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★
TECHNICAL MANUAL

FIELD MAINTENANCE

LAUNCH COMPLEX FACILITIES CONSOLE

OA-2436(XAA-2)/GJQ-11

327N2130000-009

OA-2436(XAA-3)/GJQ-11

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Page No.	Issue
*Title.....	16 Jun 64 ✓
*A.....	16 Jun 64 ✓
i thru iii.....	Original ✓
iv.....	15 May 63 ✓
1-1 thru 1-15.....	Original ✓
2-1.....	Original ✓
3-1.....	Original ✓
4-1/5-1/6-1.....	Original ✓
7-1 thru 7-58.....	Original ✓
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TABLE OF CONTENTS

Section		Page
I	DESCRIPTION AND LEADING PARTICULARS	1-1
	1-1 Purpose of Manual	1-1
	1-4 Purpose of Launch Complex Facilities Console	1-1
	1-6 Description	1-1
	1-8 Leading Particulars	1-1
	1-10 Location and Function of Operating Controls and Indicators	1-1
II	PREPARATION FOR USE AND RESHIPMENT.	2-1
III	TEST EQUIPMENT AND SPECIAL TOOLS	3-1
	3-1 Test Equipment	3-1
	3-3 Special Tools	3-1
IV	THEORY OF OPERATION	4-1, 5-1, 6-1
V	DESCRIPTION OF SYSTEM TIE-IN OF EQUIPMENT AND ACCESSORIES.	4-1, 5-1, 6-1
VI	CHECKOUT AND ANALYSIS	4-1, 5-1, 6-1
VII	MAINTENANCE INSTRUCTIONS, LAUNCH COMPLEX FACILITIES CONSOLE	7-1
	7-1 Scope of Section.	7-1
	7-3 Circuit Description	7-1
	7-5 Block Diagram Analysis	7-1
	7-9 Detailed Circuit Analysis	7-3
	7-15 Test Setup.	7-6
	7-17 Checkout	7-6
	7-19 Trouble Analysis	7-36
	7-21 Disassembly	7-36
	7-23 Cleaning	7-50

Section	Page
7-25 Inspection	7-50
7-27 Repair and Replacement	7-50
7-29 Flasher Verify Switch	7-52
7-31 Pushbutton Indicators and Indicators	7-52
7-36 Lamp Verify and Buzzer Verify Switches	7-54
7-38 Lubrication	7-54
7-40 Reassembly	7-54
7-42 Adjustments	7-54
7-44 Checkout After Reassembly	7-54
DIFFERENCE DATA SHEET	7-57
GLOSSARY	G-1
ALPHABETICAL INDEX	1

LIST OF ILLUSTRATIONS

Number	Title	Page
1-1	Launch Complex Facilities Console	1-2
1-2	Table of Leading Particulars	1-2
1-3	Table of Operating Controls and Indicators (Sheet 1 of 11)	1-3
1-4	Front Panel Operating Controls and Indicators	1-14
1-5	Back Panel Operating Controls and Indicators	1-15
3-1	Table of Test Equipment	3-1
7-1	Launch Complex Facilities Console Block Diagram	7-2
7-2	Monitoring Circuit Simplified Schematic	7-4
7-3	Self-Verify Circuits Simplified Schematic	7-5
7-4	Table of Checkout Procedures for Ground Guidance Indicators	7-7

Number	Title	Page
7-5	Table of Checkout Procedures for Common Facilities Indicators (Sheet 1 of 3) .	7-8
7-6	Table of Checkout Procedures for Launcher NO. 1 Indicators (Sheet 1 of 6) . . .	7-11
7-7	Table of Checkout Procedures for Launcher NO. 2 Indicators (Sheet 1 of 6) . .	7-17
7-8	Table of Checkout Procedures for Launcher NO. 3 Indicators (Sheet 1 of 6) . .	7-23
7-9	Table of Checkout Procedures for Lamp Verify Circuit (Sheet 1 of 5)	7-29
7-10	Table of Checkout Procedures for Flasher Verify Circuits	7-34
7-11	Table of Checkout Procedures for Buzzer Verify Circuits	7-35
7-12	Table of Trouble Analysis Procedures for Fuel Vapor Indicator	7-37
7-13	Table of Trouble Analysis Procedures for Lamp Verify Circuits (Sheet 1 of 6) .	7-38
7-14	Table of Trouble Analysis Procedures for Flasher Verify Circuits	7-44
7-15	Launch Complex Facilities Console Schematic (Sheet 1 of 3)	7-45
7-16	Launch Complex Facilities Console Parts Location (Sheet 1 of 2)	7-48
7-17	Table of Inspection of Parts	7-51
7-18	Repair of Pushbutton Indicator	7-53
7-19	Military Standard Electrical and Electronic Symbols	7-55
7-20	Non-Standard Electrical and Electronic Symbols	7-56
7-21	Launch Complex Facilities Console, Part NO. 327P2130000-009	7-58
7-22	Table of Leading Particulars, Part NO. 327P2130000-009	7-58
7-23	Table of Operating Controls and Indicators, Part NO. 327P2130000-009	7-59
7-24	Table of Checkout Procedures for Ground Guidance Indicators, Part NO. 327P2130000-009	7-60
7-25	Table of Checkout Procedures for Common Facilities Indicators, Part NO. 327P2130000-009 (Sheet 1 of 2)	7-61
7-26	Front Panel Operating Controls and Indicators, Part NO. 327P2130000-009 . .	7-63
7-27	Back Panel Operating Controls and Indicators, Part NO. 327P2130000-009 . .	7-64
7-28	Launch Complex Facilities Console Schematic, Part NO. 327P2130000-009 (Sheet 1 of 3)	7-67
7-29	Launch Complex Facilities Console Parts Location, Part NO. 327P2130000-009 (Sheet 1 of 2)	7-70

INTRODUCTION

This manual is one of a series of field maintenance manuals covering the SM68 missile weapon system, ground operating equipment (GOE), and ground based chassis (GBC). This manual contains all instructions needed by personnel to perform field maintenance on the launch complex facilities console, including description and leading particulars, checkout and trouble analysis, and maintenance instructions. The field maintenance instructions in this manual are to be performed on the launch complex facilities console at the control center.

LIST OF APPLICABLE TIME COMPLIANCE TECHNICAL ORDERS

This technical order includes all changes, additions, and deletions made necessary by issuance of the following time compliance technical orders:

<u>TCTO Number</u>	<u>Date</u>
31X3-10-26-509	18 September 1962
*31X3-10-26-514	17 July 1963

*The asterisk indicates those TCTO's incorporated in the current change.

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SECTION I

DESCRIPTION AND LEADING PARTICULARS

1-1. PURPOSE OF MANUAL.

1-2. This manual comprises field maintenance instructions for the launch complex facilities consoles, Martin Co. part numbers 327N2130000-009 and 327P2130000-009, type numbers OA-2436(XAA-2)/GJQ-11 and OA-2436(XAA-3)/GJQ-11 located in the control center.

1-3. Sections I through VII of this manual apply to the launch complex facilities console, part number 327N2130000-009. Sections I thru VII also apply to part number 327P2130000-009 except for specific differences covered in Section VII by the use of difference data sheets.

1-4. PURPOSE OF LAUNCH COMPLEX FACILITIES CONSOLE.

1-5. The launch complex facilities console monitors the status of the ground operating equipment (GOE) and facilities. Monitoring is indicated by lamps which display the status of the ground guidance station, the three missiles and their associated facilities, and the damage control system. Indicators mounted on the front panel of the console are used in monitoring and isolating malfunctioning components. If a hazard condition exists, a buzzer sounds and lamps on the console light to warn of danger.

1-6. DESCRIPTION.

1-7. The launch complex facilities console comprises a panel assembly and a base assembly (figure 1-1). The panel assembly contains a photo-enameled front panel with lens caps that designate the indicators. This panel is mounted on a hinged-front hood. When raised, the hood provides access to a back panel, which mounts the monitoring indicators and the corrective action and self-check switches. The back panel also contains a communication panel, which provides communication with other areas of the launch complex. The base assembly includes a writing desk with two storage drawers. This desk, which is mounted on the console legs, contains a telephone dial that is used with the communications panel. The console legs contain terminal boards, which connect the console indicators to the external wiring. Access to these boards is provided by doors on the outside of the console legs. The legs also contain headset jacks for use with the communication panel.

1-8. LEADING PARTICULARS.

1-9. Leading particulars of the launch complex facilities console are listed in figure 1-2.

1-10. LOCATION AND FUNCTION OF OPERATING CONTROLS AND INDICATORS.

1-11. Operating controls and indicators on the front panel of the facilities console are listed in figure 1-3 and shown in figure 1-4. Figure 1-3 also lists the launch complex facilities console self-check controls and indicators located on the back panel and shown in figure 1-5.

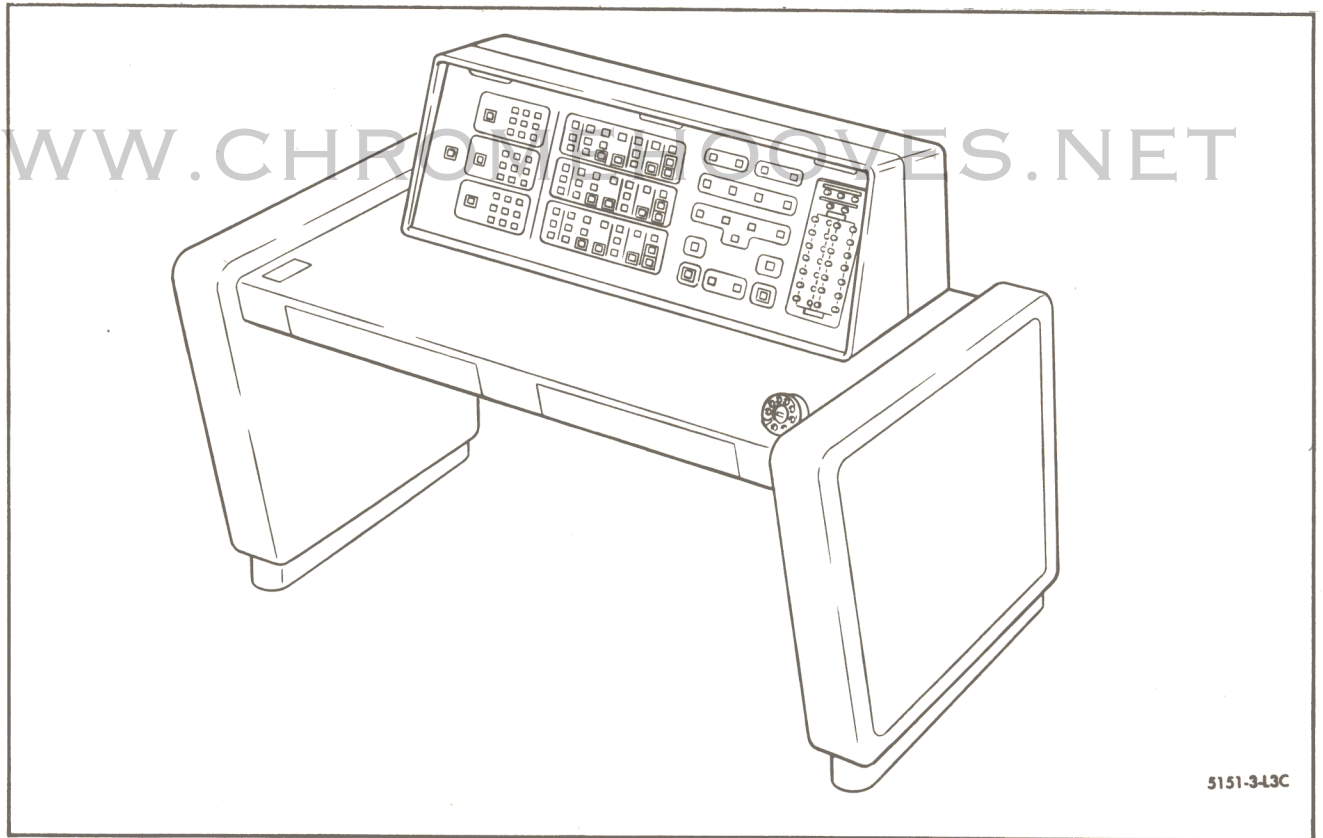


Figure 1-1. Launch Complex Facilities Console

DIMENSIONS AND WEIGHT			
Width	60 inches	Height	46.5 inches
Depth	35 inches	Weight	520 pounds
ELECTRICAL DATA			
Operating Voltage	28(±2.0) VDC		

Figure 1-2. Table of Leading Particulars

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
FRONT PANEL (SEE FIGURE 1-4.)			
GROUND GUIDANCE	DS1 and DS2	Indicator with red, white, and green lamps.	Red lamp indicates a no-go condition. White lamp indicates an in-operation condition (Guidance locked on). Green lamp indicates a go condition.
EQUIPMENT STATUS MISSILE AND FACILITY LAUNCHER		Pushbutton indicator with green and red lamps.	Green lamp indicates a go condition. Red lamp indicates a no-go condition. Pressing pushbutton indicator sends a no-go signal to the control center circuits.
NO. 1 LAUNCHER	S2 and DS3		
NO. 2 LAUNCHER	S7 and DS33		
NO. 3 LAUNCHER	S12 and DS63		
EQUIPMENT STATUS GUIDANCE LAUNCHER		Indicator with red and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates an in-checkout condition.
NO. 1 LAUNCHER	DS4		
NO. 2 LAUNCHER	DS34		
NO. 3 LAUNCHER	DS64		
EQUIPMENT STATUS FLIGHT CONTROL LAUNCHER		Indicator with red and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates an in-checkout condition.
NO. 1 LAUNCHER	DS5		
NO. 2 LAUNCHER	DS35		
NO. 3 LAUNCHER	DS65		
EQUIPMENT STATUS GROUND POWER LAUNCHER		Indicator with red, white, and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates checkout. White lamp indicates that CHECKOUT POWER pushbutton indicator on electrical system is closed.
NO. 1 LAUNCHER	DS6 and DS7		
NO. 2 LAUNCHER	DS36 and DS37		
NO. 3 LAUNCHER	DS66 and DS67		

Figure 1-3. Table of Operating Controls and Indicators (Sheet 1 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
EQUIPMENT STATUS ENGINE LAUNCHER NO. 1	DS8	Indicator with red and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates an in-checkout condition.
LAUNCHER NO. 2	DS38		
LAUNCHER NO. 3	DS68		
EQUIPMENT STATUS PROP LOAD & PRESS LAUNCHER NO. 1	DS9	Indicator with red and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates an in-checkout condition.
LAUNCHER NO. 2	DS39		
LAUNCHER NO. 3	DS69		
EQUIPMENT STATUS LAUNCHER LAUNCHER NO. 1	DS10	Indicator with red and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates an in-checkout condition.
LAUNCHER NO. 2	DS40		
LAUNCHER NO. 3	DS70		
EQUIPMENT STATUS RE-ENTRY VEHICLE LAUNCHER NO. 1	DS11	Indicator with red and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates an in-checkout condition.
LAUNCHER NO. 2	DS41		
LAUNCHER NO. 3	DS71		
EQUIPMENT STATUS LAUNCH SEQ'R LAUNCHER NO. 1	DS12	Indicator with red and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates an in-checkout condition.
LAUNCHER NO. 2	DS42		

Figure 1-3. Table of Operating Controls and Indicators (Sheet 2 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
LAUNCHER NO. 3 EQUIPMENT STATUS CONTROL CENTER CIRCUITS LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	DS72 DS13 DS43 DS73	Indicator with red and amber lamps.	Red lamp indicates a malfunction condition. Amber lamp indicates an in-checkout condition.
FACILITY STATUS & CONTROL EQUIP TERM FIRE LEVEL II LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	DS14 DS44 DS74	Indicator with flashing red lamps.	Flashing red lamp indicates a fire in Level II of equipment terminal.
FACILITY STATUS & CONTROL EQUIP TERM HYDRAULIC FIRE LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	DS15 DS45 DS75	Indicator with flashing red and flashing white lamps.	Flashing red lamp indicates fire. Flashing white lamp alternating with flashing red lamp indicates corrective action in progress.
FACILITY STATUS & CONTROL EQUIP TERM BATTERY POWER LAUNCHER NO. 1 LAUNCHER NO. 2	DS16 DS46	Indicator with red lamp.	Red lamp indicates that rectifier has been disconnected from readiness bus and standby battery power has been applied.

Figure 1-3. Table of Operating Controls and Indicators (Sheet 3 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION				
LAUNCHER NO. 3	DS 76	Indicator with flashing red and flashing white lamps.	Flashing red lamp indicates presence of fuel vapor. Flashing white lamp alternating with flashing red lamp indicates corrective action in progress.				
FACILITY STATUS & CONTROL MISSILE SILO FUEL MISSILE LAUNCHER NO. 1	DS17						
LAUNCHER NO. 2	DS47						
LAUNCHER NO. 3	DS77						
FACILITY STATUS & CONTROL MISSILE SILO GOX LAUNCHER NO. 1	DS18			Indicator with flashing red and flashing white lamps.	Flashing red lamp indicates presence of gox. Flashing white lamp alternating with flashing red lamp indicates corrective action in progress.		
LAUNCHER NO. 2	DS48						
LAUNCHER NO. 3	DS78						
FACILITY STATUS & CONTROL MISSILE SILO FUEL SUMP LAUNCHER NO. 1	DS19					Indicator with flashing red and flashing white lamps.	Flashing red lamp indicates presence of fuel vapor. Flashing white lamp alternating with flashing red lamp indicates corrective action in progress.
LAUNCHER NO. 2	DS49						
LAUNCHER NO. 3	DS79						
FACILITY STATUS & CONTROL MISSILE SILO LOX SUMP LAUNCHER NO. 1	DS20	Indicator with flashing red lamps.	Flashing red lamp indicates presence of lox.				
LAUNCHER NO. 2	DS50						
LAUNCHER NO. 3	DS80						

Figure 1-3. Table of Operating Controls and Indicators (Sheet 4 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
FACILITY STATUS & CONTROL MISSILE SILO FIRE LAUNCHER NO. 1	DS21	Indicator with flashing red and flashing white lamps.	Flashing red lamp indicates fire. Flashing white lamp alternating with flashing red lamp indicates corrective action in progress.
LAUNCHER NO. 2	DS51		
LAUNCHER NO. 3	DS81		
FACILITY STATUS & CONTROL MISSILE SILO FOG OFF LAUNCHER NO. 1	S3 and DS22	Momentary push-button indicator with flashing white lamps.	Flashing white lamp indicates automatic fog initiated. Pressing S3, S8, or S13 sends signal to turn off fog.
LAUNCHER NO. 2	S8 and DS52		
LAUNCHER NO. 3	S13 and DS82		
FACILITY STATUS & CONTROL MISSILE SILO AUTO FOG DISABLE LAUNCHER NO. 1	S4 and DS23	Alternate action pushbutton indicator with amber lamp.	Pressing pushbutton indicator disables automatic fog system and lights amber AUTO FOG DISABLE lamp. Pressing pushbutton indicator again enables automatic fog system and extinguishes lamp.
LAUNCHER NO. 2	S9 and DS53		
LAUNCHER NO. 3	S14 and DS83		
FACILITY STATUS & CONTROL MISSILE SILO SILO DOOR LAUNCHER NO. 1	DS24	Indicator with amber lamps.	Amber lamp indicates silo door open.
LAUNCHER NO. 2	DS54		
LAUNCHER NO. 3	DS84		

Figure 1-3. Table of Operating Controls and Indicators (Sheet 5 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
FACILITY STATUS & CONTROL PROP TERM LOX FIRE LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	DS25 DS55 DS85	Indicator with flashing red lamps.	Flashing red lamp indicates presence of lox fire in propellant terminal.
FACILITY STATUS & CONTROL PROP TERM GOX LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	DS26 DS56 DS86	Indicator with flashing red lamps.	Flashing red lamp indicates presence of gox in propellant terminal.
FACILITY STATUS & CONTROL PROP TERM LOX EMPTY LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	DS27 DS57 DS87	Indicator with red lamps.	Red lamp indicates main lox storage tank empty.
FACILITY STATUS & CONTROL ABOVE GRD HAZARD LIGHT LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	S5 and DS28 S10 and DS58 S15 and DS88	Momentary pushbutton indicator with green, amber, and red lamps.	Pushbutton indicator is utilized to actuate the above ground hazard warning system. First pressing of pushbutton indicator lights green lamp on HAZARD LIGHT indicator. Second pressing of pushbutton indicator lights amber lamp on HAZARD LIGHT indicator. Third pressing lights red lamp on HAZARD LIGHT indicator. Fourth pressing results in

Figure 1-3. Table of Operating Controls and Indicators (Sheet 6 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
FACILITY STATUS & CONTROL ABOVE GND EXPLOSION LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	DS30 DS60 DS90	Indicator with flashing red lamps.	HAZARD LIGHT flashing - red indication. Fifth pressing lights green lamp on HAZARD LIGHT indicator. Flashing red lamp indicates explosion above ground with silo door open or explosion in missile silo with silo closed.
FACILITY STATUS & CONTROL TUNNEL BLAST DOORS LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	DS31 DS61 DS91	Indicator with red lamps.	Red lamp lighted indicates launcher blast doors open.
FACILITY STATUS & CONTROL ABOVE GND ABOVE GROUND WATER LAUNCHER NO. 1 LAUNCHER NO. 2 LAUNCHER NO. 3	S21 and DS115 S22 and DS116 S23 and DS117	Indicator with white lamps.	First pressing of pushbutton indicator lights white lamps, indicating above ground water system on. Second pressing of pushbutton indicator turns off above ground water system and extinguishes white lamps.
FACILITY STATUS & CONTROL WATER EMER OFF LAUNCHER NO. 1 LAUNCHER NO. 2	S24 and DS118 S25 and DS119	Indicator with amber lamps.	First pressing of pushbutton indicator lights amber lamps, indicating command to close main water valve. Second pressing of pushbutton indicator causes amber lamps to go off and main water valve to open.

Figure 1-3. Table of Operating Controls and Indicators (Sheet 7 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
LAUNCHER NO. 3	S26 and DS120		
FACILITY STATUS & CONTROL PORTAL WIND	DS93	Indicator with red lamps.	Red lamp indicates excessive wind.
FACILITY STATUS & CONTROL PORTAL DOORS	DS94	Indicator with red and amber lamps.	Red lamp indicates portal and blast doors open. Amber lamp indicates portal doors open.
FACILITY STATUS & CONTROL ANTENNAS ANT-1 DOORS	DS95	Indicator with red and amber lamps.	Amber lamp indicates antenna 1 silo door open. Red lamp indicates antenna 1 silo and blast doors open.
FACILITY STATUS & CONTROL ANTENNAS ANT-2 DOORS	DS96	Indicator with red and amber lamps.	Amber lamp indicates antenna 2 silo door open. Red lamp indicates antenna 2 silo and blast doors open.
FACILITY STATUS & CONTROL RADIATION ABOVE GROUND	DS97	Indicator with flashing red lamps.	Flashing red lamp indicates radiation above ground.
FACILITY STATUS & CONTROL RADIATION LAUNCHER	DS98	Indicator with flashing red lamps.	Flashing red lamp indicates radiation in launcher area.
FACILITY STATUS & CONTROL RADIATION CONTROL CENTER	DS99	Indicator with flashing red lamps.	Flashing red lamp indicates radiation in control center.
FACILITY STATUS &	DS100	Indicator with flashing red lamps.	Flashing red lamp indicates radiation in power house.

Figure 1-3. Table of Operating Controls and Indicators (Sheet 8 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
CONTROL RADIATION POWER HOUSE			
FACILITY STATUS & CONTROL POWER HOUSE GEN 1	DS101	Indicator with white lamps.	White lamp indicates generator 1 on line.
FACILITY STATUS & CONTROL POWER HOUSE GEN 2	DS102	Indicator with white lamps.	White lamp indicates generator 2 on line.
FACILITY STATUS & CONTROL POWER HOUSE GEN 3	DS103	Indicator with white lamps.	White lamp indicates generator 3 on line.
FACILITY STATUS & CONTROL POWER HOUSE GEN 4	DS104	Indicator with white lamp.	White lamp indicates generator 4 on line.
FACILITY STATUS & CONTROL POWER HOUSE EMERGENCY	DS105	Indicator with flashing red lamp.	Flashing red lamp indicates emergency in power house.
FACILITY STATUS & CONTROL ATTACK	DS106	Indicator with flashing red lamps.	Flashing red lamp indicates attack hazard exists.
FACILITY STATUS & CONTROL ESCAPE HATCH	DS107	Indicator with red lamps.	Red lamp indicates escape hatch in blast lock 1A, 1B, or 2 is open.

Figure 1-3. Table of Operating Controls and Indicators (Sheet 9 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
FACILITY STATUS & CONTROL AIR INTAKE BLAST VALVES	S17 and DS108	Momentary push-button indicator with amber indicator lamps.	Pressing pushbutton indicator sends blast valves command to control center circuits. Amber indicator lamps indicate blast valves closed. Second pressing of pushbutton indicator causes amber lamps to go off, indicating blast valves open.
FACILITY STATUS & CONTROL FUEL TERM FUEL VAPOR	DS109	Indicator with flashing red lamps.	Flashing red lamp indicates fuel vapor in fuel storage area.
FACILITY STATUS & CONTROL FUEL TERM FUEL FIRE	DS110	Indicator with flashing red and flashing white lamps.	Flashing red lamp indicates fuel fire in fuel storage area. Flashing red lamp alternating with flashing white lamp indicates corrective action in progress.
FACILITY STATUS & CONTROL HAZ ALERT PUSH TO SILENCE	S18 and DS111	Momentary push-button indicator.	Pressing pushbutton indicator silences hazard alert buzzer.
BACK PANEL (SEE FIGURE 1-5.)			
LAMP VERIFY	S1	4PDT switch.	Directly lights all spare lamps and sends 28 VDC to control center circuits, energizing inputs to operational lamps in facility console.
FLASHER TEST LIGHT	DS112	Indicator with flashing red and flashing white lamps.	Flashes red and white for verification of flashers.

Figure 1-3. Table of Operating Controls and Indicators (Sheet 10 of 11)

CONTROL OR INDICATOR	REFERENCE DESIGNATION	DESCRIPTION	FUNCTION
FLASHER VERIFY	S19	Wafer switch.	Switches output of flashers to FLASHER TEST LIGHT for verification.
BUZZER VERIFY	S20	SPDT switch.	Grounds one of flashing red inputs to simulate a hazard, resulting in operation of buzzer.

Figure 1-3. Table of Operating Controls and Indicators (Sheet 11 of 11)

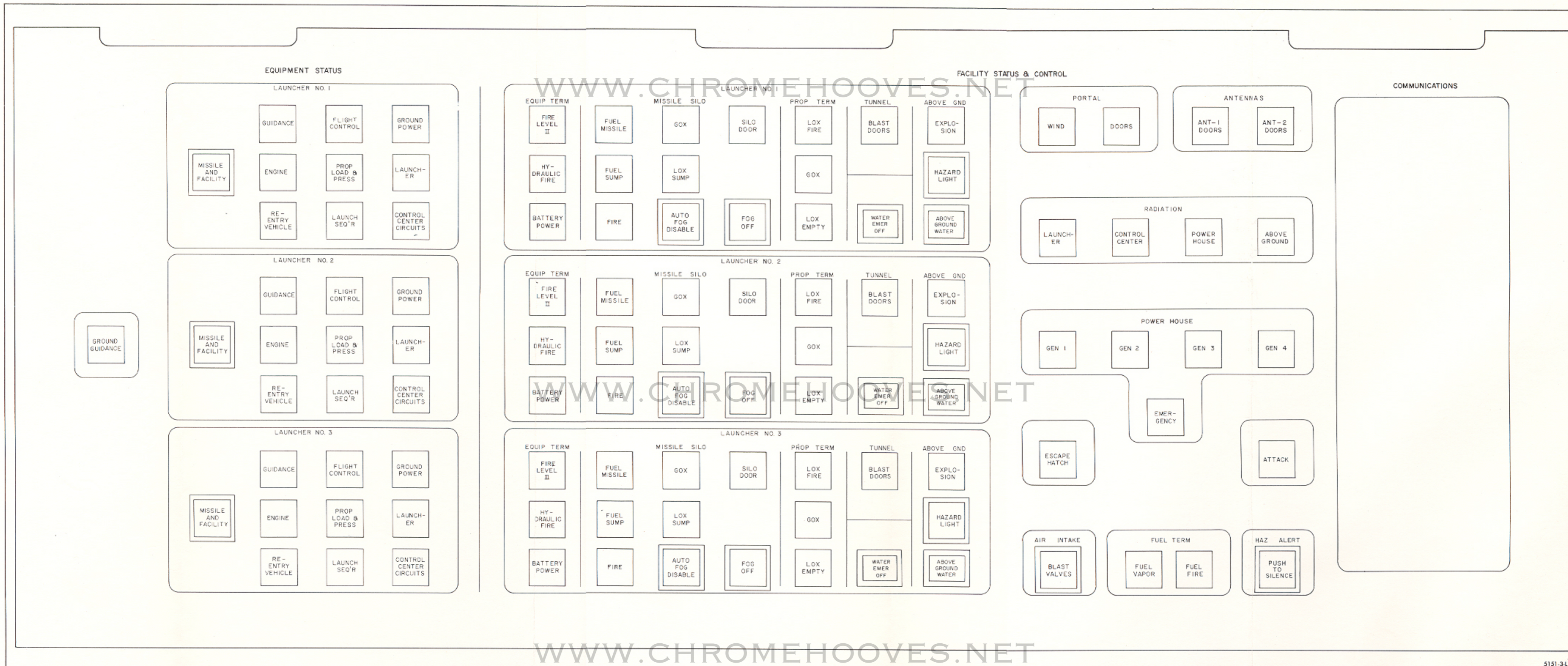
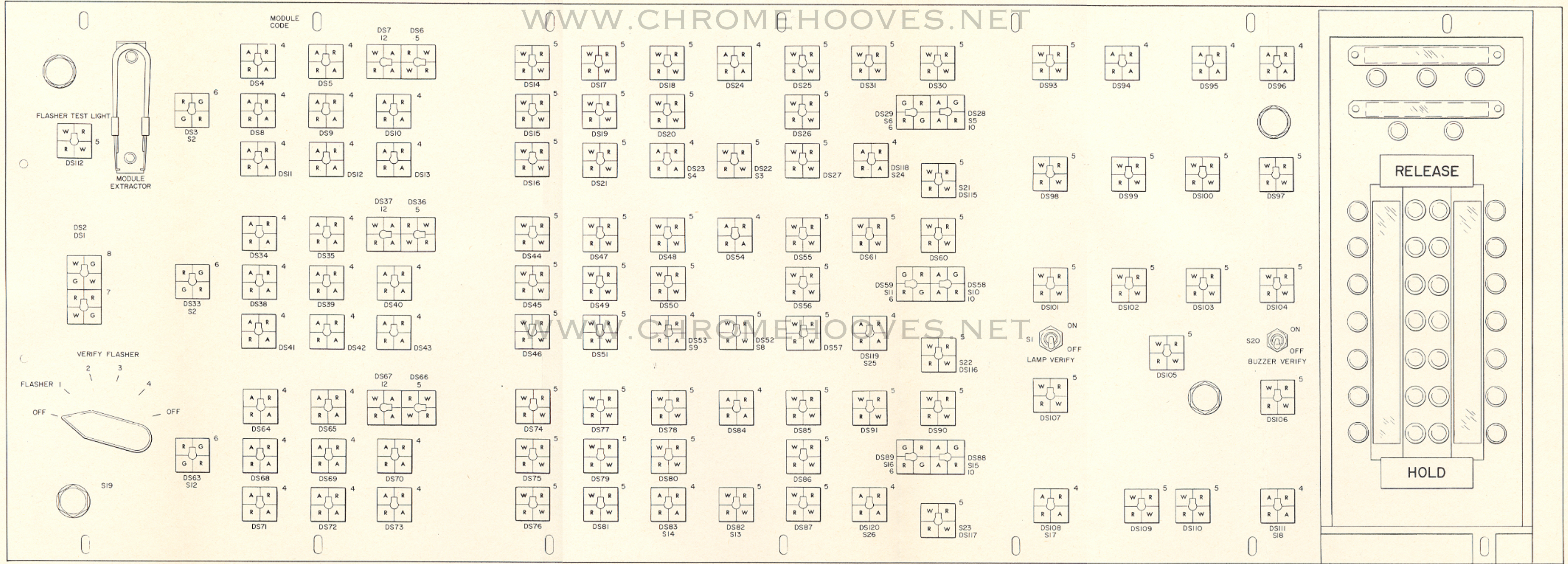


Figure 1-4. Front Panel Operating Controls and Indicators

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Figure 1-5. Back Panel Operating Controls and Indicators