T. O. 21M-HGM16F-1CL-6SS-2

SAFETY SUPPLEMENT

ABBREVIATED CHECKLIST

EMERGENCY OPERATING PROCEDURES MISSILE COMBAT CREW

LAUNCH AREA

USAF MODEL

HGM-16F

MISSILE WEAPON SYSTEM

THIS PUBLICATION SUPPLEMENTS T.O.21M-HGM16F-1CL-6SS-2 DATED 1 APRIL 1964 (PRE-RED HEAT AND RED HEAT) AND REPLACES INTERIM SAFETY SUPPLEMENTS T.O.21M-HGM16F-1CL-6SS-1 DATED 19 JULY 1964 AND T.O.21M-HGM16F-1CL-6SS-2 DATED 29 JULY 1964. Reference to this supplement will be made on the title page of the basic publication by personnel responsible for maintaining the publication in current status.

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PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE

29 JULY 1964

During a PLX or maintenance countdown using LN2 in place of LO2 and the storage area OXYGEN 19 PER CENT indicator on the FRCP illuminates red from "start countdown" to "missile lift up and locked indicator amber", and a TV camera is positioned on level seven to scan all LO2 transfer lines and valves on level seven outside the MEA, the countdown may be continued at the discretion of the MCCC, only if it can be determined by visual observation and by logic and pressure indications that there is no evidence of LN2 leakage or spillage. If leakage or spillage is evident, MCCC shall initiate abort in accordance with Section 2, Item 6C.

AF SBAMA AUG 64 2M

If the countdown is continued, the following procedures shall apply:

1. After MISSILE LIFT UP AND LOCKED indicator illuminates green, and ABORT indicator illuminates red, perform action 1, step 1, of section 2, item 6C.

2. After ABORT EXTERNAL indicator illuminates amber, perform steps 2 through 6, section 2, item 6C.

T.O. 21M-HGM16F-1CL-6

SEE FORMAL 65-2

ABBREVIATED CHECKLIST

EMERGENCY PROCEDURES
MISSILE COMBAT CREW

LAUNCH AREA

SECTIONS: 17

PAGES: 148

USAF MODEL

HGM-16F

MISSILE WEAPON SYSTEM

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1 APRIL 1964

CHANGED 21 AUG 1964

AF SBAMA SEP 64 35.25

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LIST OF EFFECTIVE PAGES

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USAF ACTIVITIES. — In accordance with T.O. 00-5-2.

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INTRODUCTION

This material contains procedures prepared for predictable emergency conditions at the launch area. These procedures are presented as checklists and are abbreviated from tables in section IV of T.O. 21M-HGM16F-1 Individual checklists are designated as sections and are numbered in the same sequence as the corresponding tables from which extracted. Each section bears the same title and contains the same item, action, and step numbers as the corresponding amplified table. Page numbers are a combination of the section number and the sequence numbering of the pages of the section. The emergency procedures covered by the checklists are listed below. Sections 1 through 4 contain steps that direct emergency actions during operating periods. This T. O. should be left opened to the section (1, 2, 3, or 4) corresponding to the current operational period. The rest of the sections contain operations common to several emergency procedures or contain procedures used to correct or bypass effects of a malfunction.

WARNING

All personnel involved in these procedures must be aware at all times that these are emergency procedures and as such are performed under circumstances of potentially extreme hazards. Countdown or abort sequence failure may require personnel to be sent into the silo for the purpose of completing the sequence. When sending personnel to silo, ensure the wearing of approved protective clothing and breathing apparatus designated by the squadron safety officer.

INTRODUCTION (CONT)

SECTION (CONT)	TITLE (CONT)
3	EMERGENCIES FROM MISSILE LIFT UP AND LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP AND LOCKED INDICATOR GREEN
4	EMERGENCIES DURING ABORT
5	EMERGENCY MISSILE STRETCH
6A	RESTORING AC POWER AFTER AC POWER LOSS (NA OSTF-2)
6B	RESTORING AC POWER AFTER AC POWER LOSS (OSTF-2 ONLY)
7	COMPLEX ELECTRICAL SYSTEM RESET
8	EMERGENCY DIESEL GENERATOR PARALLELING AND SHUTDOWN
9	(DELETED)
10	MANUAL ABORT
11	LN_2 LOAD INDICATOR NOT AMBER, OR NOT GREEN AFTER BEING AMBER
12	HYDRAULIC PRESSURE INDICATOR NOT GREEN
13	LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN
14	HELIUM LOAD INDICATOR NOT AMBER, OR NOT GREEN AFTER BEING AMBER
15	HYD-PNEU & LN_2-HE READY INDICATOR NOT GREEN
16	LAUNCHER PLATFORM FAILS TO LOWER
17	BOILOFF VALVE FAILURE TO OPEN DURING ABORT

The checklists are arranged in two-column demand-response format. Demands are listed in the left column and responses to the demands are given in the right column. Blank lines are provided as check spaces where required. Each step is preceded by a call sign identifier indicating the crew member responsible for accomplishing the step. The following identifiers are used: (C), MCCC; (D), DMCCC; (L-1), EPPT; (M-1), MFT; (A-1), BMAT.

INTRODUCTION (CONT)

Distinctively printed (bold print) items contained in these checklists shall be committed to memory. Word-for-word memorization is not required, however crew members must be able to accomplish all necessary actions quickly and accurately. All bold-print items shall be performed from memory without checklist referral and in the order in which the steps appear in the checklists. Upon completion of the memorized items, reference shall be made to the applicable checklist which shall then be accomplished in its entirety. At this time, memory items which have already been completed shall be verified.

The following is a list of abbreviations and short form nomenclature used in these checklists:

SHORT FORM	LONG FORM
ALCO	auxiliary launch control officer
CSMOL	control station manual operating level
EMCC	essential motor control center
FRCP	facility remote control panel
FTC-2	facility terminal cabinet NO. 2
GN_2	gaseous nitrogen
GO_2	gaseous oxygen
HCU	helium control charging unit
HPU	hydraulic pumping unit
LCC	launch control center
LCOC	launch control officer's console

INTRODUCTION (CONT)

SHORT FORM (CONT)	LONG FORM (CONT)
LN_2	liquid nitrogen
LO_2	liquid oxygen
LP	launcher platform
MEA	missile enclosure area
MEPU	missile enclosure purge unit
MLS	missile lifting system
MLSMCC	missile lifting system motor control center
NEMCC	nonessential motor control center
PLCP	pneumatic local control panel
PLX	propellant loading exercise
PRCP	power remote control panel
PSC	pressure system control
PSMR	pneumatic system manifold regulator
PTS	pneumatic test set
SPGG	solid propellant gas generator

EMERGENCIES DURING STANDBY

PRELIMINARY INSTRUCTIONS

This checklist contains procedures for emergency conditions during standby. The following is a list of emergency conditions and the page numbers where required actions are given. This checklist is abbreviated from table 4-1 of T.O. 21M-HGM16F-1.

EMERGENCIES DURING STANDBY (CONT)

ITEM 1. PRESSURE MODE INDICATOR RED

CAUTION

Maintain a minimum of 2 PSI differential pressure. To prevent prevalves from opening, do not exceed 20 PSI in the fuel tank

(IF PRESSURES NOT NORMAL)

1. ***(D) TANK PRESSURES*** ***ADJUSTED*** ____

(IF OR WHEN PRESSURES NORMAL)

2. ***(D) AUTOMATIC PB*** ***DEPRESSED*** ____

NOTE

If PRESSURE MODE indicator illuminates and remains GREEN, do not proceed to step 3.

If PRESSURE MODE indicator remains or returns to RED, proceed to step 3.

3. ***(D) PHASE I PRESSURES*** ***MANUALLY MAINTAINED*** ____

4. ***(C) CREW, PLACE MISSILE IN STRETCH*** ***DIRECTED*** ____
(SECTION 5)

EMERGENCIES DURING STANDBY (CONT)

ITEM 2A. GENERATOR MALFUNCTION (ALT IN STBY)

1.	***(C) L-1, PLACE ALT GEN ON LINE AND SHUT DOWN FAULTY GEN*** (SECTION 8)	***DIRECTED***	____
2.	(C) L-1, TROUBLESHOOT	DIRECTED	____

ITEM 2B. GENERATOR MALFUNCTION (ALT NOT IN STBY)

CAUTION

If possible, delay shutdown until work platform NO. 1 is extended.

1.	***(C) L-1, SHUT DOWN FAULTY GEN***	***DIRECTED***	____
	A. (L-1) FEEDER NO. 3 SW	***TRIP***	
	B. (L-1) GEN MAIN BKR CONT SW	***TRIP***	
	C. (L-1) ENGINE START-STOP SW	***STOP***	
2.	(C) L-1, TROUBLESHOOT AND RESTORE AC POWER	DIRECTED	____
	(AFTER AC POWER RESTORED)		
3.	(C) L-1, NONESSENTIAL POWER ON	DIRECTED	____
4.	(C) CREW, RESET ELEC SYS (SECTION 7)	DIRECTED	____

EMERGENCIES DURING STANDBY (CONT)

ITEM 2C. GENERATOR MALFUNCTION (GEN IN PARALLEL)

1.	***(C) L-1, SHUT DOWN FAULTY GEN***	***DIRECTED***	____
	A. (L-1) GEN MAIN BKR CONT SW	***TRIP***	
	B. (L-1) ENGINE START-STOP SW	***STOP***	
2.	(C) L-1, TROUBLESHOOT	DIRECTED	____

ITEM 3. LOSS OF AC POWER

1.	(C) L-1, RESTORE AC POWER (SECTION 6A/6B)	DIRECTED	____
	(AFTER AC POWER RESTORED)		
2.	(C) L-1, NONESSENTIAL POWER ON	DIRECTED	____
3.	(C) CREW, RESET ELEC SYS (SECTION 7)	DIRECTED	____

ITEM 4. LOSS OF UMBILICALS

WARNING

Maintenance support is required to safe ordnance (if installed) and reconnect umbilicals. Exception may be made to initiate a tactical launch if the missile crew can determine that no stray voltage exists at the umbilicals.

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING STANDBY (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

NOTE

Omit steps 1 and 2 if LCOC missile tank pressure gauges are normal.

If gauges are abnormal and TV is not available to monitor PSMR, close valve 337 in HCU then open valve 148 in PSC prior to maintaining pressures at HCU.

1.	(C) DEPUTY OR M-1, MONITOR AND MAINTAIN TANK PRESSURES	DIRECTED	____
2.	(C) A-1, L-1, PLACE MISSILE IN STRETCH (SECTION 5)	DIRECTED	____

ITEM 5. FIRE IN SILO

1.	(C) FIRE LOCATION	IDENTIFIED	____
2.	(C) FIRE ALARM	ACTIVATED	____
3.	(C) CREW, COMBAT THE FIRE	DIRECTED	____
	(OMIT STEP 4 IF FIRE NOT IN MEA)		
4.	(C) M-1, ACTIVATE MEA FOG SYSTEM	DIRECTED	____
5.	(C) SILO EVACUATED OF NONESSENTIAL PERSONNEL	VERIFIED	____
6.	(C) DISASTER CONTROL AND POTENTIAL HAZARD PROCEDURES	IMPLEMENTED	____

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING STANDBY (CONT)

ITEM 5. FIRE IN SILO (CONT)

(AT DISCRETION IF FIRE UNCONTROLLABLE)

7.	(C) M-1, OPEN SILO DOORS	DIRECTED	_____
	A. (M-1) RESET PROGRAMMER KEY	ON	
	B. (M-1) HYD 40 HP PUMP ON PB	DEPRESSED	
	C. (M-1) VERTICAL LOCK PB	DEPRESSED	
	D. (M-1) HORIZONTAL LOCK PB	DEPRESSED	
	E. (M-1) SILO DOORS OPEN PB	DEPRESSED & HELD (30 SEC)	

NOTE

No action other than troubleshooting is required for FRCP malfunction indications not listed in the following items. A nontactical countdown shall not be initiated if any of the following malfunctions are indicated on the FRCP.

ITEM 6A. SILO CONTROL CABINET HIGH TEMPERATURE

1.	(C) M-1, TROUBLESHOOT	DIRECTED	_____

ITEM 6B. MAIN EXHAUST FAN NOT OPERATING

1.	(C) M-1, TROUBLESHOOT	DIRECTED	_____

EMERGENCIES DURING STANDBY (CONT)

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19%

NOTE

Do not initiate a countdown with 25% indication.

1.	***(C) EVACUATE SILO***	***DIRECTED***	____
2	(C) M-1, TROUBLESHOOT	DIRECTED	____

ITEM 6D. AIR WASHER DUST COLL UNITS NOT OPERATING

1.	(C) M-1, TROUBLESHOOT	DIRECTED	____

ITEM 6E. DIESEL VAPOR HIGH LEVEL

NOTE

Do not initiate a countdown.

1.	***(C) EVACUATE SILO***	***DIRECTED***	____
2.	(C) M-1, TROUBLESHOOT	DIRECTED	____

ITEM 6F. LCC AIR RCVR & INST AIR RCVR LOW PRESS.

NOTE

Do not initiate a countdown.

1.	(C) M-1, TROUBLESHOOT	DIRECTED	____

EMERGENCIES DURING STANDBY (CONT)

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED

1.	***(C) EVACUATE SILO***	***DIRECTED***	____

NOTE

Blast closures should open automatically in 90 seconds if a nuclear blast or a malfunction in the blast detection or closure systems has not occurred.

(OMIT STEP 2 IF DETECTOR NORMAL)

2.	(C) M-1, RESET BLAST DETECTOR CAB.	DIRECTED	____
	A. (M-1) OUTPUT RELAY SW	DISCONNECT	
	B. (M-1) RCVR 1 MANUAL TEST PB	DEPRESSED	
	C. (M-1) ALARM RESET PB	DEPRESSED	
	D. (M-1) OUTPUT RELAY SW	CONNECT	
	E. (M-1) DETECTION MODE RESET PB	DEPRESSED	
	F. (M-1) OPTIC MODE IND	ILLUMINATED	
	G. (M-1) CHANNEL IND	CYCLING	

(OMIT STEP 3 IF CLOSURES OPEN)

3.	(C) M-1, OUTPUT RELAY SWITCH TO DISCONNECT	DIRECTED	____

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING STANDBY (CONT)

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED (CONT)

(OMIT STEP 4 IF GEN NOT IN PARALLEL)

4. (C) L-1, SHUT DOWN ONE GEN — DIRECTED ____

   A. (L-1) GEN MAIN BKR CONT SW — TRIP

   B. (L-1) ENGINE START-STOP SW — STOP

5. (DELETED)

(OMIT STEP 6 IF DETECTOR & CLOSURES NORMAL)

6. (C) M-1, TROUBLESHOOT BLAST CLOSURES — DIRECTED ____

   A. (M-1) CB-1 AND CB-3 (EMCC PNL C) — ON OR RESET

WARNING

Control circuit voltage is 120 VAC. Use extreme caution while installing jumper wires on terminal board E-1 of facility interface cabinet, level 3.

(OMIT STEPS B THRU E IF CLOSURES NORMAL)

B. (M-1) JUMPER FROM 9013 TO 9015 — CONNECTED

C. (M-1) JUMPER FROM 9015 TO 9017 — CONNECTED

D. (M-1) JUMPER FROM 9017 TO 9019 — CONNECTED

E. (M-1) JUMPER FROM C-6 TO 9013 — CONNECTED

NOTE

If it becomes necessary to stop the diesel generator, ensure that work platform NO. 1 is extended.

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING STANDBY (CONT)

ITEM 6H. MISSILE POD AIR HI TEMP OR LO PRESSURE

(OMIT STEP 1 IF GUIDANCE FAIL IND EXT)

1. (C) A-1, MGS POWER SW OFF (MSL GND PWR PNL 1) — DIRECTED _____

2. (C) M-1, TROUGLESHOOT — DIRECTED _____

ITEM 6I. EMERGENCY WATER PUMP P-32 ON

(OMIT STEP 1 IF GEN NOT PARALLELED)

1. ***(C) L-1, SHUT DOWN ONE GEN*** — ***DIRECTED*** _____
   - ***A. (L-1) GEN MAIN BKR CONT SW*** — ***TRIPPED***
   - ***B. (L-1) ENGINE START-STOP SW*** — ***STOP***

2. (C) M-1, L-1, TROUBLESHOOT — DIRECTED _____

ITEM 7. ENGINES AND GROUND POWER IND RED (28 VDC POWER & 400 CYCLE POWER IND EXTINGUISHED)

1. (C) A-1, M-1, OBSERVE SPGG INDICATORS (AC POWER DISTRIBUTION PANEL) — DIRECTED _____

NOTE

If the SPGG indicators are GREEN, assume transformer-rectifier failure; perform steps 2 and 3.

If any of the SPGG indicators are extinguished or RED, perform step 3.

2. (C) A-1, M-1, OBTAIN MANUAL CONTROL OF PSC — DIRECTED _____
   - A. (M-1) VALVES 105 AND 106 (PSC) — CLOSED
   - B. (A-1) SYSTEM POWER SW (PNEU PNL 1) — OFF

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING STANDBY (CONT)

ITEM 7. ENGINES AND GROUND POWER IND RED (28 VDC POWER & 400 CYCLE POWER IND EXTINGUISHED) (CONT)

NOTE

Open valve 123 to raise fuel tank pressure.
Open valve 125 to lower fuel tank pressure.
Open valve 124 to raise LO_2 tank pressure.
Open valve 126 to lower LO_2 tank pressure.

C. (M-1) MISSILE TANK PRESSURES (PHASE I) MAINTAINED

3. (C) A-1, L-1, TROUBLESHOOT DIRECTED ____

ITEM 8. 400 CYCLE POWER INDICATOR RED

1. (C) CREW, TROUBLESHOOT DIRECTED ____

ITEM 9. 28 VDC POWER INDICATOR AMBER OR RED

1. (C) A-1, M-1, OBTAIN MANUAL CONTROL OF PSC DIRECTED ____

A. (M-1) VALVES 105 AND 106 (PSC) CLOSED

B. (A-1) SYSTEM POWER SW (PNEU PNL 1) OFF

NOTE

Open valve 123 to raise fuel tank pressure.
Open valve 125 to lower fuel tank pressure.
Open valve 124 to raise LO_2 tank pressure.
Open valve 126 to lower LO_2 tank pressure.

C. (M-1) MISSILE TANK PRESSURES (PHASE I) MAINTAINED

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING STANDBY (CONT)

ITEM 9. 28 VDC POWER INDICATOR AMBER OR RED (CONT)

2. (C) A-1, L-1, TROUBLESHOOT DIRECTED ____

ITEM 10. GUIDANCE FAIL INDICATOR RED

NOTE

If guidance has been on memory for 7 minutes, delay troubleshooting for 2 minutes. If GUIDANCE FAIL indicator extinguishes, troubleshooting is not necessary.

1. (C) CREW, TROUBLESHOOT DIRECTED ____

ITEM 11. MISSILE LIFT FAIL INDICATOR RED

1. (C) CREW, TROUBLESHOOT DIRECTED ____

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER

PRELIMINARY INSTRUCTIONS

This checklist contains procedures for emergency conditions during this operating period. The following is a list of emergency conditions and the page numbers where required actions are given. This checklist is abbreviated from table 4-2 of T.O. 21M-HGM16F-1.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 1. PRESSURE MODE INDICATOR RED

CAUTION

Maintain a minimum of 2 PSI as observed on the DIFFERENTIAL PRESSURE gauge if LO_2 loading has not started.

If LO_2 loading has started, fuel tank pressure should be maintained at least 20 PSI greater than LO_2 tank pressure.

(IF PRESSURES NOT NORMAL)

1. ***(D) TANK PRESSURES*** ***ADJUSTED*** ____

(IF OR WHEN PRESSURES NORMAL)

2. ***(D) AUTOMATIC PB*** ***DEPRESSED*** ____

NOTE

If PRESSURE MODE indicator illuminates and remains GREEN, countdown may continue; do not proceed to step 3.

If PRESSURE MODE indicator remains or returns to RED, proceed to step 3.

(ONLY IF PRESS. MODE RED)

3. ***(C) ABORT*** ***INITIATED*** ____

4. ***(D) PHASE II PRESSURES*** ***MANUALLY MAINTAINED*** ____

(AFTER LO_2 DRAIN COMPLETE IND GREEN)

5. ***(C) CREW, PLACE MISSILE IN STRETCH*** ***DIRECTED*** ____
(SECTION 5)

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 2A. GENERATOR MALFUNCTION (ALT IN STBY)

1.	*(C) COUNTDOWN (TACTICAL)*	*CONTINUED*	____
2.	*(C) L-1, PLACE ALT GEN ON LINE AND SHUT DOWN FAULTY GEN* (SECTION 8)	*DIRECTED*	____

ITEM 2B. GENERATOR MALFUNCTION (ALT NOT IN STBY)

1.	*(C) COUNTDOWN (TACTICAL)*	*CONTINUED*	____
	(AFTER ABORT IND AMBER OR RED, IF MISSILE NOT LAUNCHED)		
2.	(C) DEPUTY, DEPRESS EMERGENCY PB	DIRECTED	____
	(AFTER ABORT IND AMBER OR RED)		
3.	(C) M-1, RESET PROGRAMMER KEY ON	DIRECTED	____
4.	(C) L-1, SHUT DOWN FAULTY GEN	DIRECTED	____
	A. (L-1) GEN MAIN BKR CONT SW	TRIP	
	B. (L-1) ENGINE START-STOP SW	STOP	
5.	(C) ABORT PB	DEPRESSED	____
6.	(C) L-1, TROUBLESHOOT AND RESTORE AC POWER	DIRECTED	____

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 2B. GENERATOR MALFUNCTION (ALT NOT IN STBY) (CONT)

(AFTER POWER RESTORED)

7. (C) M-1, RESET PROGRAMMER KEY OFF — DIRECTED ____

(AFTER ABORT COMPLETE)

8. (C) CREW, RESET ELEC SYS (SECTION 7) — DIRECTED ____

ITEM 2C. GENERATOR MALFUNCTION (GEN IN PARALLEL)

1. (C) L-1, SHUT DOWN FAULTY GEN — DIRECTED ____

(OMIT STEP A IF PRIOR TO POWER INTERNAL INDICATOR GREEN)

A. (L-1) FEEDER NO. 3 SW — TRIP

B. (L-1) GEN MAIN BKR CONT SW — TRIP

C. (L-1) ENGINE START-STOP SW — STOP

2. (C) ABORT (NONTACTICAL CD) — INITIATED ____

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 3. LOSS OF AC POWER

1.	(C) ABORT	INITIATED	____
2.	(C) L-1, RESTORE AC POWER (SECTION 6A/6B)	DIRECTED	____
	(AFTER AC POWER RESTORED)		
3.	(C) L-1, NONESSENTIAL POWER ON	DIRECTED	____
4.	(C) M-1, RESET LCC ELEC SYS (SECTION 7)	DIRECTED	____
	(AFTER ABORT COMPLETE)		
5.	(C) CREW, RESET ELEC SYS (SECTION 7)	DIRECTED	____

ITEM 4. LOSS OF UMBILICALS

ACTION 1

1.	(C) ABORT	INITIATED	____
2.	(C) DEPUTY, DEPRESS EMERGENCY PB	DIRECTED	____

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 1 (CONT)

NOTE

If prior to FINE LO_2 LOAD indicator GREEN, perform ACTION 2.

If after FINE LO_2 LOAD indicator GREEN, but prior to POWER INTERNAL indicator GREEN, observe AIRBORNE FILL & DRAIN VALVE indicator:

If indicator is GREEN, proceed to ACTION 3.

If indicator is AMBER, proceed to ACTION 2.

If after POWER INTERNAL indicator GREEN, observe AIRBORNE FILL & DRAIN VALVE indicator:

If indicator is GREEN, proceed to ACTION 4.

If indicator is AMBER, proceed to ACTION 2.

ACTION 2

NOTE

The Deputy shall maintain PNEU IN PHASE II indicator GREEN by depressing the FUEL RAISE pushbutton whenever the PNEU IN PHASE II indicator illuminates AMBER. Release immediately when indicator illuminates GREEN.

1. (C) DEPUTY, MAINTAIN PNEU IN PHASE II IND GREEN. DIRECTED ____

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 2 (CONT)

2. (C) A-1, MANUALLY DRAIN LO_2 DIRECTED _____

A. (A-1) REMOTE LOCAL SW LOCAL

NOTE

If L-16 valve indicator does not illuminate GREEN when L-16 valve switch is positioned to OPEN, position L-1 valve switch to OPEN.

B. (A-1) L-16 (OR L-1 IF USED) VALVE SW OPEN

NOTE

If it becomes necessary to stop LO_2 draining for any reason, position A/B F&D valve switch to CLOSED. Position L-16 valve switch to close if airborne fill-and-drain valve cannot be controlled.

C. (A-1) A/B F&D SW (START TIMING) OPEN

D. (A-1) AIRBORNE FILL & DRAIN VALVE IND GREEN

NOTE

After 30 min of drain, proceed to step 3.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 2 (CONT)

3.	(C) A-1, SECURE LO_2 TANKING PANELS	DIRECTED	____
	A. (A-1) L-16 (OR L-1 IF USED) VALVE SW	CLOSED	
	B. (A-1) L-16 (OR L-1 IF USED) VALVE IND	AMBER	
	C. (A-1) A/B F&D VALVE SW	CLOSED	
	D. (A-1) AIRBORNE FILL & DRAIN VALVE IND	AMBER	
4.	(C) CREW, PLACE MISSILE IN STRETCH (SECTION 5)	DIRECTED	____

NOTE

If TV monitor is not available to monitor PSMR, open valve 148 in PSC prior to maintaining pressures at HCU.

5.	(C) DEPUTY OR M-1, MONITOR AND MAINTAIN TANK PRESS.	DIRECTED	____

WARNING

After LO_2 is drained, maintenance support is required to safe ordnance (if installed) and reconnect umbilicals. Exception may be made during a tactical launch if the missile crew can determine that no stray voltage exists at the umbilicals.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 3

NOTE

The deputy shall maintain PNEU IN PHASE II indicator GREEN by depressing the FUEL RAISE pushbutton whenever the PNEU IN PHASE II indicator is AMBER. Release immediately when indicator is GREEN.

1.	(C) DEPUTY, MAINTAIN PNEU IN PHASE II IND GREEN	DIRECTED ____
2.	(C) ALLOW LO_2 TO BOIL OFF	ACCOMPLISHED ____

WARNING

After LO_2 has boiled off, maintenance support is required to safe ordnance (if installed) and reconnect umbilicals.

ACTION 4

1.	(C) M-1, OPEN SILO DOORS	DIRECTED ____
	A. (M-1) RESET PROGRAMMER KEY	ON
	B. (M-1) HYD 40 HP PUMP ON PB	DEPRESSED
	C. (M-1) VERTICAL LOCK PB	DEPRESSED
	D. (M-1) HORIZONTAL LOCK PB	DEPRESSED
	E. (M-1) SILO DOORS OPEN PB	DEPRESSED & HELD (30 SEC)

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 4 (CONT)

2.	(C) LO_2 BOILOFF	OBSERVED	____

NOTE

If boiloff valve is open, refer back to and perform ACTION 3.

If boiloff valve is closed, perform step 3.

3.	(C) M-1, DRIVE LP UP	DIRECTED	____

WARNING

Remain in the LCC. Expect loss of missile.

ITEM 5. FIRE IN SILO

1.	***(C) ABORT (PLX)***	***INITIATED***	____
2.	(C) FIRE LOCATION	IDENTIFIED	____
	(OMIT STEP 3 IF FIRE NOT IN MEA)		
3.	(C) M-1, ACTIVATE MEA FOG SYS	DIRECTED	____
4.	(C) CREW, COMBAT THE FIRE	DIRECTED	____
5.	(C) DISASTER CONTROL AND POTENTIAL HAZARD PROCEDURES	IMPLEMENTED	____

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

NOTE

No action other than troubleshooting is required for FRCP malfunction indications not listed in the following items. Countdown may continue and malfunction shall be corrected after abort is complete.

ITEM 6A. SILO CONTROL CABINET HIGH TEMPERATURE

1. ***(C) ABORT (NONTACTICAL CD)*** ***INITIATED*** ____

ITEM 6B. MAIN EXHAUST FAN NOT OPERATING

1. ***(C) ABORT (NONTACTICAL CD)*** ***INITIATED*** ____

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19%

SEE FORMAL - 6552

NOTE

During tactical countdown, if leakage is not evident, continue countdown. During a nontactical countdown or if leakage is evident during a tactical countdown, proceed with ACTION 1.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19% (CONT)

ACTION 1

1.	***(C) ABORT (NONTACTICAL CD OR TACTICAL CD WITH LEAKAGE)***	***INITIATED***	____
2.	***(C) A-1, STOP LO_2 DRAIN***	***DIRECTED***	____
	A. (A-1) L-16 SW	***OPEN***	
	B. (A-1) REMOTE LOCAL SW	***LOCAL***	
	C. (A-1) L-16, N-5, & N-4 VALVE IND	***GREEN***	
	D. (A-1) ALL OTHER VALVE IND	***AMBER***	
3.	(C) DEPUTY, PLACE PRESS. IN EMERGENCY	DIRECTED	____
	A. (D) EMERGENCY PB	***DEPRESSED***	
	B. (D) PHASE II PRESSURES	***MANUALLY MAINTAINED***	
4.	(C) A-1, M-1, INVESTIGATE CAUSE OF HIGH (OR LOW) OXYGEN ALARM	DIRECTED	____
5.	(C) CAUSE OF OXYGEN ALARM	DETERMINED	____
6.	(C) A-1, M-1, RESET OXYGEN DETECTOR SYSTEM	DIRECTED	____
	A. (M-1) SYSTEM RESET AND HORN SILENCE PB (DET CAB.)	DEPRESSED	
	B. (M-1) OXYGEN PURGE RESET (OR CR-44 RELAY RESET) PB (FTC-2)	DEPRESSED	

NOTE

If system is determined to be unsafe for LO_2 drain, perform ACTION 2.

If system is determined to be safe for LO_2 drain, perform ACTION 3.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19% (CONT)

ACTION 2

(IF SYSTEM UNSAFE FOR LO_2 DRAIN)

1. (C) ALLOW LO_2 TO BOIL OFF — ACCOMPLISHED _____

ACTION 3

(IF SYSTEM SAFE FOR LO_2 DRAIN)

1. (C) A-1, START LO_2 DRAIN — DIRECTED _____
   - A. (A-1) LO_2 TANKING SYS PWR SW — OFF - 1 SEC - ON
   - B. (A-1) REMOTE LOCAL SW — REMOTE

(AFTER LO_2 DRAIN COMPLETE IND AMBER)

2. (C) DEPUTY, DEPRESS AUTOMATIC PB — DIRECTED _____

ITEM 6D. AIR WASHER DUST COLL UNITS NOT OPERATING

1. (C) ABORT (NONTACTICAL CD) — ***INITIATED*** _____

ITEM 6E. DIESEL VAPOR HIGH LEVEL

1. (C) ABORT (NONTACTICAL CD) — ***INITIATED*** _____

(AFTER ABORT INITIATED OR MSL AWAY)

2. (C) A-1, M-1, VISUALLY CHECK SILO LEVEL 5 AND 6 — DIRECTED _____

NOTE

Attempt to isolate leakage and prevent fire potential.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 6F. LCC AIR RCVR & INST AIR RCVR LOW PRESS.

NOTE

If the LCC AIR RECEIVER or the INSTRUMENT AIR RECEIVER LOW PRESSURE indicators illuminate red separately, continue countdown. If both indicators illuminate during countdown, a severe leak in the system is indicated; perform step 1.

1.	*(C) ABORT (NONTACTICAL CD)*	*INITIATED* ____

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED

1.	*(C) ABORT (NONTACTICAL CD)*	*INITIATED* ____

NOTE

Blast closures should open automatically in 90 seconds if a nuclear blast or a malfunction in the blast detection or closure systems has not occurred.

(OMIT STEP 2 IF DETECTOR NORMAL)

2.	(C) M-1, RESET BLAST DETECTION CABINET	DIRECTED ____
	A. (M-1) OUTPUT RELAY SW	DISCONNECT
	B. (M-1) RCVR 1 MANUAL TEST PB	DEPRESSED
	C. (M-1) ALARM RESET PB	DEPRESSED
	D. (M-1) OUTPUT RELAY SW	CONNECT
	E. (M-1) DETECTION MODE RESET PB	DEPRESSED
	F. (M-1) OPTIC MODE IND	ILLUMINATED
	G. (M-1) CHANNEL IND	CYCLING

(OMIT STEP 3 IF CLOSURES OPEN)

3.	(C) M-1, OUTPUT RELAY SWITCH TO DISCONNECT	DIRECTED ____

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED (CONT)

(OMIT STEP 4 IF GEN NOT IN PARALLEL)

4. (C) L-1, SHUT DOWN ONE GEN — DIRECTED ____
   - A. (L-1) GEN MAIN BKR CONT SW — TRIP
   - B. (L-1) ENGINE START-STOP SW — STOP

5. (DELETED)

(OMIT STEP 6 IF DETECTOR & CLOSURES NORMAL)

6. (C) M-1, TROUBLESHOOT BLAST CLOSURES — DIRECTED ____
   - A. (M-1) CB-1 AND CB-3 (EMCC PNL C) — ON OR RESET

WARNING

Control circuit voltage is 120 VAC. Use extreme caution while installing jumper wires on terminal board E-1 of facility interface cabinet, level 3.

(OMIT STEPS B THRU E IF CLOSURES NORMAL)

- B. (M-1) JUMPER FROM 9013 TO 9015 — CONNECTED
- C. (M-1) JUMPER FROM 9015 TO 9017 — CONNECTED
- D. (M-1) JUMPER FROM 9017 TO 9019 — CONNECTED
- E. (M-1) JUMPER FROM C-6 TO 9013 — CONNECTED

NOTE

If it becomes necessary to stop the diesel generator, ensure that work platform NO. 1 is extended.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 6H. MISSILE POD AIR HI TEMP OR LO PRESSURE

1. *(C) ABORT (NONTACTICAL CD)* — *INITIATED* ____

ITEM 6I. EMERGENCY WATER PUMP P-32 ON

(OMIT STEP 1 IF GEN NOT PARALLELED)

1. *(C) L-1, SHUT DOWN ONE GEN* — *DIRECTED* ____

(OMIT STEP A IF PRIOR TO POWER INTERNAL IND GREEN)

- A. *(L-1) FEEDER NO. 3 SW* — *TRIP*
- B. *(L-1) GEN MAIN BKR CONT SW* — *TRIP*
- C. *(L-1) ENGINE START-STOP SW* — *STOP*

2. *(C) ABORT (NONTACTICAL)* — *INITIATED* ____

ITEM 7. ENGINES AND GROUND POWER IND RED (28 VDC POWER & 400 CYCLE POWER IND EXTINGUISHED)

1. *(C) ABORT* — *INITIATED* ____

(AFTER LO_2 DRAIN COMPLETE IND GREEN)

2. (C) A-1, M-1, OBSERVE SPGG INDICATORS (AC PWR DIST PNL) — DIRECTED ____

NOTE

Perform step 3 only if SPGG indicators (3) are green.

3. (C) A-1, M-1 OBTAIN MANUAL CONTROL OF PSC — DIRECTED ____
   - A. (M-1) VALVES 105 AND 106 (PSC) — CLOSED
   - B. (A-1) SYSTEM POWER SW (PNEU PNL 1) — OFF

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 7. ENGINES AND GROUND POWER IND RED (28 VDC POWER & 400 CYCLE POWER IND EXTINGUISHED) (CONT)

NOTE

Open valve 123 to raise fuel tank press.
Open valve 125 to lower fuel tank press.
Open valve 124 to raise LO_2 tank press.
Open valve 126 to lower LO_2 tank press.

C. (M-1) MISSILE TANK PRESSURES (PHASE I) MAINTAINED

ITEM 8. 400 CYCLE POWER INDICATOR RED

1. ***(C) ABORT (NONTACTICAL CD)*** ***INITIATED*** ____

NOTE

During a tactical launch prior to commit, perform steps 2 and 3. If after commit start, allow countdown to continue; do not proceed to steps 2 and 3.

2. (C) M-1, REPORT STATUS OF GND FREQUENCY AND VOLTAGE IND AT MSL GROUND POWER PANEL 1 DIRECTED ____

NOTE

If GROUND FREQUENCY indicator is RED and frequency is 400 (±6) CPS and (or) GROUND VOLTAGE indicator is RED and voltage is 116.7 (±1.4) volts, omit step 3; continue countdown.

If GROUND FREQUENCY indicator is RED and frequency is out of tolerance, adjust frequency at PRCP.

If GROUND VOLTAGE indicator is RED and voltage is out of tolerance, adjust voltage at motor generator.

3. (C) M-1/L-1, ADJUST VOLTAGE/FREQUENCY DIRECTED ____

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 9. VDC POWER INDICATOR AMBER OR RED

NOTE

If after inverter start, and a restart is not anticipated in a tactical countdown, abort shall be delayed until missile away.

1. ***(C) ABORT*** ***INITIATED*** ____

(AFTER LO_2 DRAIN COMPLETE IND GREEN)

2. (C) A-1, M-1, OBTAIN MANUAL CONTROL OF PSC — DIRECTED ____

   A. (M-1) VALVES 105 AND 106 (PSC) — CLOSED

   B. (A-1) SYSTEM POWER SW (PNEU PNL 1) — OFF

NOTE

Open valve 123 to raise fuel tank pressure.

Open valve 125 to lower fuel tank pressure.

Open valve 124 to raise LO_2 tank pressure.

Open valve 126 to lower LO_2 tank pressure.

   C. (M-1) MISSILE TANK PRESSURES (PHASE I) — MAINTAINED

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 10. GUIDANCE FAIL INDICATOR RED

NOTE

If guidance has been on memory for 7 minutes, delay troubleshooting for 2 minutes. If GUIDANCE FAIL indicator extinguishes, troubleshooting is not necessary.

NOTE

Do not attempt target recycle until a minimum of 6 minutes have elapsed after countdown start.

ACTION 1

1. (C) TARGET RECYCLE	INITIATED	____
A. (C) ALTERNATE TARGET	SELECTED	
B. (C) GUIDANCE FAIL IND	EXTINGUISHED	
C. (C) ALTERNATE TARGET IND	GREEN	
D. (C) LAUNCH TARGET	SELECTED	
E. (C) LAUNCH TARGET IND	GREEN	

NOTE

During a nontactical countdown if malfunction is not corrected, initiate abort.

During a tactical countdown if malfunction is not corrected, perform ACTION 2.

ACTION 2

1. (C) A-1, CHECK GUIDANCE COUNTDOWN GROUP FUSES	DIRECTED	____
A. (A-1) STATUS OF FUSES	REPORTED	
B. (A-1) BLOWN FUSES	REPLACED	____

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 10. GUIDANCE FAIL INDICATOR RED (CONT)

ACTION 2 (CONT)

NOTE

If fuses are normal, initiate abort.

If fuses were replaced, perform step 2.

2.	(C) TARGET RECYCLE	INITIATED	____
	A. (C) ALTERNATE TARGET	SELECTED	
	B. (C) GUIDANCE FAIL IND	EXTINGUISHED	
	C. (C) ALTERNATE TARGET IND	GREEN	
	D. (C) LAUNCH TARGET	SELECTED	
	E. (C) LAUNCH TARGET IND	GREEN	

NOTE

If GUIDANCE FAIL indicator does not extinguish, abort is required.

ITEM 11. MISSILE LIFT FAIL INDICATOR RED

1.	***(C) ABORT (NONTACTICAL CD)***	***INITIATED***	____

NOTE

During a tactical countdown prior to commit start, proceed to step 2. If after commit start, allow countdown to continue.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 11. MISSILE LIFT FAIL INDICATOR RED (CONT)

2.	(C) M-1, A-1, TROUBLESHOOT MLS	DIRECTED _____
	A. (M-1) RESET PROGRAMMER KEY	ON
	B. (M-1) NOT RECHARGED IND COND (RED OR EXT) (LCL CONT HYD PNL)	REPORTED

NOTE

If NOT RECHARGED indicator is illuminated RED, proceed to step 3.

	(SELECT 28 VDC NOT IN USE)	
	C. (M-1) TRANSFER PB (MLSMCC)	DEPRESSED
	D. (M-1) CKT BKR (MLSMCC AND ELEC MSL LIFTING CONT SYS)	RESET
	E. (M-1) LAUNCHER STATUS AND TEST START PB	SIMULTANEOUSLY DEPRESSED
	F. (M-1) HYD 40 HP PUMP ON PB (LCL CONT HYD PNL)	DEPRESSED
	(AFTER 30 SECONDS)	
	G. (M-1) HYD 40 HP PUMP OFF PB	DEPRESSED

NOTE

If MISSILE LIFT FAIL indicator did not extinguish, abort is required.

EMERGENCIES FROM COUNTDOWN START TO MISSILE LIFT UP & LOCKED INDICATOR AMBER (CONT)

ITEM 11. MISSILE LIFT FAIL INDICATOR RED (CONT)

(AFTER LN_2 LOAD IND GREEN)

3. (C) A-1, M-1, INITIATE GN_2 RECHARGE — DIRECTED _____

   A. (A-1) VALVE 7, 13, 14, 26, 37, 215, 52 & 54 SW (LN_2-HE PNL 1) — OPEN

   B. (A-1) ALL OTHER VALVE SW — CLOSED

   C. (A-1) REMOTE LOCAL SW — LOCAL

   D. (M-1) RECHARGE PB (LCL CONT HYD PNL) — DEPRESSED

   (AFTER RECHARGE COMPLETE)

   E. (A-1) REMOTE LOCAL SW — REMOTE

NOTE

If MISSILE LIFT FAIL indicator did not extinguish, abort is required.

4. (C) M-1, RESET PROGRAMMER KEY OFF — DIRECTED _____

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN

PRELIMINARY INSTRUCTIONS

This checklist contains procedures for emergency conditions during this operating period. The following is a list of emergency conditions and the page numbers where required actions are given. This checklist is abbreviated from table 4-3 of T.O. 21M-HGM16F-1.

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 1. PRESSURE MODE INDICATOR RED

1.	***(C) ABORT***	***INITIATED***	____

NOTE

While LP is lowering, control boiloff valve as in normal abort sequence. After ABORT EXTERNAL indicator AMBER, adjust pressures to phase II if necessary, and return system to automatic mode.

ITEM 2A. GENERATOR MALFUNCTION (ALT IN STBY)

1.	***(C) COUNTDOWN***	***CONTINUED***	____
2.	***(C) L-1, PLACE ALT GEN ON LINE SHUT DOWN FAULTY GEN*** (SECTION 8)	***DIRECTED***	____

ITEM 2B. GENERATOR MALFUNCTION (ALT NOT IN STBY)

1.	***(C) COUNTDOWN (TACTICAL)***	***CONTINUED***	____
	(AFTER ABORT IND AMBER OR RED, IF MISSILE NOT LAUNCHED)		
2.	(C) DEPUTY, DEPRESS EMERGENCY PB	DIRECTED	____
	(AFTER ABORT IND AMBER OR RED)		
3.	(C) M-1, RESET PROGRAMMER KEY ON	DIRECTED	____
4.	(C) L-1, SHUT DOWN FAULTY GEN	DIRECTED	____
	A. (L-1) GEN MAIN BKR CONT SW	TRIP	
	B. (L-1) ENGINE START-STOP SW	STOP	

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 2B. GENERATOR MALFUNCTION (ALT NOT IN STBY) (CONT)

5.	(C) ABORT PB	DEPRESSED	____
6.	(C) L-1, TROUBLESHOOT AND RESTORE AC POWER	DIRECTED	____
	(AFTER POWER RESTORED)		
7.	(C) M-1, RESET PROGRAMMER KEY OFF	DIRECTED	____
	(AFTER ABORT COMPLETE)		
8.	(C) CREW, RESET ELEC SYSTEM (SECTION 7)	DIRECTED	____

ITEM 2C. GENERATOR MALFUNCTION (GEN IN PARALLEL)

1.	*(C) COUNTDOWN*	*CONTINUED*	____

CAUTION

If PRCP ammeter indicates rapidly falling current, perform step 2 immediately. If current not falling rapidly, perform step 2 after missile is launched or ABORT indicator illuminates AMBER or RED.

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 2C. GENERATOR MALFUNCTION (GEN IN PARALLEL) (CONT)

2.	*(C) L-1 SHUT DOWN FAULTY GEN*	*DIRECTED*	____
	(OMIT STEP A IF MISSILE AWAY OR ABORT IND AMBER OR RED)		
	A. (L-1) FEEDER NO. 3 SW	*TRIP*	
	B. (L-1) GEN MAIN BKR CONT SW	*TRIP*	
	C. (L-1) ENGINE START-STOP SW	*STOP*	

ITEM 3. LOSS OF AC POWER

ACTION 1

1.	(C) ABORT	INITIATED	____
2.	(C) M-1, RESET PROGRAMMER KEY ON	DIRECTED	____
3.	(C) L-1, RESTORE AC POWER (SECTION 6A/6B)	DIRECTED	____

NOTE

If AC power is restored at PRCP, perform ACTION 2.

If AC power cannot be restored immediately at PRCP, perform ACTION 3.

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 3. LOSS OF AC POWER (CONT)

ACTION 2

1.	(C) L-1, NONESSENTIAL POWER ON	DIRECTED	____
2.	(C) M-1, RESET PROGRAMMER KEY OFF	DIRECTED	____
3.	(C) M-1, RESET LCC ELEC SYS (SECTION 7)	DIRECTED	____
	(AFTER ABORT COMPLETE)		
4.	(C) CREW, RESET ELEC SYS (SECTION 7)	DIRECTED	____

ACTION 3

WARNING

Regardless of LP position, if boiloff valve is closed, immediately depress EMERGENCY pushbutton. After LO_2 tank pressure decreases to phase II, depress AUTOMATIC pushbutton. Enable boiloff valve periodically to relieve pressure when LO_2 tank pressure increases to 12 PSI. Proceed to step 1.

WARNING

If boiloff will impinge on tension equilizer and water to spray tension equilizer, or MEPU is not available, do not proceed with step 1 until silo is determined safe.

(OMIT WATER SPRAY IF NO IMPINGEMENT)

1.	(C) A-1, SPRAY TENSION EQUALIZER OR EXTEND MEPU	DIRECTED	____
	(WHEN A-1 READY)		
2.	(C) DEPUTY, DEPRESS EMERGENCY PB	DIRECTED	____

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 3. LOSS OF AC POWER (CONT)

ACTION 3 (CONT)

3. (DELETED)

4. (C) L-1, TROUBLESHOOT AND RESTORE AC POWER — DIRECTED ____

5. (DELETED)

(AFTER POWER RESTORED)

6. (C) M-1, RESET LCC ELEC SYS (SECTION 7) — DIRECTED ____

7. (C) M-1, RESET PROGRAMMER KEY OFF — DIRECTED ____

(AFTER ABORT COMPLETE)

8. CREW, RESET ELEC SYS (SECTION 7) — DIRECTED ____

ITEM 4. LOSS OF UMBILICALS

WARNING

During a tactical or training launch, if umbilical loss occurs after PROGRAMMER ARMED indicator GREEN, the flight programmer may be running. In this case the retarding rockets may fire, causing possible loss of missile. Continue countdown; do not initiate abort. Remain in the LCC.

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

1. (C) AIRBORNE FILL & DRAIN VALVE IND AMBER — OBSERVED ____

WARNING

If AIRBORNE FILL & DRAIN VALVE indicator is GREEN, continue countdown; do not proceed to step 2.

2. (C) ABORT — INITIATED ____

3. (C) A-1, LO_2 TANKING PANEL TO LOCAL — DIRECTED ____

(AFTER ABORT EXTERNAL IND AMBER)

4. (C) DEPUTY, DEPRESS EMERGENCY PB — DIRECTED ____

NOTE

The Deputy shall maintain PNEU IN PHASE II indicator GREEN by depressing the FUEL RAISE pushbutton whenever the PNEU IN PHASE II indicator illuminates AMBER. Release immediately when indicator illuminates GREEN.

5. (C) DEPUTY, MAINTAIN PNEU IN PHASE II IND GREEN — DIRECTED ____

6. (C) A-1, MANUALLY DRAIN LO_2 — DIRECTED ____

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

NOTE

If L-16 valve indicator does not illuminate GREEN when L-16 valve switch is positioned to OPEN, position L-1 valve switch to OPEN.

A. (A-1) L-16 (OR L-1 IF USED) VALVE SW — OPEN

NOTE

If it becomes necessary to stop LO_2 draining for any reason, position A/B F&D valve switch to CLOSED.

B. (A-1) A/B F&D SW (START TIMING) — OPEN

C. (A-1) AIRBORNE FILL & DRAIN VALVE IND — GREEN

NOTE

After 30 min of drain, proceed to step 7.

7. (C) A-1, SECURE LO_2 TANKING PANELS — DIRECTED _____

A. (A-1) L-16 (OR L-1 IF USED) VALVE SW — CLOSED

B. (A-1) L-16 (OR L-1 IF USED) VALVE IND — AMBER

C. (A-1) A/B F&D VALVE SW — CLOSED

D. (A-1) AIRBORNE FILL & DRAIN VALVE IND — AMBER

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

8. (C) CREW, PLACE MISSILE IN STRETCH (SECTION 5) DIRECTED ____

NOTE

If TV monitor is not available to monitor PSMR, open valve 148 in PSC prior to maintaining pressures at HCU.

9. (C) DEPUTY OR M-1, MONITOR AND MAINTAIN TANK PRESS. DIRECTED ____

WARNING

After LO_2 is drained, maintenance support is required to safe ordnance (if installed) and reconnect umbilicals. Exception may be made during a tactical launch if the missile crew can determine that no stray voltage exists at the umbilicals.

ITEM 5. FIRE IN SILO

1. (C) COUNTDOWN ***CONTINUED*** ____

2. (C) FIRE LOCATION IDENTIFIED ____

(OMIT STEP 3 IF FIRE NOT IN MEA)

3. (C) M-1, ACTIVATE MEA FOG SYS DIRECTED ____

NOTE

Proceed to step 4 after MISSILE LIFT UP & LOCKED indicator GREEN. Do not initiate abort until silo is safe. If missile was not launched, maintain proper missile tank pressures.

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 5. FIRE IN SILO (CONT)

CAUTION

If LP fails to reach up and locked, position RESET PROGRAMMER KEY to ON and depress ABORT pushbutton prior to proceeding to step 4.

4. (C) CREW, COMBAT THE FIRE — DIRECTED ____
5. (C) DISASTER CONTROL AND POTENTIAL HAZARD PROCEDURES — IMPLEMENTED ____

NOTE

No action other than troubleshooting is required for FRCP malfunction indications not listed in the following items. Countdown may continue and malfunction shall be corrected after abort is complete.

ITEM 6A. SILO CONTROL CABINET HIGH TEMPERATURE

1. (C) COUNTDOWN — *CONTINUED* ____

ITEM 6B. MAIN EXHAUST FAN NOT OPERATING

1. (C) COUNTDOWN — *CONTINUED* ____

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19%

ACTION 1

(OMIT STEP 1 IF SPILLAGE FROM LP)

1. (C) COUNTDOWN — *CONTINUED* ____

NOTE

A. IF SPILLAGE FROM LP PERFORM STEP 2 IMMEDIATELY.

B. IF NO SPILLAGE FROM LP PERFORM STEP 2 AFTER LP UP AND LOCKED

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19% (CONT)

ACTION 1 (CONT)

2.	*(C) ABORT*	*INITIATED*	____
	(AFTER ABORT EXTERNAL IND AMBER)		
3.	*(C) A-1, STOP LO_2 DRAIN*	*DIRECTED*	____
	A. (A-1) L-16 SW	*OPEN*	
	B. (A-1) REMOTE LOCAL SW	*LOCAL*	
	C. (A-1) L-16, N-5, & N-4 VALVE IND	*GREEN*	
	D. (A-1) ALL OTHER VALVE IND	*AMBER*	
4.	(C) DEPUTY, PLACE PRESS. IN EMERGENCY	DIRECTED	____
	A. (D) EMERGENCY PB	*DEPRESSED*	
	B. (D) PHASE II PRESSURES	*MANUALLY MAINTAINED*	
5.	(C) A-1, M-1, INVESTIGATE CAUSE OF HIGH (OR LOW) OXYGEN ALARM	DIRECTED	____
6.	(C) CAUSE OF OXYGEN ALARM	DETERMINED	____
7.	(C) A-1, M-1, RESET OXYGEN DETECTOR SYSTEM	DIRECTED	____
	A. (M-1) SYSTEM RESET AND HORN SILENCE PB (DET CAB)	DEPRESSED	
	B. (M-1) OXYGEN PURGE RESET (OR CR-44 RELAY RESET) PB (FTC-2)	DEPRESSED	

NOTE

If system is determined to be unsafe for LO_2 drain, perform ACTION 2.

If system is determined to be safe for LO_2 drain, perform ACTION 3.

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19% (CONT)

ACTION 2

(IF SYSTEM UNSAFE FOR LO_2 DRAIN)

1. (C) ALLOW LO_2 TO BOIL OFF — ACCOMPLISHED ____

ACTION 3

(IF SYSTEM SAFE FOR LO_2 DRAIN)

1. (C) A-1, START LO_2 DRAIN — DIRECTED ____
   - A. (A-1) LO_2 TANKING SYS PWR SW — OFF - 1 SEC - ON
   - B. (A-1) REMOTE LOCAL SW — REMOTE

(AFTER LO_2 DRAIN COMPLETE IND AMBER)

2. (C) DEPUTY, DEPRESS AUTOMATIC PB — DIRECTED ____

ITEM 6D. AIR WASHER DUST COLL UNITS NOT OPERATING

1. (C) COUNTDOWN — ***CONTINUED*** ____

ITEM 6E. DIESEL VAPOR HIGH LEVEL

1. (C) COUNTDOWN — ***CONTINUED*** ____

NOTE

Proceed to step 2 after MISSILE LIFT UP & LOCKED indicator GREEN. Do not initiate abort until silo is safe. If missile was not launched, maintain proper missile tank pressures.

CAUTION

If LP fails to reach up and locked, position RESET PROGRAMMER KEY to ON and depress ABORT pushbutton prior to proceeding to step 2.

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 6E. DIESEL VAPOR HIGH LEVEL (CONT)

2. (C) A-1, VISUALLY CHECK SILO LEVELS 5 AND 6 — DIRECTED ____

NOTE

Actions will vary at this point. Attempt to isolate leakage and prevent fire potential. When silo is determined safe, perform step 3.

3. (C) ABORT — INITIATED ____

ITEM 6F. LCC AIR RCVR & INST AIR RCVR LOW PRESS.

1. (C) ABORT (NONTACTICAL CD) — ***INITIATED*** ____

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED

1. (C) COUNTDOWN — ***CONTINUED*** ____

(AFTER LP UP & LOCKED)

2. (C) ABORT — ***INITIATED*** ____

NOTE

Blast closures should open automatically in 90 seconds if a nuclear blast or a malfunction in the blast detection or closure systems has not occurred.

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED (CONT)

(OMIT STEP 3 IF DETECTOR NORMAL)

3.	(C) M-1, RESET BLAST DETECTION CABINET	DIRECTED ____
	A. (M-1) OUTPUT RELAY SW	DISCONNECT
	B. (M-1) RCVR 1 MANUAL TEST PB	DEPRESSED
	C. (M-1) ALARM RESET PB	DEPRESSED
	D. (M-1) OUTPUT RELAY SW	CONNECT
	E. (M-1) DETECTION MODE RESET PB	DEPRESSED
	F. (M-1) OPTIC MODE IND	ILLUMINATED
	G. (M-1) CHANNEL IND	CYCLING

(OMIT STEP 4 IF CLOSURES OPEN)

4.	(C) M-1, OUTPUT RELAY SWITCH TO DISCONNECT	DIRECTED ____

NOTE

If generators are in parallel, perform step 5 if blast closures are not open.

5.	(C) L-1, SHUT DOWN ONE GEN	DIRECTED ____
	A. (L-1) GEN MAIN BKR CONT SW	TRIP
	B. (L-1) ENGINE START-STOP SW	STOP

(CONTINUED ON NEXT PAGE)

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED (CONT)

(AFTER LO_2 DRAIN COMPLETE)

6. (C) M-1, STOP P-32, CHECK P-30 OR P-31 — DIRECTED _____
   - A. (M-1) P-32 STOP PB (FTC-2) — DEPRESSED
   - B. (M-1) P-30 OR P-31 RUN IND — ILLUMINATED

(OMIT STEP 7 IF DETECTOR & CLOSURES NORMAL)

7. (C) M-1, TROUBLESHOOT BLAST CLOSURES — DIRECTED _____
   - A. (M-1) CB-1 AND CB-3 (EMCC PNL 1) — ON OR RESET

WARNING

Control circuit voltage is 120 VAC. Use extreme caution while installing jumper wires on terminal board E-1 of facility interface cabinet, level 3.

(OMIT STEPS B THRU E IF CLOSURES NORMAL)

- B. (M-1) JUMPER FROM 9013 TO 9015 — CONNECTED
- C. (M-1) JUMPER FROM 9015 TO 9017 — CONNECTED
- D. (M-1) JUMPER FROM 9017 TO 9019 — CONNECTED
- E. (M-1) JUMPER FROM C-6 TO 9013 — CONNECTED

NOTE

If it becomes necessary to stop the diesel generator ensure that work platform NO. 1 is extended.

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 6H. MISSILE POD AIR HI TEMP OR LO PRESSURE

1. *(C) COUNTDOWN* — *CONTINUED* ____

ITEM 6I. EMERGENCY WATER PUMP P-32 ON

1. *(C) COUNTDOWN* — *CONTINUED* ____

NOTE

Delay performing step 2 until after MISSILE AWAY indicator GREEN or ABORT indicator AMBER or RED.

2. *(C) L-1, SHUT DOWN ONE GEN* — *DIRECTED* ____
   - A. *(L-1) GEN MAIN BKR CONT SW* — *TRIP*
   - B. *(L-1) ENGINE START-STOP SW* — *STOP*

ITEM 7. ENGINES AND GROUND POWER IND RED (28 VDC POWER & 400 CYCLE POWER IND EXTINGUISHED

1. *(C) COUNTDOWN* — *CONTINUED* ____

ITEM 8. 400 CYCLE POWER INDICATOR RED

1. *(C) COUNTDOWN* — *CONTINUED* ____

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 9. 28 VDC POWER INDICATOR AMBER OR RED

1. *(C) COUNTDOWN* ***CONTINUED*** ____

NOTE

Immediately after ABORT indicator RED, proceed to step 2.

If LP fails to reach up and locked position, proceed to step 2 after MISSILE LIFT FAIL indicator illuminates RED and ABORT indicator illuminates AMBER.

If 28-VDC power has been interrupted, perform manual abort (Section 10, action 1.)

2. (C) ABORT INITIATED ____

(AFTER LO_2 DRAIN COMPLETE IND GREEN)

3. (C) A-1, M-1, OBTAIN MANUAL CONTROL OF PSC DIRECTED ____

A. (M-1) VALVES 105 AND 106 (PSC) CLOSED

B. (A-1) SYSTEM POWER SW (PNEU PNL 1) OFF

NOTE

Open valve 123 to raise fuel tank pressure.

Open valve 125 to lower fuel tank pressure.

Open valve 124 to raise LO_2 tank pressure.

Open valve 126 to lower LO_2 tank pressure.

C. (M-1) MISSILE TANK PRESSURES (PHASE I) MAINTAINED

EMERGENCIES FROM MISSILE LIFT UP & LOCKED INDICATOR AMBER THROUGH MISSILE LIFT UP & LOCKED INDICATOR GREEN (CONT)

ITEM 10. GUIDANCE FAIL INDICATOR RED

1. (C) COUNTDOWN *CONTINUED* ____

ITEM 11. MISSILE LIFT FAIL INDICATOR RED

CAUTION

If the ABORT indicator illuminates AMBER, initiate abort.

1. (C) COUNTDOWN *CONTINUED* ____

EMERGENCIES DURING ABORT

PRELIMINARY INSTRUCTIONS

This checklist contains procedures for emergency conditions during this operating period. The following is a list of emergency conditions and the page numbers where required actions are given. This checklist is abbreviated from table 4-4 of T.O. 21M-HGM16F-1.

EMERGENCIES DURING ABORT (CONT)

ITEM 1. PRESSURE MODE INDICATOR RED

CAUTION

Maintain a minimum of 2 PSI as observed on the DIFFERENTIAL PRESSURE gauge.

NOTE

If prior to ABORT EXTERNAL indicator AMBER, perform ACTION 1.

If after ABORT EXTERNAL indicator AMBER, perform ACTION 2.

ACTION 1

1.	*(D) AUTOMATIC PB*	*DEPRESSED* ____
2.	*(C) ABORT*	*CONTINUED* ____

ACTION 2

(IF PRESSURES NOT NORMAL)

1.	*(D) TANK PRESSURES*	*ADJUSTED* ____

(IF OR WHEN PRESSURES NORMAL)

2.	*(D) AUTOMATIC PB*	*DEPRESSED* ____

NOTE

If PRESSURE MODE indicator illuminates and remains GREEN, troubleshoot system after abort complete; do not proceed to step 3.

If PRESSURE MODE indicator remains or returns to RED, proceed to step 3.

EMERGENCIES DURING ABORT (CONT)

ITEM 1. PRESSURE MODE INDICATOR RED (CONT)

ACTION 2 (CONT)

3.	*(D) PROPER PRESSURES*	*MANUALLY MAINTAINED*	____
	(AFTER LO_2 DRAIN COMPLETE IND GREEN)		
4.	*(C) CREW, PLACE MISSILE IN STRETCH* (SECTION 5)	*DIRECTED*	____

ITEM 2A. GENERATOR MALFUNCTION (ALT IN STBY)

1.	*(C) L-1, PLACE ALT GEN ON LINE AND SHUT DOWN FAULTY GEN* (SECTION 8)	*DIRECTED*	____

ITEM 2B. GENERATOR MALFUNCTION (ALT NOT IN STBY)

1.	*(C) ABORT*	*CONTINUED*	____

NOTE

After SITE HARD indicator GREEN, proceed to step 2. If possible, delay shutdown until work platform NO. 1 is extended.

2.	(C) L-1, SHUT DOWN FAULTY GEN	DIRECTED	____
	A. (L-1) FEEDER NO. 3 SW	TRIP	
	B. (L-1) GEN MAIN BKR CONT SW	TRIP	
	C. (L-1) ENGINE START-STOP SW	STOP	

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 2B. GENERATOR MALFUNCTION (ALT NOT IN STBY) (CONT)

(AFTER LO_2 DRAIN COMPLETE)

3. (C) L-1, TROUBLESHOOT AND RESTORE AC POWER — DIRECTED ____

(AFTER ABORT COMPLETE)

4. (C) CREW, RESET ELEC SYS (SECTION 7) — DIRECTED ____

ITEM 2C. GENERATOR MALFUNCTION (GEN IN PARALLEL)

1. (C) L-1, SHUT DOWN FAULTY GEN — DIRECTED ____

A. (L-1) GEN MAIN BKR CONT SW — TRIP

B. (L-1) ENGINE START-STOP SW — STOP

2. (C) ABORT — CONTINUED ____

ITEM 3. LOSS OF AC POWER

ACTION 1

(OMIT STEP 1 IF LOSS AFTER ABORT EXTERNAL IND AMBER)

1. (C) M-1, RESET PROGRAMMER KEY ON — DIRECTED ____

2. (C) L-1, RESTORE AC POWER (SECTION 6A/6B) — DIRECTED ____

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 3. LOSS OF AC POWER (CONT)

ACTION 1 (CONT)

NOTE

If AC power loss occurred after ABORT EXTERNAL indicator GREEN, LO_2 drain will continue. Monitor LO_2 drain closely.

If AC power is restored at PRCP, perform ACTION 2.

If AC power cannot be restored immediately at PRCP, perform ACTION 3.

ACTION 2

1.	(C) L-1, NONESSENTIAL POWER ON	DIRECTED	____
2.	(C) M-1, RESET PROGRAMMER KEY OFF	DIRECTED	____
3.	(C) M-1, RESET LCC ELEC SYS (SECTION 7)	DIRECTED	____
	(AFTER ABORT COMPLETE)		
4.	(C) CREW, RESET ELEC SYS (SECTION 7)	DIRECTED	____

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 3. LOSS OF AC POWER (CONT)

ACTION 3

WARNING

Regardless of LP position, if boiloff valve is closed, immediately depress EMERGENCY pushbutton. After LO_2 tank pressure decreases to phase II, depress AUTOMATIC pushbutton. Enable boiloff valve periodically to relieve pressure when LO_2 tank pressure increases to 12 PSI. Proceed to step 1.

WARNING

If boiloff will impinge on tension equalizer and water to spray tension equalizer or MEPU is not available, do not proceed with checklist until silo is determined safe.

(OMIT WATER SPRAY IF NO IMPINGEMENT)

1. (C) A-1, SPRAY TENSION EQUALIZER OR EXTEND MEPU — DIRECTED ____

NOTE

Omit step 2 if power loss occurred after ABORT EXTERNAL indicator GREEN.

(WHEN A-1 READY)

2. (C) DEPUTY, DEPRESS EMERGENCY PB — DIRECTED ____

3. (DELETED)

4. (C) L-1, TROUBLESHOOT AND RESTORE AC POWER — DIRECTED ____

5. (DELETED)

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 3. LOSS OF AC POWER (CONT)

ACTION 3 (CONT)

	(AFTER POWER RESTORED)		
6.	(C) M-1, RESET LCC ELEC SYS (SECTION 7)	DIRECTED	____
7.	(C) M-1, RESET PROGRAMMER KEY OFF	DIRECTED	____
	(AFTER ABORT COMPLETE)		
8.	CREW, RESET ELEC SYS (SECTION 7)	DIRECTED	____

ITEM 4. LOSS OF UMBILICALS

NOTE

Prior to LO_2 DRAIN COMPLETE ind AMBER, observe AIRBORNE FILL & DRAIN VALVE indicator and boiloff valve:

If indicator is GREEN and boiloff valve is closed, proceed to ACTION 1.

If indicator is GREEN and boiloff valve is open, proceed to ACTION 2.

If indicator is AMBER, proceed to ACTION 3.

After LO_2 DRAIN COMPLETE indicator AMBER, proceed to ACTION 4.

EMERGENCIES DURING ABORT (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 1

1. (C) M-1, RESET PROGRAMMER KEY ON — DIRECTED ____

NOTE

If M/L STOP indicator on CSMOL is RED, up movement of LP will not occur.

2. (C) M-1, DEPRESS UP RUN PB — DIRECTED ____

WARNING

Expect loss of missile. All personnel shall remain in the LCC.

ACTION 2

1. (C) ABORT — CONTINUED ____

(AFTER ABORT EXTERNAL IND AMBER)

2. (C) DEPUTY, DEPRESS EMERGENCY PB — DIRECTED ____

NOTE

The Deputy shall maintain PNEU IN PHASE II indicator GREEN by depressing the FUEL RAISE pushbutton whenever the PNEU IN PHASE II indicator illuminates AMBER. Release immediately when indicator illuminates GREEN.

3. (C) DEPUTY, MAINTAIN PNEU IN PHASE II IND GREEN — DIRECTED ____

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 2 (CONT)

4. (C) ALLOW LO_2 TO BOIL OFF — ACCOMPLISHED _____

WARNING

After LO_2 has boiled off, maintenance support is required to safe ordnance (if installed) and reconnect umbilicals.

ACTION 3

1. (C) ABORT — CONTINUED _____
2. (C) A-1, LO_2 TANKING PANEL TO LOCAL — DIRECTED _____

(AFTER ABORT EXTERNAL IND AMBER)

3. (C) DEPUTY, DEPRESS EMERGENCY PB — DIRECTED _____

NOTE

The Deputy shall maintain PNEU IN PHASE II indicator GREEN by depressing the FUEL RAISE pushbutton whenever the PNEU IN PHASE II indicator illuminates AMBER. Release immediately when indicator illuminates GREEN.

4. (C) DEPUTY, MAINTAIN PNEU IN PHASE II IND GREEN — DIRECTED _____
5. (C) A-1, MANUALLY DRAIN LO_2 — DIRECTED _____

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 3 (CONT)

NOTE

If L-16 valve indicator does not illuminate GREEN when L-16 valve switch is positioned to OPEN, position L-1 valve switch to OPEN.

A. (A-1) L-16 (OR L-1 IF USED) VALVE SW — OPEN

NOTE

If it becomes necessary to stop LO_2 draining for any reason, position A/B F&D valve switch to CLOSED.

B. (A-1) A/B F&D SW (START TIMING) — OPEN

C. (A-1) AIRBORNE FILL & DRAIN VALVE IND — GREEN

NOTE

After 30 min of drain, proceed to step 6.

EMERGENCIES DURING ABORT (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 3 (CONT)

6.	(C) A-1, SECURE LO_2 TANKING PANELS	DIRECTED	____
	A. (A-1) L-16 (OR L-1 IF USED) VALVE SW	CLOSED	
	B. (A-1) L-16 (OR L-1 IF USED) VALVE IND	AMBER	
	C. (A-1) A/B F&D VALVE SW	CLOSED	
	D. (A-1) AIRBORNE FILL & DRAIN VALVE IND	AMBER	
7.	(C) CREW, PLACE MISSILE IN STRTECH (SECTION) 5	DIRECTED	____

NOTE

If TV monitor is not available to monitor PSMR, open valve 148 in PSC prior to maintaining pressures at HCU.

8.	DEPUTY OR M-1, MONITOR AND MAINTAIN TANK PRESS.	DIRECTED	____

WARNING

After LO_2 is drained, maintenance support is required to safe ordnance (if installed) and reconnect umbilicals. Exception may be made during a tactical launch if the missile crew can determine that no stray voltage exists at the umbilicals.

EMERGENCIES DURING ABORT (CONT)

ITEM 4. LOSS OF UMBILICALS (CONT)

ACTION 4

1. (C) DEPUTY, DEPRESS EMERGENCY PB — DIRECTED ____

NOTE

The Deputy shall maintain PNEU IN PHASE II indicator GREEN by depressing the FUEL RAISE pushbutton whenever the PNEU IN PHASE II indicator illuminates AMBER. Release immediately when indicator illuminates GREEN.

2. (C) DEPUTY, MAINTAIN PNEU IN PHASE II IND GREEN — DIRECTED ____
3. (C) NORMAL LO_2 DRAIN — CONTINUED ____

NOTE

If TV monitor is not available to monitor PSMR, open valve 148 in PSC prior to maintaining pressures at HCU.

(AFTER LO_2 DRAIN COMPLETE IND GREEN)

4. (C) DEPUTY OR M-1, MONITOR AND MAINTAIN TANK PRESS. — DIRECTED ____
5. (C) A-1, L-1, PLACE MISSILE IN STRETCH (SECTION 5) — DIRECTED ____

WARNING

After LO_2 is drained, maintenance support is required to safe ordnance (if installed) and reconnect umbilicals. Exception may be made during a tactical launch if the missile crew can determine that no stray voltage exists at the umbilicals.

EMERGENCIES DURING ABORT (CONT)

ITEM 5. FIRE IN SILO

NOTE

If prior to ABORT EXTERNAL indicator AMBER, perform ACTION 1.

If after ABORT EXTERNAL indicator AMBER, perform ACTION 2.

ACTION 1

1.	(C) FIRE LOCATION	IDENTIFIED	____
2.	(C) DEPUTY, DEPRESS AUTOMATIC PB	DIRECTED	____
3.	(C) M-1, DRIVE LP UP	DIRECTED	____
	A. (M-1) RESET PROGRAMMER KEY	ON	
	B. (M-1) UP RUN PB	DEPRESSED	
	(OMIT STEP 4 IF FIRE NOT IN MEA)		
4.	(C) M-1, ACTIVATE MEA FOG SYSTEM	DIRECTED	____
5.	(C) CREW, COMBAT THE FIRE	DIRECTED	____
6.	(C) DISASTER CONTROL AND POTENTIAL HAZARD PROCEDURES	IMPLEMENTED	

NOTE

Do not drive LP down until silo is safe.

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 5. FIRE IN SILO (CONT)

ACTION 1 (CONT)

7.	(C) CREW, PERFORM MANUAL ABORT (SECTION 10, ACTION 1.)	DIRECTED	_____

ACTION 2

1.	(C) FIRE LOCATION	IDENTIFIED	_____
	(OMIT STEP 2 IF FIRE NOT IN MEA)		
2.	(C) M-1, ACTIVATE MEA FOG SYSTEM	DIRECTED	_____
	(AT DISCRETION, IF FIRE UNCONTROLLABLE) (AFTER SITE HARD IND GREEN)		
3.	(C) M-1, OPEN SILO DOORS	DIRECTED	_____
	A. (M-1) RESET PROGRAMMER KEY	ON	
	B. (M-1) HYD 40 HP PUMP ON PB	DEPRESSED	
	C. (M-1) VERTICAL LOCK PB	DEPRESSED	
	D. (M-1) HORIZONTAL LOCK PB	DEPRESSED	
	E. (M-1) SILO DOORS OPEN PB	DEPRESSED & HELD (30 SEC)	
4.	(C) CREW, COMBAT THE FIRE	DIRECTED	_____
5.	(C) DISASTER CONTROL AND POTENTIAL HAZARD PROCEDURES	IMPLEMENTED	_____

EMERGENCIES DURING ABORT (CONT)

NOTE

No action other than troubleshooting is required for FRCP malfunction indications not listed in the following items. ABORT may continue and malfunction shall be corrected after abort is complete.

ITEM 6A. SILO CONTROL CABINET HIGH TEMPERATURE

1. *(C) ABORT* — *CONTINUED* ____

ITEM 6B. MAIN EXHAUST FAN NOT OPERATING

1. *(C) ABORT* — *CONTINUED* ____

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19%

ACTION 1

1. *(C) ABORT* — *CONTINUED* ____

(AFTER ABORT EXTERNAL IND AMBER)

2. *(C) A-1, STOP LO_2 DRAIN* — *DIRECTED* ____

   A. *(A-1) L-16 SW* — *OPEN*

   B. *(A-1) REMOTE LOCAL SW* — *LOCAL*

   C. *(A-1) L-16, N-5, & N-4 VALVE IND* — *GREEN*

   D. *(A-1) ALL OTHER VALVE IND* — *AMBER*

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19% (CONT)

ACTION 1 (CONT)

3.	(C) DEPUTY, PLACE PRESS. IN EMERGENCY	DIRECTED	____
	A. (D) EMERGENCY PB	DEPRESSED	
	B. (D) PHASE II PRESSURES	MANUALLY MAINTAINED	
4.	(C) A-1, M-1, INVESTIGATE CAUSE OF HIGH (OR LOW) OXYGEN ALARM	DIRECTED	____
5.	(C) CAUSE OF OXYGEN ALARM	DETERMINED	____
6.	(C) A-1, M-1, RESET OXYGEN DETECTOR SYSTEM	DIRECTED	____
	A. (M-1) SYSTEM RESET AND HORN SILENCE PB (DET CAB)	DEPRESSED	
	B. (M-1) OXYGEN PURGE RESET (OR CR-44 RELAY RESET) PB (FTC-2)	DEPRESSED	

NOTE

If system is determined to be unsafe for LO_2 drain, perform ACTION 2.

If system is determined to be safe for LO_2 drain, perform ACTION 3.

EMERGENCIES DURING ABORT (CONT)

ITEM 6C. STORAGE AREA OXYGEN 25% OR 19% (CONT)

ACTION 2

(IF SYSTEM UNSAFE FOR LO_2 DRAIN)

1. (C) ALLOW LO_2 TO BOIL OFF — ACCOMPLISHED ____

ACTION 3

(IF SYSTEM SAFE FOR LO_2 DRAIN)

1. (C) A-1, START LO_2 DRAIN — DIRECTED ____
   - A. (A-1) LO_2 TANKING SYS PWR SW — OFF - 1 SEC - ON
   - B. (A-1) REMOTE LOCAL SW — REMOTE

(AFTER LO_2 DRAIN COMPLETE IND AMBER)

2. (C) DEPUTY, DEPRESS AUTOMATIC PB — DIRECTED ____

ITEM 6D. AIR WASHER DUST COLL UNITS NOT OPERATING

1. (C) ABORT — ***CONTINUED*** ____

ITEM 6E. DIESEL VAPOR HIGH LEVEL

1. (C) ABORT — ***CONTINUED*** ____

2. (C) A-1, M-1, VISUALLY CHECK SILL LEVELS 5 AND 6 — DIRECTED ____

NOTE

Attempt to isolate leakage and prevent fire potential.

EMERGENCIES DURING ABORT (CONT)

ITEM 6F. LCC AIR RCVR & INST AIR RCVR LOW PRESS.

1. *(C) ABORT* *CONTINUED* ____

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED

1. *(C) ABORT* *CONTINUED* ____

NOTE

Blast closures should open automatically in 90 seconds if a nuclear blast or a malfunction in the blast detection or closure systems has not occurred.

(OMIT STEP 2 IF DETECTOR NORMAL)

2.	(C) M-1, RESET BLAST DETECTION CABINET	DIRECTED ____
	A. (M-1) OUTPUT RELAY SW	DISCONNECT
	B. (M-1) RCVR 1 MANUAL TEST PB	DEPRESSED
	C. (M-1) ALARM RESET PB	DEPRESSED
	D. (M-1) OUTPUT RELAY SW	CONNECT
	E. (M-1) DETECTION MODE RESET PB	DEPRESSED
	F. (M-1) OPTIC MODE IND	ILLUMINATED
	G. (M-1) CHANNEL IND	CYCLING

(OMIT STEP 3 IF CLOSURES OPEN)

3.	(C) M-1, OUTPUT RELAY SWITCH TO DISCONNECT	DIRECTED ____

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 6G. SILO AIR INT/EXH BLAST CLOSURES CLOSED (CONT)

NOTE

If generators are in parallel, perform step 4 after SITE HARD indicator GREEN.

4.	(C) L-1, SHUT DOWN ONE GEN	DIRECTED	____
	A. (L-1) GEN MAIN BKR CONT SW	TRIP	
	B. (L-1) ENGINE START-STOP SW	STOP	
	(AFTER LO_2 DRAIN COMPLETE)		
5.	(C) M-1, STOP P-32, CHECK P-30 OR P-31	DIRECTED	____
	A. (M-1) P-32 STOP PB (FTC-2)	DEPRESSED	
	B. (M-1) P-30 OR P-31 RUN IND	ILLUMINATED	
	(OMIT STEP 6 IF DETECTOR & CLOSURES NORMAL)		
6.	(C) M-1, TROUBLESHOOT BLAST CLOSURES	DIRECTED	____
	A. (M-1) CB-1 AND CB-3 (EMCC PNL 1)	ON OR RESET	

WARNING

Control circuit voltage is 120 VAC. Use extreme caution while installing jumper wires on terminal board E-1 of facility interface cabinet, level 3.

	(OMIT STEPS B THRU E IF CLOSURES NORMAL)	
B.	(M-1) JUMPER FROM 9013 TO 9015	CONNECTED
C.	(M-1) JUMPER FROM 9015 TO 9017	CONNECTED
D.	(M-1) JUMPER FROM 9017 TO 9019	CONNECTED
E.	(M-1) JUMPER FROM C-6 TO 9013	CONNECTED

NOTE

If it becomes necessary to stop the diesel generator, ensure that work platfrom NO. 1 is extended.

EMERGENCIES DURING ABORT (CONT)

ITEM 6H. MISSILE POD AIR HI TEMP OR LO PRESSURE

1. *(C) ABORT* — *CONTINUED* ____

ITEM 6I. EMERGENCY WATER PUMP P-32 ON

(OMIT STEP 1 IF GEN NOT PARALLELED)

1. *(C) L-1, SHUT DOWN ONE GEN* — *DIRECTED* ____
   - A. *(L-1) GEN MAIN BKR CONT SW* — *TRIP*
   - B. *(L-1) ENGINE START-STOP SW* — *STOP*
2. *(C) ABORT* — *CONTINUED* ____

ITEM 7. ENGINES AND GROUND POWER IND RED (28 VDC POWER & 400 CYCLE POWER IND EXTINGUISHED

1. *(C) ABORT* — *CONTINUED* ____

ITEM 8. 400 CYCLE POWER INDICATOR RED

1. *(C) ABORT* — *CONTINUED* ____

ITEM 9. 28 VDC POWER INDICATOR AMBER OR RED

1. *(C) ABORT* — *CONTINUED* ____

(AFTER LO_2 DRAIN COMPLETE IND GREEN)

2. (C) A-1, M-1, OBTAIN MANUAL CONTROL OF PSC — DIRECTED ____
   - A. (M-1) VALVES 105 AND 106 (PSC) — CLOSED
   - B. (A-1) SYSTEM POWER SW (PNEU PNL 1) — OFF

(CONTINUED ON NEXT PAGE)

EMERGENCIES DURING ABORT (CONT)

ITEM 9. 28 VDC POWER INDICATOR AMBER OR RED (CONT)

NOTE

Open valve 123 to raise fuel tank pressure.

Open valve 125 to lower fuel tank pressure.

Open valve 124 to raise LO_2 tank pressure.

Open valve 126 to lower LO_2 tank pressure.

C. (M-1) MISSILE TANK PRESSURES (PHASE I) MAINTAINED

ITEM 10. GUIDANCE FAIL INDICATOR RED

1. (C) ABORT ***CONTINUED*** ____

ITEM 11. MISSILE LIFT FAIL INDICATOR RED

1. (C) MISSILE DOWN MOVEMENT OBSERVED ____

NOTE

If down movement is observed, continue abort.

If down movement is not observed, refer to section 16, action 1.

EMERGENCY MISSILE STRETCH

PRELIMINARY INSTRUCTIONS

Procedures in this checklist shall be accomplished at MCCC direction if conditions require the missile be placed in emergency stretch. This checklist is abbreviated from table 4-5 of T.O. 21M-HGM16F-1.

ACTION 1

1. (C) PLACE MISSILE IN STRETCH DIRECTED _____

NOTE

Either MCCC or DMCCC shall perform steps a and b. EPPT, MFT, and BMAT (as available) shall perform steps c through r.

A. RESET PROGRAMMER KEY (CSMOL)	*ON*
B. HYD 40 HP PUMP ON PB	*DEPRESSED*
(IF PRACTICAL)	
C. COMMUNICATIONS WITH LCC	*ESTABLISHED*
D. WORK PLATFORM 1	*EXTENDED*
E. HYD 40 HP PUMP OFF PB (LOCAL CONT HYD PNL)	*DEPRESSED*
F. SIDE LEAF	*EXTENDED*
G. FOLDING RAILS	*POSITIONED*
H. STRETCH MECHANISM	*UP AND LOCKED*
I. STRETCH PINS	*INSERTED*
J. STRETCH PUMP ACCESS GRATING	*OPENED*
K. RELEASE VALVE	*CLOSED*
I. STRETCH PUMP HAND VALVE	*OPENED*

NOTE

Position actuator caps prior to or during stretch pump actuation.

(CONTINUED ON NEXT PAGE)

EMERGENCY MISSILE STRETCH (CONT)

ACTION 1 (CONT)

M. STRETCH PUMP (APPLY 2000 PSI)	*OPERATED*
N. STRETCH PUMP HAND VALVE	*CLOSED*
O. STRETCH LOCKING COLLARS	*POSITIONED*
P. STRETCH PUMP HAND VALVE	*OPENED*
Q. RELEASE VALVE	*OPENED*
R. MISSILE IN STRETCH	*REPORTED*

NOTE

If missile was placed in stretch due to missile pressurization system switching to EMERGENCY MODE perform ACTION 2.

ACTION 2

1.	(C) A-1, OBSERVE PNEUMATICS (PANEL 1)	DIRECTED ____
	A. (A-1) EMERGENCY IND STATUS	REPORTED
	B. (A-1) OTHER ABNORMAL INDICATIONS	REPORTED

NOTE

If the EMERGENCY indicator is illuminated RED and no other indicator is illuminated RED, and no abnormal indications were observed on the PLCP; proceed to step 2.

If the EMERGENCY indicator is illuminated RED with other indicators illuminated RED, and (or) abnormal indications were observed on the PLCP; troubleshoot faulty system.

2.	(C) A-1, OBSERVE TANK PRESSURE AT PSC	DIRECTED ____
	A. (A-1) TANK PRESSURES (PSC)	REPORTED

(CONTINUED ON NEXT PAGE)

EMERGENCY MISSILE STRETCH (CONT)

ACTION 2 (CONT)

NOTE

If pressures are not normal, troubleshoot malfunction.

If pressures are normal, proceed to step 3.

3. (C) A-1, OBSERVE PRESSURE GAUGES AT PSMR — DIRECTED ____

   A. (A-1) INST AIR SUPPLY PRESS. (MUST BE GREATER THAN 50 PSI) — REPORTED

   B. (A-1) AIRBORNE HELIUM SUPPLY NO. 1 PRESS. (MUST BE GREATER THAN 1450 PSI) — REPORTED

   C. (A-1) AIRBORNE HELIUM SUPPLY NO. 2 PRESS. (MUST BE GREATER THAN 1450 PSI) — REPORTED

   D. (A-1) PCU NITROGEN SUPPLY PRESS. (MUST BE GREATER THAN 1450 PSI) — REPORTED

NOTE

If pressure in steps 2 and 3 above are normal, proceed to step 4.

If AIRBORNE HELIUM SUPPLY NO. 1 and NO. 2 gauge indications are below 1450 PSI and emergency pressurization occurred during countdown or abort, proceed to step 4, perform manual abort. (Refer to section 10, action 4.)

4. (C) DEPUTY, DEPRESS AUTOMATIC PB — DIRECTED ____

NOTE

If pressurization system remains in automatic mode, return to normal alert configuration.

If pressurization system returns to emergency mode, troubleshoot system.

RESTORING AC POWER AFTER AC POWER LOSS (NA OSTF-2)

PRELIMINARY INSTRUCTIONS

This checklist contains procedures for restoring AC power at the PRCP if power loss was due to the generator main breaker(s) tripping or generator automatically shutting down. Perform item 1 or 2 as applicable. All steps are memory items for the L-1. This checklist is abbreviated from table 4-6A of T.O. 21M-HGM16F-1.

CAUTION

If power cannot be restored at the PRCP, operating generators must be shut down immediately.

CAUTION

Do not operate generators in parallel (operate only one diesel) after AC power loss until complex electrical system has been reset.

ITEM 1. GENERATOR MAIN BREAKER(S) TRIPPED, GENERATOR(S) OPERATING

1.	*(C) L-1, RESTORE AC POWER*	*DIRECTED* ____
	A. FEEDER NO. 3 SW	*TRIP*
	B. SYNCHRONIZING SW	*ON*
	C. INCOMING VOLTMETER	*460 (+2, -8) VOLTS*
	D. INCOMING FREQUENCY METER	*60 CPS*
	E. MAIN BKR CONT SW	*CLOSE*
	F. SYNCHRONIZING SW	*OFF*

(CONTINUED ON NEXT PAGE)

RESTORING AC POWER AFTER AC POWER LOSS (NA OSTF-2) (CONT)

ITEM 1. (CONT)

NOTE

If generators were operating in parallel and power is not restored, shut down the faulty generator and repeat steps b through f on the operating generator.

ITEM 2. GENERATOR SHUT DOWN, ALTERNATE GENERATOR IN STANDBY

1.	*(C) L-1, RESTORE AC POWER*	*DIRECTED*
	A. *FEEDER NO. 3 SW*	*TRIP*
	B. *FAULTY GEN MAIN BKR CONT SW*	*TRIP*
	C. *FAULTY ENGINE STOP-START SW*	*STOP*
	D. *ALT GEN SYNCHRONIZING SW*	*ON*
	E. *ALT ENGINE START-STOP SW*	*START*
	F. *INCOMING VOLTMETER*	*460 (+2, -8) VOLTS*
	G. *INCOMING FREQUENCY METER*	*60 CPS*
	H. *ALT GEN MAIN BKR CONT SW*	*CLOSE*
	I. *SYNCHRONIZING SW*	*OFF*

RESTORING AC POWER AFTER AC POWER LOSS (NA OSTF-2)

PRELIMINARY INSTRUCTIONS

This checklist contains procedures for restoring AC power at the PRCP if power loss was due to the generator main breaker(s) tripping or generator automatically shutting down. Perform item 1 or 2 as applicable. All steps are memory items for the L-1. This checklist is abbreviated from table 4-6A of T.O. 21M-HGM16F-1.

CAUTION

If power cannot be restored at the PRCP, operating generators must be shut down immediately.

CAUTION

Do not operate generators in parallel (operate only one diesel) after AC power loss until complex electrical system has been reset.

ITEM 1. GENERATOR MAIN BREAKER(S) TRIPPED, GENERATOR(S) OPERATING

1.	*(C) L-1, RESTORE AC POWER*	*DIRECTED* ____
	A. FEEDER NO. 3 SW	*TRIP*
	B. SYNCHRONIZING SW	*ON*
	C. INCOMING VOLTMETER	*460 (+2, -8) VOLTS*
	D. INCOMING FREQUENCY METER	*60 CPS*
	E. MAIN BKR CONT SW	*CLOSE*
	F. SYNCHRONIZING SW	*OFF*

(CONTINUED ON NEXT PAGE)

RESTORING AC POWER AFTER AC POWER LOSS (OSTF-2 ONLY)

PRELIMINARY INSTRUCTIONS

This checklist contains procedures for restoring AC power at the PRCP. Perform item 1, 2, 3, or 4 as applicable. All steps are memory items for the L-1. This checklist is abbreviated from table 4-6B of T.O. 21M-HGM16F-1.

ITEM 1. GENERATOR MAIN BREAKER TRIPPED, GENERATOR STILL OPERATING

1.	*(C) L-1, RESTORE AC POWER*	*DIRECTED* ____
	A. *FEEDER NO. 3 SW*	*TRIP*
	B. *GEN VOLTMETER*	*460 (+2, -8) VOLTS*
	C. *GEN FREQUENCY METER*	*60 CPS*
	D. *GEN MAIN BKR SW*	*CLOSE*

ITEM 2. GENERATOR SHUT DOWN, POWER CO. POWER AVAILABLE

1.	*(C) L-1, RESTORE AC POWER*	*DIRECTED* ____
	A. *FEEDER NO. 3 SW*	*TRIP*
	B. *GEN MAIN BKR SW*	*TRIP*
	C. *POWER CO. LINE MAIN BKR SW*	*CLOSE*

ITEM 3. POWER CO. POWER LOST BUT STILL AVAILABLE

1.	*(C) L-1, RESTORE AC POWER*	*DIRECTED* ____
	A. *FEEDER NO. 3 SW*	*TRIP*
	B. *POWER CO. LINE MAIN BKR SW*	*CLOSE*

RESTORING AC POWER AFTER AC POWER LOSS (OSTF-2 ONLY) (CONT)

ITEM 4. POWER CO. POWER LOST AND NOT AVAILABLE GENERATOR IN STANDBY

1. (C) L-1, RESTORE AC POWER	DIRECTED
A. FEEDER NO. 3 SW	TRIP
B. POWER CO. LINE MAIN BKR SW	TRIP
C. ENGINE START-STOP SW	START
D. GEN VOLTMETER	460 (+2, -8) VOLTS
E. GEN FREQUENCY METER	60 CPS
F. GEN MAIN BKR SW	CLOSE

COMPLEX ELECTRICAL SYSTEM RESET

PRELIMINARY INSTRUCTIONS

This checklist contains procedures for resetting complex electrical systems after AC power is restored following AC power loss. These procedures shall be performed by the missile combat crew when directed by the MCCC. The steps identified by double asterisks will be accomplished or verified any time Feeder NO. 3 nonessential power bus has been de-energized and then re-energized. This checklist is abbreviated from table 4-7 of T.O. 21M-HGM16F-1.

1.	FIRE ALARM RESET PB (LCC)	DEPRESSED	____
2.	BLAST DETECTION CAB.	RESET	____
	A. OUTPUT RELAY SW	DISCONNECT	
	B. RCVR 1 MANUAL TEST PB	DEPRESSED	
	C. ALARM RESET PB	DEPRESSED	
	D. OUTPUT RELAY SW	CONNECT	
	E. DETECTION MODE RESET PB	DEPRESSED	
	F. OPTIC MODE IND	ILLUMINATED	
3.	FUSE AND ALARM RESET PB (COMM ROOM)	DEPRESSED	____
4.	FAN COIL UNIT START PB	DEPRESSED	____
5.	SUPPLY FAN START PB (LCC, LEVEL 1)	DEPRESSED	____
6.	EXHAUST FAN START PB	DEPRESSED	____
**7.	SILO LIGHTING START PB (SILO ENTRANCE)	DEPRESSED	____
8.	OXYGEN PURGE RESET (CR-44 RELAY RESET) PB (FTC-2)	DEPRESSED	____

(CONTINUED ON NEXT PAGE)

COMPLEX ELECTRICAL SYSTEM RESET (CONT)

** 9.	LP FAN COIL UNIT FC-40 START PB	DEPRESSED	____
**10.	EMER WATER PUMP P-32 STOP PB	DEPRESSED	____
**11.	COND WATER PUMP P-30 (OR P-31) RUN IND	ILLUMINATED	____
**12.	CHILLED WATER PUMP P-50 (OR P-51) START PB	DEPRESSED	____
**13.	CONT CAB FAN COIL UNIT FC-10 START PB	DEPRESSED	____
**14.	RESET SETTLING TANK PB	DEPRESSED	____
15.	400-CYCLE MOTOR GENERATOR	STARTED	____
	A. MOTOR STARTER START PB	DEPRESSED	
	B. OUTPUT AC VOLTS METER	116 VOLTS NOM	
	C. OUTPUT CONTACTOR ON PB	DEPRESSED	
16.	POWER SUPPLY DISTRIBUTION SET OPERATION	VERIFIED	____
	A. POWER SUPPLY ON IND	GREEN	
	B. STANDBY BUS ON IND	GREEN	
	C. BATTERY DISCHARGE IND	EXTINGUISHED	
	D. DC VOLTMETER	29.5 VOLTS NOM	
	E. DC AMMETER	600 AMPS MAX	

NOTE

If the BATTERY DISCHARGE indicator is illuminated RED, the 28-volt batteries must be recharged in accordance with T.O. 21M-HGM16F-2-6.

(CONTINUED ON NEXT PAGE)

COMPLEX ELECTRICAL SYSTEM RESET (CONT)

NOTE

If POD AIR CONDITIONER MALFUNCTION indicator on the FRCP is illuminated RED, position MGS POWER switch to OFF until the pod air conditioner malfunction is corrected.

16A.	MGS POWER SW (MSL GND PWR PNL 1)	OFF - 1 SEC - ON ____
	(REFER TO T.O. 21M-HGM16F-2-4)	
17.	GUIDANCE WARMUP (LEVEL 3)	INITIATED ____
18.	ENGINE ALARM STOP PB (LEVELS 5 AND 6)	DEPRESSED ____
19.	DIESEL FUEL VAPOR AND GASEOUS OXYGEN DETECTOR CAB. (LEVEL 7)	RESET ____
	A. HORN SILENCE PB (DIESEL)	DEPRESSED
	B. SYSTEM RESET PB (DIESEL)	DEPRESSED
	C. HORN SILENCE PB (GO_2)	DEPRESSED
	D. SYSTEM RESET PB (GO_2)	DEPRESSED
**20.	STORAGE TANK VACUUM PUMPS (LEVEL 8)	STARTED ____
	A. LO_2 STORAGE TANK VACUUM PUMP START PB	DEPRESSED
	B. LO_2 TOPPING TANK VACUUM PUMP START PB	DEPRESSED
	C. LN_2 STORAGE TANK VACUUM PUMP START PB	DEPRESSED

CAUTION

The RESET PROGRAMMER key must be in the ON position before correlating missile lifting system.

(CONTINUED ON NEXT PAGE)

COMPLEX ELECTRICAL SYSTEM RESET (CONT)

21.	MISSILE LIFTING SYSTEM	CORRELATED	____
	A. RESET PROGRAMMER KEY (CSMOL)	ON	
	B. HYD 40 HP PUMP PRESS. IND	EXTINGUISHED	
	C. DIRECTORY SWITCH (LEVEL 1, A4A2)	POSITION 6	
	D. LAUNCHER STATUS AND TEST START PB	DEPRESSED	
	E. LAUNCHER STATUS IND	GREEN	
	F. DIRECTORY SWITCH	POSITION 1	
	G. RESET PROGRAMMER KEY	OFF	
	(THIRTY MINUTES AFTER POWER RESTORED)		
22.	LCC BLAST CLOSURES OPEN PB (FRCP)	DEPRESSED	____
	(REFER TO T.O. 21M-HGM16F-2-4)		
23.	MGS CHECKOUT (LEVEL 3)	INITIATED	____

EMERGENCY DIESEL GENERATOR PARALLELING AND SHUTDOWN (NA OSTF-2)

PRELIMINARY INSTRUCTIONS

This checklist shall be used when paralleling generators at the PRCP during a diesel generator malfunction emergency. All steps are memory items for the L-1. Any other available crew member, as directed by the MCCC, shall accomplish this checklist but is not required to perform the steps from memory. This checklist is abbreviated from table 4-8 of T.O. 21M-HGM16F-1.

1. ***(C) L-1, PLACE ALTERNATE GEN ON THE LINE AND SHUT DOWN FAULTY GEN*** ***DIRECTED*** ____

ALTERNATE GENERATOR PARALLELING:

A. GEN AMMETER SW	***1, 2 OR 3***
B. SYNCHRONIZING SWITCH	***ON***
C. ENGINE START-STOP SW IND	***GREEN***
D. ENGINE START-STOP SW	***START***
E. ENGINE START-STOP SW IND	***RED***
F. INCOMING VOLTAGE METER	***460 (+2, -8) VOLTS***
G. INCOMING FREQUENCY METER	***60 CPS***

NOTE

Operate GENERATOR GOVERNOR MOTOR CONTROL switch so that SYNCHROSCOPE hand rotates slowly clockwise. When hand indicates 11:55 (clock position), perform step h.

H. GEN MAIN BKR CONT SW	***CLOSE***
I. GEN MAIN BKR CONT SW IND	***RED***

(CONTINUED ON NEXT PAGE)

EMERGENCY DIESEL GENERATOR PARALLELING AND SHUTDOWN (NA OSTF-2) (CONT)

J. SYNCHRONIZING SW	OFF
K. RUNNING VOLTAGE METER	460 (+2, -8) VOLTS
L. RUNNING FREQUENCY METER	60 CPS

FAULTY GENERATOR SHUTDOWN:

M. GEN MAIN BKR CONT SW	TRIP
N. GEN MAIN BKR CONT SW IND	GREEN
O. ENGINE START-STOP SW	STOP
P. ENGINE START-STOP SW IND	GREEN

RESTORING AC POWER AFTER AC POWER LOSS (NA OSTF-2) (CONT)

ITEM 1. (CONT)

NOTE

If generators were operating in parallel and power is not restored, shut down the faulty generator and repeat steps b through f on the operating generator.

ITEM 2. GENERATOR SHUT DOWN, ALTERNATE GENERATOR IN STANDBY

1.	*(C) L-1, RESTORE AC POWER*	*DIRECTED*
	A. *FEEDER NO. 3 SW*	*TRIP*
	B. *FAULTY GEN MAIN BKR CONT SW*	*TRIP*
	C. *FAULTY ENGINE STOP-START SW*	*STOP*
	D. *ALT GEN SYNCHRONIZING SW*	*ON*
	E. *ALT ENGINE START-STOP SW*	*START*
	F. *INCOMING VOLTMETER*	*460 (+2, -8) VOLTS*
	G. *INCOMING FREQUENCY METER*	*60 CPS*
	H. *ALT GEN MAIN BKR CONT SW*	*CLOSE*
	I. *SYNCHRONIZING SW*	*OFF*

MANUAL ABORT

PRELIMINARY INSTRUCTIONS

Procedures contained in this checklist may be commenced at various ACTIONS or steps as directed by procedures contained in other sections of this T.O., and controlled by the MCCC. Steps previously accomplished need only be verified. This checklist is abbreviated from table 4-10 of T.O. 21M-HGM16F-1.

ACTION 1

1.	(C) M-1, RESET PROGRAMMER KEY ON	DIRECTED	____
2.	(C) DEPUTY, A-1, SHUT DOWN HPU AND CYCLE COUNTDOWN SYSTEM POWER	DIRECTED	____
	A. (A-1) HYD PUMP STOP PB (HYD PNL 1)	DEPRESSED & HELD	
	B. (D) EMERGENCY PB	DEPRESSED & HELD	
	C. (A-1) CD SYSTEM POWER SW (CD PNL 1)	OFF - 1 SEC - ON	
	(AFTER PRESSURE MODE RED) D. (D) EMERGENCY PB	RELEASED	
	E. (A-1) HYD PUMP STOP PB	RELEASED	
	F. (A-1) CHANGEOVER SW EXTERNAL IND GREEN (MSL GND PWR PNL 1)	REPORTED	

NOTE

Opening and closing of boiloff valve shall be accomplished as in normal abort.

3.	(C) M-1, MANUALLY LOWER LP	DIRECTED	____
	A. (M-1) HYD 40 HP PUMP ON PB (CSMOL)	DEPRESSED	
	B. (M-1) DOWN RUN PB	DEPRESSED	
	C. (M-1) LP DOWN MOTION	OBSERVED	

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 1 (CONT)

4.	(C) DOWN COMPLETED RUN & LOCKED IND GREEN (CSMOL)	OBSERVED	____

NOTE

Proceed with ACTION 2.

ACTION 2

WARNING

Leave pressurization system in emergency until specifically directed to return to automatic.

1.	(C) DEPUTY, DEPRESS EMERGENCY PB	DIRECTED	____

CAUTION

Do not close silo doors if MEPU is extended.

NOTE

Proceed to step 3 while door closing sequence is in progress.

2.	(C) M-1, CLOSE SILO DOORS	DIRECTED	____
	A. (M-1) SILO DOOR CLOSE PB	DEPRESSED & HELD (30 SEC)	
	B. (M-1) SILO DOOR CLOSE IND	GREEN	
	C. (M-1) CRIB HORIZONTAL UNLOCK PB	DEPRESSED	
	D. (M-1) CRIB HORIZONTAL UNLOCK IND	GREEN	
	E. (M-1) CRIB VERTICAL UNLOCK PB	DEPRESSED	
	F. (M-1) CRIB VERTICAL UNLOCK IND	GREEN	
	G. (M-1) HYD 40 HP PUMP OFF PB	DEPRESSED	

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 2 (CONT)

3. (C) DEPUTY, A-1, CYCLE PNEUMATIC SYSTEM POWER AND ADJUST TO PHASE II PRESSURES — DIRECTED _____

CAUTION

When cycling pneumatics system power, the EMERGENCY pushbutton shall be depressed and held to ensure that the pressurization system does not return to automatic.

A. (D) EMERGENCY PB — DEPRESSED & HELD

B. (A-1) PNEU SYSTEM POWER SW (PNEU PNL 1) — OFF - 1 SEC - ON

(AFTER PRESSURE MODE RED)

C. (D) EMERGENCY PB — RELEASED

D. (D) PHASE II PRESSURES — MANUALLY ADJUSTED

(OMIT STEP 4 IF PREVIOUSLY ACCOMPLISHED DURING MANUAL ABORT PROCEDURES)

4. (C) DEPUTY, A-1, SHUT DOWN HPU AND CYCLE COUNTDOWN SYSTEM POWER — DIRECTED _____

CAUTION

When cycling countdown system power, the EMERGENCY pushbutton shall be depressed and held to ensure that the pressurization system does not return to automatic.

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 2 (CONT)

A.	(A-1) HYD PUMP STOP PB (HYD PNL 1)	DEPRESSED & HELD
B.	(D) EMERGENCY PB	DEPRESSED & HELD
C.	(A-1) CD SYSTEM POWER SW (CD PNL 1) (AFTER PRESSURE MODE RED)	OFF - 1 SEC - ON
D.	(D) EMERGENCY PB	RELEASED
E.	(A-1) HYD PUMP STOP PB	RELEASED
F.	(A-1) CHANGEOVER SW EXTERNAL IND GREEN (MSL GND PWR PNL 1)	REPORTED

5. (C) M-1, OPEN LCC BLAST CLOSURES (IF BOTH OPERATING) — DIRECTED _____

6. (C) L-1, SHUT DOWN ONE GEN — DIRECTED _____

A.	(L-1) GEN MAIN BKR CONTROL SW	TRIP
B.	(L-1) ENGINE START-STOP SW	STOP

NOTE

Proceed with ACTION 3.

ACTION 3

1. (C) A-1, MANUALLY DRAIN LO_2 — DIRECTED _____

A.	(A-1) REMOTE LOCAL SW	LOCAL
B.	(A-1) LOCAL POWER IND	AMBER

CAUTION

If N-80 valve indicator fails to illuminate AMBER, the N-80 vent valve plug must be inserted prior to continuing manual LO_2 drain.

C.	(A-1) N-80 VALVE IND	AMBER

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 3 (CONT)

NOTE

If LO_2 STG TNK PRESSURE indicator does not illuminate GREEN after 2 minutes, observe N-5 valve indicator. If indicator is AMBER, manually open N-5 valve by disconnecting instrument air line between N-5 valve controller and valve bonnet at the controller.

D. (A-1) LO_2 STG TNK PRESSURE IND GREEN

CAUTION

Monitor LO_2 DISCONNECT MATED SWITCH "A" and "B" indicators during LO_2 drain. If indicators illuminate RED, stop LO_2 drain until main LO_2 disconnect is verified to be properly mated for drain.

NOTE

If L-16 valve indicator does not illuminate GREEN when L-16 switch is positioned to OPEN, position L-1 switch to OPEN.

E. (A-1) L-16 (OR L-1 IF USED) VALVE SW OPEN

NOTE

If airborne fill-and-drain valve cannot be opened, LO_2 must be allowed to boil off.

NOTE

If it becomes necessary to stop LO_2 draining for any reason, position A/B F&D valve switch to CLOSED.

F. (A-1) A/B F&D VALVE SW (START 50 MIN TIMING) OPEN

G. (A-1) AIRBORNE FILL & DRAIN VALVE IND GREEN

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 3 (CONT)

(AFTER SITE HARD GREEN IF BOTH OPERATING)

2. (C) L-1, SHUTDOWN ONE GEN — DIRECTED ____
   - A. (L-1) GEN MAIN BKR CONTROL SW — TRIP
   - B. (L-1) ENGINE START-STOP SW — STOP

NOTE

Allow 50 minutes for LO_2 drain prior to proceeding with step 3.

3. (C) A-1, SECURE FROM LO_2 DRAIN — DIRECTED ____
   - A. (A-1) L-16 (OR L-1) VALVE SW — CLOSED
   - B. (A-1) L-16 (OR L-1) VALVE IND — AMBER
   - C. (A-1) A/B F&D VALVE SW — CLOSED
   - D. (A-1) AIRBORNE FILL & DRAIN VALVE IND — AMBER

NOTE

Proceed with ACTION 4.

ACTION 4

(OMIT STEP 1 IF PREVIOUSLY ACCOMPLISHED DURING MANUAL ABORT PROCEDURES)

1. (C) DEPUTY, A-1, SHUT DOWN HPU AND CYCLE COUNTDOWN SYSTEM POWER — DIRECTED ____

CAUTION

When cycling countdown system power the EMERGENCY pushbutton must be depressed and held to ensure that the pressurization system does not return to automatic.

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 4 (CONT)

NOTE

If LO_2 DRAIN COMPLETE indicator is illuminated GREEN, cycle LO_2 tanking system power switch OFF for 1 second, then ON prior to performing step a.

A.	(A-1) HYD PUMP STOP PB (HYD PNL 1)	DEPRESSED & HELD
B.	(D) EMERGENCY PB	DEPRESSED & HELD
C.	(A-1) CD SYSTEM POWER SW (CD PNL 1) (AFTER PRESSURE MODE RED)	OFF - 1 SEC - ON
D.	(D) EMERGENCY PB	RELEASED
E.	(A-1) HYD PUMP STOP PB	RELEASED
F.	(A-1) CHANGEOVER SW EXTERNAL IND GREEN (MSL GND PWR PNL 1)	REPORTED

(OMIT STEP 2 IF HELIUM VENT COMPLETE IND GREEN)

2. (C) A-1, M-1, MANUALLY VENT HELIUM — DIRECTED

A.	(A-1) VALVE SW 14, 201, & 50 (LN_2/HE PNL 1)	OPEN
B.	(A-1) ALL OTHER VALVE SW	CLOSED
C.	(A-1) REMOTE LOCAL SW	LOCAL
D.	(A-1) LOCAL POWER IND	AMBER

WARNING

Venting at the HCU creates a high noise level. Wear ear protectors.

E.	(M-1) VALVE 302 (HCU)	OPENED
F.	(M-1) GAUGE 301 (HCU) (AFTER 10 MINUTES HAVE ELAPSED)	LESS THAN 50 PSI
G.	(M-1) VALVE 302	CLOSED
H.	(M-1) VALVE 313 (AFTER AUDIBLE VENTING STOPS)	OPENED
I.	(M-1) VALVE 313	CLOSED

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 4 (CONT)

3.	(C) DEPUTY, A-1, CYCLE PRESSURIZATION SYSTEM TO PHASE I	DIRECTED ____
	A. (A-1) STANDBY PB (PNEU PNL 1)	DEPRESSED & HELD

NOTE

When pneumatic system power is cycled, pressurization system will switch to automatic and pressures will automatically adjust to phase I when STANDBY STARTED indicator illuminates GREEN.

	B. (A-1) SYSTEM POWER SW	OFF - 1 SEC - ON
	C. (A-1) STANDBY STARTED IND	GREEN

NOTE

Do not release STANDBY pushbutton until STANDBY STARTED indicator illuminates GREEN.

	D. (A-1) STANDBY PB	RELEASED

NOTE

Twenty seconds after pneumatics system power is cycled, PRESSURE MODE indicator will illuminate RED.

(AFTER PRESSURE MODE RED)

	E. (D) AUTOMATIC PB	DEPRESSED
	F. (D) PHASE I PRESSURES	VERIFIED

(OMIT STEP 4 IF HE VENTED AUTO.)

4.	(C) A-1, CYCLE LN_2/HE SYSTEM POWER SW OFF FOR 1 SEC, THEN ON	DIRECTED ____

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 4 (CONT)

(IF NOT PREVIOUSLY SHUT DOWN)

5. (C) A-1, SHUT DOWN HPU — DIRECTED ____

   A. (A-1) HPU CKT BKR (EMCC) — OFF

6. (C) CREW, TROUBLESHOOT — DIRECTED ____

NOTE

If helium was vented manually or ABORT COMPLETE indicator did not illuminate GREEN, perform step 7 two hours after phase I pressures have been attained.

7. (C) A-1, M-1, VENT AMBIENT HELIUM SPHERE — DIRECTED ____

WARNING

Venting at the HCU creates a high noise level. Wear ear protectors.

   A. (A-1) VALVE SW 26 (LN_2/HE PNL 1) — OPEN

   B. (M-1) VALVES 302 & 313 (HCU) — OPENED

   C. (M-1) MSL HE STG PRESS GA — LESS THAN 50 PSI

   (AFTER 10 MINUTES HAVE ELAPSED)

   D. (M-1) VALVES 302 & 313 — CLOSED

   E. (A-1) VALVE SW 26 & 14 — CLOSED

   F. (A-1) VALVE SW 15 & 54 — OPEN

   G. (A-1) REMOTE LOCAL SW — REMOTE

   H. (A-1) SYSTEM IN STANDBY IND — GREEN

(CONTINUED ON NEXT PAGE)

MANUAL ABORT (CONT)

ACTION 4 (CONT)

WARNING

Hydraulic recharge is not initiated at end of manual door closing sequence. Therefore, if silo doors were manually closed, loud venting will occur when GN_2 recharge cycle is initiated at hydraulic local control panel.

LN_2 LOAD INDICATOR NOT AMBER, OR NOT GREEN AFTER BEING AMBER

PRELIMINARY INSTRUCTIONS

This checklist contains procedures to be used to complete a tactical countdown if LN_2 loading sequence malfunctions. This checklist is abbreviated from table 4-11 of T.O. 21M-HGM16F-1.

NOTE

If LN_2 LOAD indicator does not illuminate AMBER, proceed to ACTION 1 after HELIUM LOAD indicator illuminates AMBER. If HELIUM LOAD indicator does not illuminate AMBER, initiate abort.

If LN_2 LOAD indicator does not illuminate GREEN after illuminating AMBER, perform ACTION 2.

ACTION 1

1.	(C) A-1, PROCEED TO LN_2 HELIUM PANEL 1	DIRECTED	____
2.	(C) M-1, PROCEED TO LN_2 PREFAB	DIRECTED	____
	(AFTER A-1 & M-1 IN POSITION)		
3.	(C) A-1, LN_2-HE SYSTEM POWER OFF	DIRECTED	____
4.	(C) A-1, LN_2-HE SYSTEM POWER ON	DIRECTED	____
5.	(C) M-1, REPORT VALVES 213 AND 214 POSITIONS	DIRECTED	____

(CONTINUED ON NEXT PAGE)

LN_2 LOAD INDICATOR NOT AMBER, OR NOT GREEN AFTER BEING AMBER (CONT)

ACTION 1 (CONT)

NOTE

If both valves 213 and 214 are closed, abort is required.

If either valve 213 or 214 (or both) are open, proceed to step 6.

6. (C) A-1, LN_2-HE SYSTEM POWER OFF — DIRECTED ____

7. (C) M-1, JUMPER 2 AND 3 OF TB54 (VALVE 214) — DIRECTED ____

8. (C) A-1, LN_2-HE SYSTEM POWER ON — DIRECTED ____

NOTE

If LN_2 LOAD indicator does not illuminate AMBER, remove all connected jumpers and initiate abort. LN_2 LOAD indicator should illuminate GREEN in 3 minutes.

ACTION 2

Observe P. S. 96 LN_2 PRESS LOW indicator on PLCP:

If indicator is extinguished, abort is required.

If indicator is AMBER, proceed to step 1.

1. (C) M-1, REPORT GAUGE 227 INDICATION (LN2 PREFAB) — DIRECTED ____

(CONTINUED ON NEXT PAGE)

LN_2 LOAD INDICATOR NOT AMBER, OR NOT GREEN AFTER BEING AMBER (CONT)

ACTION 2 (CONT)

2. (C) A-1, DISCONNECT WIRE FROM PIN 14 OF A22J1 (LN2-HELIUM PNL 1) DIRECTED _____

3. (C) A-1, CYCLE LN_2-HE SYSTEM POWER OFF - 1 SEC - ON DIRECTED _____

NOTE

If LN_2 LOAD indicator does not illuminate GREEN in 3 minutes, abort is required.

HYDRAULIC PRESSURE INDICATOR NOT GREEN

PRELIMINARY INSTRUCTIONS

This checklist contains procedures to be used to complete a tactical countdown if a malfunction occurs in the hydraulic pumping unit. Complete only those steps necessary to obtain HYDRAULIC PRESSURE indicator GREEN. This checklist is abbreviated from table 4-12 of T.O. 21M-HGM16F-1.

ACTION 1

1.	(C) M-1, RESET HPU CIRCUIT BREAKER (EMCC)	DIRECTED	____
2.	(C) M-1, REPORT STATUS OF HPU	DIRECTED	____
	A. (M-1) HPU RUNNING OR NOT RUNNING	REPORTED	
	B. (M-1) STAGE PRESSURES	REPORTED	

NOTE

If HPU is not running, proceed to ACTION 2.

If HPU is running and pressures are not 1750 to 2250 PSI, proceed to ACTION 3.

If HPU is running and pressures are 1750 to 2250 PSI, proceed to ACTION 4.

ACTION 2

1.	(C) M-1, ATTEMPT TO START HPU	DIRECTED	____
	A. (M-1) CKT BKR NO. 1 (INSIDE HPU)	RESET	

NOTE

If HPU does not start, perform steps b and c.

B. (M-1) REMOTE LOCAL SW	LOCAL	
C. (M-1) HYDRAULIC PUMP START PB	DEPRESSED	

(CONTINUED ON NEXT PAGE)

HYDRAULIC PRESSURE INDICATOR NOT GREEN (CONT)

ACTION 2 (CONT)

NOTE

If HPU fails to start, abort is required.

(AFTER PRESS. GREATER THAN 1750 PSI)
D. (M-1) OIL EVACUATE PB (BOTH STAGES) DEPRESSED

ACTION 3

1. (C) M-1, REPORT POSITION OF VALVE 13 ON MALFUNCTIONING STAGE DIRECTED ____

(OMIT STEP 2 IF VALVE CLOSED)
2. (C) M-1, CLOSE VALVE 13 ON MALFUNCTIONING STAGE DIRECTED ____

A. (M-1) VALVE 13 MANUALLY CLOSED

(OMIT STEP B IF VALVE 13 REMAINS CLOSED)
B. (M-1) ELEC CONN TO VALVE 13 DISCONNECTED

NOTE

If malfunctioning valve does not close and stay closed, abort is required.

3. (C) M-1, ADJUST COMPENSATOR TO OBTAIN 2000 PSI DIRECTED ____

NOTE

If pressure cannot be adjusted, abort is required.

HYDRAULIC PRESSURE INDICATOR NOT GREEN (CONT)

ACTION 4

NOTE

When installing jumpers, the wires leading from the pins to be jumpered shall be stripped at a point approximately 6 inches from the pin and jumpered at that point.

1. (C) A-1, JUMPER PINS 13 AND 23 OF A38J1 (HYD PNL 1) DIRECTED ____

NOTE

If HYDRAULIC PRESSURE indicator on LCOC does not illuminate GREEN, abort is required.

LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN

PRELIMINARY INSTRUCTIONS

Troubleshooting procedures in this section are to be used as required during a tactical countdown prior to RAPID LO_2 LOAD indicator AMBER for correcting electrical malfunction of LO_2 loading system valves. The following is a list of valve indicators on LO_2 TANKING (PANEL 1 OR 2) that may fail to indicate properly and the page numbers where troubleshooting procedures are given. This checklist is abbreviated from table 4-13 of T.O. 21M-HGM16F-1.

WARNING

If any jumpers are installed in the performance of these procedures and an abort is initiated, immediately place SYSTEM POWER switch on LO_2 TANKING (PANEL 1) to OFF. Remove jumpers and position SYSTEM POWER switch to ON.

LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN (CONT)

ITEM 1. N-5 INDICATOR NOT AMBER

ACTION 1

1.	***(A-1) LO_2 TANKING POWER***	***OFF***	____
2.	(C) M-1, PROCEED TO PRESSURIZATION PREFAB	DIRECTED	____
	(AFTER M-1, IN POSITION)		
3.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____
4.	(C) M-1, REPORT POSITION OF N-5	DIRECTED	____

NOTE

If N-5 is closed, proceed to ACTION 2.

If N-5 is not closed, proceed to ACTION 3.

ACTION 2

1.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
2.	(C) M-1, JUMPER 11 AND 12 OF TB42	DIRECTED	____
3.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____
4.	(C) A-1, REPORT N-5 IND	DIRECTED	____

NOTE

If N-5 IND not AMBER, abort is required.

If N-5 IND is AMBER, proceed to step 5.

5.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
6.	(C) M-1, RETURN TO LCC	DIRECTED	____
	(AFTER M-1 RETURNED)		
7.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____

LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN (CONT)

ITEM 1. N-5 INDICATOR NOT AMBER (CONT)

ACTION 3

1.	(C) M-1, REPORT VOLTAGE BETWEEN 3 AND 4 OF TB41	DIRECTED	____

NOTE

If 20 to 28 VDC present, abort is required.

If no voltage present, proceed to step 2.

2.	(C) A-1, LO_2 POWER OFF	DIRECTED	____
3.	(C) M-1, JUMPER 4 OF TB41 AND 8 OF TB42	DIRECTED	____
4.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____
5.	(C) A-1, REPORT N-5 IND	DIRECTED	____

NOTE

If N-5 IND is not AMBER, abort is required.

If N-5 IND is AMBER, proceed to step 6.

6.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
7.	(C) M-1, RETURN TO LCC	DIRECTED	____
	(AFTER M-1 RETURNED)		
8.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____

LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN (CONT)

ITEM 2. N-4 INDICATOR NOT AMBER

ACTION 1

1.	***(A-1) LO_2 TANKING POWER***	***OFF***	____
2.	(C) M-1, PROCEED TO PRESSURIZATION PREFAB	DIRECTED	____
	(AFTER M-1 IN POSITION)		
3.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____
4.	(C) M-1, REPORT POSITION OF N-4	DIRECTED	____

NOTE

If N-4 is closed, proceed to ACTION 2.

If N-4 is not closed, proceed to ACTION 3.

ACTION 2

1.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
2.	(C) M-1, JUMPER 5 AND 6 OF TB42	DIRECTED	____
3.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____
4.	(C) A-1, REPORT N-4 IND	DIRECTED	____

NOTE

If N-4 IND is not AMBER, abort is required.

If N-4 IND is AMBER, proceed to step 5.

5.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____

(CONTINUED ON NEXT PAGE)

LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN (CONT)

ITEM 2. N-4 INDICATOR NOT AMBER (CONT)

ACTION 2 (CONT)

6.	(C) M-1, RETURN TO LCC	DIRECTED	____
	(AFTER M-1 RETURNED)		
7.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____

ACTION 3

1.	(C) M-1, REPORT VOLTAGE BETWEEN 1 AND 2 OF TB41	DIRECTED	____

NOTE

If 20 to 28 VDC present, abort is required.

If no voltage present, proceed to step 2.

2.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
3.	(C) M-1, JUMPER 2 OF TB41 AND 8 OF TB42	DIRECTED	____
4.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____
5.	(C) A-1, REPORT N-4 IND	DIRECTED	____

NOTE

If N-4 IND is not AMBER, abort is required.

If N-4 IND is AMBER, proceed to step 6.

6.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
7.	(C) M-1, RETURN TO LCC	DIRECTED	____
	(AFTER M-1 RETURNED)		
8.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____

LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN (CONT)

ITEM 3. N-50 INDICATOR NOT GREEN

ACTION 1

1.	***(A-1) LO_2 TANKING POWER***	***OFF***	____
2.	(C) M-1, PROCEED TO PRESSURIZATION PREFAB	DIRECTED	____
	(AFTER M-1 IN POSITION)		
3.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____
4.	(C) M-1, REPORT POSITION OF N-50	DIRECTED	____

NOTE

If N-50 is open, proceed to step 5.

If N-50 is closed, proceed to ACTION 2.

5.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
6.	(C) M-1, RETURN TO LCC	DIRECTED	____
	(AFTER M-1 RETURNED)		
7.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____

ACTION 2

1.	(C) M-1, REPORT VOLTAGE BETWEEN 11 AND 12 OF TB41	DIRECTED	____

NOTE

If 20 to 28 VDC present, abort is required.

If no voltage present, proceed to step 2.

LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN (CONT)

ITEM 3. N-50 INDICATOR NOT GREEN (CONT)

ACTION 2 (CONT)

2.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
3.	(C) M-1, JUMPER 11 OF TB41 AND 8 OF TB42	DIRECTED	____
4.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____
5.	(C) M-1, REPORT POSITION OF N-50	DIRECTED	____

NOTE

If N-50 is not open, abort is required.

If N-50 is open, proceed to step 6.

6.	(C) A-1, LO_2 TANKING POWER OFF	DIRECTED	____
7.	(C) M-1, RETURN TO LCC	DIRECTED	____
	(AFTER M-1 RETURNED)		
8.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____

ITEM 4. L-60 INDICATOR NOT GREEN

ACTION 1

1.	***(A-1) LO_2 TANKING POWER***	***OFF***	____
2.	(C) M-1, PROCEED TO LO_2 TOPPING PREFAB	DIRECTED	____
	(AFTER M-1 IN POSITION)		
3.	(C) A-1, LO_2 TANKING POWER ON	DIRECTED	____

(CONTINUED ON NEXT PAGE)

LO_2 TANKING PANEL MALFUNCTIONS DURING LO_2 CHILLDOWN (CONT)

ITEM 4. L-60 INDICATOR NOT GREEN (CONT)

ACTION 1 (CONT)

4. (C) M-1, REPORT POSITION OF L-60 VALVE — DIRECTED _____

NOTE

If L-60 is closed, abort is required. Do not proceed to step 5.

If L-60 is open, proceed to step 5.

5. (C) A-1, LO_2 TANKING POWER OFF — DIRECTED _____

6. (C) M-1, RETURN TO LCC — DIRECTED _____

(AFTER M-1 RETURNED)

7. (C) A-1, LO_2 TANKING POWER ON — DIRECTED _____

HELIUM LOAD INDICATOR NOT AMBER, OR NOT GREEN AFTER BEING AMBER

PRELIMINARY INSTRUCTIONS

This checklist contains procedures to be used to complete a tactical countdown if helium load sequence malfunctions. This checklist is abbreviated from table 4-14 of T.O. 21M-HGM16F-1.

ACTION 1

NOTE

Obsereve P.S. 321 SPHERES FULL indicator on PLCP:

If indicator is AMBER, abort is required.

If indicator is extinguished, proceed to step 1.

1. (C) M-1, REPORT GAUGE 301 INDICATION (HCU) DIRECTED _____

NOTE

If gauge 301 indicates less than 2950 PSI and pressure is increasing, continue countdown.

If gauge 301 indicates greater than 2950 PSI, proceed to ACTION 2.

If gauge 301 indicates 0 PSI, proceed to ACTION 3.

ACTION 2

NOTE

When installing jumpers, the wires leading from the pins to be jumpered shall be stripped at a point approximately 6 inches from the pin and jumpered at that point.

(CONTINUED ON NEXT PAGE)

HELIUM LOAD INDICATOR NOT AMBER, OR NOT GREEN AFTER BEING AMBER (CONT)

ACTION 2 (CONT)

1. (C) A-1, JUMPER PIN 48 OF A8J1 AND PIN 1 OF A8J3 (PNEU PNL 1) — DIRECTED _____

NOTE

If HELIUM LOAD indicator does not illuminate GREEN, remove jumper and return to LCC. Abort is required.

ACTION 3

NOTE

LN_2 LOAD indicator must be illuminated GREEN prior to performing step 1.

1. (C) A-1, MANUALLY LOAD HELIUM — DIRECTED _____

   A. (A-1) VALVES 7, 13, 14, 26, 37, 213, 215, 52, & 54 SW (LN_2-HELIUM PANEL 2) — OPEN

   B. (A-1) ALL OTHER VALVE SW — CLOSED

   C. (A-1) REMOTE LOCAL SW — LOCAL

   (AFTER APPROX 5 MIN)

2. (C) HELIUM LOAD INDICATOR — GREEN _____

NOTE

If HELIUM LOAD indicator does not illuminate GREEN, return LN_2-HELIUM (PANEL 1) REMOTE LOCAL switch to REMOTE. Abort is required.

3. (C) READY FOR COMMIT IND — GREEN _____

   (6 MIN AFTER LOCAL)

4. (C) A-1, PLACE LN_2-HE SWITCH TO REMOTE — DIRECTED _____

5. (C) COUNTDOWN — CONTINUED _____

HYD-PNEU & LN_2-HE READY INDICATOR NOT GREEN

PRELIMINARY INSTRUCTIONS

This checklist contains procedures to be used to complete a tactical countdown if pressure switch PS 328 fails to sense 4500 PSI in the HCU. This checklist is abbreviated from table 4-15 of T.O. 21M-HGM16F-1.

ACTION 1

NOTE

Obsereve P.S. 328 HCU SOURCE OK indicator on PLCP:

If indicator is AMBER, abort is required.

If indicator is extinguished proceed to step 1.

NOTE

When installing jumpers, the wires leading from the pins to be jumpered shall be stripped at a point approximately 6 inches from the pin and jumpered at that point.

1. (C) A-1, JUMPER PINS 34 AND 50 OF A10J2 (PNEU PNL 3) DIRECTED ____

NOTE

If HYD-PNEU & LN_2-HE READY indicator does not illuminate GREEN, remove jumper and return to LCC. Abort is required.

LAUNCHER PLATFORM FAILS TO LOWER

PRELIMINARY INSTRUCTIONS

This checklist contains procedures to be used if launcher platform fails to lower after abort has been initiated. This checklist is abbreviated from table 4-16 of T.O. 21M-HGM16F-1.

WARNING

Regardless of LP position, if boiloff valve is closed, immediately depress EMERGENCY pushbutton. After LO_2 tank pressure decreases to phase II, depress AUTOMATIC pushbutton. Enable boiloff valve periodically to relieve pressure when LO_2 tank pressure increases to 12 PSI. Proceed to action 1.

ACTION 1

NOTE

If LP is within 33 inches of up and locked position, the pressurization system must be in automatic and LO_2 tank pressure greater than 8 PSI before LP can be lowered. P.S. 326 LO_2 OVER 8 PSI indication on PLCP must be illuminated AMBER.

NOTE

Opening and closing of boiloff valve shall be accomplished as in a normal abort during LP motion.

1. (C) M-1 RESET PROGRAMMER KEY ON DIRECTED _____

(CONTINUED ON NEXT PAGE)

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 1 (CONT)

2. (C) M-1, MANUALLY LOWER LP — DIRECTED _____

CAUTION

If HYDRAULIC 40 HP PUMP PRESSURE indicator does not illuminate GREEN, depress HYDRAULIC 40 HP PUMP OFF pushbutton. If boiloff will impinge on tension equalizer, proceed to ACTION 4. If impingement will not occur, proceed to ACTION 5.

A. (M-1) HYD 40 HP PUMP ON PB — DEPRESSED
B. (M-1) HYD 40 HP PUMP PRESSURE INDICATOR — GREEN
C. (M-1) STOP PB — DEPRESSED
D. (M-1) DOWN RUN PB — DEPRESSED

NOTE

If LP down motion is observed or if LP is verified down and locked, perform ACTION 2.

If no LP motion is observed and LP is not up and locked, proceed to ACTION 3.

If no LP motion is observed and LP is up and locked, proceed to ACTION 5.

ACTION 2

NOTE

Do not proceed to step 1 until LP is verified down and locked.

(CONTINUED ON NEXT PAGE)

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 2 (CONT)

1. (C) M-1, RESET PROGRAMMER KEY OFF — DIRECTED _____

2. (C) CREW, MONITOR ABORT — DIRECTED _____

NOTE

If automatic abort does not start, perform manual abort (section 10, action 2.)

ACTION 3

NOTE

Pressurization system must be in automatic and LO_2 tank pressure greater than 8 PSI before LP can be raised.

1. (C) M-1, MANUALLY RAISE LP — DIRECTED _____
   - A. (M-1) STOP PB — DEPRESSED
   - B. (M-1) UP RUN PB — DEPRESSED

NOTE

If LP cannot be raised and boiloff will impinge on tension equalizer, proceed to ACTION 4.

If LP can be raised, or if LP cannot be raised and impingement will not occur, after LP motion has stopped proceed to ACTION 5.

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 4

WARNING

LO_2 tank pressure must be relieved each time tank pressure increases to 12 PSI by depressing the EMERGENCY pushbutton even if tension equalizer is impinged. Depress AUTOMATIC pushbutton immediately after LO_2 tank pressure decreases to phase II.

WARNING

If water is not available to spray tension equalizer, or MEPU is not available, do not proceed with step 1.

1.	(C) A-1, SPRAY TENSION EQUALIZER OR EXTEND MEPU	DIRECTED	_____
2.	(C) REPORT THAT TENSION EQUALIZER IS BEING SPRAYED OR MEPU IS EXTENDED	RECEIVED	_____

NOTE

Proceed to ACTION 5.

ACTION 5

1.	(C) DEPUTY, DEPRESS EMERGENCY PB	DIRECTED	_____
2.	(DELETE)		

(CONTINUED ON NEXT PAGE)

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 5 (CONT)

CAUTION

If manual drive has been attempted, STOP pushbutton on CSMOL must be depressed prior to troubleshooting MLS.

3. (C) M-1, DEPRESS LP STOP PB — DIRECTED ____

4. (C) A-1, M-1, TROUBLESHOOT MLS — DIRECTED ____

NOTE

Proceed to ACTION 6.

ACTION 6

NOTE

Perform only those steps necessary to correct the malfunction. Attempt to drive the LP, using procedures contained in ACTION 7, whenever malfunction has been, or is believed to be, corrected.

NOTE

If LP is within 33 inches of up and locked position, M/L STOP indicator on CSMOL must extinguish after AUTOMATIC pushbutton is depressed and LO_2 tank pressure increases to greater than 8 PSI, before the lowering sequence will begin. Omit step 1 if LP is not in upper speed zone.

(CONTINUED ON NEXT PAGE)

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 6 (CONT)

1. (C) M-1, VERIFY M/L STOP INDICATOR EXTINGUISHED OR RED — DIRECTED ____

NOTE

If M/L STOP indicator is extinguished, proceed to step 2.

If indicator is illuminated RED and LO_2 tank pressure is greater than 8 PSI, connect jumper between pins 30 and 17 of TB8 in electrical missile lifting control system, chassis A-2.

2. (C) M-1, VERIFY HYD 40 HP PUMP IS ON, AND ACCUM. PRESS. SYS GA INDICATES 2700 PSI — DIRECTED ____

NOTE

If 40 HP pump is running and pressure is normal, proceed to step 3.

If LP failed to lower due to loss of 40 HP pump pressure, ensure no hydraulic line leaks or rupture exists prior to starting the 40 HP pump.

If pressure is greater than 2700 PSI and HYDRAULIC 40 HP PUMP PRESSURE indicator is extinguished, install jumper between pin 24 of TB4 and pin 18 of TB8. Verify HYDRAULIC 40 HP PUMP PRESSURE indicator is illuminated.

If the 40 HP pump will not start, reset 40 HP PUMP circuit breaker at MLSMCC and attempt to restart pump. If pump is operating but hydraulic pressure is below 2700 PSI, continue troubleshooting hydraulic system.

(CONTINUED ON NEXT PAGE)

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 6 (CONT)

3. M-1, REMOVE FAULT TAPE (MLS) DIRECTED ____

NOTE

Proceed to step 4. If malfunction has not been corrected after completing all steps of this action, M-1 shall examine tape and troubleshoot.

4. (C) M-1, VERIFY ONE 28 VDC SUPPLY IN USE INDICATOR ILLUMINATED (MLSMCC) DIRECTED ____

NOTE

If either 28 VDC SUPPLY IN USE indicator is illuminated, proceed to step 5.

If both 28 VDC SUPPLY IN USE indicators are extinguished, troubleshoot.

5. (C) M-1, RESET LP DRIVE MOTOR CIRCUIT BREAKER (MLSMCC) DIRECTED ____

NOTE

If LP DRIVE circuit breaker can be reset, proceed to step 6.

If circuit breaker cannot be reset, troubleshoot.

6. (C) M-1, RESET TRIPPED CIRCUIT BREAKERS (ELEC MSL LIFTING CONT SYS, CHASSIS A3A1) DIRECTED ____

(CONTINUED ON NEXT PAGE)

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 6 (CONT)

NOTE

If all tripped circuit breakers are reset, proceed to step 7.

If all circuit breakers cannot be reset and logic circuits are affected, trouble-shoot.

7. (C) M-1, REGULATED POWER SUPPLY SWITCH ON (MLS DR ASSY CAB. NO. 1) DIRECTED ____

8. (C) M-1, VERIFY POWER ON INDICATOR ILLUMINATED DIRECTED ____

NOTE

If POWER ON indicator is illuminated, procced to step 8A.

If indicator is extinguished, Replace fuse.

8A. (C) M-1, RESET THERMAL OVERLOAD RELAYS OL-1 & OL-2 (MSL DR ASSY CAB. NO. 2) DIRECTED ____

9. (C) M-1, DEPRESS RESET PB (OVSP CONT BOX) DIRECTED ____

NOTE

If OVERSPEED CONTROL OPERATE indicator extinguishes, proceed to step 11.

If indicator remains illuminated, proceed to step 10.

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 6 (CONT)

10.	(C) M-1, DISCONNECT CABLES FROM OVERSPEED CONTROL BOX	DIRECTED ____
	A. (M-1) CABLE 907U16A27P02	DISCONNECTED
	B. (M-1) CABLE 907U16A27P03	DISCONNECTED
	C. (M-1) CABLE 907U16A27P04	DISCONNECTED
	D. (M-1) CABLE 907U16A27P05	DISCONNECTED
11.	(C) M-1, VERIFY DRIVE COUPLING POSITION	DIRECTED ____

NOTE

If drive coupling is engaged and locked, proceed to step 13.

If coupling is not engaged and locked, proceed to step 12.

12.	(C) M-1, ENGAGE DRIVE COUPLING	DIRECTED ____
	A. (M-1) CB-16 (MLS CHASSIS A3A1)	OFF
	B. (M-1) FLEXIBLE COUPLING	ROTATED
	C. (M-1) CB-16	ON
	D. (M-1) HYD 40 HP PUMP ON PB	DEPRESSED
13.	(C) M-1, VERIFY DRIVE COUPLING ENGAGED LIMIT SWITCH ACTUATED	DIRECTED ____

NOTE

If drive coupling engaged limit switch is actuated, proceed to step 14.

If limit switch is not actuated, insert spacer or tape limit switch closed and proceed to ACTION 7.

LAUNCHER PLATFORM FAILS TO LOWER (CONT)

ACTION 6 (CONT)

14.	(C) M-1, DISCONNECT WIRE 53-1 FROM 4TB (MLS DR CAB. NO. 2)	DIRECTED ____

ACTION 7

CAUTION

Prior to attempting LP lowering, ensure that MEPU is retracted.

1.	(C) M-1, MANUALLY LOWER LP	DIRECTED ____
	A. (M-1) RESET PROGRAMMER KEY	ON
	B. (M-1) HYD 40 HP PUMP ON PB	DEPRESSED
	C. (M-1) HYD 40 HP PUMP PRESSURE IND	GREEN
	D. (M-1) DOWN RUN PB	DEPRESSED

NOTE

If LP will not lower, depress STOP push-button and continue troubleshooting.

If DOWN COMPLETED RUN AND LOCKED indicator is illuminated, proceed to ACTION 8.

ACTION 8

1.	(C) M-1, RESET PROGRAMMER KEY OFF	DIRECTED ____
2.	(C) CREW, MONITOR ABORT	DIRECTED ____

BOILOFF VALVE FAILURE TO OPEN DURING ABORT

PRELIMINARY INSTRUCTIONS

This checklist contains procedures to be used during abort sequence when the boiloff valve fails to open. This checklist is abbreviated from table 4-17 of T.O. 21M-HGM16F-1.

WARNING

If boiloff valve fails to open during abort, loss of missile may occur due to LO_2 overflow into pressurization duct and airborne relief valve.

NOTE

If LP is within 33 inches of up and locked position, pressurization system must be in automatic and LO_2 tank pressure greater than 8 PSI before LP can be lowered.

ACTION 1

(IF NOT PREVIOUSLY ACCOMPLISHED)

1.	*(C) ABORT*	*INITIATED* ____
2.	*(D) CYCLE AUTOMATIC AND EMERGENCY PB*	*ACCOMPLISHED* ____

CAUTION

If boiloff valve does not open, return to automatic mode prior to fuel tank pressure decreasing below 56 PSI.

(CONTINUED ON NEXT PAGE)

BOILOFF VALVE FAILURE TO OPEN DURING ABORT (CONT)

ACTION 1 (CONT)

CAUTION

If boiloff valve opens after performing step 2 above, continue with normal abort, do not proceed to step 3.

3.	***(C) M-1, STOP LP AND DRIVE DOWN MANUALLY***	***DIRECTED***	____
	A. (M-1) RESET PROGRAMMER KEY	***ON***	
	B. (M-1) DOWN RUN PB	***DEPRESSED***	
	(AFTER LP DOWN AND LOCKED)		
4.	(C) DEPUTY, DEPRESS EMERGENCY PB	DIRECTED	____
5.	(C) A-1, START LO_2 DRAIN (START TIMING)	DIRECTED	____
	A. (A-1) REMOTE-LOCAL SW	LOCAL	

NOTE

If L-16 valve indicator does not illuminate GREEN when L-16 valve switch is positioned to OPEN, position L-1 valve switch to OPEN.

B.	(A-1) L-16 (OR L-1 IF USED) VALVE SW	OPEN
C.	(A-1) A/B F&D VALVE SW	OPEN
6.	(C) M-1, CLOSE SILO DOORS AND UNLOCK CRIB	DIRECTED ____
A.	(M-1) DOOR CLOSE PB	DEPRESSED
B.	(M-1) DOOR CLOSE IND	GREEN
C.	(M-1) CRIB HORIZONTAL UNLOCK PB	DEPRESSED
D.	(M-1) CRIB HORIZONTAL UNLOCK IND	GREEN
E.	(M-1) CRIB VERTICAL UNLOCK PB	DEPRESSED
F.	(M-1) CRIB VERTICAL UNLOCK IND	GREEN

(CONTINUED ON NEXT PAGE)

BOILOFF VALVE FAILURE TO OPEN DURING ABORT (CONT)

ACTION 1 (CONT)

(AFTER 10 MIN. DRAIN)
7. (C) A-1, CLOSE L-16 (OR L-1 IF USED) DIRECTED ____

WARNING

While placing missile in stretch open L-16 to lower LO_2 tank pressure as required to maintain LO_2 tank pressure at least 20 PSI less than fuel tank pressure. The fuel raise and lower pushbutton are not effective at this time.

8. (C) CREW, PLACE MISSILE IN STRETCH (SECTION 5) DIRECTED ____

(AFTER MSL IN STRETCH)
9. (C) A-1, OPEN L-16 (OR L-1 IF USED) (START TIMING) DIRECTED ____

NOTE

After 20 additional minutes of drain, proceed to step 10.

10. (C) A-1 CLOSE L-16 (OR L-1 IF USED) DIRECTED ____

(IF REQUIRED)
11. (C) A-1, LOWER LO_2 TANK PRESS TO 4 PSI DIRECTED ____
    A. (A-1) N-60 VALVE SW OPEN ____
    (WHEN LO_2 PRESS 4 PSI)
    B. (A-1) N-60 VALVE SW CLOSED ____
    C. (A-1) A/B F&D SW CLOSED ____
12. (C) M-1, RESET PROGRAMMER KEY OFF DIRECTED ____

(CONTINUED ON NEXT PAGE)

BOILOFF VALVE FAILURE TO OPEN DURING ABORT (CONT)

ACTION 1 (CONT)

13. (C) DEPUTY, RAISE FUEL PRESS TO 62 PSI — DIRECTED _____

(WHEN FUEL PRESS 62 PSI)

14. (C) DEPUTY, DEPRESS AUTOMATIC PB — DIRECTED _____

15. (C) A-1, LO_2 REMOTE-LOCAL SW REMOTE — DIRECTED _____

(AFTER ABORT COMPLETE)

16. (C) DEPUTY, DEPRESS EMERGENCY PB — DIRECTED _____

NOTE

If a ruptured relief valve is suspected do not attempt to maintain LO_2 tank pressure. Remain in emergency mode.

If relief valve appears normal return pressurization system to automatic mode.

In either instance maintenance assistance is required.

17. (C) STATUS OF RELIEF VALVE — DETERMINED _____