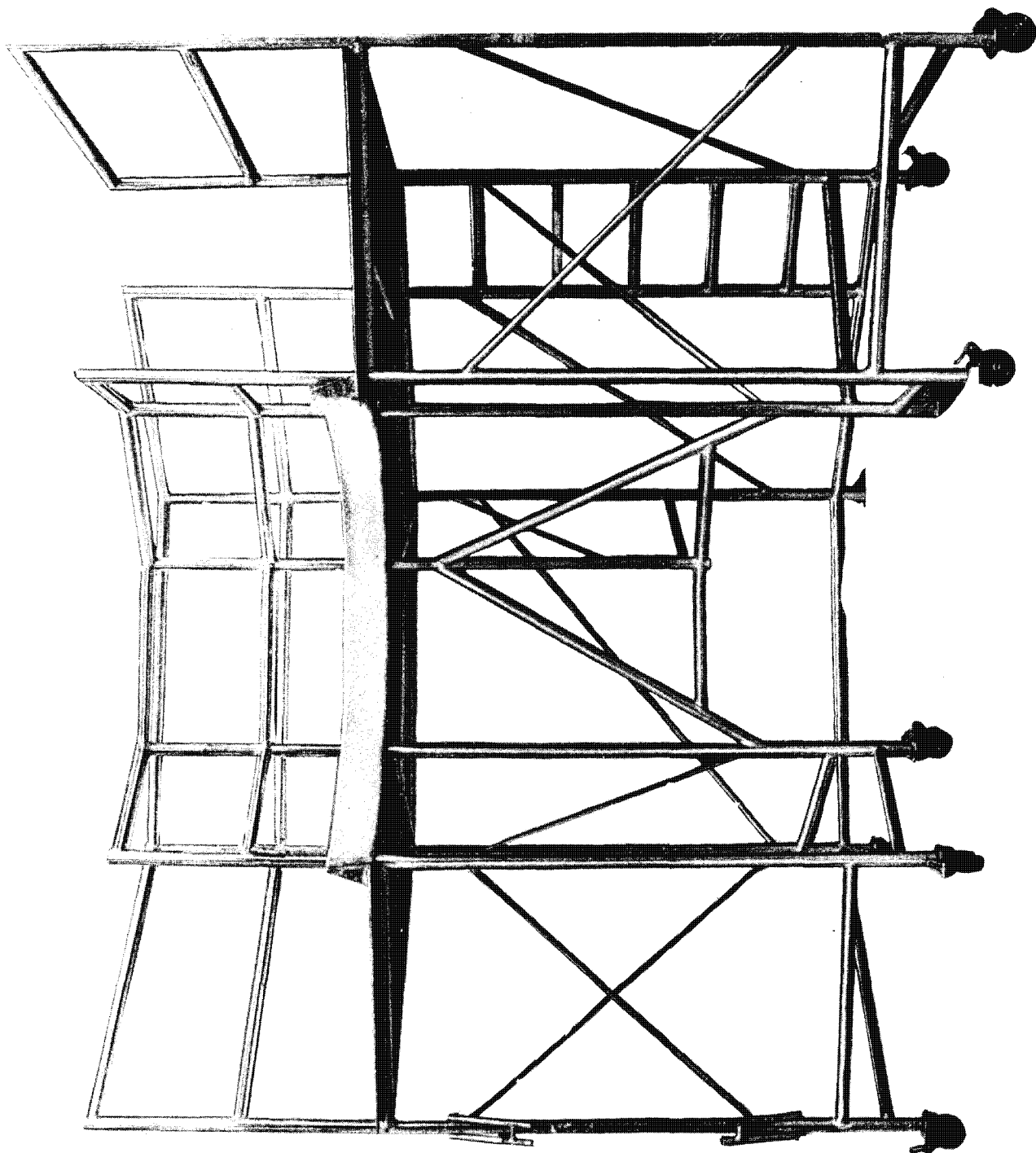


END ITEM NO. 16
OC/V VERTICAL POSITIONING SLING

AEROSPACE GROUND EQUIPMENT LIST																																			
MISSILE AND SPACE DIVISION																																			
GENERAL ELECTRIC																																			
DATE 7 NOVEMBER 1966																																			
LIST NO. 62SD340																																			
CONTRACT NO. AF 04(695)-580																																			
REVISION E																																			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)																		
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE FIRST AVAILABLE	BASIS OF USE																		
16	-		248E9-4 SVS 4318	SLING, ORBITAL CONTROL VEHICLE VERTICAL POSITIONING	-	1	7,695	15,390	SSD	NON STD	CFE	-	UNCLASS	18	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV																		
(4) NOMENCLATURE The ORBITAL CONTROL VEHICLE VERTICAL POSITIONING SLING consists of forward and aft support rings, a lateral spreader bar, wire ropes, guard assembly, and a two-ton hoist. The tubular aft support ring includes a tubular brace, eight axial bolt pads, a single sling fitting, and four pads which mate with the OC/V vertical support stand. The forward ring includes a bolt flange inserted in a circumferential split in the ring, a tubular brace, and two trunnion type sling fittings. The guard is a tray-like component which attaches to fittings at the top of the two support rings and protects the OC/V from injury by the aft sling link. The lateral spreader bar center link is connected to the aft ring by a wire rope and electric hoist assembly which provides for considerable lengthening of the aft sling leg. The spreader bar outer links are connected to the forward ring trunnion fittings by two fixed-length wire rope assemblies. In the vertical position the sling has a total length of 315 inches, measures 68 inches in diameter, and weighs approximately 425 pounds. The sling has a design load of approximately 3400 pounds. It can be stowed in a space measuring 160 inches long, 75 inches wide, and 15 inches high.																																			
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A sling is required to lift the complete OC/V from the OC/V CRADLE and CARRIAGE (Items 10 and 11) in the horizontal position, rotate the OC/V to the vertical position, and set it down on the OC/V VERTICAL SUPPORT STAND (Item 15). The sling is designed to rotate the OC/V by altering the sling geometry. Rigid attachment of the sling to the OC/V is required.																																			
TOTAL OPERATIONAL AGE																																			
2																																			

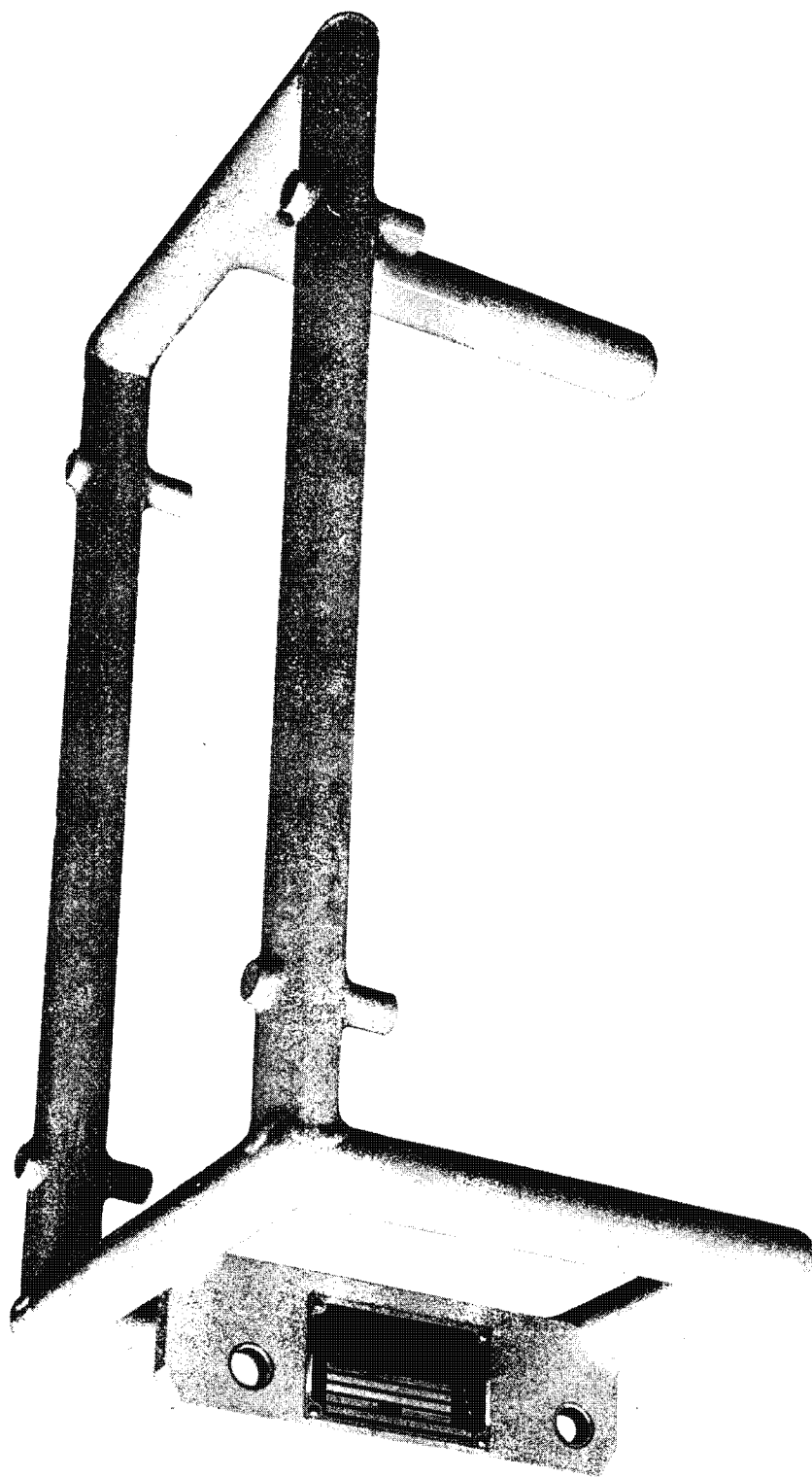
62SD340 REV. E

ITEM SEQUENCE NO.16
PAGE NO.45



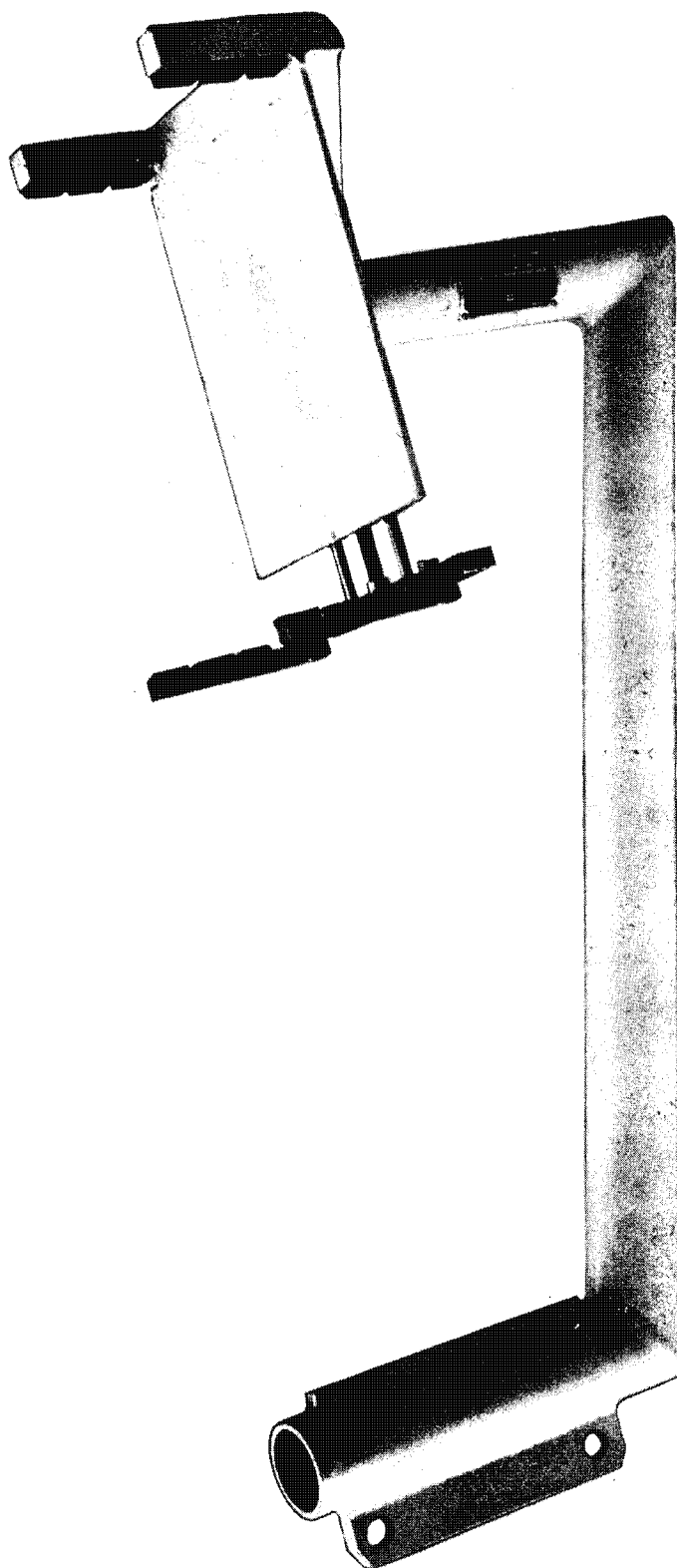
END ITEM NO. 17
PERSONNEL WORK STAND

AEROSPACE GROUND EQUIPMENT LIST													DATE 7 NOVEMBER 1966	LIST NO 62SD340		
MISSILE AND SPACE DIVISION													CONTRACT NO AF 04(695)-580	REVISION E		
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB. AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(8) BASIS OF USE
17	-	894D683 SVS 4319A	STAND, PERSONNEL WORK	-	PR	1,817	3,634	SSD	STD	CFE	-	UNCLASS	8	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE The PERSONNEL WORK STAND is a standard trestle type stand modified by the addition of bolted extension platforms. Access to the platform is by integral steps at each end of the stand. The stand is castered for manhandling and is equipped with floor locks. The stand measures 120 inches long, 97 inches wide, and 123 inches high.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: Personnel work stands are required to provide all-around access to the OC/V when it is mounted on the OC/V VERTICAL SUPPORT STAND (Item 15). The stand permits personnel to remove and replace the forward section of the OC/V and to place the GFE in the aft section.																
TOTAL OPERATIONAL AGE															2	



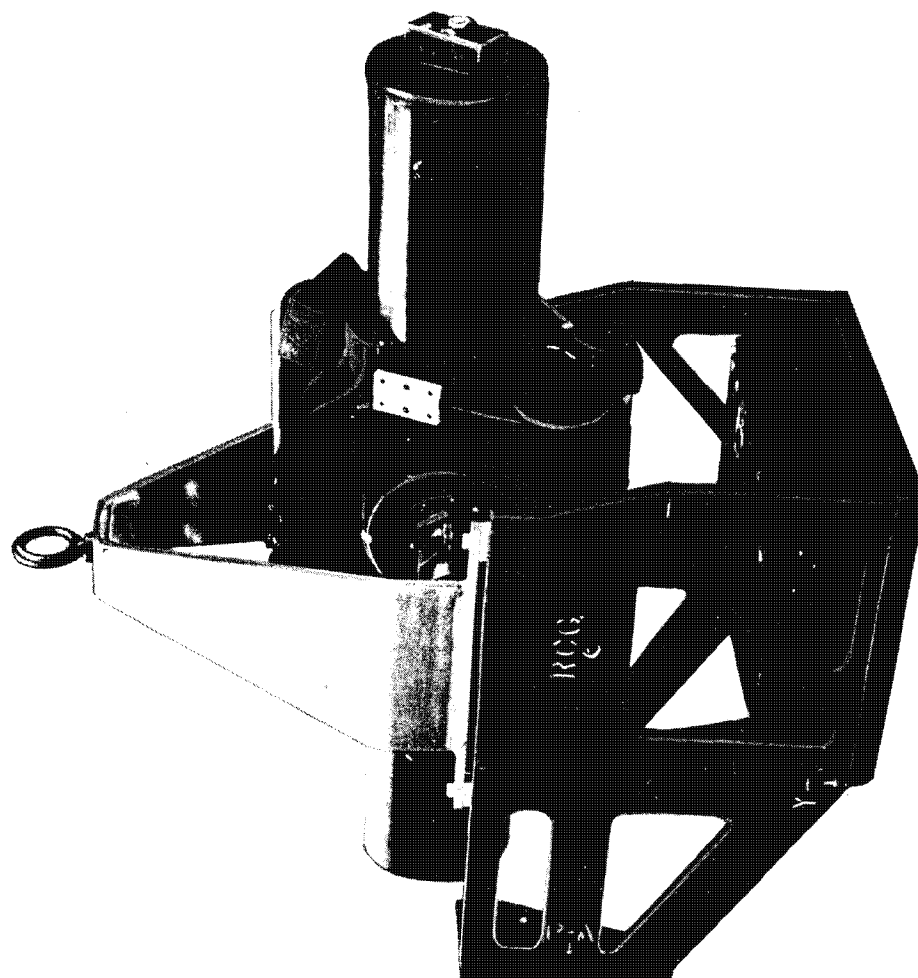
END ITEM NO. 18
BATTERY HANDLING FIXTURE

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LIST NO 62SD340					
MISSILE AND SPACE DIVISION										CONTRACT NO AF 04(695)-580	REVISION E					
GENERAL ELECTRIC																
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) REMARKS AND CLASS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED DATE APPROVED	(15) FIRST AVAILABLE DATE	(18) BASIS OF USE
18	-	248E950G1 SVS 4284A	FIXTURE, BATTERY HANDLING	-	1	211	211	SSD	NON STD	CFE	-	UNCLASS	8	-	12-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE The BATTERY HANDLING FIXTURE is a tubular aluminum weldment which cradles a single SV battery on three sides. The fixture includes an integral sling fitting and four battery stand-off studs to which the battery is bolted. The fixture measures 24 inches high, 12 inches wide, 11 inches deep; it weighs approximately 25 pounds, and is capable of handling loads up to 125 pounds.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A fixture is required to support a single SV test and prime battery during handling and testing. The fixture, with battery, can be lifted with the UNIVERSAL SLING (Item 31) and is stable while resting in either the horizontal or vertical position on a level plane surface. The fixture holds the battery in such a position that it can be picked up by the BATTERY INSTALLATION FIXTURE (Item 18.1).																
TOTAL OPERATIONAL AGE															1	



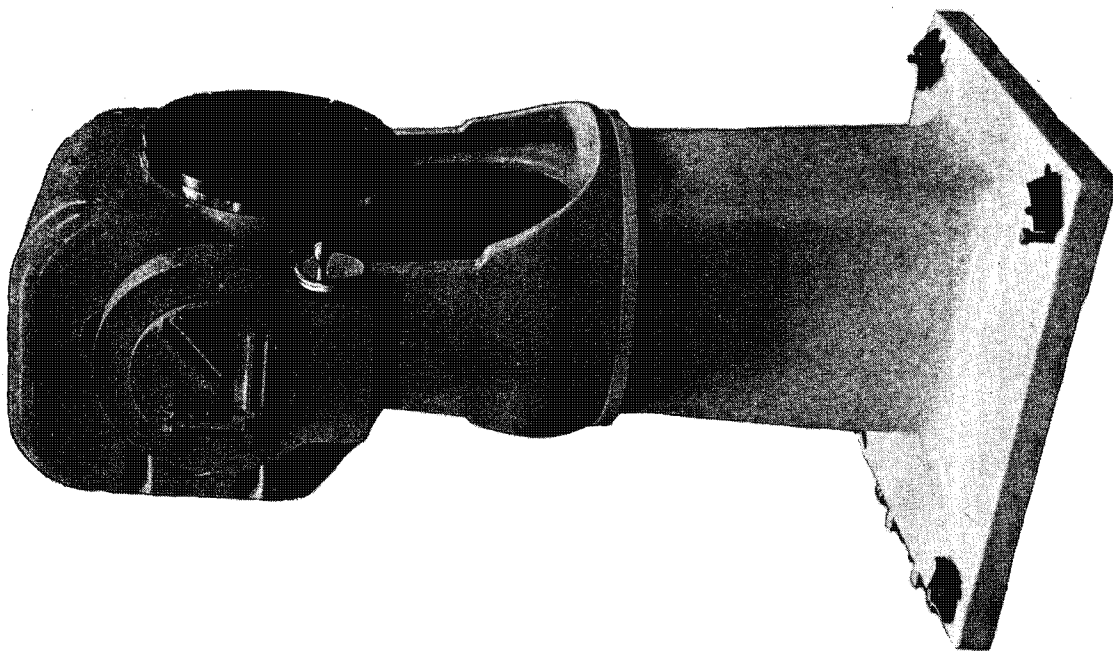
END ITEM NO. 18.1
BATTERY INSTALLATION FIXTURE

AEROSPACE GROUND EQUIPMENT LIST													DATE 7 NOVEMBER 1966	LIST NO 62SD340			
GENERAL ELECTRIC													CONTRACT NO. AF 04(695)-580	REVISION E			
MISSILE AND SPACE DIVISION																	
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT	(12) TYPE CLAS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE AFSC APPROVED	(15) FIRST AVAILABLE DATE	(7) BASIS OF USE	(8) SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
1b.1		111C4237 SNS 4217A	FIXTURE, BATTERY INSTALLATION	-	1	990	990	SSD	NON STD	CFE	-	UNCLASS	8	-	12-82		
(4) NOMENCLATURE																	
The BATTERY INSTALLATION FIXTURE is a weldment of aluminum shapes and parts. The fixture is a "C"-shaped structure with sling pick-ups on the upper arm and an integral vise-type battery pick-up fixture on the lower arm. The pick-up fixture consists of a flat plate to which are attached, at right angles to the plate, two pair of jaws; one pair of jaws is fixed, and one pair is movable. The fixture is clamped onto the battery by common hand tools.																	
The fixture measures 45 inches high, 11 inches wide, 26 inches deep, and weighs approximately 30 pounds.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
A fixture is required to hold the 240 amp-hr batteries in place for installation in the OC/V. The fixture is lifted by the UNIVERSAL SLING (Item 31), and it is fully compatible with the BATTERY HANDLING FIXTURE (Item 18), permitting the battery to be engaged before it is detached from Item 18. The fixture is capable of holding individual batteries directly to the mounting provision without interfering with the OC/V CRADLE (Item 10).																	
TOTAL OPERATIONAL AGE																	1



END ITEM NO. 19
INERTIAL PLATFORM FIXTURE

AEROSPACE GROUND EQUIPMENT LIST																				
GENERAL ELECTRIC			MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT																	
DATE 1 APRIL 1964		LIST NO 62SD340		CONTRACT NO AF04(695)-76		REVISION D														
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)			
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION FROM AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLAS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	REMARKS AND CLASS	LEAD TIME (WEEKS)	DATE APPROVED (MM/DD/YY)	FIRST AVAILABLE DATE	BASIS OF USE				
19	-	254E662G1,G2 SVS 4218	FIXTURE, INERTIAL PLATFORM	-	1	2,117	2,117	SSD	NON STD	CFE	-	UNCLASS	8	-	12-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE				
(4) NOMENCLATURE The INERTIAL PLATFORM FIXTURE is an accurately machined alignment of aluminum parts with bolts for attachment to the inertial platform and the inertial platform test table, and cable clamps for restraining the platform gimbal assembly. The fixture measures 12 inches deep, 14 inches wide, 16 inches high, and weighs approximately 22 pounds.																		OPERATIONAL AGE:		
																		MISSILE ASSEMBLY BUILDING 1		
																		VEHICLE SUPPORT BUILDING		
																		LAUNCH PAD		
																		LAUNCH SERVICE BUILDING		
																		LAUNCH OPERATIONS BLDG. -		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A fixture is required to rigidly support and accurately position the inertial platform on the INERTIAL PLATFORM TEST TABLE (item 20). The platform gimbal assembly can be oriented and fixed in position. The fixture also supports the rate gyro to the test table during secondary attitude control system testing.																		AF TRACKING STATIONS		
TOTAL OPERATIONAL AGE 1																				



END ITEM NO. 20
INERTIAL PLATFORM TEST TABLE

AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC				MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT													
DATE 1 APRIL 1964		LIST NO. 62SD340		CONTRACT NO. AF04(695)-76		REVISION D											
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(8)	(16)	(17)	(15)	(7)	(6)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART / DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS.	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE	BASIS OF USE	
20	-	111C4204C1 SVS 4219	TABLE, INERTIAL PLATFORM TEST	-	1	38,321	38,321	SSD	NON STD	CFE	-	UNCLASS	20	-	12-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV	
TOTAL OPERATIONAL AGE 1																	

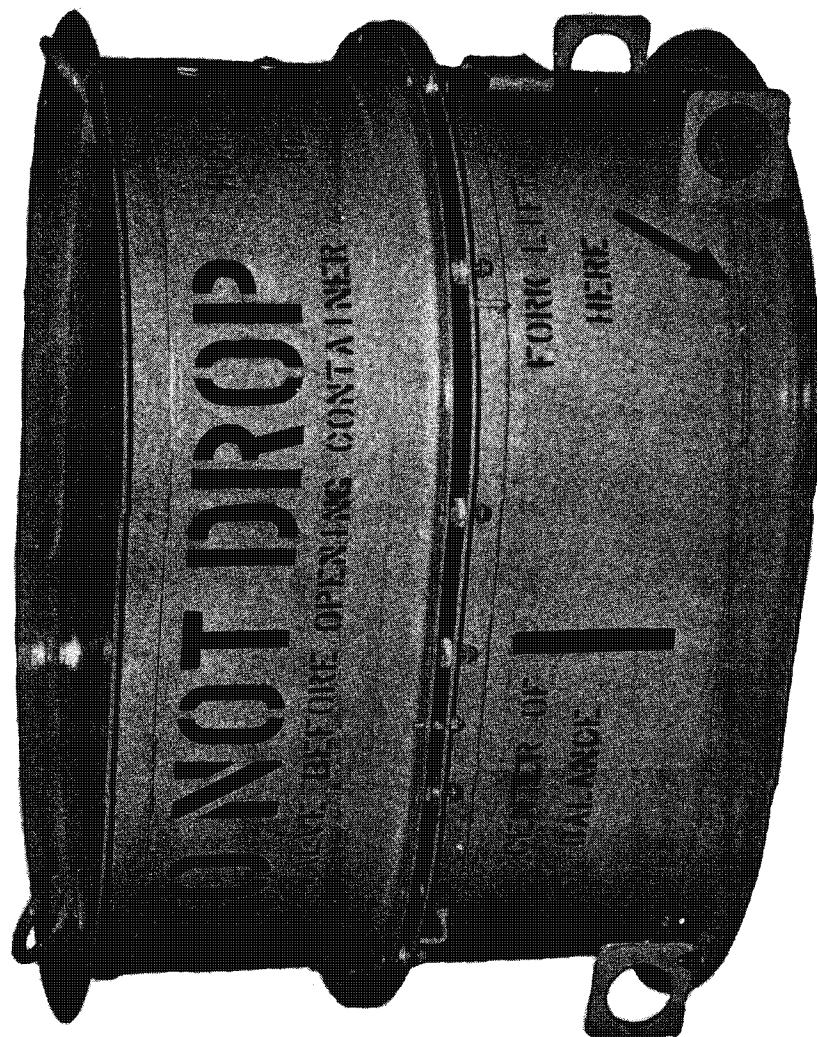
(4) NOMENCLATURE

The INERTIAL PLATFORM TEST TABLE consists of a massive pedestal and an adjustable drive head. The pedestal includes levels, minor azimuth adjusting provisions to bring the plane containing the table spin axis into alignment with true north, and provisions for maintaining the elevation of the drive head (the table spin axis) anywhere between +90 deg and -90 deg. The drive head is pivoted on the pedestal and contains a 14-inch spin table, drive motors, tachometer, and provisions for commutated information. Elevations can be determined to ± 10 sec of arc.

The test table measures 51 inches high, 25 inches wide, 27 inches deep, and weighs approximately 955 pounds. It is capable of handling loads up to 100 pounds at continuously variable speeds in either direction from 1.5 to 45,000 deg/hr.

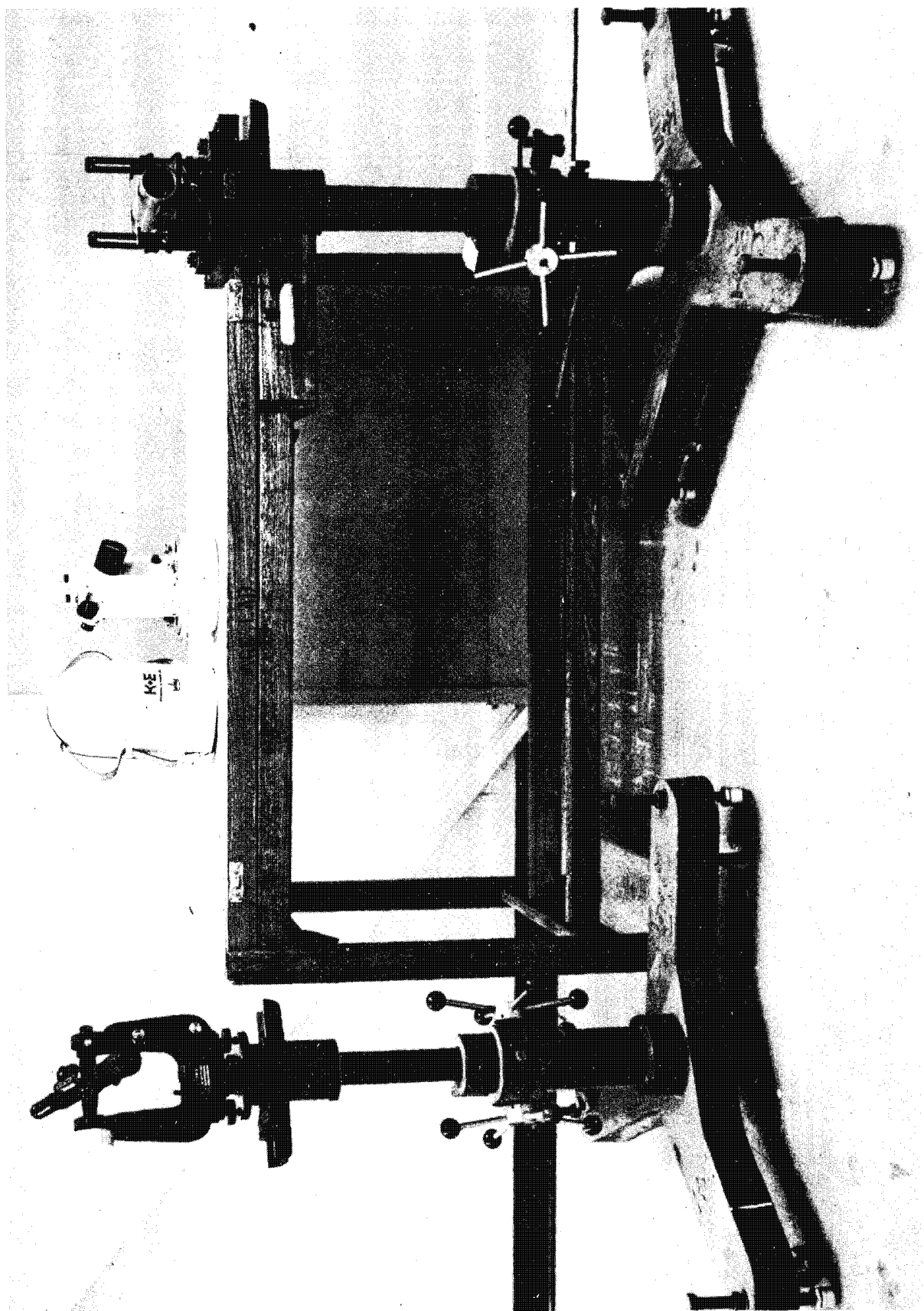
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A test table is required to determine inertial platform drift rates as well as to function as a servo table in stabilization subsystem closed loop tests. The INERTIAL PLATFORM FIXTURE (item 19) with platform, attaches to the test table and all associated electrical and electronic equipment is mounted in the STABILIZATION SUBSYSTEM TEST SET (item 80). Manual operation as a rate table, and automatic operation as a servo table are possible.



END ITEM NO. 21
INERTIAL PLATFORM SHIPPING CONTAINER

AEROSPACE GROUND EQUIPMENT LIST													DATE 7 NOVEMBER 1966	LISTING 62SD340		
GENERAL ELECTRIC													MISSILE AND SPACE DIVISION			
CONTRACT NO. AF 04(695) -580													REVISION E			
(1) ITEM SEQUENCE	(2) FUNCTIONAL INDEX NUMBER	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS.	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRST DATE AVAILABLE	(8) BASIS OF USE
21	-	254E672G2 SVS 4320	SHIPPING CONTAINER, INERTIAL PLATFORM	-	1	5,442	5,442	SSD	NON STD	CFE	-	UNCLASS	16	-	3-63	* SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE The INERTIAL PLATFORM SHIPPING CONTAINER is an oval shaped metal reusable container containing a suspension system to protect the Inertial Platform from shipping damage. The environment inside the container is controlled with a humidity and temperature control system. The container measures 44 inches long, 31 inches wide, 30 inches high, and weighs approximately 400 pounds unloaded.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A container is required to ship the Inertial Platform from the factory to the MAB and must be capable of maintaining established internal environmental control of humidity and temperature.																
TOTAL OPERATIONAL AGE															1	



END ITEM NO. 22
INERTIAL PLATFORM ALIGNMENT EQUIPMENT

AEROSPACE GROUND EQUIPMENT LIST																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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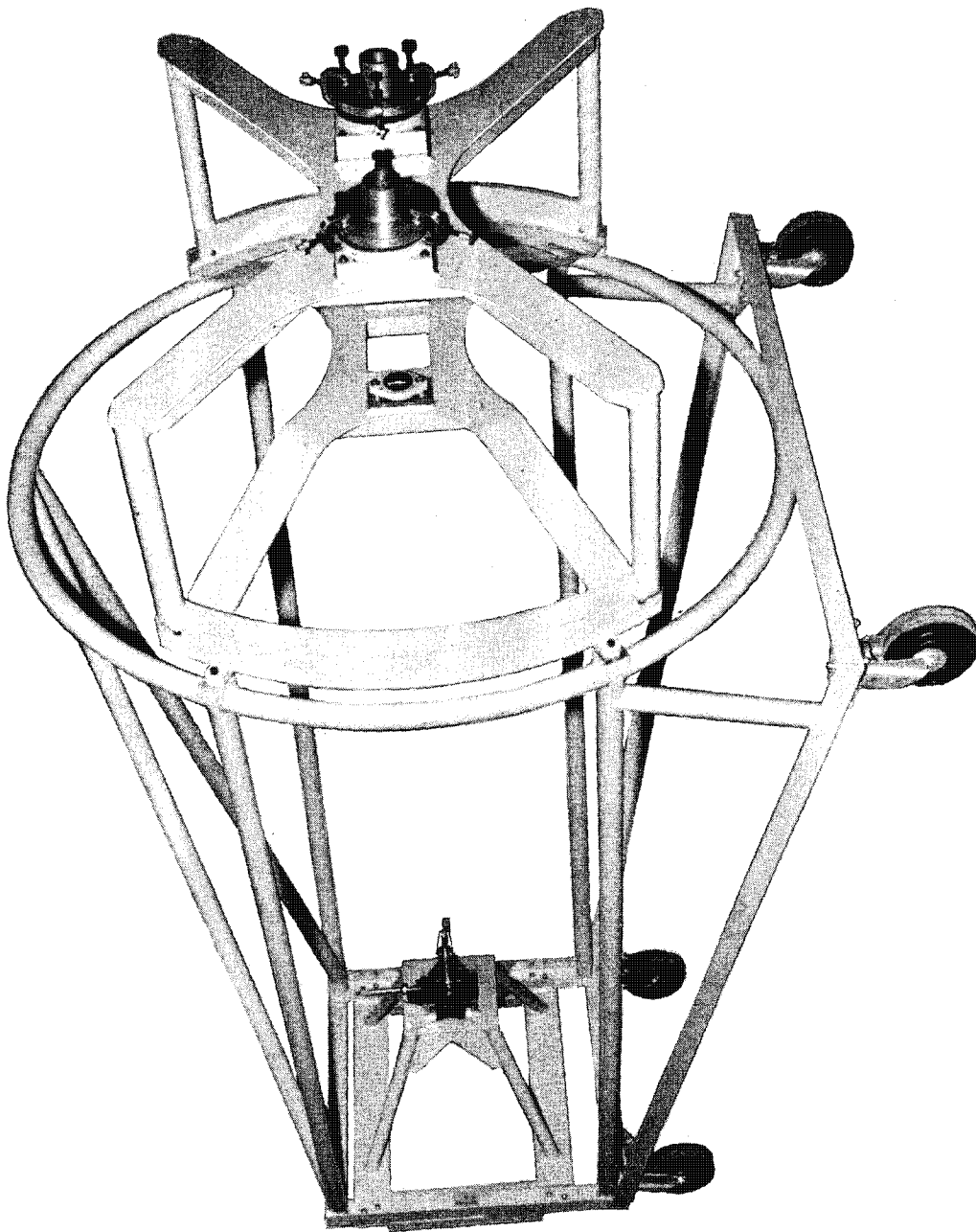
AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION		DATE	62SD340				
										CONTRACT NO.		AF04(695)-580	REVISION	E			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	PROPOSED SUPPLY	SOURCE CODE	CLASS AND REMARKS	LEAD TIME	DATE APPROVED	DATE FIRST AVAILABLE	BASIS OF USE	
23.3		115C7461G1	IR Sensor		1				NON	CFE		Unclass				SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE	
		SYS 5188	Simulator					SSD	STD							OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV	
																TOTAL OPERATIONAL AGE	
																1	

(4) NOMENCLATURE

The IR Sensor Simulator consists of two heater assemblies, two transformers, and a securing strap. Each heater assembly consists of a molded silicone rubber heater pad with a cable to enable it to be connected to its associated transformer. Guides on each heater assembly aid in positioning the securing strap. Each transformer provides a means to vary power supplied to each heater. The securing strap holds both heating assemblies in place on the vehicle with the vehicle in a vertical position.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

An infra-red sensor simulator is required in the MAB to heat the passive infra-red sensor targets mounted on the inertial platform, which enables sensor lock-on tests to be performed. The heater assemblies mount directly to the SV during testing.

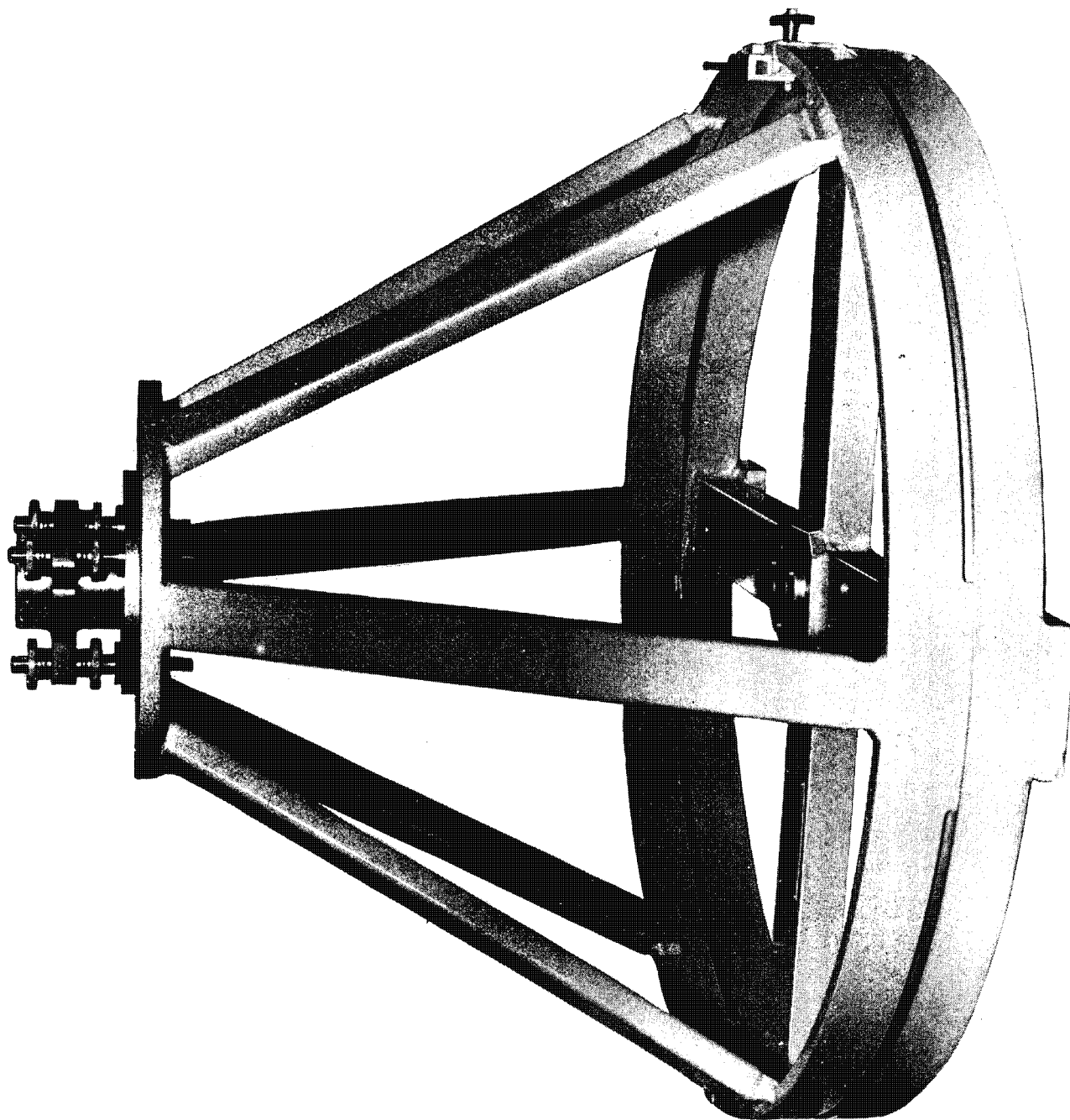


END ITEM NO. 24
ORBIT ADJUST NOZZLE ALIGNMENT SET

[illegible]

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

Optical alignment equipment is required at the MAB to align the two orbit adjust engine thrust vectors to within 0.03 inch of the measured aft OC/V center of gravity. The equipment establishes the aft OC/V ring as a reference plane, provides an adjustable target mirror assembly to simulate the SV center of gravity, and incorporates an alignment fixture which can be adjusted to the entire spectrum of center of gravity locations and then mated to the aft OC/V ring. The target mirror assembly is inserted into the OC/V where point error can be read on the alignment sighting scope. Linear displacements of the OC/V are read on the target mirror assembly.

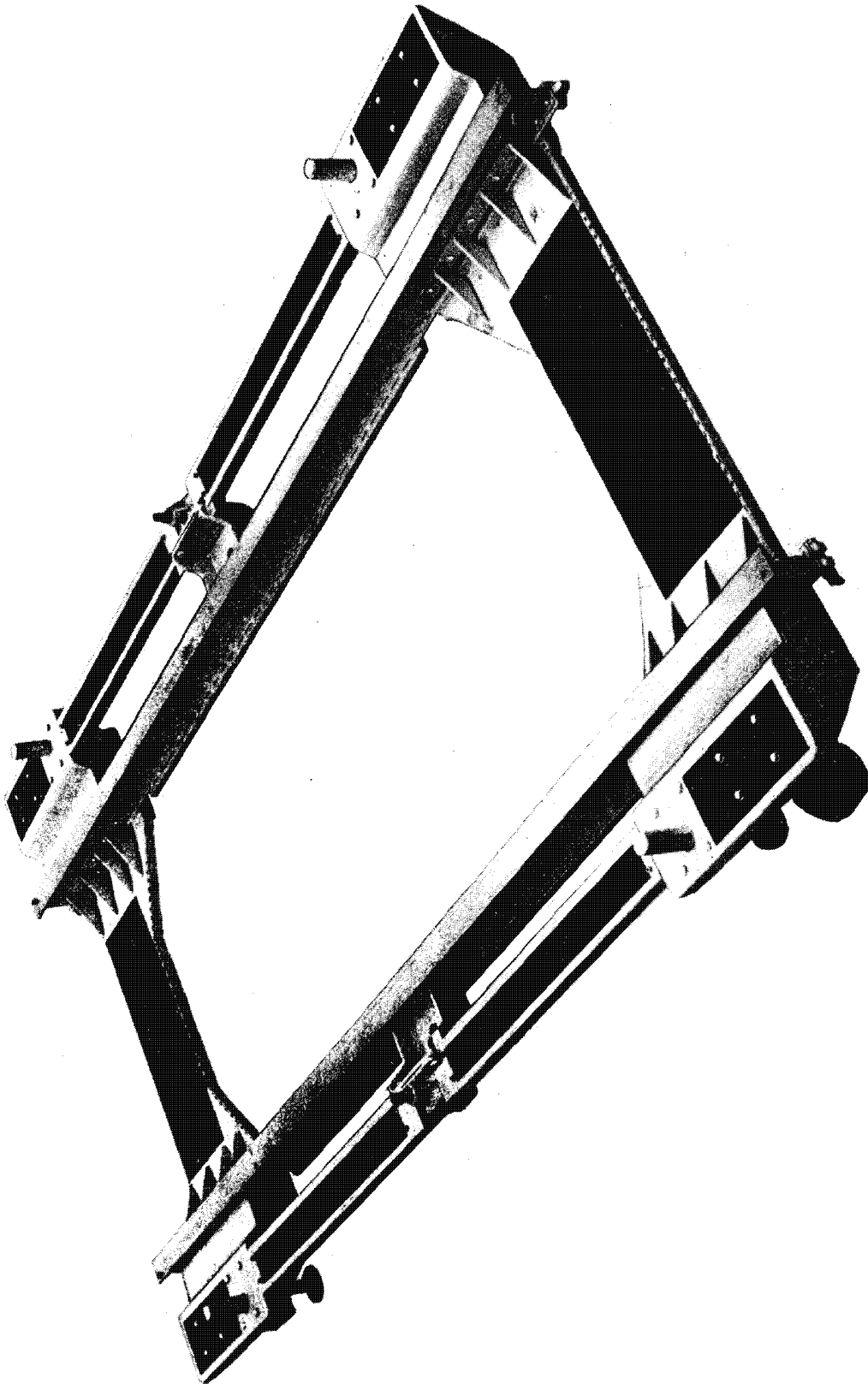


END ITEM NO. 24.1
ROCKET ALIGNMENT FIXTURE

62SD340 REV. D

PAGE NO. 68

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LIST NO 62SD340						
MISSILE AND SPACE DIVISION										CONTRACT NO AF 04(695)-580	REVISION E						
GENERAL ELECTRIC																	
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(7) UNIT PRICE	(8) TOTAL PRICE	(9) COGNIZANT	(10) TYPE CLASS.	(11) PROPOSED SOURCE	(12) SOURCE CODE	(13) CLASS AND REMARKS	(14) LEAD TIME (WEEKS)	(15) DATE APPROVED	(16) DATE FIRST AVAILABLE	(17) BASIS OF USE	(18)
24.1	1	894D646G1 SVS 4430	FIXTURE, ROCKET ALIGNMENT	-	1	5,466	5,466	SSD	NON STD	CFE	-	UNCLASS	12	-	2-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE																	
The ROCKET ALIGNMENT FIXTURE consists of three major components: a calibration ring, an alignment fixture, and an alignment sighting scope. The calibration ring is approximately 34-inches in diameter and consists of channel cross members which support and accurately center the target mirror assembly in the calibration ring. The alignment fixture consists of a disc mounting plate for the alignment sighting scope and four mounting legs which bolt-fasten to the fittings affixed to the calibration ring. The alignment sighting scope is adjustable for pointing direction and for translation. The fixture measures approximately 37 inches in diameter, and 33 inches high.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
Optical alignment equipment is required at the MAB to align the retro rocket engine parallel to roll axis and through the center of gravity of the nose cone. It establishes an optical axis normal to the optical target and coincident with the target center. The target mirror assembly is inserted into the rocket engine where point error can be read on the alignment sighting scope reticle. Linear displacements of the rocket engine thrust vector are read on the target mirror assembly.																	
TOTAL OPERATIONAL AGE																	
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END ITEM NO. 26
SV WORK AND ASSEMBLY TRUCK

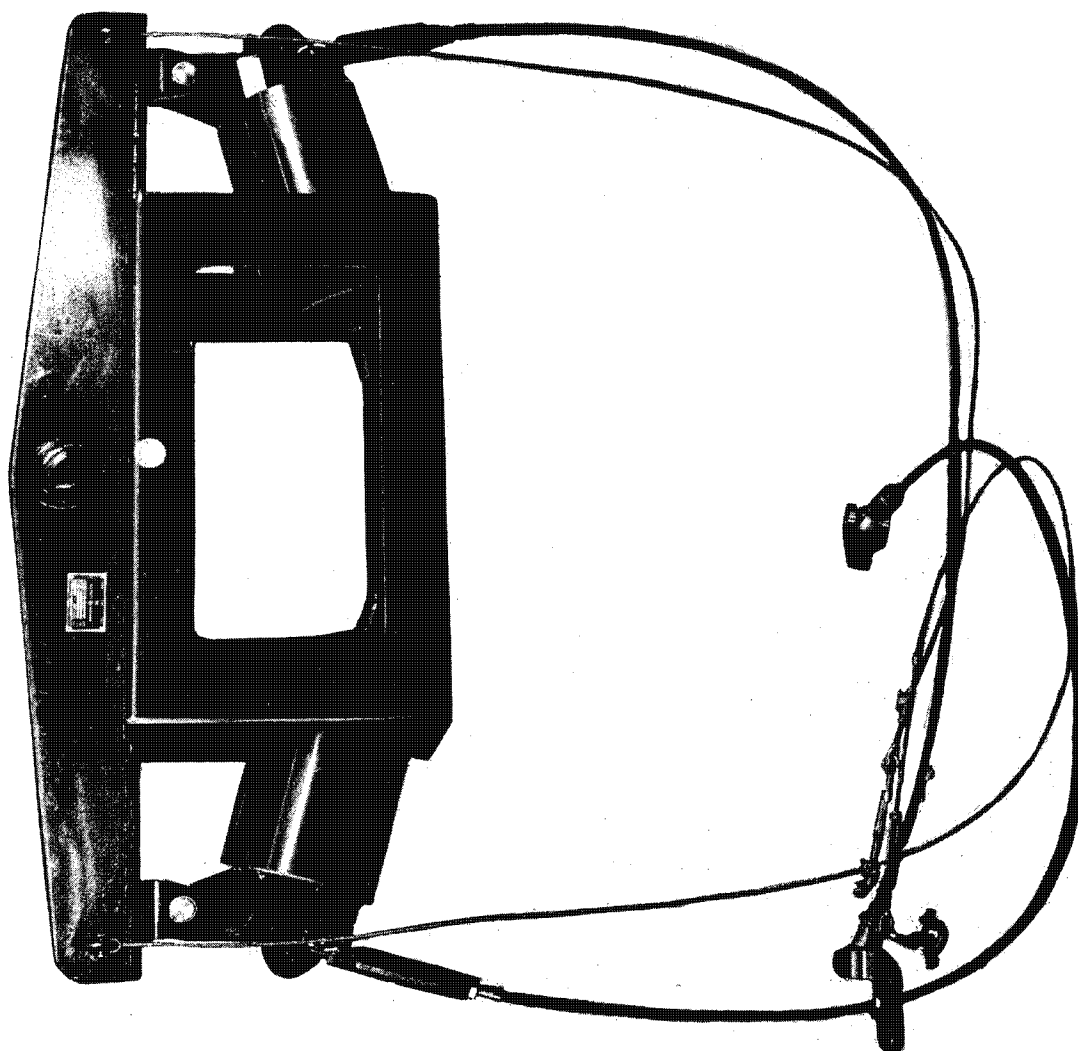
62SD340 REV. D

PAGE NO. 74

AEROSPACE GROUND EQUIPMENT LIST																	
MISSILE AND SPACE DIVISION																	
GENERAL ELECTRIC																	
CONTRACT NO. AF 04(695)-580																	
REVISION E																	
DATE 7 NOVEMBER 1966 LIST NO. 62SD340																	
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ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/OWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB. AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT LAB	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	REMARKS CLASS AND	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE	
26	-	248E916G1 SVS 4296A	TRUCK, SATELLITE VEHICLE WORK AND ASSEMBLY	-	1	5,161	20,644	SSD	NON STD		-	UNCLASS	12	-	11-63	ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS	

52SD340 REV. E

ITEM SEQUENCE NO. 26
PAGE NO. 75



END ITEM NO. 27
SV MATING SLING

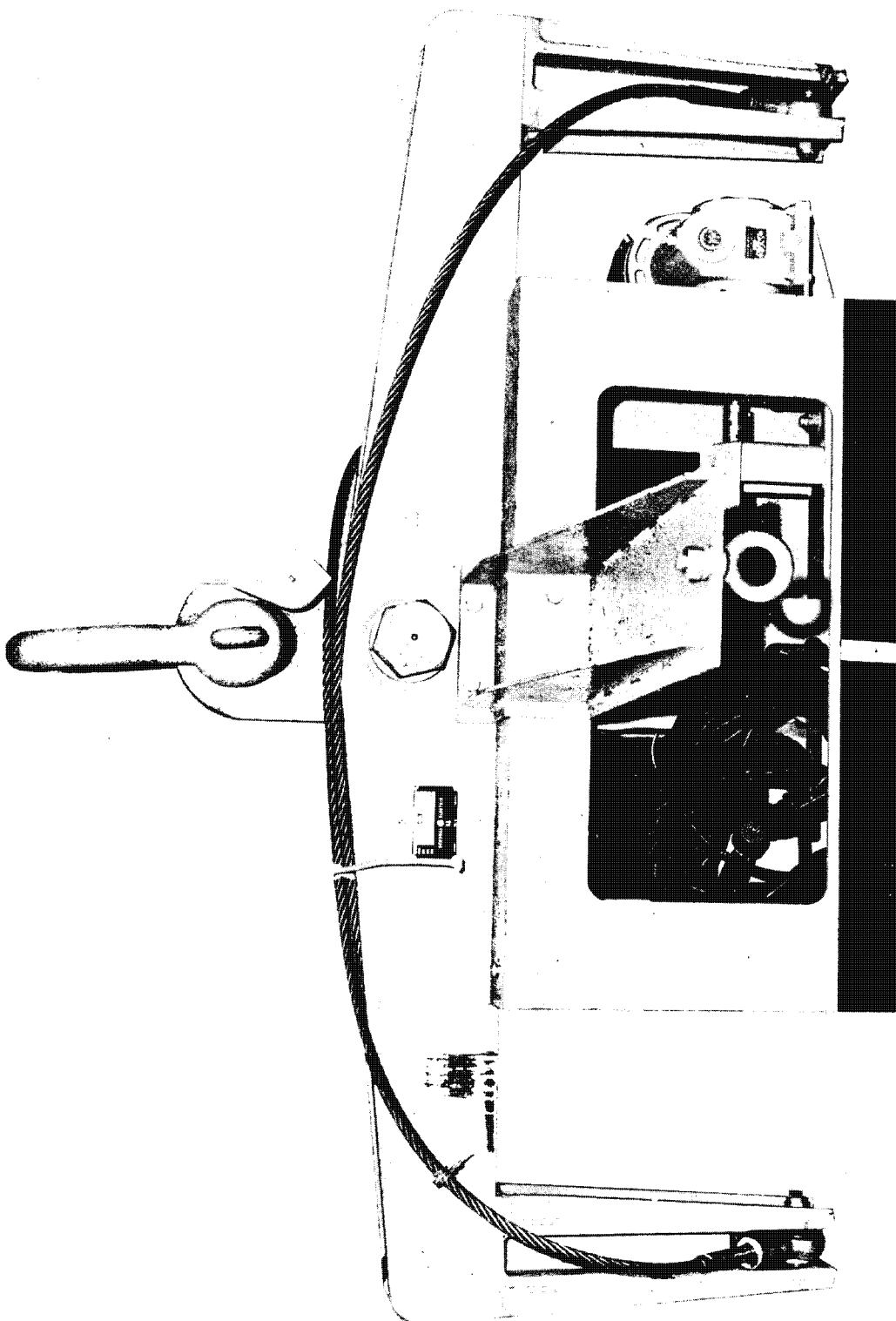
62SD340 REV. D

PAGE NO. 76

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5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A sling is required to facilitate lifting the SV from the horizontal position on the SV TRANSPORTER (item 29) to the vertical position and, further, to carry the SV in the vertical position to the top of the booster and there to mate it with the booster. The main suspensors and stabilizing cables are attached to the forward end of the Oc/V CRADLE (item 10). The sling includes provisions for permitting minor manual adjustments.



END ITEM NO. 27.1
SATELLITE VEHICLE MATING SLING

62SD340 REV. E

PAGE NO. 77A

AEROSPACE GROUND EQUIPMENT LIST																
GENERAL ELECTRIC MISSILE AND SPACE DIVISION						DATE 7 NOVEMBER 1966		CUST NO. 62SD340								
						CONTRACT NO. AF04(695)-580		REVISION E								
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS.	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME	(17) DATE AFSC APPROVED	(15) FIRST AVAILABLE DATE	BASIS OF USE
27.1		S95D68UG1 SVS 4352	Sling, SV Mating		1			SSD	NON STD		-	Unclass				* SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE
(4) NOMENCLATURE The Satellite Vehicle Mating Sling consists of a steel weldment, a motor and gear mechanism, a tilting link, 2 wire rope assemblies, a leveling arm, a nylon strap, and a ratchet. The steel weldment is a frame that supports the wire rope assemblies on approximately 59 inch centers and provides a lifting connection for an overhead crane.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A sling is required to facilitate lifting the SV from the horizontal position on the SV Transporter (Item 29) to the vertical position and to carry the SV in the vertical position to the top of the booster in order to mate it with the booster. The mating sling incorporates a motorized tilt system to provide minute adjustments required during mating. The sling interfaces with the SV Non Magnetic Cradle (Item 10, 2) and the SV Vertical Transport Tie Down Ring (Item 29).																
OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 1 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV																
TOTAL OPERATIONAL AGE 1																



END ITEM NO. 28
SV VERTICAL TRANSPORT TIE-DOWN RING

AEROSPACE GROUND EQUIPMENT LIST																		
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION		DATE	1 APRIL 1964	LIST NO	62SD340			
ADVANCED SPACE PROJECTS DEPARTMENT										CONTRACT NO.		AF04(695)-76		REVISION		D		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY	SOURCE CODE	REMARKS AND CLASS	LEAD TIME (WEEKS)	DATE APPROVED	DATE FIRST AVAILABLE	BASIS OF USE		
28	-	248E975G3 SVS 4297	TIE-DOWN RING, SATELLITE VEHICLE VERTICAL TRANSPORT	-	1	5,427	5,427	SSD	NON STD	CFE	-	UNCLASS	16	-	11-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV		
																TOTAL OPERATIONAL AGE		1

(4) NOMENCLATURE

The SATELLITE VEHICLE VERTICAL TRANSPORT TIE-DOWN RING is a welded assemblage of aluminum shapes and components. The basic tubular ring is split in half and joined by two pairs of flanges each tied together with three swing bolts. On the periphery of the ring are two trunnion fittings, which engage the transporter pivot assemblies, four adjustable tie rods which connect with the OC/V cradle, and eight teflon-faced pads which engage the aft OC/V ring.

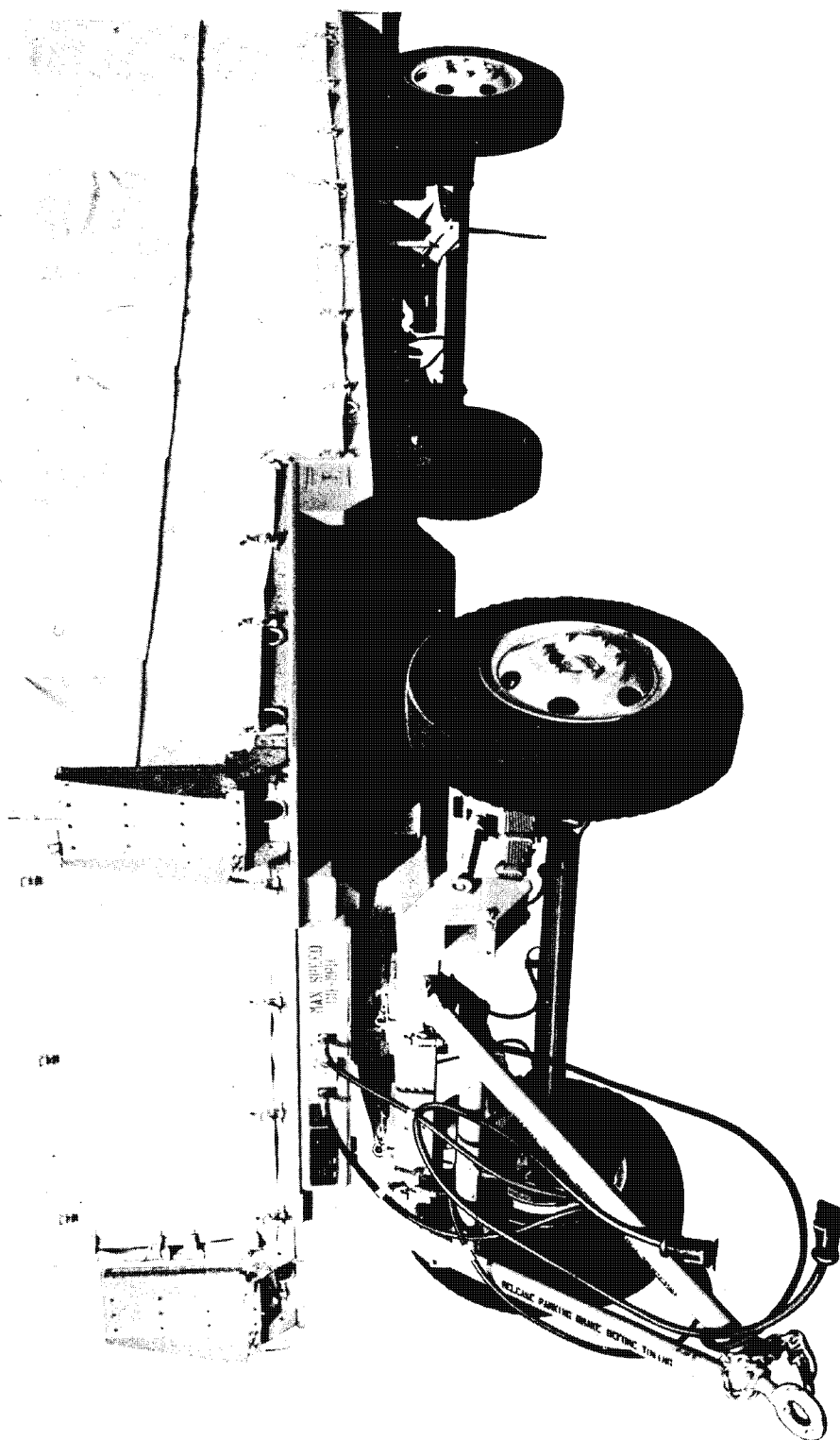
The ring measures 70 inches in diameter, 8 inches thick; it weighs approximately 150 pounds; and has a design load of 6060 pounds radially and 13,632 pounds axially.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

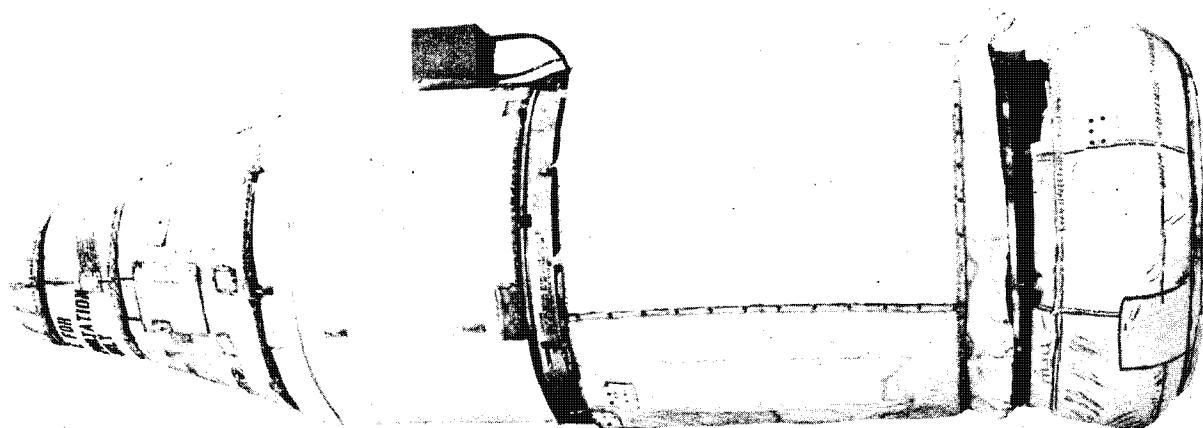
A ring is required to tie the aft end of the SV to the pivot assembly of the SV TRANSPORTER (Item 29) during horizontal transport, and rotation to the vertical position before slinging. In addition, the ring is mated with the OC/V CRADLE (Item 10) to form a single fixture for slinging the SV in a vertical position. The ring mates directly with the aft ring of the OC/V and rests in the transporter pivot assembly in which it rotates freely about the SV pitch axis.

END ITEM NO. 29
SV TRANSPORTER

62SD340 REV. D



AEROSPACE GROUND EQUIPMENT LIST														
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION				
DATE 7 NOVEMBER 1966										LIST NO 62SD340				
CONTRACT NO AF 04(695)-580										REVISION E				
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(17)	(8)
ITEMS	FUNCTIONAL	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	PROPOSED	SOURCE	CLASS AND	LEAD TIME	DATE
SEQUENCE	INDEX	MFG												APPROVED
		PART/DWG												DATE
		NUMBER												AVAILABLE
		SPECIFICATION												
29	-	254E675	TRANSPORTER,											
		SVS 4226B	SATELLITE VEHICLE	-	1	22,233	22,233	SSD	NON	CFE	-	UNCLASS	20	11-62
(4) NOMENCLATURE														
The SATELLITE VEHICLE TRANSPORTER is a four-wheel road trailer constructed primarily of steel. The floor of the trailer carries a set of longitudinal rails set 60 inches apart. In addition, the floor supports a rear tie-down trunion assembly which supports the vertical transport tie-down ring, as well as a telescoping tarpaulin top. The transporter incorporates transport tie-down assembly rods, four stabilizing jacks, a system which permits adjustment of the trailer bed height, and draw-bar towing provisions. The transporter is also fitted with a dampened spring suspension system, road lights, and air-over-hydraulic brakes. A dc battery pack is included in the transporter to provide a power source for the HEATER CONTROL UNIT (Item 10.1).														
The transporter measures 270 inches long, 96 inches wide, 136 inches high; it weighs approximately 8500 pounds, and has a capacity of approximately 9000 pounds.														
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:														
A transporter is required to move the assembled SV from the assembly area to the launch site. The transporter is equipped with 60-inch rails which mate with the rails on an SV WORK AND ASSEMBLY TRUCK (Item 26) when Item 26 is on a 51-inch loading dock, and the ability to receive the entire SV on the OC/ V CRADLE AND CARRIAGE (Items 10 and 11) by roll transfer. The transporter contains provisions for carrying the aft end of the SV in the SV VERTICAL TRANSPORT TIE-DOWN RING (Item 28), and the entire SV may be raised to the vertical while restrained by the ring. A cover provides protection from the elements and security control. The transporter is equipped with a dc battery pack and power control unit to provide a power source for the HEATER CONTROL UNIT (Item 10.1).														
SPECIAL TEST EQUIPMENT:													BASIS OF USE	
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS														
Q. C. ACCEPTANCE														
SYSTEM CHECKOUT														
STRUCTURE LAB														
Q. C. OPER. ASSURANCE													OPERATIONAL AGE:	
MISSILE ASSEMBLY BUILDING														
VEHICLE SUPPORT BUILDING														
LAUNCH PAD														
LAUNCH SERVICE BUILDING														
LAUNCH OPERATIONS BLDG. -													AF TRACKING STATIONS	
DELIVER WITH SV													TOTAL OPERATIONAL AGE	
													1	



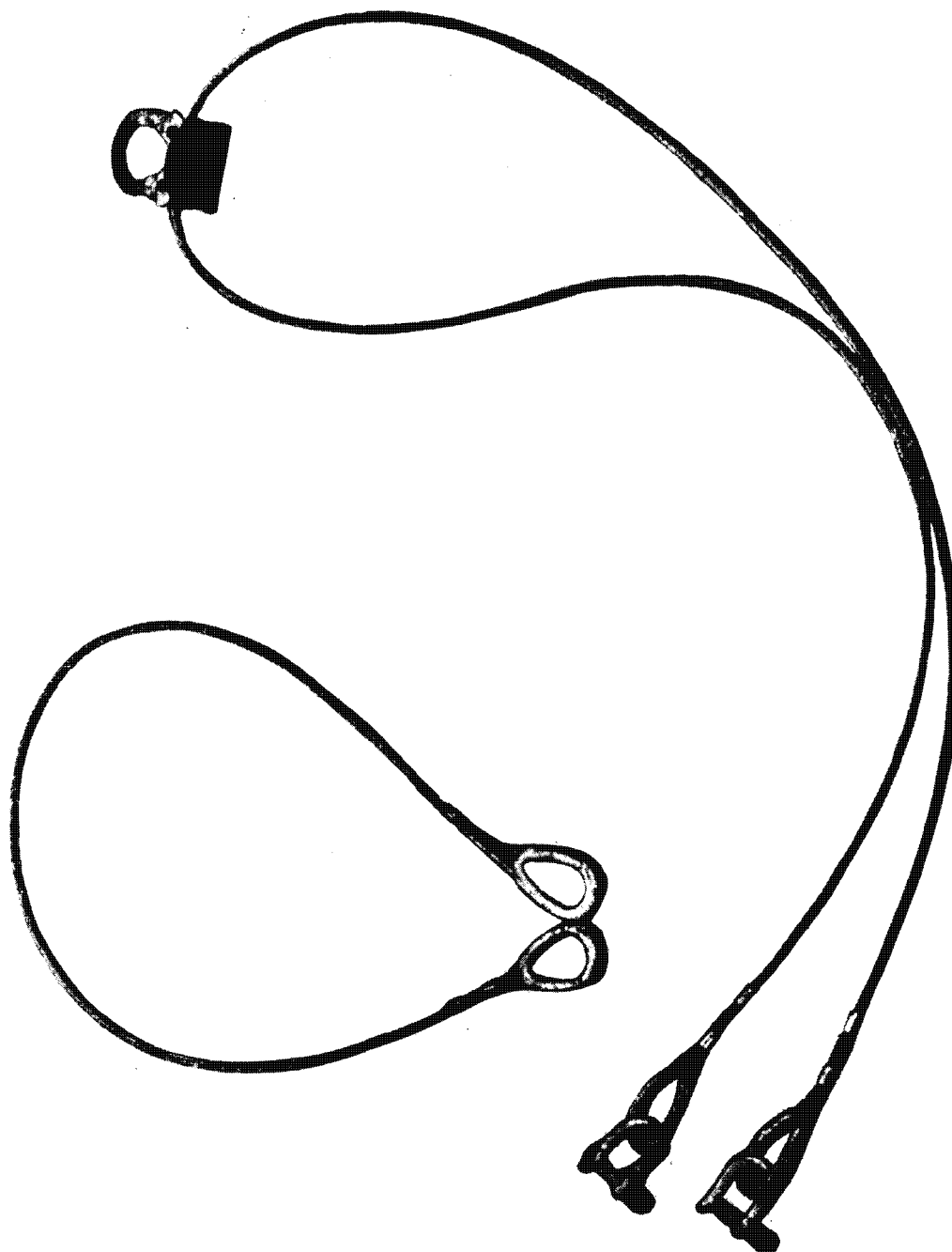
END ITEM NO. 91.2
SATELLITE VEHICLE TRANSPORTATION BLANKET

AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION							
DATE 7 NOVEMBER 1966										LIST NO. 62SD340							
CONTRACT NO. AF04(695)-580										REVISION E							
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	PROPOSED SUPPLY SOURCE	CLASS AND REMARKS	LEAD TIME	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE	
29.2			489L514G4 SVS 5211	Transportation Blanket, SV		1			SSD	NON STD	CFE	Unclass				SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE																	
The Satellite Vehicle Transportation Blanket consists of nine sections each fabricated of water proof neoprene impregnated cloth, polyurethane foam insulation, and resistance wire, fabricated in layers, which fasten to each other and the SV Non-Magnetic Cradle (Item 10, 2) and which cover the entire SV. When energized, the thermostat controlled battery elements keep the SV skin temperature within specified limits. A fabric air plenum and connecting duct are also provided for on-pad cooling.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
Transportation blankets are required to maintain a constant thermal environment around the SV during transportation, erection, and mating. They receive power from a plug-in connection through the Heater Control Unit (Item 10.1). The upper blanket (Item 7, 1) and the OCV Temperature Control Blanket (Item 8) replace the transportation blankets at the pad after mating. The blanket is designed for quick removal after SV mating on the pad.																	
TOTAL OPERATIONAL AGE																1	



END ITEM NO. 30
SV INSTALLATION SLING

AEROSPACE GROUND EQUIPMENT LIST																		
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION								
DATE 7 NOVEMBER 1966										LIST NO 62SD340								
CONTRACT NO. AF 04(695) -580										REVISION E								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ITEM SEQUENCE	FUNCTIONAL INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	SOURCE CODE	REMARKS AND	LEAD TIME	DATE APPROVED	DATE AVAILABLE	BASIS OF USE		
30	-	248E953 SVS 4321A	SLING, SATELLITE VEHICLE INSTALLATION	-	1	2,843	2,843	SSD	NON STD	CFE	-	UNCLASS	16	-	12-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV		
(4) NOMENCLATURE															TOTAL OPERATIONAL AGE			
The SATELLITE VEHICLE INSTALLATION SLING consists of an "F" beam, a lifting plate and shackle, a forward strap, and an aft support ring. The lifting plate contains several holes for attaching the shackle. The sling aft support ring bolts directly to the aft ring of the OC/V and is attached to the beam through a hanger fitting. The forward strap is of nylon, cradles the forward end of the OC/V, and is attached to the beam through a hanger fitting.															1			
The sling has a design load of 13,650 pounds, and measures approximately 148-inches long.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																		
A sling is required to lift the complete SV in a horizontal position by means of an overhead crane, and for transferring it from one OC/V cradle to another. The sling serves for testing or for any special purpose requiring the slinging of the entire SV.																		



END ITEM NO. 31
UNIVERSAL SLING

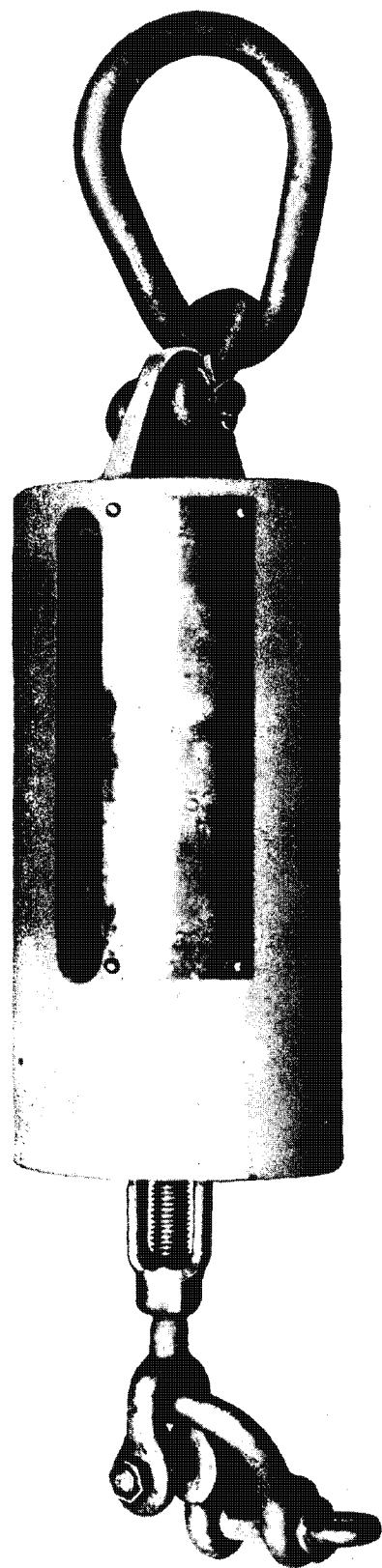
GENERAL ELECTRIC														AEROSPACE GROUND EQUIPMENT LIST														DATE 7 NOVEMBER 1966		LIST NO 62SD340	
MISSILE AND SPACE DIVISION														CONTRACT NO. AF 04(695)-580														REVISION E			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)												
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	GOVERNANCE CODE	CLASS AND REMARKS	LEAD TIME	DATE APPROVED	DATE AVAILABLE	BASIS OF USE															
31	-	111C4155 SVS 4322A	SLING, UNIVERSAL	-	1	181	724	SSD	NON STD	CFE	-	UNCLASS	6	-	11-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 4 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV															
(4) NOMENCLATURE																		TOTAL OPERATIONAL AGE		4											

The UNIVERSAL SLING consists of a load equalizing link and a length of steel cable. The load equalizing link contains a cable locking plate which permits adjusting the length of the sling legs. The cable ends are terminated with shackles and pins.

Two lengths of cables are supplied with this item; one measuring 85 inches long; the other 160 inches long. The total weight of the sling is approximately 20 pounds. It has a design capacity of approximately 2000 pounds.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

An adjustable general purpose sling is required for all lifting operations for which special slings have not been designed. The sling mates, through 3/4-inch shackle pins, with a number of lifting and handling fixtures. SV components, and other items of AGE; it may be used with the UNIVERSAL SLING LOAD BALANCER (item 32). The sling geometry is adjustable to take into account varying centers of gravity, and, by using two different cables, a considerable range of sizes can be accommodated.

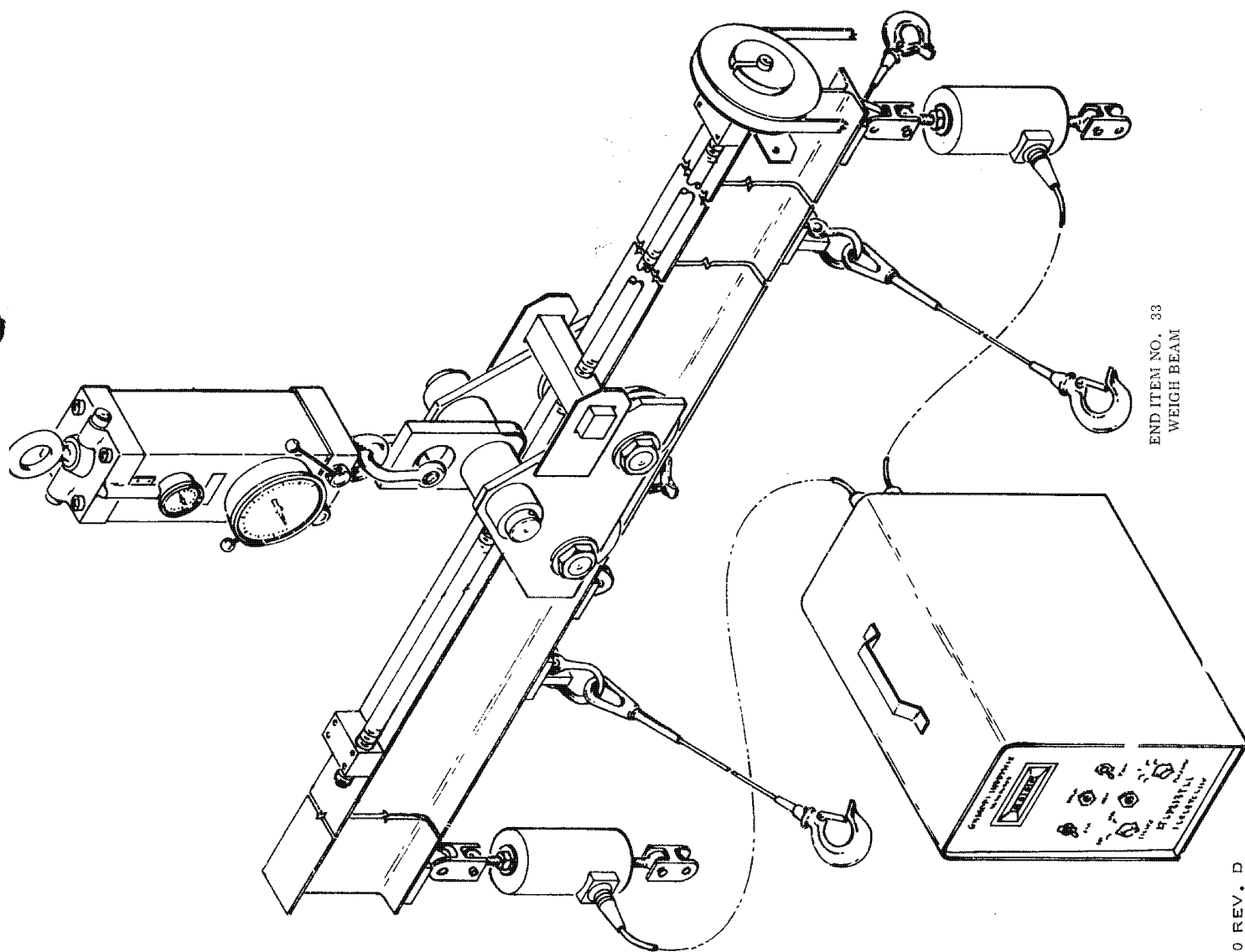


END ITEM NO. 32
UNIVERSAL SLING LOAD BALANCER

62SD340 REV. D

PAGE NO. 88

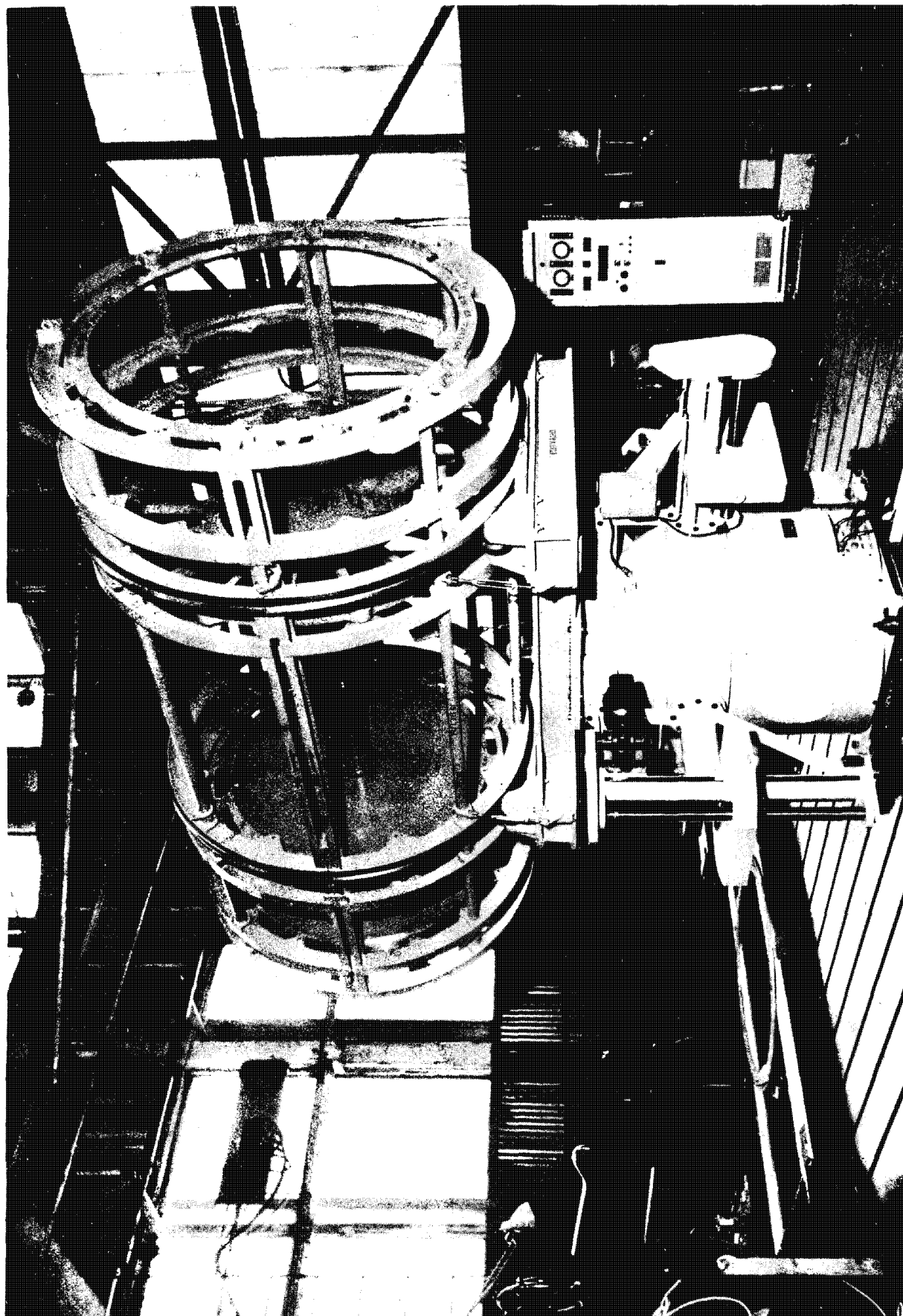
AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC			MISSILE AND SPACE DIVISION														
DATE		1 APRIL 1964		LIST NO.		62SD340		REVISION		E							
CONTRACT NO.		AF 04(695)-580		BASIS OF USE		(7)		(8)									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	CLASS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE
32	-		131B4596 SVS 4323A	LOAD BALANCER, UNIVERSAL SLING	- 1	71	71	SSD	NON STD	UNCLASS	8	11-62					
(4) NOMENCLATURE The UNIVERSAL SLING LOAD BALANCER is a cylindrical spring device enclosed in a metal case and provided with a shackle on the bottom and a hoist ring on top. When subjected to loads of less than 50 or more than 175 pounds, the balancer functions as a solid link. The balancer measures 15 inches long, has a diameter of 4.5 inches, and weighs approximately 20 pounds. It has an operating range of between 50-175 pounds, and a spring rate of 28 pounds per inch of deflection.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A load balancer is required to provide shock attenuation and minute positional adjustment of subassemblies and components of the vehicle when they are handled by hoist. When used, the load balancer is mated with the hoist and the UNIVERSAL SLING (item 31).																	
OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV TOTAL OPERATIONAL AGE 1																	



AEROSPACE GROUND EQUIPMENT LIST																			
DATE		1 APRIL 1964		LIST NO		62SD340													
GENERAL ELECTRIC				MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT				CONTRACT NO.		REVISION									
								AFO4(695)-76		D									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS.	PROPOSED SUPPLY	SOURCE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE			
33	-	248E995G1 SVS 4227	WEIGH BEAM	- 1		24,080	24,080	SSD	NON STD	CFE	-	UNCLASS	20	-	1-63		SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE		
(4) NOMENCLATURE																			
The WEIGH BEAM is a steel weldment used in conjunction with the INERTIA FIXTURE SET (Item 34) and the FORWARD SECTION INERTIA FIXTURE SET (Item 34.1). The beam is equipped with two electrical load cells capable of weighing and locating longitudinal centers of gravity for loads weighing between 600 and 5000 pounds.																			
The weigh beam measures approximately 166 inches wide, 12 inches deep, 22 inches high, and weighs 500 pounds.																			
OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV																			
TOTAL OPERATIONAL AGE																			

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A weigh beam is required at the MAB for weighing the Adapter Section and the OC/V, and to establish their approximate center of gravity.



END ITEM NO. 34
INERTIA FIXTURE SET

AEROSPACE GROUND EQUIPMENT LIST													DATE	1 APRIL 1964	LIST NO	62SD340				
GENERAL ELECTRIC													MISSILE AND SPACE DIVISION				CONTRACT NO.		REVISION	
ADVANCED SPACE PROJECTS DEPARTMENT													AFO4(695)-76				D			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)			
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY	SOURCE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE				
34	-	489L304C4 SVS 4228	FIXTURE SET, INERTIA	-	1	100,389	100,389	SSD	NON STD	CFE	-	UNCLASS	28	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV				
																TOTAL OPERATIONAL AGE				
																1				

(4) NOMENCLATURE

The INERTIA FIXTURE SET consists of aluminum support weldments, bolted joint adapters, and a suspended cage assembly. The cage assembly is provided with two relief cutouts to accommodate and clear the antenna and magnetometer fairings of the Orbital Control Vehicle.

The set measures 168 inches long, 81 inches wide, 96 inches high, and weighs approximately 3500 pounds.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A fixture set is required at the MAB to support and align the vehicle Adapter Section or the OC/V during determinations of center of gravity, moment of inertia, and product of inertia. The set is compatible with the MOMENTS OF INERTIA MACHINE (Item 35), the PRODUCTS OF INERTIA MACHINE (Item 36), the WEIGH BEAM (Item 39), and the FORWARD SECTION INERTIA FIXTURE SET (Item 34, 1).

AEROSPACE GROUND EQUIPMENT LIST													DATE	1 APRIL 1964	LIST NO	62SD340								
GENERAL ELECTRIC													MISSILE AND SPACE DIVISION				CONTRACT NO.				REVISION			
ADVANCED SPACE PROJECTS DEPARTMENT													AFO4(695)-76				D							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)					
ITEM SEQUENCE	FUNCTIONAL INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	CLASS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE FIRST AVAILABLE	BASIS OF USE							
34.1	-	489L304G2 SVS 4448	FIXTURE SET, INERTIA, FORWARD SECTION	-	1	17,167	17,167	SSD	NON STD	CFE	-	UNCLASS	14	-	1-63		SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV							
																		TOTAL OPERATIONAL AGE		1				

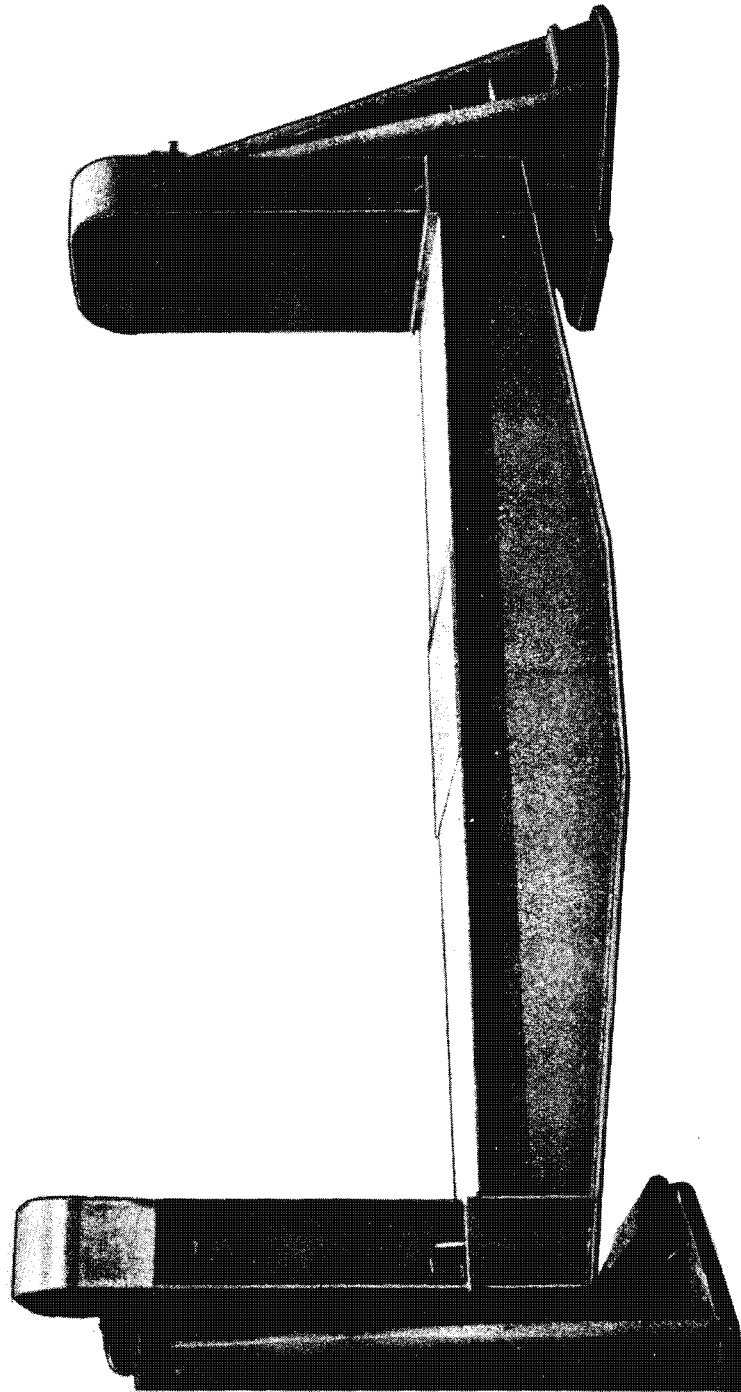
(4) NOMENCLATURE

The FORWARD SECTION INERTIA FIXTURE SET is an aluminum weldment comprising a cage-frame assembly shaped to the configuration of the Forward Section. The outer frame members are provided with fittings for attachment to the WEIGH BEAM (Item 33) and the PRODUCTS OF INERTIA MACHINE (Item 36). The fixture set is attached to the BI FILAR MOMENTS OF INERTIA MACHINE (Item 35.1) by affixing the vehicle support ring of Item 35.1 to the attachment ring of the fixture set. Attachment of the fixture set to the INERTIA FIXTURE SET (Item 34) is accomplished by joining the two journals of the table of Item 34 to the matching trunnions of the cage-frame.

The Forward Section Inertia Fixture Set measures 80 inches long, 56 inches wide, 52 inches high, and weighs approximately 1500 pounds.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :

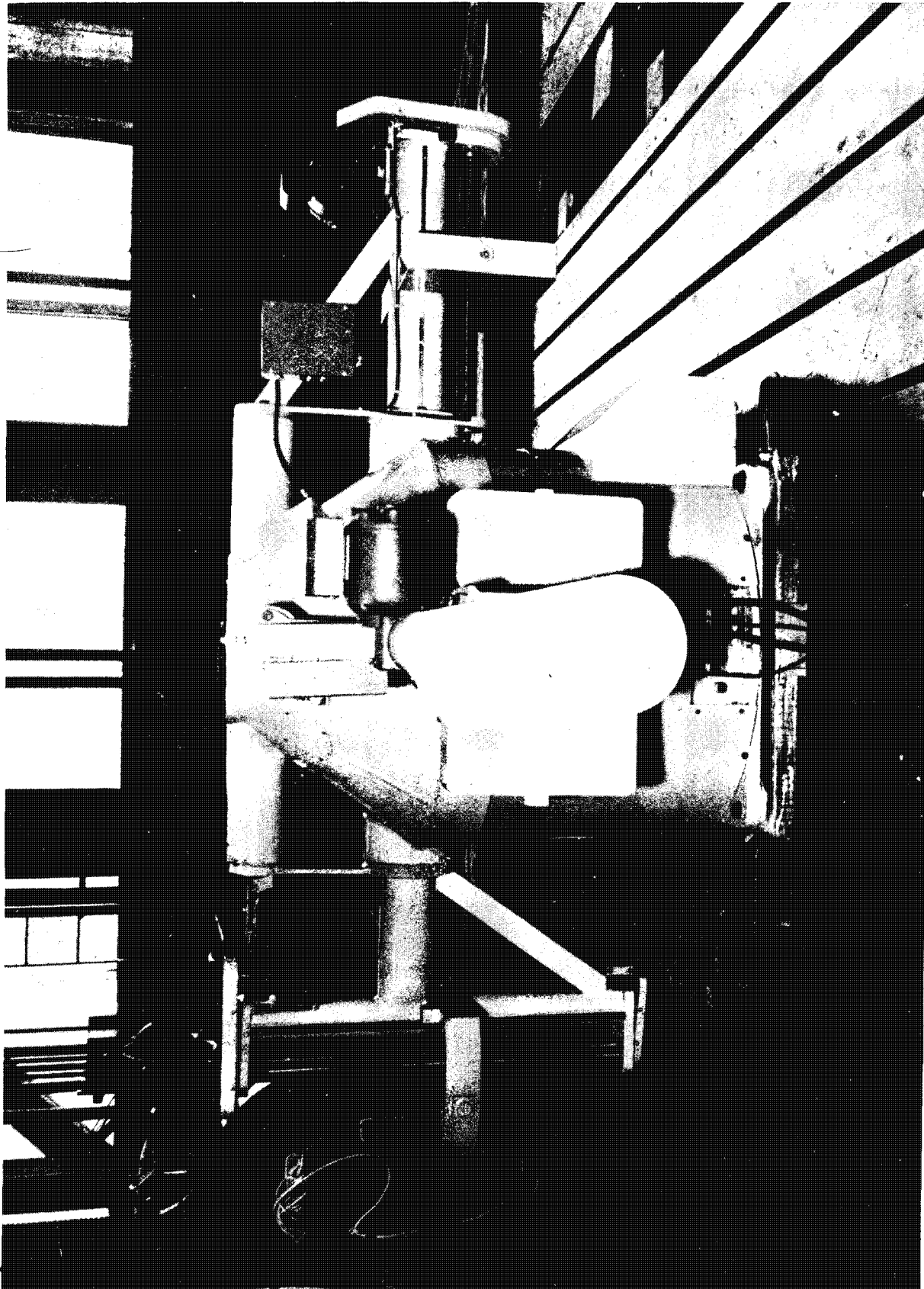
A fixture is required at the MAB to support and align the Forward Section during determinations of the center of gravity, moments of inertia, and products of inertia.



END ITEM NO. 35
MOMENTS OF INERTIA MACHINE

AEROSPACE GROUND EQUIPMENT LIST															DATE	1 APRIL 1964	LIST NO	62SD340						
GENERAL ELECTRIC															MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT				CONTRACT NO. AF04(695)-76				REVISION D	
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/OWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB. AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS.	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(7) BASIS OF USE			(8)					
35	-	201R762G1	MACHINE, MOMENTS OF INERTIA	-	1	-	-	SSD	NON STD	CFE	-	UNCLASS	-	-	-	-	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV							
(4) NOMENCLATURE																								
The MOMENTS OF INERTIA MACHINE is constructed of aluminum and consists of the following major components: pendulum and pedestal, pendulum assembly interval counter, pendulum assembly interval time counter support, pendulum starter mechanism, worm gear jack and handle assembly, special purpose electric cable assemblies, and a pointer assembly. The machine measures 206 inches long, 40 inches wide, 80 inches high, and weighs approximately 60 pounds.																								
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																								
A machine is required to provide a means for calculating the moments of inertia of the Adapter Section and the OC/ V. This unit is already in existence as part of Item 117 on Contract AF04(695)-6.																								
TOTAL OPERATIONAL AGE																		1						

AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC			MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT														
DATE			1 APRIL 1964			LIST NO			62SD340			REVISION					
CONTRACT NO.			AF04(695)-76			D											
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE
35.1	-	255E818G1 SVS 4449	MACHINE, BIFILAR MOMENTS OF INERTIA	-	1	4,058	4,058	SSD	NON STD	CFE	-	UNCLASS	10	-	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV TOTAL OPERATIONAL AGE
(4) NOMENCLATURE The BIFILAR MOMENTS OF INERTIA MACHINE is a pendulum assembly consisting of a pair of vertical suspension music wires terminated at one end by conical bracket attachment to the ceiling "T" beam and at the free-swinging end by conical bracket attachment to a vehicle support ring. The ring is shaped and sized to the outer aft configuration of the Forward Section. The machine measures approximately 64 inches high, 40 inches wide, and 4.5 inches deep. (5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A bifilar pendulum is required at the MAB to provide a means for calculating the moments of inertia of the Forward Section.																	

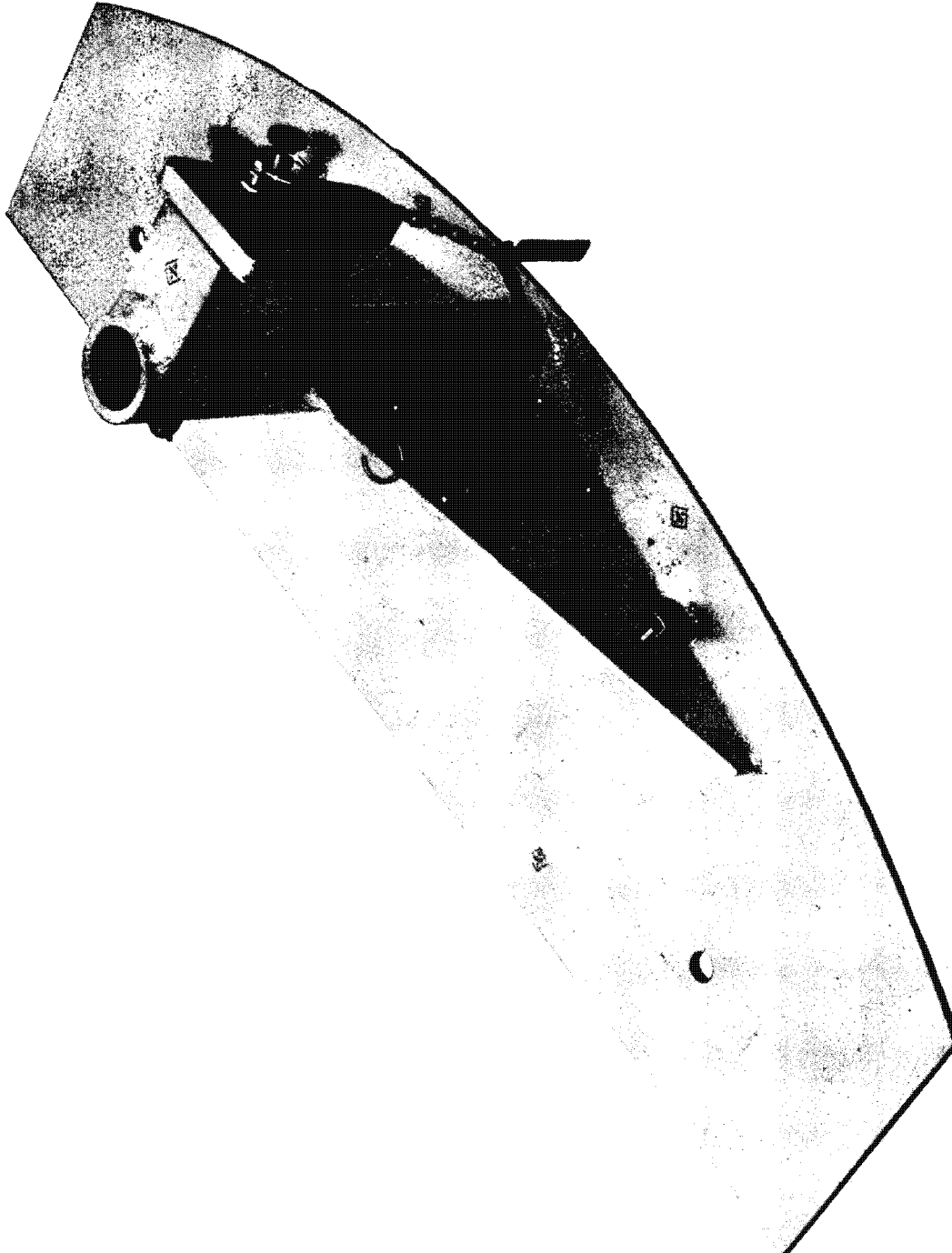


END ITEM NO. 36
PRODUCTS OF INERTIA MACHINE

AEROSPACE GROUND EQUIPMENT LIST																		
GENERAL ELECTRIC				MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT														
				CONTRACT NO. AF04(695)-76														
				REVISION D														
				DATE 1 APRIL 1964														
				LIST NO 62SD340														
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)	
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	CLASS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE
36	-	-	243E454G1	MACHINE, PRODUCTS OF INERTIA	-	1	-	-	SS	NON STD	CFE	-	UNCLASS	-	-	-	-	ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS
Q. C. ACCEPTANCE																		
SYSTEM CHECKOUT																		
STRUCTURE LAB																		
Q. C. OPER. ASSURANCE																		
OPERATIONAL AGE:																		
MISSILE ASSEMBLY BUILDING 1																		
VEHICLE SUPPORT BUILDING																		
LAUNCH PAD																		
LAUNCH SERVICE BUILDING																		
LAUNCH OPERATIONS BLDG. -																		
AF TRACKING STATIONS																		
DELIVER WITH SV																		

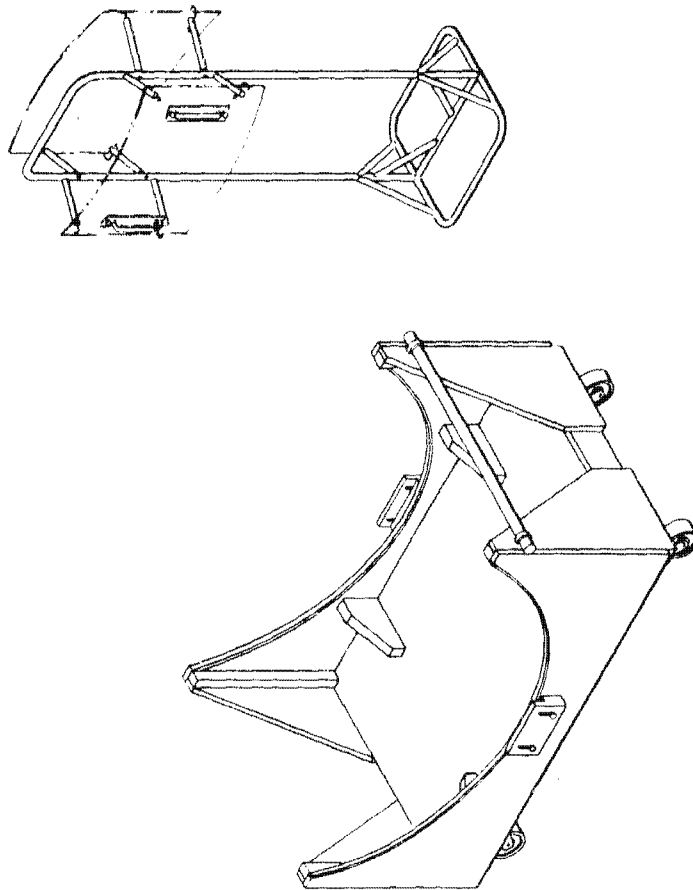
ITEM SEQUENCE NO. 36
PAGE NO. 101

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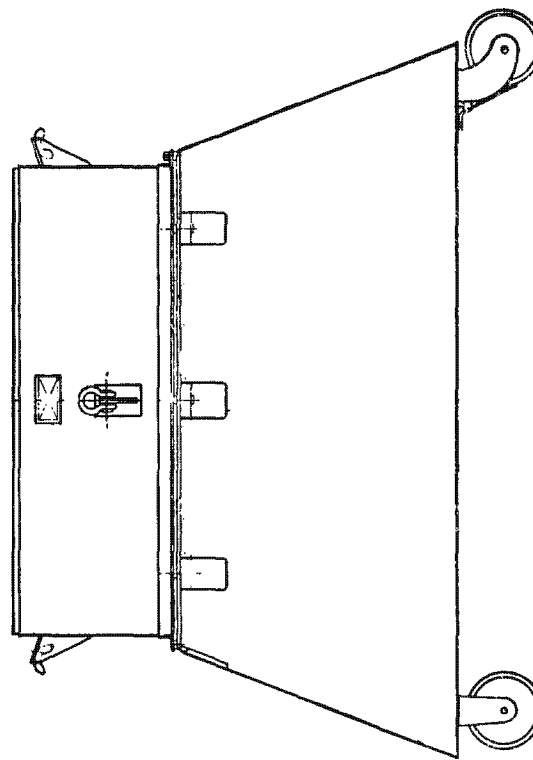


END ITEM NO. 38
OC/V AFT END LIFTING FIXTURE

AEROSPACE GROUND EQUIPMENT LIST															
MISSILE AND SPACE DIVISION															
GENERAL ELECTRIC															
DATE 7 NOVEMBER 1966															
LIST NO 62SD340															
CONTRACT NO. AF 04(695)-580															
REVISION E															
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(17)	(15)	(8)
ITEM	FUNCTIONAL	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	PROPOSED	SOURCE	CLASS AND	LEAD TIME	DATE	BASIS OF USE
SEQUENCE	AREA INDEX	MFG PART/DWG NUMBER SPECIFICATION							CLAS.	SUPPLY		REMARKS	(WEEKS)	APPROVED	
38	-	884D220 SVS 4325	LIFTING FIXTURE AFT END, ORBITAL CONTROL VEHICLE	- PR	814	3256	SSD	NON	STD	CFE	-	UNCLASS	10	-	2-63
(4) NOMENCLATURE															
The ORBITAL CONTROL VEHICLE AFT END LIFTING FIXTURE is an all-aluminum weldment consisting of a segmental plate with two bolt holes matching the holes on the aft ring of the OC/ V, a tube normal to the plate supported by gusset plates, and a rotatable sling fitting on the tube. An identical pair of fixtures is used to remove the aft section, the only difference between them being in the orientation of the sling fittings, which is manually adjustable.															
Each fixture measures 32 inches long, 12 inches wide, and 10 inches high. A pair of fixtures weigh approximately 75 pounds.															
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :															
A device is required to facilitate the removal of the OC/ V aft section from the remainder of the OC/ V while the vehicle is horizontal on the OC/ V CRADLE (Item 10).															
SPECIAL TEST EQUIPMENT:															
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS															
Q. C. ACCEPTANCE															
SYSTEM CHECKOUT															
STRUCTURE LAB															
Q.C. OPER. ASSURANCE															
OPERATIONAL AGE:															
MISSILE ASSEMBLY BUILDING 4															
VEHICLE SUPPORT BUILDING															
LAUNCH PAD															
LAUNCH SERVICE BUILDING															
LAUNCH OPERATIONS BLDG. -															
AF TRACKING STATIONS															
DELIVER WITH SV															
TOTAL OPERATIONAL AGE															
4															



AEROSPACE GROUND EQUIPMENT LIST															
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION		DATE 7 NOVEMBER 1966	LIST NO 62SD340		
CONTRACT NO. AFO4(695)-580										REVISION E					
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(8)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME	DATE APPROVED	FIRST AVAILABLE DATE
39		133B3949 SVS 4298A	Orbital Control Vehicle Maintenance Set		1	1,375		SSD	NON STD	CFE	-	Unclass	10	-	12-62
(4) NOMENCLATURE															
The Orbital Control Vehicle Maintenance Set consists of the following components: a forward OCV truck, an access door storage rack, ACA door brackets, a maintenance set to position internal electrical connectors during OCV transportation, and a counterbalance. The forward OCV truck consists of a castered wooden base which supports wooden concave side members protectively lined. The storage rack is an upright, welded, tubular, aluminum assemblage base mounted with extending top mounted bracket hanger attachments.															
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :															
A maintenance set is required to support the forward OCV and OCV access doors during checkout and testing operations. The set also provides for supporting the ACA door during checkout and positioning internal electrical connectors during OCV transportation.															
SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV															1
TOTAL OPERATIONAL AGE															1



END ITEM NO. 41
ANTENNA TUNING STAND

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AEROSPACE GROUND EQUIPMENT LIST																				
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT												DATE 1 APRIL 1964		LIST NO. 62SD340						
GENERAL ELECTRIC												CONTRACT NO. AF04(695)-76		REVISION D						
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(17)	(8)	
					NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	PROPOSED SUPPLY	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE AFSC APPROVED	FIRST AVAILABLE DATE	BASIS OF USE		
41	-		894D637C1 SVS 4432		STAND, ANTENNA TUNING	-	1	5,480	5,480	SSD	NON STD	CFE	-	UNCLASS	10	-	2-63		SPECIAL TEST EQUIPMENT- ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE																				
The ANTENNA TUNING STAND consists of a tubular weldment structure supporting a fabricated monocoque aluminum spacer which simulates the configuration of the OC/ V. The assembly also includes a polyethylene dust protection cover-skirt. The stand is mounted on a reinforced plywood platform to which is affixed four lock-type casters for mobility. The stand measures 86 inches long, 86 inches wide, 48 inches high, and has a design load of 2100 pounds.																				
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																				
A stand is required at the MAB to support the assembled Forward and Adapter Sections in a vertical position for antennae tuning. An aluminum spacer simulating the OC/ V is required to provide the vertical support, to serve as a mating surface for the Adapter Section, to maintain those antennae closest to the ground at a fixed allowable distance from interfering structure, and to provide the necessary tie points for lifting and rotating operations.																				
TOTAL OPERATIONAL AGE																		1		

AEROSPACE GROUND EQUIPMENT LIST															DATE	1 APRIL 1964	LIST NO.	62SD340				
GENERAL ELECTRIC															MISSILE AND SPACE DIVISION				ADVANCED SPACE PROJECTS DEPARTMENT			
															CONTRACT NO.				REVISION			
															AF04(695)-76				D			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)				
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE TEST AVAILABLE	BASIS OF USE					
42	-		894D643G1 SVS 4133	SLING, VERTICAL POSITIONING, FORWARD ADAPTER SECTION	-	1	1,428	1,428	SSD	NON STD	CFE	-	UNCLASS	12	-	2-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV					
																		TOTAL OPERATIONAL AGE				
																		1				

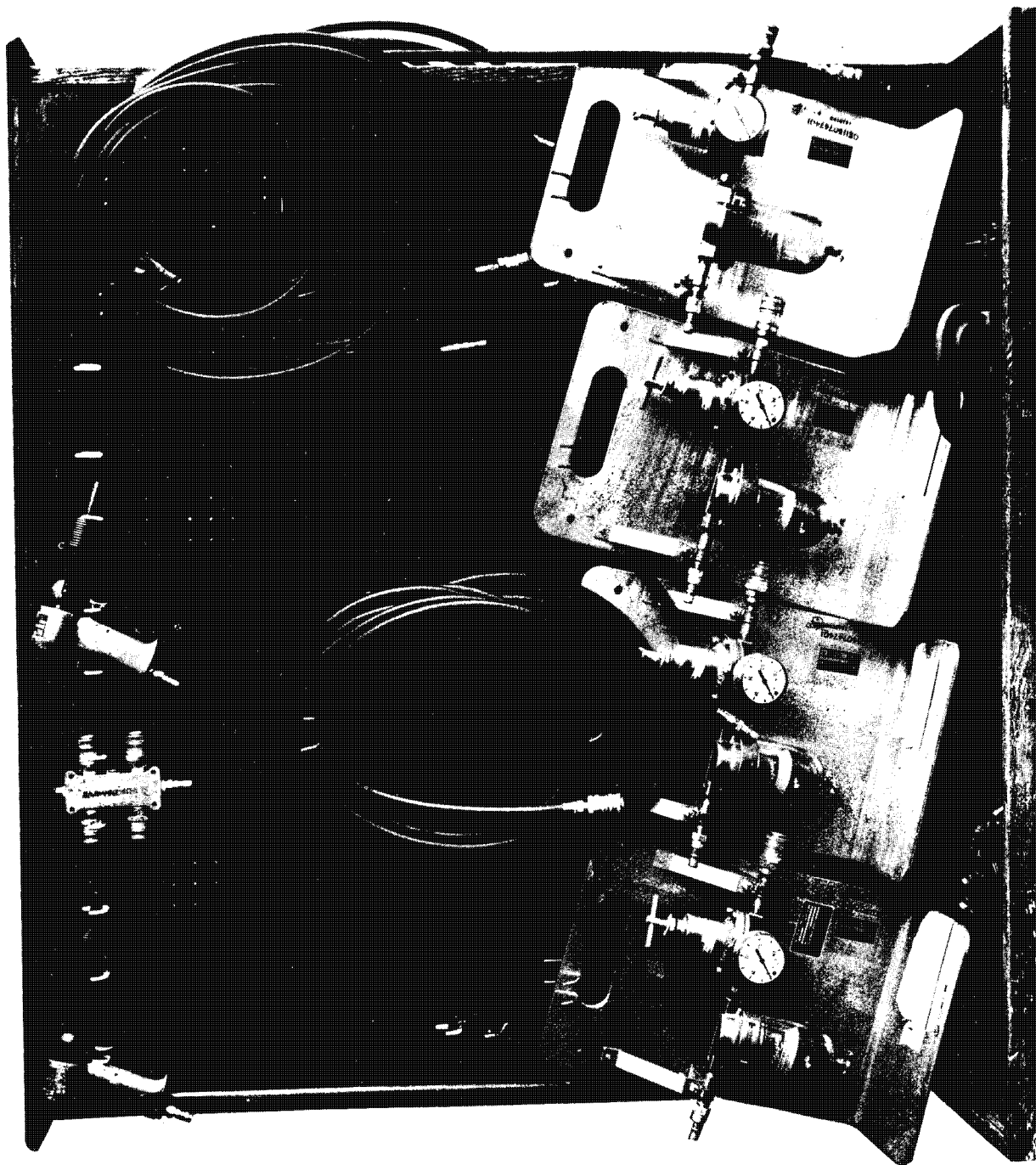
(4) NOMENCLATURE

The FORWARD/ADAPTER SECTION VERTICAL POSITIONING SLING consists of a chain-fall, an aluminum spreader bar, cables, and all necessary hardware for lifting, pivoting, and repositioning operations of the assembled Forward and Adapter Sections.

The spreader bar measures 38 inches long, 9 inches wide, 8 inches deep, and has a design load of 2100 pounds.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :

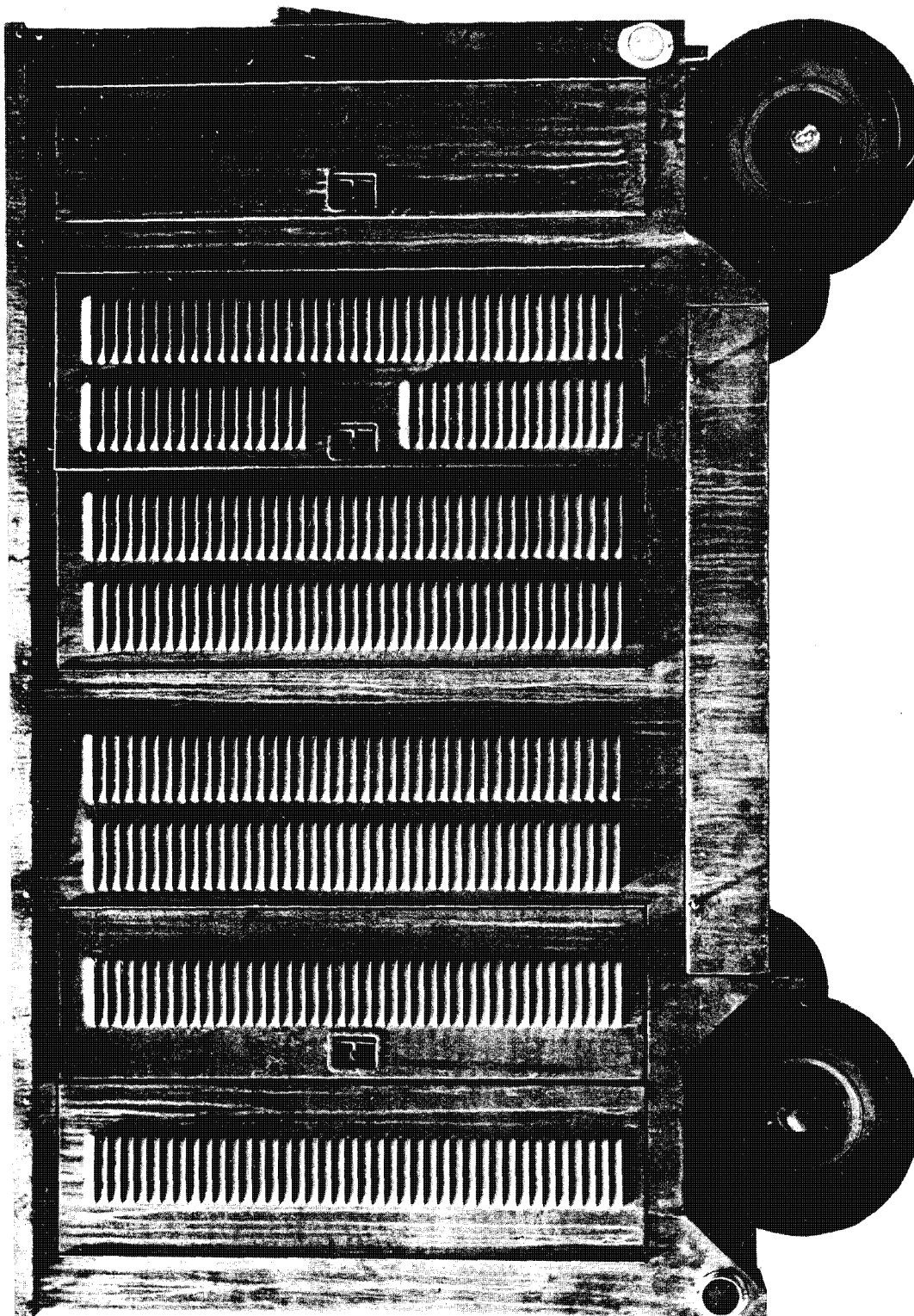
A sling is required at the MAB in conjunction with an overhead hoist, to lift, pivot, and reposition the assembled Forward and Adapter Sections from a horizontal position to a vertical position for mating to the ANTENNA TUNING STAND (Item 41). The lifting, pivoting and repositioning operations, as well as the reverse procedure, is accomplished by sling attachment to the front collar ring of the ADAPTER SECTION CRADLE (Item 3) and the tie-points of the aluminum simulated OC/V spacer of the ANTENNA TUNING STAND (Item 41).



END ITEM NO. 44
GENERAL EXCITATION TEST EQUIPMENT

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AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC		MISSILE AND SPACE DIVISION															
DATE		7 NOVEMBER 1966		LIST NO		62SD340		CONTRACT NO		AFO4(695)-580			REVISION		E		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPORT SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE	
44		895D66G3 SVS 5279	Test Equipment General Excitation		1			SSD	NON STD	CFE	-	Unclass				SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE The General Excitation Test Equipment shall consist of the following components: four impact guns, impact blocks, a pneumatics distribution system connected to a facility supply, and a dolly. The impact guns are pneumatically operated and each gun is controlled by a filter regulator to provide a constant predetermined pressure. Metal impact blocks are attached to the SV Non-Magnetic Cradle (Item 10.2) at stations 125 and 209, to the adapter dolly ring at station 84 and to the aft interface ring of Section 7. The adapter dolly consists of an aluminum frame on casters for mobility, support rings encircling the adapter fore and aft, and rollers interfacing with the support rings to provide roll capability.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: The excitation equipment is used to produce a general excitation or vibration throughout entire vehicle sections which are mated electrically but not mechanically. The equipment subjects vehicle subsystems to vibration while they are performing their required functions. A dolly is provided to support the adapter during vibration. The OCV is supported in the SV Non-Magnetic Cradle (Item 10.2) during vibration.																	
TOTAL OPERATIONAL AGE															1		



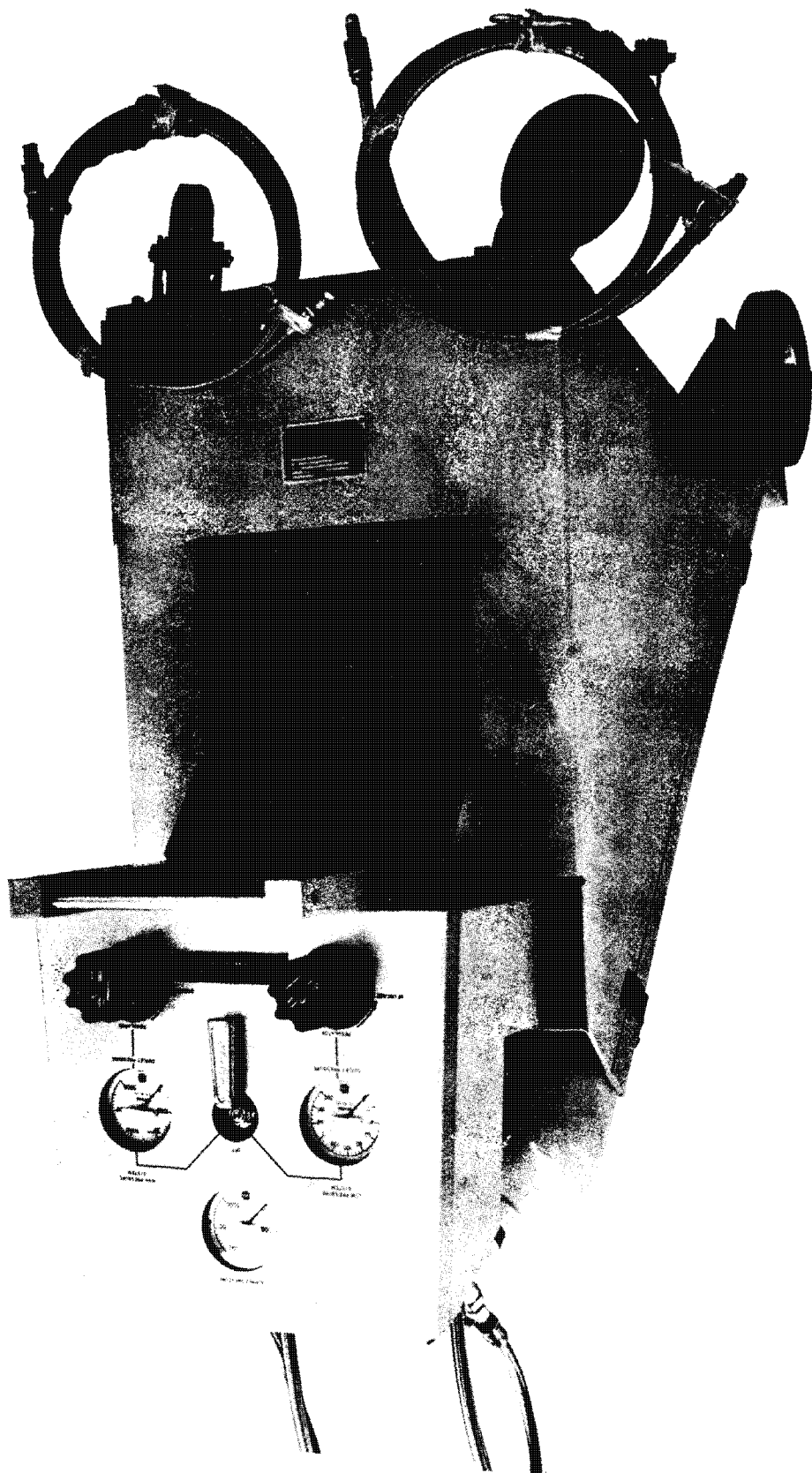
END ITEM NO. 51
COOLING UNIT

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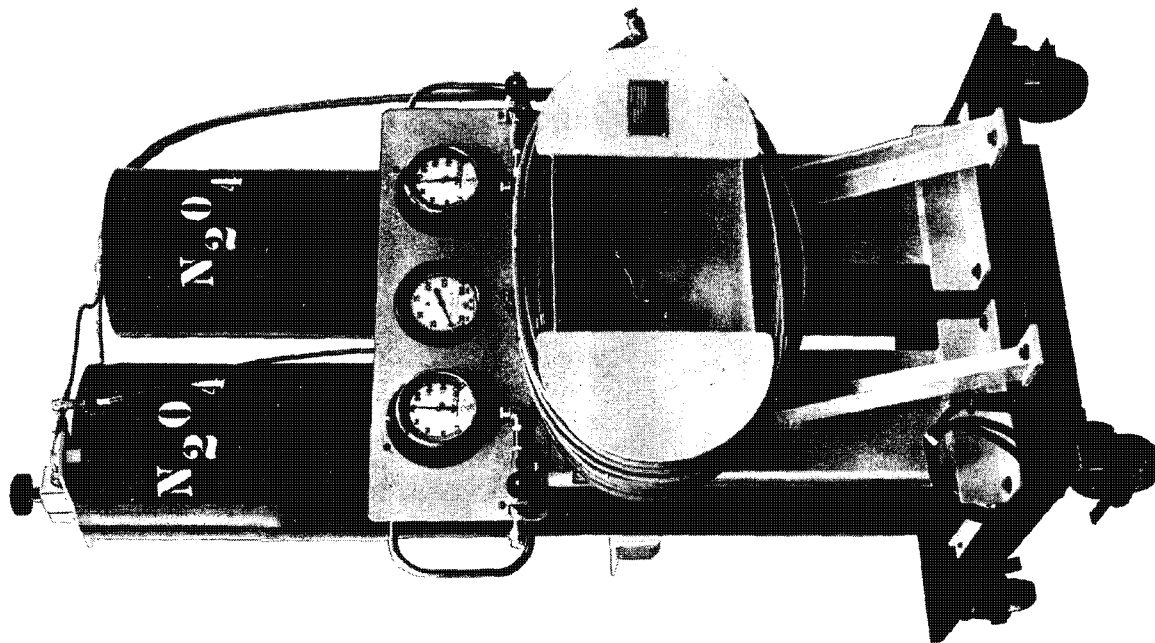
AEROSPACE GROUND EQUIPMENT LIST													DATE	7 NOVEMBER 1966	LIST NO.	62SD340		
MISSILE AND SPACE DIVISION													CONTRACT NO.	AF 04(695)-580	REVISION	E		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	CLASS	PROPOSED SUPPLY	SOURCE	CLASS AND	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE	BASIS OF USE
51	-		489L308G1 489L310G1 SVS 4231	UNIT, COOLING	-	1	18,659	37,318	SSD	NON STD	UNCLASS	12	-	2-63				SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV TOTAL OPERATIONAL AGE
(4) NOMENCLATURE The COOLING UNIT system consists of an air conditioner, remotely mounted outside the MAB, connected to a stationary air duct with all necessary duct outlet fittings and air hoses. The auxiliary cooling equipment for the adapter Section includes a cover plate with hose connector arrangement. The auxiliary cooling equipment for the OC/V includes a series of clamp-on cover shield support lines with fastener arrangement for attachment to the OC/V cradle cage bars and a fold-back cover shield plate with hose connector.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A cooling system is required at the MAB to supply air pressure to the cooling air inlets of the Adapter Section and the OC/V whenever the SV is operated for test purposes. The Advant air conditioner, utilized for this purpose, is capable of supplying 100 pounds per minute of air at 34° F, 80% relative humidity, and at a maximum static pressure of 28-inches (1 psig).																		

END ITEM NO. 52
PORTABLE GAS SERVICING UNIT



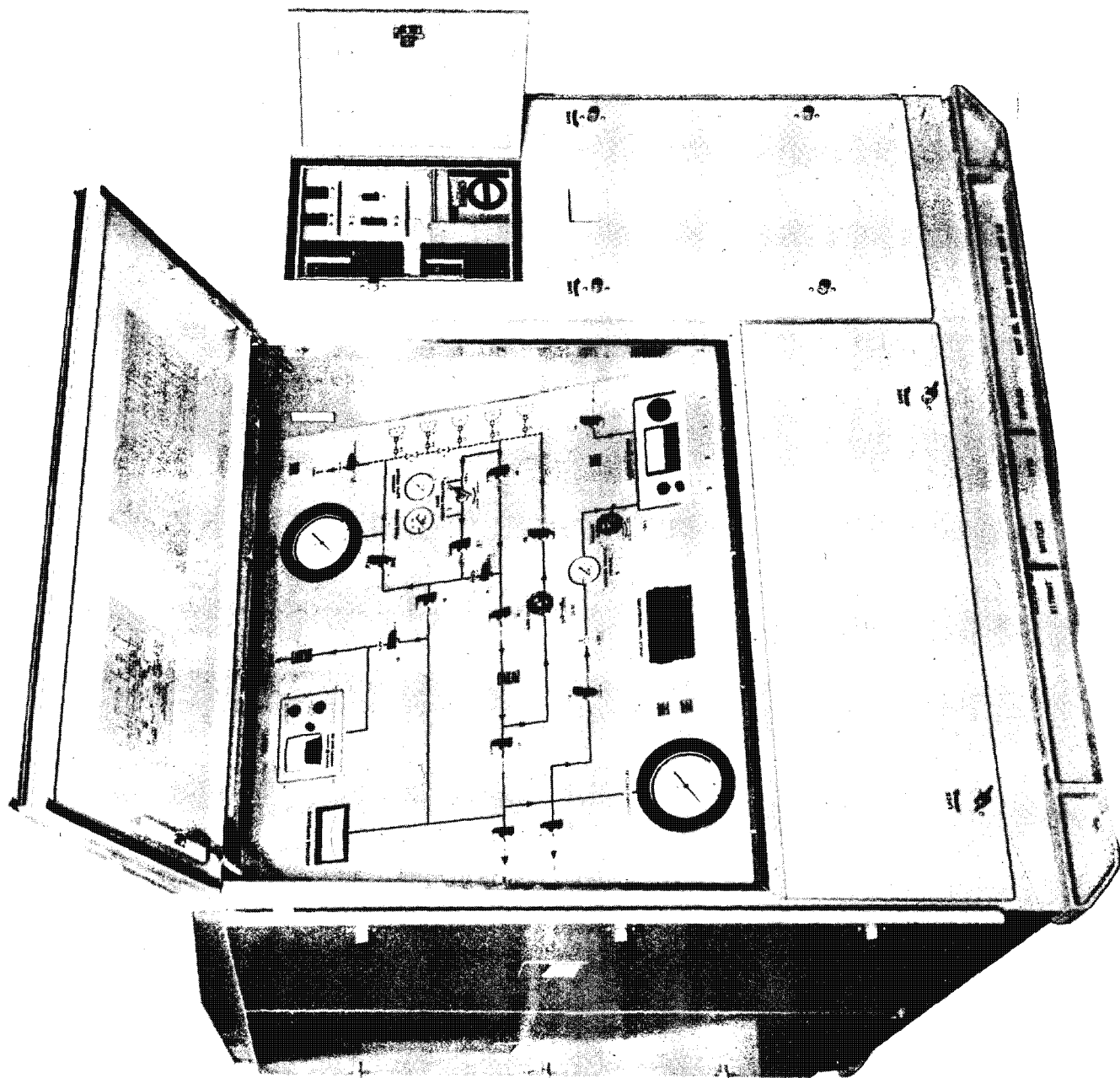
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AEROSPACE GROUND EQUIPMENT LIST															DATE	7 NOVEMBER 1966	LIST NO	62SD340								
GENERAL ELECTRIC															MISSILE AND SPACE DIVISION				CONTRACT NO		AF 04(695)-580		REVISION		E	
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	BASIS OF USE			(8)							
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	TEST DATE AVAILABLE	SPECIAL TEST EQUIPMENT:										
52	-	254E700 SVS 4241	SERVICING UNIT, PORTABLE GAS	-	1	4,282	8,564	SSD	NON STD	CFE	-	UNCLASS	8	-	11-62	ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS			*							
(4) NOMENCLATURE																			Q. C. ACCEPTANCE							
																			SYSTEM CHECKOUT							
																			STRUCTURE LAB							
																			Q. C. OPER. ASSURANCE							
																			OPERATIONAL AGE:							
																			MISSILE ASSEMBLY BUILDING	2						
																			VEHICLE SUPPORT BUILDING							
																			LAUNCH PAD							
																			LAUNCH SERVICE BUILDING							
																			LAUNCH OPERATIONS BLDG. -							
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																			AF TRACKING STATIONS							
																			DELIVER WITH SV							
TOTAL OPERATIONAL AGE																			2							



END ITEM NO. 53
PROPELLANT CARRIER N₂O₄

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LISTING 62SD340																		
GENERAL ELECTRIC										CONTRACT NO AF 04(695)-580		REVISION E																	
MISSILE AND SPACE DIVISION										(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)		
ITEM	FUNCTIONAL	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	LAB	TYPE	CLASS	PROPOSED	SOURCE	REMARKS	LEAD TIME	DATE	APPROVED	FIRST	BASIS OF USE										
53	-	254E579 SVS 4450	CARRIER, PROPELLANT (N ₂ O ₄)		1	8,895	17,790	SSD	NON	STD	CFE	-	UNCLASS	12	-	1-63			SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV										
(4) NOMENCLATURE										The PROPELLANT CARRIER (N ₂ O ₄) consists of a portable aluminum rack device mounted on caster rollers, and is designed to support two 156-pound tetroxide cylinders connected by means of a manifold. The carrier measures approximately 30 inches wide, 30 inches deep, and 60 inches high.										TOTAL OPERATIONAL AGE									
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :										A propellant carrier is required to transport the tetroxide (N ₂ O ₄) mixture to the filling area in the Launch Service Building for introduction into the Propellant Servicing Unit (N ₂ O ₂). It shall also permit N ₂ O ₄ to be removed for disposal in the event of an abort. All points on the carrier shall be grounded and all materials used in its construction shall be corrosion resistant.																			

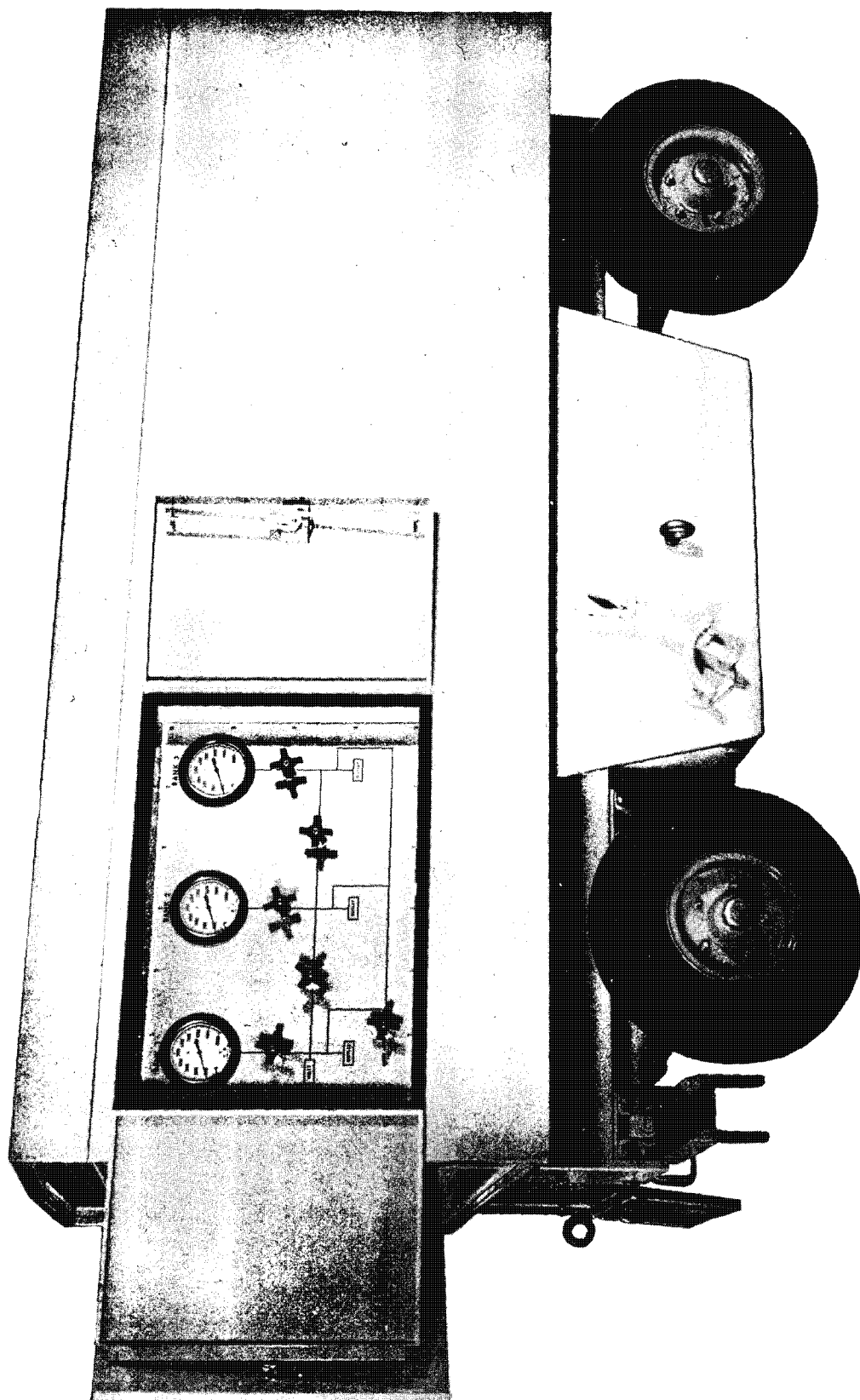


END ITEM NO. 57
COLD GAS SUPPLY (FREON)

62SD340 REV. D

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GENERAL ELECTRIC										AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966		62SD340	
MISSILE AND SPACE DIVISION										CONTRACT NO. AF 04(695)-580										REVISION E			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)						
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE						
57	-		255E279 SYS 4232	SUPPLY, COLD GAS	-	1	101,161	202,322	SSD	NON STD	CFE	-	UNCLASS	20	1-63								
(4) NOMENCLATURE																							
The COLD GAS SUPPLY consists of the Freon 14 (CF₄) and Freon 14-Nitrogen (CF₄-N₂) mixture cylinders, a diaphragm type compressor, and associated piping, regulators, gauges, safety and monitoring devices mounted in a compact cabinet. The gas supply is capable of loading two vehicle gas tanks of two cubic feet capacity each with gas at 3500 psi at 120°F. The output line from the supply is coupled to the gas tank. The line terminates in a flexible hose to facilitate attachment. Regulator valves control the gas pressure and rate of flow. The compressor is capable of raising the gas pressure from cylinder pressure to 3500 psi. The filling line contains a bleed valve used to reduce the pressure in the line before disconnecting the supply or to dump the contents of the tank. The gas supply monitors give a continuous indication of the pressure and temperature of the gas in the vehicle tank during filling operations. The supply monitoring unit consists of a pressure transducer, temperature thermistor, an ammeter (temperature monitor), a voltmeter (pressure monitor) and a power source to operate the circuit components. The cabinet measures approximately 79 inches wide, 70 inches deep, and 69 inches high.																							
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																							
A cold gas supply is required at the MAB to preload the vehicle stabilization and BUSS tanks with Freon 14 at the correct pressure and temperature. This represents a partial load with the final loading accomplished at the launch pad. Interconnecting fittings on the supply are compatible with fittings on the vehicle. The cold gas supply also loads the SRV spin and despin tanks with a Freon 14-Nitrogen (CF₄-N₂) mixture at the MAB.																							
BASIS OF USE																							
SPECIAL TEST EQUIPMENT:																							
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS																							
Q. C. ACCEPTANCE																							
SYSTEM CHECKOUT																							
STRUCTURE LAB																							
Q. C. OPER. ASSURANCE																							
OPERATIONAL AGE:																							
MISSILE ASSEMBLY BUILDING																							
VEHICLE SUPPORT BUILDING 2																							
LAUNCH PAD																							
LAUNCH SERVICE BUILDING																							
LAUNCH OPERATIONS BLDG. -																							

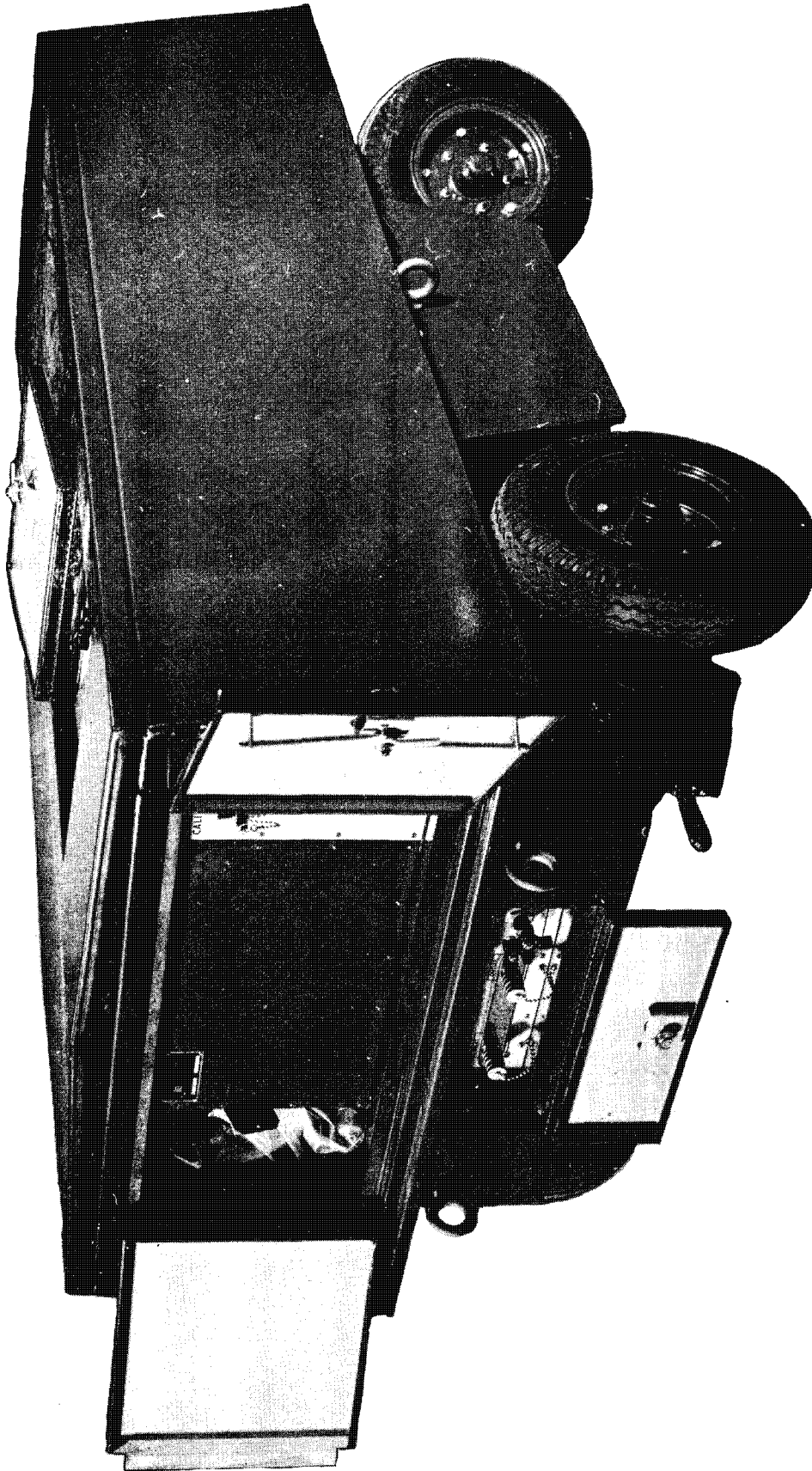


END ITEM NO. 58
HIGH PRESSURE NITROGEN SUPPLY

62SD340 REV. D

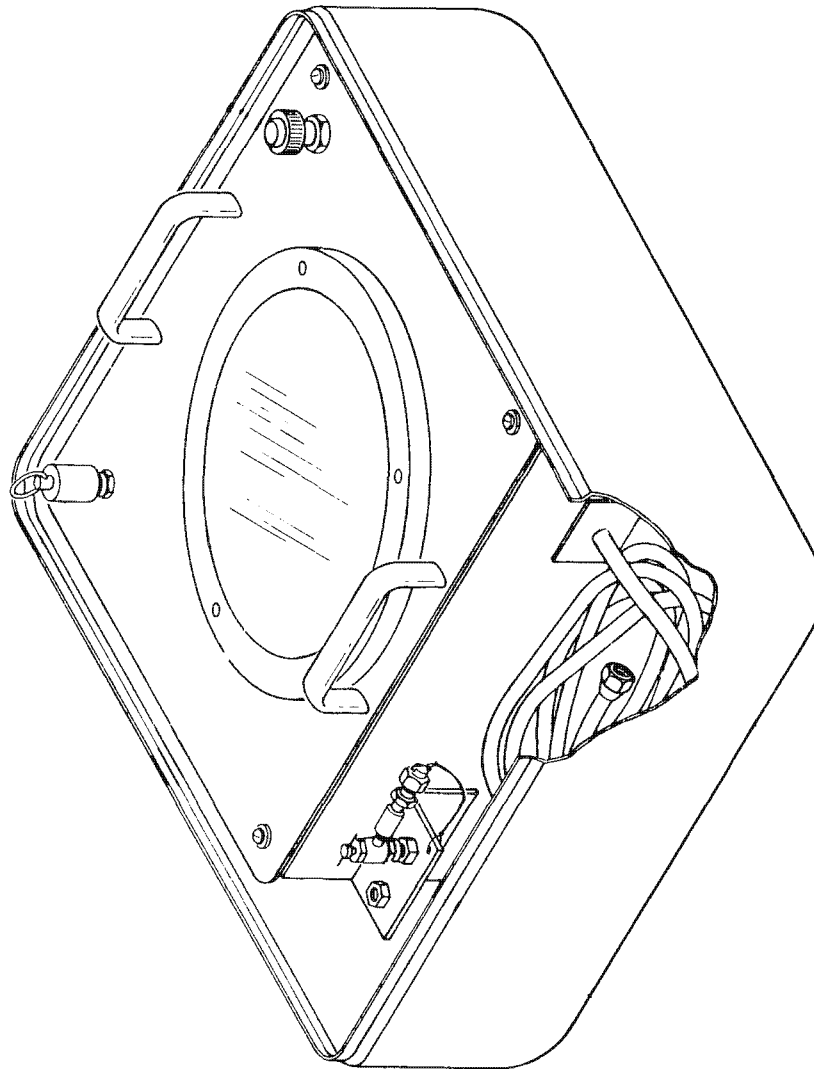
PAGE NO. 128

AEROSPACE GROUND EQUIPMENT LIST													DATE 7 NOVEMBER 1966	JUST NO. 62SD340				
GENERAL ELECTRIC													MISSILE AND SPACE DIVISION		CONTRACT NO. AF 04(695) -580		REVISION E	
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/OWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(7) UNIT PRICE	(8) TOTAL PRICE	(9) LAB COGNIZANT	(10) TYPE CLASS.	(11) PROPOSED SOURCE	(12) SOURCE CODE	(13) CLASS AND REMARKS	(14) LEAD TIME (WEEKS)	(15) DATE APPROVED	(16) FIRST AVAILABLE DATE	(17) BASIS OF USE	(18)	
58	-	893D778 SVS 4233	SUPPLY,HIGH PRESSURE NITROGEN	-	1	13.072	65.365	SSD	NON STD	CFE	-	UNCLASS	20	-	12-62		SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 5 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV	*
(4) NOMENCLATURE																		
The HIGH PRESSURE NITROGEN SUPPLY consists of twelve nitrogen cylinders, associated plumbing, pressure gauges, and control valves fully enclosed and mounted within a towable trailer. The trailer is constructed of steel and is fitted with a spring suspension system, hand brake, tow rings, and four rubber tire mounted wheels. The trailer body is completely steel paneled and houses the twelve nitrogen cylinders and associated plumbing grouped into three banks of four cylinders in parallel. An end positioned hinged and handle door provides access to the cylinders; and side positioned handle latched double doors provide access to a control panel. The control panel contains three pressure gauges and associated vents, safety devices, and control valves.																		
The trailer measures approximately 98 inches long, 86 inches wide, and 82 inches high.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																		
A transportable, manually operated, unregulated nitrogen supply trailer is required at the MAB to service the SV PLUMBING LEAK RATE DETECTOR (Item 61). Three banks of nitrogen cylinders in the trailer are equipped with pressure gauges, vents and safety devices. The cylinders are charged through a common inlet line containing a filter and dryer. Three quick-disconnect outlets can be supplied separately or in any combination by one or more of the cylinder supply banks.																		
TOTAL OPERATIONAL AGE																		
5																		



END ITEM 59
HIGH PRESSURE HELIUM SUPPLY

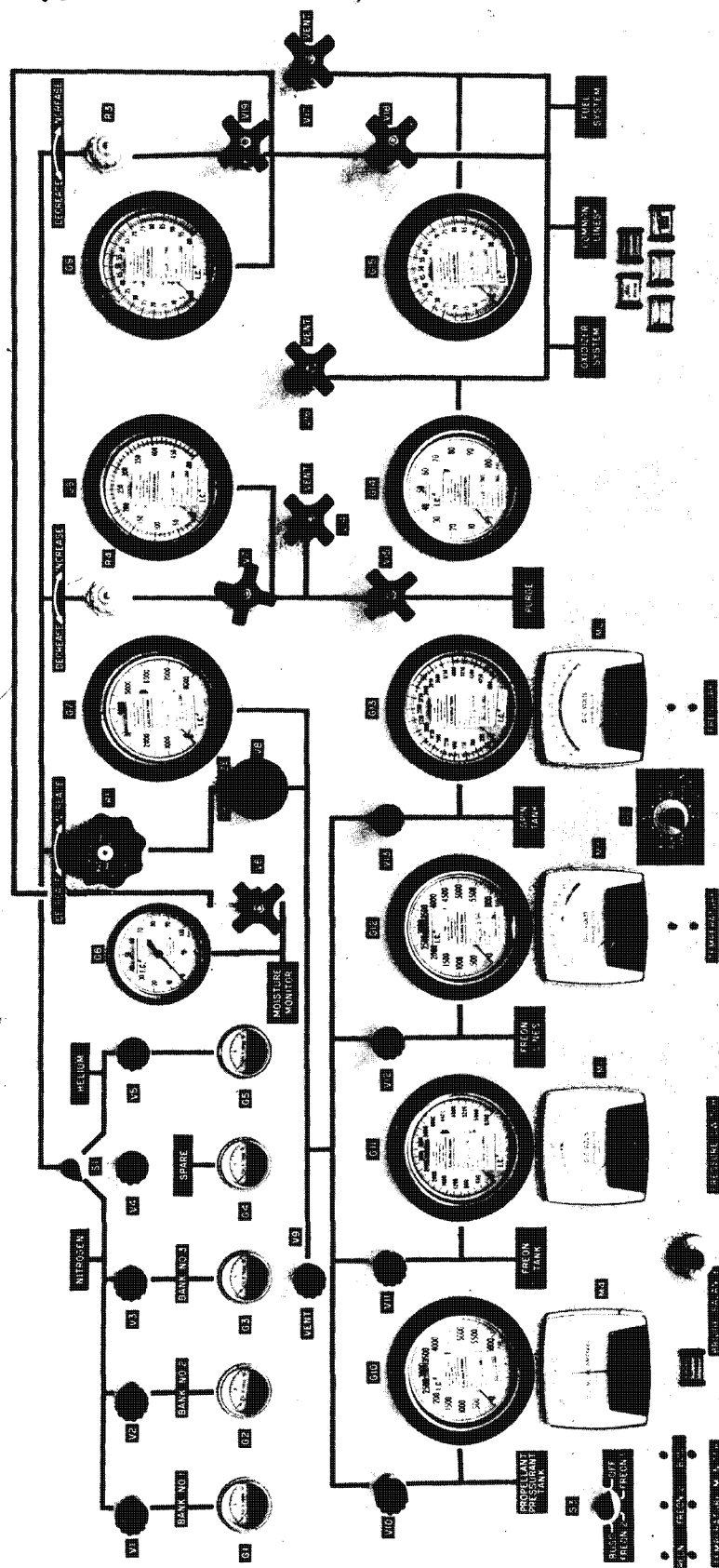
AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966		LISTING 62SD340			
MISSILE AND SPACE DIVISION										CONTRACT NO. AF 04(695)-580		REVISION E			
GENERAL ELECTRIC															
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(19)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCES	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE
59	-	993D794 SVS 4234	SUPPLY, HIGH PRESSURE HELIUM	-	1	7,926	15,852	SSD	NON STD	CFE	-	UNCLASS	20		12-62
(4) NOMENCLATURE The HIGH PRESSURE HELIUM SUPPLY consists of two helium cylinders, associated plumbing, and pressure gauges and controls all fully enclosed and mounted within a towable trailer. The trailer is constructed of steel and is fitted with a spring suspension system, hand brake, towing draw bar, and four rubber tire mounted wheels. The trailer body is completely steel paneled and houses the two helium cylinders, associated plumbing, and control panel. End positioned handle latched double doors provide access to the control panel which contains pressure gauges, control valves, and vent and safety devices. The trailer measures approximately 81 inches long, 47 inches wide, and 37 inches high.															
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: A transportable, manually operated, unregulated helium supply trailer is required at the MAB to service the SV PLUMBING LEAK RATE DETECTOR (Item 61). Two helium cylinders are equipped with pressure gauges, and have common vent and safety devices. The cylinders are charged through a common inlet line containing a filter and dryer. Delivery is accomplished through a single quick-disconnect outlet.															
TOTAL OPERATIONAL AGE													2		



ART 698-41

END ITEM NO. 60
BATTERY LEAK RATE DETECTOR

AEROSPACE GROUND EQUIPMENT LIST																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)	(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)	(72)	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)	(81)	(82)	(83)	(84)	(85)	(86)	(87)	(88)	(89)	(90)	(91)	(92)	(93)	(94)	(95)	(96)	(97)	(98)	(99)	(100)	(101)	(102)	(103)	(104)	(105)	(106)	(107)	(108)	(109)	(110)	(111)	(112)	(113)	(114)	(115)	(116)	(117)	(118)	(119)	(120)	(121)	(122)	(123)	(124)	(125)	(126)	(127)	(128)	(129)	(130)	(131)	(132)	(133)	(134)	(135)	(136)	(137)	(138)	(139)	(140)	(141)	(142)	(143)	(144)	(145)	(146)	(147)	(148)	(149)	(150)	(151)	(152)	(153)	(154)	(155)	(156)	(157)	(158)	(159)	(160)	(161)	(162)	(163)	(164)	(165)	(166)	(167)	(168)	(169)	(170)	(171)	(172)	(173)	(174)	(175)	(176)	(177)	(178)	(179)	(180)	(181)	(182)	(183)	(184)	(185)	(186)	(187)	(188)	(189)	(190)	(191)	(192)	(193)	(194)	(195)	(196)	(197)	(198)	(199)	(200)	(201)	(202)	(203)	(204)	(205)	(206)	(207)	(208)	(209)	(210)	(211)	(212)	(213)	(214)	(215)	(216)	(217)	(218)	(219)	(220)	(221)	(222)	(223)	(224)	(225)	(226)	(227)	(228)	(229)	(230)	(231)	(232)	(233)	(234)	(235)	(236)	(237)	(238)	(239)	(240)	(241)	(242)	(243)	(244)	(245)	(246)	(247)	(248)	(249)	(250)	(251)	(252)	(253)	(254)	(255)	(256)	(257)	(258)	(259)	(260)	(261)	(262)	(263)	(264)	(265)	(266)	(267)	(268)	(269)	(270)	(271)	(272)	(273)	(274)	(275)	(276)	(277)	(278)	(279)	(280)	(281)	(282)	(283)	(284)	(285)	(286)	(287)	(288)	(289)	(290)	(291)	(292)	(293)	(294)	(295)	(296)	(297)	(298)	(299)	(300)	(301)	(302)	(303)	(304)	(305)	(306)	(307)	(308)	(309)	(310)	(311)	(312)	(313)	(314)	(315)	(316)	(317)	(318)	(319)	(320)	(321)	(322)	(323)	(324)	(325)	(326)	(327)	(328)	(329)	(330)	(331)	(332)	(333)	(334)	(335)	(336)	(337)	(338)	(339)	(340)	(341)	(342)	(343)	(344)	(345)	(346)	(347)	(348)	(349)	(350)	(351)	(352)	(353)	(354)	(355)	(356)	(357)	(358)	(359)	(360)	(361)	(362)	(363)	(364)	(365)	(366)	(367)	(368)	(369)	(370)	(371)	(372)	(373)	(374)	(375)	(376)	(377)	(378)	(379)	(380)	(381)	(382)	(383)	(384)	(385)	(386)	(387)	(388)	(389)	(390)	(391)	(392)	(393)	(394)	(395)	(396)	(397)	(398)	(399)	(400)	(401)	(402)	(403)	(404)	(405)	(406)	(407)	(408)	(409)	(410)	(411)	(412)	(413)	(414)	(415)	(416)	(417)	(418)	(419)	(420)	(421)	(422)	(423)	(424)	(425)	(426)	(427)	(428)	(429)	(430)	(431)	(432)	(433)	(434)	(435)	(436)	(437)	(438)	(439)	(440)	(441)	(442)	(443)	(444)	(445)	(



END ITEM NO. 61
SATELLITE VEHICLE PLUMBING LEAK RATE DETECTION

62SD340 REV. E

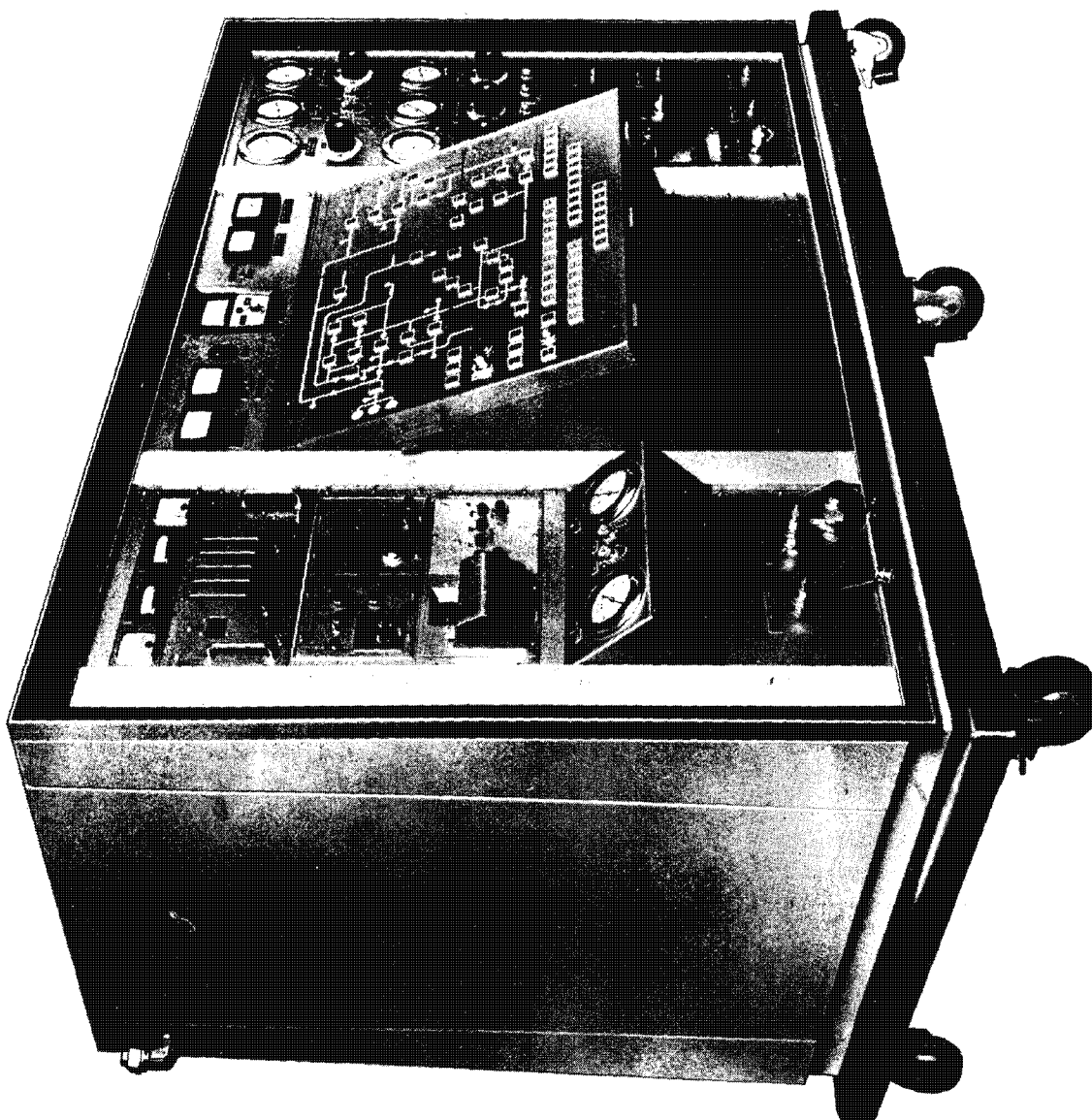
PAGE NO. 134

AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION							
DATE: 7 NOVEMBER 1966										62SD340							
CONTRACT NO. AF 04(695)-580										REVISION E							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM	FUNCTIONAL	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	CLASS	PROPOSED	SOURCE	SOURCE	CLASS AND	LEAD TIME	DATE	DATE
SEQUENCE	INDEX	MFG PART/DWG NUMBER SPECIFICATION														APPROVED	AVAILABLE
61	-	489L307 SVS4240	DETECTOR, SATELLITE VEHICLE PLUMBING LEAK RATE	-	1	75.251	75,251	SSD	NON STD	CFE	-	UNCLASS	20	1-63	-	-	-
(4) NOMENCLATURE																	
The SATELLITE VEHICLE PLUMBING LEAK RATE DETECTOR consists of the following components: gas pressurization console; power supply; portable mass spectrometer; nozzle caps; leak bubbler; moisture analyzer; and a purge system. The gas pressurization console contains all inlets, valves, regulators, pressure gauges, outlets, and safety provisions for directing and/or mixing nitrogen and freon; for pressurizing leak testing each vehicle fluid and propellant system; and for filling the vehicle nitrogen and freon tank. The pressurization console also contains a display of vehicle tank pressure and temperatures. The nozzle caps serve to cap off the stabilization nozzles during leak tests. The leak bubbler provides for leak evaluation of propellant bladders. The moisture analyzer measures the moisture content of gas in the vehicle. The purge system provides for a dry nitrogen purge of the vehicle and prevents condensation of atmospheric moisture of the vehicle tanks when vented after high pressure fill.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
A highly sensitive leak detector is required to assure the integrity of all vehicle fluid systems. The detector pressurizes individual fluid systems with helium combined with various ratios of nitrogen, and leaks are detected and monitored by sniffing with a mass spectrometer probe. The detector controls and monitors the purging and pressure of all gaseous systems in the MAB prior to launch.																	
TOTAL OPERATIONAL AGE															1		



END ITEM NO. 62
PROPELLANT SERVICING UNIT (N₂O₄)

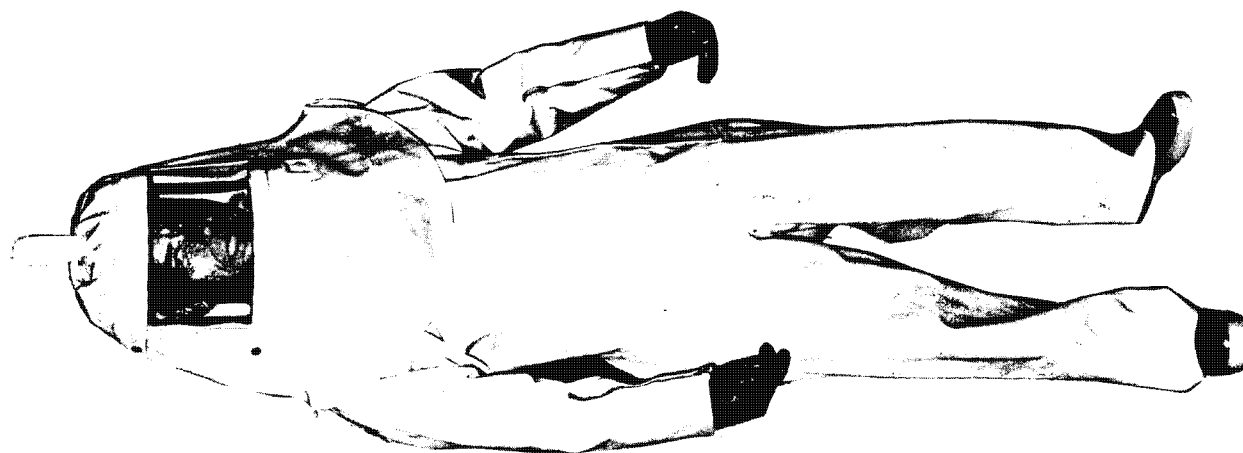
AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	62SD340						
MISSILE AND SPACE DIVISION										CONTRACT NO. AF 04(695)-580	REVISION E						
GENERAL ELECTRIC																	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE	BASIS OF USE		
62	-	254E590 SVS4451	SERVICING UNIT, (N ₂ O ₄) PROPELLANT	-	1	194,876	194,876	SSD	NON STD	CFE	UNCLASS	20	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATION DELIVER WITH SV		
(4) NOMENCLATURE															TOTAL OPERATIONAL AGE		
The PROPELLANT SERVICING UNIT (N ₂ O ₄) consists of a castored upright metal cabinet containing a fuel storage tank, a propellant vacuum pump- ing unit, a propellant positive pressure pumping system, a propellant weighing system, spheres of compressed nitrogen, integral flow control panel with associated plumbing, complete nitrogen purge system, and an N ₂ O ₄ exhaust system. The storage tank is spherical and equipped with a filler and a sampling top. The vacuum pumping units consist of explosion-proof drive motors, high vacuum pumps, and a water ejector aspirator - type pump. Positive pressure fuel transfer is accomplished by means of pressure nitrogen from the integral storage cylinders. The flow control panel contains all valves and gauges required to perform all carrier missions. The nitrogen purge system permits all carrier plumbing to be completely purged of N ₂ O ₄ ; the N ₂ O ₄ exhaust system carries all purged, overflowed, or other unwanted N ₂ O ₄ to the water ejector pump which, in turn, carries all such N ₂ O ₄ to the approved disposal areas. The propellant weighing system employs a force ring mounted on the fuel tank to directly weight the fuel tank and contents. The weighing system electronics are packaged in a single box containing both a visual readout meter and a permanent weight recorder. The force ring is caged when the weighing system is not operating.															1		
The unit measures approximately 104 inches wide, 54 inches deep, and 78 inches high.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
A self-contained N ₂ O ₄ propellant mobile unit is required to perform oxidizer load and abort. The unit is complete with reservoir tank, pumping systems, weighing system, plumbing, and a control panel. It does not contain its own integral electrical power source. The equipment is capable of: removing sufficient N ₂ O ₄ to completely fuel the Satellite Vehicle (SV) at proper loads from bulk source; and also to completely defuel the SV. The mobile carrier unit must be complete corrosion resistant with all points grounded. The N ₂ O ₄ must be handled under a pad of N ₂ at all times, and all N ₂ O ₄ exhaust fumes must be ducted to approved N ₂ O ₄ disposal areas. The GANTRY OXIDIZER EQUIPMENT (Item 71), located on the gantry, is operated from this unit. The PROPELLANT CARRIER (Item 53) transports the Tetroxide (N ₂ O ₄) mixture to this unit.																	



END ITEM NO. 63
PROPELLANT SERVICING UNIT (N₂H₄)

62SD340 REV. D

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LIST NO 62SD340					
MISSILE AND SPACE DIVISION										CONTRACT NO AF 04(695)-580	REVISION E					
GENERAL ELECTRIC																
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(16)	(17)	(8)		
ITEM SEQUENCE	FUNCTIONAL INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	CLASS	PROPOSED SOURCE	SOURCE CODE	REMARKS AND CLASS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST DATE AVAILABLE	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
63	-	254E590 SVS4452	SERVICING UNIT (N ₂ H ₄), PROPELLANT	-	1	194,876	191,876	SSD	NON STD	CFE	-	UNCLASS	20	-	1-63	
(4) NOMENCLATURE																
The PROPELLANT SERVICING UNIT (N ₂ H ₄) consists of a castered upright metal cabinet containing a fuel storage tank, a propellant vacuum pumping unit, a propellant positive pressure pumping system, a propellant weighing system, spheres of compressed nitrogen, integral flow control panel with associated plumbing, complete nitrogen purge system, and an N ₂ H ₄ exhaust system. The storage tank is spherical and equipped with a filler and sampling top. The vacuum pumping units consist of explosion-proof drive motors, high vacuum pumps, and a water ejector aspirator - type pump. Positive pressure fuel transfer is accomplished by means of pressure nitrogen from the integral storage cylinders. The flow control panel contains all valves and gauges required to perform all carrier missions. The nitrogen purge system permits all carrier plumbing to be completely purged of N ₂ H ₄ ; the N ₂ H ₄ exhaust system carries all purged, overflowed, or other unwanted N ₂ H ₄ to the water ejector pump which, in turn, carries all such N ₂ H ₄ to the approved disposal areas. The propellant weighing system employs a force ring mounted in the fuel tank to directly weight the fuel tank and contents. The weighing system electronics are packaged in a single box containing both a visual readout meter and a permanent weight recorder. The force ring is caged when the weighing system is not operating.																
The unit measures approximately 104 inches wide, 54 inches deep and 78 inches high.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
A self-contained N ₂ H ₄ propellant mobile unit is required to perform fuel load and abort. The unit is complete with reservoir tank, pumping systems, weighing system, plumbing, and a control panel. It does not contain its own integral electrical power source. The equipment is capable of removing sufficient N ₂ H ₄ to completely fuel the Satellite Vehicle (SV) from bulk source and at proper load; and completely defuel the SV. The mobile carrier unit must be completely corrosion resistant with all points grounded. The N ₂ H ₄ must be handled under a pad of N ₂ at all times, and all N ₂ H ₄ exhaust fumes must be ducted to approved N ₂ H ₄ disposal areas. The GANTRY FUEL EQUIPMENT (item 70), located on the gantry, is operated from this unit.																
TOTAL OPERATIONAL AGE															1	



END ITEM NO. 47.1
PROPELLANT HANDLER'S SUIT

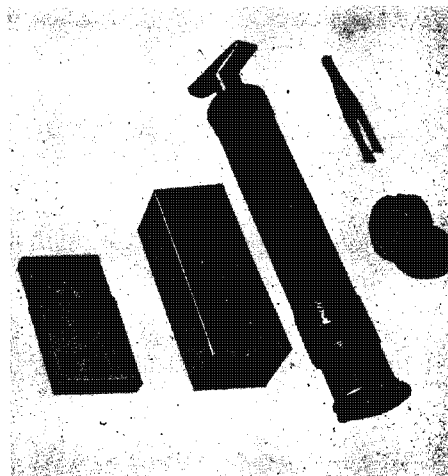
62SD340 REV. E

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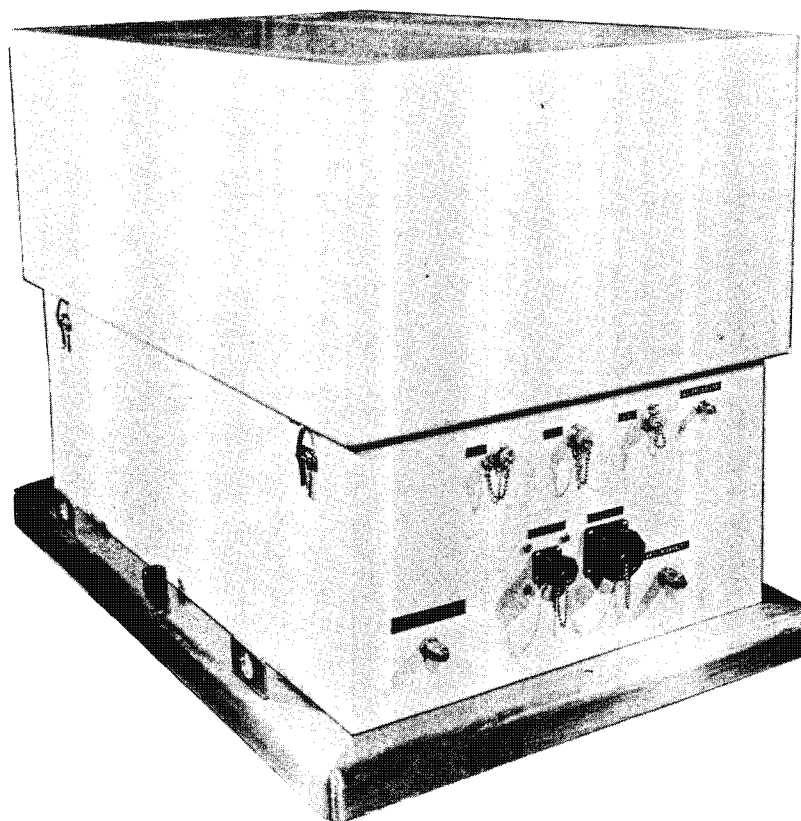
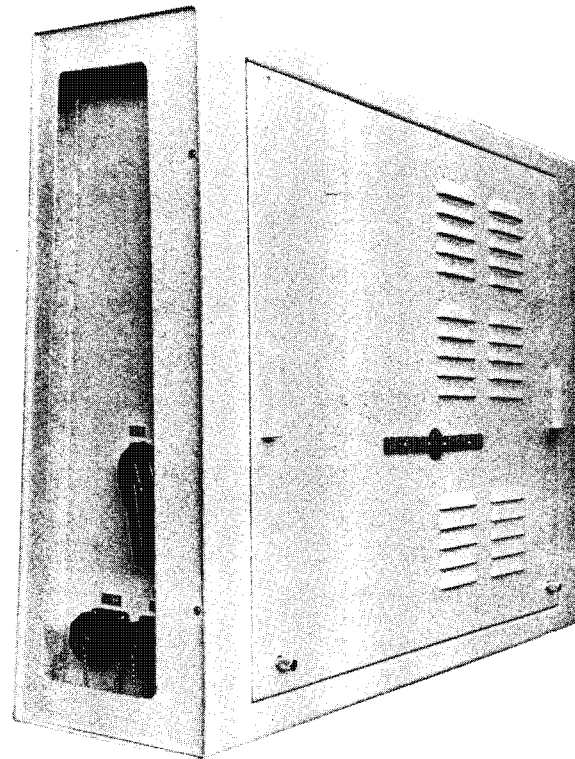
AEROSPACE GROUND EQUIPMENT LIST										DATE 1 APRIL 1964	LIST NO 62SD340						
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT										CONTRACT NO AF04(695)-76	REVISION D						
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED ATSC	(15) FIRST DATE AVAILABLE	(7) BASIS OF USE	(8) SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
67.1	-	489L321 G1 SVS 5146	SUITS, PROPELLANT HANDLER	-	1	330	4,950	SSD	NON STD	CFE	-	UNCLASS	12	-	11-63		
(4) NOMENCLATURE																	
The PROPELLANT HANDLER SUITS consist of a torso section, hood, gloves, boots, and compressed air breathing apparatus. The site communication system is used with the suits and sufficient space is provided beneath the hoods to accommodate the headgear. Two types of torso sections are included. One torso section is two piece and is used by the primary equipment operators. The other torso section is a coverall type used by standby and safety personnel. Hoods are held in place by magnetic clips and have removable non-fog visors. Gloves are primarily vinyl-coated and attached to the arm cuffs by positive mechanical devices. Asbestos gloves are also provided for the standby personnel. The boots are constructed of molded vinyl with reinforced toes and non-skid soles. The breathing apparatus contains a supply of compressed air, face mask, regulator, controls, and a warning device to alert the wearer of a diminishing air supply. Resuscitation equipment is also provided for emergency purposes.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
Protective suits are required at the launch pad to completely enclose personnel working with propellant handling equipment and to afford protection from hydrazine and nitrogen tetroxide in both the liquid and gaseous state. The suits must provide space for voice communication equipment and includes a compressed air breathing apparatus which can supply 30 minutes of air to the wearer.																	
TOTAL OPERATIONAL AGE																	15



END ITEM NO. 68.1
MANUAL VAPOR DETECTOR SET

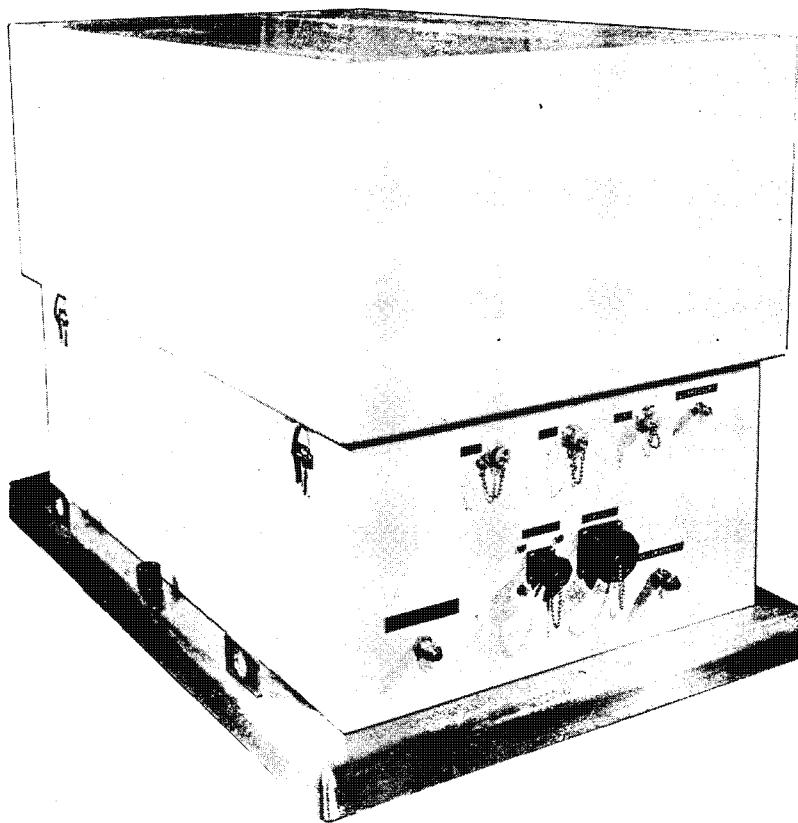
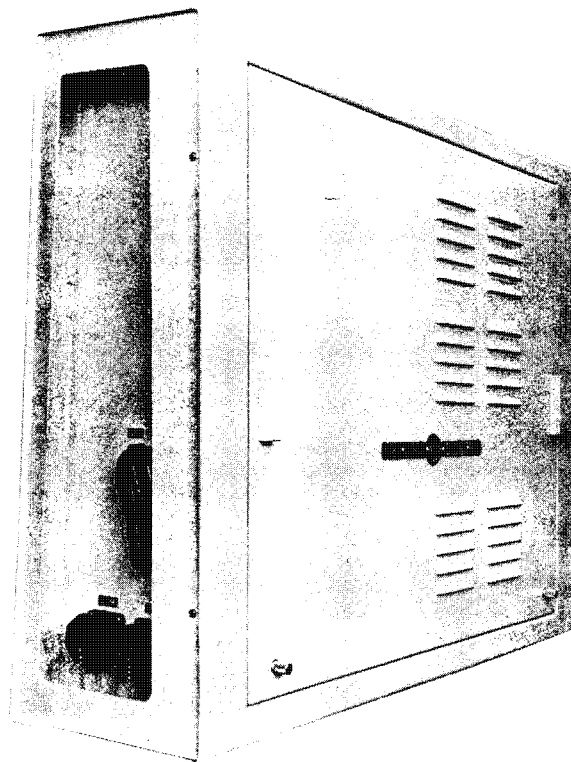


AEROSPACE GROUND EQUIPMENT LIST										DATE 1 APRIL 1964	LIST NO 62SD340					
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT										CONTRACT NO AF04(695)-76	REVISION D					
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION FROM AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS.	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) REMARKS AND CLASS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED AFSC	(15) FIRST AVAILABLE DATE	(18) BASIS OF USE
68.1	-	115C7345 G1 SVS 5033	SET, MANUAL VAPOR DETECTOR	-	2	231	693	SSD	NON STD	CFE	-	UNCLASS	12	-	11-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - PROCUREMENT AREA AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE															TOTAL OPERATIONAL AGE	
The MANUAL VAPOR DETECTOR SET consists of portable vapor sampling instruments with replaceable precalibrated indicating tubes or reagents. These instruments require indicator replacement after each sampling operation. Separate instruments are used for fuel and oxidizer vapors. Each type of vapor detector comes in a container which is clearly marked for proper application. Each container has full operating instructions and a supply of replaceable indicators. The Nitrogen Tetraoxide detector container is 3 inches in diameter by 12 inches long and has a carrying strap. The hydrazine detector equipment is housed in a metal container which measures 10 by 13 inches by 2.5 inches deep. A carrying handle is provided.															3	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
The manual vapor detector sets will support existing on-site propellant sniffer systems in the LSB areas. They will be used on-gantry for personnel safety and equipment checkout and in the LSB areas for securing propellant equipment. During transportation of propellants, these detectors will be available for monitoring purposes.																



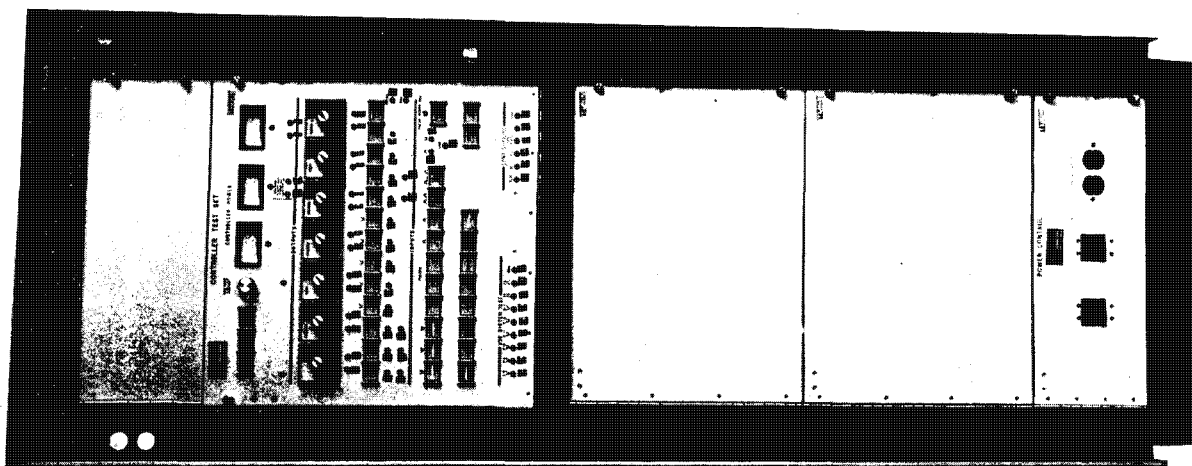
END ITEM NO. 70
GANTRY FUEL EQUIPMENT

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LIST NO 62SD340					
MISSILE AND SPACE DIVISION										CONTRACT NO AF 04(695)-580	REVISION E					
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) LAB COGNIZANT	(12) TYPE CLAS	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED AFSC (WEBS)	(15) DATE AVAILABLE FIRST	(8) BASIS OF USE
70	-	254E589 SVS 4327A	FUEL EQUIPMENT GANTRY	-	1	81,263	81,263	SSD	NON STD	CFE	-	UNCLASS	20	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE																
The GANTRY FUEL EQUIPMENT consists of various auxiliary items enclosed in a control box. The equipment includes remotely operated valves, driers, filters, electrical connectors, heater box, vacuum pump and plumbing flex lines for connection to the Satellite Vehicle. The control box is installed on the gantry. A separate box enclosure houses the heater elements, automatic controls, and circuit breaker required to maintain vehicle propellants at a temperature of 65° to 75° prior to entering the vehicle. The heater box is mounted below the gantry box for gravity drain. To permit remote operation of the heater box, temperature controllers and indicators and operational and safety switches are installed in the PROPELLANT SERVICING UNIT (Item 63). An interconnecting cable assembly is provided on the stand for control and indicator operation.																
The over-all size of the gantry control box is 52 inches long, 34 inches wide, and 37 inches high. The over-all size of the heater box enclosure is 44 inches long, 32 inches high, and 13 inches wide.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
A unit containing auxiliary valve, drier, filter, converter, pump and plumbing equipment is required on the gantry for remotely transferring fuel during PAD load and abort operations. An additional enclosure housing heating elements, automatic controlled heating thermistors, circuit breaker, relays, and related wiring is also required. Switches and controllers required to operate the equipment are to be mounted in the PROPELLANT SERVICING UNIT (Item 63) inside the ISB.																
TOTAL OPERATIONAL AGE															1	



END ITEM NO. 71
GANTRY OXIDIZER EQUIPMENT

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LISTING 62SD340					
MISSILE AND SPACE DIVISION										CONTRACT NO. AF 04(695)-580	REVISION E					
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART /DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) LAB COGNIZANT	(12) TYPE CLASS.	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRMS AVAILABLE DATE	(8) BASIS OF USE
71	-	251E588 SVS 4328A	OXIDIZER EQUIPMENT, GANTRY		1	81,263	81,263	SSD	NON STD	CFE	-	UNCLASS	20	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE																
The GANTRY OXIDIZER EQUIPMENT consists of various auxiliary items enclosed in a control box. The equipment includes remotely operated valves, driers, filters, electrical connectors, heater box, vacuum pump and plumbing flex lines for connection to the Satellite Vehicle. The control box is installed on the gantry. A separate box enclosure houses the heater elements, automatic controls, and circuit breaker required to maintaining vehicle propellants at a temperature of 65° to 75° F prior to entering the vehicle. The heater box is mounted below the gantry box for gravity drain. To permit remote operation of the heater box, temperature controllers and indicators and operational and safety switches are installed in the PROPELLANT SERVICING UNIT (Item 62). An interconnecting cable assembly is provide on the stand for control and indicator operation.																
The over-all size of the gantry control box is 52 inches long, 34 inches wide, and 37 inches high. The over-all size of the heater box enclosure is 44 inches long, 32 inches high, and 13 inches wide.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
A unit containing auxiliary valve, drier, filter, connector, pump and plumbing equipment is required on the gantry for remotely transferring fuel during PAD load and abort operations. An additional enclosure housing heating elements, automatic controlled heating thermistors, circuit breaker, relays, and related wiring is also required. Switches and controllers required to operate the equipment are to be mounted in the PROPELLANT SERVICING UNIT (Item 62) inside the LSB.																
TOTAL OPERATIONAL AGE																
1																

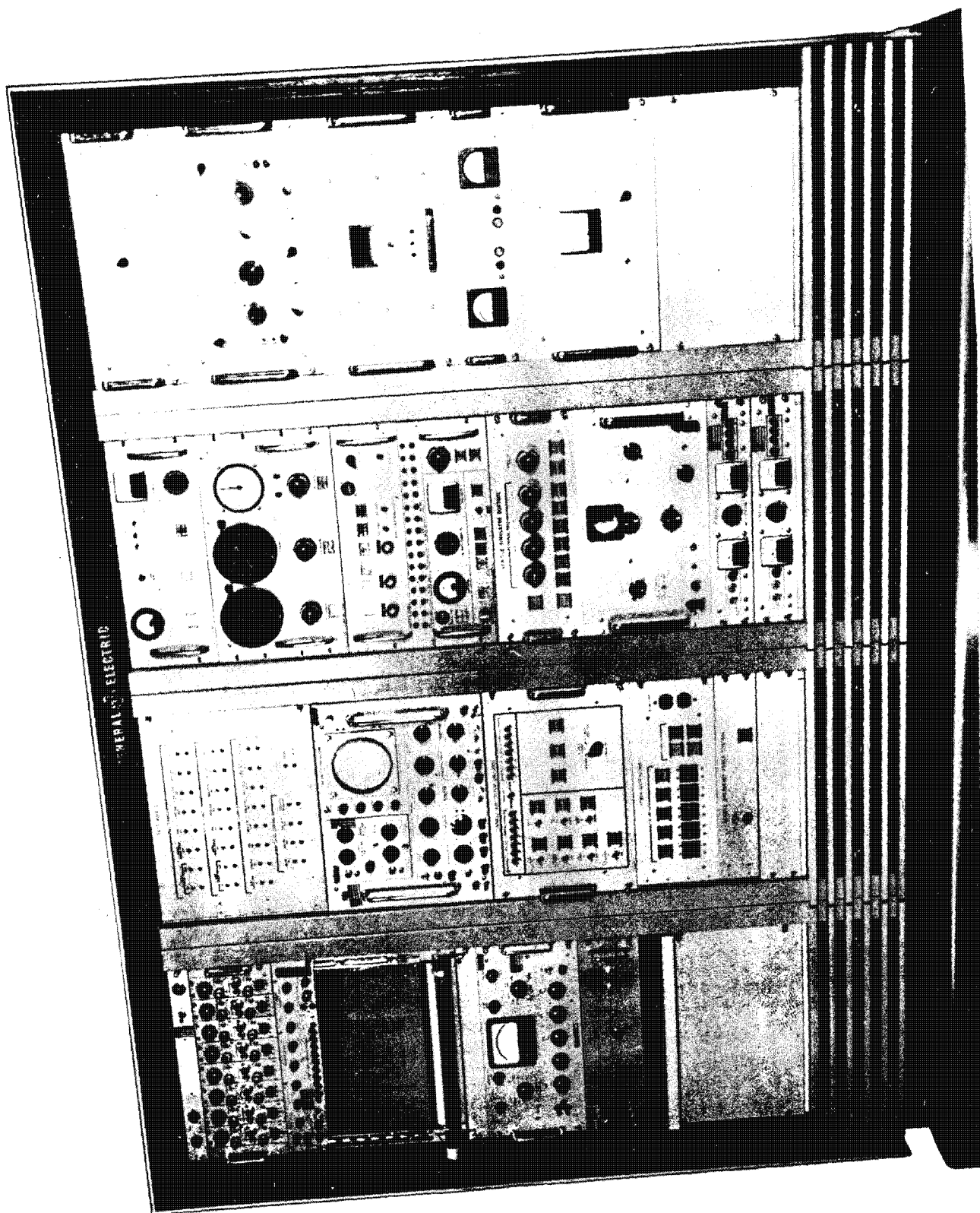


END ITEM NO. 79
CONTROLLER TEST SET

62SD340 REV. E

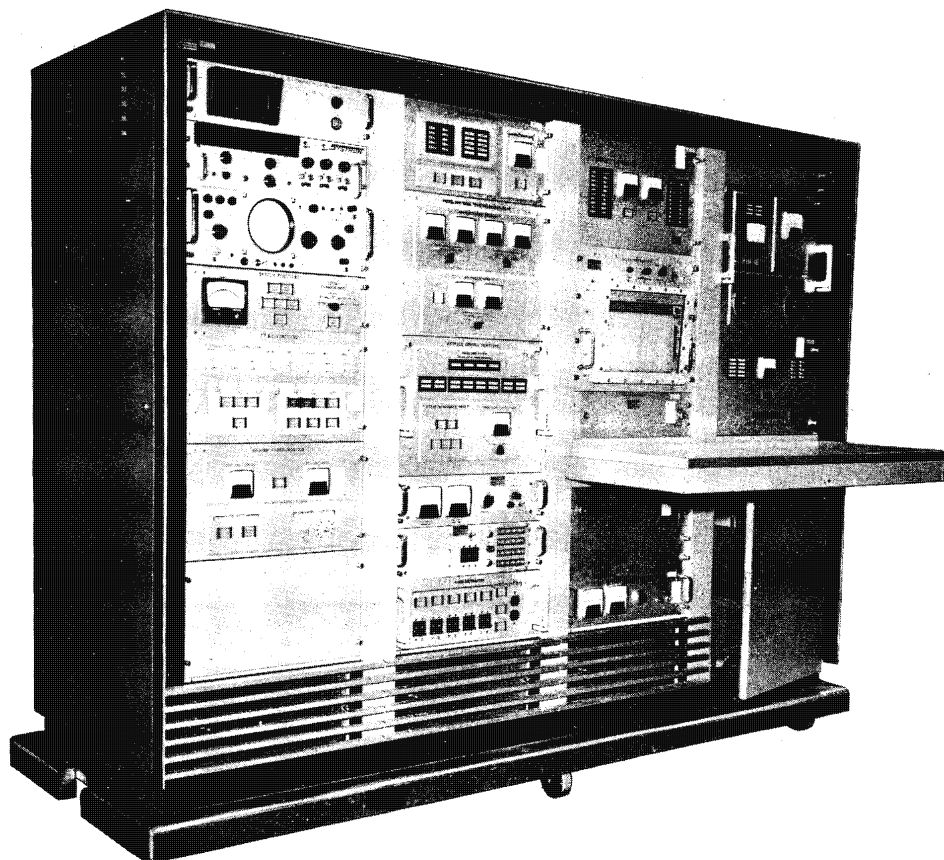
PAGE NO. 163A

AEROSPACE GROUND EQUIPMENT LIST													DATE	DIST NO		62SD340		
GENERAL ELECTRIC													7 NOVEMBER 1966		REVISION		E	
MISSILE AND SPACE DIVISION													CONTRACT NO.		AF04(695)-580			
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)	
ITEM	FUNCTIONAL	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	PROPOSED	SOURCE	CLASS AND	LEAD TIME	DATE	FIRST	BASIS OF USE		
SEQUENCE	AREA INDEX	MFG PART / DWG NUMBER SPECIFICATION							LAB	CLASS.	SUPPLY	REMARKS		APPROVED	AVAILABLE			
78		255E129 SYS5187A	Test Set, Controller		1			SSD	NON	CFE	-	Unclass				1		
(4) NOMENCLATURE																		
The Controller Test Set is a single bay, free standing upright metal cabinet with front, rear and side access. On the front, it contains a control panel and an AC power distribution panel. The rear of the cabinet contains an exterior connector panel, while on the inside there is a component panel. The side doors allow access to two power supplies and the plug in components on the rear component panel.																		
The unit measures 24 inches wide, 24 inches deep, 75 inches high.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :																		
The Controller Test Set is used to test the Piggyback controller subsystem at the factory during component and system test, and at the MAB. In component test it validates the controller by simulating all its inputs and monitoring all outputs. Subsystem checkout verifies the controller and all the subsystem harnessing. System tests consists of monitoring either the controller outputs or other system functions. The signal display is on front panel indicators and/or an event recorder (not a part of the test set).																		
TOTAL OPERATIONAL AGE																	1	



END ITEM NO. 80
STABILIZATION SUBSYSTEM TEST SET

AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT							
DATE 1 APRIL 1964										CSTN. 62SD340							
CONTRACT NO. AFO4(695)-76										REVISION D							
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRST DATE AVAILABLE	(7) BASIS OF USE	(8)
80	-	254E788G1 SVS 4258	TEST SET, STABILIZATION SUBSYSTEM	-	1	101,954	101,954	SSD	NON STD	CFE	-	UNCLASS	18	-	2-63	ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE	*
(4) NOMENCLATURE																	
The STABILIZATION SUBSYSTEM TEST SET is a four-bay, free-standing upright metal cabinet. The left-hand bay contains an eight-channel recorder, two test demodulators, and one low-level voltmeter. The left-center bay includes a test point panel, an oscilloscope, a command subsystem simulator, and a main power controller. The right-center bay contains temperature monitors and manual regulators, two component test panels, a low-frequency generator, and a relay amplifier unit. The right-hand bay includes all platform test table control electronics. The test set is capable of locating subsystem malfunctions to the component level. Tests are sequenced manually and the set contains no self-checking features.																	
The test set measures 88 inches wide, 36 inches deep, 74 inches high, and weighs approximately 3000 pounds.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :																	
Equipment is required to perform all stabilization subsystem closed or open loop tests. The equipment provides infrared stimulation to the subsystem by simulating infrared inputs, and provides controls for driving the INERTIAL PLATFORM TEST TABLE (Item 20). The test set monitors and records subsystem stability, gains, polarities, and saturation levels. It is capable of determining servo loop analysis, verifies the temperature regulation network, and determines drift performance when required.																	
TOTAL OPERATIONAL AGE															1		



END ITEM NO. 82
SV SYSTEM TEST SET

62SD340 REV. D

PAGE NO. 170

GENERAL ELECTRIC										AEROSPACE GROUND EQUIPMENT LIST										LIST NO. 62SD340	
MISSILE AND SPACE DIVISION										DATE 7 NOVEMBER 1966										REVISION E	
CONTRACT NO. AF 04(695)-580										DATE 7 NOVEMBER 1966										REVISION E	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)				
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE	BASIS OF USE					
82	-	254E755 254E755 SVS 4260	TEST SET, SATELLITE VEHICLE SYSTEM	-	1	81,554	163,108	SSD	NON STD	CFE	-	UNCLASS	18	-	1-63						
(4) NOMENCLATURE																					
The SATELLITE VEHICLE SYSTEM TEST is a four-bay, free standing upright metal cabinet. The left-hand bay contains a counter; tracking, telemetry and command controls; oscilloscope; system functions; ground power control; digital ohmmeter; and a blank panel. The left-center bay contains the separation controls and monitors; propellant tanks monitors; attitude controls and monitors; 28 volt d-c test set power supply; logic power supply; and power distribution. The right-center bay contains the orbit functions; transmitters; operation monitor; and 28 volt d-c ground control power supply. The right-hand bay contains the communications panel; attitude control; temperature monitor control; field operations panel; and storage provisions.																					
The test set measures approximately 98 inches wide, 36 inches deep, and 74 inches high.																					
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																					
Equipment is required to verify that all vehicle subsystems operate properly in conjunction with one another when interconnected as a system. The minimum requirement of the test set is to isolate problem areas to respective subsystems, and in many cases to a specific circuit. Operation is predominantly manual but some capability is provided for automatic operation. Commands to the vehicle are executed by the COMMAND SIGNAL GENERATOR (Item 89) and some switches of this test set. The test set applies 120 volt, single phase, 60 cycle, and 28 volt d-c heater power. To perform a system test, the test set requires the support of the GROUND POWER UNIT (Item 91) for 28 volt d-c power; the SATELLITE INSTRUMENTATION GROUND MONITORING EQUIPMENT (Item 88) for monitoring telemetry signals; the COMMAND SIGNAL GENERATOR (Item 89) for commands; and the SIMULATED FLIGHT KIT (Item 90).																					
SPECIAL TEST EQUIPMENT:																					
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS *																					
Q. C. ACCEPTANCE SYSTEM CHECKOUT *																					
STRUCTURE LAB *																					
Q. C. OPER. ASSURANCE *																					
O/A VAN *																					
OPERATIONAL AGE:																					
MISSILE ASSEMBLY BUILDING 2																					
VEHICLE SUPPORT BUILDING																					
LAUNCH PAD																					
LAUNCH SERVICE BUILDING																					
LAUNCH OPERATIONS BLDG. -																					
</																					

62SD340 REV. E

ITEM SEQUENCE NO. 82
PAGE NO. 171

AEROSPACE GROUND EQUIPMENT LIST															DATE	7 NOVEMBER 1966	LIST NO	62SD340		
MISSILE AND SPACE DIVISION															CONTRACT NO	AF 04(695)-580			REVISION	E
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(8)				
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE AFSC APPROVED	FIRST AVAILABLE DATE	BASIS OF USE				
83	-	720E382 SYS 4331A	ADAPTER CABLES, SATELLITE VEHICLE	-	1	17,878	53,634	SSD	NON STD	CFE	-	UNCLASS	8	-	2-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 3 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV TOTAL OPERATIONAL AGE 3				

(4) NOMENCLATURE

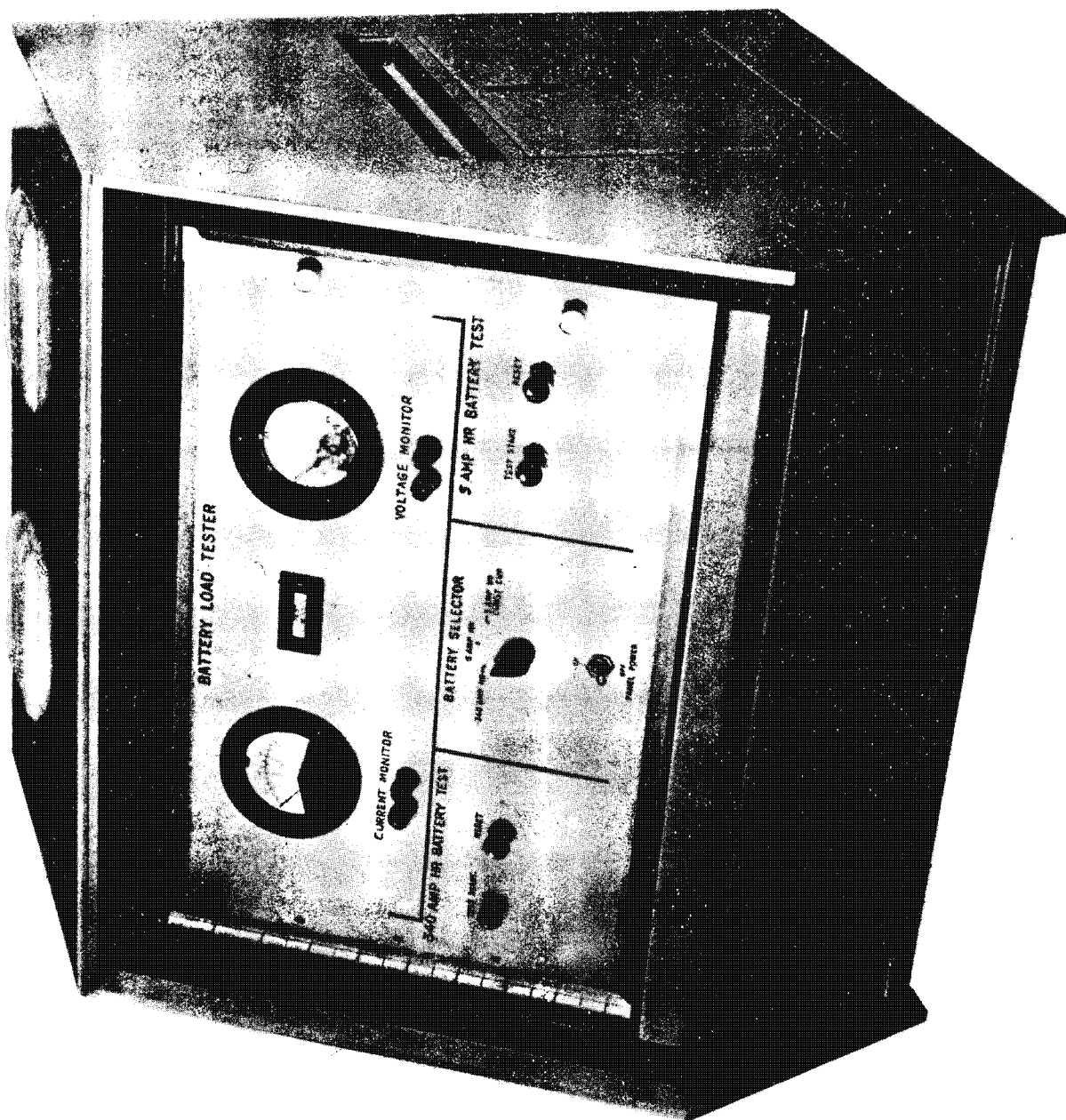
The SATELLITE VEHICLE ADAPTER CABLES comprise those cables used to interconnect SV sections and are employed in electrically mating all SV sections while in a separated configuration.

The cables measure various approximate lengths of 48 inches and 120 inches.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

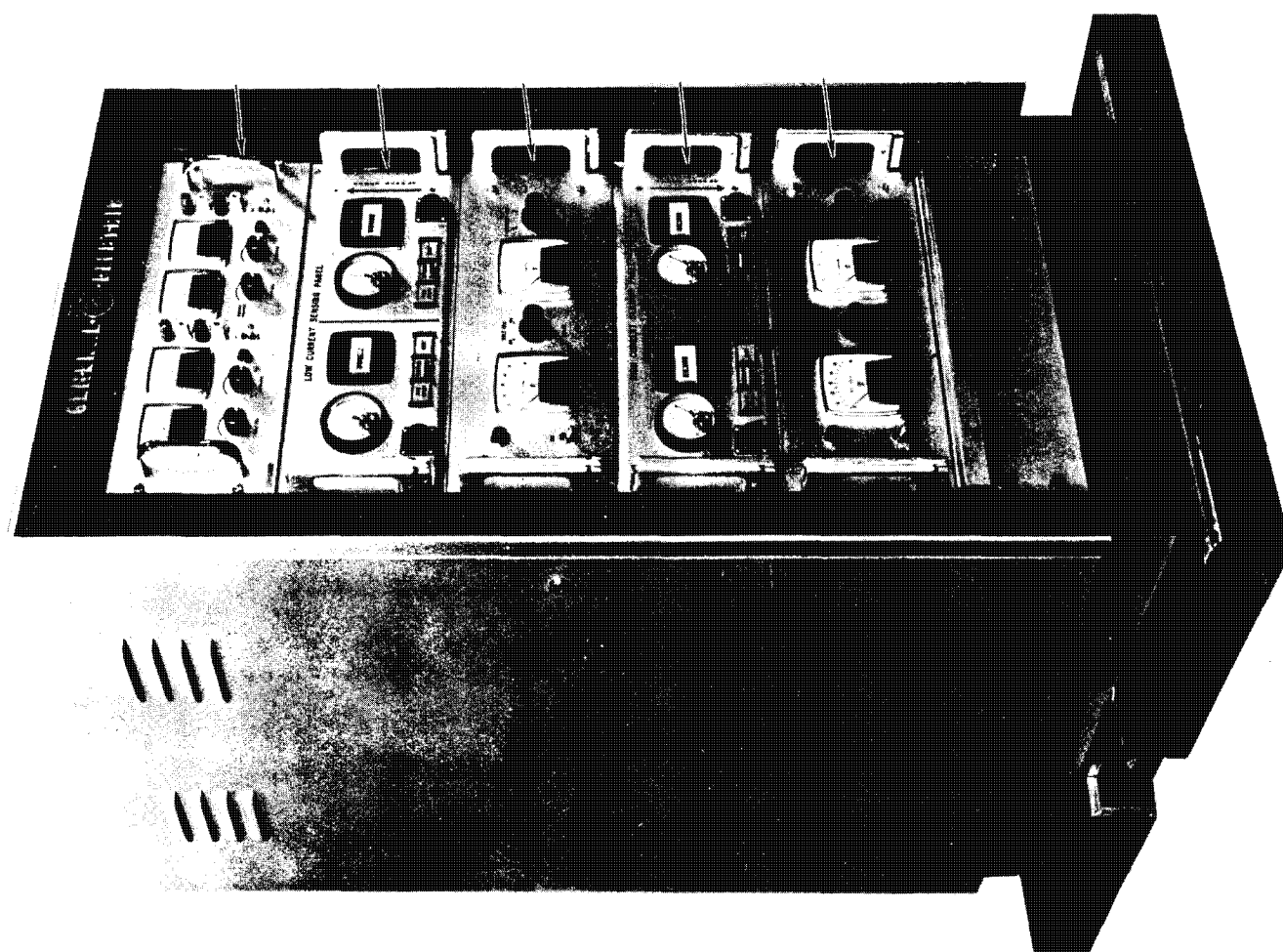
Cables are required in the MAB to connect all physically separated SV sections in order that electrical tests can be performed. The adapter cables are fully compatible with all SV inter-section connectors.

AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION		DATE 7 NOVEMBER 1964	CONTRACT NO. AF04(695)-580	REVISION 62SD340	E		
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT LAB	TYPE CLASS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME	DATE AFSC APPROVED	FIRST AVAILABLE DATE	BASIS OF USE	
85-1		159L553	Auxiliary Test Equipment, MAB					SSD	NON STD	CFE	-	Unclass					SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE The Auxiliary Test Equipment (MAB) consists of junction boxes, cable assemblies and a drop simulator assembly. The junction boxes and cable assemblies are used for trouble-shooting purposes by providing test points at the connector interfaces between the vehicle harness and all components. The drop simulator assembly consists of a patch-panel set which simulates umbilical electrical disconnect.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: Junction boxes and cables are required to provide test points between the vehicle harness and all components for trouble-shooting of problem areas in the MAB.																	
TOTAL OPERATIONAL AGE													1				



END ITEM NO. 85
BATTERY LOAD TEST SET

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LIST NO 62SD340			
MISSILE AND SPACE DIVISION										CONTRACT NO. AF 04(695)-580	REVISION E			
GENERAL ELECTRIC														
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(17)	(16)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED
85	-	243E524 SVS 4244	TEST SET, BATTERY, LOAD	-	1	9,629	19,258	SSD	NON STD	CFE	-	UNCLASS	16	2-63
(4) NOMENCLATURE														
The BATTERY LOAD TEST SET is a portable unit of welded aluminum construction. The test set consists of a voltage and current monitor and contains load resistors, sensing circuits, and time circuits. The test set is supplied with two adapter cables. The test set is manually operated, does not require power input, and has no self-checking features.														
The test set measures 18 inches wide, 24 inches deep, 21 inches high, and weighs approximately 75 pounds.														
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:														
A tester is required to apply electrical loads to the dismounted 340 amp-hr and 5 amp-hr SV batteries. The tester provides a discharge load to the 5 amp-hr battery. The tester provides monitoring of battery characteristics and access for attaching a recorder. This tester is listed as Item 314 on Contract No. AF 04 (695)-6.														
SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV														
TOTAL OPERATIONAL AGE													2	

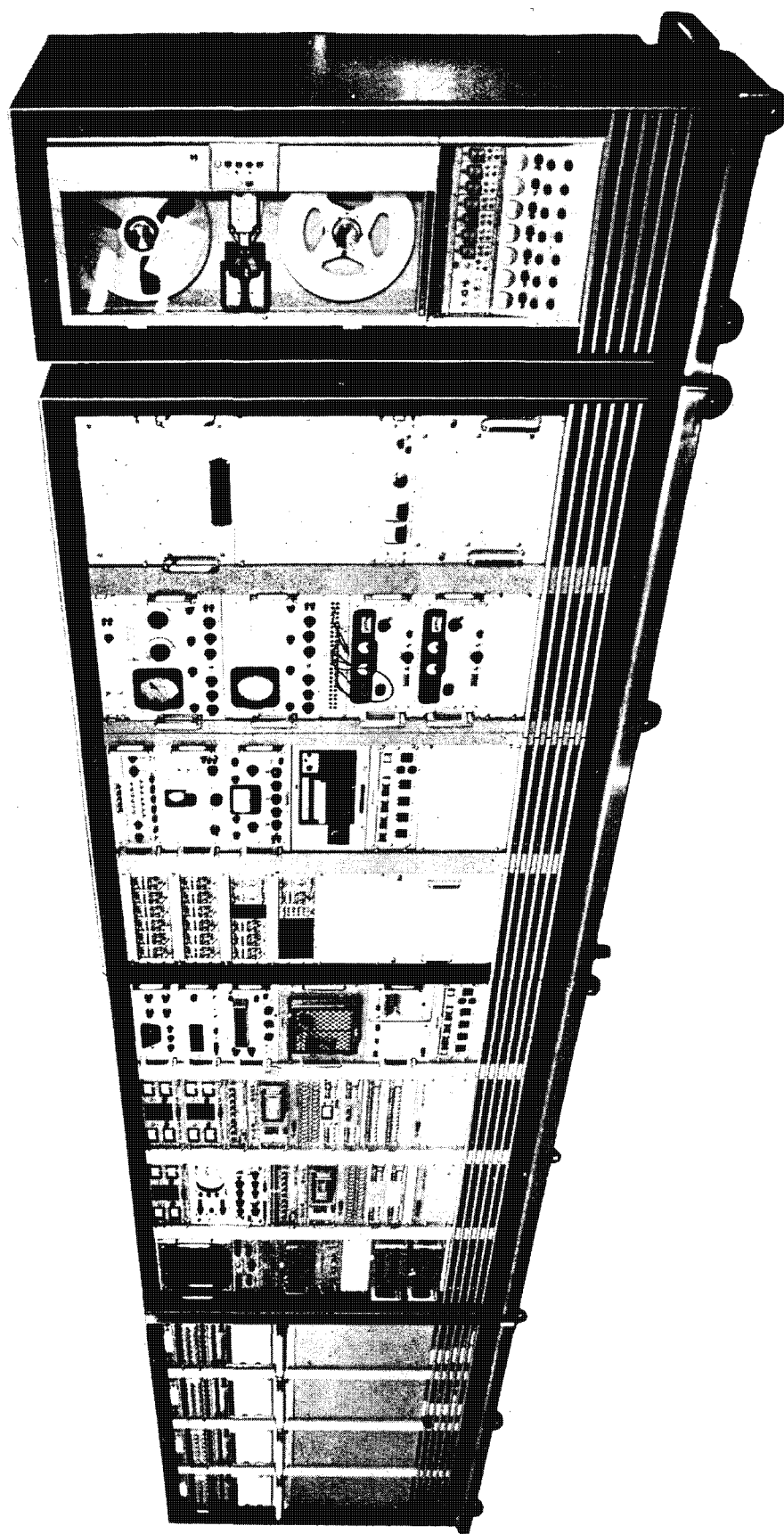


END ITEM NO. 86
TEST BATTERY CHARGER

62SD340 REV. D

PAGE NO. 176

AEROSPACE GROUND EQUIPMENT LIST										DATE 1 APRIL 1964	LIST NO 62SD340						
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT										CONTRACT NO. AF04(695)-76	REVISION D						
GENERAL ELECTRIC																	
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(16)	(17)	(15)	(7)	(18)	
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COINIZANT	TYPE CLASS	PROPOSED SUPPLY	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	BASIS OF USE		
86	-	716D928 G1 SVS 4245	CHARGER, TEST BATTERY	-	1	14,508	14,508	SSD	NON STD	CFE	-	UNCLASS	16	-	12-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE	
(4) NOMENCLATURE The TEST BATTERY CHARGER is a single-bay, free-standing metal cabinet. The charger is composed of power supplies, control and sensing circuits, and meter panels. The charger is supplied with adapter cables and operates from 120 vac. Two 250 amp-hr batteries may be charged simultaneously. The charger operates automatically and has no self-checking features. The charger measures 24 inches wide, 30 inches deep, 51 inches high, and weighs approximately 500 pounds.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: Equipment is required to recharge the dismounted 250 amp-hr and 5 amp-hr SV test batteries. The charger supplies a constant charging current to the test batteries and, through a sensing circuit, provides for an automatic shutoff of the charging circuit when the battery has been fully charged. The charger is listed as Item 316 on Contract No. AF 04 (695)-6, except that the tape advance provisions are not included.																	
															OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV		
															TOTAL OPERATIONAL AGE		
															1		



END ITEM NO. 88

SIGME

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PAGE NO. 180

AEROSPACE GROUND EQUIPMENT LIST													DATE 7 NOVEMBER 1966	LIST NO 62SD340				
MISSILE AND SPACE DIVISION													CONTRACT NO AF 04(695)-580	REVISION E				
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(7) UNIT PRICE	(8) TOTAL PRICE	(9) COGNIZANT	(10) TYPE CLASS	(11) PROPOSED SUPPLY SOURCE	(12) SOURCE CODE	(13) CLASS AND REMARKS	(14) LEAD TIME (WEEKS)	(15) DATE APPROVED	(16) FIRST AVAILABLE DATE	(17) BASIS OF USE	(18)	
88	-	822D410 SVS 4246	GROUND MONITOR EQUIPMENT SATELLITE INSTRUMENTATION	-	1	399,305	1,197,915	SSD	NCN STD	CFE	-	UNCLASS	30	-	1-63		SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - 2 AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE																		
The SATELLITE INSTRUMENTATION GROUND MONITOR EQUIPMENT (SIGME) consists of 13 bays physically mated into a dual 8-bay cabinet, one 4-bay cabinet, and one single-bay cabinet. The SIGME includes the following assemblies: 90-channel decommutation unit, 30-channel decommutation unit, quick look monitor, scanner, test oscillator, T/M spectrum analyzer, digital voltmeter, digital recorder, oscilloscope, counter, tape recorder, differential VTVM, control panel, T/M oscillator, RF patch panel, recording oscillograph, T/M receivers, master patch panel, power supply, discriminators, brush recorders, logic, signal stimulator, and power distribution panel. The SIGME will localize T/M system malfunctions to the component level. Operating and self-checking functions are semi-automatic. The SIGME includes all hardwires and coaxial cables necessary for interconnection with T/M system test points. The SIGME measures 330 inches wide, 42 inches deep, and 75 inches high.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																		
Equipment is required to function as a telemetry data acquisition system during subsystem and system tests in the MAB and on the PAD. The equipment receives T/M data, via hardware or from SV antenna; reduces the data, and displays and/or records the data in real time. The equipment does not provide T/M stimulation or SV power. The SIGME is fully compatible with the TELEMETRY SYSTEM STIMULATOR (Item 87), the LAB SIGNAL DISTRIBUTION UNIT (Item 118), the SV T-M system, and the TIME CORRECTION UNIT (Item 88, 2).																		
TOTAL OPERATIONAL AGE																3		

AEROSPACE GROUND EQUIPMENT LIST																	
GENERAL ELECTRIC			MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT														
DATE: 1 APRIL 1964			CONTRACT NO: AF04(695)-76			REVISION: D											
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB. AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT LAB	TYPE CLASS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE	
88.1		114C3715G1 SVS 4454	ADAPTER, SIGME	-	1	123,979	123,979	SSD	NON STD	CFE	-	UNCLASS	22	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV	
																TOTAL OPERATIONAL AGE	

(4) NOMENCLATURE

The SIGME ADAPTER consists of a six-bay unit and contains auxiliary decommutators and recorders. Two 30-channel decommutator units are housed in a double bay cabinet and three 8-pen analog recorders are housed in a 4-bay cabinet. The magnetic tape recorder/reproducer of SIGME (Item 88) is used in conjunction with this end item. All prime SIGME units (Item 88) include the wiring capability to accept this end item.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

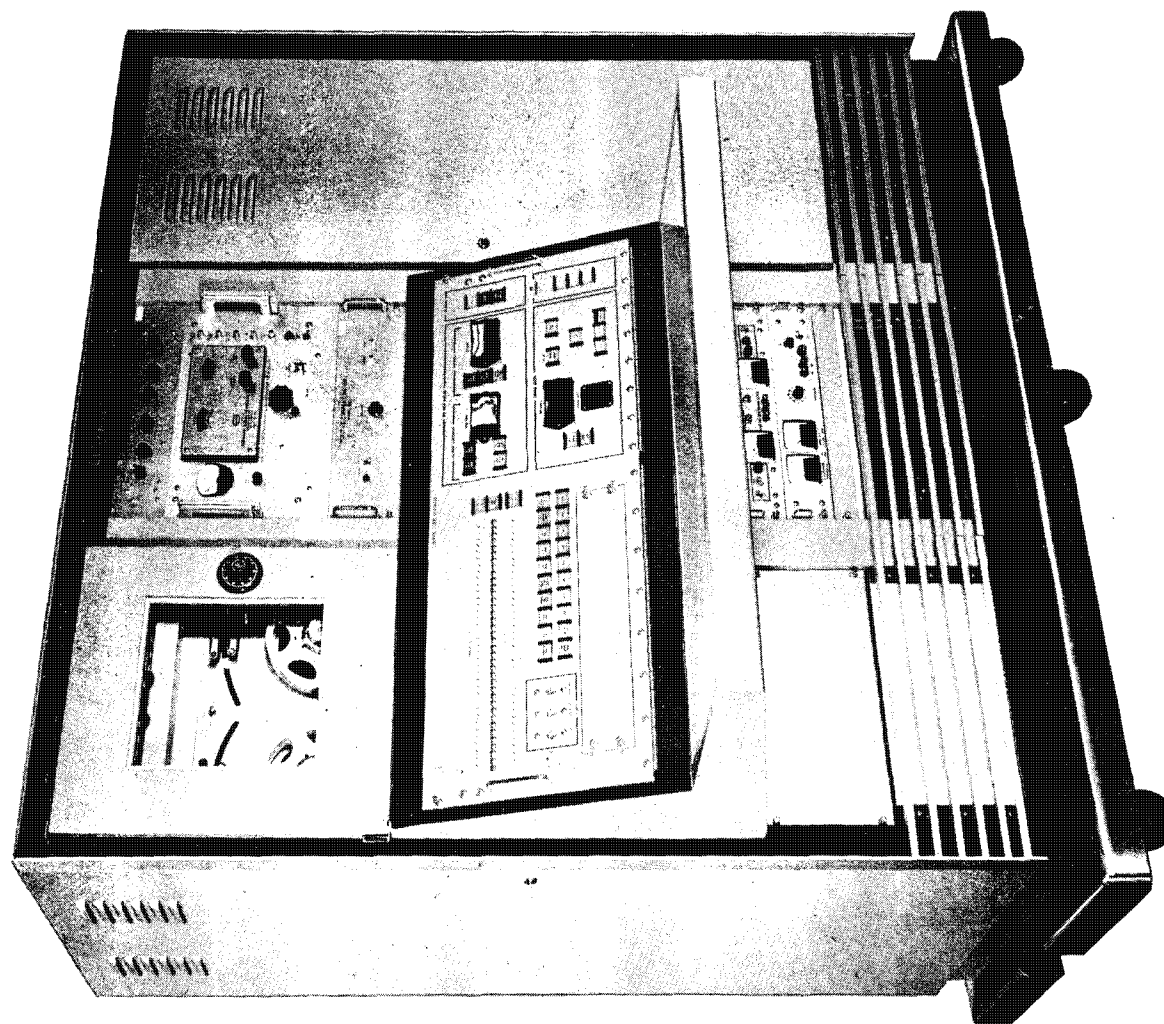
Auxiliary equipment is required in the MAB to expand the capabilities of SIGME (Item 88) by providing the ground station capability in the MAB for PAD operations.

AEROSPACE GROUND EQUIPMENT LIST														
MISSILE AND SPACE DIVISION										DATE 7 NOVEMBER 1966			CONTRACT NO. 62SD340	
REVISION E														
AF 04(695) -580														
Basis of Use														
SPECIAL TEST EQUIPMENT:														
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS														
Q. C. ACCEPTANCE														
SYSTEM CHECKOUT														
STRUCTURE LAB														
Q. C. OPER. ASSURANCE														
OPERATIONAL AGE:														
MISSILE ASSEMBLY BUILDING 2														
VEHICLE SUPPORT BUILDING														
LAUNCH PAD														
LAUNCH SERVICE BUILDING														
LAUNCH OPERATIONS BLDG. -														
LOB 1														
AF TRACKING STATIONS														
DELIVER WITH SV														
TOTAL OPERATIONAL AGE 3														

ITEM SEQUENCE	88.2	FUNCTIONAL AREA INDEX	-	STOCK NO	255E314 SVS 4494	NOMENCLATURE	UNIT, TIME CORRELATION	DESCRIPTION	PROB. AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS.	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AFSC	DATE FIRST AVAILABLE
(4) NOMENCLATURE The TIME CORRELATION UNIT is a single-bay, upright metal cabinet containing the following major components: nixie display panel; digital recorder; four logic card racks; nixie display power supply; logic card power supply; rear connector panel; and a blower unit. The cabinet is provided with casters for mobility and a foot-operated floor lock for rigidity. The unit weighs approximately 500 pounds.																					

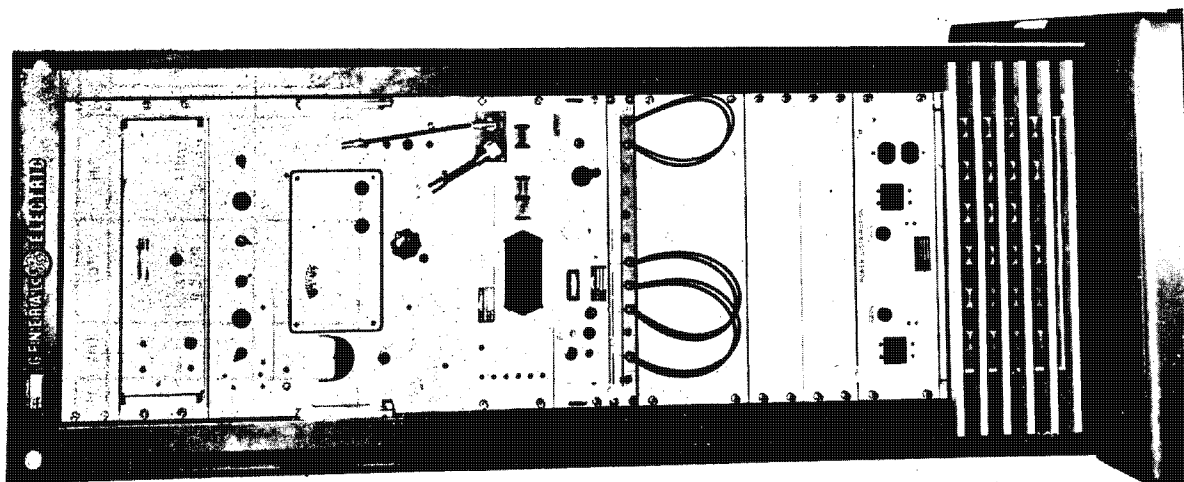
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A time correlation unit is required at the MAB and at the LOB to function as a logic decoding system during subsystem and system tests. The unit provides both a permanent record and a visual display of a comparison between PMR format -F time and vehicle programmer time. Through the use of interpolation the time correlation unit monitors the timing of all vehicle events within an accuracy of 0.1 seconds. The time correlation unit operates in conjunction with the SATELLITE INSTRUMENTATION GROUND MONITOR EQUIPMENT (Item 88).



END ITEM NO. 89
COMMAND SIGNAL GENERATOR

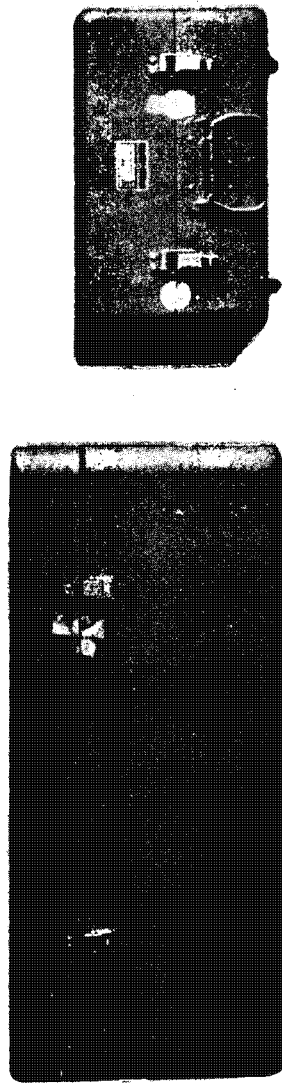
AEROSPACE GROUND EQUIPMENT LIST													DATE 7 NOVEMBER 1966	ST NO 62SD340			
GENERAL ELECTRIC MISSILE AND SPACE DIVISION													CONTRACT NO. AF 04(695) -580	REVISION E			
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO WFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESIGN AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT	(12) TYPE CLASS	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) REMARKS AND CLASS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED AFSC	(15) FIRST AVAILABLE DATE	(8) BASIS OF USE	
89	-	678E443 SVS 4247	GENERATOR COMMAND SIGNAL	-	1	71.699	215,097	SSD	NON STD	CFE	-	UNCLASS	26	-	1-63	* ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS * Q. C. ACCEPTANCE * SYSTEM CHECKOUT STRUCTURE LAB * Q. C. OPER. ASSURANCE	
(4) NOMENCLATURE The COMMAND SIGNAL GENERATOR is a three-bay, free-standing upright metal cabinet. The center bay contains a microwave signal generator, a pulse amplifier, power supplies, a blower, and part of the monitor and control panel. The left-hand bay contains a high-speed photoelectric tape reader/reeler, and the other portion of the monitor and control panel. The right-hand bay contains the logic power supply and logic card files governing tape control, tape address, tape decoding, bit count self-check, bit parity self-check, bit storage, word validation, bit storage and timing, and PPM encoder functions. The unit measures 78 inches wide, 42 inches deep, and 75 inches high.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: Equipment is required to generate coded command words for insertion into the SV command subsystem during system and subsystem tests in the MAB and tests on the launch pad. The signal generator incorporates, in a control loop, validation of Commands as received from telemetry, and it self-checks bit count and bit parity prior to insertion into the command subsystem. The signal generator must be capable of automatic operation of insertion of specific commands in any order based on signals from the applicable system, subsystem, or validation test control equipment. For MAB testing this item interfaces only with the SIGME. During testing on the pad this unit is compatible with the SIGME (Item 88), and with the LAUNCH CONTROL MONITOR CONSOLE (Item 110) through the LSB POWER AND DISTRIBUTION EQUIPMENT (Item 112) and the LOB SIGNAL DISTRIBUTION UNIT (Item 118).																	
															TOTAL OPERATIONAL AGE		3



END ITEM NO. 04.1
COMMAND DISTRIBUTION UNIT

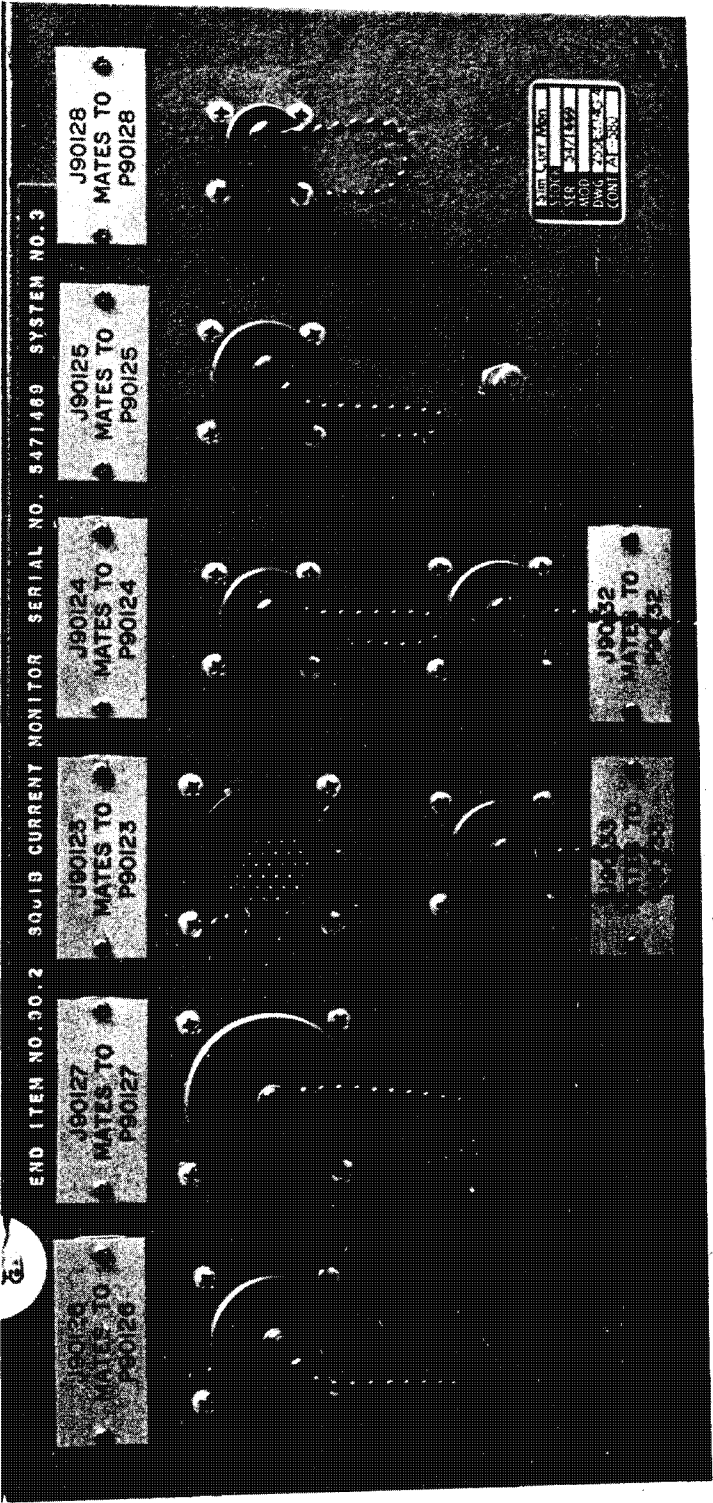
62SD340 REV. E

AEROSPACE GROUND EQUIPMENT LIST															DATE 7 NOVEMBER 1966	LIST NO 62SD340		
GENERAL ELECTRIC															CONTRACT NO. AF04(695)-580		REVISION E	
MISSILE AND SPACE DIVISION																		
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS.	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME	(17) DATE APPROVED DATE	(15) FIRST AVAILABLE DATE	(7) BASIS OF USE	(8)	
89.1		725E413G2 SVS 5310	Command Distribution Test Set														SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD NO. 2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - 1 AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE																		
The Command Distribution Unit is a single bay, free-standing upright metal cabinet. The bay consists of: a Traveling Wave Tube Amplifier, an "S" band signal generator, a crystal video receiver, patch panel, logic encoder for encoding command bit structure into a format suitable for telenctering a duplexer and an equipment blower.																		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																		
The Command Distribution Unit interfaces with the Command Signal Generator (Item 89), the Signal Distribution Unit, (Item 118), and the Satellite Instrumentation Ground Monitor Equipment (Item 88). It provides for the distribution of Command Signal Generator commands to the vehicle by either coaxial cable or an RF microwave link. The logic system demodulates the commands and conditions them for recording on the magnetic recorder of Item 88 for self-check purposes. Vehicle be con response is also conditioned by the Command Distribution Unit and recorded by Item 88.																		
TOTAL OPERATIONAL AGE																		
1																		

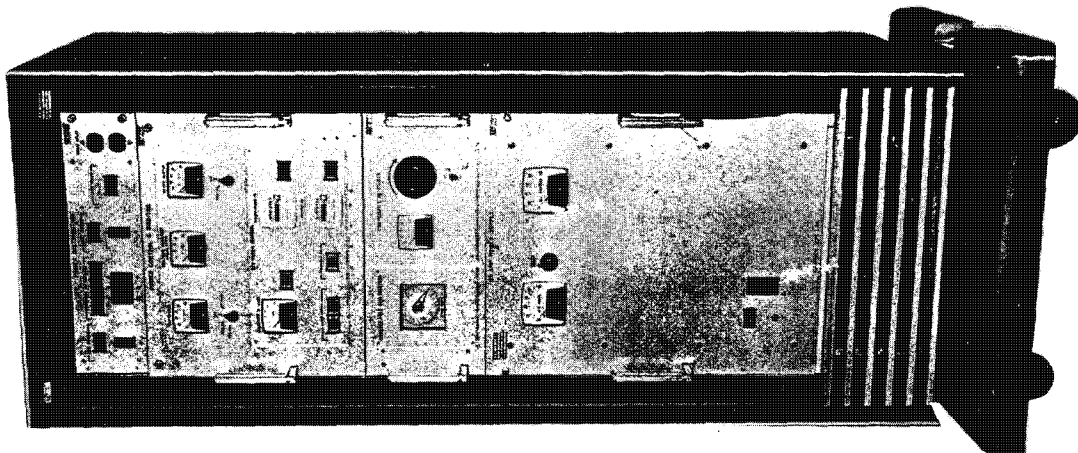


END ITEM NO. 99
SATELLITE VEHICLE SIMULATED FLIGHT KIT

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	LIST NO 62SD340					
MISSILE AND SPACE DIVISION										CONTRACT NO. AF 04(695)-580	REVISION E					
GENERAL ELECTRIC																
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(17)	(7)	(8)	
ITEM SEQUENCE	FUNCTIONAL INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
90	-	725E327 SVS 4248	KIT, SATELLITE VEHICLE SIMULATED FLIGHT	-	1	36,857	194,255	SSD	NON STD	CPE	-	UNCLASS	16	-	1-63	
(4) NOMENCLATURE																
The SATELLITE VEHICLE SIMULATED FLIGHT KIT consists of the following components: safing and arming simulators; pyrotechnic simulators; baroswitch simulators; validation harness; buffer amplifier unit; tester for safing and arming simulators; and pyrotechnic simulators; and a carrying case. Manual self-verification of the safing and arming simulators and the pyrotechnic simulators is possible with the tester. The validation harness provides all interconnections between the devices and the SV test connectors and monitors the squib simulators of the back up stabilization subsystem.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
Equipment is required to simulate the function of one-shot SV control devices during certain subsystem and system tests in the MAB and on the PAD. The devices are electrically interchangeable with the SV squibs, pyrotechnics, arming devices, and baroswitches which they replace. Monitoring lines for these devices must be brought to the SV test connectors since this equipment operates with the SV mechanically mated. The kit is completely compatible with the various SV subsystems in which the simulators are placed, the SV test connectors, and the SV SYSTEM TEST SET																
TOTAL OPERATIONAL AGE														5		



AEROSPACE GROUND EQUIPMENT LIST														DATE 7 NOVEMBER 1966		LSTNG 62SD340					
GENERAL ELECTRIC														MISSILE AND SPACE DIVISION				CONTRACT NO. AF 04(695) -580		REVISION E	
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)				
ITEM	SEQUENCE	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT LAB	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE AFSC APPROVED	FIRST AVAILABLE DATE	BASIS OF USE					
90-2		255E334 SVS 3195A	CURRENT MONITOR, SQUIB SIMULATOR	-	1	18,914	18,914	SSD	NON STD	CFE	-	UNCLASS	10	-	5-63						
(4) NOMENCLATURE																					
The SQUIB SIMULATOR CURRENT MONITOR is used in conjunction with the SV SIMULATED FLIGHT KIT (item 90), to provide current monitoring of all squib simulators. The monitor unit consists of four cables and a monitor box. Two of the cables are mated to the validation units of the flight kit and the other two cables to the recorders of the other associated items. The cables are approximately 15 feet long, and the monitor box is approximately 8 inches high, 12 inches wide, and 12 inches deep.																					
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																					
The Current Monitor box must provide switching and signal attenuation such that 50 signals of amplitudes between 2 and 10 volts can be displayed on a total of 42 recorder channels. Switching between two signals on the same channel is accomplished by relay control from the Simulated Flight Kit (item 90). The signal attenuation is provided by resistors mounted in the monitor box.																					
SPECIAL TEST EQUIPMENT:																					
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS																					
Q. C. ACCEPTANCE																					
SYSTEM CHECKOUT																					
STRUCTURE LAB																					
Q. C. OPER. ASSURANCE																					
OPERATIONAL AGE:																					
MISSILE ASSEMBLY BUILDING 1																					
VEHICLE SUPPORT BUILDING																					
LAUNCH PAD																					
LAUNCH SERVICE BUILDING																					
LAUNCH OPERATIONS BLDG. -																					
AF TRACKING STATIONS																					
DELIVER WITH SV																					

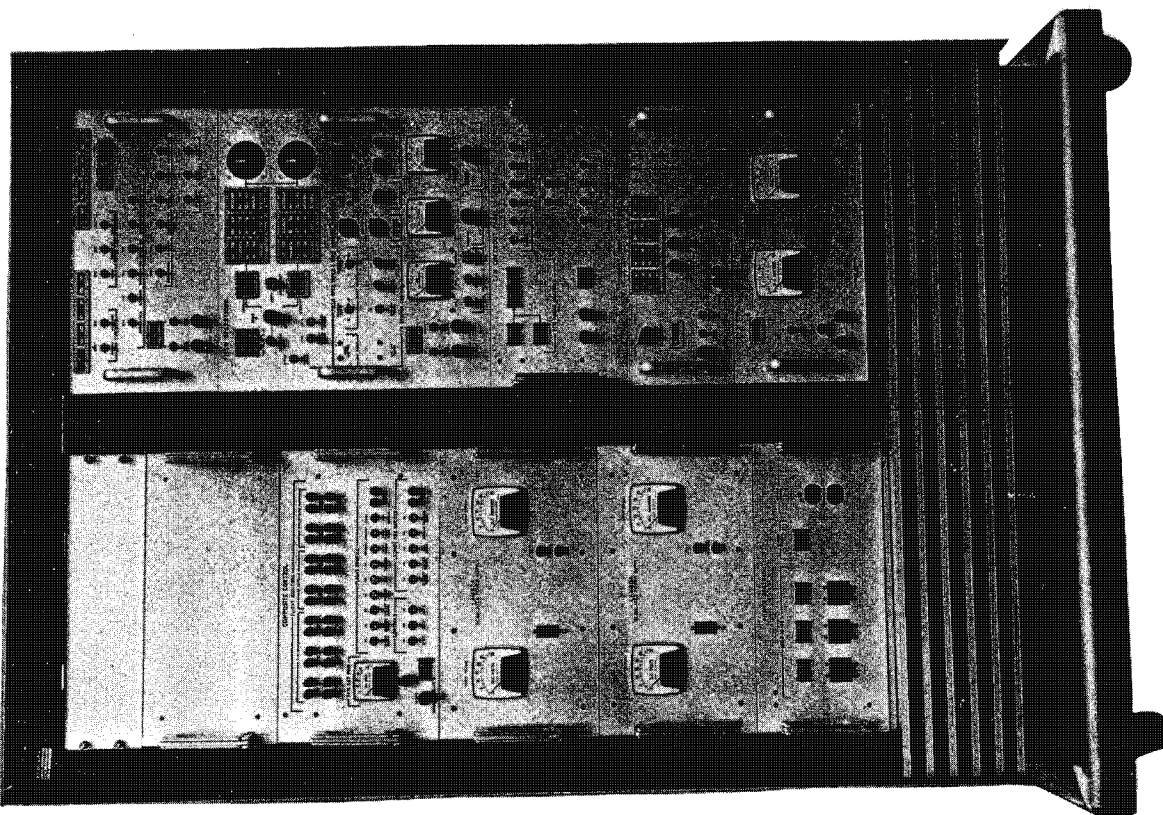


END ITEM NO. 91
GROUND POWER UNIT

62SD340 REV. D

PAGE NO. 192

AEROSPACE GROUND EQUIPMENT LIST										DATE	7 NOVEMBER 1966	LAST NO	62SD340				
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION							
										CONTRACT NO							
										AF 04(695)-580							
										REVISION							
										E							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM	FUNCTIONAL	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	CLASS AND MARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE FIRST AVAILABLE	BASIS OF USE		
91	-	254E750 SVS 4264A	GROUND POWER UNIT	-	1	25,367	55,101	SSD	NON STD	CFE	UNCLASS	15	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING 1 LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV		
(4) NOMENCLATURE The GROUND POWER UNIT is a free-standing, single-bay metal cabinet containing the power control and monitor panel, blown, environmental power supply, 28 vdc 50 amp power supply, and power distribution panel. The power unit is compatible with the SV main umbilical, operational battery connectors, and with all system and subsystem test sets which require the application of prelaunch power to the SV. Power is manually applied to the SV, but the power unit is provided with an emergency shutdown capability controlled from the applicable system or subsystem tester. This item includes all power cables to the SV. The unit measures 29 inches wide, 36 inches deep, 74 inches high, and weighs approximately 1200 pounds.															TOTAL OPERATIONAL AGE		
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: Equipment is required in the Missile Assembly Building for supplying power to the SV and other AGE for system and subsystem tests.																	

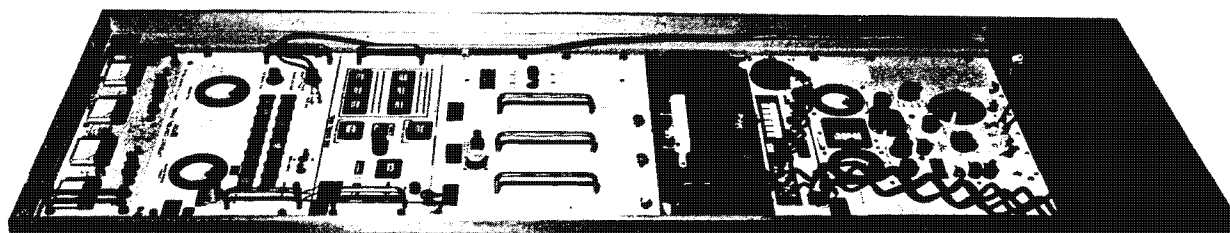


END ITEM NO. 95
FORWARD SECTION TEST SET

62SD340 REV. D

PAGE NO. 196

AEROSPACE GROUND EQUIPMENT LIST																
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT										DATE 1 APRIL 1964		USING 62SD340				
GENERAL ELECTRIC										CONTRACT NO. AFO4(695)-76		REVISION D				
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX NUMBER	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB. AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT	(12) TYPE CLASS	(13) PROPOSED SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(8) BASIS OF USE
95	-	255E225 G1 SVS 4434	TEST SET, FORWARD SECTION	-	1	49,516	49,516	SSD	NON STD	CFE	-	UNCLASS	16	-	2-63	SPECIAL TEST EQUIPMENT; ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB O.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE																
The FORWARD SECTION TEST SET is a dolly mounted two-bay, free-standing upright metal cabinet. The test set contains a battery charger, a thrust cone monitor, a telemetry checkout panel, a field operations test panel assembly, a simulator panel, the main power panel, two 0 - 30 volt power supplies, and a composite control panel. The test set contains the capability of running subsystem level tests on the orbit eject, recovery and telemetry subsystems while the Forward Section is disassembled. The composite control panel provides the capability of running complete systems test from the Adapter thrust cone interface connector.																
The test set measures 52 inches wide, 36 inches deep, 74 inches high, and weighs approximately 2000 pounds.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
Equipment is required at the MAB to provide subsystem and system level tests on the Forward Section. The equipment is capable of operating both the orbit adjust and the recovery subsystems under full load conditions. Telemetry system event inputs may be simulated by using the telemetry checkout panel. System level tests are accomplished by the composite control panel simulating commands across the Forward Section interface and electrically simulating mechanical separation of the thrust cone and Forward Section.																
TOTAL OPERATIONAL AGE															1	



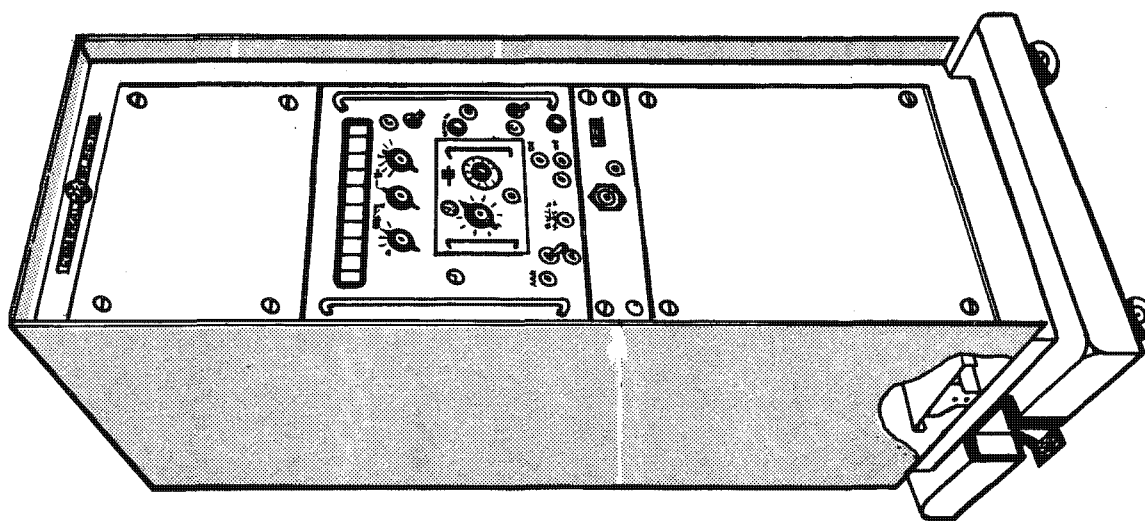
END ITEM NO. 14
BACK-UP STABILIZATION SUBSYSTEM CHECKOUT TEST SET

6280340 REV. 1

AEROSPACE GROUND EQUIPMENT LIST																			
MISSILE AND SPACE DIVISION																			
GENERAL ELECTRIC																			
DATE 7 NOVEMBER 1966 LIST NO. 62SD340																			
CONTRACT NO. AF 04(695)-580 REVISION E																			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
ITEM	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	CLASS AND	LEAD TIME	DATE APPROVED	DATE AVAILABLE	BASIS OF USE				
96	-	See (4) BELOW	TEST SET, BACK-UP STABILIZATION SUB-SYSTEM CHECKOUT	-	1	-	-	SSD	NON STD	GFE	UNCLASS	-	-	-	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE				
(4) NOMENCLATURE																			
The BACK-UP STABILIZATION SUBSYSTEM CHECKOUT TEST SET is an existing item provided by Lockheed (LMSC) to GE as follows:																			
MAB Unit - LMSC No. 1531690-507 (Serial No. 06); three phase, castered unit.																			
LOB Unit - LMSC No. 1531690-505 (Serial No. 05), single-phase, non-castered unit.																			
OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - 1																			
AF TRACKING STATIONS																			
DELIVER WITH SV																			
TOTAL OPERATIONAL AGE 2																			

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

Equipment is required at the MAB and the LOB to checkout the back-up stabilization subsystem by generating coded RF command signals to, and monitoring responses from the SV to verify proper operation of the subsystem. The equipment provides 117 volts a-c, 60 cycle, and positive 28 volt d-c unregulated power to the BACK-UP STABILIZATION SUBSYSTEM ATTITUDE CONTROL TEST SET (Item 97).



END ITEM NO. 96.1
FREQUENCY MONITORING UNIT

62SD340 REV. D

PAGE NO. 200

AEROSPACE GROUND EQUIPMENT LIST													DATE: 1 APRIL 1964	62SD340		
GENERAL ELECTRIC													MISSILE AND SPACE DIVISION		REV. 5 ON	
ADVANCED SPACE PROJECTS DEPARTMENT													AFO4(695)-76		1	
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER (SPECIFICATION)	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNIT	(9) UNIT PRICE	(10) TOTAL PRICE	(11) CONSTANT	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE AFSC APPROVED	(15) FIRST AVAILABLE DATE	(8) BASIS OF USE
96.1	-	255E2-8G1 SVS 5011	UNIT, FREQUENCY MONITORING	-	1	9,520	9,520	SSD	NON STD	CFE	-	UNCLASS	1	-	5-68	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS G.C. OPER. ASSURANCE STRUCTURE LOAD OPERATIONAL AGE MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - 1 AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE																
The FREQUENCY MONITORING UNIT is a single-bay, upright metal cabinet containing a model 524-C Hewlett-Packard electronic frequency counter and a Model 525-B plug-in converter unit. The converter unit enables an extended frequency range of 220 megacycles.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
Equipment is required to accurately measure and monitor frequencies, time intervals, and frequency drifts of the BACK-UP STABILIZATION SUBSYSTEM CHECKOUT TEST SET (item 96).																
TOTAL OPERATIONAL AGE															1	

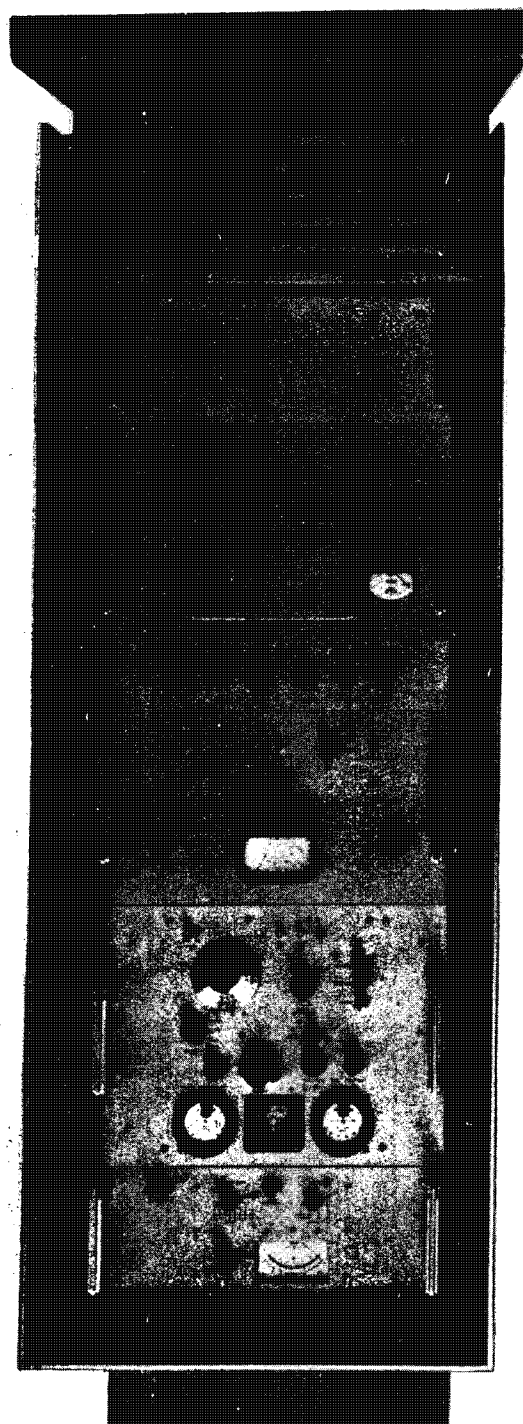
AEROSPACE GROUND EQUIPMENT LIST															
GENERAL ELECTRIC			MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT												
DATE 1 APRIL 1961		PROJECT NO. AF04(695)-76		62SD340											
(1) ITEM SEQUENCE	(2) FUNCTIONAL INDEX	(3) STOCK NO MFG PART/OWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) LAB COGNIZANT	(12) TYPE CLAS	(13) PROPOSED SOURCE	(14) SOURCE CODE	(15) CLASS AND REMARKS	(16) LEAD TIME	(17) DATE APPROVED	(18) FIRST AVAILABLE DATE
97	-	See (4) Below	TEST SET, BACK-UP STABILIZATION SUB- SYSTEM ATTITUDE CONTROL	-	1	-	-	SSD	NON STD	GFE	-	UNCLASS	-	-	-
(4) NOMENCLATURE															
The BACK-UP STABILIZATION SUBSYSTEM ATTITUDE CONTROL TEST SET is an existing item provided by Lockheed (LMSC) to GE.															
(Reference: LMSC Drawing No. 1331691-505, Serial No. 06).															
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:															
Equipment is required to monitor signals, check functions, and provide input voltages to the back-up stabilization subsystem attitude control subsystem. The equipment functions primarily as a magnetometer simulator. It has the capability of monitoring the rate gyro operation when the gyro is removed from the SV and operated on the INERTIAL PLATFORM TEST TABLE (Item 20) while remotely connected to the flight control electronics package. The equipment is wired to receive input power from the BACK-UP STABILIZATION SUBSYSTEM CHECKOUT TEST SET (Item 96)															

52SD340 REV. D

ITEM SEQUENCE NO. 205

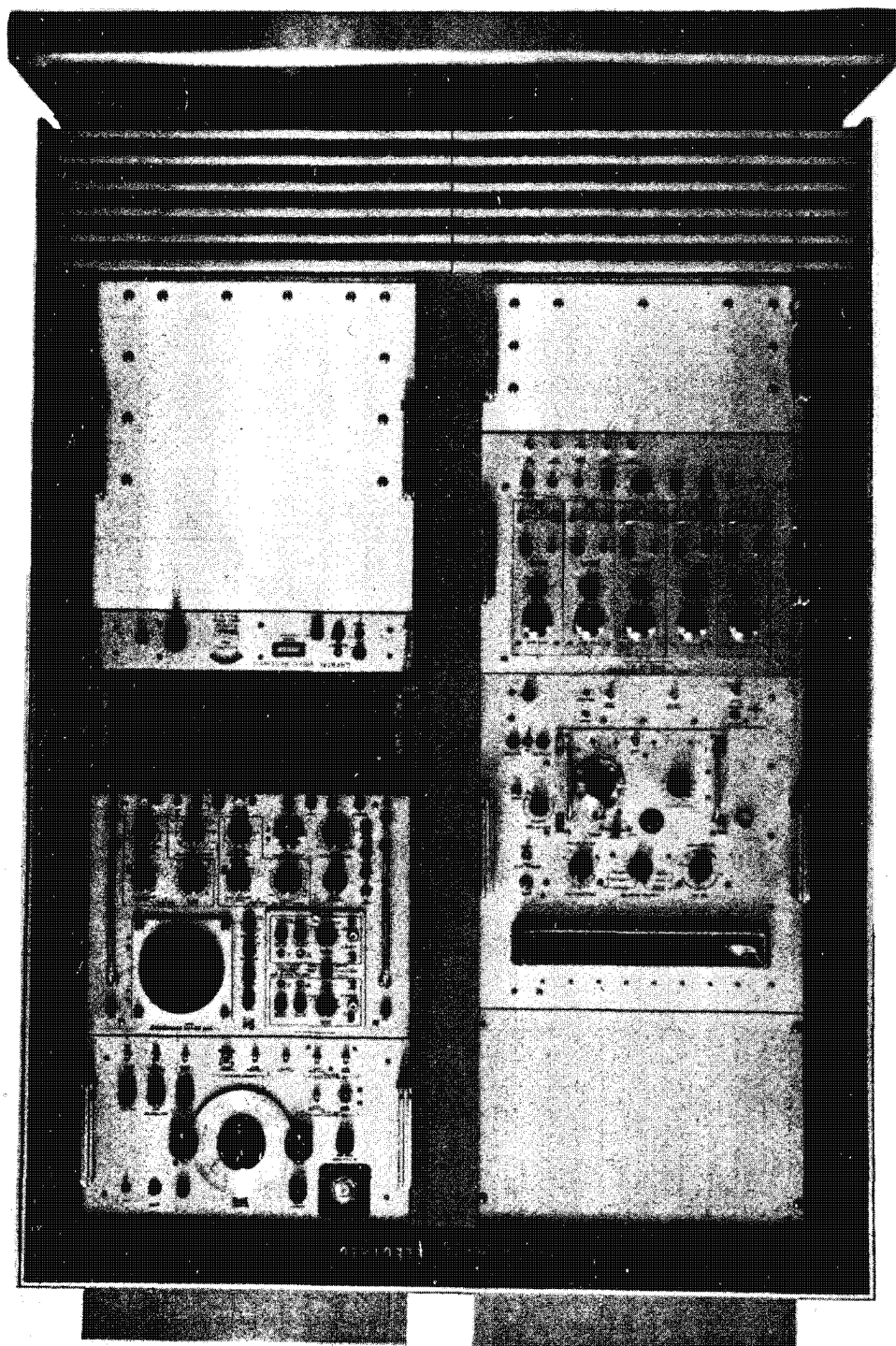
AEROSPACE GROUND EQUIPMENT LIST																											
MISSILE AND SPACE DIVISION																											
GENERAL ELECTRIC																											
DATE 7 NOVEMBER 1966																											
CONTRACT NO. AF 04(695) - 580																											
REVISION E																											
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE AVAILABLE	BASIS OF USE									
95	-	489L352 SVS 4496	AUXILIARY EQUIPMENT, BACK-UP STABILIZATION SUBSYSTEM	-	1	54,659	54,659	SSD	NON	STD	CFE	-	UNCLASS	12	-	5-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - ATTENDING STATIONS DELIVER WITH SV										
(4) NOMENCLATURE																											
The BACK-UP STABILIZATION SUBSYSTEM AUXILIARY EQUIPMENT consists of the following components: 28 volt d-c power supply; input power control box; d-c digital voltmeter; special test harness; magnetometer checkout box, solenoid simulators; permanent magnet; electronic timer simulator and monitor; flight control electronics breakout box; magnetometer electronics breakout box; analog and event recorders; cabling; magnetometer alignment fixture; and a magnetometer T/M calibration unit.																											
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																											
A group of specialized auxiliary equipment is required to compensate the magnetometer and to perform end-to-end gain checks of the P, Q and R sensors to their respective solenoids. The equipment is normally stored at the MAB.																											
TOTAL OPERATIONAL AGE 1																											

END ITEM NO. 104
ANTENNA TEST SET



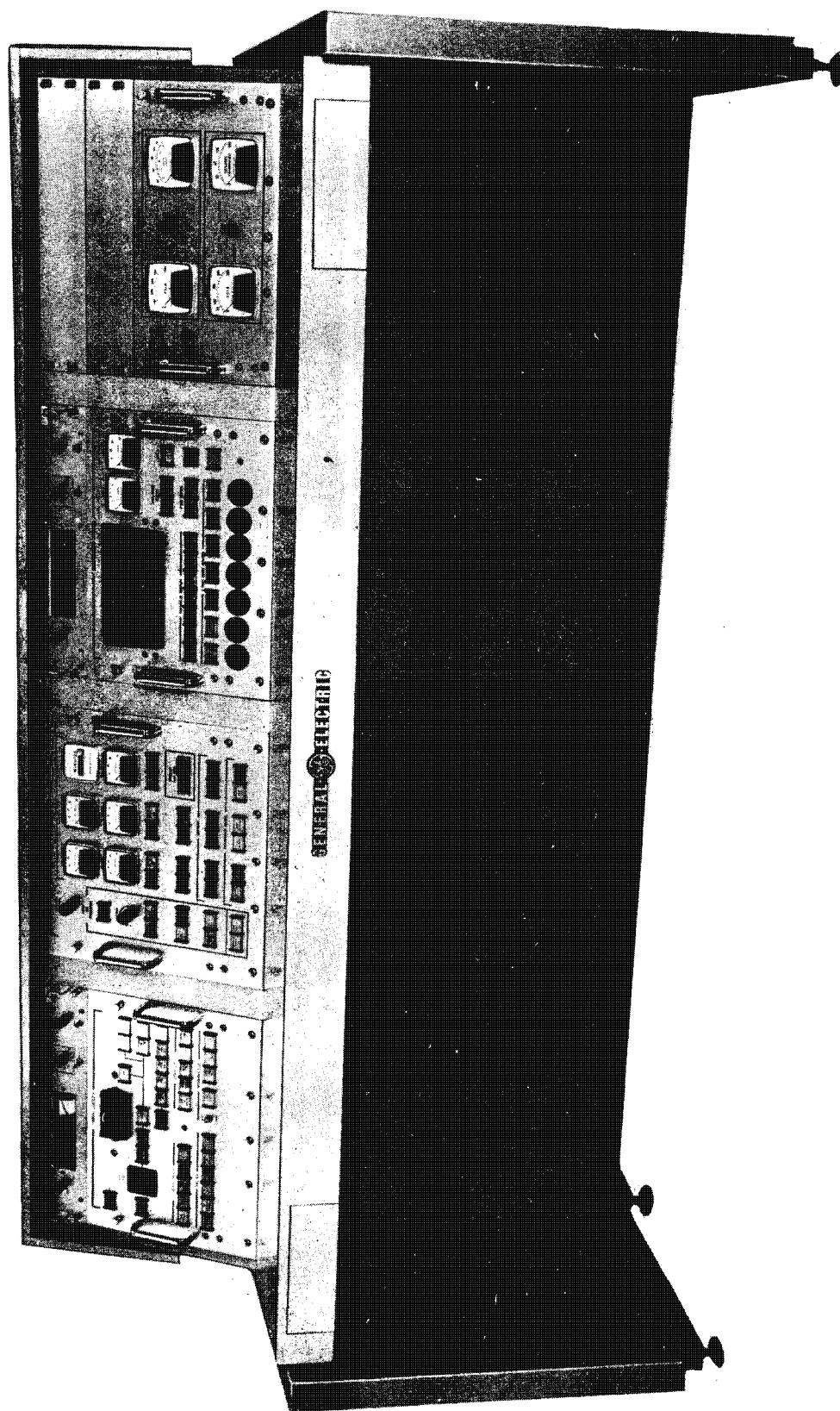
AEROSPACE GROUND EQUIPMENT LIST												
DATE		1 APRIL 1964		LIST NO		62SD340						
CONTRACT NO.				AFO4(695)-76				REVISION		D		
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT												
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	PROB AREA	UNITS	UNIT PRICE	TOTAL PRICE	LAB COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE
104	-	678E410G1 SVS 4263	TEST SET, ANTENNA	-	1	17,121	17,121	SSD	NON- STD	CFE	-	UNCLASS
(4) NOMENCLATURE												
The ANTENNA TEST SET is a single-bay, dolly-mounted, free-standing electronic cabinet containing the following assemblies: VHF-UHF-S-Band signal generators, ratio meter, and power meter. The test set also incorporates all coaxial cables necessary for interconnecting the test set and the antenna. Such auxiliary test set equipment as dual couplers, matched crystal mounts, matching transformer, bolometer, crystals, thermistor counts, and GRFF connectors are stored separately in a carrying case. The test set is manually sequenced and contains no self-checking features.												
The test set measures 25 inches wide, 36 inches deep, and 74 inches high.												
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :												
A test set is required to measure VSWR of transmission lines and vehicle antennae, and the bandwidth and center frequency of each antenna. Tests are performed on an electrically mated, physically separated Satellite Vehicle. Only the results are monitored.												
Basis of Use												
SPECIAL TEST EQUIPMENT:												
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS												
Q. C. ACCEPTANCE												
SYSTEM CHECKOUT												
STRUCTURE LAB												
Q. C. OPER. ASSURANCE												
OPERATIONAL AGE:												
MISSILE ASSEMBLY BUILDING 1												
VEHICLE SUPPORT BUILDING												
LAUNCH PAD												
LAUNCH SERVICE BUILDING												
LAUNCH OPERATIONS BLDG. -												
AF TRACKING STATIONS												
DELIVER WITH SV												
TOTAL OPERATIONAL AGE 1												

END ITEM NO. 105
BEACON CHECKOUT TEST SET



62SD340 REV. D

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	CONTRACT NO. AF 04(695) -580	REVISION 1 E	62SD340					
GENERAL ELECTRIC										MISSILE AND SPACE DIVISION								
(1) ITEM SEQUENCE	(2) FUNCTIONAL NUMBER	(3) STOCK NO MFG PART / DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) LAB COGNIZANT	(12) CLASS TYPE	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME (WEEKS)	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(7) BASIS OF USE		(8)
105		678E463 SVS 4249	TEST SET, BEACON CHECKOUT	-	1	50,143	50,143	SSD	NON STD	CFE	-	UNCLASS	15	-	1- 63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 1 VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV		
(4) NOMENCLATURE																TOTAL OPERATIONAL AGE		1
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																		
The BEACON CHECKOUT TEST SET is a two-bay, free-standing, dolly-mounted electronic cabinet. The left-hand bay contains a multipulse generator, electronic counter, and doppler shift simulator and receiver. The right-hand bay contains an oscilloscope, transfer oscillator, S-band receiver, and duplexer panel. The test set also employs the two signal generators and the power meter located in the ANTENNA TEST SET (Item 104). The set incorporates all coaxial cabling necessary for interconnecting with the vehicle beacons. Auxiliary equipment includes: frequency converters, plug-in scope, attenuators, power load, directional couplers, crystal detectors, terminations, and coaxial connectors. The auxiliary equipment is stored separately in a carrying case. The test set is manually sequenced and contains no self-checking features.																		
The test set measures 52 inches wide, 36 inches deep, and 74 inches high.																		
A test set is required to measure Satellite Vehicle RF equipment frequency sensitivity, pulse width, and pulse repetition rate: to measure output of SV transmitters: to measure operating frequency of vehicle transmitter: to interrogate rate beacon (VHF) and VERLORT beacon (S-Band): and to receive simulated doppler shift signals for checkout of rate beacon lock. Tests performed directly on the mounted transmitter or beacon require the coordinate use of portions of the ANTENNA TEST SET (Item 104). Only the test results are Monitored.																		



END ITEM NO. 110
SV LAUNCH CONTROL AND MONITOR CONSOLE

6250340 REV. D

PAGE NO. 214

AEROSPACE GROUND EQUIPMENT LIST													DATE	1 APRIL 1964	LIST NO	62SD340				
GENERAL ELECTRIC													MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT				CONTRACT NO AFO4(695)-76		REVISION D	
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(6)			
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE				
110		719E966G1 SVS 4250	CONSOLE, LAUNCH CONTROL, SATELLITE VEHICLE	-	1	36,182	36,182	SSD	NON STD	CFE	-	UNCLASS	18	-	2-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - 1 AF TRACKING STATIONS DELIVER WITH SV TOTAL OPERATIONAL AGE				

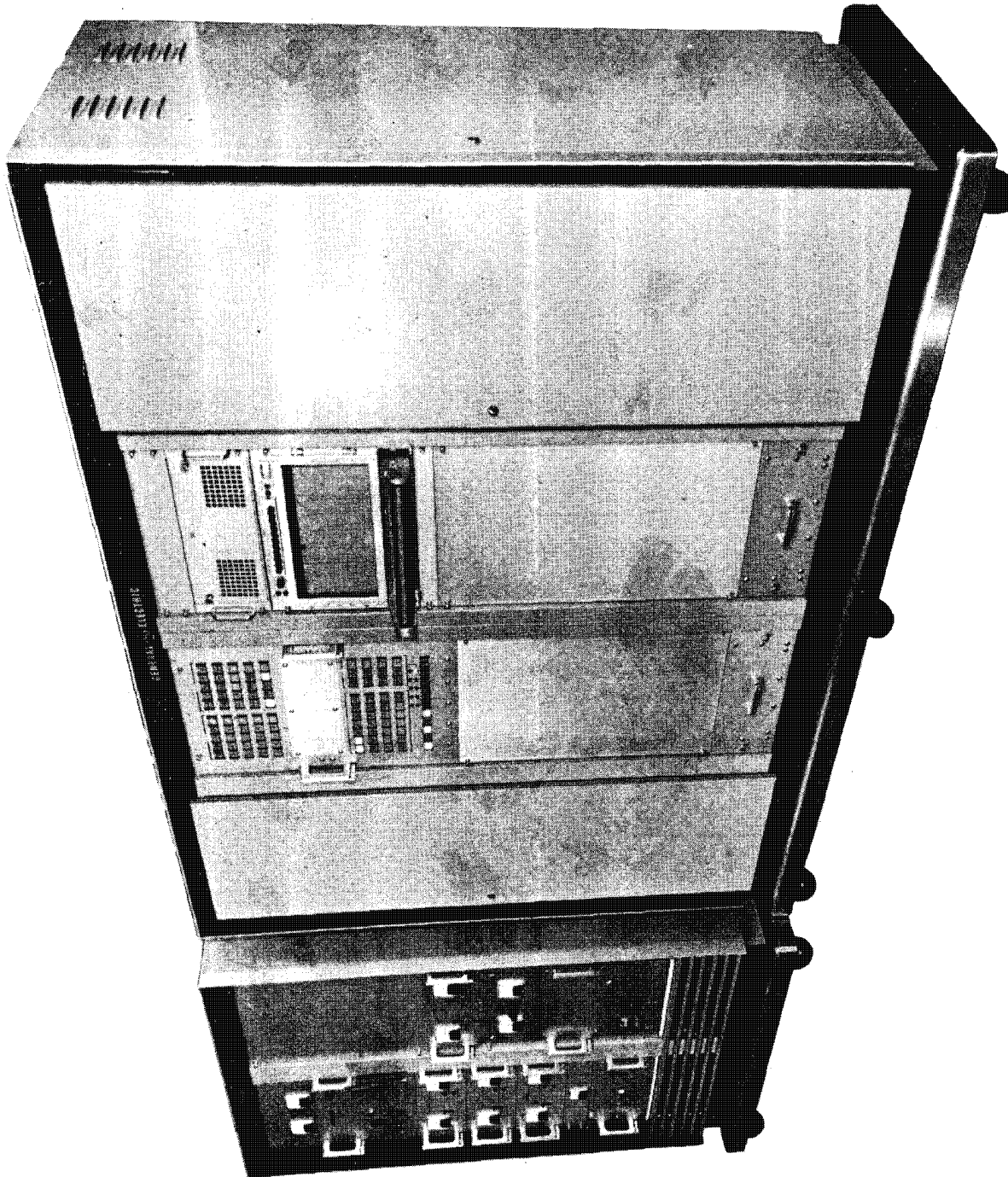
(4) NOMENCLATURE

The SATELLITE VEHICLE LAUNCH CONTROL CONSOLE is a desk-type console while includes critical SV temperature and pressure displays, payload monitors, SV power supply controls, controls for performing simple SV checks, launch controls, system clock, and communications panel. The console contains visual monitors and manual switches only. The console also contains monitors and controls for performing checks of the back-up stabilization subsystem.

The console measures 95 inches wide, 37 inches deep, and 50 inches high.

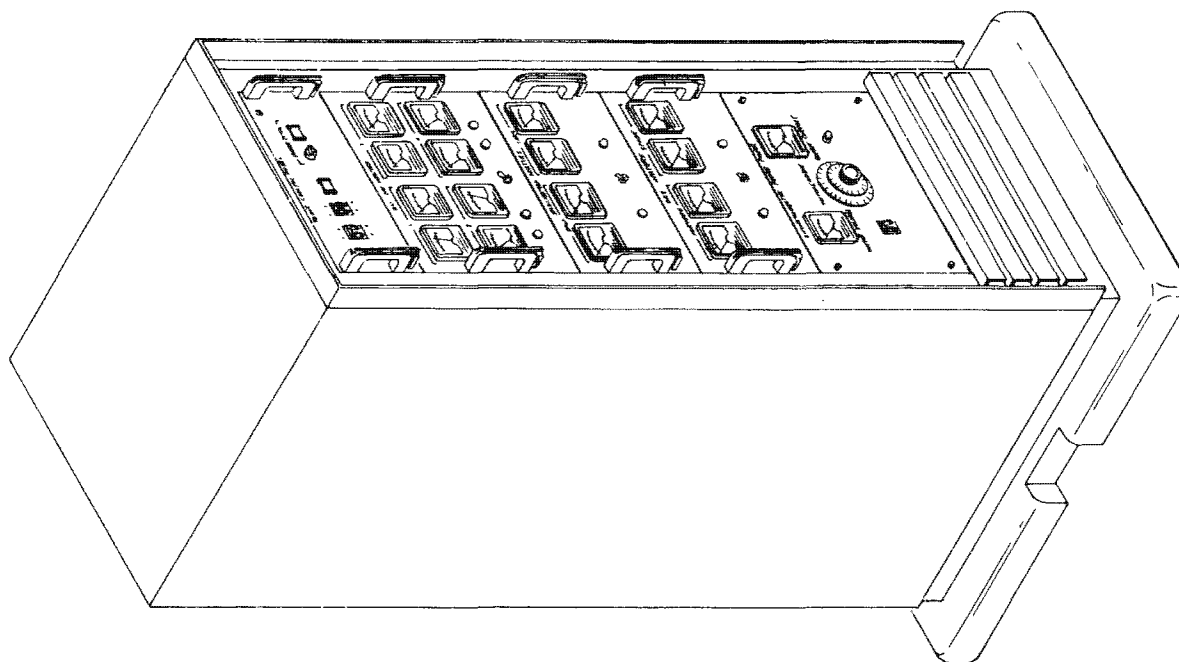
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

Equipment is required in the Launch Operations Building to remotely control and monitor the LSB POWER AND DISTRIBUTION EQUIPMENT (Item 112); to display certain critical telemetry functions reduced by the SIGME (Item 88); to initiate the action of the COMMAND SIGNAL GENERATOR (Item 89); and to provide for the interchange of information with the equipment of other system contractors. All signals to and from this item are channeled through the LOB SIGNAL DISTRIBUTION UNIT (Item 118). The equipment also serves in the control of the back-up stabilization subsystem during simulated flight and countdown.



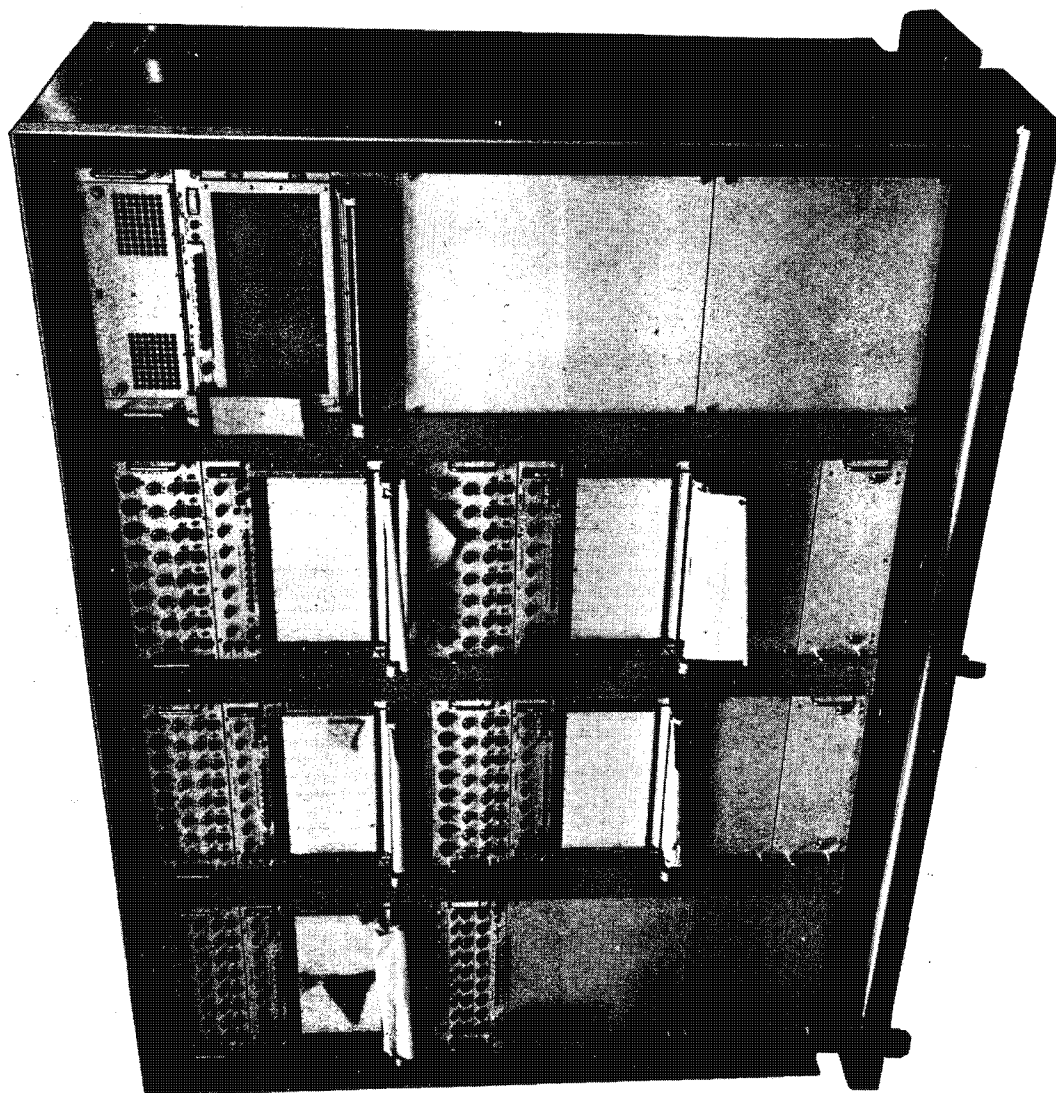
END ITEM NO. 112
LSB POWER AND DISTRIBUTION EQUIPMENT

AEROSPACE GROUND EQUIPMENT LIST										DATE 7 NOVEMBER 1966	CUST NO 62SD340									
MISSILE AND SPACE DIVISION										CONTRACT NO. AF 04(695)-580	REVISION E									
GENERAL ELECTRIC																				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE				(8)
112	-	14B3281 SYS 4251A	EQUIPMENT, LAUNCH SUPPORT BUILDING POWER AND DISTRIBUTION	-	1	90,249	90,249	SSD	NON STD	CFE	-	UNCLASS	22	-	1-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING 1 LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV				
(4) NOMENCLATURE																				
The LAUNCH SUPPORT BUILDING POWER AND DISTRIBUTION UNIT is a six-bay, free-standing upright metal cabinet. The unit contains all satellite vehicle external power and environmental power supplies, power and test panel, power distribution equipment, signal distribution equipment, and provisions for the remote control of the power supplies and power distribution equipment. The unit also contains a telemetry signal amplifier, BUSS RF amplifiers, indicators and recorders for monitoring squib simulator outputs and command relays.																				
The unit measures 156 inches wide, 42 inches deep, 74 inches high, and weighs approximately 3000 pounds.																				
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																				
Equipment is required at the LSB during validation tests and countdown to supply SV ground power to serve as the termination for all umbilical mast cables, and to serve as power and signal distribution unit for other LSB units. The unit receives and distributes to other AGE, signals from the SV main umbilical and test connector, and supplies power and routes commands to the SV. The equipment is capable of activating SV functions either manually or remotely from the LOB. It is electrically mated with the main umbilical and test connector of the LAUNCH COMPLEX VERIFICATION UNIT, Item 115 (for testing only), the COMMAND SIGNAL GENERATOR (Item 89), the SV TEST MONITOR EQUIPMENT (Item 114), the BACK-UP STABILIZATION SUBSYSTEM CHECKOUT TEST SET (Item 96), and the land lines to the LOB SIGNAL DISTRIBUTION UNIT (Item 118). It is remotely controlled by the SV LAUNCH CONTROL CONSOLE (Item 110), and provides signals to the SIGME (Item 116) through Item 118. The unit is either manually controlled directly in the LSB or remotely from the LOB, and provides for the manual control of the SV TEST MONITOR EQUIPMENT (Item 114), and the PROPELLANT SERVICING UNITS (Items 62 and 63).																				
TOTAL OPERATIONAL AGE																			1	



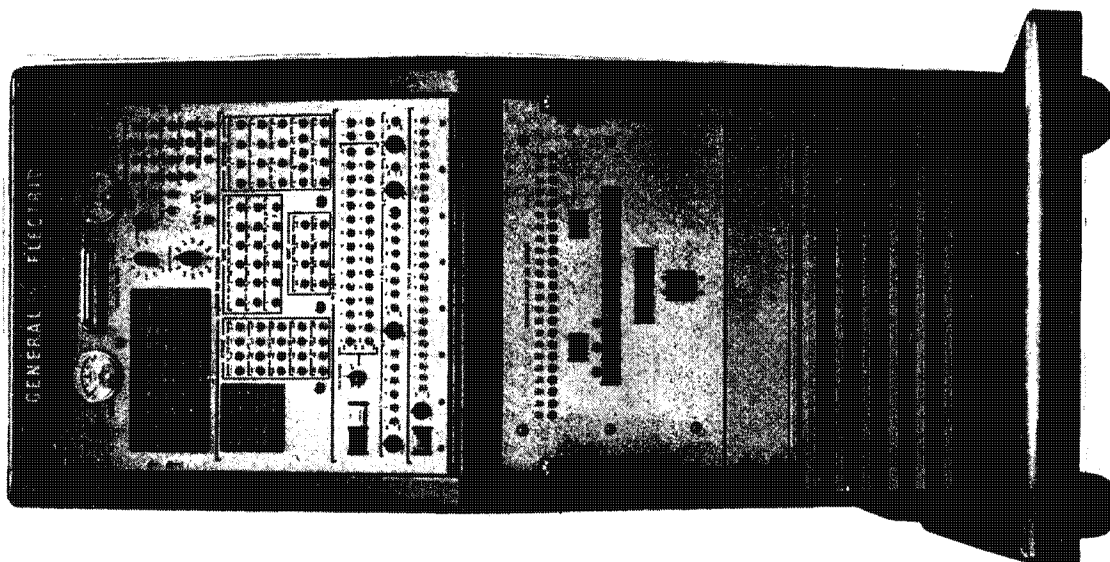
END ITEM NO. 112.1
ENVIRONMENTAL HEATER CONTROL UNIT

AEROSPACE GROUND EQUIPMENT LIST										62SD340							
GENERAL ELECTRIC										7 NOVEMBER 1966							
MISSILE AND SPACE DIVISION										REVISION E							
AF 04(695) -580										CONFIRMING							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	CLASS	PROPOSED SUPPLY	SOURCE	REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	DATE	DATE
112.1	-	133B5903 721E398 SVS 4467A	CONTROL UNIT, ENVIRONMENTAL HEATER	-	1	21,893	21,893	SSD	NON STD	CFE	-	UNCLASS	15	-	1 63		
(4) NOMENCLATURE																	
The ENVIRONMENTAL HEATER CONTROL UNIT is a single-bay console metal cabinet containing eight magnetic amplifier circuits. The unit is remotely controlled from the Launch Operations Building.																	
The console measures 34 inches wide, 42 inches deep, and 74 inches high.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
A heater control unit is required at the LSB to provide power for the stabilization stand-by heaters and to provide for the SV environmental blankets. The unit is remotely controlled from the LOB by the SV LAUNCH CONTROL AND MONITOR CONSOLE (Item 110) and the LOB SIGNAL DISTRIBUTION UNIT (Item 118).																	
BASIS OF USE																	
SPECIAL TEST EQUIPMENT:																	
ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS																	
Q. C. ACCEPTANCE																	
SYSTEM CHECKOUT																	
STRUCTURE LAB																	
Q. C. OPER. ASSURANCE																	
OPERATIONAL AGE:																	
MISSILE ASSEMBLY BUILDING																	
VEHICLE SUPPORT BUILDING																	
LAUNCH PAD																	
LAUNCH SERVICE BUILDING 1																	
LAUNCH OPERATIONS BLDG. -																	
AF TRACKING STATIONS																	
DELIVER WITH SV																	
TOTAL OPERATIONAL AGE																	
1																	



END ITEM NO. 114
SV TEST MONITOR EQUIPMENT

AEROSPACE GROUND EQUIPMENT LIST													DATE 7 NOVEMBER 1966	LISTING 62SD340			
MISSILE AND SPACE DIVISION													CONTRACT NO	REVISION E			
GENERAL ELECTRIC													AF 04(695)-580				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE	
114	-	719E970 SYS 4252	MONITOR EQUIPMENT, SATELLITE VEHICLE TEST	-	1	98,378	98,378	SSD	NON STD	CFE	-	UNCLASS	20	-	12-62	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING 1 LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV	
(4) NOMENCLATURE																TOTAL OPERATIONAL AGE	
The SATELLITE VEHICLE TEST MONITOR EQUIPMENT is a four-bay, free-standing upright metal cabinet containing five analog data monitor recorders, one event recorder, and associated amplifiers. Operation of this equipment is fully manual. There are no self-checking features.																1	
The unit measures 98 inches wide, 36 inches deep, 74 inches high, and weighs approximately 3000 pounds.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
Equipment is required to monitor and record during validation tests those SV hardware signals not normally telemetered and recorded by the SIGME (Item 88) located in the LOB. Signals to be recorded are routed to the equipment by the LSB POWER AND DISTRIBUTION EQUIPMENT (Item 112) The outputs are permanent analog and event records.																	



END ITEM NO. 115
LAUNCH COMPLEX VERIFICATION UNIT

AEROSPACE GROUND EQUIPMENT LIST																		
GENERAL ELECTRIC MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT																		
DATE 1 APRIL 1964 62SD340																		
AF04(695)-76																		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/OWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE		
115	-	719E980G1 SVS 4253	VERIFICATION UNIT, LAUNCH COMPLEX	-	1	43,813	43,813	SSD	NON STD	CFE	-	UNCLASS	16	-	2-63	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSISTANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV		
																TOTAL OPERATIONAL AGE		
																1		

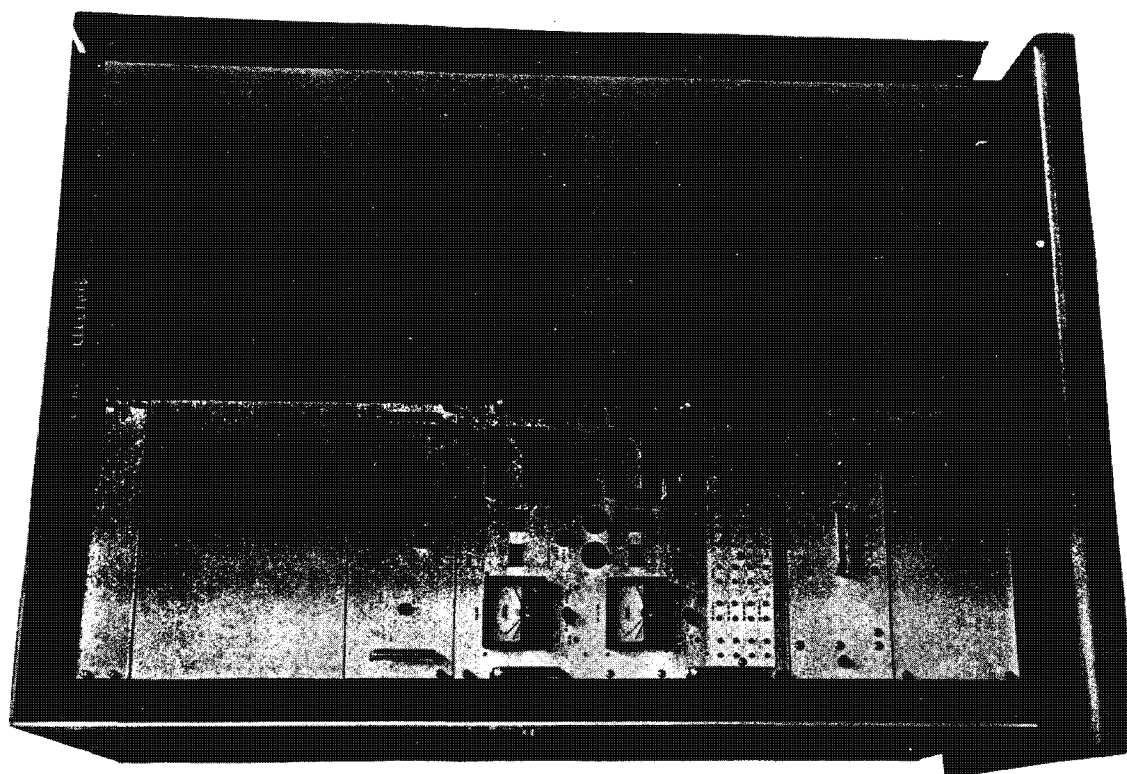
(4) NOMENCLATURE

The LAUNCH COMPLEX VERIFICATION UNIT is a semi-portable unit packaged in a single-bay cabinet. The unit contains logic to detect command pulse groups, count parity, and generate word accept/reject signals; two subcarrier oscillators with associated test point panel for manual insertion of modulating voltages; and all fixed-value load simulation circuits required to represent all SV functions. The unit contains such switches, potentiometers, etc., as are needed to check all umbilical and validation connector lines and includes all cables necessary for interconnection with the umbilical connector. There are no self-checking features.

The unit measures 30 inches wide, 36 inches deep, and 60 inches high.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

A verification unit is required at the launch pad for the purpose of establishing confidence in the operation of the launch complex AGE. The unit simulates all SV electrical power and signal functions which would appear during a simulated flight test of the SV. Telemetered functions are simulated manually.

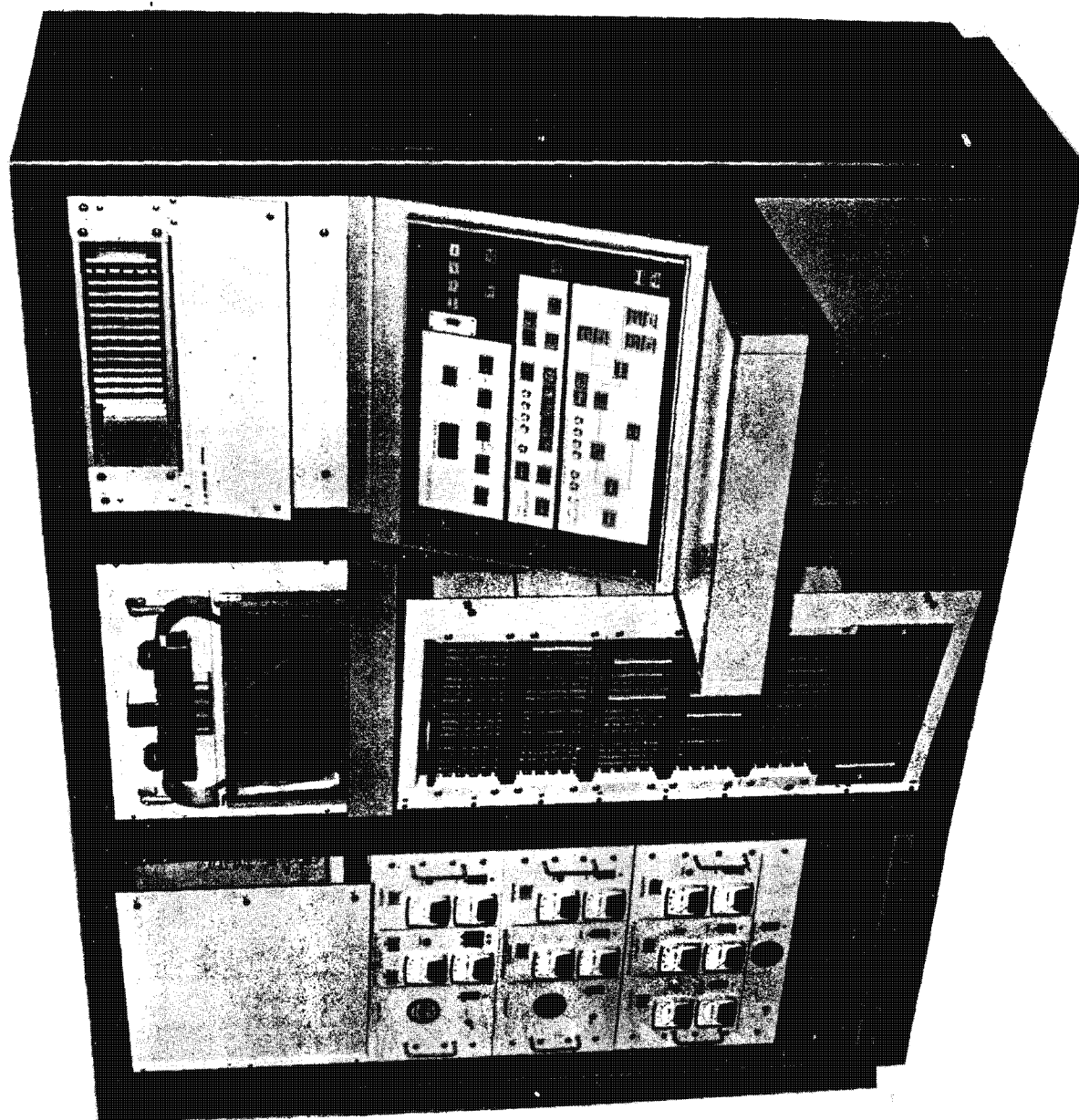


END ITEM NO. 118
LOB SIGNAL DISTRIBUTION UNIT

62SD340 REV. D

PAGE NO. 228

AEROSPACE GROUND EQUIPMENT LIST										DATE	1 APRIL 1964	62SD340			
GENERAL ELECTRIC										CONTRACT NO.			REVISION		
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT										AFO4(695)-76			D		
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(8)
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY	SOURCE CODE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE AFSC APPROVED	FIRST AVAILABLE DATE
118	-	719E951G1 SVS 4254	SIGNAL DISTRIBUTION UNIT, LAUNCH OPERATIONS BUILDING	-	1	60,576	60,576	SSD	NON STD	CFE	-	UNCLASS	16	-	2-63
(4) NOMENCLATURE															
The LAUNCH OPERATIONS BUILDING SIGNAL DISTRIBUTION UNIT is a two-bay, free-standing upright metal cabinet containing patch boards cabling, a heater control panel, a standby temperature monitor panel, and a Barnes stabilization monitor.															
The unit measures 54-inches wide, 42-inches deep, and 74-inches high.															
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:															
A distribution unit is required to provide signal interconnection between the AGE located in the Launch Operations Building (LOB) and the AGE located in the Launch Service Building (LSB). The unit is located in the LOB. All signals exchanged between the SIGME (Item 88), the SV LAUNCH CONTROL CONSOLE (Item 110), the FREQUENCY MONITORING UNIT (Item 96.1), and the LSB POWER AND DISTRIBUTION UNIT (Item 112) are routed by this unit.															
OPERATIONAL AGE:															
MISSILE ASSEMBLY BUILDING															
VEHICLE SUPPORT BUILDING															
LAUNCH PAD															
LAUNCH SERVICE BUILDING															
LAUNCH OPERATIONS BLDG. - 1															
AF TRACKING STATIONS															
DELIVER WITH SV															
TOTAL OPERATIONAL AGE															
1															



END ITEM NO. 125
SATELLITE DIGITAL DATA ENCODER

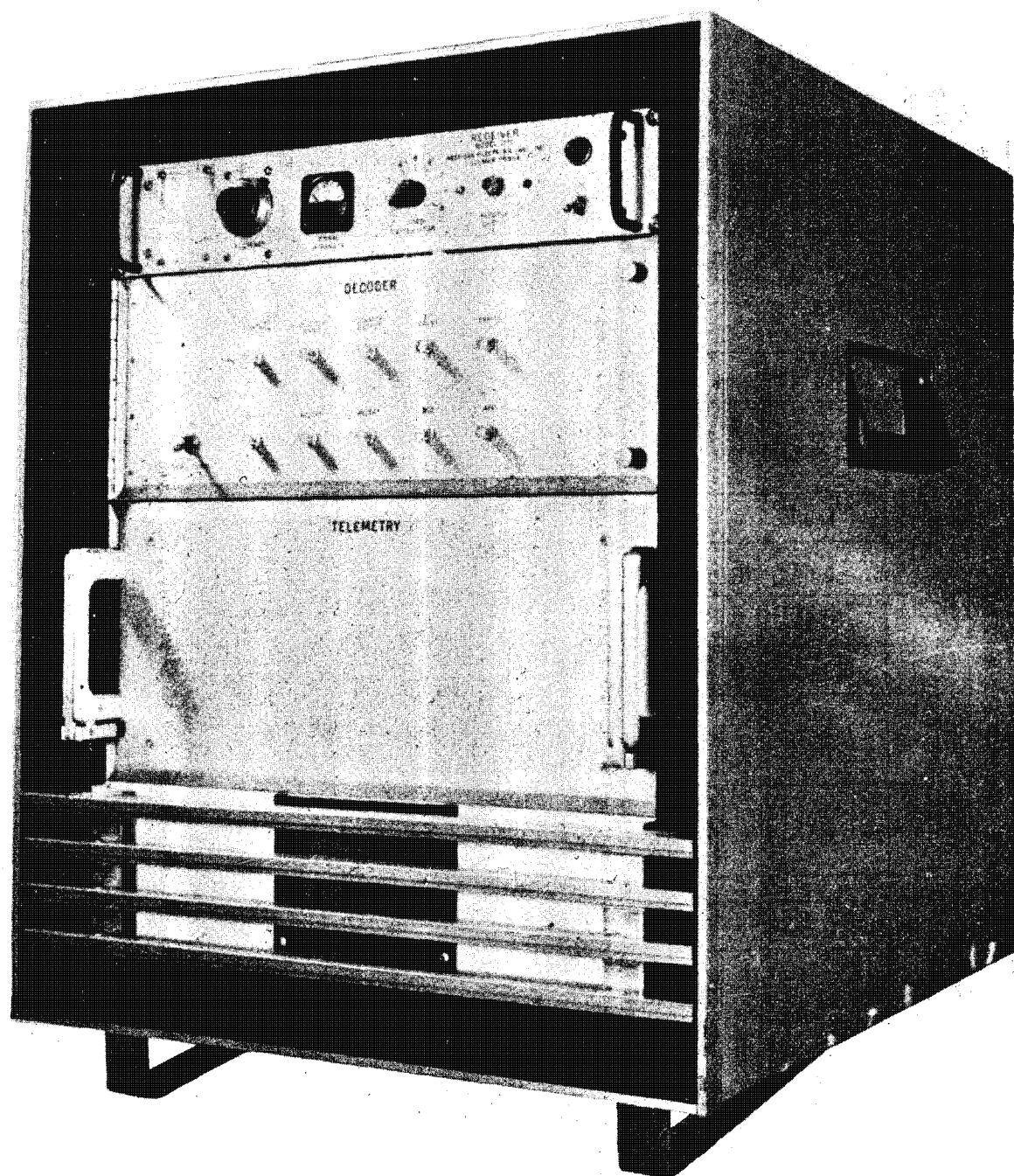
AEROSPACE GROUND EQUIPMENT LIST										DATE 1 APRIL 1964	LIST NO. 62SD340						
GENERAL ELECTRIC MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT										CONTRACT NO. AF04(695)-76	REVISION D						
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(7) BASIS OF USE	(8)
125	-	201R311G1 SVS 3085	ENCODER,SATELLITE DIGITAL DATA (MOD I)	-	1	-	-	SSD	NON STD	GFE	-	UNCLASS	-	-	-	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE	
(4) NOMENCLATURE																	
The SATELLITE DIGITAL DATA ENCODER is a three-bay, free-standing, upright metal, cabinet. The left-hand bay contains three logic power supply racks. The center bay contains a tape reader, a receptacle, and five logic racks. The right-hand bay contains a logic rack, a time display, a control panel, and a connector panel. The input power is single-phase 120 VAC at 20 amps. The unit can function either as a fully automatic link between the Satellite Tracking Center lines and the tracking station transmitters or it can code manual command word inputs. The unit contains complete manually operated self-testing circuits.																	
The cabinet measures 86 inches wide, 42 inches deep, and 69 inches high.																	
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																	
Equipment is required to encode command words received from the Satellite Tracking Center and to transmit the coded commands to the VERLORT radar System for transmission to the orbiting vehicle. The equipment must be able to use standard five-level teletype punched tape as an input, and it must be capable of operation in either pre-programmed automatic or manual mode. This item is in existence as Item 701 on Contract No. AF 04(695)-6.																	
AF TRACKING STATIONS																	6
DELIVER WITH SV																	
TOTAL OPERATIONAL AGE																	6

ITEM SEQUENCE NO. 125
PAGE NO. 235

AEROSPACE GROUND EQUIPMENT LIST													DATE 1 APRIL 1964	LIST NO 62SD340					
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT													CONTRACT NO. AFO4(695)-76	REVISION D					
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)		
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SUPPLY	SOURCE	CLASS AND REMARKS	LEAD TIME (WEEKS)	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE			
126	-	678E440G1 SVS 4256	MANUAL CONTROL CONSOLE, SATELLITE VEHICLE	-	1	49,490	98,980	SSD	NON STD	CPE	-	UNCLASS	18	-	5-63			SPECIAL TEST EQUIPMENT:	
															ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS				
															Q. C. ACCEPTANCE				
																	SYSTEM CHECKOUT		
																	STRUCTURE LAB		
																	Q. C. OPER. ASSURANCE		
																	OPERATIONAL AGE:		
																	MISSILE ASSEMBLY BUILDING		
																	VEHICLE SUPPORT BUILDING		
																	LAUNCH PAD		
																	LAUNCH SERVICE BUILDING		
																	LAUNCH OPERATIONS BLDG. -		
																	AF TRACKING STATIONS		
																	2		
																	DELIVER WITH SV		
																	TOTAL OPERATIONAL AGE		
																	2		

(4) NOMENCLATURE
The SATELLITE VEHICLE MANUAL CONTROL CONSOLE is a two-bay, free-standing metal cabinet. The left-hand bay contains provisions for the installation of a communications panel (7-inch rack space) and a system clock (3-1/2-inch rack space), and contains a control and monitor panel.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA :
Equipment is required to monitor and record certain telemetry signals received from the telemetry ground station.



END ITEM NO. 127
GROUND TRACKING STATION TEST SET

AEROSPACE GROUND EQUIPMENT LIST													DATE	1 APRIL 1964	LIST NO	62SD340		
GENERAL ELECTRIC													CONTRACT NO.				REVISION	
MISSILE AND SPACE DIVISION ADVANCED SPACE PROJECTS DEPARTMENT													AFO4(695)-76				D	
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(8)		
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS.	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE		
127	-	882D776G1 SVS 3062	TEST SET, GROUND TRACKING STATION	-	1	-	-	SSD	NON STD	GFE	-	UNCLASS	-	-	-	SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV		
																TOTAL OPERATIONAL AGE		
																6		

(4) NOMENCLATURE

The GROUND TRACKING STATION TEST SET is a single-bay, bench-mounted metal cabinet. The set consists of an S-band horn, S-band receive, a decoder, an SCO, a telemetry transmitter, and a telemetry antenna. The set includes certain characteristic pre-sets, but it functions completely automatically in closed loop ground tracking station tests of the command subsystem.

(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:

Equipment is required to simulate the function of the vehicle command subsystem for closed loop testing of the ground tracking station command transmission link. The equipment must be completely automatic. This item is in existence as item 703 on Contract No. AF 04(695)-6; minor modifications are necessary.

AEROSPACE GROUND EQUIPMENT LIST												DATE 7 NOVEMBER 1966	62SD340		
GENERAL ELECTRIC MISSILE AND SPACE DIVISION												CONTRACT NO. AF04(695)-580	REVISION E		
(1) ITEM SEQUENCE	(2) FUNCTIONAL INDEX	(3) STOCK NO MFG PART/DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT LAB	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(16) LEAD TIME	(17) DATE APPROVED	(15) FIRST AVAILABLE DATE	(8) BASIS OF USE
130		71SE509G1	Telemetry Monitor Console												SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q.C. OPER. ASSURANCE OA VAN OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD #2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG.- AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE															
The Telemetry Monitor Console is a single-bay, free-standing upright metal cabinet. The bay consists of a patch panel, three receivers, three transmitters, two RF amplifiers, two discriminators and an equipment blower.															
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:															
Equipment is required to enable a ground station to operate two prime vehicles simultaneously by shifting the frequency of one prime vehicle. The Telemetry Monitor Console receives the three telemetry frequencies from the SV, demodulates the video information then modulates three transmitters. The transmitters are tuned to frequencies other than the prime SV frequencies.															
The unit also contains an amplifier for amplification of the BTSS RF signal. Two discriminators are used to provide the Time Monitoring Unit (Item 131) and the Command Signal Generator with vehicle clock and accept reject information respectively.															
The Telemetry Monitor Console interfaces with the Command Signal Generator (Item 89) and the Time Monitoring Unit (Item 131) in the OA electronics A only.															
TOTAL OPERATIONAL AGE														0	

AEROSPACE GROUND EQUIPMENT LIST													DATE	7 NOVEMBER 1966	LIST NO.	62SD340																		
GENERAL ELECTRIC													MISSILE AND SPACE DIVISION		CONTRACT NO.		AF04(695)-580		REVISION		E													
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(18)	(16)	(17)	(15)	(7)	(8)																	
ITEM	SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO	NOMENCLATURE	DESCRIPTION	PROB. AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE	PROPOSED	SOURCE	CLASS AND	LEAD TIME	DATE	SPECIAL TEST EQUIPMENT:																	
131			748E516G1	Time Monitor Unit													ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS																	
(4) NOMENCLATURE The Time Monitor Unit is a single-bay, free-standing upright metal cabinet. The bay consists of a logic system composed of a Time Reference Generator and a Clock Decoder.																		FIRST AVAILABLE DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	
																		OPERATIONAL AGE:																
																		MISSILE ASSEMBLY BUILDING																
																		VEHICLE SUPPORT BUILDING																
																		LAUNCH PAD #2																
																		LAUNCH SERVICE BUILDING																
																		LAUNCH OPERATIONS BLDG. -																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: The Time Monitoring Unit Clock Decoder is used to provide a visual display of the vehicle programmer clock. The Time Reference Generator is used in the OA electronics van to give the test conductor both reference time and vehicle clock time. It is a short term stable accumulator that permits the visual monitoring of the programmer clock stability. The Time Monitoring Unit mates with the Telemetry Monitor Console (Item 130).																		AF TRACKING STATIONS																
																		DELIVER WITH SV																
TOTAL OPERATIONAL AGE																	0																	

AEROSPACE GROUND EQUIPMENT LIST																
GENERAL ELECTRIC MISSILE AND SPACE DIVISION																
DATE 7 NOVEMBER 1966 62SD340																
CONTRACT NO. AF04(695)-580 REVISION E																
(1) ITEM SEQUENCE	(2) FUNCTIONAL AREA INDEX	(3) STOCK NO MFG PART /DWG NUMBER SPECIFICATION	(4) NOMENCLATURE	(5) DESCRIPTION PROB. AREA	(6) UNITS	(9) UNIT PRICE	(10) TOTAL PRICE	(11) COGNIZANT	(12) TYPE CLASS	(13) PROPOSED SUPPLY SOURCE	(14) SOURCE CODE	(18) CLASS AND REMARKS	(16) LEAD TIME	(17) DATE APPROVED DATE APPROVED	(15) FIRST AVAILABLE DATE	(8) BASIS OF USE
122		902D7 JGG1	Monitor Test Set													SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE QA VAN OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING VEHICLE SUPPORT BUILDING LAUNCH PAD #2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE																
The Monitor Test Set is a two-bay, free standing upright metal cabinet. Bay A consists of six power supplies, a digital voltmeter, and a front panel for auxiliary control and events. Bay B consists of a 120-channel event monitor, a patch panel, and a power distribution panel.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA:																
Equipment is required to provide a centralized location for simulation of the secondary vehicle batteries while the vehicle is undergoing QA tests. The recorder and patch panel are used for monitoring the functions on TP3 of the vehicle. The front panel provides a means of simulating the BUSS hardware commands. The Monitor Test Set interfaces with the Satellite Vehicle Test Set (Item 52) and is used only in the OA electronics van.																
TOTAL OPERATIONAL AGE															0	

62SD340 REV. E

TEM SEQUENCE NO. 132
PAGE NO. 239F

AEROSPACE GROUND EQUIPMENT LIST																
DATE 7 NOVEMBER 1966		LISTING 62SD340														
CONTRACT NO AFO4(695)-580																
REVISION E																
MISSILE AND SPACE DIVISION																
(1)	(2)	(3)	(4)	(5)	(6)	(9)	(10)	(11)	(12)	(13)	(14)	(16)	(17)	(15)	(8)	
ITEM SEQUENCE	FUNCTIONAL AREA INDEX	STOCK NO MFG PART/DWG NUMBER SPECIFICATION	NOMENCLATURE	DESCRIPTION PROB AREA	UNITS	UNIT PRICE	TOTAL PRICE	COGNIZANT	TYPE CLASS	PROPOSED SOURCE	SOURCE CODE	CLASS AND REMARKS	LEAD TIME	DATE APPROVED	FIRST AVAILABLE DATE	BASIS OF USE
133		902D55G1 SVS 5354	Battery Simulation Console		1			SSD	NON STD	CFE	-	Unclass				SPECIAL TEST EQUIPMENT: ENGINEERING PROTOTYPE AND SYSTEM COMPATIBILITY TESTS Q. C. ACCEPTANCE SYSTEM CHECKOUT STRUCTURE LAB Q. C. OPER. ASSURANCE OPERATIONAL AGE: MISSILE ASSEMBLY BUILDING 2 VEHICLE SUPPORT BUILDING LAUNCH PAD #2 LAUNCH SERVICE BUILDING LAUNCH OPERATIONS BLDG. - AF TRACKING STATIONS DELIVER WITH SV
(4) NOMENCLATURE The Battery Simulation Console is a single-bay, free-standing upright metal cabinet. The console contains a blower, six power supplies, a switching panel and a growth panel. Each supply has a voltmeter, an ammeter, and overvoltage and overcurrent sensing, along with voltage and current adjust potentiometers. The unit measures 26 inches wide, 42 inches deep, and 75 inches high.																
(5) TECHNICAL DESCRIPTIVE DATA OF PROBLEM AREA: The Battery Simulation Console is required to provide isolated power supplies for the simulation of the Telemetry Battery, Programmer Battery Number 1, Programmer Battery Number 2, Thermal Battery Number 1, Thermal Battery Number 2, and Terminal Battery. The meters are red-lined and green-lined to indicate operating range, and indicator lights provide a visual display of overvoltage. The unit interfaces with the Satellite Vehicle Simulated Flight Kit (Item 90) and with the vehicle in the OA electronics van.																
TOTAL OPERATIONAL AGE															2	

APPENDIX 26
OPERATIONAL AGE SYSTEM
SPECIFICATION

SVS 3954 REV C
8 NOVEMBER 1963

THIS DOCUMENT CONTAINS 140 PAGES.

OPERATIONAL
AGE SYSTEM
SPECIFICATION

AF 04 (695)—76

PREPARED FOR

SAFSP-206

UNITED STATES AIR FORCE
AIR FORCE UNIT POST OFFICE
LOS ANGELES 45, CALIFORNIA

GENERAL  ELECTRIC

**SPECIAL MILITARY SPACE PROJECT
MISSILE AND SPACE DIVISION**

KING OF PRUSSIA PARK
P.O. BOX 8661, PHILADELPHIA 1, PA.

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90	Satellite Vehicle Simulated Flight Kit	3.4.3.4.3b
90.2	Squib Simulator Current Monitor	3.4.3.4.3c
91	Ground Power Unit	3.4.3.2.3c
95	Forward Section Test Set	3.4.3.1.3a
96	BUSS Subsystem Checkout Test Set	3.4.3.8.3c
96.1	Frequency Monitoring Unit	3.4.3.8.3e
97	BUSS Attitude Control Test Set	3.4.3.8.3b
98	BUSS Auxiliary Equipment	3.4.7.3h
102	VHF, UHF & S-Band Antenna Coupler	3.4.3.7.3c
104	Antenna Test Set	3.4.3.7.3b
105	Beacon Checkout Test Set	3.4.3.7.3a
110	Satellite Vehicle Launch Control & Monitor Console	3.6.4.3e
112	Launch Support Building Power and Distribution Equipment	3.6.4.3a
112.1	Environmental Heater Control Unit	3.6.4.3i
114	Satellite Vehicle Test Monitor Equipment	3.6.4.3b
115	Launch Complex Verification Unit	3.6.2.3a

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AGE END ITEM INDEX (Cont'd)

AGE Fig. "A" Item Number	End Item Nomenclature	Reference Paragraph No.
118	Launch Operations Building Signal Distribution Unit	3.6.4.3d
120	Vehicle Support Building Signal Distribution Unit	3.6.6.3d
125	Satellite Digital Data Encoder	3.6.9.3o
126	Satellite Vehicle Manual Control Console	3.6.9.3p
127	Ground Tracking Station Test Set	3.6.9.3q

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OPERATIONAL AEROSPACE GROUND EQUIPMENT (AGE) SYSTEM SPECIFICATION

1. SCOPE

1.1 PURPOSE

This System Specification is intended to describe, in a chronological sequence, AGE requirements in support of the Satellite Vehicle (SV) system from factory to launch. It further is intended to provide a general system background for all AGE end items in their proper interface relationship with the SV at the various field site locations. This specification and the Aerospace Ground Equipment List (Figure "A" List) Document No. 62SD340, supplement each other and are to be used concurrently. (The Figure "A" List provides a more detailed physical equipment description of each AGE end item.)

This revision incorporates the requirements for all modified and/or new AGE which support the Back-up Stabilization Subsystem (BUSS) and the Block II design concept of the 206 Program.

1.2 FUNCTIONS

The AGE system performs all of the functions necessary to:

- a. Ship the Satellite Vehicle (SV) from the factory to the launch base.
- b. Perform all subsystem and systems level testing on the SV in the Missile Assembly Building (MAB), the Magnetometer Checkout Building (MCB), and the Vehicle Support Building (VSB).
- c. Handle the SV in various stages of assembly, testing, servicing, and mating operations at all field facilities.
- d. Weigh, balance, and align the SV.

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- e. Perform all servicing operations on the SV, including cooling, propellant loading, and high pressure gas loading.
- f. Participate in systems verification tests conducted at the MAB and the PAD.
- g. Participate in pre-countdown checkout and terminal countdown.

1.3 EXCLUSIONS

This specification does not cover AGE for on-orbit and retrieval operations. The AGE requirements for these operations are covered by separate documents.

1.4 GLOSSARY

The following abbreviations are used consistently throughout this specification as well as in other AGE documents. Their meanings are as follows:

- | | |
|---------|---------------------------------|
| a. AGE | Aerospace Ground Equipment |
| b. BUSS | Back-up Stabilization Subsystem |
| c. CG | Center of Gravity |
| d. CSG | Command Signal Generator |
| e. EMI | Electromagnetic Interference |
| f. GPU | Ground Power Unit |
| g. IP | Inertial Platform |
| h. IR | Infra Red |
| i. LOB | Launch Operations Building |
| j. LSB | Launch and Service Building |
| k. MAB | Missile Assembly Building |

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l.	MCB	Magnetometer Checkout Building
m.	OC/V	Orbital Control Vehicle
n.	PAD	Launch Pad
o.	RAGS	Rate Gyro System
p.	R/V	Re-entry Vehicle (also SR/V)
q.	SIGME	Satellite Instrumentation Ground Monitoring Equipment
r.	SR/V	Satellite Re-entry Vehicle (also R/V)
s.	S/S	Subsystem
t.	SV	Satellite Vehicle
u.	TARS	Two Axis Reference System
v.	TLM	Telemetry
w.	VERLORT	Very Long Range Tracking Radar
x.	VSB	Vehicle Support Building

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2. DESIGN CRITERIA

Development of the operational AGE system is based on the following military and contractor specifications, operational data, and planning documents.

2.1 APPROPRIATE SPECIFICATIONS

The military and contractor specifications specifically applicable to AGE include:

2.1.1 Military Specifications

MIL-S-8512	Support Equipment, Aeronautical, Special General Specification for
*MIL-R-27542	Reliability Program Requirements, for Aerospace Systems, Subsystems and Equipment
MIL-T-8191	Test and Checkout Equipment, Guided Missile Weapon Systems, General Specification for
*MIL-I-26600	Interference Control Requirements, Aeronautical Equipment
**MIL-E-5272C	Environmental Testing, Aeronautical and Associated Equipment, General Specification for
MIL-E-4970	Environmental Testing, Ground Support Equipment, General Specification for
*MIL-S-6644A	Specifications, Equipment, Contractor Prepared, Instructions for the Preparation of

NOTE: All documents preceded by an asterisk () are compliance documents in the 206 Work Specification.

** NOTE: All documents preceded by a double asterisk (**) are guide documents in the 206 Work Specification.

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MIL-M-8090D	Mobility Requirements, Ground Support Equipment, General Specification for
*MIL-D-70327	Drawing, Engineering and Associated Lists, Military Specification for
** MIL-A-8421D	Air Transportability Requirements, General Specification for
*MIL-E-6051C	Electrical-Electronic System Compatibility and Interference Control Requirements
*MIL-R-26667A	Reliability and Longevity Requirements, Electrical Equipment, General Specification for
*MIL-W-9411A	Weapon Systems, Aeronautical, General Specification for
*MIL-STD-803	Human Engineering Criteria for Aircraft, Missile and Space Systems Ground Support Equipment
*MIL-E-8189B	Electronic Equipment, Guided Missiles, General Specification for
**MIL-STD-129C	Military Standard Marking for Shipment and Storage
**MIL-P-116C	Preservation Methods

2.1.2 Contractor Specifications

SVS-4378	System Design Specification
SVS-4379	GE External and Internal Environmental Design Criteria
SVS-3959	GE-LMSC Interface Specification
SVS-4380	Acceptance Specifications, In House
SVS-4381	Acceptance Specification, Field
SVS-5013	Pt. Arguello Launch Complex II - Interface Specification
SVS-4364	Electromagnetic Interference (EMI) Testing Specification

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2.1.3 Air Force Publications

SSZXK-37	Program 206 Work Specification - Rev 1 to Exhibit A
ARDC Manual 80-5	Handbook of Instructions for Ground Equipment Designers
ARDC Manual 80-6	Handbook of Instructions for Aircraft Ground Support Equipment Designers
SACM 136-4	Ammunition and Explosives Storage and Handling Criteria
T. O. 11A-1-40	Ordnance Safety Manual
IMDM 58-2	Guided Missile Safety
**USAF Specification	Reliability Monitoring Program Bulletin 506
*T. O. 00-25-223	Integrated Pressure Systems and Components

2.1.4 Contractor Publications

62SD362	Program 206 Program Plan
63SD4664	AGE Development and Test Program Plan
62SD340	AGE (Figure "A") List
62SD422	Facilities Criteria, MAB
62SD120	Facilities Criteria, VSB
63SD4778	Facilities Criteria, MCB

2.2 APPLICABLE OPERATIONAL DATA

Operational data applicable to AGE include:

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2.2.1 Mission

The mission of the Program 206 shall be to orbit, track and retrieve a satellite. The total flight system shall comprise an Atlas D, an Agena D, and an orbiting SV. The reference nominal orbit shall be 115 nautical miles, 95 degrees inclination with allowable altitude variations of ± 5 nautical miles. The orbit life shall be five days maximum after which retrieval of the Forward Section (R/V) capsule shall occur.

2.2.2 Operational Field Sites

The operational field sites shall include: a Missile Assembly Building (MAB) and a Magnetometer Checkout Building (MCB) at Vandenberg Air Force Base, California; a Launch Complex at Pt. Arguello, California; and a Satellite Test Annex at Sunnyvale, California.

2.2.2.1 The MAB - (See figure 2-1 and figure 2-2)

The SV shall first be received and inspected at the MAB where it shall undergo subsystem and system testing, pneumatic checks, measurement of mass properties, and preparation for transport to the MCB.

2.2.2.2 The MCB

The SV shall undergo magnetometer compensation and calibration at the MCB after which it shall be prepared for transport to the Launch Complex.

2.2.2.3 The Launch Complex - (See figure 2-3)

The Launch Complex shall consist primarily of a launch pad (PAD), a Launch and Service Building (LSB), a Launch Operations Building (LOB), and a Vehicle Support Building (VSB). The Launch Complex shall be located at Pt. Arguello, approximately 16 miles from the MAB.

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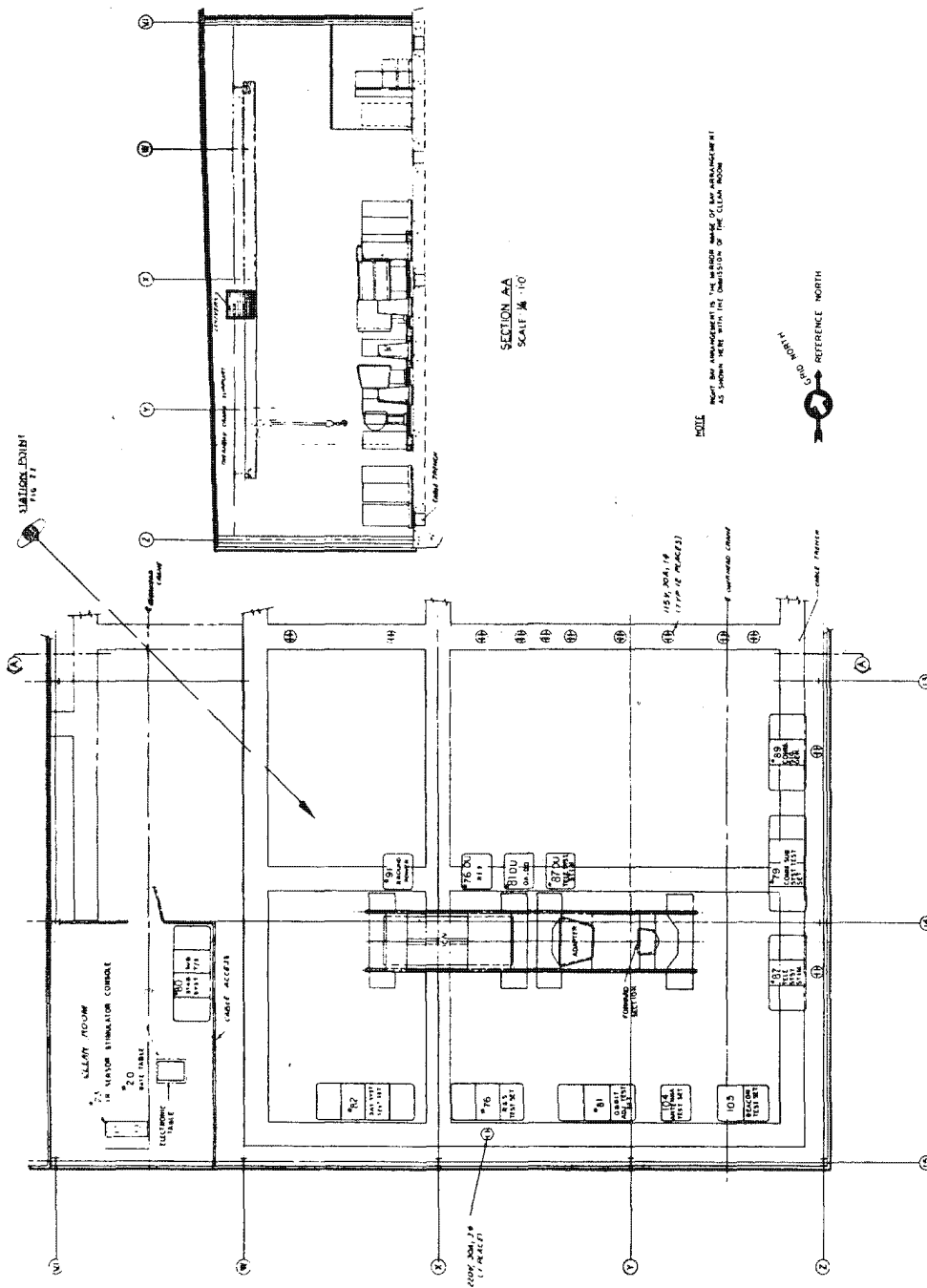


Figure 2-1. Floor Plan, MAB

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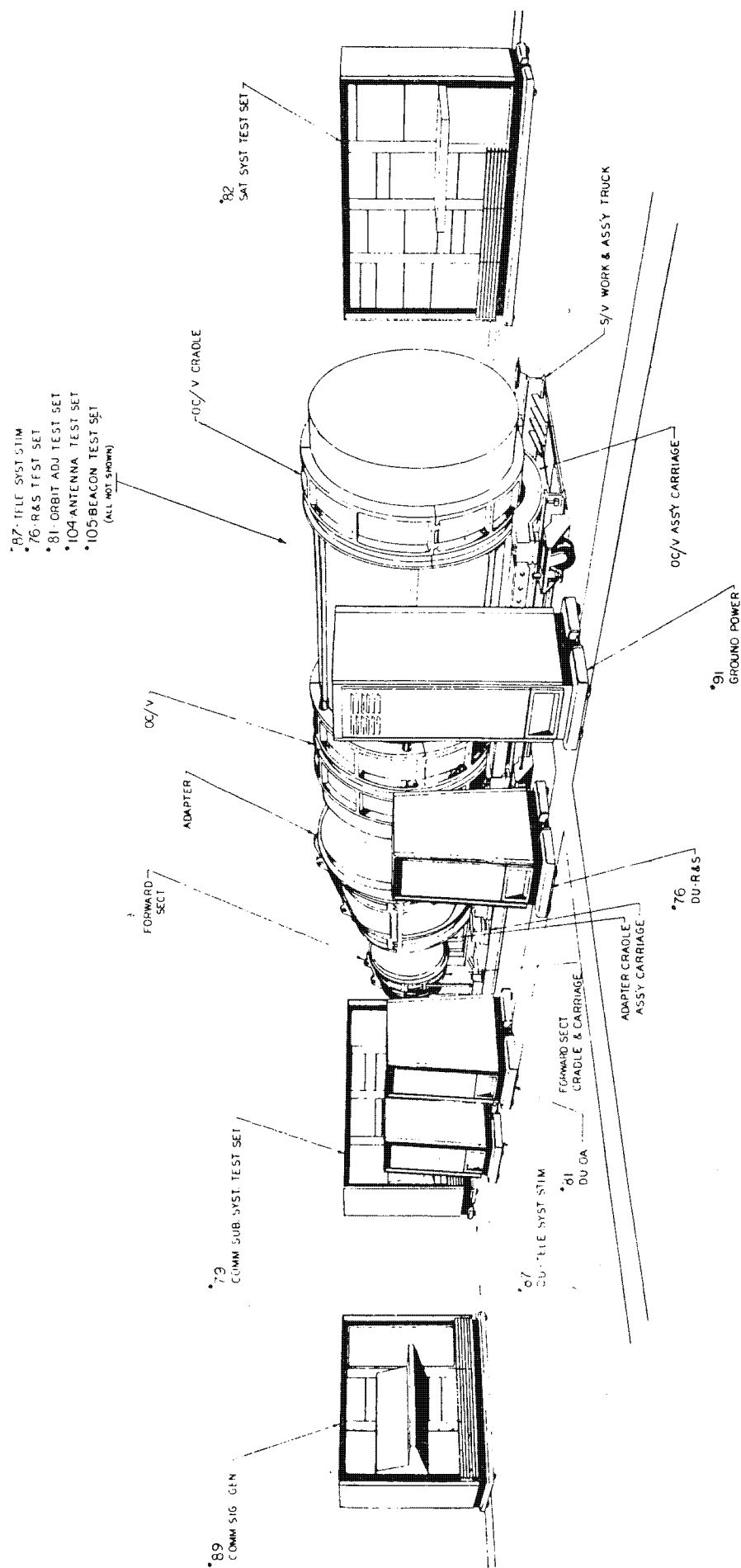


Figure 2-2. Vehicle Test Bay, MAB (Typical)

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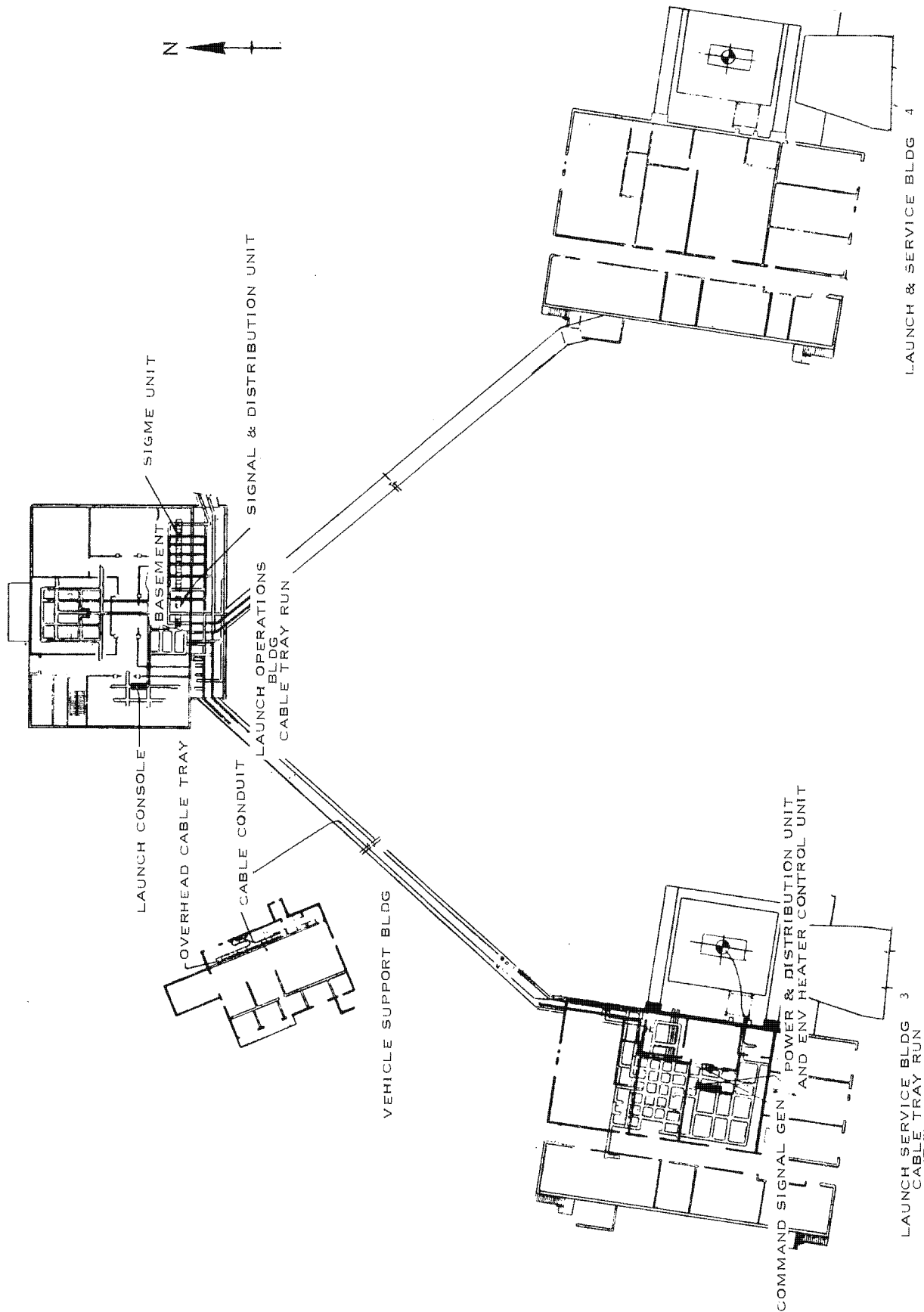


Figure 2-3. Launch Complex

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2.2.3 Tracking Stations

VERLORT tracking sites shall be located at Kodiak, Vandenberg, Hawaii, New Hampshire, Thule, and Annette. The tracking station at Thule shall be used for re-entry and deboost tracking. In addition, a rate beacon shall be tracked from Vandenberg, New Hampshire, Hawaii, and Annette.

2.2.4 Recovery Area

Retrieval of the recovery capsule of the re-entry vehicle shall be accomplished by air snatch or water recovery somewhere in the Hawaiian Island area.

2.2.5 Operational Activities

The complete flight system, consisting of an Atlas D, an Agena D, and the SV shall be assembled at the PAD. System tests, to verify mechanical and electrical compatibility of the flight configuration, and simulated flight tests shall be performed for final acceptance as well as to demonstrate effectiveness of crew, equipment and procedures in the performance of the launch countdown.

High pressure gases shall be loaded at the VSB prior to final mating. After installation of pyrotechnics, the SV shall undergo a final confidence test. Propellant loading, at the PAD, shall be controlled from the LSB. Final countdown and launch shall occur at the PAD and shall be monitored and controlled from the LOB.

The tracking stations shall serve as the remote control and monitor links between the airborne satellite and the Satellite Test Annex. The tracking station located at Vandenberg (VAFB) shall participate in systems test of the SV at the PAD and in the final countdown where the initial flight program shall be loaded.

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The 6595th Test Wing shall be responsible for the complete operation at Vandenberg. GE-MSD shall be the test conductor for the MAB and shall support the 6595th Test Wing in all other operations. The 6595th Test Wing shall observe the performance of all tests and accept the SV after completion of systems test at the PAD.

2.3 ITEMIZED ASSUMPTIONS

The following assumptions are made by General Electric Company in developing the AGE System Specification.

2.3.1 RF Radiation Restrictions

Maximum field strength restrictions imposed on closed loop radiating systems during unscheduled air time operation at the Pacific Missile Range (PMR) are assumed as 300 microvolts per meter, measured at 100 feet from the source of radiation.

2.3.2 Launch Complex Open Loop Testing

System testing at the PAD, including simulated flight tests, shall be accomplished open loop during scheduled air time with antenna elements radiating into unrestricted space. The capability to conduct system testing in a closed loop configuration, via hardline telemetry, shall also exist.

2.3.3 High Pressure Pneumatic Testing

During all tests which involve pressurizing the pneumatic systems of the vehicle, pressure levels shall not exceed 10% above operating pressures. High pressure tests shall only be conducted in a special test cell at the MAB or at the VSB.

2.4 FACILITIES CRITERIA

The following facilities criteria are applicable to AGE:

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2.4.1 Missile Assembly Building (MAB)

Facilities requirements for the MAB are defined in GE publication 62SD422A, "Facilities Criteria, Missile Assembly Building, AF04(695)-76."

2.4.2 Magnetometer Checkout Building (MCB)

The MCB shall consist of a structure located at Vandenberg AFB of adequate dimensions to allow the complete SV to be rotated about its yaw axis 360° . It shall require a minimum clear radius of 11 feet from the center of the building with a minimum roof height of 10 feet. In addition, at least 75 foot candles of illumination shall be provided in all work areas; space heaters shall be provided to heat the building to a minimum of $+65^{\circ}$ Farenheit; and three 30 ampere, 120 vdc single phase power circuits shall be provided.

To permit crane transfer of the SV from the transporter to the compass rose turntable and non-magnetic supports with the building, a roof opening shall be provided of at least 20 feet in length and 10 feet in width with provisions for closing and sealing the opening against the weather.

2.4.3 Vehicle Support Building (VSB)

Facilities requirements for the VSB are defined in GE publication 62SD120, "Facilities Criteria, Vehicle Support Building, Program 206."

2.5 FACILITIES DEFINITIONS

The following facilities are designated areas in which AGE is required.

2.5.1 Missile Assembly Building (MAB)

That building located at Vandenberg AFB, California, in which the SV shall be received, disassembled, tested, serviced, and assembled prior to being transported to the MCB.

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2.5.2 Magnetometer Checkout Building (MCB)

That building located at Vandenberg AFB, California, in which the SV flight magnetometer shall be compensated and calibrated prior to shipment to the Launch Complex for PAD validation testing.

2.5.3 Vehicle Support Building (VSB)

That building located at the Launch Complex, Pt. Arguello, (PALC-2), California, in which the SV propulsion system shall be passivated; pneumatics systems pressurized, live pyros and flight batteries installed, and all other final preparation made before transporting the SV to the PAD for final mating prior to flight.

2.5.4 Launch Operation Building (LOB)

That building located at the Launch Complex, Pt. Arguello, California, approximately 1500 feet from the PAD in which shall be located the equipment for monitoring and controlling the missile and for initiating the flight. This building shall be manned during terminal count-down and flight.

2.5.5 Launch and Service Building (LSB)

That building located at the Launch Complex, Pt. Arguello, California, adjacent to the gantry where equipment for final flight preparation shall be manned until gantry pull-back. Equipment for relaying information between the LOB and the missile shall also be located in the LSB. Personnel shall not be allowed in the LSB after gantry pull-back.

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3 REQUIREMENTS

3.1 AEROSPACE GROUND EQUIPMENT SYSTEM SUMMARY

The design of AGE has been determined by the external configuration and inboard profile of the Satellite Vehicle (SV).

3.1.1 General Description of Airborne System

The external configuration and inboard profile of the SV is shown in Figure 3-1 and shall include the following three major structural subassemblies.

- a. Forward Section (R/V) - Sta. 18.98 - 46.43
- b. Adapter Section - Sta. 46.43 - 83.38
- c. Orbital Control Vehicle (OC/V) - Sta. 83.38 - 234.88

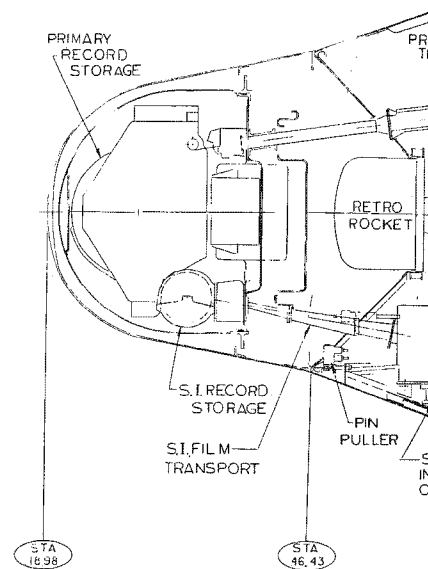
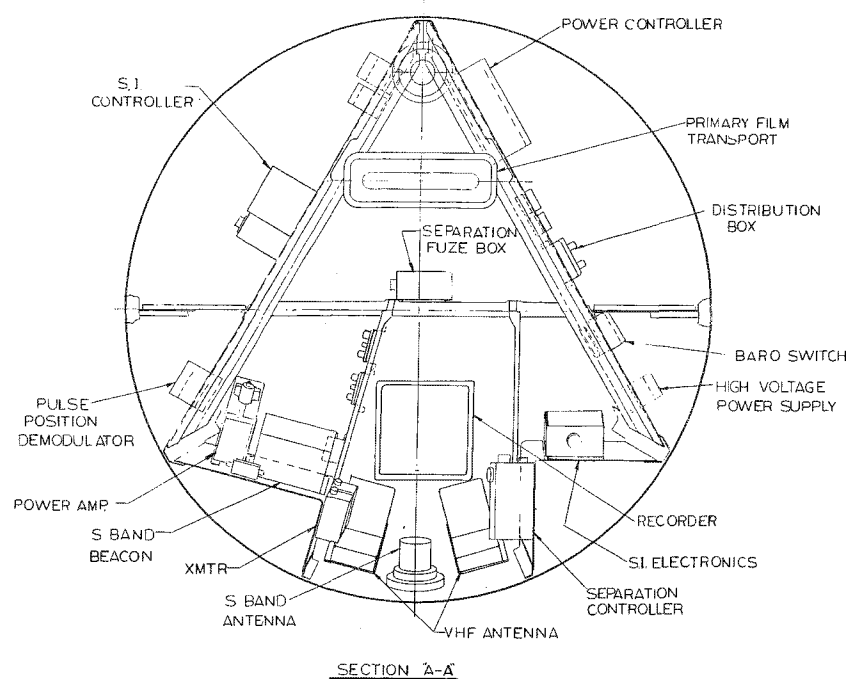
3.1.1.1 Mating Stations

The three major structural subassemblies shall be physically mated at their respective interface stations in the following manner:

- a. Station 234.88 - The Agena OC/V interface mating shall be accomplished by the bolting of the aft end of the OC/V to the Agena D booster.
- b. Station 83.38 - The OC/V/Adapter Section interface mating shall be accomplished by the use of radial bolts.
- c. Station 46.43 - The Adapter/Forward Section interface mating shall be accomplished by pinning the protruding lugs of the Forward Section (R/V) within the structure of the Adapter Section.

3.1.1.2 Separation Stations

Sequential post-launch separation of the SV and its major structural subassemblies shall be accomplished as follows:



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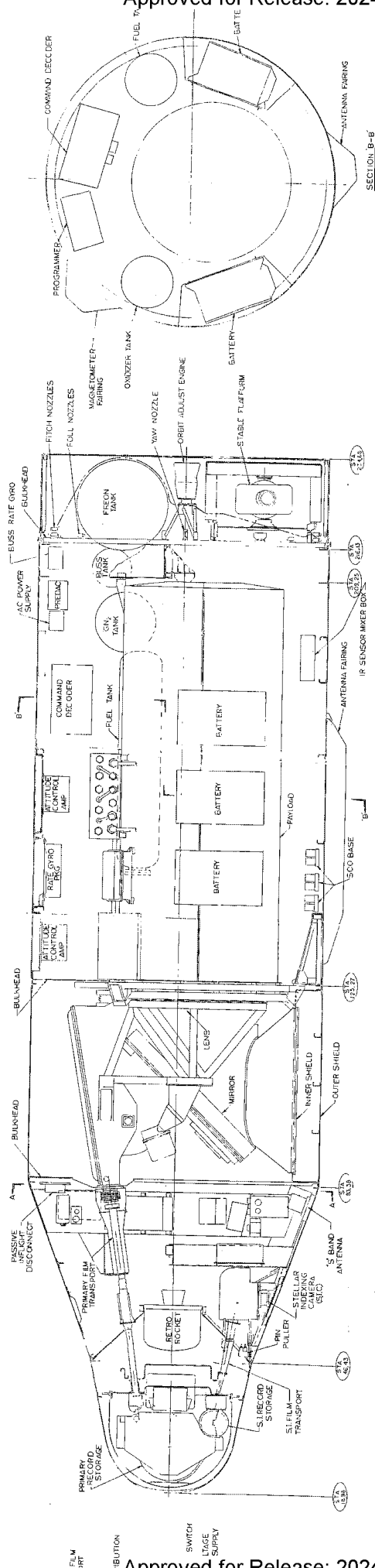


Figure 3-1. Inboard Profile, SV

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- a. The Agena separation plane shall be located at Station 217.44. At this location a metal band (Marman clamp) shall be fastened circumferentially around the vehicle by four sets of bolts, springs, and squibs. The physical separation of the Agena shall be accomplished by the firing of the squibs which shall explode the bolts, release the spring tension, and cause the metal clamp to separate from the vehicle.
- b. The Adapter/Forward Section separation plane shall be located at Station 46.43 where the lugs of the Forward Section (R/V) are pinned within the structure of the Adapter Section. The physical separation shall be accomplished by a squib-activated mechanism which releases the lug pins by spring-action.

3.1.1.3 Major SV Subsystems

The Satellite Vehicle (SV) shall consist of the following major subsystems:

- a. Forward Section (R/V). The Forward Section subsystem shall consist of an ablative-surface cone sphere forebody attached to a truncated thrust cone afterbody. The forebody shall contain a recoverable capsule and a recovery subsystem. The afterbody thrust cone, separable from the forebody prior to re-entry, shall contain a deorbit and spin propulsion subsystem. The Forward Section, as a subsystem, shall contain its own electrical power and distribution subsystem as well as a telemetry subsystem for monitoring deorbit and recovery events.

The function of the Forward Section shall serve to protect the recoverable capsule from the environments of powered flight, orbital flight, re-entry, and recovery, either by air-snatch or water recovery.

Upon command from the Command subsystem the Forward Section shall initiate and carry through to completion its own sequence of deorbit and recovery events (including recovery aids), and, by means of its own telemetry, transmit all key deorbit and recovery events.

The Forward Section shall consist of a sphere-cone forebody and a truncated thrust cone. The forebody shall contain the recoverable water-tight capsule in which the components of the recovery subsystems are mounted. The external surface shall be constructed of ablative heat shield material. The thrust cone, separable from the Forward Section before re-entry, shall contain the entire deorbit subsystem.

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The forebody shall consist of a phenolic nylon re-entry heat shield, a phenolic glass structural shell for withstanding the re-entry aerodynamic pressures, and several internal rings for supporting the recovery capsule.

The recovery capsule shall be fabricated from a spun sheet of 6061-T6 aluminum alloy material. The secondary structure within the capsule shall be spot welded to the capsule shell to support the recovery and telemetry electronic and event instrumentation components. An aluminum alloy capsule cover equipped with an "O" ring shall seal the aft end of the capsule.

The thrust cone assembly shall consist of two machined 2014-T6 aluminum alloy rings to which shall be attached stiffened 2024-T3 aluminum alloy sheet metal panels. The retro rocket, the cold gas spin and de-spin system, the rocket programmer and the power supply shall be mounted to this structure.

Shipping AGE shall be required at the Missile Assembly Building (MAB) to handle, checkout, weigh, balance and service the subsystem and to locate malfunctions to the component level. AGE shall also be required at the Vehicle Support Building (VSB) to enable the accurate installation and alignment of the solid rocket deorbit motor as well as to properly install the required squibs and batteries.

- b. Adapter Section. The Adapter Section subsystem shall be constructed of semi-monocoque aluminum in the configuration of a truncated cone. The external skin, longerons, and splice plates shall be of titanium. The rings, antenna mounts, and the component racks shall be of aluminum.

Measuring approximately 38 inches in length, the Adapter Section shall join the Forward Section (R/V) at Station 46.43 and the Orbital Control Vehicle (OC/V) at Station 83.38.

The Adapter Section shall house the antennas, telemetry components, orbit correction components, and the separation components necessary to separate the Forward Section (R/V) from the Adapter Section.

AGE shall be required to protect the Adapter Section and its contents during shipment; to assemble, weigh, balance, align, and handle the Adapter Section at the Missile Assembly Building (MAB); and to prepare the Adapter Section for flight at the Vehicle Support Building (VSB).

- c. Orbital Control Vehicle (OC/V) Structure. The OC/V structural subsystem shall measure approximately 152.88 inches in length and shall have an approximate diameter of 60 inches. Constructed of semi-monocoque aluminum, the OC/V shall be the principal load-carrier within the SV system. It shall provide support to all of the functional subsystems. Removable front and aft end sections shall provide for access to and installation of components. The OC/V shall serve as the

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interconnecting structure between the assembled Forward/Adapter Sections at Station 83.38 and the Atlas/Agena booster at Station 234.88

The BUSS module, containing a propellant tank, plumbing, pitch, roll, and yaw solenoids, and a quick-disconnect; shall be mounted at the aft portion of the OC/V, between Station 209.25 and Station 216.13.

The OC/V shall also contain two flight fairings on its outer skin parallel to its roll axis. One fairing shall protect and restrain the collapsible VHF antenna boom and dipoles and shall be mounted between Sta. 137.00 and Sta. 188.00 longitudinally centered in Quad II at 175°. The second fairing shall protect and restrain the collapsible magnetometer boom and shall be mounted between Sta. 145.00 and Sta. 196.00 longitudinally centered in Quad IV at 310°.

NOTE

Flight fairings cannot be mounted to the SV during assembly, transport, or checkout operations and shall not be installed until the SV is mounted to the Agena on PAD. AGE fairings shall be used during all handling, transport, and vehicle checkout operations.

AGE shall be required to protect the OC/V and its contents during shipment; to handle, assemble, weigh, and balance the OC/V at the Missile Assembly Building (MAB); to calibrate the magnetometers at the Magnetometer Checkout Building (MCB); and to prepare the OC/V for flight at the Vehicle Support Building (VSB). AGE shall also be required during all handling, transport, and validation testing operations to protect the antenna and the magnetometer components.

- d. Telemetry, Tracking and Command (TT&C) Subsystem. The Telemetry, Tracking and Command Subsystem shall provide the necessary ground-to-air and air-to-ground communication links with the SV.
 1. Tracking. The tracking portion of the TT&C subsystem shall consist of the S-Band VERLORT beacon, which shall receive coded, pulsed interrogations from VERLORT radars, and transmit an uncoded; single pulse response to the ground. This system shall provide range and angle tracking of the SV for ranges exceeding 600 nautical miles. (See Figure 3-2.)

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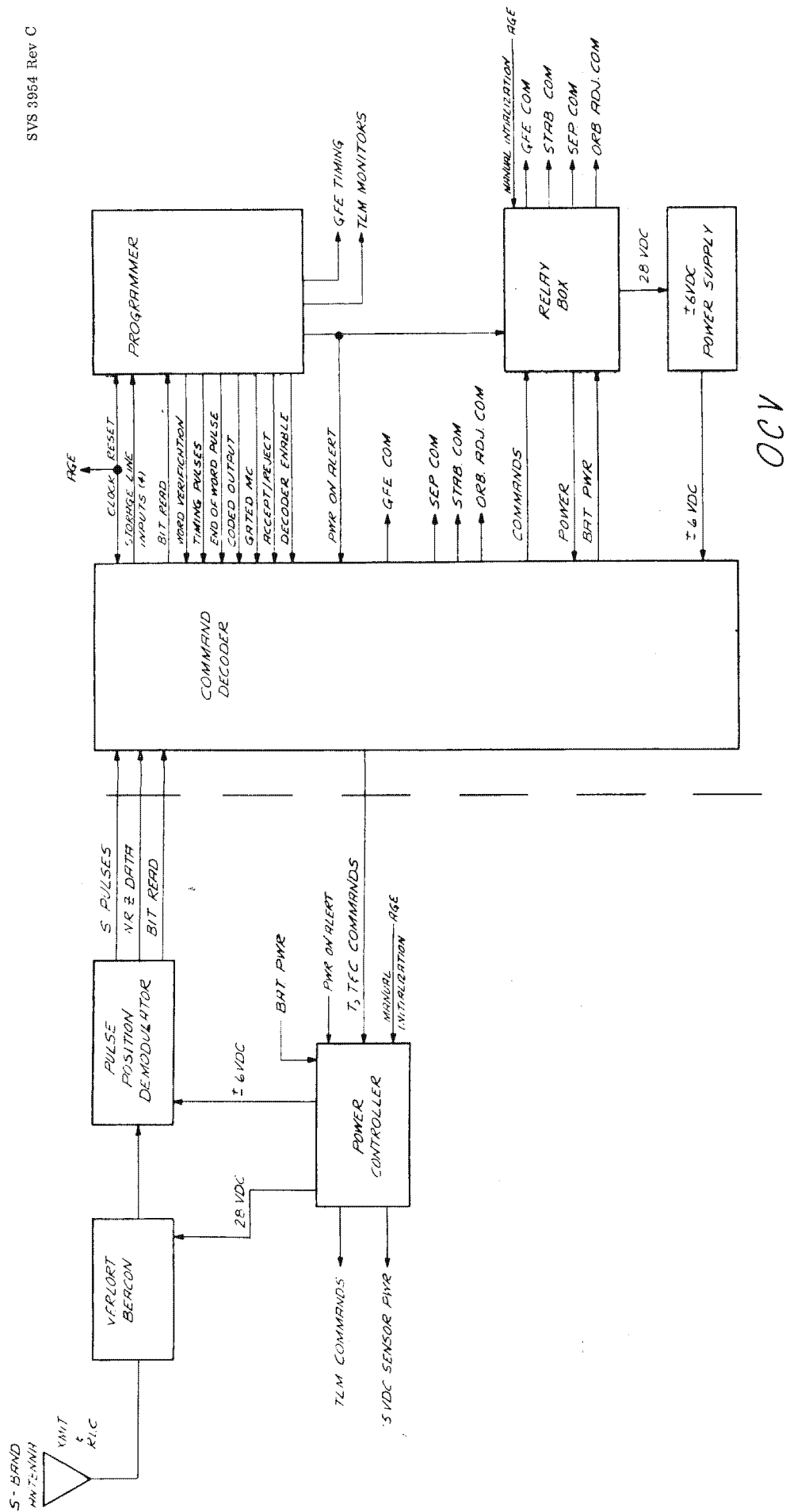


Figure 3-2. Block Diagram, Tracking and Command Subsystem

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2. Telemetry. The telemetry portion of the subsystem shall monitor the performance of the vehicle and various subsystem functions and components. (See Figure 3-3.) It shall transmit this data to the ground on FM/FM VHF telemetry. The monitoring shall be performed either in real time, when over a tracking site, or delayed time, when not over a tracking site. The latter function shall be performed by recording the data on tape and by playing back the data over the tracking station. The telemetry shall also provide "accepted" and/or "rejected" signals as described in the next paragraph.
3. Command. The command portion of the Telemetry, Tracking and Command (TT&C) subsystem shall be a clear command system with secure deboost commands. It shall utilize both the VERLORT tracking system for the ground-to-air link and the telemetry system for the verification air-to-ground link. (See Figure 3-2.)

Command data shall be transmitted to the SV by position-modulating the middle pulse of a three pulse interrogation to one of three discreet positions. This data shall be received in the SV, demodulated, translated, and the command executed or stored for later execution. All commands shall be verified through the telemetry to the tracking station before the next command.

AGE shall be required at the Missile Assembly Building (MAB) to checkout the subsystem and analyze malfunctions to the component level. AGE shall be required at the PAD to command and monitor the satellite during system closed loop tests and countdown. AGE shall also be required at the VAFB tracking station to modulate the VERLORT radar during system test and countdown.

- e. Environmental Control Subsystem. The environmental control subsystem shall maintain temperature control in the SV. The requirements shall be established by the thermal sensitivity of the equipment within each section, the material of construction, and the environmental criteria of each piece of equipment. Temperature limits shall be controlled by such factors as the re-entry shield material, emissivity coatings, insulation, and local strip heaters.

AGE shall be required to supplement the maintenance of the thermal balance of the vehicle during shipping and testing at the MAB, during transportation between the MAB and PAD, during PAD checkout procedures, and during pre-conditioning procedures.

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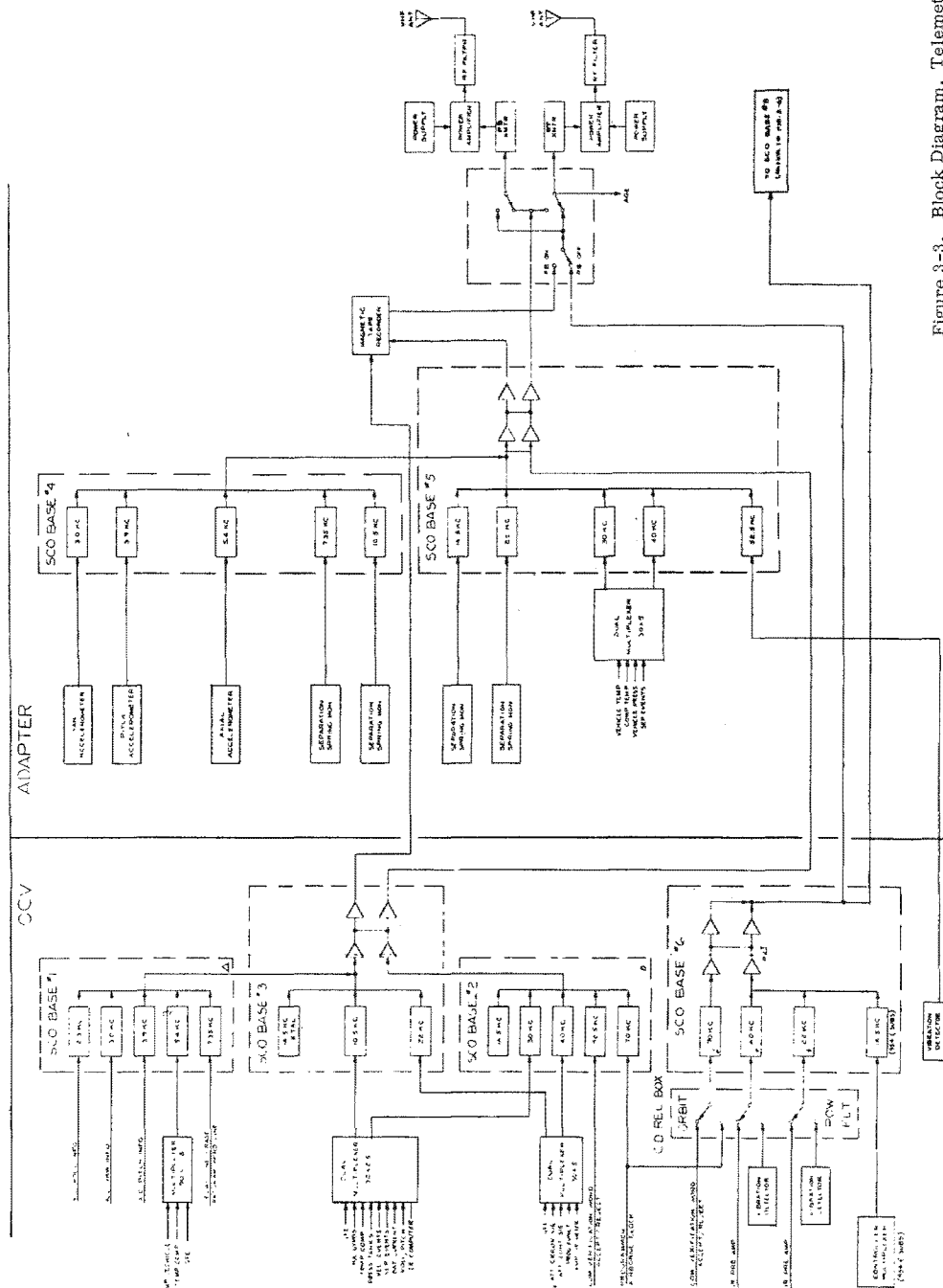


Figure 3-3. Block Diagram, Telemetry Subsystem

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- f. Separation Subsystem. The separation subsystem shall provide the circuits and elements to enable the following separation events to occur at the proper time:

1. Protection hatch by pyrotechnic pistons
2. SV from Agena by "V" clamp pyros
3. Forward Section/Adapter inflight disconnect by squibs
4. Forward Section from the Adapter Section by squib-activated pin pullers.

AGE shall be required to checkout the subsystem and to analyze malfunctions to the component level at the Missile Assembly Building (MAB); to monitor the subsystem events during PAD tests at the Launch and Service Building (LSB); and to install and checkout pyrotechnic devices at the Vehicle Support Building (VSB).

- g. Orbit Adjust Subsystem. The Orbit Adjust subsystem shall provide, by commands through the OC/V relay box, correction for orbit decay caused by aerodynamic drag. It shall also provide, by period adjust, a cross range maneuver of the SV on the last orbital pass and intersect the orbital plane with the selected impact target area. (See Figure 3-4.)

The proper impulse to the SV shall be provided by a pair of liquid propellant engines, each with a 50-pound thrust. The oxidizer shall be of nitrogen tetroxide and the fuel shall be a blend of hydrazine and monomethyl hydrazine.

AGE shall be required at the Missile Assembly Building (MAB) to checkout the subsystem and to analyze malfunctions to the component level. AGE shall also be required at the Vehicle Support Building (VSB) and the PAD for propellant and nitrogen servicing.

- h. Stabilization Subsystem. The stabilization subsystem shall control the attitude of the SV throughout the orbit track and periods of orbit adjust (See Figure 3-5.) The yaw-around and pitch-down maneuver for the de-orbit phase of re-entry shall be provided by this subsystem.

Stabilization control shall be obtained through the use of high pressure cold gas (Freon CF₄) torquing jets. The gas shall be contained in two spherical titanium tanks mounted to the aft structure portion of the Orbital Control Vehicle (OC/V). Fine and coarse control shall be provided for the pitch, yaw and roll axes. Sixteen nozzles (8 coarse and 8 fine) mounted to the aft bulkhead shall be exposed for operation upon SV separation from the Agena D.

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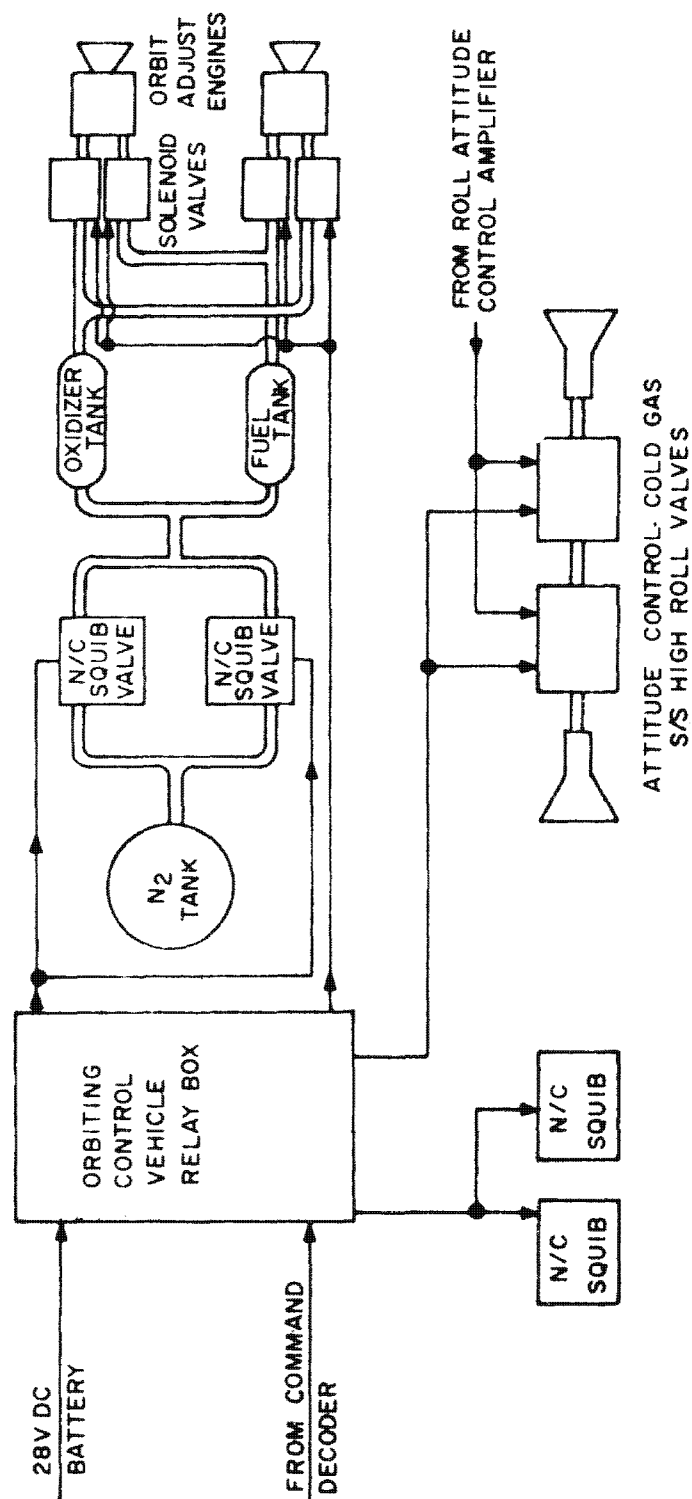


Figure 3-4. Block Diagram, Orbit Adjust Subsystem

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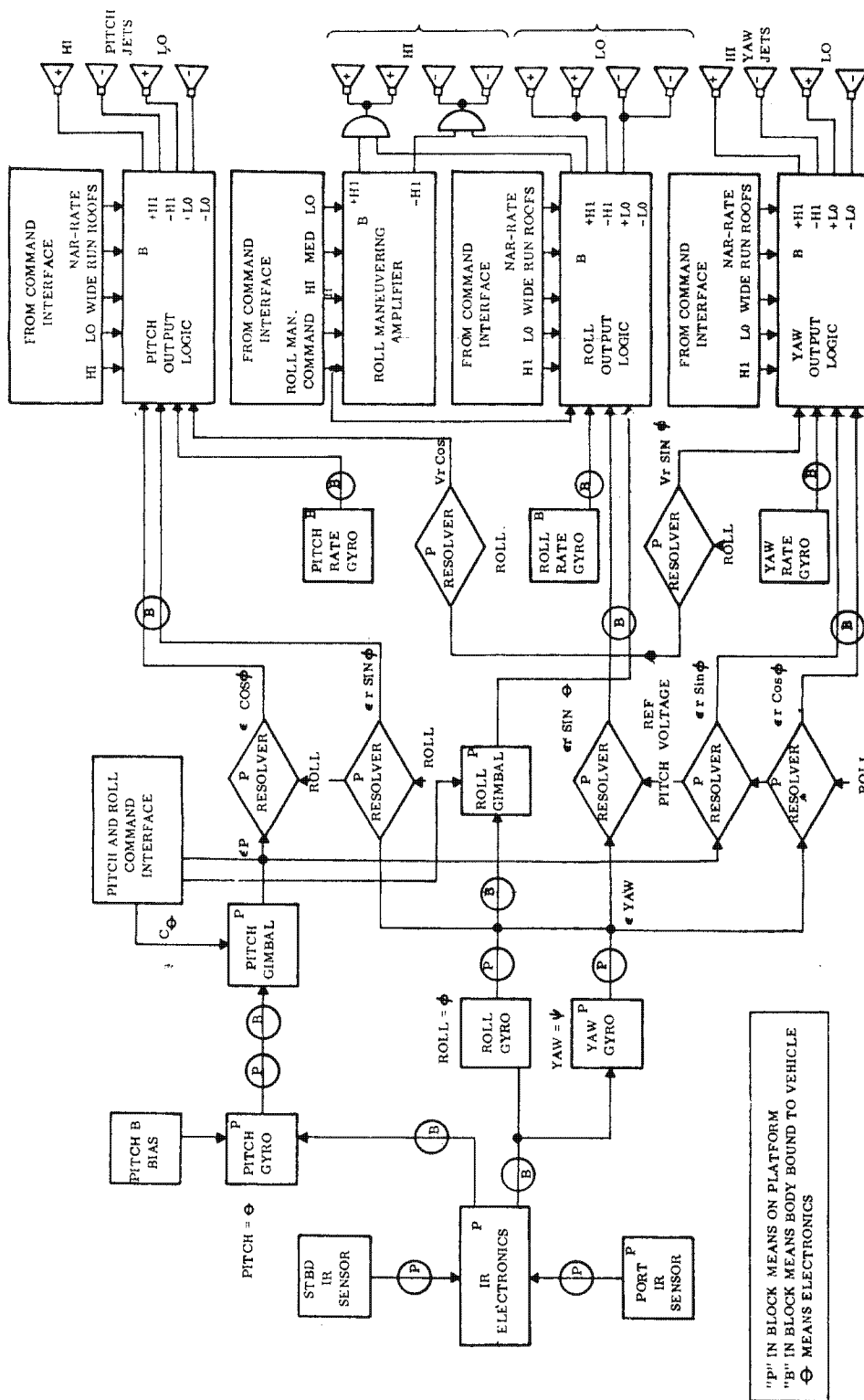


Figure 3-5. Block Diagram, Stabilization Subsystem

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The SV attitude shall be sensed from an inertial platform reference. The platform shall be slaved to the earth's local vertical by a pair of infrared horizon scanners. The SV yaw control shall be provided by sensing the yaw component of orbital rate by means of an integrating gyro. Two integrating gyros shall provide the fine sensing elements, while the IR scanners shall provide correction for drift.

AGE shall be required at the Missile Assembly Building (MAB) to checkout the subsystem, to analyze malfunctions to the component level, and to align the platform to the OC/V. AGE shall also be required at the VSB to service the vehicle with cold gas.

- i. Electrical Power and Distribution Subsystem. The electrical power and distribution subsystem shall provide power for all the operational equipment from launch to Forward Section separation. This shall include all primary power supplied. The primary power bus shall be +28 volts, unregulated. The harness, all mating connectors, inflight disconnect between the Forward Section and the Adapter Section, plugs, and electrical umbilical connector shall be included.

AGE shall be required to service the subsystem power supplies and to perform confidence tests on the airborne harness.

- j. Back-up Stabilization Subsystem (BUSS). The BUSS shall provide secondary deboost and stabilization capability to the flight vehicle, via telemetry command. The subsystem shall consist of a pneumatic tank, plumbing, pitch roll and yaw solenoids, and a quick disconnect. It shall be physically mounted within the aft portion of the OC/V. The BUSS module shall be activated by signals received and transmitted by the magnetometer and the VHF antenna, each mounted on erectable booms on the surface of the OC/V structure at approximate opposing quad locations. (See Figure 3-6.)

AGE shall be required at the MAB to perform alignment, command and attitude control tests on the BUSS module. AGE shall be required at the MCB to perform magnetometer compensation. AGE shall also be required at the MAB, the MCB and the PAD to protect the antenna and magnetometer booms during handling, transporting, and testing operations.

3.1.2 Operating Criteria and Requirements

The following operating criteria and requirements shall affect and guide the design and development of the AGE.

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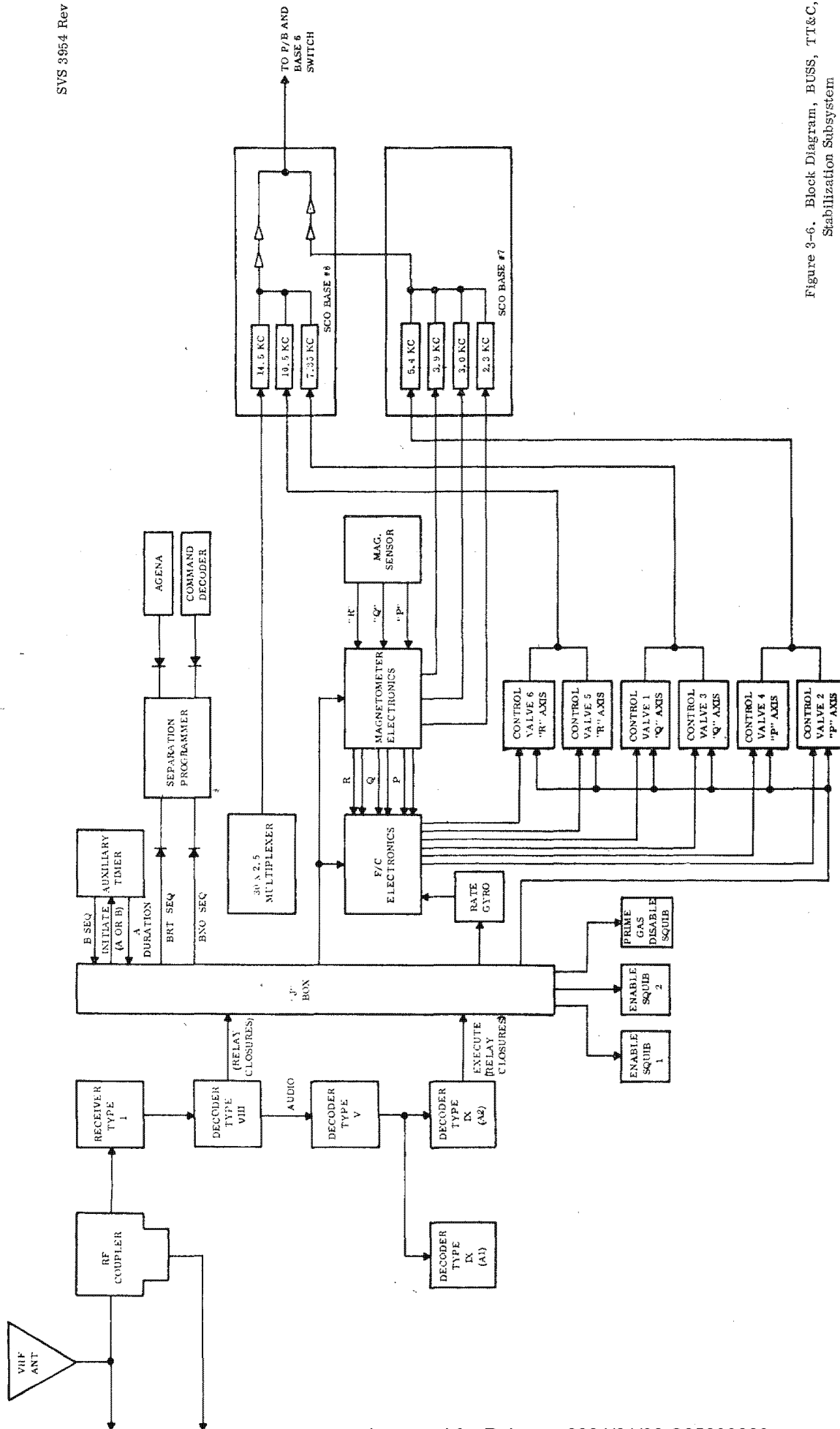


Figure 3-6. Block Diagram, BUSS, TT&C, Stabilization Subsystem

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3.1.2.1 General

The AGE design shall provide maximum operational utility and shall reflect the optimum combination of simplicity, safety, reliability and maintainability consistent with operational requirements.

3.1.2.2 Operability and Human Factors

Human capability and compatibility shall be integrated into the design in all areas having man-machine interfaces. AGE shall be human-engineered in accordance with MIL-STD-803 as defined in the Work Specification.

3.1.2.3 Safety

Personnel safety shall be of prime consideration and shall be factored into the design of the AGE to the maximum extent possible, with regard to anticipated operating conditions and capability of operating personnel. The AGE shall be designed to be "fail safe" - i. e., an AGE failure shall not cause a failure in the system under test.

3.1.2.4 Reliability

Reliability analyses shall be conducted on selected items of AGE involved in critical operational phases. Methods of analysis, figures of merit, and items to be analyzed, are as defined in the Program Plan.

3.1.2.5 Maintainability

The AGE shall be capable of being maintained at the MAB. Preventive maintenance shall be utilized as required. Electrical AGE shall be designed for ease of troubleshooting and replacement of components. Where practical the AGE shall be self-checking.

3.1.2.6 Interchangeability

All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable.

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3.1.2.7 Transportability

All items of AGE shall be capable of being transported by cargo aircraft or truck.

3.1.2.8 Construction and Materials

The AGE shall be constructed to withstand all conditions of service use without loss or loosening of parts, permanent deformation, or loss of serviceability or safety. Materials used in fabrication of AGE shall be at the designer's option and shall be of good commercial quality for the particular type of equipment. The use of critical materials shall be held to a minimum where allowable, with respect to performance requirements. AN or MIL standard parts shall be used wherever they are suitable. Commercial parts such as screws, nuts, bolts, etc., shall be used, provided they have suitable properties and are replaceable by AN or MIL standard parts without alteration; and provided corresponding AN or MIL standard part numbers are referenced on the drawings and in the parts list. In applications for which no suitable corresponding AN or MIL standard part is available, commercial parts shall be used, provided they meet design requirements.

3.1.2.9 Environment

Aerospace Ground Equipment shall be designed to withstand the anticipated environments encountered during packaged shipments from the factory to the launch base. AGE shall also perform its intended function while operating under environment anticipated at Vandenberg Air Force Base and Pt. Arguello Launch Complex. The environmental extremes outlined in SVS 4379 shall be used as a design guide. Formal qualification testing to prove performance under environmental extremes shall not be required. When the performance of an end item shall be considered marginal or uncertain under a particular environment, environmental testing shall be performed on an informal basis during the overall development test program.

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3.1.2.10 Testing

The AGE shall be designed for operation by GE flight test personnel having a minimum skill designation equivalent to the Air Force 7 level. The AGE shall be automated to the degree that is economically practical to permit speed and flexibility in analysis and interpretation of SV performance data. The test sequence shall be established to keep testing to a minimum, consistent with obtaining confidence in vehicle operational capability while operating components well below their specified life. All system tests shall be performed as close to flight configuration as practical. Systems tests shall be performed to check pyro circuits under realistic load conditions. Pyro simulators shall be used for this function.

3.1.2.11 Electromagnetic Interference (EMI)

Levels of EMI generated shall be measured and checked against acceptable levels. In general, EMI generation and susceptibility shall be a design consideration such that the requirements of MIL-I-26600 and SVS 4364 are met. Individual EMI tests shall be conducted on the following end items: 88, 89, 110, 112, and 118. (Item 88 has been tested in accordance with the requirements of MIL-I-26600 only, since it was already in process of testing at the time SVS 4364 was issued.)

3.1.3 Aerospace Ground System Summary

The AGE shall provide the complete and only support for the SV from factory through launch. (See Figure 3-7.) The equipment planned shall be designed to function as an integrated system with the SV and the base facilities, consistent with the criteria established above, to assure maximum probability of mission success.

3.1.3.1 Factory to Launch Base

The SV shall be prepared for shipment at the factory. The SV shall be disassembled and shipped as separate modules consisting of the Forward Section (R/V), the Adapter Section, and the Orbital Control Vehicle (OC/V), in order that environmental protection is most economically attained. (Refer to environmental criteria as defined in SVS 4379.)

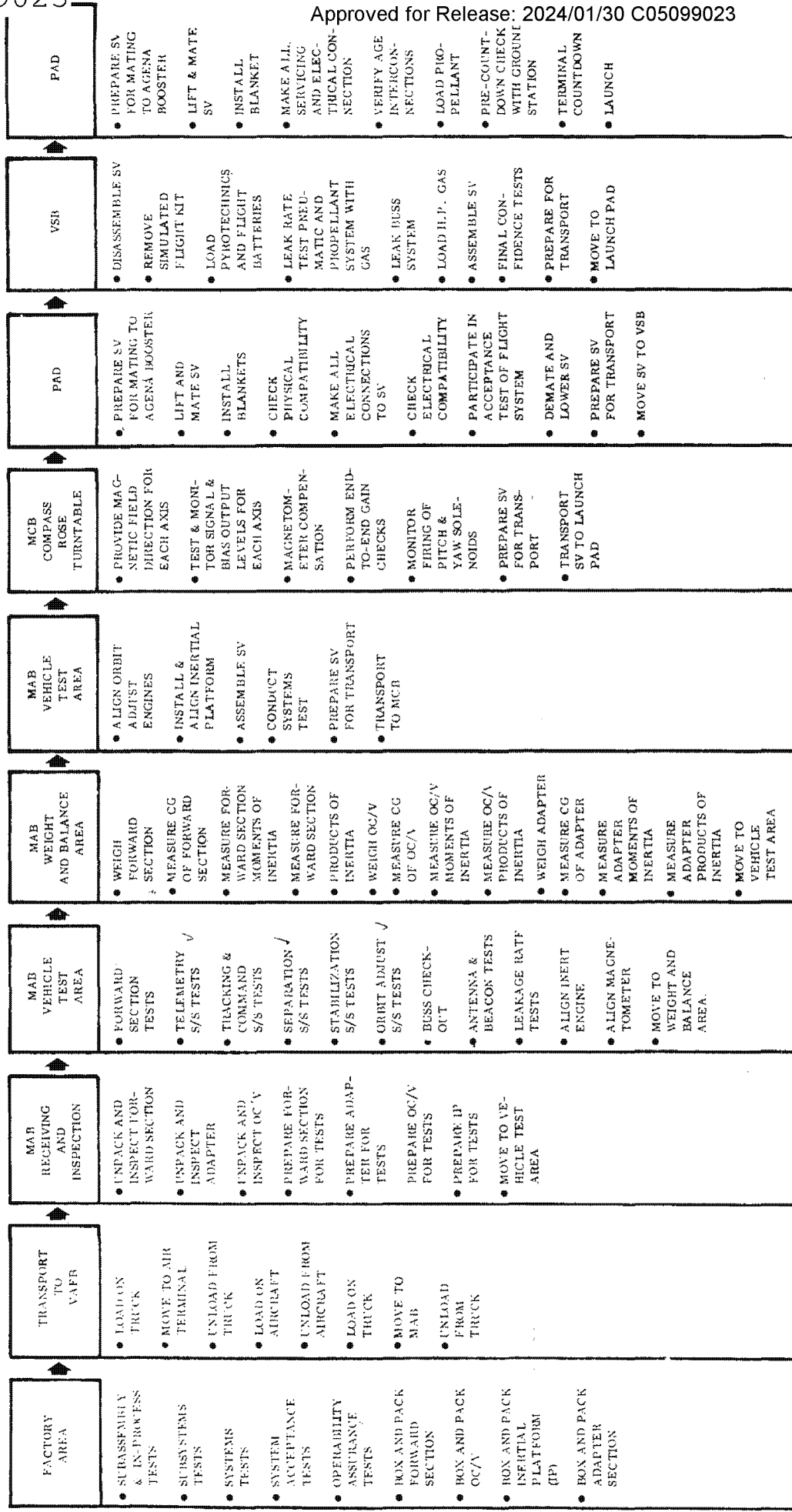


Figure 3-7. Use Area Flow, SV

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3.1.3.2 Missile Assembly Building (MAB)

- a. Receiving and Inspection. The receiving and inspection activity shall receive and unpack sections of the SV and check for any mechanical damage incurred during transportation from the factory. The various SV sections shall then be loaded onto the appropriate handling AGE in preparation for subsystem testing.
- b. Satellite Vehicle (SV) Handling and Assembly. The handling and assembly ground equipment at the MAB shall feature a rail support and transfer system as well as a soft suspension air cushion adjustment system. (These handling, assembly and transferring principals have proven successful on previous programs and their hardware implementations will make maximum utilization of these existing designs.)
- c. Subsystem Tests. Subsystem testing shall be performed to assure conformance of the airborne subsystem in accordance with requirements of the Field Acceptance Specification SVS 4381. All subsystems shall be analyzed for functional performance, with qualitative and quantitative measurements determined and recorded. The AGE utilized during subsystem tests shall include the capability to troubleshoot to the level where practical module replacement is afforded. During this activity simulated pyrotechnics shall be installed. Maximum utilization shall be made of the SV telemetry subsystem during subsystem testing.
- d. Satellite Vehicle Weight and Balance. The weight and balance equipment shall afford accurate determination of such vehicle parameters as weight, center of gravity, moments of inertia, and products of inertia. Measurements and balancing shall be conducted on the Forward Section (R/V), the Adapter Section, and the Orbital Control Vehicle (OC/V). The existing dynamic balancing machine (measurement of C.G. and products of inertia), and the moments of inertia machines presently installed in the GE portion of the MAB shall be utilized.
- e. System Test. The SV shall experience an overall system test, including a flight simulation phase. The Agena or Atlas does not participate in this activity. During this test the Vandenberg Tracking Station shall participate and thereby simulate the on-station portion of the simulated flight. Range time shall be required during the tracking station operation; all airborne subsystems shall be operated in their flight modes; and vehicle sequencing shall be monitored and recorded to obtain a permanent record of the test. It shall be the purpose of this test to demonstrate the flight capability of the SV to the 6595th Test Wing.

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After system testing at the MAB the SV shall be assembled, environmentally protected, and transported to the MCB for compensation and calibration of the vehicle flight magnetometers. The MCB shall be heated and contain an a-c power source to allow for blanket and heater control unit removal before compass rose testing.

At the completion of the MCB tasks the SV shall be environmentally protected with transportation blankets connected to a power source.

3.1.3.3 Launch Complex

- a. SV Mating. Upon conveyance to the PAD, the SV shall be erected to a vertical position, raised to the Agena interface, and mated to the Agena.
- b. PAD System Test. The SV shall be subjected to an overall system test, some times referred to as flight validation or certification. The Atlas D and the Agena D shall be included in this test. Flight validation or certification is a requirement of the 6595th Air Force Test Wing at Vandenberg AFB. Validation can be further defined as the performance of an actual countdown without engine ignition or actual flight. All subsystems and systems of the entire SV shall be operated in their flight modes. In addition, alternate modes and/or redundant back-up systems, subsystems or components shall be operated.

During PAD validation testing both open loop and closed loop tests shall be performed in order to verify that transmitted commands are received and executed by the BUSS. The VAFB Tracking Station shall transmit secure and unsecure commands to the BUSS receiver during open loop testing. During closed loop testing one secure command and two unsecure commands shall be transmitted to the BUSS receiver via RF hardwire. The pitch, roll, and yaw solenoid valves shall be simulated and their operation verified via either hardwire or telemetry. The magnetometer shall be simulated with a permanent magnet and a test plug in order to qualitatively checkout the pitch, yaw, and roll channels.

It shall be the basic intent of flight validation to perform a mission profile test to demonstrate the launch readiness of the flight system in its specific launch facility, and to establish readiness of personnel, equipment and procedures.

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- c. Flight Preparation. After the SV has been validated for flight it shall be transported to the VSB for the following pre-flight preparation:
1. Removal of simulated flight kit.
 2. Installation of flight pyrotechnics and operational batteries.
 3. Performance of stabilization subsystem end-to-end tests, leak checks of propellant and high pressure gas systems, final loading of stabilization and orbit adjust gas system, preloading of BUSS pneumatic system, and final confidence test.

At the PAD the following pre-flight preparation shall take place:

1. Mechanical and electrical mating of SV to Agena
 2. Installation of servicing equipment and electrical connectors
 3. Loading of propellants
 4. Terminal countdown
- d. Countdown. The countdown shall be performed in accordance with the launch conductor's integrated procedure manual and shall require the participation of the VAFB Tracking Station as well as the various range telemetry stations. During the countdown, telemetry shall be monitored at the MAB ground station by the SIGME (Item 88). Communication shall be required during this time between the MAB ground station and the LOB personnel.

The SV shall be placed in flight configuration by energizing the telemetry, tracking, command, and stabilization subsystems. All gyros shall be brought up to speed and the inertial platform erected and electrically caged.

After transferring the vehicle to internal power the flight program shall be loaded by the VERLORT air link. A manually initiated commit signal shall be required to start the SV clock. Television camera coverage of the SV electrical umbilical and air disconnects shall be required through lift-off.

The BUSS pneumatic system shall be topped-off and the primary stabilization pneumatic system heated to flight pressure and temperature requirements.

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3.2 FACTORY AREA

AGE is designed to support various in-house test operations.

3.2.1 Requirements

The AGE system shall be designed to support the SV during field operations. In the interest of economy and consistency of test results, AGE shall be utilized for in-house testing wherever possible. Special tools and test equipment shall be developed to supplement the AGE in areas where in-house test requirements dictate such action. The following in-house test operations shall be supported by AGE.

3.2.1.1 Systems Tests

Development tests shall be conducted on a ground test vehicle to check system compatibility, electromagnetic interference (EMI), limited environmental tests, and compatibility of design modifications.

Flight proofing tests shall be conducted on a ground test vehicle to demonstrate and evaluate vehicle performance before, during, and after exposure to environmental extremes.

3.2.1.2 Acceptance Tests

The following tests shall be performed on each flight vehicle at the factory prior to its delivery to the field, to determine compliance with the requirements of SVS4380, "System Acceptance Specification, In-House":

- a. Subassembly and in-process tests
- b. Subsystem tests
- c. Integrated systems tests
- d. Operability assurance tests

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3.2.2 Methods

The methods utilized will be similar to those employed in the field and described in subsequent paragraphs. Only minor deviations are anticipated as a result of test requirement and facility differences.

3.2.3 Equipment Descriptions

The following equipment shall be utilized in the factory area: (Refer to subsequent paragraphs for complete descriptions).

Forward Section Cradle and Carriage (Item 1.1)

Forward Section Maintenance Set (Item 1.2)

Adapter Section Cradle (Item 3)

Adapter Section Assembly Carriage (Item 4)

Forward Section Shipping Container (Item 5)

Adapter Section Shipping Container (Item 5.1)

Upper Blanket (Item 7.1)

Adapter Internal Cooling Disconnect (Item 7.2)

OC/V Temperature Control Blanket (Item 8.1)

OC/V Internal Cooling Disconnect (Item 9)

OC/V Cradle (Item 10)

SV Non-Magnetic Cradle (Item 10.2)

OC/V Assembly Carriage (Item 11)

AGE Fairing Set (Item 12)

OC/V Shipping Container (Item 14)

OC/V Vertical Support Stand (Item 15)

OC/V Vertical Positioning Sling (Item 16)

Personnel Work Stand (Item 17)

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Battery Handling Fixture (Item 18)
Battery Installation Fixture (Item 18.1)
Inertial Platform Fixture (Item 19)
Inertial Platform Test Table (Item 20)
Inertial Platform Alignment Equipment (Item 22)
IR Sensor Stimulator (Item 23)
IR Sensor Alignment Set (Item 23.2)
IR Sensor Stimulator (Item 23.3)
Orbit Adjust Nozzle Alignment Set (Item 24)
Rocket Alignment Fixture (Item 24.1)
SV Work and Assembly Truck (Item 26)
SV Mating Sling (Item 27)
SV Vertical Transport Tie-Down Ring (Item 28)
SV Transporter (Item 29)
SV Transportation Blanket (Item 29.1)
SV Installation Sling (Item 30)
Universal Sling (Item 31)
Universal Sling Load Balancer (Item 32)
Forward Section Inertia Fixture Set (Item 34.1)
Protective Covers (Item 37)
OC/V Aft End Lifting Fixture (Item 38)
OC/V Aft End Truck (Item 39)
Antenna Tuning Stand (Item 41)
Cooling Unit (Item 51)
Forward Adapter Section Vertical Positioning Sling (Item 42)
Portable Gas Servicing Unit (Item 52)
Cold Gas Supply (Freon) - (Item 57)

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H. P. Nitrogen Supply (Item 58)
H. P. Helium Supply (Item 59)
Battery Leak Rate Detector (Item 60)
SV Plumbing Leak Rate Detector (Item 61)
Separation S/S Test Set (Item 76)
Command S/S Test Set (Item 79)
Stabilization S/S Test Set (Item 80)
Orbit Adjust S/S Test Set (Item 81)
SV System Test Set (Item 82)
SV Adapter Cables (Item 83)
Battery Load Test Set (Item 85)
Telemetry System Stimulator (Item 87)
Satellite Instrumentation Ground Monitor Equipment (SIGME) - (Item 88)
Command Signal Generator (Item 89)
SV Simulated Flight Kit (Item 90)
Ground Power Unit (Item 91)
Forward Section Test Set (Item 95)
BUSS Subsystem Checkout Test Set (Item 96)
BUSS Attitude Control Test Set (Item 97)
BUSS Auxiliary Equipment (Item 98)
Antenna Coupler, VHF, UHF-S-Band (Item 102)
Antenna Test Set (Item 104)
Beacon Checkout Test Set (Item 105)

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3.3 SHIPMENT AND TRANSPORTATION

AGE is designed to provide protection to the SV during all phases of shipment.

3.3.1 Requirements

The AGE system shall provide environmental and security protection for the SV during all of its planned shipments and storage periods.

3.3.2 Methods

During shipment and storage the following methods shall be employed:

3.3.2.1 Shipping and Storage Configuration

The SV shall be disassembled into three major modules for shipment and storage, as follows:

- a. Forward Section (R.V) - less gases and propellants
- b. Adapter Section
- c. Orbital Control Vehicle (OC/V) - less GFE package, batteries, gases and propellants.

3.3.2.2 Modes of Transportation

These containers shall only be shipped by air or truck, or any combination of the two.

3.3.2.3 Environmental Protection

The SV shall be packaged to withstand the extremes of external environment as defined in SVS4379. Containers for the SV shall be designed to attenuate the external environment to levels acceptable to the SV modules contained within them.

3.3.2.3.1 Environmental Design Criteria

The environmental design criteria for AGE and SV components shall be as outlined in GE Document SVS4379, "External and Internal Environmental Design Criteria."

- a. Anticipated Container Environment. The anticipated extremes of environment to be encountered by the packed SV container during shipment shall be:
 1. Temperature - High: 125°F for not more than 8 hours
Low: 0°F (+35°F for 8 hours restricted air transport)
 2. Humidity - 95% @ + 68°F sheltered areas
100% at Launch site or storage
 3. Precipitation - Rainfall: Maximum rate 4"/hr @ +70°F; max. accum. 32"/24 hrs
Snowfall: 60"/24 hrs; max load 20 lbs/ft²
Hail: 1/2" hailstones falling at 50 mph velocity for 30 min;
accumulation rate 4"/hr.
 4. Sand and Dust -
Sand: 0.01 to 1.0 mm dia.; density 10 lb/ft³ 40 mph wind @
5 ft. ht.
Dust: Size range 0.0001 to 0.01 min. dia. density 6 x 10⁹
grams/cc; 40 mph wind @ 5 ft. ht.
 5. Fungus - Normal growth found in U. S.
 6. Pressure - 30.5 inches of Hg (variable down to 16.8 inches of Hg for 8 hrs)
 7. Shock - Drop tests as defined by MIL-E-4970
Procedure VII, less impact tests.
Flight and taxiing loads as defined in MIL-A-8421.
 8. Vibration - Tests as defined by MIL-E-4970, Procedures VI.
Frequencies between 5 and 52 cps only.
- b. Allowable SV Environment. The environment to which the SV itself can be exposed within respective shipping containers shall not exceed the following limits:
 1. Temperature - 0°F to 125°F

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2. Humidity - 95% @ +68^oF
3. Shock - Longitudinal and lateral loads not exceeding 20 g
4. Acceleration - Lateral pressure loads only to be applied to the SV at reinforced ring locations
5. Vibration - Loads not to exceed a peak acceleration of +5 g between 5 and 52 cps

3.3.3 AGE Descriptions

Item numbers after each end item name listed herein refer to AGE (Figure "A") List End Item sequence numbers. Refer to the Figure "A" List, Document No. 62SD340, Rev. C, for more detailed descriptions.

3.3.3.1 The Forward Section (R/V) Shipping Container (Item 5)

The Forward Section shipping container is a reuseable, cylindrically shaped metal container. It shall be equipped with a foam cavity protective enclosure which shall hold, support, protect, and insulate the Forward Section. The container shall be capable of limited temperature and humidity control.

3.3.3.2 The Adapter Section Shipping Container (Item 5.1)

The Adapter Section shipping container is a reuseable, cylindrically shaped, top-opening metal container. It shall be equipped with shock-isolated mounting brackets and a fixture to hold and support the Adapter Section in a vertical axis. It shall be pressure tight and use passive methods for temperature and humidity control.

3.3.3.3 The Orbital Control Vehicle (OC/V) Shipping Container (Item 14)

The OCV shipping container is a reuseable, cylindrically shaped, sealed, metal container. It shall be equipped with a shear mount-type suspension system and a fixture to hold and support the OC/V in the suspension system. It shall be pressure tight and use passive methods for temperature control.

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3.3.3.4 The Inertial Platform Shipping Container (Item 21)

The Inertial Platform shipping container shall be a reuseable, sealed, metal container. It shall include a suspension system and a fixture to hold and support the platform in the suspension system.

3.3.3.5 The Fork Lift Truck

The fork lift truck is a 6000-pound minimum capacity truck. Fork extensions shall be desirable but not necessary. This item shall be furnished by the contractor at the factory. The MAB area shall obtain a truck from Air Force Supply (AFS).

3.3.3.6 Air Transport

The following aircraft, or equivalent, shall be suitable for air transport of the shipping containers:

- a. C 124
- b. C 130
- c. C 133

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3.4 MISSILE ASSEMBLY BUILDING (MAB)

AGE is required at the MAB during various test and assembly operations.

3.4.1 Satellite Vehicle Tests

The following operations and tests shall be performed on the SV at the Missile Assembly Building (MAB): (Refer to Figure 3-8, SV flow at the MAB.)

- a. Mate and demate the structural sections of the SV as required
- b. Assemble the Forward Section to the Adapter Section
- c. Assemble the Forward and Adapter Sections to the OC/V
- d. Checkout BUSS Attitude control system in the OC/V
- e. Checkout BUSS receiver and align magnetometer
- f. Remove and install components and packages as required
- g. Perform subsystems level testing on the SV
- h. Remove I. P, RSA, RAGS and TARS electronics and disassemble the SV into three sections
- i. Perform systems level electrical test with vehicle separated, but electrically interconnected
- j. Leak check the BUSS pneumatic system with the OC/V in the pressure cell
- k. Hold and orient the SV in various stages of disassembly during insertion of components, alignment checks, subsystem testing, and systems testing
- l. Check BUSS with antenna and magnetometer boom extended
- m. Align or check alignment of critical propulsion and stabilization devices with respect to the SV and each other
- n. Pressurize and leak test the pneumatic and liquid propellant systems of the SV

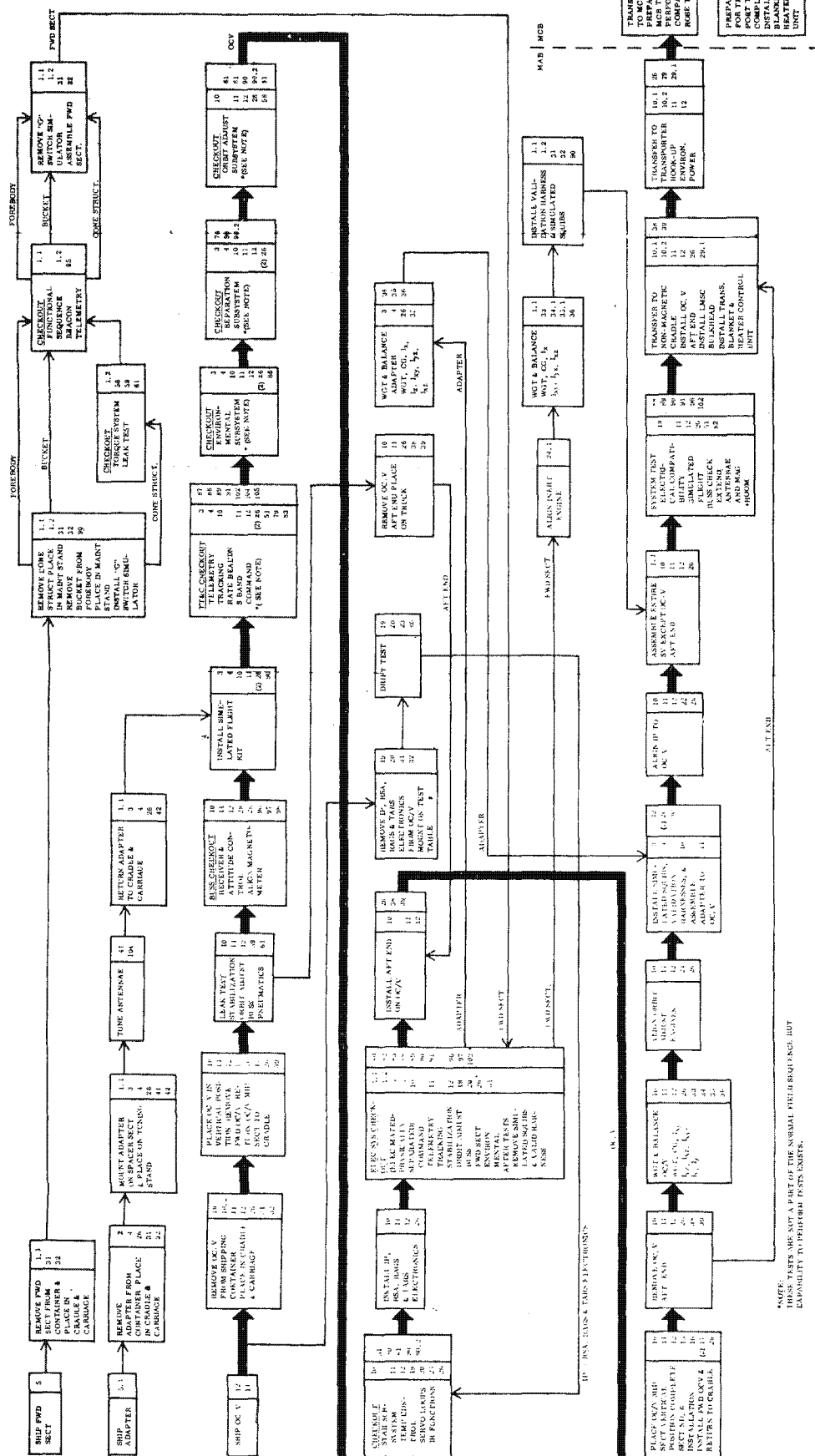


Figure 3-8. Satellite Vehicle Flow,
MAB/MCB

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- o. Perform weight and balance measurements on the SV
- p. Conduct a systems test on the SV to closely simulate the actual flight profile from terminal countdown through retrieval
- q. Assemble the SV, install transportation blankets and transport SV to MCB for magnetometer compensation and calibration
- r. Prepare the SV for movement to the Launch Complex.

The subsequent paragraphs shall cover these requirements in greater detail and shall also describe the methods and equipment required to fulfill these objectives.

3.4.2 Satellite Vehicle Handling and Assembly

3.4.2.1 Requirements

The AGE system shall be designed to perform the following handling and assembly operations on the SV.

- a. Disassemble and assemble the Forward Section (R/V) for tests, alignment and component installation
- b. Disassemble and assemble the Adapter Section for tests, alignment and component installation
- c. Orient the Forward Section/Adapter Section for antenna tuning
- d. Orient the OC/V for GFE package installation
- e. Remove, handle, hold, and install the Inertial Platform (IP)
- f. Assemble the Forward Section (R/V) to the Adapter Section
- g. Assemble the Adapter Section to the OC/V
- h. Prepare the assembled SV for transport to the MCB

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- i. Support the SV in the MCB
- j. Prepare the assembled SV for transport to the PAD.

3.4.2.2 Methods

- a. Assembly/Disassembly. The AGE shall utilize a horizontal rail transfer system to perform the majority of the handling and assembly operations. A set of rubber lined cradles and two types of carriages, soft and hard mounted, shall be used in conjunction with a work and assembly truck.

The reference plane for horizontal assembly/disassembly of the SV shall be the rails of the work and assembly truck. The truck shall contain two parallel rails spaced 60-inches apart between centers. The rails shall support and allow for horizontal motion of the vehicle sections in their respective cradles and carriages. The roller assemblies of the carriages shall lock to the rails of the work and assembly truck. The rails shall be capable of coupling in order that two work and assembly trucks may be used in tandem as well as to permit roll transfer onto the rails of the transport vehicle. Three carriages shall be used: one for the Forward Section (R/V) which can be entirely separated from the work and assembly truck; one for the Adapter Section; and one for the OC/V. Two of the carriages shall contain a soft air bag suspension system which shall provide all of the yaw and pitch motions needed for alignment of the various vehicle sections during assembly/disassembly operations. In addition, these assembly carriages shall have rubber rollers to permit the vehicle sections to be rotated in their cradles (roll motion) for alignment. The third carriage for the Forward Section shall be permanently fastened to a rail-type base with its own casters. These rails will mate with the rails of the work and assembly truck.

The cradles, used with the assembly carriages, shall have grooved tracks to accept the rollers of the carriages. A typical assembly operation shall require that one vehicle section be held rigidly in its cradle-carriage combination while the other shall "float" in its cradle on the air bag suspension system of an assembly carriage. The air bags shall be pressurized in order to align the center lines of the two sections within a half inch of each other. The low spring rate of the air bags shall allow for yaw and pitch movements of the "floating" vehicle section by manual application of small forces. The "floating" vehicle section shall be roll-transferred until it mates with the fixed vehicle section. The "floating" section shall then be rolled in its cradle on the rollers of the carriage to permit alignment of bolt holes.

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Vertical assembly and disassembly shall be required at the MAB during checkout operations of the Forward Section (R/V). The pivoting arrangement of the Forward Section cradle and carriage shall enable the turning of the Forward Section from a horizontal to a vertical position. Once vertical the capsule can be hoist-lifted from the forebody of the Forward Section and placed upon the capsule ring framework support of the Forward Section Maintenance set. The maintenance set shall also provide two supporting fixtures to separately maintain the thrust cone and the thermal cover during checkout of the Forward Section (R/V).

- b. Antenna Tuning. In order to tune the antenna system the Adapter Section must be placed and supported in a vertical position. The Adapter Section shall be mounted to an aluminum spacer simulating the mating surface of the OC/V. A positioning sling shall be used to lift, pivot, and reposition the Adapter Section from a horizontal to a vertical position. Once repositioned, the Adapter Section shall then be lowered onto an antenna tuning stand. The stand shall also afford protection to those antennas closest to the ground by maintaining and supporting them at a fixed allowable distance from interfering structures.
- c. GFE Package Installation. In order to install the GFE package into the OC/V, the vehicle must be held in a vertical attitude. A positioning sling shall be used to lift the vehicle, rotate it from a horizontal to a vertical attitude, and install it on a vertical support stand. The GFE package shall be lifted by the MAB overhead crane and installed in the vehicle.
- d. Orbital Control Vehicle Aft End Handling. The aft end of the vehicle must be removed in order to install and align the inertial platform, to align the orbit adjust engines, and to perform end-to-end tests. This shall be accomplished by using a lifting fixture, a universal sling, a load balancer, and an overhead hoist. After removal, the aft end shall be stored on a work truck.
- e. Inertial Platform Installation. The Inertial Platform (IP) shall be installed in the OC/V after testing and prior to weight and balance measurements in the MAB. This shall be accomplished by using a fixture (also used for shipping and tests), a universal sling, a load balancer, and an overhead hoist.

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3.4.2.3 Equipment Descriptions

- a. The Forward Section Cradle and Carriage (Item 1.1) shall consist of a fabricated aluminum cradle lined with rubber which shall bolt to a welded aluminum carriage mounted on a rail-type platform with casters.
- b. The Forward Section Maintenance Set (Item 1.2) shall consist of two square shaped stands of tubular aluminum construction and a wooden capsule support stand with casters. The two tubular stands stack on the wooden stand for mobility and storage.
- c. The Adapter Section Cradle (Item 3) shall consist of an aluminum casting lined with rubber. The lower section shall have two grooved tracks which accept the drive rollers of the Adapter Section Assembly Carriage (Item 4).
- d. The Adapter Section Assembly Carriage (Item 4) shall consist of an aluminum casting containing an air bag suspension system, four rubber drive rollers, and four rail adapters (roller assemblies).
- e. The OC/V Cradle (Item 10) shall consist of an assembly of aluminum castings and weldments, comprising a forward cradle, an aft cradle, and an interconnecting edge. The forward and aft cradles shall each have a grooved track to accept the drive rollers of the OC/V Assembly Carriage (Item 11). (Cannot be used in MCB.)

The SV Non-Magnetic Cradle (Item 10.2) shall consist of an assembly of machined aluminum rings and removable longitudinal connecting bars. The forward and aft rings shall each have a grooved track to accept the drive rollers of the OC/V Assembly Carriage (Item 11). Item 10.2 shall be used for MCB tests.

- f. The OC/V Assembly Carriage (Item 11) shall be similar to Item 4 (paragraph d above), except for size and shape.
- g. The AGE Fairing Set (Item 12) shall consist of two aluminum handling covers and two fiberglass simulated flight covers functionally designed to restrain and protect the antenna and the magnetometer components of the OC/V. The two aluminum covers shall be used throughout ground handling and transport operations. The two fiberglass covers shall be used only during PAD validation testing operations.
- h. The OC/V Vertical Support Stand (Item 15) shall be constructed of welded structural aluminum in the shape of a cross. Four casters and four screw-type leveling jacks shall be mounted on the ends of the cross. Teflon covered pads on four upright supports shall accept the OC/V in a vertical attitude.

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- i. The OC/V Vertical Positioning Sling (Item 16) shall consist of a forward and aft support ring, a lateral spreader bar, wire ropes, and a hoist.
- j. The Personnel Work Stand (Item 17) shall consist of a welded tubular aluminum structure curved to form an elevated work platform and which shall wrap around one half of the upright OC/V. Two stands shall be required to form a complete encirclement around the OC/V.
- k. The Inertial Platform Fixture (Item 19) shall consist of an accurately machined and balanced aluminum frame which shall bolt to the Inertial Platform and to the Inertial Platform Test Table (Item 20).
- l. The SV Work and Assembly Truck (Item 26) shall consist of a rectangular frame of welded aluminum construction containing two horizontal parallel rails spaced 60-inches apart. Casters provided for mobility shall be retractable by screw-type jacks to afford truck rigidity as well as for leveling purposes.
- m. The SV Vertical Transport Tie-Down Ring (Item 28) shall consist of a welded aluminum tubular ring split and jointed by two flanges 180° apart. It shall have four adjustable tie rods perpendicular to the plane of the ring and two trunnion shafts in the plane of the ring. All shall be fastened at the periphery of the ring.
- n. The SV Transporter (Item 29) shall be a four wheel roadable trailer of steel construction containing two parallel rails set 60-inches apart on centers on the bed of the trailer, plus one pivot assembly. A cover shall also be provided. The transporter shall also contain a battery compartment housing two battery sets for the purpose of furnishing power to heat the OC/V transportation blanket and the TARS gyros during transportation.
- o. The SV Installation Sling (Item 30) shall consist of an "I" beam, a lifting plate and shackle, a forward strap, and an aft support ring.
- p. The Universal Sling (Item 31) shall consist of a load equalizing link with locking features and a length of steel cable. The cable ends shall be terminated with shackles.
- q. The Universal Sling Load Balancer (Item 32) shall comprise a coil spring device enclosed in a metal case. It shall be provided with a clevis on the bottom, suspended from the spring, and a hoist ring on the top of the metal case.

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- r. Protective Covers (Item 37) shall consist of a set of Mylar discs for protecting the interior of the Forward Section, the Adapter Section, and the OC/V during handling and assembly operations. The covers shall be disposable.
- s. The OC/V Aft End Lifting Fixture (Item 38) shall consist of a segmented plate with holes to attach to the vehicle aft end. A tube normal to the plate shall have a rotatable sling fitting.
- t. The OC/V Aft End Truck (Item 39) shall consist of a wooden assembly mounted on a casted base frame. The truck shall contain four vertical support arms capped by quartered, segmented, concave rests.
- u. The Portable Gas Servicing Unit (Item 52) shall consist of two high pressure nitrogen cylinders mounted on a cart with regulators and flexible hoses. It shall be compatible with the air suspension systems of the assembly carriages.
- v. The Forward/Adapter Section Vertical Positioning Sling (Item 42) shall consist of a chain-fall, an aluminum spreader bar, cables, and all necessary hardware for lifting, pivoting, and repositioning operations of the assembled Forward and Adapter Sections. The design load of the sling shall be 2100 pounds.
- w. The Antenna Tuning Stand (Item 41) shall consist of a tubular weldment structure supporting a fabricated monocoque aluminum spacer which simulates the configuration of the OC/V. The stand shall be mounted to a reinforced plywood platform to which is affixed four lock-type casters for mobility.

3.4.3 Subsystem Testing

The major objectives of subsystem testing are to evaluate subsystem performance, to demonstrate compliance with Satellite Field Acceptance Specification requirements, and to isolate faults and malfunctions to the lowest replaceable level.

3.4.3.1 Forward Section Subsystem Testing

3.4.3.1.1 Requirements

The AGE shall perform the following tests on the Forward Section:

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- a. Charge battery
- b. Orbit eject tests
- c. Check thrust cone assembly
- d. Recovery tests
- e. Check telemetry
- f. Check simulator assembly

3.4.3.1.2 Methods

The Forward Section Test Set shall conduct subsystem level tests on the orbit eject, recovery, and telemetry subsystems while the Forward Section is disassembled. The composite control panel shall provide the capability of conducting complete systems tests from the Adapter thrust cone interface connector.

3.4.3.1.3 Equipment Description

- a. The Forward Section Test Set (Item 95) shall consist of a two-bay metal cabinet containing:
 - 1. Battery charger
 - 2. Thrust cone assembly checkout panel
 - 3. Telemetry checkout panel
 - 4. Field operations test panel assembly
 - 5. Simulator assembly
 - 6. Main power panel.

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3.4.3.2 Telemetry Subsystem Testing

3.4.3.2.1 Requirements

The AGE system shall perform the following tests via hardwire or open loop on the telemetry subsystem:

- a. Sensor continuity tests
- b. Telemetry sensor channel allocations
- c. Polarity checks on telemetry sensors
- d. Output power and frequency checks of the transmitters
- e. Tape recorder operations
- f. Multiplexer calibrations with respect to repetition rate, pulse width and linearity
- g. Switching function checks of the signal data converter
- h. Subcarrier oscillator calibrations
- i. Gyro checkout
- j. Accelerometer checkout
- k. Antenna checkout (see paragraph 3.4.3.7)
- l. Realtime and delayed checks of data links under both set and reset modes of the transfer switch
- m. Noise level checks during above tests
- n. Pre-emphasis checks.

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3.4.3.2.2 Methods

The Telemetry subsystem shall interconnect with adapter cables and testing shall be accomplished in accordance with Figure 3-9 with the following AGE:

- a. Telemetry System Stimulator (TSS) shall provide the necessary simulation, stimulation and control to operate the Telemetry system and, except on the component level, shall utilize the SIGME to determine proper operation.
- b. Satellite Instrumentation Ground Monitor Equipment (SIGME) shall provide for data acquisition for the Telemetry system and shall be utilized in all required test areas. Telemetry information shall be received via hardwire from the vehicle or, via airlink, from the vehicle antenna with ground reception through the radio receiver. The data shall then be displayed in realtime and recorded on a magnetic tape recorder for data reduction.

3.4.3.2.3 Equipment Descriptions

- a. Telemetry System Stimulator (TSS) - (Item 87) shall consist of the following:
 1. The T/M control and monitor panel to provide, at the vehicle interface or the power controller, the necessary functions to energize the telemetry transmitters, subcarrier oscillators, tape recorder multiplexers, and transfer switches. Battery voltage, bus voltages, and "on" time for limited life components shall be monitored.
 2. The 30-channel multiplexer test panel to provide fixed or variable voltages to the PAM multiplexer and to furnish the output to be displayed. Provisions shall be made to monitor multiplexer reception rates, channel crosstalk, linearity, voltage limiting circuits, and duty cycle.
 3. The T/M simulation panel to provide simulation for events, sensors, gyros, and where feasible, accelerometers in the form of voltage levels.
 4. The pre-emphasis panel to provide the d.c. levels to the subcarrier oscillators to deviate the frequencies to their limits. The composite of these frequencies shall be analyzed at SIGME.

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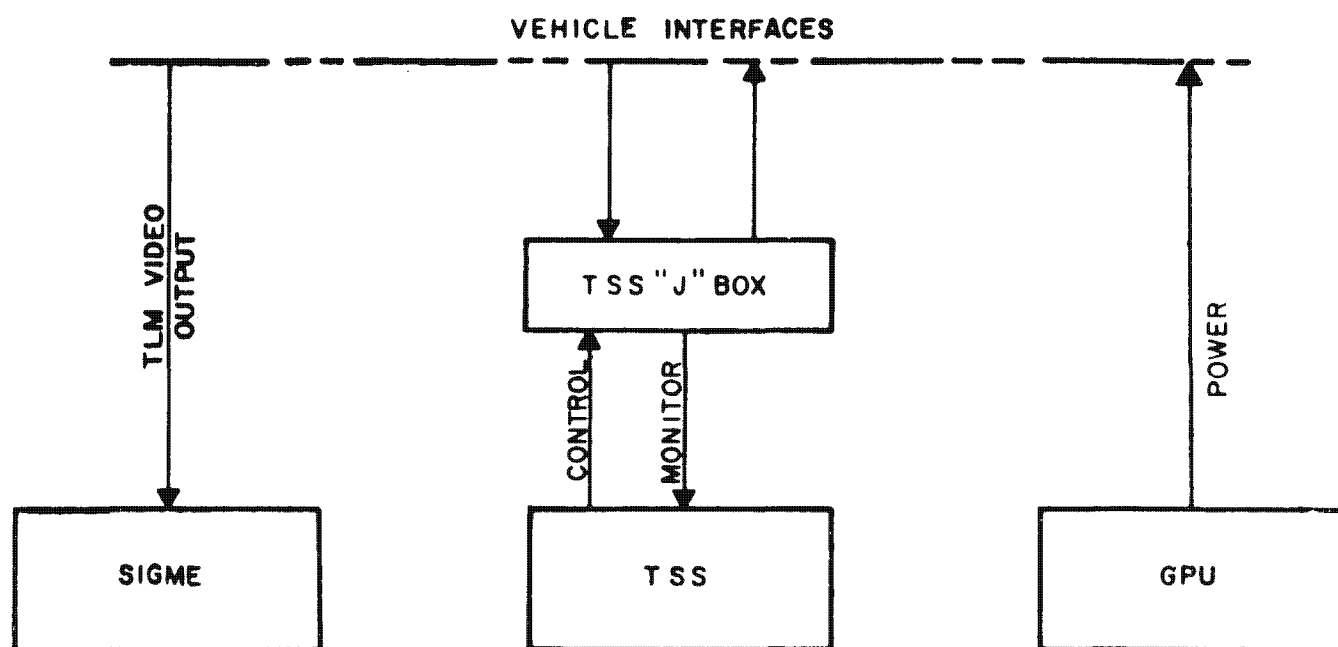


Figure 3-9. Block Diagram, Telemetry Subsystem Testing

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5. The power distribution panel to provide circuit breaker protection and power distribution for 120 VAC 60 cps single phase, 208 VAC 60 cps three phase, and 28 VDC.
 6. The vacuum tube voltmeter to provide the capability to measure any voltage in the TSS.
- b. Satellite Instrumentation Ground Monitor Equipment (SIGME) - (Item 88) - (See Figure 3-10.) SIGME shall consist of the following:
1. Two receivers tuneable through the IRIG telemetry band of 215 to 260 m.c. One receiver shall receive the signal from one transmitter while the other receives the signal of another transmitter. The demodulated composite signal of 125 KC shall then be presented to the magnetic tape recorder.
 2. The magnetic tape recorder to record the composite signal from each receiver on two of the available seven tracks. A third track shall record the hardwire composite signal when the vehicle is operating in this mode. Individual record and reproduce amplifiers shall be available for these signals.
 3. The discriminators shall be presented with the composite signal where the individual subcarriers are selected and demodulated. These discriminators shall be standard phase lock, solid state, with plug-in type tuning units to determine the selected subcarrier.

Wow and flutter compensation shall be accomplished with a tape speed compensation system comprised of the standard discriminator with plug-in type delay units. The reference signal shall be applied to the reference discriminator whose output is representative of tape velocity variations. The compensation signal shall be applied to the tape compensation input of each data discriminator through a delay network appropriate to that channel frequency. The composite data signal shall be applied to the normal input of each data discriminator through the composite delay unit to achieve time correlation of data and compensation.
 4. Decommutation - The multiplexed output from the discriminators shall be presented to the three-unit decommutation system through the patch panel arrangement. Two units shall reduce data and the third shall be a "quick look" unit. Unit one shall decommutate the PAM rate of $90 \times 1/18$ and shall provide reduced data output at the patch panel for presentation to the analog recorder. Unit two shall decommutate the PAM rate of 30×5 and 30×2.5 and shall provide reduced data output at the patch panel for analog recording. The "quick

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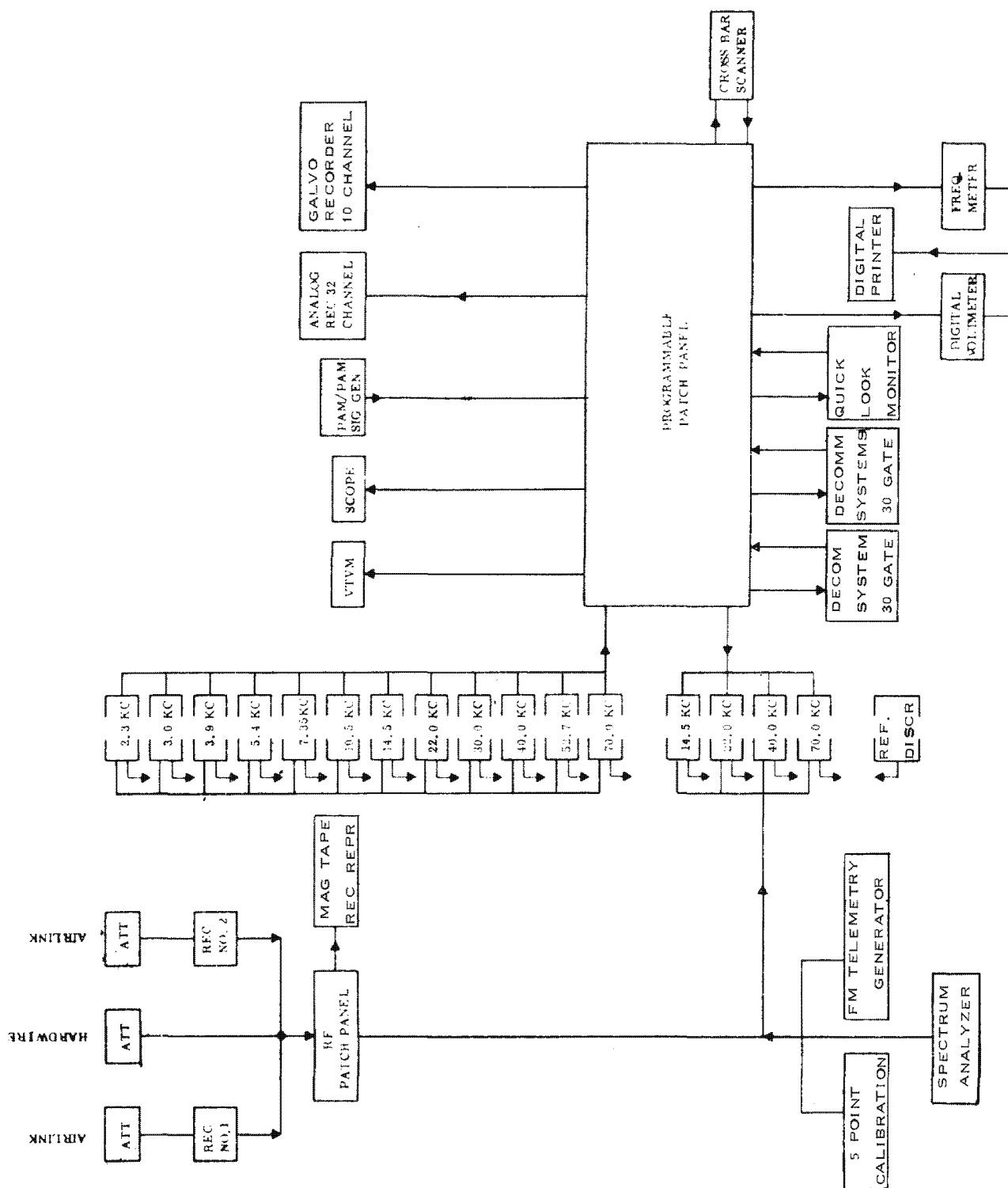


Figure 3-10. Block Diagram, SIGME

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look" unit shall extend the capability of the system by allowing a quick view of any commutated channel during subsystem troubleshooting as well as MAB and PAD system testing. Continuous channel information shall appear at the patch panel when demodulated by the discriminator. This reduced data shall be recorded by the analog recorder. Non-commutated channels that contain random pulse information shall be recorded by a galvo oscillograph.

5. Recorders - The analog recorder shall consist of the recorder, the drive amplifiers, and associated controls. It shall contain 32 channels, provide internal calibration, and shall incorporate a flat frequency response from DC to 60 cps.

The oscillograph shall consist of 12 optical galvos, utilize photographic paper that does not require developing, fixing or washing, and shall provide a galvo frequency response of 1000 and 2000 cps.

6. The time clock display shall accept the serial coded binary time information and display it in decimal format. The serial time information shall be the demodulated output of a discriminator. Logic circuitry, composed of solid state modules, shall be used for decoding the time clock information. The ground reference unit shall display in decimal format a reference clock for time comparison with the time clock display.
7. The pre-emphasis display unit shall provide visual display of the subcarriers which make up the composite signal. The subcarriers shall be displayed in a logarithmic form on a calibrated six-inch cathode ray tube. Relative amplitudes shall then be used to determine the amount of pre-emphasis existing. Any single subcarrier can be displayed on a second cathode ray tube to permit minute examination and, by utilization of linear frequency enable immediate identification and appraisal of such unwanted and disturbing effects as noise intermodulation distortion.
8. The system calibration checks of discriminators shall be accomplished automatically with results recorded on a digital printer. The digital data shall be a parallel line display of the discriminator input frequency and the resultant output voltage sequenced through five test points for each discriminator.
9. The five point calibrator shall supply discriminators with test signals as well as a composite signal of all subcarriers. Each subcarrier band edge, mid-band, and center frequency shall be supplied. Any of the five points can be selected manually or accomplished by automatic scanning.

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10. The crossbar scanner shall provide the contact closures necessary to monitor the subcarrier frequency from each discriminator. It shall provide the contact closure to allow the resultant discriminator output to be monitored by the digital voltmeter. A digital display shall be used to visually indicate the channel contact in use.
 11. The digital voltmeter shall measure the resultant voltage from discriminators. It shall present this to the digital printer at the same time the frequency is measured and presented to the printer.
 12. The digital printer shall receive and print the measured frequency and voltage as well as the discriminator identifying number being calibrated.
 13. The decommutation system calibration checks shall be accomplished in much the same manner as discriminator checks. The output gates shall be scanned sequentially by the crossbar scanner, measured by the digital voltmeter, and recorded by the digital printer along with the identification number of the monitored gate. The decommutation system shall have its own internal calibrator; the system calibration doing nothing more than to rapidly assure that the units are in calibration.
 14. The master patch panel shall be the key distribution point of the complete system since the inputs and outputs of all major functional equipment shall terminate here. The ease of system operation and versatility of equipment usage shall become possible through this arrangement.
 15. The general test equipment shall include an 0.05 - 500 VAC, 0-500 VDC voltmeter; a 100 cps - 100 KC test oscillator; and a dual trace oscilloscope.
 16. The signal simulator shall generate a PAM signal for calibration and alignment of the decommutation unit. The serial pulse train output shall include all IRIG standard rates, plus all special rates used in the vehicle telemetry system.
 17. Each power distribution panel shall provide for the utilization of separate circuit breakers for the four bays and one for the duplex receptacle. Each circuit breaker shall be equipped with an "on" light indicator.
- c. The Ground Power Unit (Item 91) shall consist of a single-bay metal cabinet containing the following modules:
1. Power control and monitor panel

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2. Blower
3. Environmental power supply
4. 28 VDC, 60 amp power supply
5. Power distribution panel

The power unit of the Ground Power Unit shall be compatible with the SV main umbilical, operational battery connectors, and with all system and subsystem test sets requiring application of ground power to the SV.

- d. The SV Adapter Cables (Item 83) shall comprise those cables used to interconnect SV sections and shall be employed in electrically mating all sections while in a separated configuration.
- e. The SIGME Adapter (Item 88.1) shall consist of a six-bay unit containing two 30-channel auxiliary decommutators and three 8-pen analog recorders. This equipment shall be required in the MAB to expand the capabilities of SIGME (Item 88) by providing the ground station capability in the MAB for PAD operations. (See Figure 3-11.)
- f. The Time Correlation Unit (Item 88.2) shall consist of a single bay rack mounted metal cabinet containing a nixie display panel, a printer, a 200 volt d-c power supply, a logic power supply, four logic card racks, a blower, and associated cabling. This equipment shall be required at the MAB and at the PAD to provide both a visual and a written record of time comparisons between PMR time (Format F) and vehicle programmer time.

3.4.3.3 Command Subsystem Testing

3.4.3.3.1 Requirements

The AGE system shall be designed to perform the following tests on the Command Subsystem under closed loop and video data link conditions:

- a. S-Band beacon operation
- b. Command decoder checks

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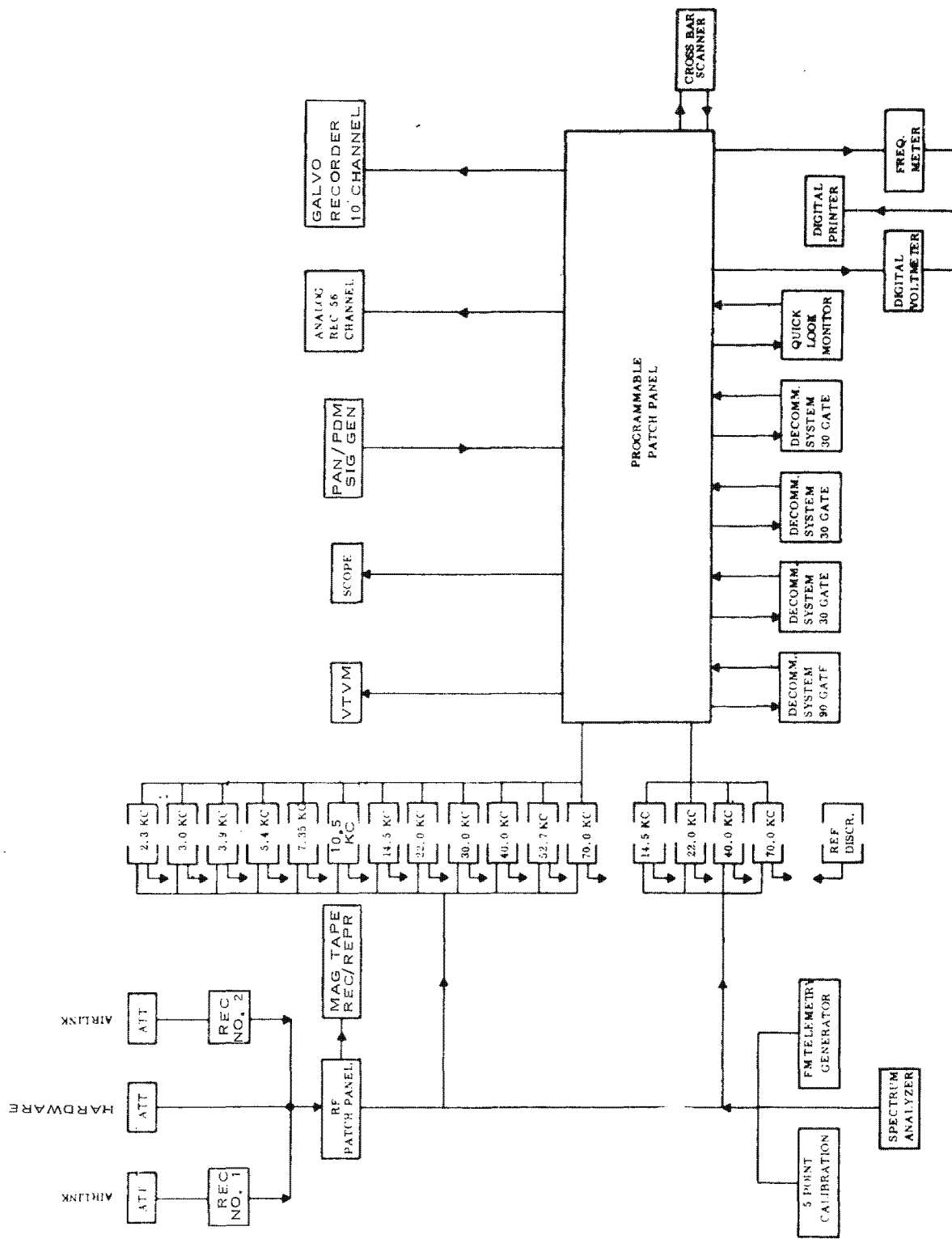


Figure 3-11. Block Diagram, SIGME With SIGME Adapter

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- c. Programmer checks
- d. Power controller checks
- e. Pulse position demodulator checks
- f. Command selector unit checks
- g. Antenna systems check
- h. Realtime commands test
- i. Word reject parity error check
- j. Word command verification
- k. Stored word commands test
- l. Delay line operation check
- m. Delay line rejection check
- n. Translator decoder capability check
- o. Deboost function check

3.4.3.3.2 Methods

Command subsystem testing shall verify proper operation by:

- a. Monitoring data received from the Command system when the vehicle is tested as a system.
- b. Implementation of signal stimulation and detailed monitoring to isolate trouble area to the "black box" level. (See block diagram, Figure 3-12.)

By supplying the proper stimuli and word structure to the command system and by monitoring the results of these inputs the Command Subsystem Test Set (CTS) shall provide a means of localizing a malfunction in the dismounted command subsystem and isolating same to the "black box" level.

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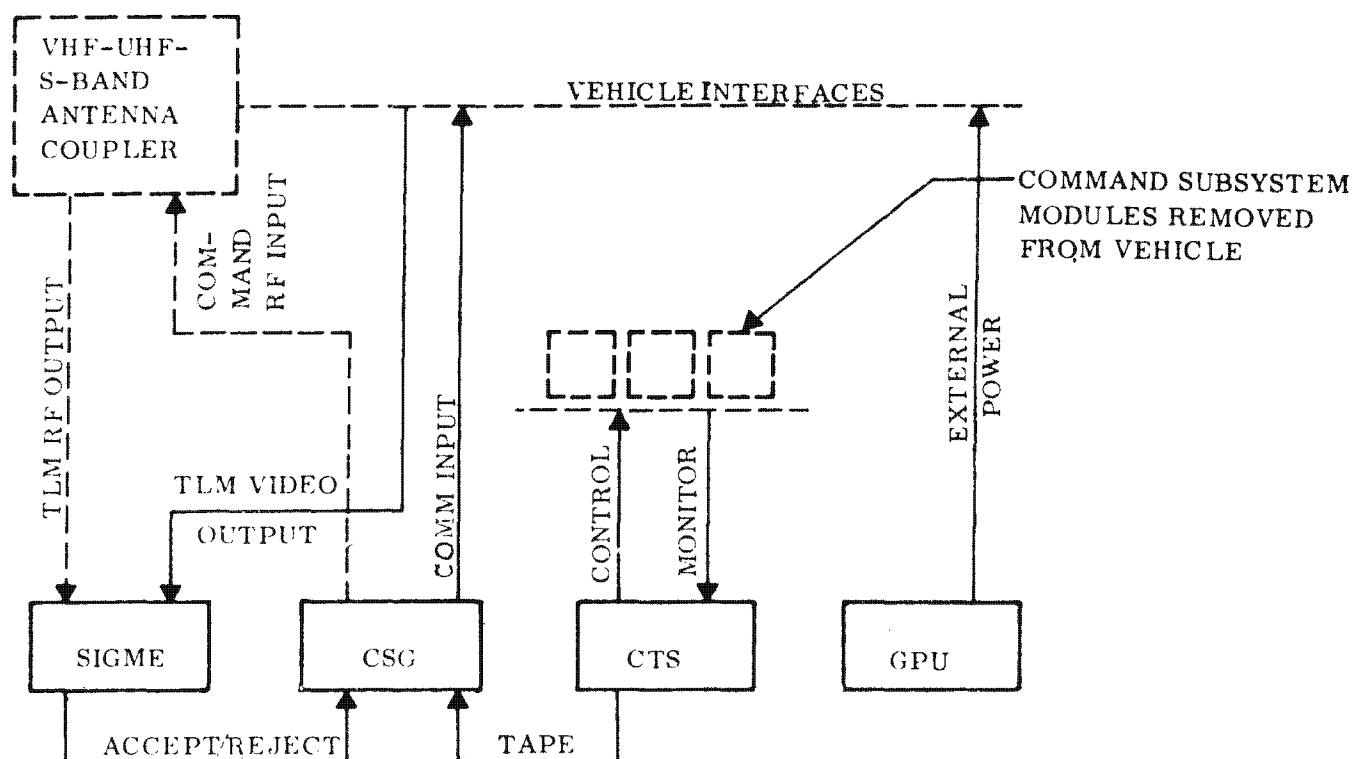


Figure 3-12. Block Diagram, Command Subsystem Testing

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As a troubleshooting aid in assuring proper command system operation the Command Subsystem Test Set shall have the capability to develop and inject NRZ coded information into the command decoder. The CTS shall also have the capability of introducing NRZ coded information into any of the four delay lines in the command programmer to verify and stimulate the function of the command decoder.

The CTS shall further provide for:

- a. Monitoring and display of all TT&C and command functions from the command decoder
- b. Monitoring of input and operating voltages
- c. Simulation of relay drive pulses to power controller and command decoder relay box
- d. Indication of the output relay closures in the power controller and command decoder relay box
- e. Simulation of input and output monitoring of programmer.

The Command Signal Generator shall generate command words composed of coded pulse groups for insertion into the airborne command subsystem. Validation of the proper reception of these commands shall be received from telemetry response in the form of an "accept/reject" signal and incorporated into a control loop within the CSG. Bit count and bit parity associated with these command words shall be self-checked prior to insertion into the airborne subsystem. Manual override controls shall allow the intentional generation of a command or commands with bad bit count and/or bad bit parity.

The CSG shall be used in the subsystems test area, the satellite system test area, and the launch area. Provisions shall be made to operate the unit by itself or remotely in conjunction with the LCM.

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3.4.3.3.3 Equipment Descriptions

a. The Command Subsystem Test Set (Item 79) shall consist of the following modules:

1. Command decoder display and stimulation
2. Word generation and control
3. Power supplies
4. Oscilloscope
5. Patch panel
6. Signal matrixer
7. Power distribution
8. Power control and display
9. Counter
10. Event monitor
11. Power control and relay box
12. Test set logic and logic power supply
13. Blowers.

The Command Subsystem Test Set, a four-bay metal cabinet, shall provide manual sequencing of tests. It shall also include all hardwires required for direct connection with stipulated test points in the dismounted command subsystem, subsystem components, and the signal generator.

b. The Command Signal Generator (Item 89) - (See Figure 3-13.) The CSG shall comprise a three-bay metal cabinet consisting of the following modules:

1. Microwave signal generator
2. Pulse amplifier

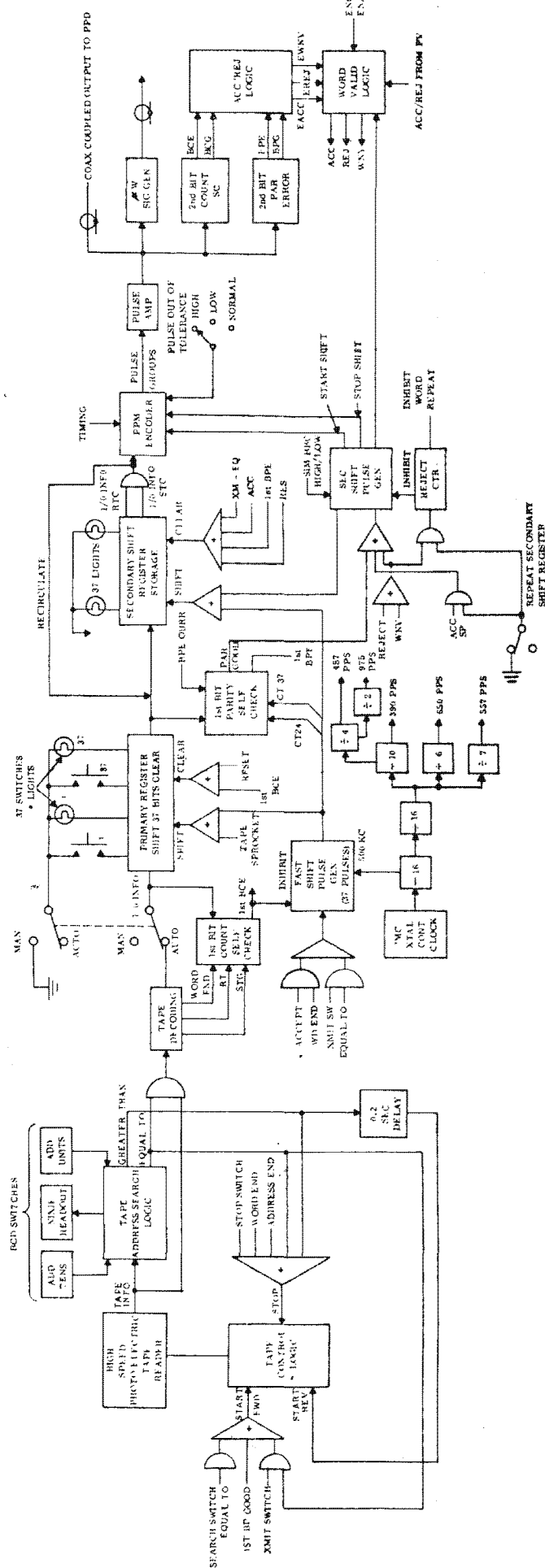


Figure 3-13. Block Diagram, Command Signal Generator

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3. Power control panel
4. Blowers
5. Monitor and control panel
6. Photoelectric tape reader
7. Power supplies
8. Logic card files

The high speed photoelectric tape reader shall be the prime mover of the CSG upon which test tapes are run into the system, converted into proper pulse position coded groups and, in turn, inserted into the command subsystem. Tapes used by the CSG shall be five-hole punched paper tapes segmented into a maximum of 99 addresses, each of which may contain either single or multiple commands. (See Figure 3-14.)

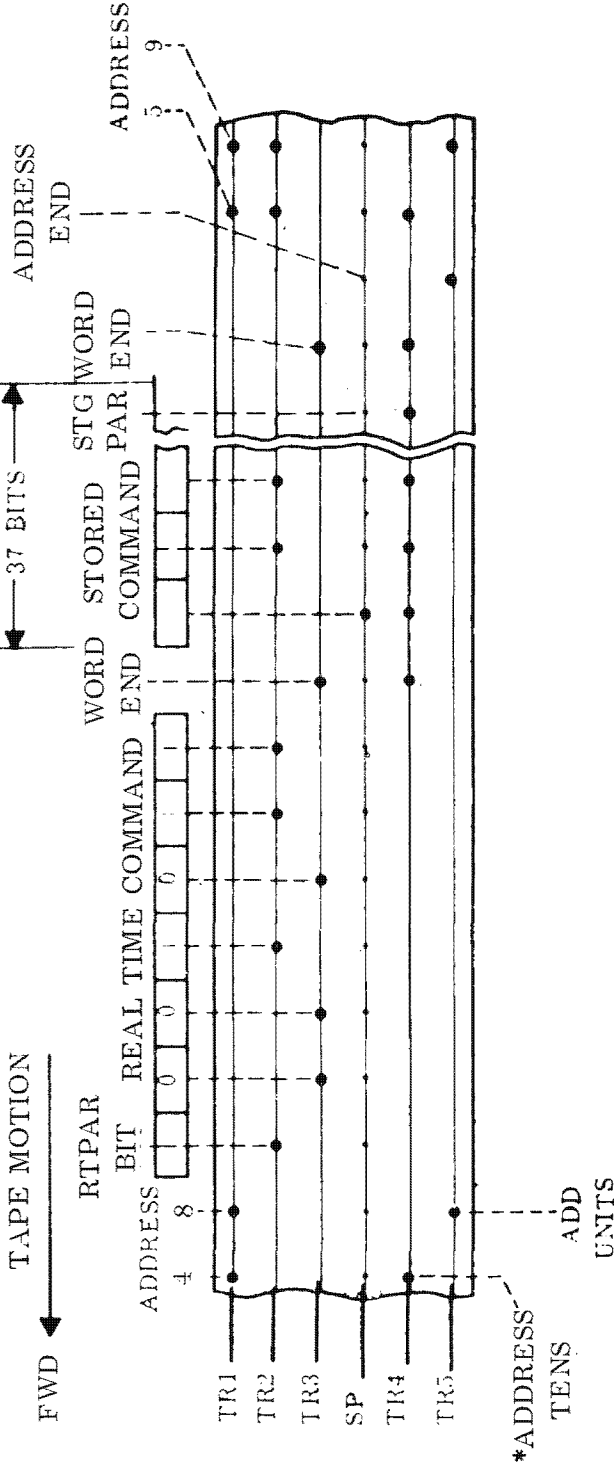
Tape control logic shall control the operation of the tape reader in conjunction with responses from the airborne command subsystem, manual controls (local or remote), and control signals from the CSG self-check circuits.

Tape address search. Upon initiation of a "search" mode the logic shall read, store, display, and continuously compare tape addresses with the manually selected address. If the address on the tape shall be less than the one selected, the tape shall continue to run in the forward direction until the tape and the selected addresses compare. At this point the tape shall stop to enable tape decoding. If the tape address shall be greater than the one selected, the tape will stop, reverse direction, and search in reverse until equality is obtained. Tape direction shall then be switched back to forward to enable tape decoding as before.

Tape decoding shall decode the five level tape into the following discrete characters:

1. Bin -1
2. Bin -0
3. Realtime command (RT)
4. Stored command (STG)

HOLE CONFIGURATION	DECODED MEANS:
TR1	ADDRESS FRAME
TR1 TR2	ADDRESS 1 OR 10*
TR1 TR3	ADDRESS 2 OR 20
TR1 TR4	ADDRESS 4 OR 40
TR1 TR5	ADDRESS 8 OR 80
TR1 TR2	BINARY -1
TR1 TR2	BINARY -0
TR1 TR3 TR4	REAL TIME COMMAND
TR1 TR4 TR3	STORED COMMAND
TR1 TR3 TR4	WORD END
TR1 TR5	ADDRESS END



*TENS OR UNITS DEPENDING
UPON LOCATIONS ON TAPE

Figure 3-14. Tape Format Command Signal Generator

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5. Word end (WE)
6. Address end (AE)

Bit count self-check shall count the number of Binary 1's and 0's contained within a command word and shall generate an error signal (BCE) if an incorrect number of bits have been read. Transmission shall continue only if the "transmit" switch is depressed a second time.

The timing chain shall be composed of a one megacycle crystal controlled clock whose output is frequency divided down to five discrete frequencies of from 400 to 600 and 975 PPS. These frequencies shall represent approximately the upper and lower limits of normal bit repetition rates into the vehicle, and shall be used in the PPM encoder portion of the CSG for that purpose.

The primary storage shall consist of a shift register whose input shall be derived from either the tape or manually activated switches. Shift pulses shall be derived directly from the tape sprocket hole signal when shifting-in, or from a shift pulse generator when shifting-out. The shift register shall act as interim storage when transmitting long series of commands into the vehicle.

At the start of the transmission of a series of commands under one tape address, the first word shall be read into the register from the tape and upon sensing "word end" shall be shifted-out of the register at the accelerated rate of 250 KC. Shift-outs shall be accomplished in less than one bit time. If both bit count and bit parity self-checks made during the shift-out process are good, another word shall be entered into the register.

When the first word is clocked out of the secondary register, the second word shall immediately be ready to go in the primary register. This shall greatly minimize the time between word transmissions. From the time the first word is clocked-out of the secondary register (transmitted to the vehicle), nothing shall be shifted-out of the primary register until reception of an "accept" signal from the vehicle. When an "accept" signal is received the succeeding word shall be fast-shifted into the secondary register. The cycle shall then be repeated for all words under the specific address.

The bit parity self-check shall check the word for even number of Binary -1's when shifted into secondary storage. If an error is detected the tape shall repeat this word into primary storage and continue the cycle as when a bit count error is observed.

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In order to check the vehicle's ability to detect incorrect bit parity a bad word shall be set up by the manual switches controlling the primary register input, and clocked-out of the secondary register. In order to accomplish this, a bit parity disable switch must be activated to inhibit this logic.

Secondary storage is a recirculating shift register which derives its input from primary storage. Commands shall be clocked out of this register from 400 to 600 bits/sec. Shift-out shall be initiated by an indication of good bit parity of times and transmitted until an "accept" pulse shall be received from the vehicle.

At this time the register shall be cleared and the word waiting in primary storage shall be fast-shifted and immediately clocked-out in less than one bit time. Bad bit count shall be simulated by changing the number of shift pulses into the register through actuation of a front panel control.

Word validation logic shall receive as its input an "accept/reject" signal from SIGME. This shall consist of a pulse of two discrete amplitudes to signify either acceptance or rejection of a vehicle-transmitted word. Its output shall be composed of three signals sensed at the proper time (time delayed approximately two bit times from the end of the transmitted word) as follows:

1. "Accept"
2. "Reject"
3. "Word not verified" (indicating vehicle has not responded to transmission).

The pulse position modulated encoder shall receive information from the secondary register and transform Binary -1 and 0 data into the proper three pulse group. The third configuration of this pulse group shall signify an "S" pulse transmission continuously except:

1. When 1's or 0's are being transmitted
2. In the two bits following the last bit of a transmitted stored command.

Timing for the information of these pulse groups shall be derived from the timing chain as is the bit repetition frequency, thus forming a completely synchronous system.

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The video amplifier shall amplify the encoder pulse groups and convert them from standard logic levels to a variable amplitude (0 to +25 V 50 ohm output). This amplitude shall be capable of driving coaxial lines of significant length without excessive degradation of rise and fall times.

The output of this amplifier shall be available for insertion through a 50 ohm coax into the command hardwire interface of the vehicle and thence into the vehicle Pulse position demodulator (PPD) 50 ohm input. The output shall also be used to modulate an RF signal source.

The RF signal generator shall convert the encoded video signal to a microwave signal in the S-band of 0 dbm (1 milliwatt) calibrated for use either directly through appropriate attenuators into the vehicle command subsystem beacon or through the antenna coupler.

- c. The Satellite Instrumentation Ground Monitor Equipment (SIGME). - (Item 88) - (See paragraph 3.4.3.2.3b.)
- d. The Ground Power Unit (Item 91) - (See paragraph 3.4.3.2.3c.)
- e. The Antenna Coupler (Item 102) - (See paragraph 3.4.3.7.3c.)

3.4.3.4 Separation Subsystem Testing

3.4.3.4.1 Requirements

The AGE system shall be designed to perform the following tests on the separation subsystem:

- a. Functional tests of separation subsystem mounted in an electrically mated, physically separated SV
- b. Stimulate the subsystem and components
- c. Monitor and record subsystem and component outputs
- d. Initiate commands, and monitor and record events of the subsystem
- e. Assure current carrying capabilities of the subsystem.

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3.4.3.4.2 Methods - (See Figure 3-15.)

A vacuum pump shall actuate the baroswitches and enable the separation subsystem. The pressure level at which activation shall occur will be monitored by the test set. The test set shall also generate and transmit simulated commands in order to drive the separation programmer. Outputs from the programmer, in turn, shall fire the pyrotechnic simulators, the output of which shall be monitored by an oscillograph.

3.4.3.4.3 Equipment Descriptions

- a. The Separation Subsystem Test Set (Item 76) shall consist of the following components:
 1. Test set checkout box for checking and verifying operability of the test equipment before use
 2. Test cables and junction box
 3. Oscillograph (24-channel) for monitoring; 6-channel amplifier; and take-up unit
 4. Power supply
 5. Power and distribution panel
 6. Separation subsystem test panel containing controls for input signals; indicator for subsystem events; stop clocks for measuring subsystem time delays; and meters for monitoring vehicle power and TLM voltages
 7. Vacuum system for evacuating the baroswitch and measuring actuating pressure
 8. Forward Section Simulator
 9. Blower.

The above equipment shall be incorporated in a three-bay, free-standing, upright metal cabinet and shall include an ancillary junction box, a separation checkout box, and F/S simulator box, and all necessary interconnecting input and signal cables, and a vacuum line.

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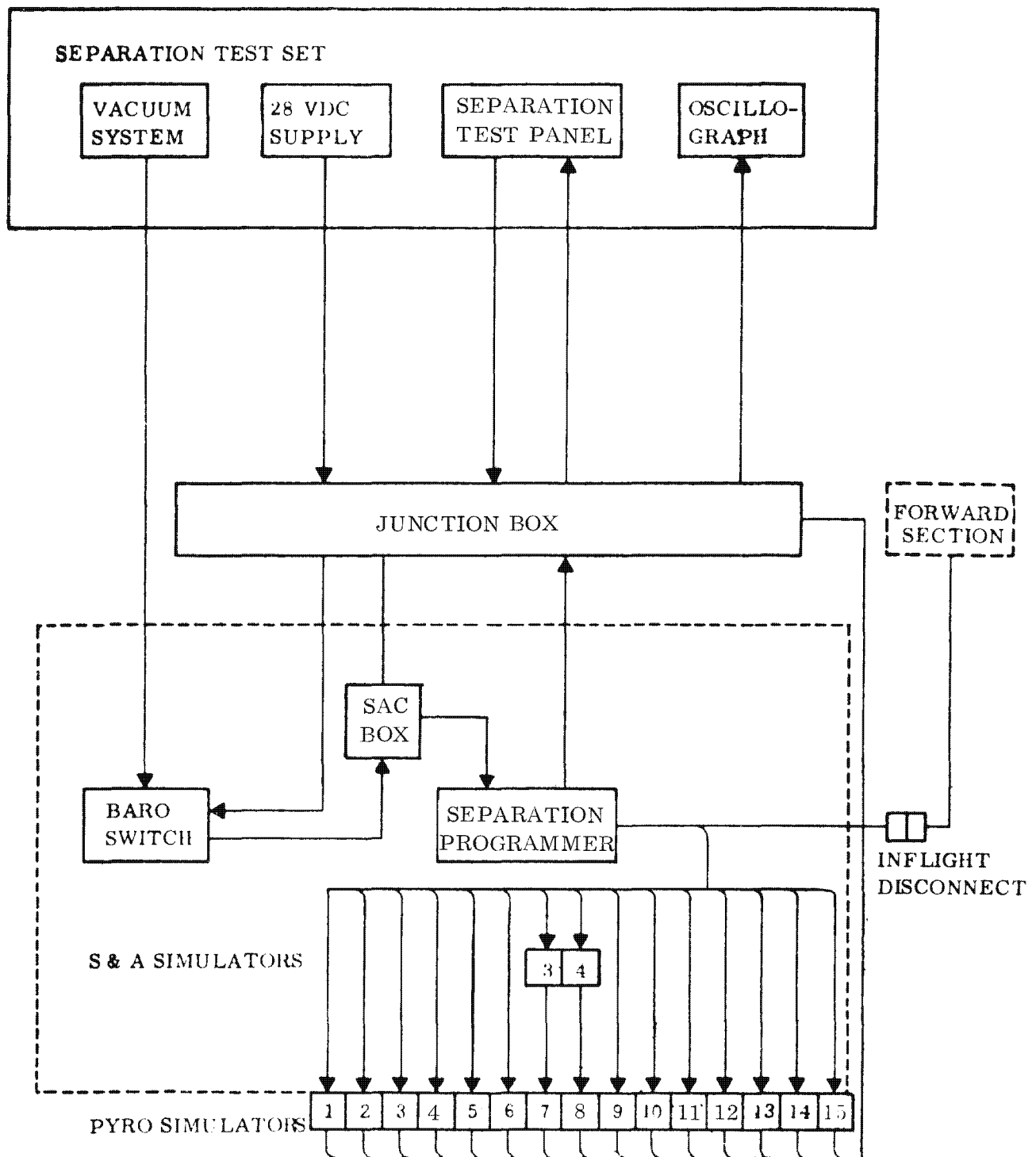


Figure 3-15. Block Diagram, Separation Subsystem

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- b. The SV Simulated Flight Kit (Item 90) shall consist of the following components:
 - 1. Safing and arming simulators
 - 2. Pyrotechnic simulators
 - 3. Validation harness
 - 4. Tester
 - 5. Carrying case.

Manual self-verification of the safing and arming simulators and the pyrotechnic simulators shall be possible with the tester. (The validation harness shall provide all interconnections between the devices and the SV test connector during system testing.)

- c. The Squib Simulator Current Monitor (Item 90.2) shall consist of a junction box and cables for the purpose of monitoring squib simulator currents on recorders in the Separation Subsystem Test Set (Item 76) and the Orbit Adjust Subsystem Test Set (Item 81).
- d. The Ground Power Unit (Item 91) - (See paragraph 3.4.3.2.3c.)

3.4.3.5 Stabilization Subsystem Testing

3.4.3.5.1 Requirements

The AGE system shall be designed to perform the following tests on the stabilization subsystem under closed loop conditions:

- a. Platform checkout as to servo operation and gyro drift
- b. Calibration of telemetry monitoring circuits
- c. Accuracy checkout
- d. Pickoff gradients checkout
- e. Amplifier gains checkout

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- f. Polarity checkout
- g. Analysis of servo loop
- h. Verification of temperature registration and drift performance
- i. Marginal voltage performance
- j. Alignment of IR Sensor.

3.4.3.5.2 Methods

The major tests performed here shall primarily consist of closed loop tests to check signal polarity and functional operation of each of the servo loops. Where closed loop tests are not feasible, open loop tests shall be performed. In either case, several points in each loop tested shall be monitored by means of an 8-channel recorder in order to obtain loop accuracy and component gains.

When it shall be ascertained that all loops are operating correctly, the entire system shall be tied together and the IR Sensor control loop stimulated by means of an artificial horizon. The movement of the gimbals and gas exhaust from the reaction jets shall then be observed. In the event a malfunction should occur in any loop, the multi-channel recorder shall pinpoint the component at fault.

An inertial platform test table shall determine inertial platform drift rates and shall function also as a servo table in the stabilization subsystem loop tests. This table shall furnish accurate rate inputs to the Inertial Platform (IP) and the rate gyro system by rotating at rates equal to earth rate $\pm$ orbital rate $\pm$ small perturbations.

3.4.3.5.3 Equipment Descriptions

- a. The Stabilization Subsystem Test Set (Item 80) shall consist of:

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1. Data and recording unit containing phase angle voltmeter; oscilloscope, two channel recorders; test point patch panel; and blowers
2. Module control unit containing a temperature control and monitoring panel; gimbal positioning panel; power supplies; and blower
3. System control and monitor unit, containing subsystem operational control panel; test point patch panel; test demodulators; eight channel recorders and amplifier; relay unit; and an AC power supply
4. Test cables to interconnect the airborne and AGE.

The above equipment shall be incorporated in a four-bay metal cabinet measuring 98-inches wide, 75-inches high, and 36-inches deep.

- b. The Inertial Platform Test Table (Item 20) shall consist of a pedestal and an adjustable drive head. The pedestal shall include levels and minor azimuth adjusting provisions. The drive head shall consist of a spin table, drive motors, a tachometer, and provisions for signal commutation. The test table shall measure 51-inches high, 25-inches wide, 27-inches deep, and shall weigh approximately 955 pounds.
- c. The Inertial Platform Fixture (Item 19) - (See paragraph 3.4.2.3.1.)
- d. The IR Sensor Stimulator (Item 23) shall provide simulation of the radiation level differential between earth and space. This differential shall serve as the stimulation to the platform mounted sensors during subsystem testing and component evaluation. (Used only with Barnes scanner.)

When the Mark II scanner system replaces the Barnes scanner, Item 23 will be replaced by Item 23.3, IR Sensor Stimulator (MK II).

- e. The Ground Power Unit (Item 91) - (See paragraph 3.4.3.2.3c.)
- f. The Infra-Red Sensor Alignment Set (Item 23.2) shall consist of a fixture assembly and an instrument stand to provide an optical means of checking the physical mounting alignment of the IR sensor to the inertial platform. (Used only with the Mark II scanner).

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3.4.3.6 Orbit Adjust Subsystem Testing

3.4.3.6.1 Requirements

The AGE system shall be designed to perform the following tests:

- a. Check relay box
- b. Monitor solenoid valve voltages
- c. Check performance of solenoid valves
- d. Check pyrotechnic initiator circuits.

3.4.3.6.2 Methods - (See Figure 3-16.)

The Orbit Adjust subsystem shall be initiated by simulated command sent from the test set to the relay box in the command subsystem. The contact closures in the relay box shall be monitored by the test set. Pyrotechnic simulators of the SV Simulated Flight Kit (Item 90) shall be used in place of pyrotechnics to check out the initiator circuits. Firing of these simulators shall be monitored by the test set.

Nitrogen gas shall be introduced upstream of the rocket engines and downstream of the burst disc in the fuel and oxidizer systems. The test set shall monitor the voltage applied to the engine solenoid valves, and the flow of gas through the valves shall be visually and audibly monitored.

3.4.3.6.3 Equipment Descriptions

- a. The Orbit Adjust Subsystem Test Set (Item 81) shall consist of:
 1. Orbit adjust test panel and controls for all input signals and indicators for subsystem events

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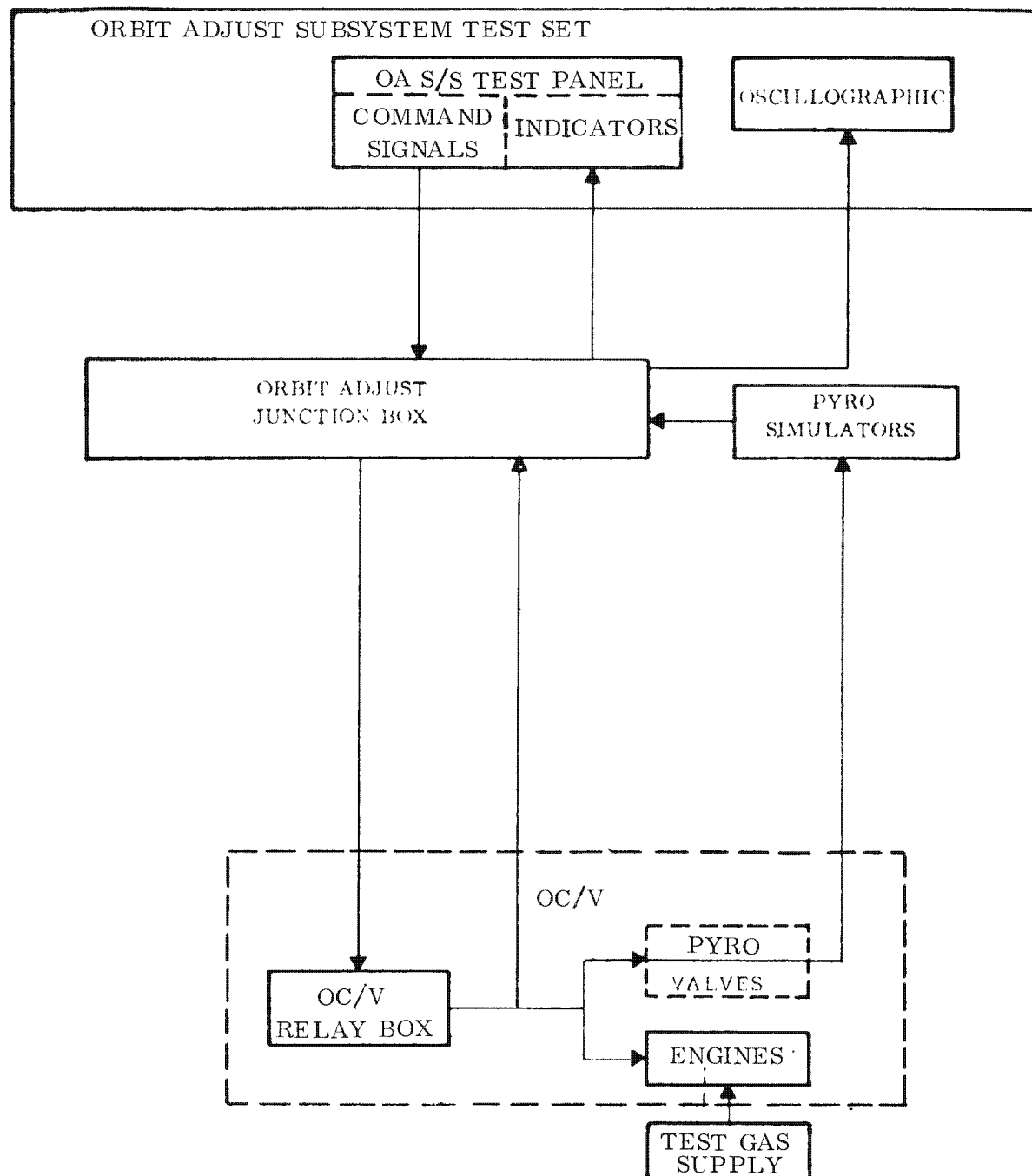


Figure 3-16. Block Diagram, Orbit Adjust Subsystem Test Set

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2. Test set checkout box for checking and verifying operability of the test equipment before use
3. Test cables and necessary junction boxes
4. Oscilloscope (multi-channel) for monitoring purposes.

The above equipment shall be incorporated in a three-bay, free-standing upright metal cabinet. The test set shall also include an ancillary junction box and all necessary interconnecting input and signal cables.

- b. The SV Simulated Flight Kit (Item 90) - (See paragraph 3.4.3.4.3b)
- c. The Squib Simulator Current Monitor (Item 90.2) - (See paragraph 3.4.3.4.3c)
- d. The Ground Power Unit (Item 91) - (See paragraph 3.4.3.2.3c)

3.4.3.7 Antenna and Beacon Testing

3.4.3.7.1 Requirements

The AGE system shall be designed to perform the following tests on the antenna and beacons:

- a. Measurement of bandwidth, VSWR
- b. S-Band beacon and rate beacon frequency
- c. S-Band beacon and rate beacon power output
- d. Pulse shape determination of S-Band beacon and rate beacon.

3.4.3.7.2 Methods

The Beacon Test Set shall be designed for use with the Antenna Test Set and shall measure the frequency, power output and pulse shapes, as well as to interrogate and observe the response of the various beacons aboard the Satellite Vehicle (SV). The Antenna Test Set to measure the VSWR and bandwidth of the antenna aboard the Satellite Vehicle (SV).

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3.4.3.7.3 Equipment Descriptions

a. The Beacon Test Set (Item 105) shall consist of the following rack-mounted equipment:

1. Oscilloscope
2. Multipulse generator
3. S-Band diplexer
4. S-Band receiver
5. Electronic counter
6. Transfer oscillator
7. Doppler simulator
8. Doppler signal comparator
9. Directional couplers
10. Power lead
11. Attenuator
12. Coax cables and connectors
13. Thermistor mount
14. Hybrid junction
15. Terminations
16. Pick-up antenna.

The above equipment shall be incorporated in a two-bay, free-standing metal cabinet. The test set shall also include all coaxial cable necessary for interconnecting with the vehicle beacons.

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- b. The Antenna Test Set (Item 104) shall consist of the following rack-mounted equipment:
1. M/W generator- polarad
 2. VHF, UHF and S-Band signal generators
 3. Ratiometer
 4. Power meter
 5. Dual directional couplers
 6. Matched crystal mounts
 7. Universal bolometer mounts (2)
 8. Bolometer matching transformer
 9. Coax cables and connectors
 10. Terminations
 11. Thermistor mounts.

The above equipment shall be incorporated in a single-bay, free-standing metal cabinet and shall include all coaxial cables necessary for interconnection with the antennas.

- c. The Antenna Coupler, VHF, UHF and S-Band (Item 102) shall consist of:
1. Dielectric "hats" for VHF transmission
 2. Dielectric "hats" for UHF and S-Band transmission and reception
 3. Coaxial connectors

The above equipment shall be mounted on an electrically isolated aluminum sheet over that part of the Satellite Vehicle (SV) housing the antennas.

3.4.3.8 Back-up Stabilization Subsystem (BUSS) Testing

3.4.3.8.1 Requirements

The AGE system shall be designed to perform the following tests on the BUSS:

- a. Attitude control checks
- b. Rate Gyro checks
- c. Command checks
- d. Pneumatic system leak check
- e. Solenoid valve operation

3.4.3.8.2 Methods

The subsystem testing of the BUSS command system and the BUSS attitude control system shall take place at the MAB prior to system and magnetometer testing. (See Figure 3-17.)

The magnetometer output shall be simulated with triangular waves of varying frequencies and constant "R" channel voltages to establish:

- a. The null gain of "P" and "Q" channels
- b. The rate gain and positive attitude limits of "Q" and "P" axis rates
- c. The rate gain and negative attitude limits of "P" and "Q" axis rates.

The rate gyro shall be mounted to the rate table with its input axis parallel to the spin axis of the table. The roll rate gain shall be tested by rotating the table clockwise and then counterclockwise at varying rates of speed. The correct roll solenoid shall be activated before a rate of 2.5 degrees per second is reached, and turn off at a rate greater than 0.1 degree per second.

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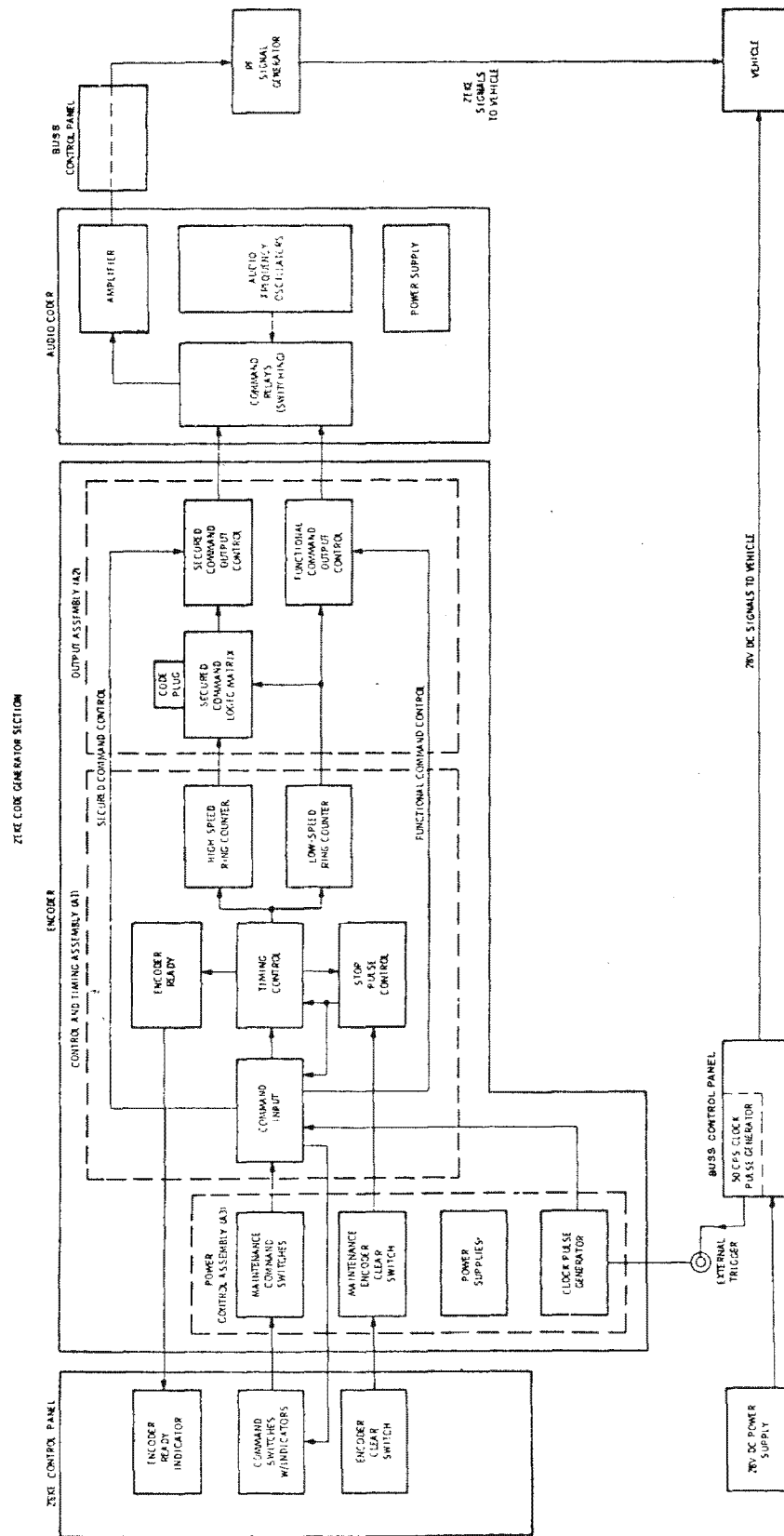


Figure 3-17. BUSS System Test

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Commands shall be fed hardwire through the umbilical or transmitted open loop to the BUSS subsystem via the vehicle antenna. The BUSS receiver shall receive either a secure command on any of three unsecure commands. Capability shall be provided to monitor the transmitted frequency, to check receiver sensitivity, to check for correct translation of commands by the decoder, and to monitor the timer output function for proper time.

A leak test shall be performed in that part of the pressurant system upstream of the normally closed squib valves. The leak rate shall be measured at a tank pressure of 3600 psia using a helium mass spectrometer leak detector. A further leak test shall be performed on that part of the pressurant system downstream of the normally closed squib valves with the system charged.

A source of regulated nitrogen gas shall be connected to the pressurant system downstream of the normally closed squib valves with the solenoid valve monitored. As the solenoids open a check for gas ejection through the nozzles shall be made. Regulator lock-up performance shall also be checked during this test.

3.4.3.8.3 Equipment Descriptions

- a. The Inertial Platform Test Table (Item 20) - (See paragraph 3.4.3.5.3b.)
- b. The BUSS Attitude Control Test Set (Item 97) shall be supplied by LMSC to GE for monitoring signals, checking functions and providing input voltages to the BUSS attitude control subsystem. The test set shall mainly function as a magnetometer simulator. It shall also be capable of monitoring rate gyro operation when the gyro is removed from the vehicle and remotely connected to the flight control electronic package.
- c. The BUSS Subsystem Checkout Test Set (Item 96) shall be supplied by LMSC to GE to supply input power to End Item 97. It shall also be used to checkout the BUSS command subsystem by generating coded RF command signals to and monitoring responses from the vehicle to verify proper operation.

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- d. The SV Plumbing Leak Rate Detector (Item 61) - (See paragraph 3.4.6.3a.)
- e. The Frequency Monitoring Unit (Item 96.1) shall consist of a single bay upright metal cabinet containing an electronic frequency counter and converter units. This equipment is required to measure and monitor transmitter frequencies, time intervals, and frequency drifts of the BUSS Subsystem Checkout Test Set (Item 96).

3.4.3.9 Environmental Control Subsystem Testing

3.4.3.9.1 Requirements

- a. Monitor performance of heaters
- b. Operate the blowers
- c. Internally and externally cool the SV during ground tests.

3.4.3.9.2 Methods

The environmental heaters and blowers shall be operated and monitored, as required, by the various test sets during subsystem and system tests. A cooling unit shall be supplied to envelope the Satellite Vehicle (SV) with a flow of cooling air in order to carry off heat generated during ground testing.

3.4.3.9.3 Equipment Descriptions

- a. The Cooling Unit (Item 51) shall consist of an air conditioner remotely mounted outside the Missile Assembly Building (MAB) and connected to a stationary internal air duct system containing duct outlet fittings and air hoses. The auxiliary cooling equipment for the Adapter Section shall include a cover plate with hose connector arrangement. For the Orbital Control Vehicle (OC/V) the cooling equipment shall include a series of clamp-on cover shield support lines with fastener arrangement to the OC/V cradle cage bars and a fold-back cover shield plate with hose connector. A quick disconnect with hose connector shall cool the aft bay of the OC/V.

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The air conditioner shall be capable of supplying 100 lb/min of air at 34⁰F, 80% relative humidity, at a maximum static pressure of 28 inches of water (1 psig).

3.4.4 Alignment

3.4.4.1 Requirements

During the vehicle assembly and checkout in the Missile Assembly Building (MAB) the following components of the propulsion and stabilization and BUSS systems shall be aligned with respect to vehicle references to insure proper functioning of the satellite during orbit acquisition and orbital flight:

- a. Orbit adjust engines
- b. Retro rocket engine
- c. Inertial platform
- d. Magnetometer.

3.4.4.2 Methods

- a. Orbit Adjust Engine Alignment. An accurately machined calibration fixture shall establish the aft OC/V ring at Sta. 218.03 as a reference plane, provide an adjustable target assembly to simulate the Satellite Vehicle (SV) mean CG, and incorporate an alignment fixture adjusted to the entire spectrum of CG locations and mated to the aft OC/V ring. A reference target mirror assembly shall be inserted into the Orbit Adjust engine where pointing displacement error can be read on an alignment scope. The two orbit adjust engine thrust vectors shall be aligned to within 0.06 inches of the reference or mean CG.
- b. Retro Rocket Engine Alignment. A fixture consisting of a calibration ring, an alignment fixture, and an alignment sighting scope shall establish an optical axis normal to the optical target and coincident with the target center. The target mirror shall be inserted into the rocket engine where pointing and displacement error can be read on the alignment sighting scope reticle. The rocket engine shall be aligned to roll axis and through the CG plane of the Forward Section within 0.010 inch.

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- c. Inertial Platform Alignment. An alignment set consisting of a theodolite, an autocollimator, levels and instrument stands, shall be positioned to establish and transfer the vehicle reference plane and reference target mirror on the vehicle structure to the inertial platform. The reference target mirror shall be mounted on the inertial platform perpendicular to its reference axis. The inertial platform shall then be adjusted until its reference axis is perpendicular to the vehicle reference plane to within three minutes of arc.
- d. Magnetometer Alignment. An alignment fixture with auto-collimating mirror shall be attached to the vehicle interface station 234.88. A clinometer placed on the fixture is used to level the vehicle. With the mirror on the alignment fixture to represent vehicle axes, and with a mirror target assembly fastened to the magnetometer to represent the magnetometer axes, a theodolite (from end item 22) is used to check the alignment of the magnetometer. The reference corner which defines the magnetometer axes must be aligned to be within ± 30 minutes of arc of the three vehicle axes.

3.4.4.3 Equipment Descriptions

- a. The Orbit Adjust Nozzle Alignment Set (Item 24) shall consist of a calibration fixture with target assembly, an alignment fixture with an alignment scope, and an engine target assembly.
- b. The Rocket Alignment Fixture (Item 24.1) shall consist of four major components: a calibration ring, an alignment fixture, an engine target assembly, and an alignment sighting scope.
- c. The Inertial Platform Alignment Equipment (Item 22) shall consist of optical tooling bars, coincidence via levels, a theodolite and an autocollimator.
- d. The magnetometer alignment set of the BUSS Auxiliary Equipment (Item 98) shall consist of a clinometer, target assembly, and a calibration fixture.

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3.4.5 Weight and Balance

3.4.5.1 Requirements

The Forward and Adapter Sections and the Orbital Control Vehicle (OC/V) must be weighed and balanced in the Missile Assembly Building (MAB) prior to the systems test and subsequent movement to the Launch Complex. Propellants, pyrotechnics, and high pressure gases shall not be included in the vehicles during this activity in order to insure accuracy as well as to provide for the safety of personnel and equipment.

The following measurements shall be made separately on the Forward and Adapter Sections as well as on the Orbital Control Vehicle (OC/V):

- a. Weight
- b. Center of Gravity
- c. Moments of Inertia (I_x , I_y , I_z) (Forward Section I_x only)
- d. Products of Inertia (I_{xy} , I_{xz} , I_{yz}) (Forward Section only)

3.4.5.2 Methods

During the following measurements the Forward Section (R/V), The Adapter Section, and the Orbital Control Vehicle (OC/V) shall be supported in inertia fixture sets.

- a. Weight determination shall be performed by means of a weigh beam and integral load cells. A console readout shall indicate the aft and forward load reactions summed by the operator in determining the vehicle weight.
- b. Moment of inertia determination shall be made by the use of a bifilar pendulum machine for the Forward Section. The period, displayed in digital form, shall enable the calculation and determination of moments of inertia.
- c. Products of inertia determinations shall be ascertained by rotating the Forward Section in a horizontal attitude about a vertical centerline on a products of inertia machine. Unbalanced forces shall then be null balanced by the displacement of weights on the axes of the machine. Products of inertia shall then be calculated from the displacement and mass of the machine weights.

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3.4.5.3 Equipment Descriptions

- a. The Inertia Fixture Set (Item 34) shall be an accurately machined fixture with machined roller tracks to provide a full 360° roll capability. It shall have bolted interfaces with the Adapter Section and the aft end of the Orbital Control Vehicle (OC/V) which shall establish references for the three mutually perpendicular axes (pitch, roll and yaw) of the vehicle. The fixture shall be an aluminum weldment with weight requirements of 300 pounds for the Adapter Section and 3200 pounds for the OC/V.
- b. The Weigh Beam (Item 33) shall consist of a welded steel lifting beam with an adjustable lifting eye and two strain gauge-type load cells. It shall be capable of weighing and locating longitudinal centers of gravity for loads weighing between 600 and 5000 pounds.
- c. The Moments of Inertia Machine (Item 35) shall consist of a pedestal and pendulum assembly with an interval time counter and a pendulum starter mechanism. It shall provide the means for calculating the moments of inertia of the Adapter Section and the Orbital Control Vehicle (OC/V). (Item 35 is presently installed in the Missile Assembly Building (MAB) as part of Contract AF 04(695)-6.)
- d. The Bifilar Moments of Inertia Machine (Item 35.1) shall be a bifilar pendulum assembly consisting of a pair of vertical suspension piano wires terminated at one end by conical brackets attached to a ceiling "T" beam, and at the free-swinging end by conical bracket attachment to the Forward Section support ring. The Bifilar machine shall provide a means for calculating the moments of inertia of the Forward Section by timing the period of the oscillations about the Forward Section roll axis.
- e. The Products of Inertia Machine (Item 36) shall consist of a base plate mount and a dynamic balancer. It shall provide the means for calculating the products of inertia for the Forward Section, the Adapter Section, and the Orbital Control Vehicle (OC/V). (Item 36 is presently installed in the MAB as part of Contract AF 04(695)-6.)
- f. The Forward Section Inertia Fixture Set (Item 34.1) shall consist of an aluminum weldment comprising a cage-frame assembly shaped to accommodate the Forward Section. The fixture shall support and align the Forward Section during determinations of the center of gravity, moments of inertia, and products of inertia. It shall interface with the Bifilar Moments of Inertia Machine (Item 35.1) and the Inertia Fixture Set (Item 34).

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3.4.6 Leakage Rate Testing

3.4.6.1 Requirements

Leakage rate testing shall be required to reaffirm confidence in the pneumatic and propellant systems of the vehicle after exposure to shipping environments. Quantitative measurements shall be made to insure that any leakage shall be within the allowable limits of the vehicle specifications. The following vehicle subsystems shall be pressurized and checked for leakage in the Missile Assembly Building (MAB):

- a. Stabilization subsystem (Freon)
- b. Orbit Adjust subsystem (Nitrogen, hydrazine and tetroxide)
- c. Forward Section (forebody)
- d. BUSS subsystem.

3.4.6.2 Methods

Tests shall be performed on each subsystem to measure gas loss at operating pressures. Nitrogen gas, with a small percentage of helium added, shall be used as a common test fluid to replace the Freon and other propellants normally used in some of the subsystems. All fluids in the vehicle system shall be correlated to an equivalent nitrogen leakage rate.

- a. High pressure systems shall be tested at operating pressures. Any subsystem which exceeds its allowable leakage rate shall be reduced to a specified pressure and then a mass spectrometer, a sensitive to helium, shall be used to locate the leaks.
- b. Low pressure systems (propellant systems) shall be tested at approximately one-sixth of their operating pressure in order to protect the Teflon bladders and the burst discs. If leakage is within limits the pressure on both sides of the bladders shall be reduced until the nitrogen side is at atmospheric pressure and a small positive pressure shall remain in the bladder. Any leakage through the bladder shall be measured by water displacement method.

The helium mass spectrometer shall be used to locate leaks if the leakage rate is out of limits.

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3.4.6.3 Equipment Descriptions

- a. The SV Plumbing Leak Rate Detector (Item 61) shall consist of the following components: gas pressurization console; power supply; portable mass spectrometer; nozzle caps; leak bottles; moisture analyzer; and a purge system. The gas pressurization console shall contain all inlets, valves, regulators, pressure gauges, outlets, and safety provision for directing and/or mixing nitrogen and helium for pressurizing and leak testing of each vehicle fluid and propellant system, and for filling the vehicle nitrogen and Freon tank. The console shall also contain a display of vehicle tank pressures and temperatures. The nozzle caps shall serve to cap off the stabilization nozzles during leak tests. The leak bubbler shall provide for leak evaluation of propellant bladders. The moisture analyzer shall measure the moisture content of gas in the vehicle. The purge system shall provide for a dry nitrogen purge of the vehicle and shall prevent condensation of atmospheric moisture on the vehicle tanks and lines when vented after high pressure fill.
- b. The High Pressure Nitrogen Supply (Item 58) shall consist of twelve high pressure nitrogen cylinders plus valves, regulators, gauges, and tubing, mounted on a roadable trailer. It shall also contain temperature pressure meters to monitor the tanks of the SV.
- c. The High Pressure Helium Supply (Item 59) shall consist of two helium supply cylinders and a control and supply panel mounted on a cart. The cylinder supply shall include individual cylinder valves, gauges, and associated tubing. The panel shall contain valves, regulators, gauges, outlets, and the SV helium tank pressure and temperature monitors.

3.4.7 System Testing

3.4.7.1 Requirements

The AGE system shall be designed to verify that the Satellite Vehicle (SV) is functioning as a system. This test shall reveal any malfunction caused by interference between subsystems. (See Figure 3-18.)

The system test shall simulate the flight profile and shall consist of the following phases:

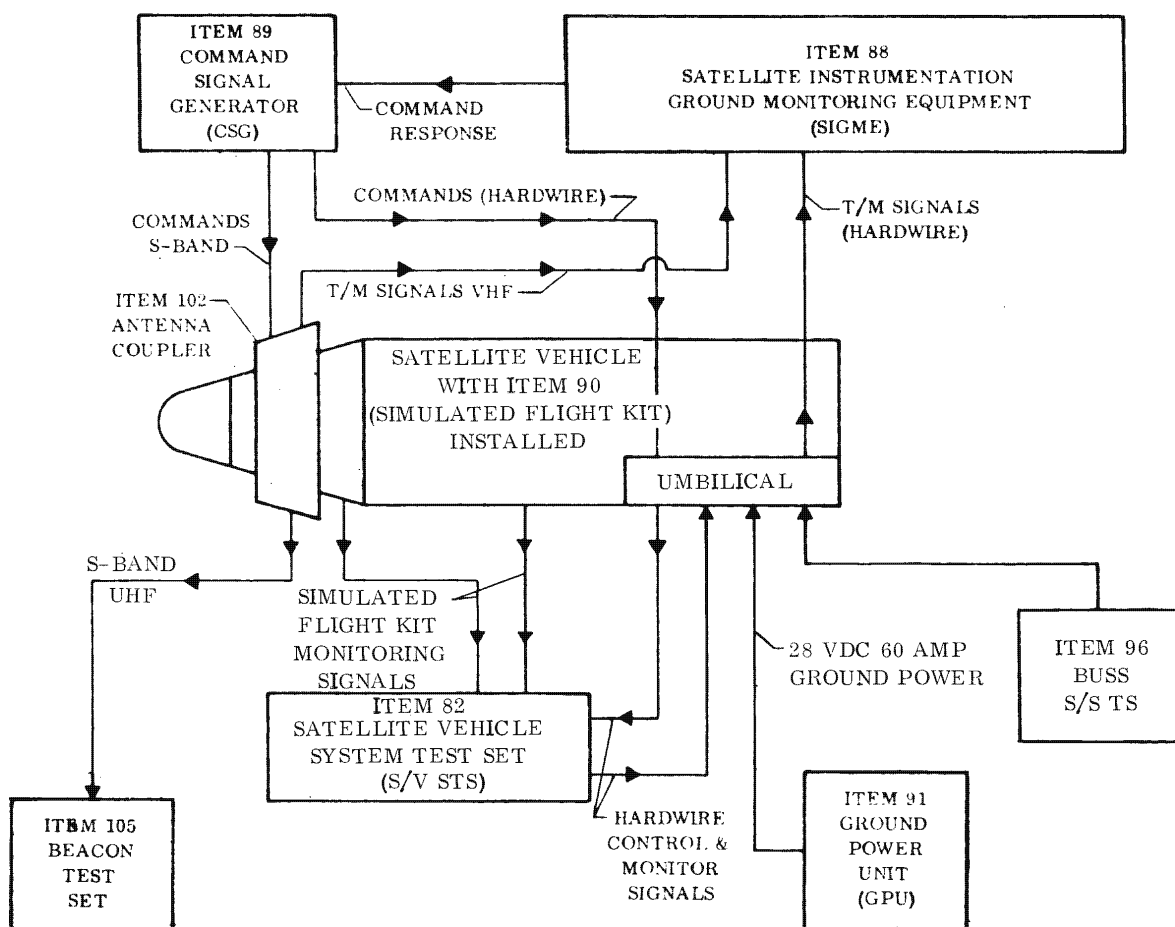


Figure 3-18. Block Diagram SV System Test

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- a. Terminal countdown
- b. Powered flight
- c. Separation - Atlas/Agena
- d. Separation - Agena/OC/V
- e. Attitude control check
- f. Stabilization and orbit adjust
- g. Typical orbits
- h. Orbit maintenance
- i. Terminal orbit
- j. BUSS monitoring
- k. Separation - R/V-OC/V
- l. Re-entry.

3.4.7.2 Methods

The system test shall be conducted in the MAB Vehicle Test Area. The Forward Section, Adapter Section, and the Orbital Control Vehicle (OC/V) shall be electrically and mechanically mated. Simulated baroswitches, safe arm devices, squibs, and a test harness shall be installed in the vehicle throughout the test. The Satellite Vehicle (SV) internal environment shall be maintained by utilizing its internal environment control, supplemented by a cooling unit, and associated ducting.

- a. Terminal Countdown. This phase of the system test shall establish confidence that:
 1. Command monitoring subsystems are functioning
 2. AGE is properly adjusted
 3. Required conditions at launch exist in the SV.

Initial checks include:

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1. Monitoring continuity loops
2. Checking compartment temperature
3. Monitoring battery voltages
4. Applying ground power
5. Establishing that command subsystem is operating through S-Band
6. Monitoring 52.5 KC "accept/reject" discriminator on scope
7. Monitoring UHF and S-Band beacon
8. Hardwire monitoring of stimulated commands to the Agena.

Prelaunch initial conditions include:

1. Manual initialization ON
2. Servo disable ON
3. Reset and hold clock
4. Turn Stabilization temperature monitors OFF
5. Apply external power
6. Enable T/M hardwire
7. Remove manual initialization
8. TT&C ON
9. Compatibility check with ground station
10. Prelaunch preset
11. Manual initialization ON
12. Switch on internal power

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13. Remove manual initialization
 14. TT&C ON
 15. Orbital mode transfer
 16. Erase delay lines
 17. Load flight program
 18. Release clock
 19. Manual initialization ON and OFF
 20. TT&C ON.
- b. Powered Flight. The following operations shall be performed during this phase of the test:
1. Monitor telemetry realtime transmitter powered flight channels
 2. Operate simulated baroswitch to enable separation subsystem
 3. Monitor, through telemetry, signal from separation programmer.
- c. Separation Atlas/Agena. This phase of the test shall be initiated by a command to the separation programmer. The following programmed events shall be monitored:
1. Hatch cover ejected
 - (a) Hardwire monitor, through validation test connector, that hatch cover #1 and #2 simulated squibs have fired
 2. Monitor separation circuitry armed
 - (a) Monitor that #1, #2, #3, and #4 safe/arm devices are in the ARM position via hardwire
 - (b) Monitor 5 VDC level on separation programmer telemetry monitor #1
 3. Monitor orbit adjust engine manifold bleed

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- (a) Hardwire monitor from engine solenoids
- 4. Monitor that OC/V propellant tanks have been pressurized
 - (a) Hardwire monitor that simulators for squib valves have fired.
- d. Separation Agena/OC/V. Monitor firing of simulated squibs.
- e. Attitude Control. In checking the attitude control, source of nitrogen gas shall be connected to the pressurant system downstream of the normally closed squib valves. The magnetic field shall be moved with reference to the magnetometer and the operation of the pitch and yaw solenoids and valves monitored. The rate gyro shall be moved to check that the roll solenoids and valves operate properly. During solenoid operation a gross check shall be made to determine that gas is ejected from the nozzles.

The following BUSS system functions shall be checked when the proper umbilical connections are made:

1. Command reset. A 28 volt d. c. signal shall be required from AGE to reset auxiliary timer and relays.
2. Auxiliary timer speed-up. A 28 volt d. c. signal shall be required from AGE to increase timer speed.
3. Execute monitor. A 28 volt d. c. signal shall be received by AGE to indicate an output from the decoder.
4. Gas fill pressure. A 0-5 volt d. c. signal shall be received by AGE to represent pressure of BUSS gas during tank filling operations.
5. Solenoid fill valve. A 28 volt d. c. signal shall be required from AGE to remotely control the gas solenoid shut-off valve when loading the tank on PAD.
6. Mode and event monitor. A 0-5 volt d. c. signal shall be received by AGE to monitor discrete outputs from BUSS.
7. Command (coaxial). This cable shall enable AGE to supply an RF hardwire command input during closed loop operation of the BUSS command subsystem.

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The following BUSS system functions shall be checked when the proper TP2 test connections are made:

1. Magnetometer solenoid output #1.
 2. Magnetometer solenoid output #2
 3. Antenna solenoid output #1
 4. Antenna solenoid output #2
 5. Roll valve solenoid #5
 6. Roll valve solenoid #6
 7. Pitch valve solenoid #2
 8. Yaw valve solenoid #3
 9. Pitch valve solenoid #4
 10. Enable squib #1
 11. Enable squib #2
 12. Primary gas disable #1
 13. Primary gas disable #2
 14. Yaw valve solenoid #1.
- f. Stabilization and Orbit Correction. The following operations shall be performed during this phase of the test:
1. Uncage the stable platform
 - (a) Monitor thrust nozzle valves opening and closing
 2. Initiate normal orbit correction
- g. Typical orbits

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1. Command required GFE functions
 - (a) Monitor GFE functions by telemetry and hardwire
- h. Orbit maintenance
 1. Command engines ON
 2. Monitor engine cutoff
- i. Terminal orbit
 1. Initiate yaw around sequence by commanding attitude control to fly reverse
 - (a) Command yawing torque ON and OFF
 - (b) Monitor yawing sequence
 2. Command SV pitch down sequence
 - (a) Monitor proper solenoid valves open
 3. Initiate Prearm - Monitor telemetry output
 4. Initiate arm
 - (a) Arm thrust cone delay
 - (b) Arm capsule programmer
 - (c) Turn on and monitor beacon
 - (d) Start back up timer.
- j. BUSS Monitoring. The following BUSS subsystem signals shall be monitored during terminal countdown:
 1. Gas Fill Temperature (BUSS)
 2. Gas Fill Pressure (BUSS)
 3. Execute Monitor (BUSS)

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4. Auxiliary Time Speed-Up (BUSS).

The following hardware control capability shall be available throughout countdown:

1. Command Reset (BUSS)
2. Solenoid Fill Valve (BUSS)
3. Command, BUSS - RF hardwire.

k. R/V Separation

1. Initiate transfer command from OC/V
 - (a) Actuate and monitor thermal battery simulator
 - (b) Actuate and monitor inflight disconnect simulated squibs
 - (c) Actuate and monitor pin puller simulated squibs.

l. Re-entry

1. Monitor spin up - firing of squib valve simulators
2. Monitor retro rocket firing - simulator squib
3. Monitor design - firing of squib valve simulators
4. Monitor thrust cone inflight separation simulated squibs
5. Initiate thrust cone separation - monitor simulators
6. Monitor telemetry re-entry sensors
7. Close simulated "g" switches in retrieval subsystem
8. Monitor sequence of retrieval events.

m. OC/V De-Orbit

1. Initiate OC/V spin

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2. Monitor roll nozzle valve opening
3. Monitor engine solenoid valves ON and OFF
4. Spin, deboost (solenoids and retroignition).

3.4.7.3 Equipment Descriptions

- a. The SV System Test Set (Item 82) shall consist of a four-bay metal upright cabinet containing the following:
 1. Counter
 2. Tracking, telemetry and command controls
 3. Oscilloscope
 4. System functions
 5. Ground power control
 6. Digital ohmmeter
 7. Separation controls and monitors
 8. Propellant tank temperature and pressure monitors
 9. Attitude controls and monitors
 10. 28 VDC test set power supply
 11. Logic power supply
 12. Power distribution
 13. Orbit functions
 14. Transwitcher
 15. Operation monitor

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16. 28 VDC ground control power supply
 17. Communications panel
 18. Attitude control
 19. Temperature monitor control
 20. Field operations panel.
- b. The SIGME (Item 88) - (Refer paragraph 3.4.3.2.3b.)
 - c. The Command Signal Generator (Item 89) - (See paragraph 3.4.3.3.3b.)
 - d. The Ground Power Unit (Item 91) - (See paragraph 3.4.3.2.3c.)
 - e. The BUSS Subsystem Checkout Test Set (Item 96) - (See paragraph 3.4.3.8.3c.)
 - f. The BUSS Attitude Control Test Set (Item 97) - (See paragraph 3.4.3.8.3b.)
 - g. The SV Simulated Flight Kit (Item 90) - (See paragraph 3.4.3.4.3b.)
 - h. The BUSS Auxiliary Equipment (Item 98) consists of the following components:
28 volt d. c. power supply; input power control box; d. c. digital voltmeter; special test harness; magnetometer checkout box, solenoid simulator; permanent magnet; electronic timer simulator and monitor; flight control electronics breakout box; magnetometer electronics breakout box; analog and event recorders; cabling; magnetometer alignment set; and a magnetometer T/M calibration unit.
 - i. The Antenna Coupler (Item 102) - (See paragraph 3.4.3.7.3c.)
 - j. The Beacon Checkout Test Set (Item 105) - (See paragraph 3.4.3.7.3a.)

3.4.8 Preparation for Transport

3.4.8.1 Requirements

Upon completion of all operations in the MAB and SV shall be made ready for transport to the MCB after certain environmental conditions and requirements are met. These environmental control requirements shall include:

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- a. Maintaining temperature of the Forward/Adapter Sections
- b. Maintaining temperature of the OC/V Section
- c. Maintaining temperature of TARS package.

3.4.8.2 Methods

The vertical transport tie-down ring shall be attached to the aft end of the SV mounted on its cradle and carriage. A heater control unit shall then be fastened to the S/V cradle and a 115 VAC power cord plugged into it.

The SV transportation blanket shall be installed over the Forward, Adapter, and OC/V sections of the SV and a common power cord from the SV transportation blanket plugged into the heater control unit. The test umbilical shall be disconnected and in its place a special TARS heater plug connected to the heater control unit.

The SV shall then be moved to the MAB loading platform on the SV work and assembly truck and roll-transferred onto the SV transporter. Once transferred, the rail adapters shall be locked in position and the two trunnion shafts of the SV vertical transport tie-down ring engaged with the transporter's pivot assemblies. The a. c. cable shall then be disconnected from the heater control unit and a d. c. cable leading from the transporter's battery pack shall be installed in its place to provide the power source required for both blankets and TARS while transporting the SV. The transporter tarpaulin shall then be closed and secured and the SV shall then be ready for transporting to the MCB.

3.4.8.3 Equipment Descriptions

- a. The SV Non-Magnetic Cradle (Item 10.2) - (See paragraph 3.4.2.3e.)
- b. The OC/V Assembly Carriage (Item 11) - (See paragraph 3.4.2.3f.)
- c. The SV Work and Assembly Truck (Item 26) - (See paragraph 3.4.2.3l)

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- d. The SV Vertical Transport Tie-Down Ring (Item 28) - (See paragraph 3.4.2.3m)
- e. The Heater Control Unit (Item 10.1) shall consist of a junction box for connections to the SV transportation blanket heaters and the TARS gyro heaters. The heater control unit shall connect to the transporter battery pack and shall be clamp-mounted to the OC/V cradle.
- f. The SV Transportation Blanket (Item 29.1) shall consist of an OC/V portion and an upper blanket portion. The OC/V portion shall consist of two sections held together by zippers. The upper blanket portion shall consist of a cap, a nose, and an adapter section held together by zippers. All blanket sections shall be constructed of neoprene or vinyl-coated cloth and shall contain heating elements, temperature sensors, and plug connector for connection to a monitor and control unit.
- g. The SV Transporter (Item 29) - (See paragraph 3.4.2.3n.)

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3.5 MAGNETOMETER CHECKOUT BUILDING (MCB)

AGE is required at the MCB during various testing operations.

3.5.1 Magnetometer Compensation and Calibration Tests

The following tests shall be performed on the SV at the MCB:

- a. Provide magnetic field direction and intensity for each of the three major axes
- b. Test and monitor signal and bias output levels for each axis
- c. Compensate and calibrate magnetometer
- d. Perform end-to-end gain checks of the P and Q sensors to their respective solenoids
- e. Monitor the firing of the pitch and yaw solenoids.

3.5.1.1 Requirements

The compensation and calibration of the tri-axis magnetometer shall be performed at the MCB in order to assure the capability of the magnetometer to provide information and intensity of the earth's magnetic field along each of the three major axes of the SV.

3.5.1.2 Methods

The assembled and blanketed SV shall be transported to the MCB, lifted in the SV non-magnetic cradle from the transporter by means of the installation sling and a facility crane, and placed upon non-magnetic supports on the indexed compass rose turntable. (Since the MCB shall be heated to a minimum 65⁰F the transportation blanket and the heater control unit shall be removed from the cradle. The heater control unit shall still be used to heat the TARS package. The unit must be at least 15 feet from the cradle.)

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During all magnetometer calibration and compensation operation at the MCB the magnetometer boom shall be in an extended position.

In order to compensate the P, R, and Q axes, the magnetometer electronics output for a given axis shall be nulled to "X" millivolts when that axis is perpendicular to north. ("X" represents the shift in null due to the difference between the compass rose and in-orbit field strengths.)

The magnetometer shall be operated in a magnetic field of 0.495 oersted. The bias output of each of these axes shall be 0.3 of the power supply voltage with 1% accuracy at an external load of one megohm. The signal output of each axis shall be equal to the bias output plus $2.5 \sin \phi$ ($\pm 5\%$) at an external load of one megohm. (ϕ is the angle of sensor axis to zero field intensity.) When the difference between the bias and signal outputs are equal to "X" the sensor shall be considered nulled. The noise on the signal output shall be less than 10 millivolts zero to peak. Any change in output in the positive sense shall correspond to a change in magnetic intensity in the positive sense.

An external 28 volt d-c power supply shall power the magnetometer and the flight control electronics package. A d-c digital voltmeter shall monitor the signal and bias output levels and a special test harness shall be utilized to bring out all interconnections through the four test access doors. A checkout box shall monitor the 28 volt d-c power supply as well as the signal and bias outputs of each of the three axes.

During end-to-end tests, solenoid simulators shall be required to monitor the firing of pitch and yaw axis solenoids. The SV shall be rotated in both directions from the nose north position with both the pitch and then the yaw axis horizontal. Each solenoid shall open and remain open at an angle less than 15.3° maximum, and shall close and remain closed at an angle greater than 6.5° minimum.

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Upon completion of magnetometer compensation and calibration the SV shall be prepared for transport to the Launch Complex at Pt. Arguello, California. Care shall be exercised to see that all environmental conditions for maintaining the temperature of the SV are met and that proper environmental power hook-up is made. (Refer to paragraph 3.4.8.2.)

3.5.1.3 Equipment Descriptions

- a. The OC/V Cradle (Item 10.2) - (See paragraph 3.4.2.3e)
- b. The Heater Control Unit (Item 10.1) - (See paragraph 3.4.8.3e)
- c. The AGE Fairing Set (Item 12) - (See paragraph 3.4.2.3g)
- d. The SV Transporter (Item 29) - (See paragraph 3.4.2.3p)
- e. The SV Transportation Blanket (Item 29.1) - (See paragraph 3.4.8.3g)
- f. The SV Installation Sling (Item 30) - (See paragraph 3.4.2.3q)
- g. The SV Non-Magnetic Support Stand (Item 43) shall consist of two aluminum supports each containing two roller assemblies to restrain, support, and rotate the assembled SV during magnetometer compensation and calibration.
- h. The BUSS Auxiliary Equipment (Item 98) - (See paragraph 3.4.7.3h)

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3.6 LAUNCH COMPLEX

AGE is required at the Launch Complex during various pre-launch operations.

3.6.1 General

The Launch Complex, for purposes of this specification, shall comprise two (2) launch pads (PAD), two (2) Launch and Service Buildings (LSB), a Launch Operations Building (LOB), and a Vehicle Support Building (VSB).

The following operations and tests shall be performed at the Launch Complex with the AGE provided (See figure 3-19):

- a. Mating of SV to Agena booster
- b. Verification of launch AGE interconnections
- c. System acceptance testing of SV in conjunction with Agena and Atlas vehicles
- d. Demating of SV from Agena booster and transport to VSB
- e. Preparing SV for flight
- f. Conducting final confidence test on SV and transport to PAD
- g. Final verification of launch AGE interconnections
- h. Final mating of SV to the Agena booster at the PAD
- i. Pad servicing
- j. Countdown

3.6.2 Verification of Launch AGE Interconnections

3.6.2.1 Requirements

The verification of launch AGE interconnections shall initiate the countdown required by the SSD launch controller to assure that each associate contractor is capable of beginning the countdown.

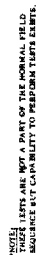


Figure 3-19. SV Flow, Launch Complex

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3.6.2.2 Methods

This task shall indicate that all stations are manned in the LOB, LSB, MAB, and the tracking stations; that communications are operative and clear; and that all physical connections are established between the airborne vehicle and the launch AGE.

3.6.2.3 Equipment Descriptions

- a. The Launch Complex Verification Unit (Item 115) shall serve to confirm the launch equipment interconnection. It shall also simulate the SV electrical interface (Umbilical and test connector) to the degree necessary to establish flight readiness confidence in the launch equipment.

3.6.3 Mating Operations

3.6.3.1 Requirements

The environmental conditions and requirements outlined in Paragraph 3.4.8 must be maintained as the SV is transported to the PAD as well as during all mating operations at the PAD.

3.6.3.2 Methods

After the SV arrives at the PAD the SV transporter shall be properly positioned directly under the gantry hoist and the transporter tarpaulin cover telescoped open toward the forward end of the transporter. Swing bolts holding the OC/V cradle to the OC/V assembly carriage shall then be loosened and cleared.

The heater control unit shall be disconnected from the transporter's battery pack and an ac power cable, located midway up the missile service tower, connected in its place. The mating sling shall be attached to the SV cradle and the SV rotated about the pivot point from a horizontal to a vertical attitude. (Before raising SV to a vertical position, the upper fly-away blanket shall be installed.)

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Prior to hoisting the SV to the working level of the missile service tower and into position over the Agena vehicle, the trunnions of the SV vertical transport tie-down ring shall be freed from the pivot assemblies of the transporter.

Once positioned, a load balancing feature of the mating sling shall permit precise manual positioning of the SV as it is lowered onto the Agena. Access doors in the Agena shall permit torquing of the connecting bolts and electrical hook-up.

The umbilical adapter plug from the heater control unit shall then be disconnected and the umbilical shall be hooked-up. The upper blanket around the Forward/Adapter sections shall be disconnected from the heater control unit and connected to its power cable located on the umbilical mast. The OC/V portion of the transportation blanket and the SV cradle shall then be removed and the OC/V temperature control blanket installed to the OC/V section and connected to its umbilical mast power cable.

3.6.3.3 Equipment Descriptions

- a. The SV Transporter (Item 29) - (See paragraph 3.4.2.3n)
- b. The SV Non-Magnetic Cradle (Item 10.2) - (See paragraph 3.4.2.3e)
- c. The OC/V Assembly Carriage (Item 11) - (See paragraph 3.4.2.3f)
- d. AGE Fairing Set (Item 12) - (See paragraph 3.4.2.3g)
- e. The Heater Control Unit (Item 10.1) - (See paragraph 3.4.8.3e)
- f. The SV Mating Sling (Item 27) shall consist of a spreader bar with integral load balancers and wire rope legs.
- g. The SV Vertical Transport Tie-Down Ring (Item 28) - (See paragraph 3.4.2.3m)
- h. The Upper Blanket (Item 7.1) - (See paragraph 3.6.4.3h)

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- i. The OC/V Transportation Blanket (Item 29.1) - (See paragraph 3.4.8.3f)
- j. The OC/V Temperature Control Blanket (Item 8.1) - (See paragraph 3.6.4.3h)

3.6.4 System Acceptance Test

The SV shall be interconnected with the launch AGE as shown in Figure 3-20. This configuration shall be identical to the launch configuration with the exception that the SV Simulated Flight Kit (Item 90) shall be installed in the vehicle.

3.6.4.1 Requirements

- a. To verify mechanical compatibility of the flight configuration
- b. To verify electrical compatibility of the flight configuration
- c. To demonstrate performance of the SV in its launch configuration
- d. To demonstrate effectiveness of crew, equipment and procedures in the performance of a launch countdown.

3.6.4.2 Methods

The system acceptance test method shall be identical to the system test method as outlined for the Missile Assembly Building (MAB). (See paragraph 3.4.7.2.)

3.6.4.3 Equipment Descriptions

- a. The LSB Power and Distribution Unit (Item 112) shall be located in the LSB transfer room. It shall contain terminations for all cables run up to the umbilical mast and distribution to the SV monitor equipment, command signal generator, and LOB signal and distribution unit. The ground power supplies providing power to the SV shall also be contained in this unit. During most test conditions the unit shall be remotely operated from the launch control console.

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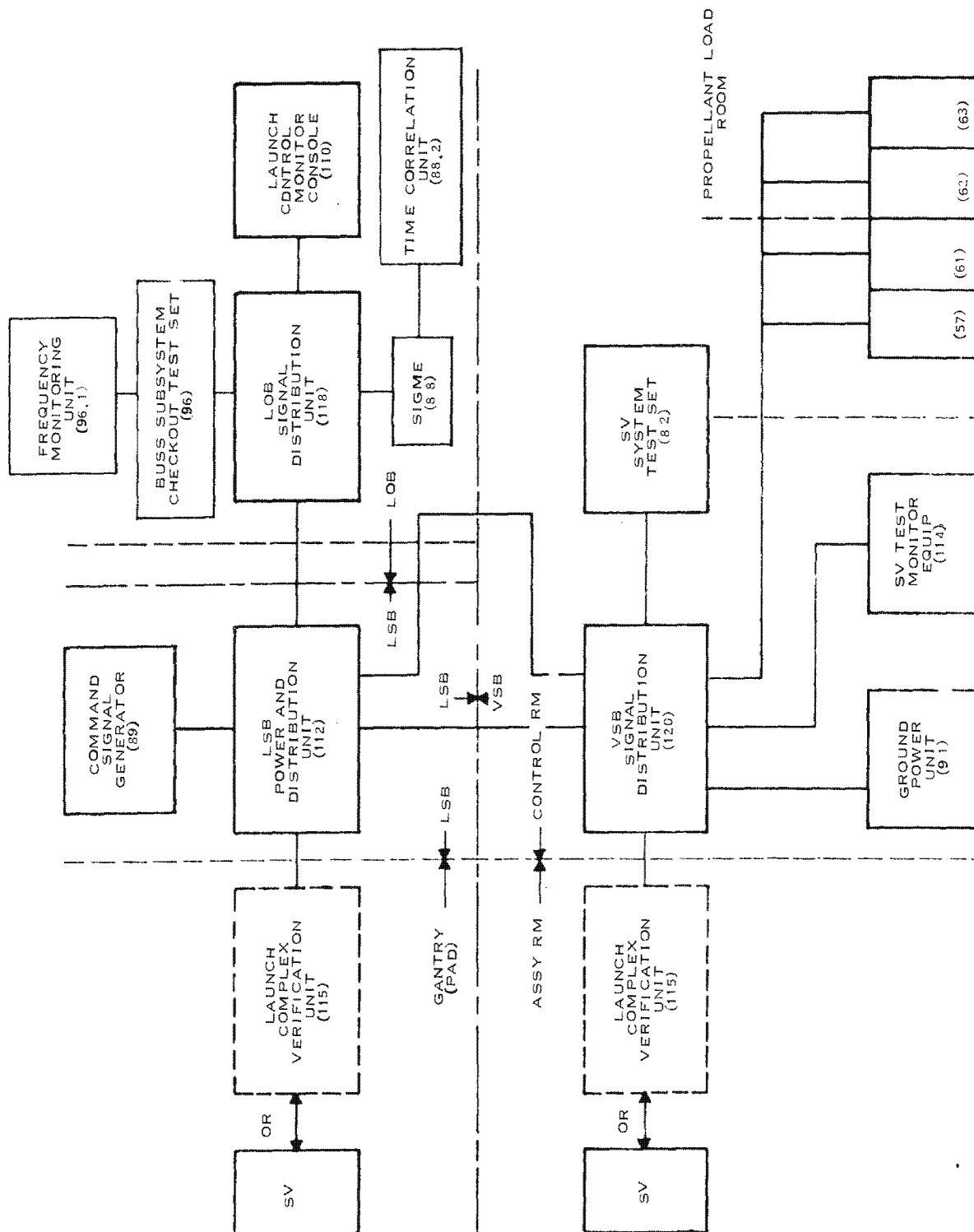


Figure 3-20. Block Diagram, Launch Complex Interconnections

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- b. The SV Test Monitor Equipment (Item 114) shall contain all the analog and galvo recorders necessary for monitoring the hardwire. The test panel of the power and distribution equipment shall remotely control the recorders and supply the recorder inputs from its termination unit.
- c. The Command Signal Generator (Item 89) - (See paragraph 3.4.3.3b)
- d. The LOB Signal Distribution Unit (Item 118) shall be located in the LOB. It shall be the distribution point between the LOB and the LSB. From this point all the distribution of cabling between the launch control console and SIGME in the LOB, and the cabling connecting to the LSB, shall be made. It shall also contain a self-check subassembly, controls for standby operation of the stabilization subsystem heaters, and a stabilization monitor.
- e. The Launch Control Console (Item 110) shall comprise a desk type console containing three panels of controls and monitors. The monitor functions shall include vehicle environment "power on," launch and checkout status, and BUSS monitoring.

The console shall remotely control the Command Signal Generator, the power distribution equipment, and the BUSS subsystem during simulated flight and count-down. Remote controls for operation of the Command Signal Generator include: search, transmit, stop, reset, encoder, self-check, enable, and address select. Typical Command Signal Generator monitors include CSG on remote, tape running, tape off reel, address readout, bit count error, bit count running, tape off reel, address readout, bit count error, bit count parity, accept, reject, word not verified, word end, and address end. Other console monitors shall include clock status and vehicle mode of operating during validation testing.

- f. The SIGME (Item 88) - (See paragraph 3.4.3.2.3b)
- g. The Launch Complex Verification Unit (Item 115) - (See paragraph 3.6.2.3a)
- h. The Upper Blanket (Item 7.1); the OC/V Temperature Control Blanket (Item 8.1); the OC/V Internal Cooling Disconnect (Item 9); the Adapter Internal Cooling Disconnect (Item 7.2) - These end items shall be required to maintain a pre-determined controlled environment for the SV throughout launch complex testing and countdown. The conditioned air supply for the cooling blankets and internal cooling disconnects shall be supplied from existing PAD facilities.

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1. The Upper Blanket (Item 7.1) shall consist of three sections including a skull-cap section, a Forward section, and an Adapter section. The blanket shall be constructed of synthetic material and shall contain three major components: an insulation, an inner skin, and a heavy-duty outer skin. Each section shall be equipped with a tear-open zipper for quick attachment and quick separation. The complete blanket shall be formed to the configuration of the Forward and Adapter Sections and shall contain heating wires. It shall be manually installed on the assembled vehicle with attaching provisions for a retractable lanyard. The Adapter section of the blanket shall be removable in order to place the Antenna Coupler (Item 102) on the PAD.
2. The OC/V Temperature Control Blanket (Item 8.1) shall be of synthetic double-wall construction containing integral air passages, integral cooling air supply duct, temperature sensors, resistance heating elements and controls, signal and power leads, a solar shield, and a tear-open zipper closure. The antenna protuberance shall be provided with a zippered access opening to permit antenna erection during testing operations with the blanket installed around the vehicle.
3. The OC/V Internal Cooling Disconnect (Item 9) shall consist of an insulated flexible hose terminated at one end in a coupling and at the opposite end in a quick disconnect. The coupling shall mate to the umbilical boom air coupling and the quick disconnect end shall mate to the OC/V air inlet.
4. The Adapter Internal Cooling Disconnect (Item 7.2) shall consist of an insulated flexible hose terminated at one end in a coupling for mating to the umbilical boom air coupling. The opposite end shall terminate in a quick disconnect for mating to the Adapter Section air inlet.
- i. The Environmental Heater Control Unit (Item 112.1) shall consist of a single bay console containing 8 magnetic amplifier units. This equipment shall be required at the LSB to provide power for the stabilization stand-by heaters and to provide power to the SV transportation blankets.
- j. The BUSS Subsystem Checkout Test Set (Item 96) - (See paragraph 3.4.3.8.c)

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3.6.5 Flight Preparation

3.6.5.1 Requirements

After successful completion of the system acceptance tests at the PAD, the SV shall be demated and transported to the VSB. The following operations and tests shall be performed in this building:

- a. Disassemble the SV; remove simulated flight kit
- b. Install and connect flight batteries, GFE package, pyrotechnics, and arming devices
- c. Perform stabilization end-to-end test
- d. Perform leak checks on propellant systems, nitrogen pressurant system, spin and de-spin systems, stabilization system, and BUSS
- e. Load high pressure gases
- f. Align "live" R/V engine
- g. Assemble the SV.

3.6.5.2 Methods

- a. Disassembly and installation of components. (Follow same procedures and equipment as used in the MAB. Refer to paragraph 3.4.2.)
- b. Leak testing. (Follow same procedures and equipment as used in the MAB. Refer to paragraph 3.4.6.)
- c. Flight battery installation. Prior to installation, the flight batteries shall be leak tested and manually activated and loaded in accordance with component requirements. Battery leakage shall be determined by the pressure drop versus time method. A drip-type activation kit supplying a small dummy load shall be used to activate the battery and to determine its capacity.

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The OC/V shall be rotated in its cradle and carriage assembly in order to expose the battery access doors. A special installation fixture shall then be attached to a battery handling fixture and lifted by use of the universal sling, a load balancer, and an overhead hoist.

- d. High pressure nitrogen loading. Nitrogen gas systems shall first be purged by pressurizing to approximately 50 psi and then vented. This cycle shall be repeated as required to reduce the moisture content in the system. A trailer-mounted supply shall be used to supply the high pressure nitrogen for loading the nitrogen system. Control of the loading process shall be maintained at a wall mounted control panel. Pressure and temperature relationships shall be used to determine that the correct amount of gas has been delivered.
- e. Freon loading. The Freon system in the SV shall be purged by evacuating and then by filling to a low pressure. This cycle shall be repeated as often as required. A permanently installed floor mounted supply including a compressor shall be used with hard lines for delivery.

The pressure in the storage bottles and the vehicle tanks shall be equalized and then a diaphragm type compressor used to boost the vehicle tank pressure to approximately 100 psi above operating pressure. When this pressure has been reached the vehicle tanks shall be valved-off and the compressor shut down. The excess Freon gas shall be bled back into the supply through a back pressure regulator until the correct amount of gas remains in the vehicle tanks. Moisture content shall be sampled during this bleed back operation.

- f. Personnel training. A test satellite shall be utilized at the VSB and the PAD to serve as a training aid for instructing personnel in the proper procedures and techniques in loading and unloading propellants, loading gases, and checking out air conditioners and cooling blankets.

3.6.5.3 Equipment Descriptions

- a. The Battery Handling Fixture (Item 18) shall consist of a tubular aluminum weldment with four stand-off studs for fastening to a battery case.
- b. The Battery Installation Fixture (Item 18.1) shall consist of a "c" shaped aluminum frame with sling pickups on the upper arms and vise-type battery pickups on the lower arm.

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- c. The Battery Leak Rate Detector - (Item 60) shall consist of a portable suitcase-type unit constructed of aluminum. It shall contain a flexible gas hose for mating with the batteries; an inlet for mating with the gas servicing unit; a large pressure gauge; and associated pneumatic tubing and valves.
- d. The Battery Load Test Set (Item 85) shall comprise a portable unit of welded aluminum construction. It shall consist of a voltage and current monitor containing load resistors, sensing circuits, and timing circuits.
- e. The SV Plumbing Leak Rate Detector (Item 61) - (See paragraph 3.4.6.3a)
- f. The High Pressure Nitrogen Supply (Item 58) - (See paragraph 3.4.6.3b)
- g. The Cold Gas Supply (Freon) - (Item 57) shall consist of the Freon 14 (CF₄) cylinders, a diaphragm type compressor, and associated piping, regulators, gauges, safety and monitoring devices mounted in a compact assembly.
- h. The Facilities Checkout Vehicle (Item 74) shall comprise a training satellite vehicle of the same physical configuration as that of a flight vehicle. The structure of the checkout vehicle shall be of semi-monocoque aluminum and shall contain bolted separations to afford handling ease. The test satellite shall also contain support brackets for tanks, plumbing and harnesses as well as hardware connections for the following: loading propellants, tanks, burst discs, disconnects, temperature sensors, pressure transducers, relay box, and all associated plumbing. The vehicle shall also contain an aft-mounted BUSS module containing a tank, plumbing, and a quick-disconnect.
- i. The High Pressure Helium Supply (Item 59) - (See paragraph 3.4.6.3c)

3.6.6 Final Assembly Tests

3.6.6.1 Requirements

After the SV has been prepared for flight it shall undergo a final test in the VSB prior to movement to the PAD. The following tests shall be performed:

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- a. Check continuity loops after pyrotechnic installation
- b. Monitor temperature and pressure of high pressure gas tanks
- c. Turn on vehicle by application of ground power
- d. Monitor flight batteries
- e. Monitor pyrotechnic circuit
- f. Control vehicle turn-on procedure
- g. Insert commands into vehicle
- h. Monitor vehicle via hardwire telemetry hook-up

3.6.6.2 Methods

The SV System Test Set (Item 82) shall provide controls, monitors, and recorders for conducting functional tests on the assembled SV. The test arrangement shall include a closed loop link with the Command Signal Generator (Item 89) located in the LSB and the SIGME (Item 88) located in the LOB. The Ground Power Unit (Item 91) shall be used to turn on the vehicle, monitor flight batteries and supply ground power during all tests. The VSB Signal Distribution Unit (Item 120) shall control the turn-on procedure for the vehicle and shall control the commands sent from the Command Signal Generator to the vehicle. The distribution unit shall also monitor and visually indicate any unsafe condition in the gas systems, propellant systems and pyrotechnics. It shall also control the application of power to the vehicle environmental heaters and blowers as required during tests.

3.6.6.3 Equipment Descriptions

- a. The Command Signal Generator (Item 89) - (See paragraph 3.4.3.3.3b)
- b. The SIGME (Item 88) - (See paragraph 3.4.3.2.3b)
- c. The Ground Power Unit (Item 91) - (See paragraph 3.4.3.2.3c)
- d. The VSB Signal Distribution Unit (Item 120) shall consist of the following:

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1. Command control panel
2. Temperature and pressure monitor panel
3. Continuous loop panel
4. Power distribution panel
5. Power supply
6. Patch boards
7. Cabling
8. Junction boxes
9. Storage drawer

The above equipment shall be housed in a four-bay, free-standing, upright metal cabinet, and shall provide signal interconnection between the AGE located in the VSB and the AGE located in the LSB.

- e. The SV System Test Set (Item 82) - (See paragraph 3.4.7.3a)

3.6.7 Final Verification of Launch AGE Interconnection - (See paragraph 3.6.2)

3.6.8 Final Mating Operation - (See paragraph 3.6.3)

3.6.9 Countdown

3.6.9.1 Requirements

The countdown shall consist of the following operations:

- a. Pre-verification of launch AGE interconnection
- b. Verification of launch AGE interconnection

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- c. Closed loop TT&C checks
- d. Open loop range RF checks
- e. Open loop satellite system check
- f. Pad servicing
- g. Service tower removal
- h. Terminal countdown
 - 1. Manual initialization ON
 - 2. Servo disable ON
 - 3. Reset and hold clock
 - 4. Apply external power
 - 5. Enable T/M hardwire
 - 6. TT&C ON
 - 7. Prelaunch preset
 - 8. Turn off external power
 - 9. Turn on internal power
 - 10. TT&C ON
 - 11. Orbital mode transfer
 - 12. Erase delay lines from T/A
 - 13. Load flight program from T/A
 - 14. Load secure program
 - 15. Release clock and verify
 - 16. Manual initialization ON
 - 17. TT&C ON.

3.6.9.2 Methods

- a. Pre-verification of launch AGE interconnections. (A preliminary run-down of the requirements as set forth in paragraph 3.6.2.)

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- b. Verification of launch AGE interconnections. (Refer to paragraph 3.6.2.)
- c. Closed loop TT&C checks shall be required to ascertain that all electrical connections are continuous as part of the countdown procedure. This phase shall include energizing the Satellite Vehicle (SV), closed loop, through the command and telemetry hardwires in order to set up the data reduction capability included in SIGME (Item 88). Each hardwire control shall be exercised and monitored to confirm the launch interconnection. All controls shall be initiated from the SV Launch Control and Monitor Console (Item 110), or the LSB Power and Distribution Unit (Item 112). Hardwire monitors shall be observed at the SV Launch Control and Monitor Console, the LSB Power and Distribution Unit, and the SV Test Monitor Equipment (Item 114).
- d. Open loop range RF checks shall ascertain that range monitors are calibrated and can receive the SV telemetry and tracking signals. Range time shall be required during this task. This SV shall be energized via the video link. The rate beacon and S-band beacon shall be interrogated by the Vandenberg tracking station. All applicable range telemetry stations shall acquire the SV and evaluate the telemetry links. All controls of the SV shall remain with the launch AGE since critical monitors shall be observed during this activity.
- e. Open loop satellite system checks shall evaluate the performance of the SV. Range time shall be required during this activity. The Vandenberg tracking station shall be required to transmit pre-selected commands to the SV. All data reduction and evaluation shall be performed at the MAB ground station by use of the SIGME (Item 88) and the SIGME Adapter (Item 88.1). Evaluation shall include the command, tracking, telemetry, orbit adjust, attitude control, environmental, and electrical power subsystems. It shall be performed on both internal and external power.
- f. Pad servicing. After final mating to the Agena, and prior to the terminal countdown, the following operations shall be performed on the Satellite Vehicle (SV):
 - 1. Connect internal cooling disconnects
 - 2. Install the Upper Blanket
 - 3. Install the OC/V Temperature Control Blanket
 - 4. Connect umbilical connector
 - 5. Connect all servicing connectors

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6. Load propellants

7. Load BUSS.

The propellant systems in the satellite shall be purged by evacuating and filling the systems with nitrogen gas at a low pressure. The purging cycle shall leave the vehicle systems under a vacuum for loading.

All personnel in the loading area shall be required to wear protective clothing during loading operations.

At the base of the gantry, servicing units shall serve as both supply and control centers for each propellant. Nitrogen, vacuum, propellant and prepressurant hard lines shall lead up to and connect to gantry-mounted control units. These lines shall interface with the SV through the control units.

Before weighing, propellants shall first be pumped up the propellant lines and into each control unit. Each propellant line shall then be opened remotely from the servicing units, delivered to respective vehicle tanks, and weighed.

One vapor detector system shall be positioned on the SV working level of the service tower with readouts and alarms located at the loading area. Another vapor detector system shall be contained within the SV for detecting internal SV leakage and shall be connected to an LMSC vapor detector located and monitored at the LOB.

- g. Service tower removal shall include the disconnection of the test connector catenary between the SV and the umbilical top connector plate, and verification of connection of all lanyards and quick disconnects on the electrical umbilical, the blankets (Items 7.1 and 8.1) and the cooling disconnects (Items 7.2 and 9). These tasks shall require a physical inspection prior to tower withdrawal. All personnel shall be required to vacate the PAD area at the conclusion of this activity.
- h. The BUSS pneumatic system storage tanks shall be topped-off (by LMSC) to a pressure of 3600 psia with 100% Freon.
- i. Heat the stabilization pneumatic tanks to specified lift-off pressure and temperature.
- j. Terminal countdown shall include the final countdown through lift-off. Range time shall be required. All telemetry shall be monitored at the MAB ground station by the SIGME Adapter (Item 88.1) while SIGME (Item 88) shall monitor specific critical functions during the countdown via the telemetry hardwire. Communications shall be required between the MAB ground station and the LOB operating personnel.

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The SV shall be placed in flight configuration by energizing the TT&C subsystems and the stabilization subsystem. All gyros shall be brought up to speed and the inertial platform shall be erected and electrically caged. All controls shall be afforded the SV Launch Control and Monitor Console (Item 110). After transferring the vehicle to internal power, the flight programmer shall be loaded by the VERLORT air link. A manually initiated commit signal shall be required in order to start the SV clock. Television camera coverage shall be required of the SV electrical umbilical and air disconnect through lift off.

3.6.9.3 Equipment Descriptions

- a. The Upper Blanket (Item 7.1) - (See paragraph 3.6.4.3h)
- b. The OC/V Temperature Control Blanket (Item 8.1) - (See paragraph 3.6.4.3h)
- c. The OC/V Internal Cooling Disconnect (Item 9) - (See paragraph 3.6.4.3h)
- d. The Adapter Internal Cooling Disconnect (Item 7.2) - (See paragraph 3.6.4.3h)
- e. The Gantry Fuel Equipment (Item 70) shall consist of a junction box, gantry-mounted, including remotely operated valves, driers, filters, electrical connectors, vacuum pumps, heater unit, and flex lines for connection to the SV. A fuel vapor detector shall function as a monitoring device in conjunction with the fuel equipment.
- f. The Gantry Oxidizer Equipment (Item 71) shall be similar to Item 70 above except an oxidizer vapor detector shall function as the monitoring device in conjunction with the oxidizer equipment.
- g. The Propellant Carrier (N_2O_4) - (Item 53) shall consist of a portable aluminum rack device mounted on caster rollers and designed to support two manifold connected 156-pound tetroxide cylinders.
- h. The LSB Power and Distribution Unit (Item 112) - (See paragraph 3.6.4.3a)
- i. The SV Test Monitor Equipment (Item 114) - (See paragraph 3.6.4.3b)
- j. The Command Signal Generator (Item 89) - (See paragraph 3.4.3.3.3b)
- k. The LOB Signal Distribution Unit (Item 118) - (See paragraph 3.6.4.3d)

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- l. The SV Launch Control and Monitor Console (Item 110) - (See paragraph 3.6.4.3e)
- m. The SIGME (Item 88) - (See paragraph 3.4.3.2.3b)
- n. The Launch Complex Verification Unit (Item 115) - (See paragraph 3.6.2.3a)
- o. The Satellite Digital Data Encoder (Item 125) shall consist of a three-bay cabinet containing logic power supplies, a tape reader, a time display, a control panel, and a connector panel. The unit shall function either as a fully automatic link between the Satellite Tracking Annex lines and the tracking station transmitters or the code manual command word inputs. (This is an existing equipment item on a previous contract.)
- p. The Satellite Vehicle Manual Control Console (Item 126) shall consist of a two-bay cabinet containing a control and monitor panel and provisions for the installation of a communications panel and a system clock.
- q. The Ground Tracking Station Test Set (Item 127) shall consist of a single-bay unit containing an S-band horn, and S-band receiver, a decoder, a telemetry transmitter, and a telemetry antenna. This equipment shall be required to simulate the function of the vehicle command subsystem for closed loop testing of the ground tracking station command transmission link. (This is an existing equipment item on a previous contract.)
- r. The Propellant Servicing Unit (N_2O_4) - (Item 62) shall consist of a casted unit with an enclosure containing the fuel storage tank, a propellant vacuum pumping unit, a propellant positive pressure pumping system, cylinders of compressed nitrogen, integral flow control panel with associated plumbing, complete nitrogen purge system, N_2O_4 exhaust system, and a fire extinguisher.
- s. The Propellant Servicing Unit (N_2H_4) - (Item 63) shall essentially be the same as Item 62 except that it shall handle N_2H_4 propellant.
- t. The Fuel Handler's Suit (Item 67) shall consist of an acid (splash) type suit providing personnel protection, but without breathing apparatus. The suit shall be made of rubberized material with a protective hood, gloves, and boots.

On stand-by, to relieve personnel using the above suits in case a fuel leak occurs, shall be two men wearing graylite type suits. These suits shall be non-inflammable with protective hoods, gloves, and boots and shall provide air breathing apparatus.

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- u. The Manual Vapor Detector Kit (Item 68.1) shall be a portable unit consisting of a nitrogen dioxide detector and a universal kit for detection of hydrazine vapors. The unit shall be a one-shot device with replaceable reagents.

APPENDIX 27
COMMAND AND CONTROL
COMPUTER PROGRAM
MILESTONE 3

THIS DOCUMENT CONTAINS 7 PAGES

DIN: 64SD4911

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COMMAND AND CONTROL
COMPUTER PROGRAM

MILESTONE 3

GINTERP

CONTRACT NO. AF04(695)-155

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LIST OF EFFECTIVE PAGES

This document contains 7 pages, consisting of the following:

Title

A

1 through 5

INTRODUCTION

This document is a Milestone 3 for the GINTERP general subroutine. This routine will be used to interpret command bit patterns into corresponding COMMAND DESCRIPTORS which appear in various output listings. **This** routine will provide a significant measure of protection against command bit pattern errors.

1.0 GINTERP General Subroutine

1.1 General

The purpose of GINTERP is to interpret command bit patterns into corresponding COMMAND DESCRIPTORS for all of the defined command types (DSPC's 1, 2, 3, 4, 5, 6; SSPC's 1, 2; RTC's, Hybrids). This routine will interface and perform this output function for all command-handling modules which produce command listings.

The incorporation of the GINTERP function will accomplish two highly desirable objectives, (1) provide an additional protection against command bit pattern errors and (2) provide the required COMMAND DESCRIPTOR growth capability for future vehicles (available characters/spaces).

In more detail, Objective (1) will remove the possible error condition which now exists, whereby a seemingly correct COMMAND DESCRIPTOR can be printed out while the corresponding stored bit pattern is incorrect. GINTERP will thus perform a further operational check against (a) data flow errors within the computer and (b) incorrectly stored command bit patterns. Potential command bit pattern errors could still occur but system checks performed in GCOMPAT and by command-checking personnel should detect them.

Objective (2) will erase the present limitation on output listings of a maximum size of 24 characters/spaces for a COMMAND DESCRIPTOR. This maximum size limitation will not be acceptable in the near future due to additional commandable functions (for vehicle 965 and subsequent). This trend is expected to continue in the foreseeable future. GINTERP must have the capability to generate COMMAND DESCRIPTORS of at least 40 characters/spaces. The present

output listing formats of the command-handling modules have an allotted printing space of 32 characters/spaces per COMMAND DESCRIPTOR. For the present and near future this would seem to be sufficient to accommodate the anticipated new commandable functions. Only minimum logic changes to the command-handling modules to interface with GINTERP should be required to utilize a 32 characters/space COMMAND DESCRIPTOR. No revision of output format will be required for these modules. At some later date it may be necessary to alter these output formats; however, GINTERP will be designed to handle COMMAND DESCRIPTORS of at least 40 characters/spaces.

Another valuable asset of GINTERP will be the added confidence factor realized in the "SPEC" mode of GCOMMAND. At present, the full value of SPEC has not been utilized. The use of SPEC (even though it performs its function adequately) is avoided largely because of the method in which it prints out the COMMAND DESCRIPTOR of newly defined commands. If the desired command does not exist in COMIAB a new command is generated, stored, and assigned an available command number. However, this new command has no defined COMMAND DESCRIPTOR and is listed on outputs as, simply, "New Command". The verification of correct operation of SPEC now requires a painstaking check of the bit pattern listed in GCOMINT for each case of a "New Command". The GINTERP routine will obviously be beneficial to delete this tedious check since the actual COMMAND DESCRIPTOR of the "New Command" would be listed and could be verified by the normal command checking process. Confident use of SPEC will represent a significant step in utilizing the full flexibility of the C&C System.

2.0 LOGIC/DECISIONS:

2.1 Command bit patterns, in a predetermined order assigned by a particular command handling module, are input to GINTERP. GINTERP will examine each of the respective bit patterns, identify command type (DSPC, SSPC, RTC, Hybrid) and generate the corresponding BCD COMMAND DESCRIPTOR. This BCD COMMAND DESCRIPTOR will then be output for processing by the respective module.

When a bit pattern is non-recognizable, error statements (with the command identified) will be printed. Non-recognizable bit patterns will be comprised of the following:

- (a) Spare bit is in "1" state.
- (b) A matrix combination of bits is not defined. Hybrids, RTC's, TIMER RESET, DUMMY SSPC, PO/PS/PR, roll angles, etc. will all be considered as a matrix combination of bits.
- (c) Improper word defining bit for a given SPC.
- (d) COMMAND DESCRIPTOR exceeds maximum character/space limitation (max. value stored in MPES).

Error statements will not stop the running of the program. In the case of DSPC #1, no testing of the secure key will take place.

3.0 OPTIONS:

3.1 The GINTERP routine will be so designed to accomplish the following options on a vehicle to vehicle schedule.

- (a) Interpret COMMAND DESCRIPTORS up to or greater than 40 characters/spaces in length.
- (b) Interpret COMMAND DESCRIPTORS according to Function Abbreviations listed in the "then current" Command Definition

Specification. This will require flexibility in adding/deleting command functions/command matrices for a given command type.

- (c) Order in which the Command Abbreviations are assembled in a COMMAND DESCRIPTOR should be variable. The current practice of left to right interpretation of bits may change as in the case of widely spaced matrix bits.

4.0 INPUT: (from core buffer)

- (a) Command bit patterns corresponding to each type of DSPC, SSPC, RTC's, and Hybrids.

5.0 OUTPUT: (a) (to core buffer)

BCD COMMAND DESCRIPTORS

- (b) on-line print: error statements if bit pattern is undefined for reasons listed above. Identify command in error.

6.0 INTERFACES:

This general subroutine will be utilized by the following command-handling modules:

GCOMMAND

GTELM

GPROFILE