

(ATLAS) DEACTIVATION INTERIM TECHNICAL
PROCEDURE A-109

ATLAS "F" INDEFINITE PRESERVATION (PLAN 1B)

Feb 1965
RETURN TO HQ, USAFHRC MAXWELL AFB, AL 36111
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NOTE

Procedure A-106 must be accomplished prior to Block 4 & 5 of this Procedure A-109

This procedure cannot be implemented at those missile sites that have been preserved in accordance with Atlas "F" Deactivation Interim Technical Procedure A-108, without additional instructions which will be provided at a later date.

This procedure has been approved by the Program Management Center and the SAC Representative.

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MICROFILMED BY 11M

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ATLAS F SERIES SILO INACTIVATION

Foreword

This inactivation plan describes certain ground rules and a general description of the inactivation plan. The entire package consists of a flow chart with an engineering procedure to cover each block, and a surveillance checklist to be used after inactivation.

Atlas Site Inactivation Plan Ground Rules (F Series)

A. General

1. A sequence and flow diagram will be used to show the earliest time given operations may be safely performed in removing a site from EWO and placing it in an unmanned inactive condition. The site inactivity is to be a period in excess of one year.
2. During the inactive period, the site will be inspected on a weekly basis. Minimum essential unscheduled maintenance is contemplated; most sites should require minimal. Most discrepancies could be worked off immediately or deferred at local option.
3. Manpower requirements will be shown as men and clock time for the performance of each block task as described on the flow chart. Suggested manning for the performance of surveillance will be provided.
4. Weekly surveillance checklists will be provided. It is assumed that some local conditions may require more frequent observations and maintenance (e.g. severe water leakage, air condition fans or sump pumps).
5. General equipment and material requirements for the deactivation sequence will be furnished. Mobile equipment which must be kept on standby for unscheduled maintenance will be identified.
6. Certain high value items will be preserved for Class II storage per existing T.O.s. Other items will be covered and protected from water leakage.
7. It is assumed that T.O.s and Vendors Handbooks are available although some discrepancies may exist due to the baseline documents that are modified or supplemented for the inactivation sequence.

B. F Series Inactivation Plan

1. The launch platform will be driven down, silo doors closed, stanchions installed and crib locks unlocked. The launch platform drive up capability will be retained by placing stanchions in the crib suspension system prior to removal of the cryogenics. MLS hydraulic system will remain filled, door accumulators and stand-by accumulator will be relieved of pressure and power will be removed from the missile lift system.
2. All fluids and compressed gases except MLS hydraulic oil will be salvaged or blown down (Instrument Air), 2000 PSIG of GN2 will remain for blanket use.
3. Electronic Cabinets will be covered with vinyl and desiccants will be used to keep moisture at a minimum.
4. Electric power will be transferred from diesels to Commercial or APU power. The diesels will be placed in Class II preservation.
5. All water systems except hard water storage will be drained and left open.
6. One exhaust and one air intake blast closure will be blocked open. Two fans and an air heater will remain in operation to circulate warm air through the silo to prevent the silo air from saturating and causing extensive corrosion. All silo lighting will remain on for heat supplementation. Sump pumps and sewage pumps will remain in normal operation.
7. Vents and closures on silo cap area will be sealed or secured and rat and ant poison distributed for protection against ants and rodents.
8. All batteries will be removed and preserved for storage per applicable T.O.s.
9. It is assumed that the Re-Entry Vehicle Pre-Launch Monitor (RVPLM) has been removed from the complex IAW SAC Message DM3-D2-119369 (Part 9) dated December 1964.

C. Post Inactivation

1. Weekly surveillance inspections will be made to observe fan operation and lubrication, sump pump operation, excessive water seepage, corrosion of equipment, pilfering, lighting, door positions, rodent control, escaping gas, electrical wiring damage and general condition of silo and crib.

D. Equipment Required for Maintenance after Shutdown

1. GN2 recharger with auxiliary power unit.
2. Hand tools such as wrenches, screwdrivers, volt - OHM - Milliammeter, etc., (Base Engineer Standard Items).
3. Existing base supply of hydraulic seals, packing, "O" rings, gaskets, pump & motor bearings should be retained.
4. Corrosion control materials held by CE Section (paint, preservative oils, etc). Inspection teams to report need for corrosion measures to CE.
5. Portable atmosphere analyzers, miners lamps, Scott Packs - 30 minute or greater, hoisting harness, portable high intensity lamps, first aid equipment. All safety equipment will be of USAF approved type.
6. Standard AF vehicles with two way radio for inspection teams plus spares & repair vehicle for repairs found necessary by inspectors. Recommend eight 6 passenger 1/2 ton pick-up trucks.

E. Minimum Manpower Required After Shutdown

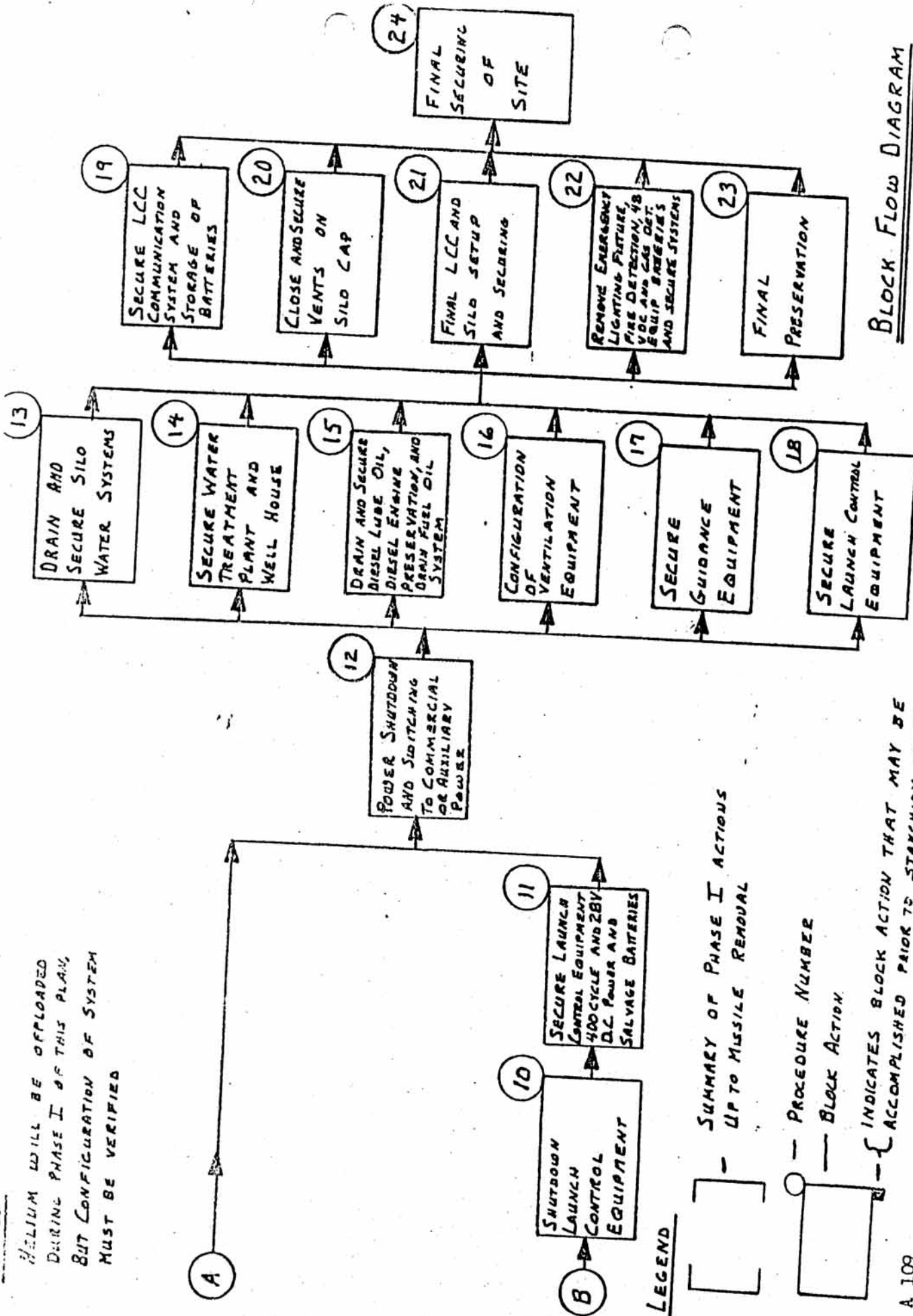
<u>AFSC</u>	<u>Quantity</u>
542X0	5
552X5Y	5
541X0D	8
546X0D	4
545X0	1
552X2	3
552X4	6
442X0A	3
702X0	1
Total	<u>36</u>

F. Because of site peculiarities and possible necessity to substitute material, minor deviations to the procedures are authorized as directed by the SOTAF Commander. The intent of the procedure and final configuration must be obtained.

G. Personnel should be reminded that safety considerations are of paramount importance. SAC Safety will insure that sound safety and maintenance practices are followed at all times. Safety equipment and procedures set forth in this Interim technical Procedure and existing technical orders and regulations must be complied with. This includes the requirement for such items as special breathing apparatus, ear plugs, gloves and other safety clothing when appropriate.

NOTES

HELIUM WILL BE OFFLOADED DURING PHASE I OF THIS PLAN, BUT CONFIGURATION OF SYSTEM MUST BE VERIFIED



LEGEND

- [] - SUMMARY OF PHASE I ACTIONS UP TO MISSILE REMOVAL
- [] - PROCEDURE NUMBER
- [] - BLOCK ACTION
- [] - INDICATES BLOCK ACTION THAT MAY BE ACCOMPLISHED PRIOR TO STATION INSTALLATION

BLOCK FLOW DIAGRAM
SHEET 2 OF 2

3-2

BLOCK NUMBER: 2

BLOCK TITLE: Drain and Secure Inert Fluid Injection System.

GENERAL DESCRIPTION OF BLOCK ACTION:

Removes inert fluid from and flushes both IFIS modules and secures system.

TIME REQUIRED: 1 hour

MANPOWER REQUIRED: 2 men

SKILLS REQUIRED: 443X1A - 2 ea

MATERIALS REQUIRED:

- (a) 1 ea $\frac{1}{4}$ " Plug -- Part No. AN 806-4C or Equiv.
- (b) 1 ea $\frac{1}{4}$ " Cap -- Part No. AN 929-4C or Equiv.
- (c) 2 ea $\frac{3}{8}$ " Plug -- Part No. AN 806-6C or Equiv.
- (d) 2 ea $\frac{3}{8}$ " Cap -- Part No. AN 929-6C or Equiv.
- (e) $\frac{1}{4}$ " Flex Hose -- 5 foot minimum
- (f) 1 ea 6" Funnel
- (g) 1 ea $\frac{1}{4}$ " Pipe to $\frac{1}{4}$ " AN fitting
- (h) Wrench -- 2 $\frac{3}{16}$ " with extension handle
- (i) Wrench -- $3\frac{1}{2}$ "
- (j) 10 Gal Demineralized Water
- (k) 2 ea 5 Gallon Cans or 1-10 Gallon Can
- (l) Standard Tool Kit

TASK DETAILS:

A. Deactivation of Inert Fluid Module.

NOTE

Ensure pressure is available to NCU before starting this procedures.

CAUTION

All steps must be performed in exact sequence to prevent spills of inert fluid which is corrosive to metals and irritating to skin.

1. Close Module Inlet Valve.
2. Open Module Vent Valve.
3. Disconnect inlet line upstream of filter of Module Inlet Valve and plug line with $\frac{1}{4}$ " pressure plug.
4. Connect NCU line 1 to upstream side of filter on Module Inlet Valve.

-
5. Verify/close NCU Line 2 Pressure Valve.
 6. Adjust NCU line 2 pressure regulator to 50 PSIG.
 7. Close NCU line 1 vent valve.
 8. Close NCU line 1 pressure valve.
 9. Adjust NCU line 1 pressure regulator to 35 PSIG.
 10. Slowly open NCU line 1 pressure valve.

NOTE

Steps 11 thru 28 will be performed for one accumulator at a time only.

11. Wrap rags around top of accumulator to collect slight leakage, if any, in next step.
12. Remove $\frac{1}{4}$ " plug at top of accumulator and install $\frac{1}{4}$ " pipe to $\frac{1}{4}$ " tube connector and $\frac{1}{4}$ " flex hose. (Free end of hose to be in empty container)
13. Close module vent valve.
14. Open module inlet valve and collect 3-4 gallons inert fluid in container.
15. When flow ceases, close module inlet valve.
16. Open module vent valve.
17. Disconnect tube from orifice connector at upper fluid filter above accumulator.
18. Remove clamp from upper filter.

CAUTION:

Care must be taken in performing the following step to ensure that the accumulator assembly does not rotate.

19. Disassemble union halves and remove upper filter and union half and rupture disk.
20. Place drain hose in empty container.

21. Pour 5 gallons demineralized water using funnel into accumulator thru lower union half.
22. Reassemble union half with rupture disk (curvature up), tighten to prevent excessive water leakage.
23. Replace clamp and cover connections at orifice with 3/8" pressure plug and cap.
24. Close module vent valve.
25. Open module inlet valve and collect 5 gal water in container.
26. Close module inlet valve.
27. Open module vent valve.
28. Remove drain hose and pipe to tube connector from accumulator, replace 1/4" pipe plug.
29. Repeat steps 11 thru 28 for the other accumulator.
30. Close NCU line 1 pressure valve and open line.
31. Adjust NCU line 1 and line 2 regulators to zero PSIG.
32. Disconnect NCU line 1 from filter on module inlet valve.
33. Cap module inlet valve with 1/4" pressure cap.
34. Close module vent valve.

BLOCK NUMBER: 3

BLOCK TITLE: TURN ON 28 VOLT D.C. POWER

MATERIAL REQUIRED: None

GENERAL DESCRIPTION OF BLOCK ACTION: TURNS ON 28 VOLT POWER FOR OPERATION OF LAUNCH CONTROL EQUIPMENT.

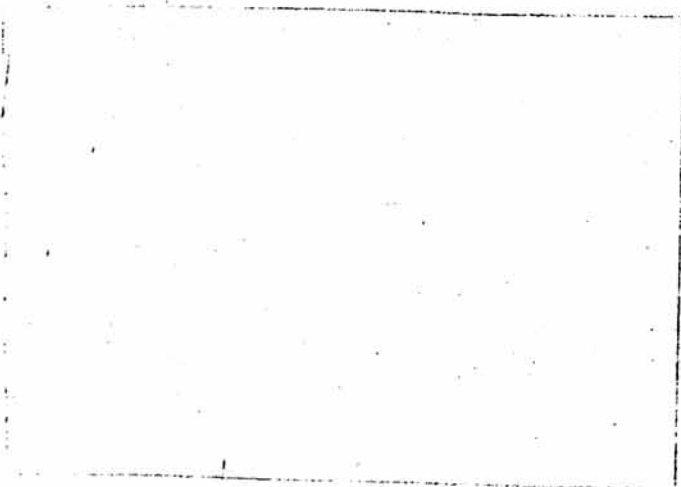
TIME REQUIRED: 10 MIN

MANPOWER REQUIRED: 1 MAN - 312X4D - BMAT

TASK DETAILS: PROCEED IN ACCORDANCE WITH SECTION 61 T.O. 21M-HGM16F-3CL-1 EXCEPT AS FOLLOWS:

A. PAGE 61-1A - SECOND HEADING IS NOT APPLICABLE

B. PAGE 61-2 & 3 - PAGES NOT APPLICABLE



BLOCK NUMBER: 4

BLOCK TITLE: Setup Missile Lifting System

GENERAL DESCRIPTION OF BLOCK ACTION

This block shuts down the missile lift hydraulic and electrical systems for inactivation period. The overhead door and stand by accumulators are vented.

TIME REQUIRED: 2 Hours

MANPOWER REQUIRED: 2 Men/442XOA Pneu, 542XOD Fac Elect

MATERIAL REQUIRED: Vinyl, Tape

TASK DETAILS:

NOTES

- (1) Verify that the silo is in the following configuration:
 - A. L/P down and locked.
 - B. Horizontal & vertical crib locks unlocked.
 - C. Stanchions installed.
 - D. Doors closed
 - (2) The shutdown is designed to allow all equipment to be put into operation (ie. W/P retracted, crib locked, doors open, etc) without bleeding. However, once the doors have been opened or the W/P retracted, no further actuation of either doors or W/P is allowed unless the system is bled per applicable T.O.
 - (3) The standby pump shall have been operating for a minimum of 30 minutes prior to door opening.
1. Extend silo work platforms in accordance with T.O. 21M-HGM-16F-3CL-1, Section 26.
 2. Verify system is in NOTE (1) configuration.
 3. Inspect all bleed valves, hoses, cylinders, and plumbing, and verify that no leakage exists (seepage - insufficient to form a drop - is allowed). Any leakage shall be stopped by any appropriate means.

NOTE

A record shall be made of any hardware removed and not replaced. The record shall be posted at the pump circuit breakers on the MLS MCC.

NOTE

All Open ports shall be capped or plugged with pressure-type hydraulic fittings and verified leak tight.

WARNING

INSURE THAT SCOTT PACKS AND OXYGEN DEFICIENCY TEST UNIT (D-2 OR MSA) ARE AVAILABLE FOR ALL PERSONNEL. HIGH CONCENTRATIONS OF NITROGEN GAS IN THE AIR CAUSES OXYGEN DEFICIENCY AND SUFFOCATION. FAILURE TO COMPLY CAN RESULT IN INJURY OR DEATH TO PERSONNEL.

4. PSMR - Silo Level 8

Close manual valve 55 and open manual valve 60.

WARNING

FAILURE TO SHUT OFF ELECTRICAL EQUIPMENT CAN RESULT IN INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

5. Level I - Quad II

Position all circuit breakers on missile lift system motor control center and logic rack to off.

6. Local control hydraulic panel - Level II - Quad III.

a. Remove back panel.

b. Remove valve guard bracket.

c. Fully close manual valves VM973, VM974 and VM975

WARNING

USE EXTREME CAUTION WHEN PERFORMING THE FOLLOWING STEP. RESIDUAL HIGH PRESSURE NITROGEN IS TRAPPED BETWEEN MANUAL VALVE AND GAGE. LOOSEN CAP VERY SLOWLY. IF ESCAPING GAS IS AUDIBLE, STOP UNTIL IT CEASES AND GAGE PRESSURE INDICATES ZERO. FAILURE TO COMPLY CAN RESULT IN INJURY TO PERSONNEL. EVACUATE ALL PERSONNEL NOT INVOLVED WITH THE NEXT STEPS FROM THE SILO UNTIL ALL VENTING IS COMPLETED.

d. Remove caps from calibration ports for gages GA956, GA961 and GA967.

CAUTION

While performing the next step personnel shall wear ear plugs and monitor GO2 content of the air with portable GO2 detector. Personnel shall evacuate silo if oxygen content of air becomes deficient until all venting ceases.

- e. Slowly open manual valve VM973, when venting ceases open manual valve VM975, when venting ceases open manual valve, VM 974
 - f. When all venting ceases close manual valves VM973, VM974 and VM975.
 - g. Install caps for calibration ports for gages GA956, GA961 and GA967.
 - h. Place valve guard bracket inside cabinet and replace back panel.
 - i. Tag panel INOPERATIVE - SITE DEACTIVATED, ACCUMULATORS VENTED.
7. PSMR Silo Level 8
- a. Leave manual valve 55 closed and manual valve 60 open.
8. Standby Accumulator, level II, Quad IV
- a. On accumulator nitrogen supply line turn GN2 regulator handle fully clockwise
 - b. On top of accumulator, turn handle on gage valve clockwise until venting thru regulator starts.
 - c. When venting thru regulator ceases, turn handle further clockwise until venting begins again.
 - d. Continue above process until handle is fully clockwise.
 - e. Slowly crack cap on gage valve port until venting begins.
 - f. When all venting ceases, tighten cap.
9. Drape all electronic cabinets with polyethylene.

T.O. 21M-HGM16F-3CL-1
T.O. 34Y1-126-1
T.O. 21M-HGM16F-2-8
T.O. 34Y1-137-11

BLOCK NUMBER: 5

BLOCK TITLE: Detank LO2, LN2 and Helium Tanks and Set Up Systems

GENERAL DESCRIPTION OF BLOCK ACTION

The procedure is divided into four parts, the sequence of which may be adjusted to facilitate equipment availability with the following exceptions:

- a. Part I must be accomplished prior to Part II.
- b. Part IV must be accomplished immediately following Part II.

The accomplishment of other tasks in the silo concurrently with these operations is subject to local regulations.

PART I - Removes liquid oxygen from the LO2 storage and topping tanks and secures LO2 system and LO2 vents on CAP.

PART II - Removes liquid nitrogen from the LN2 storage tank and the LN2/He heat exchanger and secures LN2 system and LN2 vents on CAP.

PART III - Removes Helium from both Helium storage bottles and secures helium system and helium vents on CAP.

PART IV - Relieves vacuum in vacuum jackets of the LO2 storage and topping tanks and the LN2 storage tank and heat exchanger by manifolding them together and filled with GN2 from the NCU and secures vacuum pumps and vacuum indicators on those tanks.

TIME REQUIRED: PART I - 6 hours (Dependant upon availability of transportation)
PART II - 5 hours (Dependant on availability of transportation)
PART III - 8 hours
PART IV - 2 hours *

* This time represents the setup and start time. The total time for complete job varies but is 2 to 3 days.

MANPOWER REQUIRED: PART I - 6 men
PART II - 6 men
PART III - 4 men
PART IV - 2 men

TASK DETAILS:

PART I. Deactivation of Liquid Oxygen System

Time Required: 6 hours

Manpower Required: 6 men

Skills Required: 546XOD 3 ea
541XOD 1 ea
312440 1 ea
603X0 1 ea

Material Requirements: Polyethylene and pressure sensitive tape.
Tank truck - 6 ea. total

Note: Insure 28 VDC power for logic operation.

TASK DETAILS:

a. Detank the LO2 storage tank in accordance with section 167 of —
T.O. 21M-HGM16F-3CL-1 with the following revisions.

1. Pg 167-1 - Under PRELIMINARY REQUIREMENTS, delete requirement for residual LN2 drain hose.

2. Pg 167-4 - In step 11, change AMBER to GREEN (Since no A/B —
F & D valve is installed, indicator will be green).

3. Pg 167-13 - Under PRESSURIZATION PREFAB PANEL, delete steps 1 & 2.

4. Delete pages 167-13A thru 167-26.

b. Detank the IO2 topping tank in accordance with section 168 of
T.O. 21M-HGM16F-3CL-1 with the following revisions:

1. Pg 168-1 - Under PRELIMINARY REQUIREMENTS, delete requirements for residual LN2 drain hose and ladder.

2. Delete pages 168-12 thru 168-20.

3. Pg 168-21 - Under PRESSURIZATION PREFAB PANEL, delete steps 1 and 2, and add new steps a thru c as follows:

(a) PRESSURE CONTROLLER COOLDOWN PRESSURE PC-1 to 0 PSIG
..... SET

(b) PRESSURE CONTROLLER TRANSFER PRESSURE PC-2 to 0 PSIG
..... SET

(c) PRESSURE CONTROLLER TOPPING TRANSFER PC-3 to 0 PSIG
..... SET

4. Pg 168-21 - Delete LO₂ TANKING (PANEL 1)
5. Pg 168-21 - Delete TOPPING CONTROL UNIT
6. Pg 168-21 - Under LIQUID OXYGEN FILL PREFAB add note prior step 1 as follows:

NOTE

Leak check of filter element installation is not required.

c. Install plugs in bonnets at SV6A and 6B on Pressurization Prefab. If plugs are not available, cover ports with polyethylene and tape.

d. After the frost and ice on the vent line connection at the top of both the LO₂ Storage and Topping Tanks disappears, cover vent line OVP above ground with polyethylene and tape. (Do not accomplish this step until GN₂ system has been deactivated.)

PART II. Deactivation of Liquid Nitrogen System

Time Required: 5 hours

Manpower Required: 6 men

Skills Required: 603X0 1 ea
546X0D 3 ea
541X0D 1 ea
312X4D 1 ea

Materials Required: Polyethylene, Pressure Sensitive Tape
Tank Truck 2 ea
Box Wrench 1 5/16" 2 ea

Insure 28VDC Power is available for logic operation.

TASK DETAILS:

1. On LN2/He panel #1, cycle system power to off. Accomplish the following valve switch configuration.

a. Valve 7 switch	CLOSED
b. Valve 8 switch	CLOSED
c. Valve 13 switch	CLOSED
d. Valve 14 switch	CLOSED
e. Valve 15 switch	CLOSED
f. Valve 26 switch	CLOSED
g. Valve 37 switch	CLOSED
h. Valve 50 switch	CLOSED
i. Valve 52 switch	CLOSED
j. Valve 54 switch	OPENED
k. Valve 201 switch	OPENED
l. Valve 213 switch	CLOSED
m. Valve 214 switch	CLOSED
n. Valve 215 switch	CLOSED

PART II (Continued)

o. Remote/local switch LOCAL

2. On Pneumatic System Manifold Regulator accomplish the following valve set up:

- | | | | |
|----|--------------|------|--------|
| a. | Manual Valve | 36 | CLOSED |
| b. | " | " 31 | OPENED |
| c. | " | " 16 | CLOSED |
| d. | " | " 17 | CLOSED |
| e. | " | " 18 | CLOSED |
| f. | " | " 19 | CLOSED |
| g. | " | " 60 | CLOSED |
| h. | " | " 22 | CLOSED |
| i. | " | " 3 | CLOSED |
| j. | " | " 4 | CLOSED |
| k. | " | " 55 | CLOSED |

3. On Pressurization prefab, verify that manual valve N-48 is opened and N-40 is closed.

4. On LN2 prefab, verify that the following valve set-ups are as follows:

- | | | | |
|----|--------------|-------|--------|
| a. | Manual Valve | 203 | CLOSED |
| b. | " | " 216 | CLOSED |
| c. | " | " 208 | CLOSED |
| d. | " | " 226 | CLOSED |

5. On LN2 prefab, remove fill line filter 240 element. (Store element in clean polyethylene bag for LN2 off-loading sequence. Re-install element after sequence is completed).

6. On LN2 prefab re-assemble filter housing without the element.

PART II (Continued)

7. Position LN2 truck and connect the grounding strap.
8. On LN2/He panel cycle system power to ON.
9. Verify the remote/local switch is on LOCAL.

NOTE

The following steps, 10 thru 19, will off-load the LN2 storage tank only.

10. On silo cap remove LN2 fill stub-up dust cap 260.
11. On silo cap, connect LN2 truck discharge line to LN2 fill connection 260.

NOTE

If the portable LN2/I02 filter, part #8003500 (Purolator products INC.) is available, connect in discharge line to the truck. If the filter is used, verify the proper flow direction of liquid through the filter.

12. On LN2 truck, open the supply valve.
13. On LN2 truck, open the vent valve.
14. On the LN2/He panel #1 position the valve 201 switch to be closed.
15. On the LN2/He panel #1 position the valve 37 switch to open.
16. On the LN2 pre-fab slowly open manual valve 208.

CAUTION

If any leaks on the LN2 pre-fab develop immediately close the valve switch 37 on the LN2/He panel, close manual valve 208 in the LN2 pre-fab and open valve switch 201 on the LN2/He panel.

17. On the LN2 pre-fab fully open manual valve 208.
18. Flow LN2 into the truck until the truck is filled or the storage tank is emptied.

CAUTION

Personnel in the silo cap can determine when the storage tank is depleted by audibly hearing the flow of gas thru the line. (Do not rely on the LL I-221 to give liquid level during the off-loading sequence).

PART II (Continued)

19. Upon hearing the sound of gas flow through the line at the cap or when the truck is filled, immediately close the LN2 truck supply valve and close valve switch 37 on the LN2/He panel.

CAUTION

Notify personnel that high pressure venting will commence on the silo cap.

20. Position vent valve switch 201 to the open position on the LN2/He panel #1.

21. When venting has ceased, position valve switch 201 on the LN2/He panel #1 to closed and close valve manual 208 on the LN2 pre-fab.

NOTE

Upon completion of draining the LN2 storage tank, the following steps will off load the LN2/He heat exchanger. If quality of the contents of the heat exchanger is questionable, a separate facility should be used for the heat exchanger.

22. At the silo cap, disconnect the fill line to the first LN2 truck.

22a. At the silo cap, connect the fill line to a second facility/second truck.

22b. On the LN2 pre-fab, position the spectacle blind flange in the closed (blocked) position.

23. On the LN2 pre-fab, close manual valve 208.

24. On the LN2 prefab, open manual valve 216.

25. On the silo cap, open the LN2 truck supply and vent valves (if applicable).

26. On the LN2/He Panel #1 open valve switch 37.

27. On the LN2 prefab, slowly open manual valve 226.

CAUTION

If any leaks on the LN2 prefab are evident, immediately close the valve switch 37 on the LN2/He panel, close manual valve 226 on the LN2 prefab and open valve switch 201 on the LN2/He panel.

28. Fully open manual valve 226 (Do not come in contact with the super-cooled lines).

PART II (Continued)

29. Flow LN2 into the truck until the truck is filled or the heat exchanger tank is empty.

CAUTION

Personnel on the silo cap can determine when the storage tank is depleted by the audible sound of gas flowing through the fill line. (Do not rely on LLI-220 to give a liquid level indication during the off-loading sequence.)

30. Upon hearing the sound of gas flow through the fill line at the cap or when the truck is filled, immediately close the LN2 truck supply valve and close valve switch 37 on the LN2/He panel #1.

CAUTION

The following steps will vent the GN2 in the storage and heat exchanger tanks and fill line. Notify all personnel that high pressure venting will occur at the silo cap.

31. At the LN2 pre-fab, position manual valve 208 to OPEN position.
32. At the LN2/He panel #1 position the valve 201 switch to the OPEN position.
33. When venting ceases (verify system venting complete by observing gage 228 on the LN2 prefab, close manual valves 208, 226, 216.
34. On the silo cap, disconnect the LN2 truck discharge line. Secure the LN2 trailer.
35. On the silo cap, replace the LN2 fill stub-up dust cap 260.
36. At the LN2/He panel #1 cycle system power to OFF.

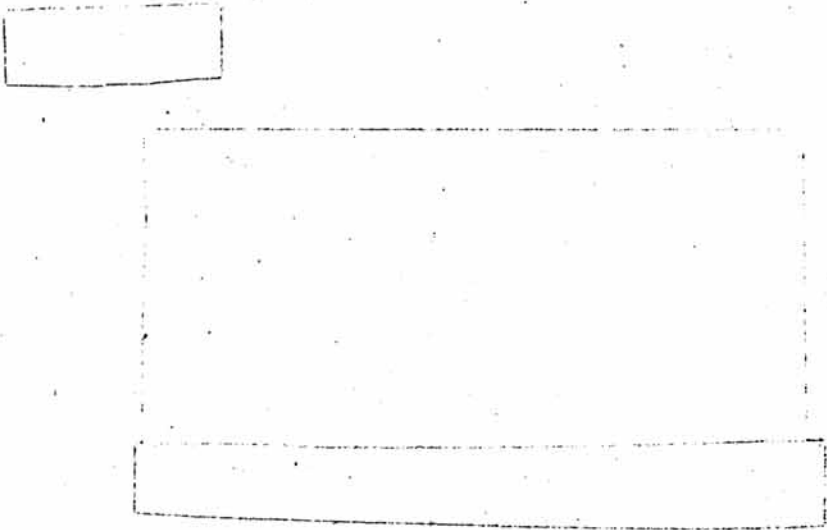
NOTE

Allow the residual LN2 remaining in the tanks to boil off. When the frost on the exhaust (vent) lines for the LN2 storage tank and the LN2/He heat exchanger starts to melt (at the top of each tank) seal the NEX exhaust vent port on the silo cap with several layers of polyethylene and tape. Insure the seal is adequate to keep moisture out of the lines and tanks. (See block 20)

PART II (Continued)

37. On the LN2 pre-fab, replace the 240 filter element.

38. On the LN2 pre-fab, position the spectacle blind flange to the open position.



PART III - D eactivation of the Helium Storage System

Time Required: 8 hours

Manpower Required: 4 men

Skills Required: 546XOD 2 ea
541XOD 1 ea
312X4D 1 ea

Materials Required: Polyethylene, Pressure Sensitive Tape

TASK DETAILS:

a. Remove helium from in-flight helium cylinders number 1 and 2 and secure system as follows:

1. Close PSMR valves 3 and 4.
2. Open PSMR valves 16 and 17. Open HCU valves 302, 313, and 339.
3. Verify that PSMR valves 23, 24, and 25 are closed.
4. On the silo cap, verify that valve H-2 on helium fill line HFD is closed.
5. Bleed the upper portion of line HFD to zero (0) PSIG by opening the valve H-3 at the silo cap.
6. Connect compressor discharge hose from the helium fill connector 250 to helium compressor inlet by using adapters as required.
7. Connect compressor inlet hose to compressor outlet recharge fitting on tube bank trailer.

SILO PREPARATION FOR PNEUMATIC SYSTEM SHUTDOWN

8. Verify that missile has been removed.
9. Open helium compressor outlet shutoff valve.
10. Open tube bank trailer fill valves.
11. Close valve H-3 on silo cap.
12. Open valve H-2 on silo cap.
13. Open compressor by-pass valves BPV-2 and SOV-1.

PART III (Continued)

WARNING

While performing Step 14 monitor compressor inlet pressure gage and do not permit pressure to exceed 3750 PSI. Failure to observe can cause damage to equipment and injury to personnel.

14. Crack open valve 23 or 24 on the PSMR until pressure in the tube bank trailer reaches 2200 plus 100 PSIG. Regulate pressure to the helium compressor inlet with PSMR valve 23 or 24 and insure that maximum inlet pressure of the compressor is not exceeded.
15. When tube bank trailer is filled, close valve H-2, on the silo cap compressor outlet valves, tube bank trailer fill valve, and PSMR valve 23 or 24.
16. Open compressor outlet bleed valve and bleed trapped pressure in compressor outlet hose to zero.
17. Disconnect the full trailer and connect an empty one.
18. Close compressor outlet bleed valve.
19. Repeat steps 15 thru 20 until helium in flight bottles 1 and 2 equalize with tube bank trailer at a pressure below 2200 PSIG.
20. When pressure has stabilized, close compressor by-pass valves BPV-2 and SOV-1 and start helium compressor using applicable T.O. for compressor operation.

NOTE

The compressor can pump helium until the inflight helium storage bottle pressure equals the minimum inlet pressure for the compressor by setting the compressor back pressure valve at 6000 PSIG.

21. Pump helium into tube bank trailer with compressor until trailer is filled to 2200 plus 100 PSIG or there is 200 PSI remaining in the helium inflight bottles 1 and 2.
22. PSMR valves 23 and 24, the trailer fill valves and compressor outlet shut-off valve, will now be closed. Shutdown compressor I/A/W applicable T.O.
23. Bleed the line from compressor outlet to the trailer by opening bleeder valve on the helium compressor.

PART III (Continued)

24. Disconnect trailer and close bleeder valve on the helium compressor outlet hose.
25. On the silo cap, open valve H-3 and bleed upper portion of HFD to zero PSIG.
26. Close valve H-3 and H-2 on silo cap, PSMR valves 16 and 17 and HCU valves 302, 313, and 339.
27. Cap or seal all helium vents and outlets with polyethylene.

BLOCK NUMBER: 5 Part IV

BLOCK TITLE: Deactivation and Securing of Vacuum Pumps and System

GENERAL DESCRIPTION OF BLOCK ACTION:

The vacuum in the annular space of the cryogenic tanks is replaced with gaseous nitrogen to prevent corrosion.

TIME REQUIRED: 2 hours set-up, 2-3 days purge, 1 hour final securing

MANPOWER REQUIRED: 4 men

SKILLS REQUIRED: 442XOA 1 ea
54250D 1 ea
546XO 2 ea

MATERIAL REQUIRED: MS20825-4 Tee, 3 ea
MS20822-6-2 Elbow, 1 ea
MS20822-4-4 Elbow, 1 ea
Safety Hooks/Belts, 2 ea
Rope - 50 feet
AN893-2 or 2D Screw Thread Expander 1 ea

TASK DETAILS:

A. Secure the vacuum systems for the LOX storage tank, LOX topping tank and LN2 storage tank/heat exchanger as follows:

1. At the pressurization pre-fab insure valve N-48 is open.
2. At the pressurization pre-fab open valve N-40.
3. At the NCU observe that pressure is available at the inlet gage.
4. At the NCU implement the following hose connections.
 - a. Extend hose reel #1 through the MEA wall to the LOX storage tank.
 - b. Extend and remove/disconnect 3-30' sections of hose from hose reels #3 and #4.
 - c. Place the 30' hose from the LOX storage tank to the topping tank from the topping tank to the LN2 heat exchanger and from the heat exchanger to the LN2 storage tank. (These hoses will manifold the vacuum systems together).

- d. Cap openings on NCU where lines are removed.
5. At the vacuum gauge for each vessel, position the switch on the front of the gauge to OFF and unplug gauge from 110 VAC source.
6. At the top of the LOX storage and topping tanks and the LN2 heat exchanger, close the small manual valve located between the vacuum gauge thermocouple and the tank.
7. Disconnect the electrical connectors from the three thermocouples.
8. Remove the thermocouples from the valves and reconnect the electrical connectors. Wrap thermocouples with polyethylene and tape and stow.
9. Install an MS20825-4 (or equivalent) tee in the LOX storage tank vacuum valve where the thermocouple was removed.
10. Install an MS20825-4 (or equivalent) tee in the LOX topping tank vacuum valve where the thermocouple was removed.
11. Install an MS20825-4 (or equivalent) tee in the LN2/He heat exchanger tank vacuum valve where the thermocouple was removed.
12. Install an AN893-2 (or 2D) screw thread expander on one end of tee (LN2/He Heat Exchanger).
13. Install an MS20822-6-2 (or equivalent) elbow in the LN2 storage tank.
14. Connect NCU hose reel #1 to the tee on the LOX storage tank.
15. Connect a 30 foot #4 hose section from the LOX storage tank to the topping tank, and from the topping tank to the LN2/He heat exchanger tank, and a #6 hose from the heat exchanger tank to the LN2 storage tank.
16. At the NCU adjust line #2 regulator to 50 ± 5 PSIG.
17. At the NCU adjust line #1 regulator to 10 ± 1 PSIG.
18. At the NCU close the vent valve on line #1 and open the pressure valve on line #1.
19. At the outside of the missile enclosure at level 8 in quadrant III, shut off the vacuum pumps for the LOX storage tank, LOX topping tank, and LN2 storage tank/heat exchanger.

20. At the non-essential motor control center on level 2, open circuit breakers to all three vacuum pumps.

21. Open the small vacuum valves at the top of each vessel where the hoses have been connected. The vacuum in the cryogenic vessels will now be relieved by filling the vacuum chambers with GN2.

"CAUTION"

Do not allow a negative pressure to reverse the needle on NCU line gauge. If the needle drops below 1 psi, close NCU pressure valve on line #1 and throttle the vacuum tank valves before proceeding.

22. After the vacuum systems have been filled, close the NCU pressure valve #1.

"NOTE"

Determine if flow to the vacuum systems has ceased by closing the pressure valve and cracking a fitting to the LOX tank. If there is a slight in-rush of air, the vacuum has not been relieved. If there is an outward flow of GN2, this indicates that the vacuum systems are filled - Proceed to step 23.

23. Close the vacuum valves.

24. At the pressurization pre-fab, close valve N-40.

25. At the NCU, open line #1 pressure valve.

"CAUTION"

Inform silo personnel that high pressure venting will occur at level 2 of the L/P.

26. At the NCU, open line #1 vent valve.

27. At the NCU, open open #2 vent valve, then open line #2 pressure valve.

28. At the NCU, when venting ceases, back off regulators on lines #1 and #2 then close pressure and vent valves on lines #1 and #2.

29. Disconnect the liquid level indicator sense line from the top of the LN2 heat exchanger including the tubing/pipethread adapter. Cover sense line with polyethylene and tape.

30. Install an MS20822-4-4 (or equivalent) elbow in the liquid level indicator port in the top of the tank.

31. Disconnect the two 30' hoses from the NCU at their midpoint and connect to the fitting just installed, (in step 30).

"NOTE"

A shorter length of equivalent hose may be used.

32. Retract hose reels and secure NCU.

33. Open the small vacuum valves at the top of each vessel where the hoses have been connected.

34. Cover discharge ports in the three vacuum pumps with polyethylene and tape.

"NOTE"

The above procedure leaves all of the vacuum systems manifolded together and further connects to the LN2 storage tank/heat exchanger to compensate for varying ambient conditions.

BLOCK NUMBER: 6

BLOCK TITLE: Drain and Secure Missile Hydraulic Pumping Unit.

GENERAL DESCRIPTION OF BLOCK ACTION:

This block shuts down and depressurizes the missile hydraulic pumping unit and electrically prevents unit operation.

TIME REQUIRED: 1 hour

MANPOWER REQUIRED: 2 men

SKILLS REQUIRED: 442XQA 2 ea

MATERIALS REQUIRED: 3 ea 5 gallon cans; 1 inch pipe, six inches long.

TASKS DETAILS:

1. Place CB-1 located in rear of HPU to OFF.
2. Position switch S1 to LOCAL and S8 to OPEN.
3. Close reservoir pressure shut-off valve.
4. Slowly open reservoir pressure bleed valve and vent reservoir.
5. Observe reservoir pressure gage for 0 PSI pressure.
6. Drain reservoir to $\frac{1}{4}$ - $\frac{1}{3}$ full through reservoir drain valve.
7. Position valve 58 (first and second stages) manually to open and vent the evacuation chambers GN2 to 0 PSIG (Gage #35) thru the charge post.
8. Verify valves 54 are set to not via flowmeter position.
9. Close reservoir pressure bleed valve.
10. Adjust reservoir pressure regulator to minimum setting.
11. Open valve (6c) reservoir pressure shut-off valve.
12. Pressurize reservoir to 5-10 PSIG.
13. Close valve 6c.
14. Verify valves 6, 6A, 23, V1 and V3 are open.
15. Verify that evacuation chamber charge fittings are capped.
16. Place system power switch on logic unit No 2 hydraulic panel to OFF.

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BLOCK NUMBER: 7

BLOCK TITLE: Detank RP-1 Leveling Tank and Setup System

GENERAL DESCRIPTION OF BLOCK ACTION

Removes RP-1 fuel from fuel leveling tank on level #8, readjusts leveling tank blanket pressure supply regulators to lower values and secures silo fuel system and fuel vents on CAP. 28 VDC power required for logic operation.

TIME REQUIRED: 2 1/2 hours.

MANPOWER REQUIRED: 4 men.

SKILLS REQUIRED: 546XOD 2
541XOD 1
312X4D 1

MATERIALS REQUIRED: Short lengths of garden hose (4' to 6'). Fuel cans - 4 each 5 gallon capacity. Polyethylene and pressure sensitive tape, 0-30 PSIG gage (adapt to 1/4" AN male fitting).

TASK DETAILS:

1. Verify that the fuel leveling tank has been drained. If the leveling tank has not been drained, accomplish paragraph 5-13, steps "m" thru "y" of T.O. 21M-HGM-16F-2-12. If the leveling tank has been drained, accomplish residual drain IAW paragraph 5-13, step VB of T. O. 21M-HGM-16F-2-12. (This section requires 28 VDC @ Fuel Tanking Panel).
2. Adjust regulators NR-7, NR-8, and NR-9 on the fuel pre-fab to the following pressures IAW paragraph 7-5 thru 7-6B of T.O. 21M-HGM-16F-2-12:

(See NOTE on next page)

NOTE

The following regulators must be adjusted in the order shown so that there is sufficient pressure to operate valve F-4.

- a. NR-9 $1.5 \pm .5$ PSIG
 - b. NR-8 10 ± 5 PSIG
 - c. NR-7 100 ± 50 PSIG
3. Place a warning placard over fuel pump F-11 to read as follows: "Approximately 10 gallons of residual fuel remain in pre-fab. Drain and clean lines thoroughly before re-use or dismantling."
 4. Cover above grade vent line NVP with polyethylene and tape.

BLOCK NUMBER: 8

BLOCK TITLE: Drain and Secure RP-1 Fuel Catchment Tank

GENERAL DESCRIPTION OF BLOCK ACTION:

Removes Fuel from Catchment Tank and Secures System

TIME REQUIRED: 4 hours

MANPOWER REQUIRED: 3 men

SKILLS REQUIRED: 546XOD 2 ea - 312X4D 1 ea

MATERIALS REQUIRED: Fuel Tank Trucks, 5 ea
FPU, 1 ea

TASK DETAILS:

A. Drain fuel catchment tank as follows:

1. Perform steps a thru eB of para 5-6A of T.O. 21M-HGMI6F-2-12.
2. Connect fuel purification unit outlet hose nozzle to fuel tank truck defueling hose using necessary adapter.
3. Insure fuel purification unit outlet hose nozzle is closed.
4. Connect fuel purification unit inlet hose nozzle to fuel fill adapter F-19 (figure 5-2, T.O. F-2-12) and open hose nozzle.
5. Insure manual valve F-18 in fuel valve pit is closed.
6. On fuel purification unit, verify that moisture monitor fuel sample block valve is closed.
7. Prepare fuel tank truck for receiving fuel from fuel purification unit.
8. Open vent valve on liquid filter-separator and depress fuel purification unit pump START Pushbutton.
9. Perform steps r thru v and observe note prior to step r in para 5-6A of T.O. F-2-12.
10. Open fuel purification unit outlet hose nozzle.
11. When fuel tank truck becomes full, depress the fuel purification unit STOP pushbutton and close fuel purification unit outlet hose nozzle.
12. Disconnect full tank truck, connect empty tank truck and open fuel purification unit outlet hose nozzle.
13. Depress fuel purification unit START pushbutton.

14. Repeat steps 11 thru 13 until fuel catchment tank is empty then depress fuel purification unit STOP pushbutton. (An empty catchment tank will be indicated by a rapid decay in the fuel transfer rate accompanied by cavitation, noisy operation of the fuel pump).

15. Close the fuel purification unit outlet nose nozzle and disconnect fuel truck.

16. Secure the fuel purification unit I/A/W/ step rA and CAUTION prior to rA in para 5-7, T.O. F-2-12, revised as follows:

a. Delete substeps (1), (2) and (6).

17. It is not necessary to remove the fuel remaining in the catchment tank at this time, approximately 450 gallons.

BLOCK 9 SET UP AND SECURE GN2 SYSTEM

TIME REQUIRED: 4 hours

MANPOWER REQUIRED: 3 men

SKILLS REQUIRED: 546XOD 3 ea

MATERIALS REQUIRED: none

GENERAL DESCRIPTION OF BLOCK ACTION:

Vents all GN2 storage tanks to approximately 2000 PSIG and vents trapped pressure in GN2 system lines.

TASK DETAILS:

A. Securing of silo 6000 PSIG GN2 systems.

1. Close PSMR valve 21, 3 and 4.
2. Verify SYSTEM POWER "OFF" on PNEUMATICS (PANEL L)
3. Open PSC manual valves 105 and 106.
4. Open PSMR valves 22, 16 17, 18, 19 and 60.
5. Open PSC valves 123, 124, 125 and 126, 150 and 148.
6. When venting is complete close PSC valves 123, 124, 125, 126, 150 and 148. Close PSMR valves 55, 22, 16, 17, 18, 19 and 60.
7. Close PRESSURIZATION PRE-FAB valves N-48 and N-40.
8. Vent NCU by opening vent and pressure valves on line 4 of the NCU.
9. Turn regulator on line 4 C. W. until the inlet gage on the NCU reads zero.
10. When venting ceases close vent and pressure valves on the NCU line 4 and back regulator fully C. C. W.
11. Open PSMR valve 36.
12. When PSMR gage 30 reads 0 PSIG close PSMR valves 31 and 36.
13. Cycle SYSTEM POWER TO "ON" on PNEUMATICS (panel 1)
14. On ICC Depress EMERGENCY P/B.
15. Insure Rise-off disconnects on top of L/P are open.
 - a. Depress Fuel raise P/B until venting ceases.
16. On PNEUMATIC PANEL 1, cycle system power to "OFF."

WARNING

In the following steps high pressure nitrogen will be vented at the silo cap. Silo cap area must be cleared of personnel. Failure to comply may result in injury and/or death to personnel.

17. Open valve N-51 on silo cap and remove N-21 disconnect.
18. Slowly open PSMR valve 25 and vent GROUND PRESS and routine use 6000 PSIG bottle.
19. When PSMR gage 20 reads approx. 2000 PSIG, close PSMR valve 25, close valve N-51. On silo cap replace N-21 disconnect.

E. Securing of Silo 4000 PSIG GN2 System

- a. If the I02 Transfer GN2 supply pressure (P-1, PRESSURIZATION PREFAB PANEL) is greater than approximately 2000 PSIG, vent vessels as follows:

WARNING

In the following steps high pressure nitrogen will be vented at the silo cap. Silo cap area must be cleared of personnel, Failure to comply may result in injury and/or death to personnel.

1. At the PRESSURIZATION PREFAB PANEL ensure valves N-45 and N-49 are closed.
 2. Announce venting at silo cap and open valve N-13. Press prefab open N-44 and O-5.
 3. When P-1 indicates approximately 2000 PSIG, close valve O-5.
 4. After venting ceases, close N-44 and N-13.
- b. If the LN2 Transfer GN2 supply pressure (P1-3, PRESSURIZATION PREFAB PANEL) is greater than approximately 2000 PSIG, vent vessel as follows:
 1. At the Pressurization Prefab Panel ensure valves N-45, N-40, N-48 and N-44 are closed.
 2. Announce venting at silo cap and open valve N-13, then open valve N-49.
 3. When P1-3 indicates approximately 2000 PSIG, close valve N-49.
 4. After venting ceases, close N-13.

- (c) AT PRESSURIZATION PREFAB, securely close manual valve N-6.
- (d) AT TOPPING CONTROL UNIT bleed pressure trapped down stream of N-6 by cracking valve N-76. Leave valve N-76 open after venting has ceased. (If venting continues, check to make sure valve N-6 is completely closed.

NOTE

Place warning placard over gage 20 and 30 on the PMSR indicating that 2000 PSIG still remains in the GN2 storage bottles. Reservice to 2000 PSIG when pressure drops to 200 PSIG. (LN2 transfer system only).

- (e) At the PMSR crack open the following valves 16, 17, and 22. This is to prevent re-pressurizing in case of internal valve leakage. Tag the above valves noting their position and cover with polyethylene.

BLOCK NUMBER: 10

BLOCK TITLE: Shutdown Launch Control Equipment.

GENERAL DESCRIPTION OF BLOCK ACTION:

This block shuts down all panels of relay logic units and launch signal responders on silo level 3 and shuts down and accomplishes preservation of CSMOL panel, surveillance and gate T.V. monitors, blast detection cabinet on launch control center level 2.

TIME REQUIRED: 1 hour

MANPOWER REQUIRED: 2 men - 312X4D - BMAT, 541XOD - MFT

MATERIEL REQUIRED: Vinyl, tape

1. To secure launch control equipment on silo level 3 proceed in accordance with T.O. 21M-11GM16F-3CL-1. Section 111 except as follows;

a) Page 111-4

Under heading (NA VAFB) launch control center, Step 1 is not applicable.

b) Pages 111-5 & 6

Pages are not applicable.

2. For minimum preservation of launch control center equipment, drape the surveillance and gate TV monitors, blast detection cabinet, and CSMOL panel with vinyl sheeting and tape as required.

BLOCK NUMBER: 11

BLOCK TITLE: Secure Launch Control Equipment 400 cycle and 28 volt DC Power and Salvage 28 volt DC batteries.

GENERAL DESCRIPTION OF BLOCK ACTION:

This block shuts down all electrical power to Launch Control equipment after equipment has been turned off and then removes 28 volt DC batteries [redacted]

TIME REQUIRED: 2 hours

MANPOWER REQUIRED: 2 men - 542XOA - Fac Elect

MATERIAL REQUIRED: Vinyl, tape

TASK DETAILS:

1. Perform procedures in accordance with T.O. 21M-HGM16F-3CL-1 Section 39, except as follows:
 - a. Page 39-1 Caution is N/A
 - b. Page 39-1A Note is N/A
 - c. Page 39-1A Change step 1 to read "All circuit breakers...OFF"
 - d. Page 39-2 First note is N/A
2. Perform procedures IAW T.O. 21M-HGM16F-3CL-1 Section 49, except as follows:
 - a. Page 49-2 Steps 6 thru 10 N/A
 - b. Page 49-2A Steps 11 & 12 N/A
 - c. Page 49-3 Page N/A

NOTE

Remove batteries to storage area and store and preserve IAW T.O. 36Y4-1-201

3. Cover 400 cycle motor generator and 28Volt DC generator with vinyl sheeting .

BLOCK NUMBER: 12

38-1-5
35-1-4

BLOCK TITLE: Power Shutdown and Switching to Commercial or Auxiliary Power

GENERAL DESCRIPTION OF BLOCK 12

Transfer of electrical power from diesels to commercial or APU is accomplished in this block. The LCC - Silo electrical load is reduced down to accommodate to a 150 KW input.

The following equipment essential to inactivation remains operating:

- (1) SF22
- (2) EF30
- (3) P82, P83 (sump pumps) and sewerage pumps 1 & 2 (LCC).
- (4) Facility elevator
- (5) P81 (utility water pump)
- (6) All inside lighting and cap pole lights.

TIME REQUIRED: 8 Hours

MANPOWER REQUIRED: 4 men - 2-542XOA-Fac Elect, 2-543XO-EPPT

MATERIAL REQUIRED: Wood - 4"x4"x6' - 2 each, Electrician Tool Kit
RHW 600V #14 stranded copper wire, or equiv., 1 ft.

TASK DETAILS

Use attached copy of T.O. 21M-HGM16F-3CL-1. Section 189, Part 1, change dated 2 Nov. 1964, modified as follows:

<u>Page</u>	<u>Comment</u>
189-1-3	This procedure is valid for either commercial power or an auxiliary power unit. If commercial power is available, it is stepped down to 480v and wired through the Oxygen-Nitrogen Recharger receptacle similiarly to the APU, unless commercial power is already wired into the silo.
1-3	Disregard note on this page.
1-3	Prior to commencing electrical shutdown, secure the water chiller and pod conditioner systems in accordance with T.O. 35-1-4.
1-4	Disregard warning and note on this page. Omit Step 1 under non-essential MCC if commercial power is already wired into the silo.

<u>Page</u>	<u>Comment</u>
189-1-5	Omit all steps on this page if commercial power is already wired into silo.
1-6	Remove electric locks on entrapment doors prior to commencing shutdown at panel.A. Block open vestibule entrapment and blast doors in LCC entrance.
1-6	If commercial power is wired into the silo, change Step 1 under non-essential MCC to read "Com'l power disconnect switches.....open.
1-6	At Panel A, open all breakers except those for indoor and outdoor lighting.
1-8	At Panel LA, open breakers for all receptacles, re-entry wrench, and spares.
1-8	Omit Instrument air and portable GN2 backup. Vacuum shutoff is handled elsewhere in the deactivation sequence (Block #5). Omit LO2 storage tank (level 8) and LO2 topping tank steps.
1-9	Lighting Panel LB turn off all breakers for receptacles and spares.
1-9	Omit LN2 storage tank and LN2 helium heat exchanger actions.
1-9,1-10	Omit power supply dist. set actions.
1-10	At Panel LD, open breaker for gaseous detectors.
1-11, 1-12	Omit Missile Lift System MCC actions. The MLS is inactivated elsewhere in the sequence (Block <u>4</u>).
1-12,1-13	Omit steps 1 through 9 under heading SILO LEVEL 4. Add step, level 5, close <u>manual</u> valve downstream of LCV37A)
1-15, 16	Omit steps 1 through 5 under heading 480-volt SWITCHGEAR (LEVEL 5). Instead, turn off all circuit breakers on Essential MCC except Control Power Transformers (2) for Panel C and circuit breakers on Panel C. On 480-volt switchgear, place feeder No. 4 Missile Lift System circuit breaker to the OPEN position.

4-37

<u>Page</u>	<u>Comment</u>
189-1-17	Omit steps 1 & 2 under silo cap if com'l power is available.
1-17,18,19	Omit steps 1 through 6 under 480-volt SWITCHGEAR (LEVEL 5).
1-19	If 480v commercial power is available, wire in through 02-N2 Recharger receptacle instead of connecting APU, unless com'l power is already wired into silo.
1-20,1-21	Omit Missile Lift System hydraulic system actions.
1-20	Change Step 3 to read, "Com'l power disconnect switchesON", if already wired into silo.
1-21	Omit Step 1 under heading LAUNCH CONTROL CENTER.
1-21	Omit steps under ESSENTIAL MOTOR CONTROL CENTER (PANEL C) and AUTOMATIC TRANSFER SWITCH (LEVEL 2).
1-22	Omit steps under AUTOMATIC TRANSFER SWITCH.
1-23	Omit step under FACILITIES TERMINAL CABINET NO.2 (LEVEL 2). Instead, turn off G02 detector at the detector.
1-23	Omit steps 1 through 5 under FACILITY REMOTE CONTROL PANEL (LAUNCH CONTROL CENTER). Instead, block open silo intake blast closure #2 and silo exhaust blast closure #2, with 4x4. Place test pushbuttons for intake and exhaust blast closure No. 1 to lockout position. Insure intake and exhaust blast closures #1 are closed.
1-24	Prior to accomplishing the steps under NONESSENTIAL MOTOR CONTROL CENTER, take the following action. Disconnect the motor operator linkage for VD 22 and VD 23. Secure each damper in the fully open position.
1-24	Add step: On FTC #2, Place SF-20, SF-21 selector switch to OFF.

Page

Comment

1-24

Under NONESSENTIAL MOTOR CONTROL CENTER, omit step 1. Add a step 2a to depress SF22 TEST START button on level 6. Lock in or jumper the button. Verify SF22 operating.

1-24

Omit step 1 under heading LEVEL 7. Instead, at FTC #2, level 2, place exhaust fan EF 30 HAND-OFF-AUTO switch to HAND position. Verify EF30 operating.

1-24

Add step: In FTC #2 remove and tape wire #3810A from relay CR44. Ensure the gaseous oxygen blast closure closes.

1-24

Add step: Level 4, WCU50 & 51, remove and tape wire which energizes relays CR50 and CR51.

1-25

Omit all steps on page 25 except those steps under LEVEL 9 (SUMP).

This completes SECTION 189, Part I.

BLOCK NUMBER: 13BLOCK TITLE:

Drain and Secure Silo Water Systems

GENERAL DESCRIPTION OF BLOCK ACTION:

This procedure provides for draining the following water systems:

1. Condenser Water System (including cooling tower)
2. Demineralized Water System
3. Hot Water System
4. Chilled Water System
5. Air Washer Dust Collector Water System

Pumps are preserved later in Block 21

MANPOWER REQUIREMENTS: 2 men - 564XOY - PlumberTIME REQUIREMENTS: 16 hours totalMATERIAL REQUIRED: Garden hose, 3/4" pipe to garden hose connection.TASK DETAILS:

1. Use attached copy of T.O. 21M-HGML6F-3CL-1, Section 189, Parts 2 through 6, change date 2 November 1964, modified as follows:

<u>Page</u>	<u>Comments</u>
189 2-1	Omit step 1 under NON-ESSENTIAL MOTOR CONTROL CENTER.
2-1	Disregard note under LEVEL 1.
2-1	Add step to close manual supply valve for pump P-32.
2-1	After completing the steps under the heading LEVEL 4, take the following action. Open the 1/2" drain valves on the diesel heat exchangers or drain the condenser water from the diesels by disconnecting the condenser water supply lines. At the instrument air prefab, drain water from the compressors' heat exchangers by disconnecting condenser water supply lines. Open drain plugs on condenser water pumps P 30 and P 31
2-1	Add step to open all manual bypass valves for the condenser water automatic valves.
3-1, 3-2,	
4-1	Disregard the notes on these pages.
4-3	In LCC, open all drain valves and vent cocks on CC-1 and FC-1

4-40

TASK DETAILS (Continued)

1. (Continued)

- 5-1 Disregard notes on this page.
- 5-1 Delete steps under heading LEVEL 5.
- 5-1 Loosen fitting on the demineralized water line connection to the diesels. Open supply valve to diesel jackets.
- 6-1 Disregard note on this page.
- 6-1 Omit steps under heading LEVEL 2.
- 6-1 Open drain valves and vent cocks in LCC on HC-1 heating coil.
- 6-1 Remove drain plugs and open 1/2" drain valves on hot water pumps P 60 and P 61.
- 7-1 Desregard remainder of T.O. Section 189, commencing with Part #7.

T.O. 21k JML6F-2-19
35-1-4
36Y4-1-194
38-1-5

BLOCK NO: 14

BLOCK TITLE: Secure Water Treatment Plant and Well House

GENERAL DESCRIPTION OF BLOCK 14

Provides procedures for shut down, securing, and preservation of water treatment plants and well houses of various configurations at the various sites. This also applies to auxiliary fire pumps, quonset hut water pressure systems, etc.

TIME REQUIRED: 5 hours (varies)

MANPOWER REQUIRED: 3 men (varies) - 564XOY, Plumber

MATERIAL AND TOOLS REQUIRED: Plumbers Tool Box
Engine Preservation Oil
Bucket
Rags
Truck

Many different configurations of water treatment plants, well houses and auxiliary equipment installed at the various sites with the water treatment varying from chlorination only, to complete filtration, softening and chemical additions. The required condition of the plants is to have all tanks and containers drained, flushed, and vented. All chemicals and additives disposed of, all piping drained and vented, all power and heater switches off, engine generator sets turned off with engines preserved, air compressors vented and preserved, buildings closed and locked. SACCEM 21-SM65F-2-19 (see dash number for the individual squadrons) shows the details for the treatment plants, well houses and auxiliary equipment installed at the sites. Engines and compressors will be preserved in accordance with T.O. 35-1-4 and/or T.O. 38-1-5 as applicable. These manuals also cover fuel supply tanks for engines.

The engine starting battery should be removed and preserved in accordance with T.O. 36Y4-1-194, Chapter 5, after the engine has been preserved so that the engine may be operated during the preservation task.

BLOCK NUMBER: 15

T-9, 38-1-5
S. JEM 21SM65F-2-21

BLOCK TITLE:

Drain and secure Diesel Lube Oil, Diesel Engine Preservation,
and Drain Fuel Oil Systems.

GENERAL DESCRIPTION OF BLOCK ACTION:

This block provides for the following actions to be accomplished.

1. The dirty lube oil tank is pumped out.
2. The clean lube oil tank is pumped out.
3. The diesel engines are preserved.
4. The day tank diesel fuel oil storage is pumped out.

MANPOWER REQUIREMENTS: 3 men - 543XO, EPPT.

TIME REQUIREMENTS: 24 hours

MATERIAL REQUIRED:

Rags - 10 lbs	
Preservative oil MIL-L-21260 Type II	100 Gals
MIL-L-644	10 Gals
MIL-C-16173 TYPE II - Exterior Surfaces	5 Gals
MIL-L-21260 TYPE I - Gasoline Engines	10 Gals
MIL-L-3150 - Compressors and pumps	10 Gals
O-C-746	2 Gals

Small Air Compressor and Oil Spray Gun.

Mechanics tool box

Dirty lube oil receiver

Clean lube oil receiver

Diesel fuel oil receiver

Preservative oil receiver - 100 Gals total

Hose and connection for dirty lube oil stub up

25" hose with female connection (garden hose)

3' hose with female connection (garden hose)

10 quart bucket

TASK DETAILS:

Pump out dirty lube oil tank TK-62 using the following procedure:

1. Make receiver connection at silo cap to receive dirty lube oil.
2. Turn on circuit breaker at non-essential bus MCC level 2, for dirty lube oil pump, P-62.
3. Close 1½" valve to dirty lube oil tank.
4. Open 1½" valve on discharge line to grade.
5. Open 1½" valve under tank TK-62 to lube oil pump.
6. Switch on dirty lube oil pump and pump dirty lube oil to receiver on cap.
7. At completion of evacuation of dirty lube oil, shut off pump and shut off valve opened in step 5 above.

Pump out clean lube oil using the following procedure:

1. Open 1½" sump drain valve on D 60 and D 61.

2. Start pump P-62 and run until sumps are drained, then stop pump P-62.
3. Close D-60 sump drain valve.
4. Open 1½" valve from clean oil tank TK-61 and D-61 sump. Do not allow sump to overflow. Check dip stick frequently.
5. Start pump P-62 and run for 3 minutes, then stop pump 62.
6. Close 1½" valve from clean oil tank TK-61.
7. At cap disconnect dirty lube oil receiver and connect receiver for clean lube oil.
8. Open 1½" valve from clean oil tank TK-61.
9. Start pump P-62.
10. Shut down when clean lube oil transfer is complete by observing sump is empty.
11. Disconnect clean oil receiver at grade and secure connection.

Use the following procedure for diesel engine preservation:

1. Open manual bypass valve around diesel fuel oil fill line solenoid valve, silo level 1, Quadrant IV.
2. Place 48V DC Rectifier circuit breaker on the essential MCC to ON.
3. Prepare both diesel engines for long-term storage, Type II, using T:O. 38-1-5. Use SACCEM 21-SM65F-2-2K for preservation oil drain and operation of 48V DC system.
4. Place 48V DC Rectifier circuit breaker on the essential MCC to OFF.
5. Close manual bypass valve around diesel fuel oil fill line solenoid valve, Silo level 1, Quadrant IV.

Use the following procedure for diesel fuel oil removal:

1. Shut off fuel oil supply line gate valve at level 1.
2. The oil in the soft tank may be evacuated.
3. Proceed with evacuating the oil from the day fuel oil tank TK 60 using the following steps.
4. Connect the diesel, fuel oil receiver to the dirty lube oil connection at grade.
5. Clamp one end of a hose to the drain line at TK 60.
6. Plumb the other end of the hose into the lube oil sump for D 60 through the drain plug at the dip stick or other feasible connection.
7. Open ¾" drain valve at TK 61 and drain fuel into sump. Do not allow sump to overflow.
8. Start dirty lube oil pump P-62 and run until fuel oil in day tank is transferred to receiver.
9. Stop pump P 62 and open breaker at non-essential bus MCC on level 2.
10. Disconnect transfer hose and close TK 60 drain valve.
11. Disconnect receiver at grade and install cap on dirty lube oil outlet.
12. Disconnect the 1½" line on the discharge side of P 62 and the 1½" swing check valve. Drain the discharge line into a 50 gal. drum. Remove drum via the facility elevator. Reconnect the discharge line.

BLOCK NUMBER: 16

BLOCK TITLE: Configuration of Ventilation Equipment

GENERAL DESCRIPTION OF BLOCK:

This procedure sets up silo air conditioning system for removal of moisture in the silo by air circulation and heating of air spaces. 5500 cfm outside air is brought in, approximately 4000cfm is re-circulated with lowest outlet at level eight, and 5500 cfm is exhausted to outside.

Heat is provided by lighting and also by EC 20 which will be turned on in Block 21. Circulation is provided by EF 30 and SF 22 which were activated in Block 12.

TIME REQUIRED: 4 hours

MANPOWER REQUIRED: 2 men - 541XOD, MFT

MATERIAL REQUIRED: Safety wire

TASK DETAILS:

Accomplish the following steps after completion of the switching to commercial or auxiliary power in block 12.

1. a. Stop and restart exhaust fan EF 30 as necessary to perform the following:
 - b. At the exhaust air plenum disconnect VD-34 motor operator linkage and secure damper in the normally part-closed position. If the damper is open, adjust thermostat T-21 to move damper VD-34 to part-closed position prior to securing in place. Secure damper with wire or other permanent means.
2. c. On level 1, in bypass air duct disconnect motor operator linkage for VD 20 and secure VD 20 in the fully open position.
3. Disconnect VD 25 actuator in the inlet air plenum (BC #2) and secure damper in the fully open position.
4. Open missile enclosure doors on level #2 and #8 and block open.
5. Insure missile enclosure doors on level #5 and #6 in diesel rooms and doors to crib area are closed.

BLOCK NUMBER: 17

T.O. 21M-HGM16F-2-4-1

BLOCK TITLE: Secure Guidance Equipment

GENERAL DESCRIPTION OF BLOCK ACTION:

Verify, on silo levels 3 and 6, that Guidance System Power has been shut off and accomplish minimum preservation of countdown group and collimator assembly.

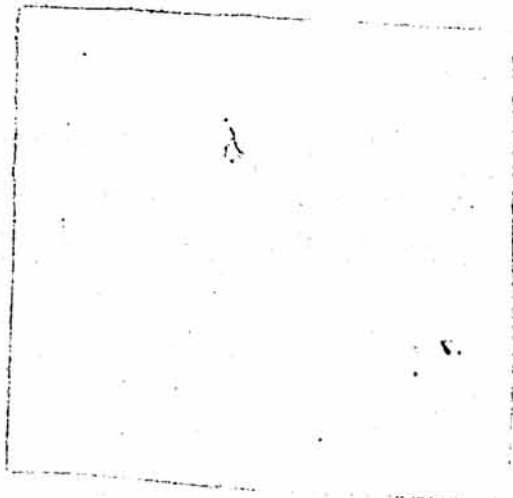
TIME REQUIRED: 2 hours

MANPOWER REQUIRED: 2 men - 312X2A - Guidance Tech.

MATERIAL REQUIRED: Vinyl, tape, desiccant (indicating and nonindicating)

TASK DETAILS

1. On silo level 3, verify that system power has been turned off IAW T.O. 21M-HGM16F-2-4-1. Cut the flexible return duct connections (2) on top of countdown group and hang desiccant bags in each duct opening and cover top of C/D group with vinyl and tape as required. Drape the countdown group panel with vinyl sheeting and tape as required.
2. On silo level 6, verify that system power has been turned off IAW T.O. 21M-HGM16F-2-4-1. Tie desiccant bags with indicators to the collimator and drape with vinyl sheeting and tape as required. Replace collimator mounted desiccant cartridges with new desiccant.



BLOCK NUMBER: 18

BLOCK TITLE: Secure Launch Control Equipment

GENERAL DESCRIPTION OF BLOCK ACTION:

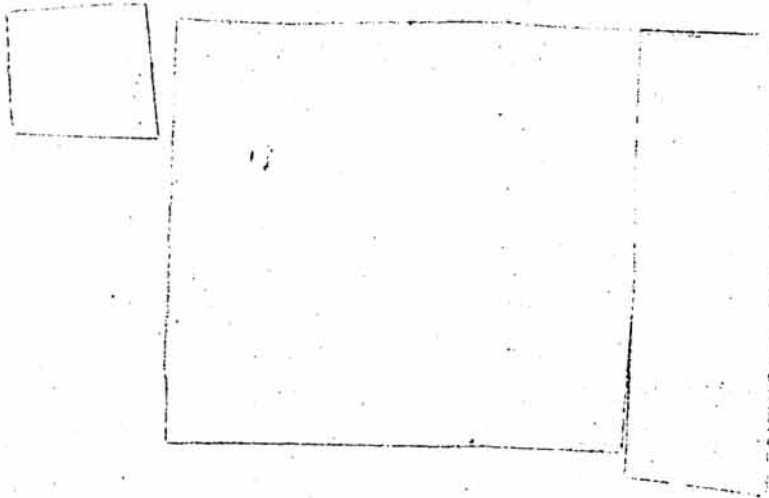
This block accomplishes general preservation of relay logic units and launch signal responders on silo level 3.

TIME REQUIRED: 1 hour

MANPOWER REQUIRED: 2 men - 312X4D-BMAT, 541XOD-MFT.

MATERIAL REQUIRED: Vinyl, Tape, Desiccant Bags.

TASK DETAILS: For preservation, cut the flex ducts on top of logic and responder unit and seal the ducts. Hang desiccant bags (2) and humidity indicators in each of the inlet and exhaust duct areas and drape the top of cabinets with vinyl. Drape the front and back panel areas with vinyl sheeting and tape as required.



BLOCK NUMBER: 19

BLOCK TITLE: Secure LCC Communication System and Storage of Batteries

GENERAL DESCRIPTION OF TASK:

Consists of turning all switches of LCC Communication, charging and control panels to the OFF position, disconnecting and storage of communications batteries, securing all T.V. cameras and accomplishing general preservation of equipment. The model #750 pure gas air dryer is left in operation.

TIME REQUIRED: 3 hours

MANPOWER REQUIRED: 2 men 361X2 - Communication type

MATERIAL REQUIRED: Polyethylene, tape

TASK DETAILS:

1. Turn off all power switches on the LCC communications equipment in the communications room and battery room as follows:
 - a. Panel D - open all circuit breakers except lighting panel A and communications panel C-1.
 - b. Panel D-1 - open all breakers.
 - c. Panel C-1 - open all breakers except pure gas compressor.
 - d. Panel C - open all breakers.
2. Disconnect and remove batteries from rack in LCC battery room. Cover all communications racks and panels with polyethylene sheeting. Remove batteries to storage area and store and preserve IAW T.O. 36Y4-1-194, Chapter 5. Remove all T.V. cameras to storage area.
3. Block open door into LCC communications room.
4. Verify power is applied to de-humidifier for Hardened Antenna Manhole.

BLOCK NUMBER: 20

BLOCK TITLE: Close and Secure Vents on Silo Cap.

GENERAL DESCRIPTION OF BLOCK ACTION:

Cover propellant vents on the Silo Cap with polyethylene and
the Fill & Vent shaft with plywood cover.

TIME REQUIRED: 2 hours

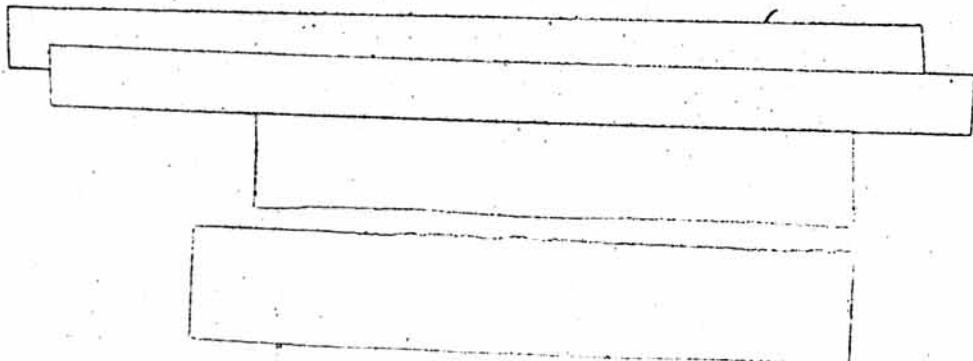
MANPOWER REQUIRED: 2 men - 541XOD, MFT

MATERIEL, 2-4 X 8 plywood sheets, vinyl, tape

TASK DETAILS:

1. Cover the following propellant vents with polyethylene sheet by wrapping it around the end of the "L" and tape it closed:
In the Fill & Vent Shaft: OVP 10 inch, vent
NEX 4 inch, vent
HCX-1 3 inch vent

At the edge of Silo Cap NVP 2 inch vent
HCX-2 3 inch vent
2. Cover the Fill & Vent shaft with 3/4 inch weather resistant plywood, commercial grade. Bolt or wire down to grill and cut out for vents as required. Area to be covered 8' X 8'.



BLOCK NUMBER: 2/

BLOCK TITLE: Final LCC and Silo setup and securing, []

GENERAL DESCRIPTION OF BLOCK ACTION:

Steps are provided in this block to accomplish the following:

1. Secure Utility Air System
2. Secure Utility Water System
3. Preserve pumps
4. Secure facility elevator
5. Activate EC 20
6. Placement of blast closure screen
7. Configure entry and tunnel blast doors

MANPOWER REQUIREMENTS: 4 men - 2 - 541XOD - MFT
1 - 542XOD - Fac Elect
1 - 564XOY - Plumber

TIME REQUIREMENTS: 32 hours total

MATERIAL REQUIRED: Hardware Cloth
Vinyl
Tape
Anti-Rodent Poison and Dispensers

TASK DETAILS:

1. Secure Utility Air System
 - a. Check that silo intake blast closure #1 and exhaust blast closure #1 are closed.
 - b. Blowdown utility air system by cracking 3/4" vent on tank TK 64.
 - c. After pressure on air receiver in instrument air prefab drops below 300PSI, crack 1" drain valve on air receiver.
 - d. Open all vent valves and/or drain plugs on LCC and silo blast closure accumulators and vent air down to zero PSI. Open vent valve on TK-100 in LCC and vent to Zero PSI.
 - e. Preserve air compressors in accordance with T.O. 35-1-4.

2. Secure Utility Water System

- a. Close 6" main utility water supply valve at level three from the hard water storage.
- b. Open breaker at non-essential MCC for P 81.
- c. Drain utility water lines by turning on fire hoses at level seven and eight and direct water from fire hoses into sump.
- d. Open sight gage drain valve on TK 80.
- e. Remove drain plugs on utility water pumps P 80 and P 81.
- f. Open all faucets in latrine, kitchen and utility room and drain hot water heater into tunnel drain.
- g. Install hasp and lock on latrine door and tag inoperative.
- h. Turn on emergency shower and eye wash units on levels 7 and 8 and leave in open position.

3. Pump preservation

- a. Preserve all pumps, electric or air operated valve stems and all exposed actuator and cylinder rods in LCC and silo IAW T.O. 35-1-4. Do not preserve propellant loading system valves on levels 7 and 8.

4. Facility Elevator Securing

- a. Park elevator at level 1.
- b. Open breaker for facility elevator circuit at non-essential MCC, Level 2.

5. EC 20 Activation

- a. Close breaker for EC 20 at main switchgear on level 5.
- b. Adjust thermostat T 23, level 1 at side of intake air plenum, for highest temperature setting.
- c. Verify that EC 20 in intake air duct is operating.
(If temperature of outside air is below 90°F.)

6. Blast Closure Sdreen Placement

- a. Install hardware cloth in silo air intake blast closure #2 behind volume damper VD-25 for rodent and debris prevention.

7. Miscellaneous Equipment Dust and Water Protection

a. Drape the missile battery simulator on level 2 under the flame bucket of the L/P with vinyl sheeting and tape as required for sealing.

b. Drape pod air conditioner with vinyl sheeting on level 4 Northeast corner of the L/P with vinyl sheeting and tape as required for sealing. Cover duct openings with vinyl.

8. Tunnel

a. Leave all tunnel blast doors open for air circulation.

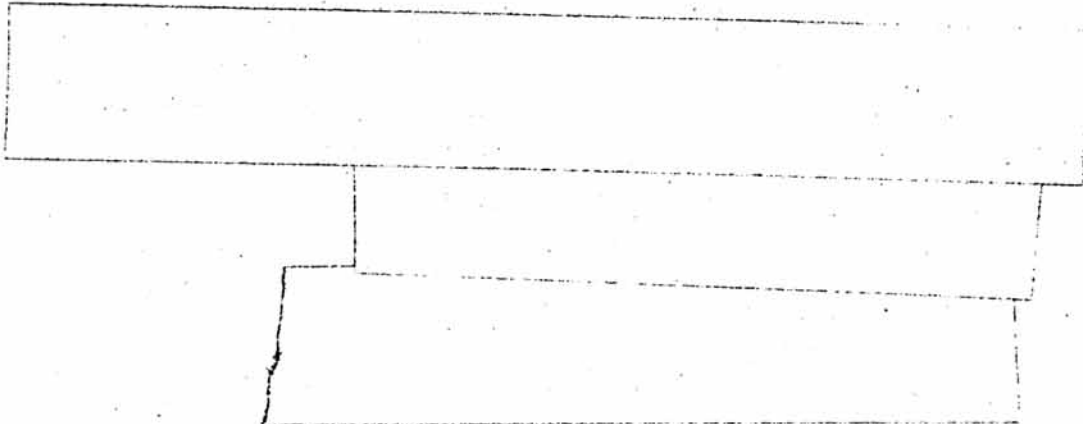
9. LCC/Silo Entrance

a. Close LCC vestibule, entrapment doors and (1) blast door.

10. Accomplish anti-rodent and insect preventative measures.

11. Security Fence Gate.

a. Cut access hole in fence gate to permit access to key hole on lock if required to facilitate opening gate.



T.O. 36X4-1-171

3 1-1-194

36Y4-1-201

21M-HGM16F-1

BLOCK NUMBER: 227

BLOCK TITLE: Removes Emergency Lighting Fixture, Fire Detection, 48 Volt DC System and Gas Detection Equipment Batteries and secures systems.

GENERAL DESCRIPTION OF ACTION:

Removes batteries from emergency lighting/ fixtures in silo and LCC, from fire detection cabinet, from the diesel 48 Volt DC system, and from the gas detection equipment and secures systems with vinyl and tape as required.

TIME REQUIRED: 7 hours

MANPOWER REQUIRED: 2 Men - 542XOD- Fac Elect, 541XOD-MFT.

MATERIAL REQUIRED: Vinyl, tape.

TASK DETAILS:

1. Turn off circuit breakers for emergency lighting fixtures on panel LD silo level 2 and circuit breaker for emergency lighting fixtures on panel A LCC level 2 to remove 120 VAC to rectifiers in emergency light units. Verify with voltmeter at light units that power is off. Remove 24 emergency light batteries to storage. The location of these is shown in T.O. 21M-HGM16F-1, Fig. 1-74.
2. Turn off AC Power Switch located on the battery charger unit level 6 and disconnect the 8 six volt batteries of the 48 volt DC system. Remove the batteries to storage. Clean battery rack per applicable T.O. and cover battery charger with vinyl sheeting. The location of these units is shown in T.O. 21M-HGM16F-1, Figure 1-27.
3. Turn off all switches on Fire Detection Cabinet in LCC level 2 and remove batteries from cabinet to storage. Cover fire detection cabinet with vinyl sheeting.
4. Turn off switches on Gaseous Oxygen Detector and remove 1 1/2 volt calibration batteries where installed. Cover cabinets with vinyl sheeting. Dispose of batteries removed through normal channels. The location of this equipment is shown in T.O. 21M-HGM16F-1, Fig 1-34.
5. All wet cell battery units are to be preserved IAW T.O. 36Y4-1-171, T.O. 36Y4-1-194 or T.O. 36Y4-1-201 as applicable.



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BLOCK NUMBER: 23

BLOCK TITLE: Final Preservation

GENERAL DESCRIPTION OF BLOCK ACTION:

Places indicator cards at location of desiccant bags, seals polaris sight tube shaft, places desiccant bags in collimator room, seals missile enclosure overhead doors.

TIME REQUIRED: 16 hours

SKILLS REQUIRED: 541XOD 2 ea

MATERIALS REQUIRED: Indicator cards - 10 ea
MIL-S-8802 type B-4 sealant - 1 quart
1 lb desiccant bags - 3 ea
Primer for metal SS4119
Sealant G.S. code 01139 - 6 tubes
Primer for masonry 554124
Caulking gun and brushes

TASK DETAILS:

1. Place tags in communication room of LCC and on Logic Units to show location of desiccant bags which may require changing.
2. Mix MIL-S-8802 type B-4 sealant and apply around steel plate on wall in collimator room.
3. Place tag on collimator room door to show location of desiccant.
4. Seal missile enclosure overhead doors in accordance with directions on sealant tubes.

BLOCK NUMBER: 24

BLOCK TITLE: Final Securing of Site _____

GENERAL DESCRIPTION OF BLOCK ACTION:

This block installs padlock hardware on grade entry door and inspects site per surveillance check list and secures complex.

TIME REQUIRED: 4 hours

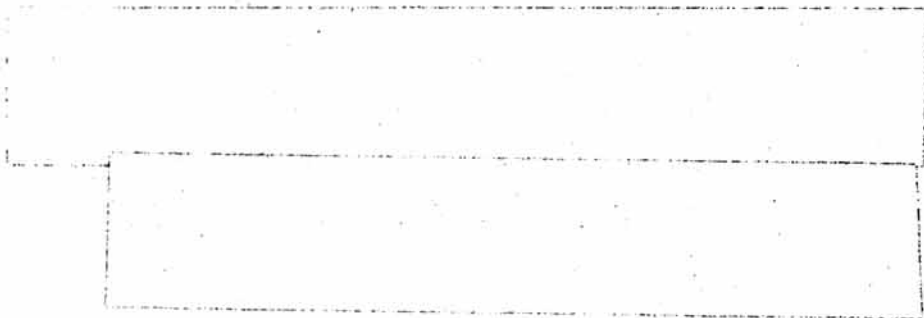
MANPOWER REQUIRED: 2 men - 541XOD - MFT

MATERIAL REQUIRED: Lock and hasp arrangement - if required.

1. Install padlock hardware on grade entry door (not required if door lock is operable).
2. Perform the surveillance checklist to verify/double check complex in configuration for inactivation shutdown.

NOTE

Insure that Fence Gate Key and grade entry key is in surveillance crews' possession before final closing of site.



BLOCK NUMBER: 25

BLOCK TITLE: Rotate Electro-Collimator

GENERAL DESCRIPTION OF BLOCK ACTION:

This block rotates the Electro-Collimator to coat the gears with oil.

TIME REQUIRED: 1 hour

MANPOWER REQUIRED: 2 men

SKILLS REQUIRED: 312X2A 1 ea
542XOD 1 ea

MATERIALS REQUIRED: None

TASK DETAILS:

1. Verify or energize 28 VDC system for electro-collimator. Refer to 21M-HGM16F-2-6 para 2-11. Disregard references to relay logics. (Note: skip step 5.)
2. Verify or energize 115 volt, 3 phase, 400 cycle, AC power system. Refer to 21M-HGM16F-2-6 para 2-12. Disregard references to relay logics. (countdown group level 3)
3. Open the CONTROL SELECTOR door on the programmer drawer.
4. Verify that air conditioning is being supplied to the countdown group cabinets by noting the presence of cool air at the CONTROL SELECTOR door. To turn on countdown group air conditioner:
 - a. Verify/turn control cabinet fan coil unit SF-10 (ASC) CB on (level 2 MCC).
 - b. Depress control cabinet fan coil unit FC-10 push button, (level 2 MCC).
5. Place the CONTROL SELECTOR switch on the local auto position, then close the CONTROL SELECTOR door.
6. Verify/turn 28 VDC circuit breaker, and T1, T2, T3 400 cycle circuit breakers on the power distribution drawer of the countdown group to the ON position.
7. Verify that the CONTROL SELECTOR in local indicator is illuminated.
8. Verify that the 28 VDC indicator is illuminated on the power distribution drawer.

9. Apply power to the sensing platform alignment group OA-2185/GJQ-8 as outlined in paragraph 2-44 of T.O. 21M-HGMI6F-2-4-1.
10. Operate the electro-collimator as outlined in paragraph 2-47 a, b, c, and d of T.O. 21M-HGMI6F-2-4-1.
11. Depress the CCW button the switch assembly and rotate the electro-collimator CCW 180° . Release the CCW button.
12. Depress the CW button on the switch assembly and rotate the electro-collimator CW 360° . Release the CW button.
13. Depress the CCW button on the switch assembly and rotate the electro-collimator CCW 180° . Release the CCW button.
14. Replace the switch assembly to the stowed position.
15. Elevate the electro-collimator $+25^{\circ}$ from its setting and return to its original setting.
16. Clamp azimuth indicator as follows:
 - a. Rotate the clamp B clockwise.
 - b. Clamp each successive clamp from Clamp B moving in a counter clockwise direction until Clamp A is clamped.
 - c. Replace azimuth clamp covers.
17. Place the power switch on the fixed alignment group in the OFF position.