

## SECTION V

## COMBAT CREW MALFUNCTION ISOLATION

5-1. SCOPE.

5-2. This section contains missile combat crew procedures for isolating, to the component level, those malfunctions that may occur during the countdown. Most of the malfunctions listed are those which the combat crew will be able to isolate and take positive corrective action during the first first hold period (T-280). This analysis is based on the following assumptions:

a. All situations cannot be covered by procedure and corrective action because malfunction isolation of various situations depends on the combat crew's weapon system knowledge. The malfunction procedures are guides only and are not a substitute for good judgement.

b. Corrective action may differ between an exercise mode of operation and an EWO mode of operation.

c. Manual operating procedures override automatic operation and are provided as an emergency means of operating a system if the automatic mode fails during a launch countdown.

d. The system configuration will not be changed.

5-3. MALFUNCTION ISOLATION.

5-4. This section presents the procedures to be used in analyzing malfunction indications which may appear on the launch complex facility console and/or the launch control console. During a countdown without TV monitoring, the first indication of a malfunction will appear on these consoles. This section also contains the necessary corrective actions to be taken for finding and correcting the malfunction. The more common subsystem malfunctions are analyzed, where an automatic subsystem checkout can be performed during a hold time, and the correction procedures are indicated in the corrective action column. Where corrective action is indicated, complete if possible and resume countdown.

5-5. MALFUNCTION ISOLATION OF PROPELLANT LOADING AND PRESSURIZATION SYSTEM.

5-6. Figure 5-1 through 5-7 cover malfunctions and analysis of the propellant loading and pressurization system.

5-7. MALFUNCTION ISOLATION OF ELECTRICAL SYSTEM.

5-8. Figures 5-8 through 5-11 cover malfunctions and analysis of the electrical system.

5-9. MALFUNCTION ISOLATION FLIGHT CONTROL SYSTEM.

5-10. Figure 5-12 covers malfunctions and analysis of the flight control system.

5-11. MALFUNCTION ISOLATION OF RVS AND GMTS.

5-12. Figure 5-13 covers malfunctions and analysis of the RVS and GMTS.

5-12A. MALFUNCTION ISOLATION FOR LAUNCHER.

5-12B. Figure 5-13A covers malfunction and analysis for enabling the two remaining launchers when one launcher has malfunctioned and stopped in an intermediate position.

5-13. MALFUNCTION ISOLATION FOR GUIDANCE.

5-14. Figures 5-14 through 5-37 cover malfunctions and analysis of the ground guidance system. If a malfunction occurs that is not covered or cannot be corrected by the malfunction analysis procedures, the GEO will report an indefinite hold to the MLO and proceed to the following technical orders for further analysis and troubleshooting:

- a. T.O. 21-SM68-2J-7-1-1, countdown trouble analysis.
- b. T.O. 21-SM68-2J-7-1-1, handover countdown trouble analysis.
- c. T.O. 21-SM68-2J-6-3, computer power trouble analysis.

5-15. MALFUNCTION OF POWER HOUSE.

5-16. Figures 5-38 covers malfunction analysis of the power house.

Changed 18 December 1963 TOCN-1 (DEN-5)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
PLPS red (LCFC) at TSI.	Shut down.	Shut down.	Stage I or II lox probe disconnected.	Reconnect lox probe, recycle ES, and re-initiate countdown.	Same as EXERCISE.
	Shut down.	Shut down.	(Prior to incorporation of TCTO 31X3-10-11-621) Airborne point sensors prematurely armed.	Unload helium and lox if necessary, recycle, and troubleshoot to determine malfunction.	Same as EXERCISE.

Figure 5-1. PLPS Red (LCFC) at TSI

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
No LOX LOADING white (LCC).	Continue countdown.	Continue countdown.	CV-311 closed.	Open CV-311 immediately.	Same as EXERCISE.
	Continue countdown.	Continue countdown.	(Prior to incorporation of TCTO 31X3-10-11-621 CV-538 closed.	Open CV-538 immediately.	Same as EXERCISE.
	Continue countdown.	Continue countdown.	FCV-211 and/or FCV-212 not open.	Continue to lox loaded.	Same as EXERCISE.
	Shut down.	Shut down.	(Prior to incorporation of TCTO 31X3-10-11-621) SOV-310 closed.	Recycle.	Same as EXERCISE.
	Shut down.	Shut down.	(Prior to incorporation of TCTO 31X3-10-11-621) ROV-801 or ROV-803 not closed.	Recycle.	Same as EXERCISE.
	Continue countdown.	Continue countdown.	PC-311 not regulating properly.	Readjust PC-311. If not possible by T-500 shut down.	Same as EXERCISE.
	Shut down.	Shut down.	(Prior to incorporation of TCTO 31X3-10-11-621). Missile fill and drain or vent valve fail to open.	Recycle.	Same as EXERCISE.

Figure 5-2. No LOX LOADING White (LCC)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
(After incorporation of TCTO 31X3-10-11-621) PLPS red at T-700.	Shut down.	Shut down.	Airborne point sensors failed to arm.	Unload and recycle ES in accordance with T.O. 21-SM68-CL-24-1 or T.O. 21-SM68-CL-27-1. Run PLPS checkout.	Same as EXERCISE.

Figure 5-4. PLPS Red at T-700

Changed 19 March 1964 TOCN 1-1 (DEN-12)

T.O. 21M-HGM25A-1-1 (21-SM68-1)

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MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
LOX EMPTY red (LCFC).	Attempt corrective action.	Attempt corrective action.	Pressure switch P-206 failure.	Unload missile helium and lox if necessary. Recycle. Replace or repair pressure switch P-206.	Same as EXERCISE.
	Attempt corrective action.	Attempt corrective action.	Liquid level indicator LLI-201 failure. Failure of CC-2 compressor. Lox storage tank empty.	Replace or calibrate liquid level indicator LLI-201. Correct CC-2 compressor malfunction. Replenish lox storage tank.	Same as EXERCISE.

Figure 5-5. LOX EMPTY Red (LCFC)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
PLPS red (LCFC) at T-280.	Attempt corrective action.	Attempt corrective action.	Helium storage tank T601A depleted below 4000 PSI.	Verify sufficient helium in T601B for loading. Close CV-607 and CV-608. Check system for leaks and repair. Open CV-607 and CV-608. Cycle ES circuit breaker 59.	Same as EXERCISE.
	Attempt corrective action.	Attempt corrective action.	Low transfer regulator pressure on PI-603 below 3200 ( $\pm 50$ ) PSI.	Adjust pressure controller PC-602 to 3200 ( $\pm 50$ ) PSI.	Same as EXERCISE.
	Shut down.	Attempt corrective action.	Stage I or II helium accumulator burst disc ruptured.	Install new burst disc in missile burst disc exhaust port. Unload helium and lox. Recycle.	Close CV-607 and CV-608. Verify helium storage tank T601B pressure sufficient for loading. Replace ruptured burst disc and primary regulator if available.  Open CV-607 and CV-608. Cycle circuit breaker 59. Verify that PI-603 reaches 3200 ( $\pm 50$ ) PSI. Resume count.

Figure 5-6. PLPS Red at T-280 (Sheet 1 of 3)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
	Attempt corrective action.	Attempt corrective action.	Quick disconnect QD-9322-635 not connected. (Stage I and II HELIUM SPHERE SAFE indicators not lighted on assembly 6A3. PI-603 indicating 3200 ( $\pm 50$ ) PSI.	Close CV-9321-631. Close CV-9322-633. Open CV-9321-634. Open CV-9322-632. Connect QD-9321-635. Close BV-9321-632 and BV-9322-634. Open CV-9321-631 and CV-9322-633. Hold for 10 minutes to insure helium loaded.	Same as EXERCISE.
	Attempt corrective action.	Attempt corrective action.	Stage I or II helium umbilical not connected. (Applicable stage helium sphere safe indicator not lighted).	Verify sufficient helium in T601A or T601B to reload missile. Close CV-607 and CV-608. Open CV-604. Press and hold FCV-605 and LS-212 until PI-603 indicates zero. Connect helium umbilical. If FCV-601 is open and T601B must be used, cycle circuit breaker 59 on ES to OFF, then ON.	Same as EXERCISE.
	Attempt corrective action.	Attempt corrective action.	Helium filter (F-9322-638) crushed or clogged.	Close CV-607, CV-608, and CV-9321-631. Open CV-9322-632. Verify PI-603 indicates zero. Remove or replace filter. Close CV-9322-632. Open CV-607, CV-608, and CV-9321-631.	Same as EXERCISE.

Figure 5-6. PLPS Red at T-280 (Sheet 2 of 3)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
	Continue ountdown.	Continue countdown.	Stage I or II lox tanks not loaded.	If no malfunction indi- cated, wait for LOX LOADED white.	Same as EXERCISE.

Figure 5-6. PLPS Red at T-280 (Sheet 3 of 3)

Changed 17 January 1964 TOCN-1 (DEN-8)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
GROUND POWER red at T-870.	Continue countdown.	Continue countdown.	Missile air conditioner failed to start.	Check for tripped circuit breaker or blown fuse in A/C panel on JEU-7/E. If resetting breaker or replacing fuse starts A/C unit, lox loading will start. If breaker or fuse continues to blow, shut down. If circuit breaker is not tripped and fuse not blown, press CHECKOUT POWER and A/C pushbuttons on assembly 8A2. If A/C unit starts, leave on and continue count.	Same as EXERCISE.

Figure 5-8. GROUND POWER Red at T-870

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
GROUND POWER red prior to T-280.	Continue countdown.	Continue countdown.	Missile A/C unit stopped.	Check JEU-7/E A/C panel for tripped circuit breaker or blown fuse. If breaker or fuse blows again, shut down.	Same as EXERCISE.
			Missile DC power not applied (Missile DC indicator assembly 8A2 not upper white).	Check ES circuit breaker 82 and if tripped, reset. If it trips again, shut down. If circuit breaker 82 is not tripped, shut down and troubleshoot ES and missile shut down relay circuit.	Same as EXERCISE.
			Missile AC power not applied. (Missile 400 CPS indicator assembly 8A2 not upper white).	Check ES circuit breaker 101 and reset if tripped. If it trips again, shut down. Check 9510 motor generator set for proper output and adjust if necessary. If output breaker tripped, reset. If it trips again, shut down. If none of the above actions correct the problem, ES chassis is defective; shut down.	Same as EXERCISE.

Figure 5-9. GROUND POWER Red Prior to T-280

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
BATTERY POWER red.	Shut down. Continue countdown.		Power supply A/E 24A-4, 28-volt rectifier failure.	Attempt restarting unit by switching local remote switch to local and pressing start pushbutton. (If over-current or over voltage indicators are lighted, the reset pushbutton inside cabinet SW-6 must be pressed before restarting). If unit cannot be repaired and restarted, turn off all ES DC circuit breakers except 1, 10, 50, 59 thru 70, and 250. If primary power circuit breaker is tripped, reset and attempt to restart.	<p>If countdown must be held at T-280, attempt to restart power supply A/E 24A-4. If a hold is not in effect, continue the count on battery power.</p> <p>If primary power to launcher is lost and cannot be reapplied, shut down and turn off all DC circuit breakers except 1, 10, 50, 59 thru 70, and 250.</p>

Figure 5-10. BATTERY POWER Red

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
GROUND POWER red at T-280.	Hold.	Hold.	Stage I or II hydraulic umbilical not connected. (Applicable reservoir level indicator on hydraulic pumping unit C-216 red.)	On hydraulic pumping unit, open bypass valve. Close pressure outlet valves and connect quick disconnect. Open pressure outlet valves and close bypass valve.	Same as EXERCISE.
			Hydraulic pumping unit C-216 not running.	Check primary power circuit breaker on JEU-7/E. Reset if tripped. If it trips again, shut down.  Check C-216 panel on JEU-7/E for blown fuse and replace if necessary. If fuse blows again, shut down.	Same as EXERCISE.

Figure 5-11. GROUND POWER Red at T-280

Changed 17 January 1964 TOCN-1 (DEN-8)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
FLIGHT CONTROLS red (LCFC) at T-280 and a readout on any of the 10 channel lights on OA-2441/GJQ-11.					<p>Note</p> <p>*Denotes: If malfunction is not corrected, replace FCS assemblies in the following order:</p> <p>Turn off ES circuit breakers 6, 56, 109, and 203.</p> <ol style="list-style-type: none"> <li>1. 3A4 PROGRAMMER CHECK</li> <li>2. 3A2 SIGNAL ANALYZER</li> <li>3. 3A6 SIGNAL GENERATOR</li> <li>4. 3A8 POWER SUPPLY</li> <li>5. 3A5 COMPARATOR</li> <li>6. 3A7 SIGNAL SELECTOR &amp; CONDITIONER</li> </ol>

Figure 5-12. FLIGHT CONTROLS Red on LCFC (T-280) and Assembly 3A2 (Sheet 1 of 6)

Changed 17 January 1964 TOCN-1 (DEN-8)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
FLIGHT CONTROLS red (LCFC) at T-280 and a readout on any of the 10 channel lights on OA-2441/GJQ-11.	Hold.	Hold.	<p>Channel 1 - ACT. 1<sub>1</sub></p> <p>6 - ACT. 3<sub>2</sub></p> <p>8 - ACT. 4<sub>2</sub></p> <p>9 - ACT. 5<sub>2</sub></p> <p>10 - ACT. 6<sub>2</sub></p> <p>Channel 2 - ACT. 2<sub>1</sub> or jato fire timer, staging bolts timer, or sustainer start timer.</p> <p>Channel 3 - ACT. 3<sub>1</sub> or nose cone release timer.</p> <p>Channel 4 - ACT. 4<sub>1</sub> or jato jettison timer.</p>	Record all indications on assembly 3A2 of OA-2441/GJQ-11 and then shut down.	<p>Channel 1, 9, or 10: Adjust applicable trim-pot (T.O. 21-SM68-2J-11-1 or -2) or *.</p> <p>Channel 6 or 8: *.</p> <p>Channel 2: Check voltage at 14TB5-61, 62, 60, and 63. If 28 VDC, shut down. If not: Adjust 2<sub>1</sub> trimpot (21-SM68-2J-11-1 or -2) or *.</p> <p>Channel 3: Check voltage at 2014TB5-63. If 28 VDC, shut down. If not: Adjust 3<sub>1</sub> trimpot (21-SM68-2J-11-1 or -2) or *.</p> <p>Channel 4: Check voltage at 2014TB5-71. If 28 VDC, shut down. If not: Adjust 4<sub>1</sub> trimpot (21-SM68-2J-11-1 or 2) or *.</p>

Figure 5-12. FLIGHT CONTROLS Red on LCFC (T-280) and Assembly 3A2 (Sheet 2 of 6)

Changed 17 January 1964 TOCN-1 (DEN-8)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
			<p>Channel 5 - ACT. 2<sub>2</sub></p> <p>or Stage II FTPR cut off timer.</p> <p>Channel 7 - ACT. 1<sub>2</sub></p> <p>or programmer not reset.</p>	<p>Channel 5: Set MODE SELECTOR switch to CHECKOUT for minimum of 5 seconds, then to LAUNCH. If malfunction is not corrected, record all indications on assembly 3A2 of OA-2441/GJQ-11 and then shut down.</p>	<p>Channel 5: Check voltage at 14TB5-64. If 28 VDC, shut down. If not: *</p> <p>Channel 7: Set MODE SELECTOR switch to CHECKOUT for minimum of 5 SEC, then to LAUNCH or *.</p>

Figure 5-12. FLIGHT CONTROLS Red on LCFC (T-280) and Assembly 3A2 (Sheet 3 of 6)

Changed 17 January 1964 TOCN-1 (DEN-8)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
T-280: FLIGHT CON- TROL red (LCFC) assem- bly 3A2 mal- function window; SPIN MOTORS and any one of the following:  3-AXIS. REF. PKG.  RATE GYRO STAGE II.  RATE GYRO STAGE I.	Hold.	Hold.	Bad spin motor.  Bad spin motor detector package.  Bad signal analyzer assembly.	Shut down.	Refer to 21-SM68-2J-11 -1 or -2 for trouble- shooting and possible replacement of bad unit.

Figure 5-12. FLIGHT CONTROLS Red on LCFC (T-280) and Assembly 3A2 (Sheet 4 of 6)

T.O. 21-SM68-1

Section V

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
T-280: FLIGHT CONTROL red (LCFC) assembly 3A2 FCS malfunction window: 25 VDC POWER SUPPLY.	Hold.	Hold.	Bad airborne 25 VDC power supply. Bad FCS power supply assembly.	Shut down.	Set LOCAL-REMOTE switch to LOCAL on hydraulic pumping unit C-216. Turn off CB82 and CB101 on circuit breaker panel 33. Replace power supply assembly.
T-280: FLIGHT CONTROL red (LCFC) assembly 3A2 GOE malfunction window: POWER SUPPLY.	Hold.	Hold.	CB109 on circuit breaker panel 33 OFF.	Reset CB109 on circuit breaker panel 33.	Same as EXERCISE.
			Blown fuse(s) on power supply assembly.	Replace blown fuse(s) on power supply assembly.	Same as EXERCISE.
			Power supply out of tolerance.	Shut down.	Turn off CB6, CB56, CB109, and CB203 on circuit breaker panel 33. Replace power supply assembly.
			Signal analyzer assembly malfunction.	Shut down.	Turn off CB6, CB56, CB109, and CB203 on circuit breaker panel 33. Replace signal analyzer assembly.

Figure 5-12. FLIGHT CONTROL Red on LCFC (T-280) and Assembly 3A2 (Sheet 5 of 6)

Changed 17 January 1964 TOCN-1 (DEN-8)

5-20A

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
T-280: FLIGHT CONTROL red (LCFC) assembly 3A2 READINESS MONITOR window: GYRO HTR NO-GO.	Hold.	Hold.	Bad power supply assembly.	Shut down.	Set MODE SELECTOR to MALFUNCTION or turn off CB-6, CB-56, CB-109, and CB-203, on circuit breaker panel 33. Replace power supply assembly.
			Bad 3-axis REF. PKG.	Shut down.	Set LOCAL-REMOTE switch to LOCAL on hydraulic pumping unit C-216 and turn off CB82 and CB101 on circuit breaker panel 33. GROUND POWER red will appear on LCFC. Replace 3-AXIS REF. PKG.

Figure 5-12. FLIGHT CONTROL Red on LCFC (T-280) and Assembly 3A2 (Sheet 6 of 6)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
RVS red (LCFC) T-280	Hold.	Hold.	Loss of fuse set.	Select new target on LCC. Cycle from MARK 4 to MARK 3 and back to MARK 4 on control monitor group OA-2440/GJQ-11.	Same as EXERCISE.
RVS red (LCFC) T-280 and CONTROL CENTER CIRCUIT red.	Hold.	Hold.	Loss of target go.	Select new target on LCC.	Same as EXERCISE.  Note  When replacing assembly 11A1 for launcher NO. 1, set CB3 and CB19 to OFF on control monitor group OA-2439/GJQ-11.  When replacing assembly 11A2 for launcher NO. 2, set CB9 and CB24 to OFF on control monitor group OA-2439/GJQ-11.  When replacing assembly 11A3 for launcher NO. 3, set CB15 and CB29 to OFF on control monitor group OA-2439/GJQ-11.

Figure 5-13 RVS Red (LCFC) T-280 or RVS Red (LCFC) T-280 and CONTROL CENTER CIRCUITS Red (Sheet 1 of 2)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
					Following replacement of any of the above assemblies, return applicable circuit breakers to ON and recycle MODE SELECTOR switch (assembly 4A2) from LAUNCH to CHECKOUT to LAUNCH.

Figure 5-13 RVS Red (LCFC) T-280 or RVS Red (LCFC) T-280 and CONTROL CENTER CIRCUITS Red (Sheet 2 of 2)

Changed 18 December 1963 TOCN-1 (DEN-5)

MALFUNCTION INDICATION	IMMEDIATE ACTION		POSSIBLE CAUSES	CORRECTIVE ACTION	
	EXERCISE	EWO		EXERCISE	EWO
LOWER LAUNCHER pressed white and launcher remains in the intermediate position.	Attempt corrective action.	Attempt corrective action.		Refer to T.O. 21-SM68 -CL-24-1 or T.O. 21-SM68 -CL-27-1.	<p>(Malfunctioning launcher, equipment terminal) Turn circuit breaker CB57 (9A1) OFF.</p> <p>Note</p> <p>When the malfunctioning launcher circuit breaker CB57 (assembly 9A1) is turned to the OFF position, 28 VDC operating power is removed from launch sequence controller #2 (assembly 2A3) and the applicable launch lowering started signal relay in the common control center circuit (assembly 10A2).</p>

Figure 5-13A. LOWER LAUNCHER Pressed White and Launcher Remains in the Intermediate Position

MALFUNCTION INDICATION	TROUBLE INDICATION	POSSIBLE CAUSES	CORRECTIVE ACTION	
			EXERCISE	EWO
TSI to T-280 Guidance red.	Hold.	Loss of phase A, B, or C because circuit breakers in GMTS tripped.	Reset tripped circuit breakers.	Same as EXERCISE.

Figure 5-14. TSI to T-280 GUIDANCE Red

MALFUNCTION INDICATION	TROUBLE INDICATION	POSSIBLE CAUSES	CORRECTIVE ACTION	
			EXERCISE	EWO
LAUNCHER red, power pack not operating at T-281.	Hold.	Loss of AC power to launcher system.	Reset launcher system main circuit breaker to ON (PNL-1001). Reset all circuit breakers and overloads ON A15A2, A15A3, A11A1, A12A1, A13A1 and, A14A1. Check voltage on both sides of fuses in A15A2, A15A3, A11A1, A12A1, A13A1 and, A14A1.	Same as EXERCISE.
		Loss of DC power to launcher logic.	Cycle normal supply selector to ALTERNATE SUPPLY (A18A1). If indicators on A18A1 are out, reset CB01 and CB02 (A18A1). Reset all OFF circuit breakers to ON (5A3A1). Check voltage on both sides of fuses for supplies 1 and 2 (A18A1).	Same as EXERCISE.
		Poor contact in operation selector.	Cycle operation selector from REMOTE to LOCAL, and back to REMOTE.	Same as EXERCISE.

Figure 5-15. LAUNCHER Red, Power Pack Not Operating at T-281

MALFUNCTION INDICATION	TROUBLE INDICATION	POSSIBLE CAUSES	CORRECTIVE ACTION	
			EXERCISE	EWO
All guidance indicators not lighted.	Hold.	Motor generator stopped.	Start alternate motor generator as follows: Press GEN 1 or GEN 2 START pushbutton indicator green, LINE VOLTS switch to C, and adjust LINE VOLTS as required.	Same as EXERCISE.
		-28V STBY RELAY PWR CB tripped (unit 16).	Reset 28V STBY RELAY PWR CB.	Same as EXERCISE.
		-28 volt standby power supply.	Check -28 volt standby power supply (unit 15). Replace power supply if inoperative.	Same as EXERCISE.

Figure 5-16. All Guidance Indicators Not Lighted

Changed 31 January 1964 TOCN 1-1 (DEN-9)

MALFUNCTION INDICATION	TROUBLE INDICATION	POSSIBLE CAUSES	CORRECTIVE ACTION	
			EXERCISE	EWO
CONSTANTS REGISTER 6 inoperative.		Magnetic clutch inoperative.	Continue countdown if index of refraction is within $\pm 1000$ of value contained in CONSTANTS REGISTER 6.	Same as EXERCISE.

Figure 5-17. CONSTANTS REGISTER 6 Inoperative

MALFUNCTION INDICATION	TROUBLE INDICATION	POSSIBLE CAUSES	CORRECTIVE ACTION	
			EXERCISE	EWO
POWER ON not white.		-28 volt operating power supply.	Check -28 volt operating power supply (unit 15). Replace power supply if inoperative.	Same as EXERCISE.

Figure 5-18. POWER ON Not White

MALFUNCTION INDICATION	TROUBLE INDICATION	POSSIBLE CAUSES	CORRECTIVE ACTION	
			EXERCISE	EWO
GUID X NOT RDY does not go out (before START GUID X green).	POWER ON not green (unit 25).	Circuit breaker CB10 tripped.	Reset to ON.	Same as EXERCISE.
	LOCAL POWER FAILURE red (unit 25).	Circuit breaker CB1 thru CB9 tripped.	Reset to ON.	Same as EXERCISE.
	PLATE VOLTS ON and SERVOS ON not green (unit 25).	Interlock open (unit 25).	Securely fasten drawers and swinging frames. If PLATE VOLTS ON and SERVOS ON do not indicate green, pull out interlock override.	Same as EXERCISE.
	STANDBY not green (unit 25).	GROUND RANGE and/or SLANT RANGE servos not reset (CAB. 23).	Manually position servo dials to approx 20,000 feet and release.	Same as EXERCISE.

Figure 5-19. GUID X NOT RDY Does Not Go Out (Before START GUID X Green)

MALFUNCTION INDICATION	TROUBLE INDICATION	POSSIBLE CAUSES	CORRECTIVE ACTION	
			EXERCISE	EWO
GUID X NOT RDY does not go out (after START GUID X green).			Continue countdown.	Same as EXERCISE.

Figure 5-20. GUID X NOT RDY Does Not Go Out (After START GUID X Green)

MALFUNCTION INDICATION	TROUBLE INDICATION	POSSIBLE CAUSES	CORRECTIVE ACTION	
			EXERCISE	EWO
START CD indicator does not light.			Continue countdown.	Same as EXERCISE.

Figure 5-21. START CD Indicator Does Not Light