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INTRODUCTION

The Wing III Supplement should be used with the Wing I QPRI and the Wing II Supplement. This supplement updates the Wing I document with the Wing II Supplement, to the Wing III configuration.

The major Wing III changes resulted from hardening and extending the survival period of the Launch Facility and the Launch Control Facility. An entirely new structure, the Launch Control Equipment Building, was constructed adjacent to the Capsule. It houses the equipment necessary to sustain the Capsule and the EWO capability for extended periods. Also, a hydraulic pusher was substituted for the gearcase motor. A list of Figure A changes with a brief explanation will be found on pages iii. 3 through xiv. 3.

Table i-1A. 3 (Volume I) and Table i-1B. 3 (Volume II) identify personnel by Air Force Specialty Code (AFSC) that are affected by equipment changes. The equipment is identified by Figure "A" number and name. The "Status" column of Table i-1A. 3 and Table i-1B. 3 show how the Duties and Tasks have changed, as follows: Changed means that Wing II Duties and Tasks been revised for Wing III. Added signifies that the Duties and Tasks are an addition to those for Wing II. Deleted shows that the Duties and Tasks are performed in Wing II but not in Wing III.

The "Page" column in Table i-1A. 3 and Table i-1B. 3 shows the page in the Wing I and Wing II QPRI affected by changes. The suffixes A. 3, B. 3, C. 3 . . . Z. 3 added to the page number show Wing III peculiarity, (. 3). The A. B. C. . . . Z. part of the suffix shows the sequential order in which pages should follow a particular page in the basic Wing I and II document. These added pages amplify existing pages or inject new material between existing pages.

Editors Note: Whenever duty/task information has been changed or added for a given AFSC, new duty/task pages have been provided which replace or supplement pages issued previously. These new duty/task pages are listed in Table i-1B.3 to the right of the AFSC to which they apply. Whenever duty/task information has been deleted for a given AFSC, the word "Deleted" has been entered in the "Status" column and the page number on which the data is to be deleted is listed in the "Page" column of Table i-1B.3. Because the deleted data is, in many instances, still applicable to earlier wings, and there may be other data on the page that is still current, it is suggested that a handwritten note be placed opposite the deleted data on the duty/task page to the effect that "Figure A XXXX (or Form B XX-XXXXXX) duties and tasks deleted for Wing III and on."

The tables in the Supplement have the same basic numbering as corresponding tables in the Wing I document and the Wing II Supplement, but in addition, they have a .3 suffix. For example; Table 5-2. 2 is a Manning Summary for Wing II and Table 5-2. 3 is a Manning Summary for Wing III.

Tables i-1A. 2 or . 3, i-1B. 2 or : 3 and 5-2B. 2 or . 3 are in the Wing II and Wing III Supplements only. Table 5-2B. 3 shows the composition of Minuteman Mobile Maintenance Teams for Wing III. Charts 5-1. 3 and 5-2. 3 compare Wing I, II and III Team and Manning Summaries.

CAUTION

The QPRI and QPRI Supplements are planning documents and should not be considered as the final source of detailed procedural information.

The Technical Orders (T. O. 's) or T. O. Checklists are the official source of detailed information on the use and maintenance of Aerospace Ground Equipment (AGE) and should be referred to for more complete and authoritative procedures.

To assist the reader in locating appropriate T. O. data, a matrix that cross references equipment Figure A numbers to T. O. numbers is provided as Appendix A-2, Volume II of Wing II Supplement to D2-5859.

NOTE

Maintenance operations for Real Property Installed Equipment (RPIE) are listed at the duty level only by direction from BSD.

REAL PROPERTY INSTALLED EQUIPMENT (RPIE) CHANGES

1. Figure A 1209.3 - Water Control and Removal System, LF
 - a. Check valve added on the discharge line of the Sump Pump to prevent reverse flow.
2. Figure A 1210.3 - Sewage Disposal System, LCC
 - a. Add automatic/manual valves on drain and vent lines penetrating the capsule.
 - b. Add 2" floor drain in the LCEB.
 - c. Add a 3500 gallon emergency sewage overflow tank located outside the Tunnel Junction and connected to the sewage sump.
 - d. Revise the size of the sump pump in the Tunnel Junction.
- *3. Figure A 1230.3 - Fuel System, LCSB
 - a. This Figure A now furnishes fuel for the mobile standby generator (Figure A 1437.3) instead of the standby power source (Figure A 1323.3).
 - b. Fuel quantity is now figured for a sixty day hot water supply instead of ten day for hot water and standby power.
 - c. Delete above-ground day tank, transfer pumps and low-level alarm.
4. Figure A 1241.3 - Shock Attenuzition System, LCC
 - a. Increase the number of air storage cylinders at each shock isolator from one to two.
- *5. Figure A 1242.3 - Lift, Service, LCC
 - a. Increase live load capacity from 2,000 to 6,000 pounds.
 - b. Decrease operating speed from 50 to 25 fpm.
 - c. Increase load equipment envelope from 30 x 42 x 68 to 58 wide x 114 long x 94 high.
- *6. Figure A 1323.3 - Electrical System, LCC (Hard)
 - a. Revise electric power ground.
 - b. Revise telephone equipment ground.

* Indicates Figure A's included in Wing III QPRI Supplement.

6. Figure A 1323.3 - Electrical System, LCC (Hard) (Cont.)
- c. Relocate standby engine-generator and transfer switch from LCSB to LCEB.
 - d. Change engine starting control from manual to automatic.
 - e. Change load transfer from manual to automatic.
 - f. Delete engine-shutdown for high lube oil temperature.
 - g. Add automatic engine exerciser.
 - h. Interlock engine operation with 36" Blast Valve operation.
 - i. Add power distribution within the LCEB.
 - j. Decrease standby generator capacity from 150 KW to 75 KW.
 - k. Decrease commercial power requirements from 225 kva to 130 KW with 85% PF.
 - l. Provide power for Blast Valve Control System, Figure A 1432.3.
7. Figure A 1324.3 - Water Supply System, LCC
- a. Add shock attenuators on the water line at point of capsule penetration.
 - b. Add remote controlled (LCC Supervisory Panel) air-operated shutoff valve on water line at point of capsule penetration.
 - c. Add 3500 gallon water storage tank (TK-112) buried outside the LCEB for emergency usage. Add seven compressed air bottles and soleroid valve inside the LCEB to pressurize the tank during the survival period.
 - d. Add an emergency shutoff valve on the water line entering the LCEB. Valve is closed manually or mechanically by an upward movement of the floor.
 - e. The water treatment equipment is revised to meet conditions at the various sites.
 - f. Add a pipe with shutoff valve to supply raw water to the sewage lagoon. Note: AIO will maintain this system.
8. Figure A 1325.3 - Heating System, LCSB
- a. Reduce boiler capacity to 250,000 btu/hr.
 - b. Add chemical pot feeder to heating system.

6 * Indicates Figure A's included in Wing III QPRI Supplement.

9. Figure A 1327.3 - Security System, LCC

- a. Delete exterior door to the Security Room in the LCSB.
- b. Change size of exterior door to the Access Shift Vestibule in the LCSB from 3 x 7 to x 8-6.

10. Figure A 1328.3 - Fire Alarm System, LCC

- a. Add second system for LCEB with an interlock to shut down the ventilating system for the LCC.
- b. Add visual and aural signals for fire in LCEB in both LCEB and LCC.

11. Figure A 1329.3 - Electrical System, Launcher

- a. Revise number of connected circuits.
- b. Reduce commercial power requirement from 112.5 kva to 75 KW with 0.81 PF.
- c. Divide the engine-generator control panel into an engine control panel and a generator control panel, and revise instrumentation.
- d. Shock mount equipment in the LSB.
- e. Remove emergency power test contactor from IWS panel and modify power switching arrangement to delete emergency power test sequence. (Boeing must initiate this change by FCIR. Change description is part of ECP 358.)
- f. On startup of the standby diesel generator, the load is not connected until the generator output reaches given levels. These levels have been raised from 55 cps for Wing II to 60 cps on Wing III and from 80% of nominal voltage on Wing II to 90% on Wing III.

12. Figure A 1330.3 - Shock Attenuation System, LER

- a. Add shock attenuation equipment for the launcher electrical distribution panel.

13. Figure A 1331.3 - Security System, Launcher

- a. Secure personnel access covers with commercial padlocks rather than conventional hardware with keyed locksets in standard hollow steel door.

14. Figure A 1333.3 - Personnel Support Equipment, LCC

- a. Revise the equipment list to eliminate those items of a "Stock" nature (refrigerator).

- b. Include items of built-in nature (bathroom fixtures) not previously called out in any Figure A.
 - c. Revise quantities to accommodate new estimated personnel requirements.
15. Figure A 1389.3 - Heating and Ventilating System, LSB
- a. Relocate unit heater from ceiling of room to underside of shock mounted floor.
 - b. Add 10,000 cfm supply fan.
 - c. Change exhaust fan from a 3450 cfm propeller type to a 10,000 cfm centrifugal type.
 - d. Delete snow melting requirement.
- *16. Figure A 1390.3 - Ventilating System, LCSB
- a. Delete provision for ventilating engine-generator and brine-chiller relocated to LCEB.
- *17. Figure A 1396.3 - Monitor System, Equipment Fault, LCC
- a. Add "LCC Supervisory Panel" in LCC (Capsule) containing the following:
 - (1) Pushbutton for electric door operator between rooms 101 and 102 in the LCSB. At Wing II there is a pushbutton located separately near the inside of the blast door operating the door between rooms 104 and 105 in the LCSB.
 - (2) To display light, buzzer and silence push-button connected to the control panel on the engine-generator and the Equipment Building Alarm Panel.
 - (3) An "open-close" switch that controls a solenoid valve in the LCEB between the compressed air cylinders and the buried water storage tank.
 - (4) A display light, bell and silence push-button connected to the Fire Alarm Control Cabinet (Figure A 1328.3) located in the LCEB.
 - (5) A display light that indicates when the Tunnel Junction Blast Door is closed and locked.
 - (6) A display light and three position switch connected to the three power phases in Panel LCPA located in the LCC (Capsule) to monitor incoming power.

* Indicates Figure A's included in Wing III QPRI Supplement.

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***17. Figure A 1396. 3 - Monitor System, Equipment Fault, LCC (Cont.)**

- a. (7) An "open-close" switch that controls three solenoid valves, which in turn control air-operated valves on the cold water, drain and vent lines where they enter the capsule.
- (8) An "open" pushbutton and "closed" pushbutton to provide manual control for the Shock Contactor located in the LCEB.
- b. The Equipment Room Alarm Panel located in the Equipment Room of the LCSB at Wing II is now the Equipment Building Alarm Panel located in the LCEB at Wing III and is changed as follows:
 - (1) The three display lights for the deleted second environmental control equipment have been removed.
 - (2) A display light for no (low) LCC air exhaust has been added. The type and location of monitor are not resolved.
- c. The following changes are made in the monitoring provisions of the Generator Instrument Panel:
 - (1) The panel, which is attached to the engine-generator, is now located in the LCEB rather than the LCSB.
 - (2) A visual display "Engine failure to start" has been added.
 - (3) A visual display "air intake and/or exhaust blast valves closed" has been added.
- d. Add monitor to show closed and locked condition of Tunnel Junction Blast Door, Figure A 1440. 3. Indication appears on LCC Supervisory Panel.
- e. The LCC Monitor and Alarm Station at Wing II is renamed the LCSB Monitor and Alarm Station at Wing III and is changed as follows:
 - (1) The display lights (2) for the Generator Room and the Equipment Room are deleted.
 - (2) The two-way selector switch for the flood lights is deleted.
 - (3) A display light for the water treatment system is added. The monitor for this display is located on the water meter in the Water Treatment Room, LCSB.

***18. Figure A 1405. 3 - Fuel System, Launcher**

- a. Increase the size of the bulk storage tank located by the LSB from 1500 to 14,300 gallons.

*** Indicates Figure A's included in Wing III QPRI Supplement.**

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***18. Figure A 1405.3 - Fuel System, Launcher (Cont.)**

- b. Change the day tank located in the LSB from a horizontal to a vertical configuration.
- c. Add flexible connections between the bulk storage tank and the day tank.
- d. Delete the 10" inspection outlet and manway to grade on the bulk storage tank and add an 18" buried manhole.
- e. Relocate the bulk storage tank conservation vent inside the LSB.

***19. Figure A 1436.3 - Ventilating System, LCEB**

- a. This new requirement is generated by relocating the engine-generator and brine chiller from the LCSB.
- b. These provisions were formerly included in Figure A 1390.3, Ventilating System, LCSB.

***20. Figure A 1437.3 - Electrical System, LCSB**

- a. New Figure A providing for electrical distribution system in the LCSB. Figure A 1323 previously provided for the LCSB, but now provides only for the hardened structures.
- b. Provide for mobile standby generator (to be furnished by SAC) for maintaining service in the LCSB.

***21. Figure A 1438.3 - Fuel System, LCEB**

- a. Provide fuel storage for the standby engine-generator.
- b. This requirement was previously satisfied by Figure A 1230, Fuel System, LCSB.

***22. Figure A 1439.3 - Shock Attenuation System, LCEB**

- a. Provide shock floor and attenuators for the new structure, complying with Wing III shock criteria.

***23. Figure A 1440.3 - Blast Door Installation, LCC, Tunnel Junction**

- a. Add blast door at the elevator shaft entrance to the Tunnel Junction. This door protects the equipment and space both within the Tunnel Junction and the LCEB.

***24. Figure A 1441.3 - Shock Attenuation System, LSB**

- a. This is a new requirement providing for increased shock protection of essential equipment in the LSB.

***25. Figure A 1450.3 Accumulator Set, 24-Inch Blast Valve Control**

*** Indicates Figure A's included in Wing III QPRI Supplement.
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OPERATIONAL GROUND EQUIPMENT (OGE) CHANGES

*1. Figure A 1211.3 - Environmental Control System, Launcher

- a. Delete the 8" blast valve on the air duct to the LER.
- b. Reduce the size of the make-up air duct between the LSB and the LER from 6" to 2" and add a buried serpentine coil to increase the total length.
- c. Mount control panels in the LER on shock mounts.
- d. Replace the blast check valves on the brine lines entering the LER with "safety heads."
- e. Add an absolute filter to the end of the make-up air duct located in the LSB.
- f. Redesign the shock mounting of the equipment.
- g. Redesign the control panel to provide automatic starting and stopping with 36" blast damper operation.

*2. Figure A 1212.3 - Environmental Control System, LCC

- a. Relocate the air conditioning equipment from the LCSB to the LCEB.
- b. Add provision for automatic shutdown of the air conditioning equipment in the event of fire in the LCEB.
- c. Add a "clean room" to enclose the air handling equipment in the LCEB.
- d. Add a monitor to sense low exhaust air flow from the capsule.
- e. In the SRCC configuration, replace the dual units used in Wing II with a single large-capacity chiller and air handling unit.

3. Figure A 1246.3 - Cable Assembly Set, Launch Control Facility

- a. ECP 403 - Delete, revise, and add cables as required to accommodate changes made to mating facilities and RPIE in the LCF.

4. Figure A 1248.3 - Cable Assembly Set, Launcher

- a. ECP 358 - Delete, revise, and add cables as required to accommodate changes made to OGE by this ECP.

* Indicates Figure A's included in Wing III QPRI Supplement.

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5. Figure A 1373.3 - Electrical Surge Arrestor, LCF
- a. ECP 401 - Change the ESA to accommodate cable conductor pair count and the hard and soft cable plant peculiar to Wing III. Add surge protection for the soft lines connected to equipment relocated to the LCEB.
6. Figure A 1374.3 - Electrical Surge Arrestor, LF
- a. ECP 401 - Revise to accommodate changes similar to those for Figure A 1373.3.
7. Figure A 1376.3 - Interconnecting Box, LCC
- a. ECP 402 - Revise wiring to accommodate new signal conductors and routing peculiar to Wing III.
8. Figure A 1377.3 - Interconnecting Box, LF
- a. ECP 402 - Revise to accommodate changes in plug and connector sizes resulting from an increase in number of signal conductors. Revise internal and shorting plug wiring to accommodate new signal conductors and routing peculiar to Wing III.
- *9. Figure A 1383 - Gear Rack Assembly, Launcher Closure
- This item is deleted.
- *10. Figure A 1417.2 - Valves, Blast (8")
- This item is deleted.
11. Figure A 1418.3 - Valves, Blast (24"), LCC
- a. ECP 396 - - Revise to contain limit switches for indicating open and closed positions.
- *12. Figure A 1428.3 - - Valves, Blast (36"), LCEB
- a. ECP 396 - Provide two new 36" valves to protect the LCEB from blast. Design the valves for hydraulic operation and provide a means for electrical interlock control for standby generators.
- *13. Figure A 1429.3 - - Blast Dampers, LSB
- a. ECP 396 - Provide two new blast dampers in each LSB. Design the valves to be actuated to the closed position by overpressure alone and to reopen automatically upon return of atmospheric pressure to near normal.

* Indicates Figure A's included in Wing III Supplement.

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***14. Figure A 1432. 3 - Control System Blast Valve**

- a. ECP 396 - Provide a new Blast Valve Control System to power and control the blast valves installed in the LCEB and the LCC.
 - (1) The LCEB portion of the system, used to control the 36" Blast Valves, consists of a hydraulic pump and motor, reservoir, hydraulic-nitrogen accumulator and hydraulic-electrical control panel.
 - (2) The LCC portion of the system, used to control the 24" Blast Valves, consists of a hydraulic-electrical control panel, a hydraulic reservoir and a hydraulic-nitrogen accumulator. Also included, but packaged separately, is a portable hand-operated hydraulic pump with reservoir.

***15. Figure A 1443. 3 - Rail, Hydraulic Jack**

- a. ECP 321 - Modify and permanently attach to the LF apron a 90 pound per yard railroad track rail with notches appropriately spaced to be compatible with Hydraulic Jack, Figure A 4640.3.

* Indicates Figure A's included in Wing III Supplement.

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MAINTENANCE GROUND EQUIPMENT (MGE) CHANGES

- *1. Figure A 4105 - Gearcase-Motor, Launcher Closure
 - a. ECP 321 - This item is deleted.
- *2. Figure A 4141 - Dolly, Gearcase-Motor
 - a. ECP 321 - This item is deleted.
- *3. Figure A 4277 - Sling, Gearcase-Motor
 - a. ECP 321 - This item is deleted.
- *4. Figure A 4282 - Hoist, Gearcase-Motor
 - a. ECP 321 - This item is deleted.
- 5. Figure A 4370 - Test Stand, Gearcase-Motor
 - a. ECP 321 - This item is deleted.
- 6. Figure A 4540.3 - Cable Assembly Set
 - a. ECP 450 - This Figure A will require reduced quantities to accommodate differences in hardware allocation.
- *7. Figure A 4640.3 - Jack Kit, Hydraulic
 - a. ECP 321 - This is a new item of MGE, replacing Figure A 4105, Gearcase Motor. This new item was initiated through BSD/STL direction. As an off-the-shelf procurement, this Figure A will be controlled by a Specification Control Drawing.
- *8. Figure A 4645.3 - Dolly, Hydraulic Jack
 - a. ECP 321 - This is a new item of MGE, replacing Figure A 4141, Dolly, Gearcase Motor. This new item will facilitate handling of the Hydraulic Jack Kit at the Launch Facility. In addition, this item will support the Hydraulic Jack Kit during transportation between the SMSB and the Launch Facility. This is to be a Boeing designed piece of equipment.
- *9. Figure A 4646.3 - Sling, Hydraulic Jack
 - a. ECP 321 - This is a new item of Boeing designed MGE, replacing Figure A 4277, Sling, Gearcase Motor. This sling will be used to facilitate the handling of the Hydraulic Jack Kit (with Dolly) between the Launcher Apron and the transporting vehicle.

* Indicates Figure A's included in Wing III Supplement.

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*10. Figure A 4648.3 - Hoist, Hydraulic Jack

- a. ECP 321 - This is a new item of MGE, replacing Figure A 4282, Hoist, Gearcase Motor. This hoist will operate both on the Launcher-Closure and on the Launcher-Apron to facilitate handling of the Hydraulic Jack Kit, with Dolly. This will be a Boeing designed item.

* Indicates Figure A's included in Wing III Supplement.

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SUMMARY OF EQUIPMENT CHANGES FOR WING III - Volume II			
AFSC	Subsystem/Operation Involved	Status	Page
1825G	Maintenance Flow-Weapon System (25-33502)		
	2.0 LCC Operator Is Alerted to a Malfunction Condition Within The LCEB and Notifies Security Guard	Added	4-15A.3
	2.1 LCC Operator Informs Security Guard if LCEB Standby Generator Fails to Start	Added	4-15A.3
	5.0 Security Guard Requests Standby Personnel to Investigate the Malfunction and Standby Personnel Proceed to Assigned Area	Added	4-15A.3
	7.4 Operator Makes Procedural Checks at Shift Change	Changed	4-17A.3
	7.6 Operator Makes Procedural Checks of Continuous Power Availability	Changed	4-17B.3
	7.7 Operator Makes Procedural Checks on SAC Terminal Equipment	Changed	4-17B.3
31255G	Position Description	Changed	4-216.3, 4-217.3
44250Z	Position Description	Changed	4-667.3, 4-668.3
44350G	Launcher Closure - Open-Close (25-33510)		
	1.2 Unload and Emplace Closure Open-Close Assembly	Added	4-721 I.3
	1.7 Open Closure by Actuating Open Close Assembly and Cable Takeup Device	Added	4-721 I.3
	2.0.1 Prepare Open-Close Assembly for Operation	Added	4-721 I.3
	2.3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device	Added	4-721 J.3
	2.8 Remove and Stow Closure Open-Close Assembly	Added	4-721 J.3
54150G	Position Description	Changed	4-784.3 thru 4-787.3
	Launcher Closure - Open-Close (25-33510)		
	1.2 Unload and Emplace Closure Open-Close Assembly	Changed	4-799A.3

TABLE i-1B.3

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SUMMARY OF EQUIPMENT CHANGES FOR WING III - Volume II			
AFSC	Subsystem/Operation Involved	Status	Page
54150G	Launcher Closure - Open-Close (25-33510) (Cont.)		
	1. 7 Open Closure by Actuating Open-Close Assembly and Cable Take-Up Device	Changed	4-799A. 3
	2. 0. 1 Prepare Open-Close Assembly for Operation	Added	4-800A. 3
	2. 3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Take-Up Device	Changed	4-800A. 3
	2. 8 Remove and Stow Closure Open-Close Assembly	Changed	4-801. 3
	Environmental Control & Ventilation Systems, Launcher, "0" Indenture	Added	4-819. 3
	1211. 3 Environmental Control System, Launcher	Changed	4-819. 3
		Added	4-819A. 3, 4-819B. 3
	1383 Gear Rack Assembly, Launcher Closure	Deleted	4-836
	1405. 3 Fuel System, Launcher	Changed	4-837. 3
	1429. 3 Blast Dampers, LSB	Added	4-837A. 3
	1441. 3 Shock Attenuation System (LSB)	Added	4-837B. 3
	1443. 3 Rack, Rail Hydraulic Pusher	Added	4-837C. 3
	1417. 2 Valve Blast, 8-Inch	Deleted	4-838A. 2, 4-838B. 2
	Environmental Control & Ventilation Systems, LCC, "0" Indenture	Added	4-842. 3
	1212. 3 Environmental Control System, LCC	Changed	4-842. 3
		Added	4-842A. 3 thru 4-842C. 3
	1230. 3 Fuel System, LCSB	Added	4-842D. 3
	1242. 3 Lift, Service LCC	Changed	4-844. 3
	1323. 3 Electrical System, LCC	Deleted	4-848
	1324. 3 Water Supply System, LCC	Deleted	4-849
		Deleted	4-848A. 2, 4-848B. 2
	1390. 3 Ventilation System, LCSB	Changed	4-854. 3
		Deleted	4-854A. 2
	1396. 3 Monitoring System Equipment Fault, LCC	Added	4-854E. 3
	1428. 3 Valve, Blast, 36-Inch	Added	4-854F. 3, 4-854G. 3
	1432. 3 Control System, Blast Valve (LCC)	Added	4-854H. 3 thru 4-854K. 3
	1436. 3 Ventilation System (LCEB)	Added	4-854L. 3
	1438. 3 Fuel System (LCEB)	Added	4-854M. 3
	1439. 3 Shock Attenuation System (LCEB)	Added	4-854N. 3
	1440. 3 Blast Door Installation (Tunnel Junction)	Added	4-854O. 3

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TABLE i-1B. 3

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SUMMARY OF EQUIPMENT CHANGES FOR WING III - Volume II

AFSC	Subsystem/Operation Involved	Status	Page
54150G	1450.3 Accumulator Set, 24-Inch Blast Valve Control (LCC)	Added	4-854P.3
	4141 Dolly Assembly, Gearcase-Motor	Deleted	4-886
	4282 Hoist, Gearcase-Motor	Deleted	4-888, 4-889
54250G	Position Description	Changed	4-890.3 thru 4-892.3
	1323.3 Electrical System (LCC)	Added	4-943A.3
	1396.3 Monitoring System, Equipment, Fault, (LCC)	Changed	4-960.3
		Deleted	4-961
	1437.3 Electrical System (LCSB)	Added	4-963A.3
54550Y	Position Description	Changed	4-1059.3, 4-1060.3
	1211.3 Environmental Control System, LF	Changed	4-1064.3 thru 4-1066AC.3
	1212.3 Environmental Control System, LCF	Changed	4-1071.3 thru 4-1071AF.3
	1390.3 Ventilation System, LCSB	Changed	4-1072.3
	1436.3 Ventilation System, LCEB	Added	4-1072A.3
	1211.3 Environmental Control System, LF	Changed	4-1074.3
		Added	4-1074A.3 thru 4-1074C.3
	1212.3 Environmental Control System, LCF	Added	4-1074D.3 thru 4-1074G.3
		-	

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MAINTENANCE FLOW - WEAPON SYSTEM - 25-33502 2.0 LCC Operator Is Alerted To A Malfunction Condition Within The LCEB And Notifies Security Guard	2.0 LCC Operator Is Alerted To A Malfunction Condition Within The LCEB And Notifies Security Guard A. The missile combat crew is alerted to LCEB mal- function by audible alarm. Auxiliary operator silences alarm and observes supervisory panel. LCC operator notifies security guard of a mal- function in the LCEB. B.	1396.3 Monitoring System, Equipment Fault, LCC 1300 Handset (SIN/LCC) 1246.3 Cable Assembly Set, LCC 1343 Telephone (SIN/LCC)	211/2 211/2	.01/LCC/ .02/LCC/
2.1 LCC Operator Informs Security Guard If LCEB Standby Generator Fails To Start	2.1 LCC Operator Informs Security Guard If LCEB Standby Generator Fails To Start A. LCC operator observes loss of overhead lighting. If lights do not come back on in one (1) minute, auxiliary operator uses switch on supervisory panel to verify loss of three phase power. B. LCC operator notifies security guard that standby generator has failed to pick up load.	1300 Handset (SIN/LCC) 1343 Telephone (SIN/LCC) 1246.3 Cable Assembly Set, LCC 1396.3 Monitoring System Equipment Fault, LCC	211/2 211/2	.02/LCC/ .02/LCC/
5.0 Security Guard Request Standby Personnel to Investigate the Mal- function and Standby Personnel Pre- ceed to Assigned Area	5.0 Security Guard Request Standby Personnel to Investigate the Malfunction and Standby Personnel Proceed to Assigned Area D. Auxiliary operator unlocks access shaft door by remote switch located on supervisory panel.	Intercom System 1343 Telephone (SIN/LCC) 1300 Handset (SIN/LCC) 1396.3 Monitoring System, Equipment Fault, LCC	111/1	.01/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MAINTENANCE FLOW - WEAPON SYSTEM - 25-33502 7.8 LCC Operator Conducts Pro- cedural Checks 7.6 Operator Makes Procedural Checks of Continuous Power Avail- ability	7.6 Operator Makes Procedural Checks of Continuous Power Availability C. The LCC operator verifies engine generator auto- matic start-up and load transfer are performed satisfactorily. The LCC operator verifies that essential hardened facility loads are satisfactorily carried by generator. 7.7 Operator Makes Procedural Checks on SAC Terminal Equipment A. LCC operator checks HF/UHF radio system by establishing communication and verify satisfactory transmission and reception.	1243 Console, Launch Control 1300 Handset (BIN/LCC) 1323.3 Electrical System (LCC) 1368 Radio Set (HF/UHF) 1423 Antenna 1424 Antenna 1425 Arrestor Assembly, Electrical Surge 1426 Antenna	221/2 121/1	/LCC/ 03/LCC/

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POSITION NO. 5	POSITION TITLE	RECOMMENDED OR AUTHORIZED AFSC
	Ballistic Missile Checkout Equipment Specialist/Technician	AFSC 3122.3/75G
GENERAL FEATURES		
POSITION SUMMARY:		
The Ballistic Missile Checkout Equipment Specialist is responsible for the Support Base maintenance and calibration of Electronic Test Equipment such as:		
623	C90 Adapter Group, Test	
624	C91 Test Center, Programmer - Fault Locator	
717.2	Test Set, Photo-Electronic Collimator	
3007	Test Set, Explosive Set Circuitry	
3013	Test Set, Command Control Console	
3092	Test Set, Programmer Group	
4012	Test Set, Sensitive Command Network	
4018	Test Adapter C91	
4152.2	Test Equipment, Electronic Facility, Base Maintenance	
4490	Missile Simulator	
4489	Message Generator	
10709	C153 Test Set, Missile Control Group	
The Ballistic Missile Checkout Equipment Specialist is responsible for troubleshooting and repairing interconnecting circuits of the Sensitive Command Network, Security System, Programmer Group, and Command Control Console when returned to the Support Base.		

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POSITION DEFINITION		RECOMMENDED OR AUTHORIZED AFSC AFSC 31255G/75G
POSITION NO. 5	POSITION TITLE Ballistic Missile Checkout Equipment Specialist/Technician	
POSITION SUMMARY: (Cont.) Checkout and testing is accomplished using self test features of programmed checkout equipment, and by using standard voltmeters, frequency meters, oscilloscopes and hand tools.		
ENVIRONMENT: Work Location: The Ballistic Missile Checkout Equipment Specialist's duty location is in the Maintenance Branch - Electronic Section at the Support Base.		
Lines of Supervision: He will be supervised at the Support Base by the Missile Officer, AFSC 3124G.		
QUALIFICATIONS: The Ballistic Missile Checkout Equipment Specialist is required to perform at a low to high perceptual skill level (high level is required for test, visual inspection, function checkout, and repair of test equipment); high judgmental skill level is required for accomplishing all detailed electronic maintenance functions; motor skill demands range from high to low. Task performance is generally critical to subsystem operation.		
RELATION TO EXISTING AIR FORCE SPECIALTIES: This position type falls within the scope of AFS Ballistic Missile Checkout Equipment Specialist/Technician, AFSC 31255G/75G.		

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POSITION NO. 10	POSITION DEFINITION	RECOMMENDED OR AUTHORIZED AFSC AFSC 44590Z/70Z
	Missile Pneudraulic Repairman/Repair Technician	
<u>GENERAL FEATURES</u>		
POSITION SUMMARY:		
The Missile Pneudraulic Repairman is responsible for Support Base repair, checkout and testing of the hydraulic equipment components removed from Transporter-Erectors. He is also responsible for assisting the Missile Mechanic/Technician in fault isolating, removing, installing and checking hydraulic equipment components of the Transporter-Erector Tractor and Transporter-Erector Trailer.		
He is responsible for testing and repair of pneudraulic components found in equipment.		
such as:		
1249.	Personnel Hatch Installation System	
1326.2	Blast Door	
He also provides assistance on an "as required" basis to the Electro-Mechanical Team for detailed troubleshooting and repair of pneudraulic components at the Launch Facility and the Launch Control Facility.		
ENVIRONMENT:		
Work Location: The Missile Pneudraulic Repairman is assigned to the Mechanical Section of the Missile Maintenance Squadron.		

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POSITION NO. 10	POSITION DEFINITION		RECOMMENDED OR AUTHORIZED AFSC AFSC 44250Z/70Z
	POSITION TITLE	Missile Pneudraulic Repairman/Repair Technician	
	ENVIRONMENT: (Cont.)	Lines of Supervision: He is supervised by the Missile Officer, AFSC 3124G.	
	QUALIFICATIONS:	The perceptual, judgmental and motor skills required for this position are essentially low to medium. For functions such as fault isolation and checkout, these same skills are considered medium to high.	
		Task performance is considered critical to Subsystem operations.	
	RELATION TO EXISTING AIR FORCE SPECIALTIES:	This position falls within the scope of AFS Missile Pneudraulic Repairman/Repair Technician, AFSC 44250Z/70Z.	

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AFSC: 443900

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN - CLOSE - 25-33510 1.6 Open Launcher Closure 1.2 Unload and Emplace Closure Open-Close Assembly	1.2 Unload And Emplace Closure Open-Close Assembly A. Remove the launcher closure open-close equipment from the stowed position on the maintenance vehicle using the vehicle mounted hoist. B. Move the open-close equipment to the top of the launcher closure. D. Attach sling to the hoist and to the hydraulic jack and lower the hydraulic jack with dolly to the launcher apron. G. Reposition the portable hoist into the socket clamp, attach sling to the hydraulic jack, release dolly attachments, hoist jack with simulated rail section of the dolly and install on the rail plate. J. Move the hydraulic jack onto the rail and pull the jack to the launcher closure. K. Assemble the draw bar and attach to the launcher closure. L. Prepare hydraulic jack for operation by attaching hoses and starting pump.	Common Hand Tools 4640.3 Jack Kit, Hydraulic 1443.3 Rail, Hydraulic Jack 4646.3 Sling, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack 4646.3 Hoist, Hydraulic Jack 4031 Truck, Mechanical Maintenance	222/1 222/1 222/1 222/1 222/1 222/1 222/1	.25/LF/ .03/LF/ .07/LF/ .20/LF/ .02/LF/ .05/LF/ .05/LF/
1.7 Open Closure by Actuating Open-Close Assembly and Cable Takeup Device	1.7 Open Closure by Actuating Open-Close Assembly and Cable Takeup Device B. Operate control handles on hydraulic jack and hydraulic pump to open launcher closure	4640.3 Jack Kit, Hydraulic 1443.3 Rail, Hydraulic Jack 4305 Cylinder/Valve, Compressed Gas 1329.3 Electrical System, Launcher	222/1	.35/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN-CLOSE - 25-33910 2.0 Close Launcher Closure 2.0.1 Prepare Open-Close Assembly For Operation	2.0.1 Prepare Open-Close Assembly For Operation A. Disconnect hydraulic hoses from hydraulic jack. B. Disassemble drawbar hawse and place attached to the closure. C. Move the hydraulic jack off the rail onto the simulated rail section of the dolly, rotate the hydraulic jack to reverse the direction, re-install the jack onto the rail and attach hoses. D. Re-assemble drawbar if necessary.	4640.3 Jack Kit, Hydraulic 1443.3 Rail, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack	222/1 112/1 222/1	.01/LF/ .02/LF/ .10/LF/
2.3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device	2.3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device G. Actuate the hydraulic jack and move closure to the predetermined position. H. Unlock handle and maintain downward pressure while closing the closure until cables have been engaged and cable load transferred from the arresting lugs to the rocker arm, and stop.	4305 Cylinder/Valve, Compressed Gas 1240 Actuating & Locking Mechanism, Launcher Closure 4634 Resetting Device, Launcher Closure Actuator 4640.3 Kit, Hydraulic Jack Industrial Safety Belt Industrial Safety Strap	222/1 223/1	.23/LF/ .12/LF/
2.8 Remove and Stow Closure Open-Close Assembly	2.8 Remove and Stow Closure Open-Close Assembly C. Move the hydraulic jack off the rail onto the dolly section mounted on the rail plate. E. Place the portable hoist in the socket clamp, attach sling, lift the hydraulic jack with simulated rail section off the dolly and place on the wheeled section of the dolly. F. Move the dolly to the launcher closure, reposition portable hoist to the socket anchor on the closure. G. Attach hoist and sling and lift the dolly and jack to the top of the launcher closure. H. Remove socket clamp from rail and drawbar end piece from launcher closure. I. Stow all equipment.	4031 Truck, Mechanical Maintenance 4640.3 Kit, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack 4646.3 Sling, Hydraulic Jack 4648.3 Hoist, Hydraulic Jack	222/1 222/1 222/1 222/1 222/1 222/1	.01/LF/ .20/LF/ .02/LF/ .08/LF/ .03/LF/ .30/LF/

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POSITION NO. <u>12</u>	POSITION DEFINITION	RECOMMENDED OR AUTHORIZED AFSC AFSC 54150G/70G
POSITION TITLE Missile Facilities Specialist/Technician		
<u>GENERAL FEATURES</u>		
<u>POSITION SUMMARY:</u>		
The Missile Facilities Specialist/Technician is a member of the Missile Team. As a member of this team, he assists in opening and closing the Launch Tube Closure; emplacing and handling environmental covers, personnel cage, safety barriers, and blowers; and assists in preparing the Re-Entry Vehicle - Guidance and Control Van for Missile, Re-Entry Vehicle or Guidance and Control Section removal and replacement.		
The Missile Facilities Specialist/Technician is a member of Electro-Mechanical Team and is responsible for the inspecting, servicing, troubleshooting, removal and replacement of equipment and components such as:		
1202	G&C Umbilical Retraction Mechanism	R
1207	Drier-Air Compressor, Hardened Cable	R
1209.3	Water Control and Removal System, Launcher	R
1210.3	Sewage Disposal System, Launch Control Center	R
1211.3	Environmental Control System, Launcher	
1212.3	Environmental Control System, Launch Control Center	
1214	Guidance Section Liquid Cooler	
1217	Closure, Launcher Tube	
1230.3	Diesel Fuel Oil System, Launch Control	R
1241.3	Shock Attenuation System, LCC	R
1242.3	Service Lift, Launch Control Facility	R

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POSITION NO.	POSITION TITLE	RECOMMENDED OR AUTHORIZED AFSC
	Missile Facilities Specialist/Technician	AFSC 54150G/70G
POSITION SUMMARY: (Cont.)		
1249	Hatch Installation, Launcher	
1280	Launcher Closure Actuating and Locking Mechanism	
1282	Battery, Emergency Power	
1288	Battery, Emergency Power	
1283	Motor Generator Set	
1318	G&C Cooling Plumbing Set	
1325. 3	Heating System, LCSB	
1326. 2	Blast Door Installation, Launch Control Capsule	
1330. 3	Shock Attenuation System, Launcher Equipment Room Floor	
1390. 3	Ventilation System	
1418. 3	Valve, Blast, 24-Inch	
1420. 3	Damper Set, Sway, Shock Attenuation	
1421. 2	Shock Isolator, Shock Attenuation	
1443. 3	Rail, Hydraulic Pusher	
1447	Drier, Air Compressor, Hardened Cable	
He is assisted in detailed troubleshooting of these equipments by the appropriate AFS having detailed knowledge, such as 44250Z, 54550Y, 54250G or 54350. He performs maintenance and tests at the Launch Facility on the ballistic charge on the		

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POSITION DEFINITION		RECOMMENDED OR AUTHORIZED AFSC AFSC 54150G/70G
POSITION NO. 12	POSITION TITLE Missile Facilities Specialist/Technician	
POSITION SUMMARY: (Cont.) Rotary Actuator Assembly and the Ballistic Gas Generator in the Launch Tube Closure Actuator Mechanism.		
At the Support Base he is responsible for inspection, servicing and referral to the appropriate section in the Maintenance Branch for detailed repair of mechanical Maintenance Ground Equipment, such as: Elevator and Work Cage, Safety Barrier, Truck Dolly, Launcher Closure Tractor, etc.		
ENVIRONMENT: Work Location: He performs his duties and tasks at the Launch Facilities, Launch Control Facilities, and the Support Base.		
Lines of Supervision: As a member of the Mobile Maintenance Teams, his work is coordinated by the Ballistic Missile Analyst Technician, AFSC 31274G. At the Support Base he is supervised by the Missile Officer, AFSC 3124G.		
QUALIFICATIONS: The Missile Facilities Specialist/Technician's skill requirements range from low to medium. Medium perceptual skill is required for troubleshooting, inspection, and checkout functions. Medium judgmental skill is required for accomplishing the various detailed maintenance procedures. Medium motor skill is required for installation and removal of assemblies and for aligning and adjusting tasks.		
Composite-test, checkout, visual check and some non-verifiable repair, installation and servicing functions involve tasks whose performance are critical to subsystem operation but which may affect system operation if not correctly performed.		

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POSITION NO. 12	POSITION DEFINITION	RECOMMENDED OR AUTHORIZED AFSC AFSC 54150G/70G
	POSITION TITLE Missile Facilities Specialist/Technician	
	RELATION TO EXISTING AIR FORCE SPECIALTIES:	
	This position type falls within the scope of AFS Missile Facilities Specialist/Technician, AFSC 54150G/70G.	

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN- CLOSE - 25-33510 1.6 Open Launcher Closure 1.2 Unload And Emplace Closure Open-Close Assembly	1.2 Unload and Emplace Closure Open-Close Assembly A. Remove the launcher closure open-close equipment from the stowed position on the maintenance vehicle using the vehicle mounted hoist. B. Move the open-close equipment to the top of the launcher closure. C. Install portable hoist in launcher closure socket. D. Attach sling to the hoist and to the hydraulic jack, and lower the hydraulic jack with dolly to the launcher apron. E. Move the dolly with hydraulic jack to the end of the launcher apron. F. Attach the socket clamp of Figure A 4648.3 to the hydraulic jack rail. G. Reposition the portable hoist into the socket clamp, attach sling to the hydraulic jack, release dolly attachments, hoist jack with simulated rail section of the dolly and install on the rail plate. H. Remove socket clamp from rail. I. Remove wheeled section of dolly from the launcher apron. J. Move the hydraulic jack onto the rail and pull the jack to the launcher closure. K. Assemble the drawbar and attach to the launcher closure. L. Prepare hydraulic jack for operation by attaching hoses, and starting pump.	Common Hand Tools 4640.3 Jack Kit, Hydraulic 1443.3 Rail, Hydraulic Jack 4646.3 Sling, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack 4648.3 Hoist, Hydraulic Jack 4031 Truck, Mechanical Maintenance	222/1 222/1 222/1 222/1 222/1 222/1 222/1 111/1 111/1 222/1 222/1 222/1	.25/LF/ .03/LF/ .02/LF/ .07/LF/ .02/LF/ .02/LF/ .20/LF/ .01/LF/ .01/LF/ .02/LF/ .05/LF/ .05/LF/
1.7 Open Closure by Actuating Open-Close Assembly and Cable Takeup Device	1.7 Open Closure by Actuating Open-Close Assembly and Cable Takeup Device B. Operate control handles on hydraulic jack and hydraulic pump to open launcher closure.	4640.3 Jack Kit, Hydraulic 1443.3 Rail, Hydraulic Jack 4305 Cylinder/Valve, Compressed Gas 1329.3 Electrical System, Launcher	222/1	.35/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN- CLOSE - 25-33510 2.0 Close Launcher Closure 2.0.1 Prepare Open-Close Assembly For Operation	2.0.1 Prepare Open-Close Assembly For Operation A. Disconnect hydraulic hoses from hydraulic jack. B. Disassemble drawbar leaving end piece attached to the closure. C. Move the hydraulic jack off the rail onto the simulated rail section of the dolly, rotate the hydraulic jack to reverse the direction, re-install the jack onto the rail and attach hoses. D. Re-assemble drawbar if necessary.	4640.3 Jack Kit, Hydraulic 1443.3 Rail, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack	222/1 112/1 222/1 112/1	.01/LF/ .02/LF/ .10/LF/ .03/LF/
2.3 Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device	2.3. Close Launcher Closure by Actuating Open-Close Assembly and Cable Takeup Device A. Open regulating valve on air bottle. B. Inspect open launcher closure C. Obtain special tool from semi-trailer. D. Install tool and personnel safety restraints. E. Engage tool to multiplying linkage piston and attach tool to clevis type fitting on closure. F. Apply upward pressure to the tool handle to rotate the multiplying linkage rocker arm to the fully retracted position and lock handle. G. Actuate the hydraulic jack and move closure to the predetermined position. H. Unlock handle and maintain downward pressure while closing the closure until cables have been engaged and cable load transferred from the arresting lugs to the rocker arm and stop. I. Remove tool and stow. J. Complete closing and locking sequence. K. Inspect closed launcher closure.	4305 Cylinder/Valve, Compressed Gas 1280 Actuating & Locking Mechanism, Launcher Closure 4634 Resetting Device, Launcher Closure Actuator 4640.3 Kit, Hydraulic Jack Industrial Safety Belt Industrial Safety Strap	221/1 221/2 111/1 222/1 222/1 222/1 222/1 222/1 222/1 222/1 223/1 223/1	.02/LF/ .02/LF/ .10/LF/ .10/LF/ .12/LF/ .02/LF/ .23/LF/ .12/LF/ .10/LF/ .10/LF/ .02/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
LAUNCHER CLOSURE - OPEN- CLOSE - 25-33510 2.6 Close Launcher Closure 2.8 Remove And Stow Closure Open- Close Assembly	2.8 Remove And Stow Closure Open-Close Assembly A. Detach electrical connections. B. Detach mechanical fasteners. C. Move the hydraulic jack off the rail onto the dolly section mounted on the rail plate. D. Attach the socket clamp of Figure A 4648.3 to the hydraulic jack rail. E. Place the portable hoist in the socket clamp, attach sling, lift the hydraulic jack with simulated rail section off the dolly and place on the wheeled section of the dolly. F. Move the dolly to the launcher closure, reposition portable hoist to the socket anchor on the closure. G. Attach hoist and sling and lift the dolly and jack to the top of the launcher closure. H. Remove socket clamp from rail and drawbar end piece from launcher closure. I. Stow all equipment.	4031 Truck, Mechanical Maintenance 4640.3 Kit, Hydraulic Jack 4645.3 Dolly, Hydraulic Jack 4646.3 Sling, Hydraulic Jack 4648.3 Hoist, Hydraulic Jack	222/1 222/1 222/1 222/1 222/1 222/1 222/1 222/1 222/1 222/1	.01/LF/ .02/LF/ .01/LF/ .02/LF/ .02/LF/ .02/LF/ .02/LF/ .08/LF/ .03/LF/ .30/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL & VENTILATION SYSTEMS, LAUN- CHER "O" Indenture Environmental Control System, Launcher - 1211.3	COMPOSITE TEST: Observe operation of supply fan, and Exhaust fan. If operation of either fan is unsatisfactory Environmental Control System, Fig "A" 1211.3 is faulted. Observe Control Air pressure. If Control Air pressure is unsatisfactory Environmental Control System Fig "A" 1211.3 is faulted. If Control Air pressure is satisfactory proceed to next step. Observe positioning of Modulating Damper. If diesel not operating, vary setting of Room Thermostat and observe damper movements. If diesel operating, vary setting of Diesel Thermostat and observe damper movements. If damper positioning is not satisfactory, Ventilation System Fig "A" 1389.3 is faulted. If damper positioning is satis- factory proceed to Indenture 1 on form C/C1's of Environ- mental Control System Fig "A" 1211.3.		121/1	.10/LF
			121/1	.10/LF
			121/1	.10/LF
		Cleaner, Vacuum Placard, Warning Stapladder, 6-foot Lantern, Electric	111/1	.10/LF/3M
			111/1	.05/LF/3M
			111/1	.15/LF/3M
			111/1	.15/LF/3M
			111/1	.15/LF/3M
			111/1	.05/LF/3M
		Common Hand Tools Lantern, Electric Stapladder, 6-foot	111/1	.20/LF/3M
	INSPECT: Check motors, pump, fans and compressors for excessive vibration or overheating. Inspect electrical conduits for damage or loose connections Use lantern to facilitate inspection.		111/1	.15/LF/3M
	REPAIR: Tighten and secure loose piping connections. Tighten and secure loose electrical wiring and connections. Tighten and secure loose components.	Common Hand Tools	111/1 111/1 111/1	.15/LF/ .15/LF/ .15/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM LAUNCHER Environmental Control System, Launcher 1211.3 /2 Heating and Ventilation Subsystem Launcher Tube	SERVICE: Lubricate bearings as required.	Kit, Lubrication Lantern, Electric Spladder, 6-Foot	211/1	.25/LF/
/2 Emergency Subsystem	SERVICE: Lubricate damper linkage as required.	Kit, Lubrication Spladder, 6-Foot	111/1	.15/LF/3M
/2 Control Air Subsystem	SERVICE: Lubricate the compressor and motor as required. Clean air intake filter as required. Drain water from air receiver.	Common Hand Tools Kit, Lubrication	111/1 111/1 111/1	.10/LF/24 .10/LF/24 .10/LF/24
/2 Supply and Exhaust Air Subsystem	SERVICE: Lubricate the fan motors as required.	Common Hand Tools Kit, Lubrication	211/1	.15/LF/24
/2 Distribution Subsystem, Cooling Air	SERVICE: Place circuit breaker in Panel in OFF position and attach Warning Placard in Conspicuous position. Lubricate modulating damper linkage as required. Remove and replace air filters F-1 and F-2 as required. Place circuit breaker in Panel in ON position and remove Warning Placard.	Placard, Warning Spladder, 6-Foot Common Hand Tools Kit, Lubrication	111/1 211/1 212/1 111/1	.05/LF/3M .10/LF/3M .20/LF/3M .05/LF/3M

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AFSC: 54150G

SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
FUEL SYSTEM, LAUNCHER Fuel System, Launcher - 1405.3	CLEAN:	Common Hand Tools Container, 1-Gallon	121/1	.45/LF/.36M
	INSPECT:	Common Hand Tools Lantern, Electric	121/1	1.10/LF/.36M
	REPAIR:	Common Hand Tools	121/1	.25/LF/Unit
	CHECKOUT:	Common Hand Tools Container, 1-Gallon	121/1	.75/LF/.36M
	TEST:	4001 Multimeter	121/1	.65/LF/.26054
	CHECKOUT:	Common Hand Tools	121/1	.75/LF/.23765
	REPAIR:	4031 Common Hand Tools Truck, Mechanical Maintenance Container, 1-Gallon Placard, Warning	121/1	.34/LF/.03209
	CHECKOUT:	Common Hand Tools Container, 1-Gallon	121/1	.50/LF/.03209

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM Blow Dampers, LBB - 1429.3	<u>NOTE:</u> No maintenance analysis information is available.			

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
SHOCK ATTENUATION SYSTEM, LSB Shock Attenuation System, LSB - 1441.3	CLEAN: INSPECT: REPAIR:	Step ladder, 8-foot Step ladder, 8-foot Level and Plumb 4031 Truck, Mechanical Maintenance Common Hand Tools	111/1 111/1 111/1	2.00/LF/3AM 1.25/LF/3AM .30/LF/.00001

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
Bach. Rail Hydraulic Pusher - 1443.3	REMOVE: Remove holding bolts and washers. Break rail loose and attach connector from crane. Remove rail from launcher apron.	4054 Crane, Truck Mounted Common Hand Tools	111/1 111/1 111/1	.50/LF .20/LF .10/LF
	HANDLE: Load rail on flatbed truck and tie down () as to avoid shifting of load during transit.	4054 Crane, Truck Mounted Flatbed Truck	111/1	.30/LF
	INSTALL: Position rail and start fasteners. Draw up until tight.	4054 Crane, Truck Mounted Torque, Wrench Flatbed Truck	112/1 112/1	.50/LF .50/LF
	PROTECT: Clean surfaces before painting. Paint all surfaces that may be exposed to the environment.	Protective Coating Material Paint Brush	111/1 111/1	.20/LF .30/LF
	INSPECT: Inspect rails for cracks, loose holding bolts and chipped or cracked detents.		121/1	.20/LF

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL AND VENTILATION SYSTEMS, LCC "0" Indenture	TEST: Observe operation of supply fan and exhaust fan. If operation of either fan is unsatisfactory, Environmental Control System, Figure A 1212.3 is faulted. Observe control air pressure. If control air pressure is unsatisfactory, Environmental Control System, Figure A 1212.3, is faulted. If control air pressure is satisfactory, proceed to the following step. Observe positioning of modulating damper. If damper positioning is not satisfactory, Ventilation System, Figure A 1436.3 is faulted. If damper positioning is satisfactory, proceed to Indenture 1 of Environmental Control System Figure A 1212.3.		221/1 221/1 221/1	.10/LCC/ .10/LCC/ .10/LCC/
Environmental Control System, LCC Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3	CLEAN: Place circuit breakers LCC-Sub C or LCC-SRCC or LCC-SRCC/ACP, located in LCDA Panel, in OFF position and attach Warning Placard. Place brine chiller lock switch in OFF position. Clean fans, motors and air compressor. Clean all gages and instruments. Place circuit breakers LCC-Sub C or LCC-SRCC or LCC-SRCC/ACP, located in LCDA Panel, in ON position and remove Warning Placard. Place brine chiller lock switch in ON position.	Cleaner, Vacuum Placard, Warning Stepladder, 6-foot Lantern, Electric	111/1 111/1 111/1 111/1 111/1	.10/LCC/SM .05/LCC/SM .15/LCC/SM .15/LCC/SM .10/LCC/SM
	INSPECT: Check motors, pump, fans and compressors for excessive vibration or overheating. Inspect electrical conduits for damage or loose connections.	Common Hand Tools Lantern, Electric Stepladder, 6-foot	111/1 111/1 111/1	.05/LCC/SM .20/LCC/SM .15/LCC/SM
	REPAIR: Tighten and secure loose piping connections. Tighten and secure loose electrical wiring and connections. Tighten and secure loose components.	Common Hand Tools	111/1 111/1 111/1	.15/LCC/ .15/LCC/ .15/LCC/
1/2 Brine Subsystem, Chilled	SERVICE: Check sight glass for presence of bubbles while compressor is running. Place brine chiller key switch SW-1 in brine chiller control panel, P-1 in OFF position. Place key switch SW-2 in vent system control panel P-2 in OFF position. Place brine pump, circuit breaker, CB-1 in brine chiller control panel P-1 and compressor motor circuit breaker, CB-2 in brine chiller control panel, P-1 in OFF position and attach Warning Placard in conspicuous position.	Kit, Lubrication Common Hand Tools Stepladder, 6-foot Hydrometer Lantern, Electric Dispensing Pump, Hand Driven Placard, Warning Container, 5-Gallon Container, 1-Gallon Pump, Rotary Hand Driven	211/1 111/1 111/1	.05/LCC/SM .05/LCC/SM .05/LCC/SM

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYS- TEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC- Sub-C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Brine Subsystem, Chilled	SERVICE: (Cont.) Add lubricating oil to compressor CP-1 as required with dispensing pump. Add brine solution to required level in expansion tank ET-1 using pump, after checking with hydrometer, to determine strength of solution to be added. Remove and clean brine line strainer screen. Place brine pump, and compressor motor circuit breakers in ON position and remove warning placard. Place brine chiller key switch SW-1 in ON position. Restart system, by closing key switch, SW-2, in vent system control panel.		121/1 111/1 111/1 111/1 111/1 111/1	05/LCC/3M 10/LCC/3M 15/LCC/3M 05/LCC/3M 05/LCC/3M 05/LCC/3M
/3 Tank, Expansion	SERVICE: Add brine solution to required level in expansion tank, using pump. Place brine pump circuit breaker in ON position and remove Warning Placard.	Stapladder, 8-foot Common Hand Tools Placard, Warning Hydrometer Lantern, Electric Container, 5-Gallon Container, 1-Gallon Pump, Rotary, Hand Driven 4031 Truck, Mechanical Maintenance	121/1 111/1	30/LCC/Unk. 05/LCC/Unk.
/2 Distribution Subsystem, Cooling Air	CHECKOUT: Check expansion tank for leaks and proper level. SERVICE: Place circuit breakers for LCC-Sub-C and/or for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Lubricate damper linkage. Remove and replace air filters as required. Place circuit breakers for LCC-SubC, and/or for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in ON position and remove Warning Placard.	Placard, Warning Common Hand Tools Stapladder, 6-foot Kit, Lubrication	121/1 111/1 111/1 211/1 111/1	10/LCC/Unk. 05/LCC/3M 30/LCC/3M 30/LCC/3M 05/LCC/3M

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 11212.3 1/2 Distribution Subsystem, Cooling Air 1/3 Panel, Alarm	TEST: For false high temperature indication: Check control air branch pressure gage at TA-1 for specified pressure indication. Check control air branch pressure gage at TA-2 for specified pressure indication. For false low temperature indication: Check control air branch pressure gage at TA-2 for specified pressure indication. For false low flow alarm: Check control air exhaust pressure at FA-1.	Common Hand Tools	222/1 222/1 222/1	.10/LCC/ .10/LCC/ .10/LCC/
1/4 Switch, Pressure	ADJUST: Place TA-3 thermostat above 60 degrees F set point and set FE-10 to activate alarm circuit when control air pressure decreases to 3 psig. Place TA-2 thermostat below 50 degrees F set point and set FE-11 to activate alarm circuit when control air pressure increases to 15 psig. Return TA-2 to normal operating setting.	Common Hand Tools	222/1 222/1	.05/LCC/3MM .05/LCC/3MM
1/2 Emergency Subsystem 1/3 Cooling Unit, Emergency 1/4 Pump, Centrifugal, Power Driven	SERVICE: Add mixture to required level. CHECKOUT: Check that emergency cooling system is operating and that the pump is operational.	Common Hand Tools Container, 5-Gallon Pump, Rotary, Hand Driven Lantern, Electric	122/1 221/1	.10/LCC/ .15/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
FUEL SYSTEM, LCSB Fuel System, LCSB - 1230.3	PUMP: INSPECT: CHECKOUT: TEST: REPAIR:	Common Hand Tools Truck, Tank Type Lantern, Electric Stepladder, 8-foot Bucket, 12-Quart Stepladder, 8-foot Common Hand Tools Truck, Mechanical Maintenance Stepladder, 8-foot 4031	121/1 121/1 221/1 221/1 122/1	2.7/LCC/3AM 1.9/LCC/3AM 1.01/LCC/3AM 1.9/LCC/.06540 1.05/LCC/.0320

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Ltr. Service, LCC - 1242.3	SERVICE:	Common Hand Tools Kit, Lubrication	111/1	.35/LCC/12M
	ADJUST:	Common Hand Tools Placard, Warning	221/1	.25/LCC/12M
	CLEAN:	3083 Compressor, Rotary 4031 Power Driven Truck, Mechanical Maintenance Gun, Cleaning, Air	221/1	2.95/LCC/3AM
	INSPECT:		221/1	1.35/LCC/3AM
	REPAIR:	Common Hand Tools Placard, Warning	111/1	.35/LCC/
	TEST:	Common Hand Tools Multimeter	221/1	.21/LCC/.0027
	REPAIR:			1.00195
	CHECKOUT:		222/1	1.30/LCC/.095
	REPAIR:	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	222/1	.87/LCC/.0007
	CHECKOUT:		222/1	.27/LCC/.0007
	ADJUST:	Common Hand Tools	222/1	.27/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SYSTEM, LCSE Ventilation System, LCSE - 1390.3	CLEAN: INSPECT:	Common Hand Tools Stepladder, 8-foot Ladder, Extension Placard, Warning Placard, Warning Stepladder, 8-foot Ladder, Extension	III/I III/I	1. 10/LCC/12M 90/LCC/12M

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MONITORING SYSTEM, EQUIPMENT FAULT, LCC Monitoring System, Equipment Fault, LCC - 1396.3	CLEAN:	Vacuum Cleaner Common Hand Tools Placard, Warning	222/1	28/LCC/12M

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC) Valve Blast, 36 inch - 1428.3	CHECKOUT: See zero indenture for ventilation safety system for detailed information. TEST: Position equipment for usage by transferring from maintenance van to LCER. Gain access to valve interior by removing ducting. Test switches for voltage/continuity by opening terminal box and probing terminal board connectors. Open/close valve by using control system panel with hand pump and observing pressure on gage at which components are activated to isolate faults. Replace ducting if test is satisfactory. CHECKOUT: See zero indenture of ventilation safety system.	4001 Multimeter 1432.3 Control System, Blast Valve Step ladder Light Portable Common Hand Tools Truck, Mechanical Maintenance	222/1 121/1 121/1 221/1	.07/LCC .25/LCC .30/LCC .64/LCC
72 Actuator	PURGE: Prepare control system to pressurize hydraulic system by using hand pump. Purge hydraulic cylinder by installing bleeder hoses in bleed ports and pressurizing hydraulic fluid. After bleeding cap ports remove bleeding equipment from interior of valve. REMOVE: Position maintenance equipment for usage by transferring equipment from maintenance van to LCER. Secure control system for maintenance in valve and leave valve in closed position. Prepare actuator for removal by: Supporting with blocking & rigging. Disconnecting and removing hydraulic lines. Disconnecting and removing switch. Removing actuator attaching fasteners. INSTALL: Transfer actuator from maintenance van to LCER using dolly for moving actuator. Unpackage/prepare actuator for installation and place actuator on blocking in valve tube. Install actuator by: Positioning actuator and installing attaching fasteners. Installing/connecting hydraulic tubing. Installing switch. Removing blocking & rigging. Purge and checkout valve. Replace ducting. Transfer maintenance equipment from LCED to maintenance van.	1423.3 Control System, Blast Valve Bleeder hose with container. Light Portable 4031 Truck, Mechanical Maintenance Light Portable Common Hand Tools Block Wood Dolly Truck Step Ladder 3022 Dolly Truck Block Wood Step Ladder Common Hand Tools Light Portable Truck Mechanical Maintenance. 4031	121/1 222/1 121/1 222/1 121/1 121/1 222/1 121/1 121/1 222/1	.30/LCC .07/LCC .05/LCC .25/LCC .25/LCC .40/LCC .40/LCC .25/LCC .10/LCC .50/LCC .32/LCC .30/LCC .25/LCC

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM, LCC Valve Blast, 36 inch - 1428. 3 /2 Switch	REMOVE: Remove switch by removing fastener and dis- connecting electrical conductors. INSTALL: Connect electrical conductor to switch, position switch and install fastener. Perform checkout to verify switch operation.	Light Portable Step Ladder Common Hand Tools Light Portable Step Ladder	121/1 121/1 221/1	.05/LCC .10/LCC .07/LCC

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC) Control System, Blast Valve-1432.3	VISUAL CHECK: Check for evidence of hydraulic fluid leakage at components and fittings at Capsule and LCEB. Check components for security of mounting and connectors for tightness at Capsule and LCEB. Check pressure gauges for proper system hydraulic and nitrogen pressures in LCEB and Capsule. TEST: Check for power at control panel by operating press to test lights. Refer to Figure A 1323.3 if there is no power at power panel. If electrical power is available to LCEB unit, test LCEB at as described in lower indenture. If power is available to Capsule Unit, test Capsule Unit as described in lower indenture. Open valve to Hydraulic System pressure gage in LCEB. If pressure is not in the range of 1100 to 1450 psi, test LCEB unit. If pressure is correct, test LCEB and/or capsule unit. INSPECT: Inspect control system after repair for security of fasteners and connectors, evidence of hydraulic fluid leakage and completeness of repair. SERVICE: Shut-off hydraulic pump and de-pressurize hydraulic system. Position compressed gas cylinder and adapter kit near accumulator charging fitting in LCEB. Connect gas cylinder and adapter kit to accumulator charging fitting. Open valves and charge accumulator to 700 psig. Close valves, release charging line pressure and disconnect charging equipment. Remove compressed gas cylinder and adapter kit from LCEB. Refer to Figure A 1450.3 for servicing of Capsule Accumulator. With hydraulic system depressurized, check fluid level in reservoir. Replace filter elements in hydraulic system. Add fluid to hydraulic reservoir if required. TEST: Check for power at control panel by depressing Press to test buttons on indicator lights. Remove power from timer by actuating switch. Check that red light goes on. Actuate and hold shutoff valve to allow hand pump operation.	Lantern, Portable	221/1 221/1 221/1 221/1 221/1 222/1 121/1 121/1 122/1 222/1 122/1 121/1 221/1 122/1 121/1 221/1 121/1 222/1	.10/LCC/ .10/LCC/ .10/LCC/ .02/LCC/ .05/LCC/ .15/LCC/ .10/LCC/ .10/LCC/ .05/LCC/ .20/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .15/LCC/ .10/LCC/ .01/LCC/ .02/LCC/ .01/LCC/
/2 LCEB Unit, Control System		4305 Cylinder, Valve, Compressed Gas 4570 Adapter Kit 4031 Filler & Bleeder, Hydraulic System Truck, Mechanical Maintenance 1432.3 Control System, Blast Valve 4001 Multimeter 4319.3 Adapter Set, Connector Stop Watch		

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC) Control System, Blast Valve-1432.3 /2 LCEB Unit, Control System	TEST: (Cont.) Energize valve close solenoid to close blast valves. Operate valve with manual override if solenoid valve fails to operate. Open valve to hand pump pressure gage and operate pump until blast valves are closed as indicated by a "Closed" light. Monitor hand pump pressure. De-energize solenoid valve and release shutoff valve. Restore power to timer. Timer contacts should close after a time delay of 20 ± 1 minute. Use momentary switch to bypass timer if timer contacts fail to close. Actuate and hold shutoff valve to allow hand pump operation. Operate hand pump and monitor pressure until blast valves are opened. Check that "Not Open" light goes off. Release hand pump shutoff valve and shutoff pressure gage valve. Open valve to system pressure gage and partially open valve from pressure to return line. Hydraulic pump should start at 1100 psi and shutdown at 1450 psi. Open circuit breakers to remove power from control panel, shutoff hydraulic pump and bleed pressure.	1432.3 Control System, Blast Valves 3022 Truck, Dolly 4117 Hoisting, Unit Portable Rope, Wire Common Hand Tools Container and Drain 4031 Hose Truck, Mechanical Maintenance 1432.3 Control System, Blast Valve Stop Watch	222/1 222/1 121/1 222/1 122/1 222/1 121/1 221/1 122/1 121/1	.05/LCC/ .10/LCC/ .01/LCC/ .40/LCC/ .01/LCC/ .10/LCC/ .01/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ .20/LCC/ .25/LCC/ .25/LCC/ .20/LCC/ .01/LCC/ .01/LCC/ .01/LCC/ .10/LCC/
	REPAIR: Check that hydraulic system is depressurized and electrical power to component is shut off. Drain hydraulic system as required. Replace defective component by removing access panels, disconnecting hydraulic lines and electrical wiring and removing component mounting fasteners. Load heavy components such as pump motor and accumulators onto dolly using hoist and wire rope.			
	CHECKOUT: Remove power from timer by actuating switch. Check that red light goes on. Place shutoff valve in position for operation of hand pump. Energize solenoid valve to close blast valves. Operate hand pump until blast valves are closed as indicated by a "Closed" light.			

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE FREQUENCY
VENTILATION SAFETY SYSTEM (LCC) Control System, Blast Valve-1432.3 / 2 LCEB Unit, Control System	CHECKOUT: (Cont.) De-energize solenoid valve and release shutoff valve. Restore power to timer. Check that light goes out. Actuate and hold shutoff valve to allow hand pump operation. Use momentary switch to energize relay which holds valve open solenoid in energized position. Operate hand pump until blast valves are opened. Check that "Not Opened" light goes off. Release hand pump shutoff valve. Remove power from timer by actuating switch. Check that red light goes on. Hold manual override on valve close solenoid to allow hydraulic pressure to close valve. Release when "Closed" light illuminates. Restore power to timer circuit. Check that red light goes off. Blast valve should open after a time delay of 20 + 1 minute. Open valve to system pressure gage and partially open valve from pressure to return line. Hydraulic pump should start at 1100 psi and shutdown at 1450 psi. TEST: Open valve to system pressure gage and check hydraulic pressure. Check for power by observing indicator lights and operating press to test buttons. Actuate and hold shutoff valve to allow hand pump operation. Open valve to hand pump pressure gage. De-energize valve close solenoid by actuating switch. Operate hand pump and monitor pressure until "Closed" light comes on. Energize valve open circuit by returning switch to normal position. Check that red light goes off. Operate hand pump and monitor pressure until blast valves are opened. Release hand pump shutoff valve and close valve to pressure gage. Open circuit breakers to remove power from panel. Shutoff hydraulic pump and bleed pressure.	1432.3 Control System, Blast Valve 4001 Multimeter 4319.3 Adapter Set, Connector	121/1 221/1 122/1 121/1 222/1 121/1 221/1 222/1 221/1 221/1 221/1 221/1 222/1 221/1 222/1 121/1 121/1	.01/LCC/ .01/LCC/ .01/LCC/ .01/LCC/ .10/LCC/ .01/LCC/ .01/LCC/ .01/LCC/ .10/LCC/ .01/LCC/ .10/LCC/ .01/LCC/ .10/LCC/ .01/LCC/ .10/LCC/ .01/LCC/ .10/LCC/

/ 2 Capsule Unit

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC) Control System, Blast Valve-1432.3 /2 Capsule Unit	REPAIR: Check that hydraulic system is de-pressurized and electrical power to component is shut off. Drain hydraulic system as required. Replace defective component by removing access panel disconnecting hydraulic lines and electrical wiring, and removing component mounting fasteners. CHECKOUT: Actuate and hold shutoff valve to allow hand pump operation. De-energize valve close solenoid by actuating switch. Check that red light goes off. Operate hand pump until "Closed" light comes on. Energize valve open circuit by returning switch to normal position. Check that red light goes off. Operate hand pump until blast valves are opened. Release hand pump shutoff valve. Interrupt AC power to relay and solenoid valves by actuating switch. Blast valves should close monitor indicator lights. Open blast valves by restoring AC power. Monitor indicator lights. NOTE: No maintenance analysis is available for Indentures 3 and 4 of either of the 2 Indentures.	1432.3 Control System, Blast Valve Container, Drain Hose, Hydraulic Fluid 4031 Truck, Mechanical Maintenance 1432.3 Control System, Blast Valve	122/1 122/1 122/1 122/1 221/1 222/1 221/1 122/1 121/1 221/1 221/1	.10/LCC/ .20/LCC/ .25/LCC/ .01/LCC/ .01/LCC/ .10/LCC/ .01/LCC/ .10/LCC/ .01/LCC/ .01/LCC/ .01/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM Ventilation System (LCES) - 1436.3	CLEAN: INSPECT: SERVICE: MINOR ADJUST: NOTE: NO MAINTENANCE ANALYSIS INFORMATION IS AVAILABLE	0		

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM Ventilation System (LCES) - 1436.3	CLEAN: INSPECT: SERVICE: MINOR ADJUST: NOTE: NO MAINTENANCE ANALYSIS INFORMATION IS AVAILABLE	0		

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
FUEL SYSTEM, LCEB Fuel System, LCEB - 1430.3	CLEAN:	Common Hand Tools Container, 1-Gallon	121/1	.35/LCC/3AM
	INSPECT:	Common Hand Tools	121/1	.90/LCC/3AM
	REPAIR:	Common Hand Tools	121/1	.25/LCC/5mb.
	CHECKOUT:	Common Hand Tools Container, 1-Gallon	211/1	1.20/LCC/3AM
	TEST:	4001 Multimeter Container, 1-Gallon	221/1	.30/LCC/.02227
	REPAIR:	4031 Common Hand Tools Truck, Mechanical Maintenance Container, 1-Gallon Placard, Warning	121/1	.21/LCC/.00331
	CHECKOUT:	Common Hand Tools	211/1	1.20/LCC/.0033

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
SHOCK ATTENUATION SYSTEM, LCES Shock Attenuation System, LCES - 1439, 3	INSPECT:		111/1	.05/LCC/6M
	CLEAN:	Stepladder, 8-foot	111/1	1.50/LCC/36M
	INSPECT:	Stepladder, 8-foot Level and Plumb	121/1	1.05/LCC/36M
	REPAIR:	4031 Common Hand Tools Truck, Mechanical Maintenance Stepladder, 8-foot	121/1	.35/LCC/.02712
	INSPECT:	Stepladder, 8-foot	111/1	.05/LCC/.02712

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
Blast Door Installation, LCC (Tunnel Junction) - 1440.3	CLEAN:	Common Hand Tools	121/1	1. 20/LCC/20M
	INSPECT:		221/1	.70/LCC/20M
	REPAIR:	Cloth, Abrasive Common Hand Tools	222/1	.40/LCC/Unk.
	SERVICE:	Kit, Lubrication Common Hand Tools	111/1	.55/LCC/20M
	TEST:	Scale, Dial Indicating Common Hand Tools	221/1	.60/LCC/.000099
	CHECKOUT:	Scale, Dial Indicating	221/1	.25/LCC/.000099
	REPAIR:	Cloth, Abrasive Common Hand Tools	222/1	.50/LCC/Unk.
	CHECKOUT:	Scale, Dial Indicating	221/1	.25/LCC/Unk.

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM Accumulator Set, 24-Inch Blast Valve Control - 1450.3	NOTE: NO MAINTENANCE ANALYSIS INFORMATION IN AVAILABLE.			

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POSITION NO. 13	POSITION DEFINITION	RECOMMENDED OR AUTHORIZED AFSC AFSC 54250G/70G
POSITION TITLE Electrician/Electrical Technician		
<u>GENERAL FEATURES</u>		
<u>POSITION SUMMARY:</u>		
The Electrician/Electrical Technician is responsible for maintenance at the Support Base of electrical power source and distribution system components returned from Launch Facilities and Launch Control Facilities. He also provides assistance on an "as required" basis to the Electro-Mechanical Team for detailed troubleshooting and repair of the electrical power system at the Launch Facilities and Launch Control Facilities.		
His duties and tasks include tests to isolate faults to a removable sub-unit, repair by replacing faulty units, and the organizational and field maintenance of such equipment as:		
1209.3	Water Control and Removal System, Elec. Components	R
1242.3	Service Lift, Launch Control Facility	R
1246.3	Cable Assembly Set, Launch Control	R
1248.3	Launcher Intra-Site Cabling	R
1283	Motor Generator	
1284	Power Supply Group	
1289	Power Supply Group, LCC	
1323.3	Electrical Systems, LCC	
1329.3	Electrical System, Launcher	R
1337.2	Junction-Box, Main, Launch Facility	R
1367.2	Motor Generator	
1379.2	Battery Charger Alarm Set Group	

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POSITION DEFINITION		RECOMMENDED OR AUTHORIZED AFSC AFSC 54250G/70G
POSITION NO. 13	POSITION TITLE Electrician/Electrical Technician	
POSITION SUMMARY: (Cont.)		
1380	60 Cycle Power Panel	
1385	Junction Box, Power and Communication - LCC	
1389.3	Heating and Ventilating System, LSB	
1396.3	Monitoring System, Equipment	
1415	Fixture, Emergency Lighting and Alarm	
4024	Semi-Trailer, G&C Re-Entry Vehicle	
4043	Elevator Work Cage	
4059	Transporter-Erector Semi-Trailer (Electrical Components)	
4119	Truck, Transporter-Erector Support	
4451	Controller, Power Azimuth Drive	
Checkout, testing and maintaining will be accomplished, using Electrical Power Test Equipment, Battery Chargers, and Standard Electrical Test Equipment.		
ENVIRONMENT:		
Work Location:		
The Electrician/Electrical Technician's primary duty location is the Maintenance Branch-Mechanical Section at the Support Base and at Launch Facilities and Launch Control Facilities when serving as a member of the Electro-Mechanical Team.		
Lines of Supervision:		
At the Support Base he is supervised by the Missile Officer, AFSC 3124G.		
When acting as a member of the Electro-Mechanical Team, his work is coordinated by the Ballistic Missile Analyst Technician, AFSC 31274G.		

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POSITION NO. <u>13</u>	POSITION DEFINITION	RECOMMENDED OR AUTHORIZED AFSC <u>AFSC 54250G/70G</u>
	POSITION TITLE <u>Electrician/Electrical Technician</u>	
QUALIFICATIONS:		
The duties and tasks of the Electrician/Electrical Technician involve low to medium perceptual, judgmental and motor skills. Task performance is generally critical to subsystem operation.		
RELATION TO EXISTING AIR FORCE SPECIALTIES:		
This position type falls within the scope of AFS Electrician/Electrical Technician, AFSC 54250G/70G.		

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ELECTRICAL SYSTEM, LCC Electrical System, LCC (HARD) 1323.3	CLEAN:	Common Hand Tools Cleaner, Vacuum	111/1	3.75/LCC/12M
	INSPECT:	Common Hand Tools	222/1	2.50/LCC/12M
	REPAIR:	Common Hand Tools Placard, Warning	222/1	.08/LCC/
	CHECKOUT:	4001 Multimeter	222/1	.25/LCC/
	TEST:	Common Hand Tools	222/1	14/LCC/1.625
	REPAIR:	4031 Common Hand Tools Truck, Mechanical Maintenance	222/1	.62/LCC/ .0002
	CHECKOUT:	4001 Common Hand Tools Multimeter	222/1	.50/LCC/ .0002

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
MONITORING SYSTEM, EQUIPMENT FAULT, LCC Monitoring System, Equipment Fault, LCC - 1396.3	INSPECT:	Lantern, Electric	222/1	20/LCC/12M
	REPAIR:	Placard, Warning Lantern, Electric	222/1	36/LCC/0.4h
	TEST:	Common Hand Tools Multimeter	222/1	22/LCC/.0028h
	REPAIR:	Common Hand Tools Truck, Mechanical Maintenance	222/1	15/LCC/.00001
	CHECKOUT:	Common Hand Tools	222/1	16/LCC/.00001

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ELECTRICAL SYSTEM, LCSE Electrical System, LCSE - 1437.3	CLEAN:	Common Hand Tools Vacuum Cleaner Extension Cord, 50 foot Stepladder, 8-foot	222/1	3. 90/LCC/12M
	INSPECT:	Common Hand Tools Stepladder, 8-foot	222/1	4. 35/LCC/12M
	REPAIR:	Common Hand Tools Placard, Warning	222/1	10/LCC/5wk
	CHECKOUT:	4001 Multimeter	222/1	10/LCC/5wk
	TEST:	Common Hand Tools Stepladder, 8-foot Placard, Warning	222/1	19/LCC/3. 95240
	REPAIR:	4001 Multimeter	222/1	62/LCC/. 00012
	CHECKOUT:	4031 Truck, Mechanical Maintenance Placard, Warning Stepladder, 8-foot	222/1	10/LCC/. 00012
		4001 Multimeter	222/1	

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
VENTILATION SAFETY SYSTEM (LCC) Control System, Blast Valve-1432.3 /2 LCEB Unit, Control System	TEST: Open access cover on terminal box and make a point to point continuity check using a multimeter. Disconnect electrical connectors at solenoid valves and check continuity using connector adapter set and multimeter. Fault isolate to replaceable component from above tests.	1432.3 Control System, Blast Valves 4001 Multimeter 4319.3 Adapter Set, Connector Stop Watch	222/1 222/1 221/1	.30/LCC/ .10/LCC/ .20/LCC/
/2 Capsule Unit	TEST: Open access cover on terminal box and make a point to point continuity check using multimeter. Disconnect electrical connectors at solenoid valves and check continuity using connector adapter set and multimeter. Fault isolate to replaceable component from above tests.	1432.3 Control System, Blast Valve 4001 Multimeter 4319.3 Adapter Set, Connector	222/1 222/1 121/1	.20/LCC/ .15/LCC/ .20/LCC/

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POSITION NO. 15	POSITION DEFINITION POSITION TITLE Refrigeration Specialist/Technician	RECOMMENDED OR AUTHORIZED AFSC AFSC 54550Y/70Y
<u>GENERAL FEATURES</u>		
POSITION SUMMARY:		
The Refrigeration Specialist/Technician is responsible for Support maintenance of the following: Environmental Control and Equipment Cooling components returned from Launch Facilities and Launch Control Facilities, Maintenance Ground Equipment Cooling Units used at the Support Base, and Transporter-Erector Environmental Control System components. He also provides back-up assistance on an "as required" basis to the Electro-Mechanical Team.		
His duties and tasks include tests to isolate faults to a removable sub-unit, repair by re-placing faulty units, and organizational and field maintenance of equipment such as:		
603.2	Environmental System, C24 (Missile Targeting Set)	
1211.3	Environmental System, Launch Facility	
1212.3	Environmental System, Launch Control Facility	
1214	Cooling Unit, Guidance and Control Compartment	
1318	Guidance and Control Cooling Plumbing Set	
3035	Test Set, Cooling Liquid, Guidance and Control	
4024	Environmental System, R/V-G&C Van	
4059	Environmental System, Transporter-Erector	
4075	Environmental System, Transporter-Erector	
4115	Environmental Control, Auxiliary	
4150	Test Bench, Guidance and Control Ground Cooling	
4191	Tank, Liquid Storage, Metal	

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POSITION DEFINITION		RECOMMENDED OR AUTHORIZED AFSC AFSC 54550Y/70Y
POSITION NO. 15	POSITION TITLE Refrigeration Specialist/Technician	
POSITION SUMMARY: (Cont.)		
1390. 3	Ventilation System, LCSB	
1436. 3	Ventilation System, LCEB	
Checkout and testing is accomplished using such equipment as a Multimeter, Refrigeration Repair Kit, Thermometer, Air Flow meters, and hand tools.		
ENVIRONMENT:		
Work Location: The Refrigeration Specialist/Technician's primary duty is at the Maintenance Branch-Mechanical Section at the Support Base and at Launch Facilities and Launch Control Facilities when required as a member of the Electro-Mechanical Team.		
Lines of Supervision: At the Support Base he is supervised by the Missile Officer, AFSC 3124G. When acting as a member of Electro-Mechanical Team, his work is coordinated by the Ballistic Missile Analyst Technician, AFSC 31274G.		
QUALIFICATIONS:		
The duties and responsibilities of the Refrigeration Specialist/Technician require medium perceptual and motor skills; and high to medium judgmental skill in fault isolating and testing functions.		
Task performance is generally critical to subsystem operation.		
RELATION TO EXISTING AIR FORCE SPECIALTIES:		
The duties of this position fall within the scope of AFS Refrigeration Specialist/Technician, AFSC 54550Y/70Y.		

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3	TEST: Check pressure gage for 15 psig supply from control air compressor. Check cooling airflow rate to electronic equipment racks, using air velocity meter. Test airflow rate to launcher tube, using air velocity meter at fan S-3 inlet. Check brine supply temperature at chiller CH-1 Check temperature of air at cooling coil CC-1 discharge. Check temperature of air at fan S-4 discharge. CHECKOUT: Check emergency subsystem temperature and rate of air flow to electronic equipment for specified reading. When brine chiller key switch SW-1 in panel P-1 and key switch SW-2 in vent system control panel P-2 are placed in ON position, observe starting sequence, using stop watch. Emergency subsystem is shut down and dampers D3, D4 and D5 reverse position. After the system is allowed to operate for 1/2 hour, check: Brine temperature at chiller CH-1 outlet for specified reading. Air compressor pressure gage for specified reading. Airflow rate to electronic equipment for specified indication. Airflow rate to launcher tube for specified indication.	Common Hand Tools Meter, Air Velocity Thermometer Set, Self-Indicating. Liquid in Glass Thermometer Set, Self-Indicating. Liquid in Glass Meter, Air Velocity Stopwatch Step ladder, 6 foot	121/1 121/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1	.05/LF/... .10/LF/... .10/LF/... .05/LF/... .05/LF/... .05/LF/... .20/LF/... .15/LF/... .05/LF/... .05/LF/... .05/LF/... .05/LF/... .05/LF/...

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 Brine Subsystem, Chilled	TEST: Brine Chiller Operating. Check pressure indicators at brine circulating pump BP-1 inlet and discharge for proper indications. Check refrigerant flow for bubbles through sight glass. Check temperature gage at chiller CH-1 outlet for specified brine temperature reading. Check level of brine in expansion tank, ET-1. Brine Chiller Not Operating. Check circuit breaker No. 7 on LDA Panel for ON position. Check brine pump circuit breaker CB-1 for ON position. Check refrigerant compressor circuit breaker CB-2 for ON position. Check for 120 vac across key switch SW-1 in panel P-1, and key switch SW-2 in panel P-2. Check for 120 vac across the following switches: Oil Pressure cutout (OPCO) SW-3 (CEG-87851). Low temperature cutout (LTCO) SW-4. High and low pressure cutouts (HPCO-LPCO) SW-5.	4001 Multimeter	221/1 211/1 111/1 121/1 111/1 111/1 111/1 221/1 221/1	.05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .15/LF/
	REPAIR: Place circuit breaker No. 7 in LDA Panel in OFF position and attach Warning Placard in conspicuous position. Place brine-chiller key switch SW-1, in panel P-1, and vent system control switch SW-2, in panel P-2 in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: Gate, plug and check valves. Sediment strainer. Quick-disconnect coupling. Rubber hose assembly. Pipe and associated fittings. Compressor muffler. Heat exchanger. Wiring.	Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 111/1	.05/LF/ .05/LF/
	Place circuit breaker, brine chiller, and vent system key switches in ON position and remove Warning Placard. Place defective item on truck.		221/1 221/1 221/1 221/1 221/1 222/1 222/1 221/1	.20/LF/ .20/LF/ .20/LF/ .20/LF/ .20/LF/ .75/LF/ .75/LF/ .75/LF/
			111/1 111/1	.05/LF/ .05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating	CHECKOUT: Refer to Environmental Control System, Launcher, Line 6, Checkout, Step d (1). TEST: Chiller operating. Check brine pump BP-1 (MBG-85086) suction and discharge pressures. Check brine temperatures at inlet and outlet to chiller CH-1. Check refrigerant compressor CP-1 (CRG-85000) suction and discharge pressures. Check damper D-2 (CRG-85066) opening for proper airflow. Check flow of refrigerant through sight glass. Check power distribution lines for proper voltage. Check condenser coil CC-2 (CRG-85609) for clogging. Chiller not operating. Check circuit breakers No. 5 and No. 7 in LDA Panel for ON position. Check brine chiller key switch SW-1, in panel P-1, for ON position. Check compressor and brine pump motor circuit breakers (CB-1, and CB-2 in panel P-1) for ON position. Check for 120 vac across fuse. Check for 120 vac across motor starter overload heaters. Check for power continuity across brine pump motor starter ST-1 (MEL-85155) and compressor motor starter ST-2 in panel P-1. Check that LTCO SW-4, LPCO-HPCO SW-5, and OPCO SW-3 switches are in closed position in panel P-1. Check that relays R-1 and R-2 are energized. Check that solenoid valve PNV-2 operates in panel P-1 Check brine level in expansion tank ET-1 (CRG-85227). Check that brine pump BP-1 (MBG-85086) operates. Check that compressor CP-1 (CRG-85000) operates. Check for air, brine and refrigerant leaks.	4001 Common Hand Tools Multimeter, AN/ PSM-6 Detector, Air Leak Thermometer, Self-Indicating Liquid in Glass 3039 Leak Detector, Refrigerant Gas	221/1 111/1 111/1 111/1 111/1 111/1 211/1 111/1 111/1 111/1 221/1 221/1 221/1 221/1 221/1 111/1 111/1 111/1 111/1	.55/LF/ .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430 .05/LF/5.430

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER (Environmental Control System, Launcher - 1211.3 / 2 Brine Subsystem, Chilled / 3 Chiller, Brine Refrigerating	REPAIR: Place circuit breaker No. 7 in LDA Panel and brine chiller key switch SW-1 in panel P-1 in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: - Flexible connection. - Pressure gage. - Drain valve. Place circuit breaker and brine chiller key switch SW-1 in panel P-1 in ON position and remove Warning Placard. Place defective item on truck. SERVICE: Refer to Brine Subsystem, Chilled, Line 5 Service, Steps a thru c.	Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031 Common Hand Tools Placard, Warning Truck, Mechanical Maintenance Hydrometer (Ethylene Glycol) Lantern, Electric Container 5-Gallon (Two) Container, 1-Gallon Pump, Rotary, Hand Driven Stepladder, 6-Foot Common Hand Tools Common Hand Tools Placard, Warning	111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1	.05/LF/.1264 .15/LF/.1264 .15/LF/.1264 .15/LF/.1264 .05/LF/.1264 /LF/.1264 .40/LF/.1264 .05/LF/.1264 .05/LF/.1264 .05/LF/.1264 .05/LF/.1264 .05/LF/.1264 .05/LF/.1264 .05/LF/2.090 .05/LF/2.090 .20/LF/2.090 .20/LF/2.090

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating	REMOVE: Disconnect air lines to brine Chiller Control Panel, P-1. Disconnect electrical wiring. Remove brine chiller mounting hardware. HANDLE: Remove Launcher Support Building roof access cover above brine chiller. Attach hoist sling to brine chiller hoisting shackles. Lift brine chiller, using truck hoist, through access cover and place brine chiller on ground. Attach sling to replacement brine chiller and lower into position in Launcher Support Building. Remove sling and replace roof access cover. Attach sling to defective brine chiller, hoist on to low bed semi-trailer and secure. INSTALL: Install brine chiller mounting hardware. Connect inlet and discharge air ducts. Connect electrical wiring. Connect supply and return lines to brine chiller. Connect air lines to brine chiller control panel P-1. SERVICE: Refer to Brine Subsystem, Chilled, Line 5 Service, Steps a thru c. CHECKOUT: Refer to Chiller, Brine, Refrigerating, CH-1, Line 5, Checkout, Steps a thru f. ADJUST: Perform the following: (1) Adjust PE-3 (MPL-55235) until refrigerant compressor starts as specified.	Common Hand Tools Sling Set Crane, Truck-mounted Semi-Trailer, Low Bed, Type XM-269 Truck, Tractor 4054 Common Hand Tools Common Hand Tools Step ladder, 6-Foot Truck, Mechanical Maintenance Placard, Warning Hydrometer (Ethylene Glycol) Lantern, Electric Container 5-Gallon (Two) Container, 1-Gallon Pump, Rotary, Hand Driven Common Hand Tools	111/1 221/1 111/1 111/1 221/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 222/1	.10/LF/2.09 .10/LF/2.09 .10/LF/2.09 .20/LF/2.09 .10/LF/2.09 .25/LF/2.09 .10/LF/2.09 .10/LF/2.09 .15/LF/2.09 .15/LF/2.09 .50/LF/2.09 .20/LF/2.09 .20/LF/2.09 .20/LF/2.09 .40/LF/2.09 .30/LF/2.09 .10/LF/2.09

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating /4 Damper Set, Modulating	ADJUST: Adjust pressure controller for specified refrigerant condensing pressure. Adjust high-low pressure cutout SW-5 for proper setting. REPAIR: Close off control air supply to PC-1 in Brine Chiller Control Panel P-1. Disconnect linkage, air line and remove mounting hardware. Remove and replace defective operator. Install mounting hardware, connect linkage and air line. Open control air valve. CHECKOUT: Observe damper operation when air supply to PC-1 is closed off. ADJUST: Adjust linkage for proper positioning of damper.	4031 Stop Watch Truck, Mechanical Maintenance Common Hand Tools 4031 Common Hand Tools Truck, Mechanical Maintenance Common Hand Tools	222/1 222/1 221/1 221/1 221/1 221/1 221/1 221/1	.20/LF/2.09 .15/LF/2.09 .10/LF/ .25/LF/ .10/LF/ .20/LF/ .05/LF/ .10/LF/ .20/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 / 2 Brine Subsystem Chilled / 3 Chiller, Brine Refrigerating / 4 Pump, Centrifugal, Power Driven	REMOVE: Place pump motor circuit breaker CB-1 (MGE-85237-1) in Panel P-1 in OFF position and attach Warning Placard in conspicuous position. Disconnect electrical wiring. Disconnect piping from pump and remove mounting hardware.	Common Hand Tools Placard, Warning Truck, Mechanical Maintenance	221/1	.05/LF/
	INSTALL: Install mounting hardware. Connect piping and electrical wiring. Place pump motor circuit breaker in ON position and remove Warning Placard.	Common Hand Tools	221/1 111/1 111/1 221/1	.10/LF/ .20/LF/ .10/LF/ .30/LF/ .05/LF/
	SERVICE: Refer to Brine Subsystem, Chilled, Line 5, Service Steps a thru c.	Lantern, Electric Container 5 gallon (Two) Container 1 gallon Pump, Rotary, Hand Driven Stepladder 6 Foot Placard, Warning Hydrometer (Ethylene Glycol)	121/1	.40/LF/
	CHECKOUT: Refer to Environmental Control System, Launcher, Line 6, Checkout, Steps b thru d.	Common Hand Tools	221/1	.90/LF/
	TEST: Refrigeration not functioning. (a) Check circuit breakers No. 5 and No. 7 in LDA Panel and key switch SW-1 in Chiller Control Panel for ON position. (b) Check reset levers for ON position. (c) Check for 110 vac across fuse. (d) Check circuit continuity through thermal overload heater fuse. (e) Check LTCO, SW-4 or HPCO SW-5 and OFCO SW-3 switches for closed position. (f) Check solenoid valve PNV-2 for open position. (g) Check brine pump, BP-1 and refrigerating compressor CP-1 for operational status. Brine not circulating. Refer to Panel, Brine Chiller Control, Line 1, Test, Condition No. 1, Steps a thru d, and f. Air not flowing. Refer to Panel, Brine Chiller Control, Line 1, Test, Condition No. 1, Steps d thru g. Temperature or pressures not indicating. Refer to Panel, Brine Chiller Control, Line 1, Test, Condition No. 1, Steps a thru g.	Common Hand Tools Multimeter Detector Air Leak Thermometer, Self- Indicating, Liquid in Glass Leak Detector, Re- frigerant Gas	111/1 111/1 221/1 221/1 222/1 222/1 111/1 222/1 222/1 222/1	.05/LF/ .05/LF/ .05/LF/ .10/LF/ .05/LF/ .20/LF/ .05/LF/ .10/LF/ .25/LF/ .60/LF/ .60/LF/
/ 4 Panel, Brine, Chiller Control				

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine Refrigerating /4 Panel, Brine, Chiller Control /5 Starter, Motor /5 Switch, Pressure	INSTALL: Connect wiring and install mounting hardware. Place circuit breaker No. 7 in Panel LDA in ON position and remove Warning Placard. Use lantern to facilitate installation. CHECKOUT: Refer to Starter, Motor, Line 2, Checkout, Steps a and b.	Common Hand Tools Lantern, Electric	221/1 221/1	.12/LF/ .05/LF/
	ADJUST: Manually adjust pressure switches to activate within the respective pressure/time delay ranges using stopwatch.	Common Hand Tools Stopwatch	222/1	.10/LF/ .20/LF/36M
	REMOVE: Open circuit breaker No. 7 in Panel LDA and attach Warning Placard in conspicuous position. Shut off air at line valve closest to pressure switch involved. Disconnect pressure switch wiring and tubing, remove switch. Place defective item on truck.	Placard, Warning Common Hand Tools Truck, Mechanical Maintenance	111/1 111/1 121/1 111/1	.05/LF/ .01/LF/ .20/LF/ .05/LF/
	INSTALL: Install replacement switch. Connect electrical wiring and tubing. Reactivate circuit by opening air line shutoff valves. Close circuit breaker No. 7 in LDA Panel and remove Warning Placard.	Common Hand Tools	221/1 121/1 221/1 111/1	.05/LF/ .20/LF/ .10/LF/ .05/LF/
	CHECKOUT: Check that switches operate.		111/1	.05/LF/
	ADJUST: Manually adjust pressure switch to activate within the respective pressure/time delay ranges, using stop watch.	Common Hand Tools Stop Watch	222/1	.20/LF/
	ADJUST: Note condensing pressure and change pressure regulator setting to this pressure. Check branch air pressure for approximately 7-1/2 psig. Reset to 157 psig.	Common Hand Tools	221/1 221/1 221/1	.05/LF/36M .05/LF/36M .05/LF/36M
	REMOVE: Close instrument air supply valve. Disconnect control air lines. Remove pressure regulator. Place defective item on truck.	Common Hand Tools Truck, Mechanical Maintenance	111/1 221/1 111/1 111/1	.01/LF/ .05/LF/ .05/LF/ .05/LF/
	INSTALL: Install new pressure regulator. Connect control air lines.	Common Hand Tools	111/1 221/1	.10/LF/ .05/LF/
	CHECKOUT: Check for air leaks at pressure regulator connections. Check that pressure regulator operates dampers by varying controls.	Common Hand Tools Detector, Airleak	111/1 111/1	.05/LF/ .05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME/ PLACE/ FREQUENCY
/5 Regulator, Pressure (Cont.) /1 Tank, Expansion	ADJUST: Adjust pressure regulator to specified setting. REPAIR: Place brine pump circuit breaker CB-1 in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required. (1) Safety relief valve. (2) Gate valve. Place defective item on truck.	Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031	221/1 111/1 111/1 111/1 111/1	.05/LF/ .05/LF/ .20/LF/ .20/LF/ .05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air	TEST: High temperature alarm. (a) If fan S-4 is not operating, check the following: (1) Circuit breaker in Panel for ON position. (2) For 120 vac at pressure switch PE-4 with multi-meter. (3) Control air pressure for 15 psig at PE-4. (b) Using air velocity meter, check airflow downstream from the following points if fan S-4 is operating. (1) Damper D-7 (2) Filter F-2 (3) Damper D-9 (4) Cooling coil face and by-pass damper D-5. (5) Cooling coil CC-1. (6) Damper D-8 (7) Damper D-4 (c) Check cooling coil CC-1 air leaving temperature with thermometer set. (d) Visually check temperature and pressure indicators on duct. (e) Check pressure switches PE-7 thru PE-9 in panel P-5 (f) Check the following alarm sensing control setting and performance. (1) TA-1 in Panel P-6 high, 44 deg F. (2) TA-2 in Panel P-6 high, 60 deg F; low, 50 deg F. (g) Check discharge thermostat TC-1 in Panel P-6 setting and performance. Set at 55 ± 2 deg F. (h) Check performance of solenoid valve PNV-1 in Panel P-5. (i) Check damper operator D.O. -5 High-Low temperature alarm. Refer to Distribution Subsystem Cooling Air, Line 2, Test, Condition No. 1, Steps b(1) thru b(4) and b(7), c, d, f(2) and g.	Meter, Air Velocity Thermometer Set, Self-Indicating, Liquid in Glass 4557 Gage Set, Pressure, Dial Indicating, GMU-38/E 4001 Multimeter, AN/PSM-6 Step ladder, 6-Foot Detector, Air Leak	211/1 221/1 221/1 211/1 211/1 211/1 221/1 221/1 221/1 221/1 211/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1	.05/LF/3.587 .10/LF/3.587 .15/LF/3.587 .05/LF/3.587 .05/LF/3.587 .05/LF/3.587 .05/LF/3.587 .05/LF/3.587 .10/LF/3.587 .05/LF/3.587 .10/LF/3.587 .10/LF/3.587 .15/LF/3.587 .15/LF/3.587 .10/LF/3.587 .75/LF/3.587

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air	TEST: Low airflow (a) Refer to Distribution Subsystem, Cooling Air, Line 2, Test, Condition No. 1, steps b(1) thru b(7) and f(2). (b) Check the following control settings and performance. (1) PE-6 for control air availability and 120 vac at leads. (2) FA-1 for control air availability. (3) Pitot tube leads to FA-1 for air leaks using air leak detector. REPAIR: Place circuit breaker Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace defective wiring. Place circuit breaker in ON position and remove Warning Placard. Place defective item on truck and secure. CHECKOUT: Check system operation by placing brine chiller key switch in ON position and observing start of supply fan. TEST: Low airflow alarm. (a) Check for 208 vac at fan S-4 motor terminals. REPAIR: Place circuit breaker Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: (1) Flexible connection, using stepladder as required. (2) Pressure gage. (3) Thermometer. Restore power and remove Warning Placard. Place defective item on truck. CHECKOUT: Check the following: (a) Flexible connections for air tightness. (b) Pressure gage or thermometer for indicating reading.	Placard, Warning Stepladder 6-Foot Common Hand Tools 4031 Truck, Mechanical Maintenance 4001 Multimeter 5031 Truck, Mechanical Maintenance Placard, Warning Stepladder 6-Foot Common Hand Tools	221/1 221/1 221/1 221/1 111/1 221/1 111/1 111/1 221/1 221/1 111/1 111/1 111/1 121/1 121/1	.45/LF/3.587 .15/LF/3.587 .10/LF/3.587 .10/LF/3.587 .05/LF/.0023 .50/LF/.0023 .05/LF/.0023 .05/LF/.0023 .10/LF/.0023 .10/LF/1.1479 .05/LF/.03415 .50/LF/.03415 .10/LF/.03415 .05/LF/.03415 .05/LF/.03415 .05/LF/.03415 .05/LF/.0341 .05/LF/.0341

/3 Air Conditioner

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYS- TEM, LAUNCHER Environmental Control System. Launcher - 1211.3 /2 Distribution Subsystem. Cooling Air /3 Air Conditioner /4 Fan, Centrifugal, Power Driven	REMOVE: Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position. Tag and disconnect wiring at motor. Disconnect ducts and flexible connections. Remove mounting hardware. INSTALL: Replace fan mounting hardware. Connect ductwork and flexible connections. Connect wiring to motor. Place circuit breaker No. in Panel in ON position and remove Warning Placard. CHECKOUT: Refer to Cooling Air Distribution Subsystem, Line 2, Test, Condition No. 1, Steps a (1) thru a (3). Check that fan S-4 operates when pressure switch PE-4 is actuated through chiller brine pump BP-1, motor-starter, ST-1. REPAIR: Remove and replace the following defective item: (1) Piston damper operator. (a) Open circuit breaker No. in Panel and attach Warning Placard in conspicuous position. (b) Disconnect air piping and linkage. (c) Remove and replace defective item. Place defective item on truck. Close circuit breaker No. in Panel and remove Warning Placard. CHECKOUT: Check damper D-5 activation when solenoid air valve PNV-1 is actuated through fan S-5 motor starter, ST-1 in Panel P-5. ADJUST: With test thermometer and air velocity meter in supply duct, adjust damper linkage to modulate in the required range.	Common Hand Tools Placard, Warning Common Hand Tools Common Hand Tools Truck, Mechanical Maintenance Placard, Warning Common Hand Tools Thermometer Set, Self-Indicating, Liquid in Glass Meter, Air Velocity Sproladder, 6- Foot Common Hand Tools Multimeter, AM/PSM -6 Meter, Air Velocity Detector, Air Velocity	111/1 221/1 111/1 111/1 211/1 211/1 221/1 111/1 221/1 211/1 111/1 211/1 211/1 111/1 111/1 211/1 222/1 111/1 221/1 221/1	.05/LF/.9370 .10/LF/.9370 .20/LF/.9370 .20/LF/.9370 .20/LF/.9370 .20/LF/.9370 .10/LF/.9370 .05/LF/.9370 .30/LF/.9370 .05/LF/.9370 .05/LF/.1253 .30/LF/.1253 .25/LF/.1253 111/1 .05/LF/.1253 .05/LF/.1253 .10/LF/.1253 .30/LF/.1253 .05/LF/.1905 .10/LF/.1905 .10/LF/.1905 .05/LF/.1905
/3 Panel, Air Conditioner Control P-5	TEST: High air temperature Check circuit breakers No. 5 and No. 7 in LDA Panel for ON position. Check continuity across fuse with multimeter. Check circuit breaker CB-1 in Panel P-5 for ON position Check continuity across radio interference filters.	Common Hand Tools Multimeter, AM/PSM -6 Meter, Air Velocity Detector, Air Velocity	111/1 221/1 221/1	.05/LF/.1905 .10/LF/.1905 .10/LF/.1905 .05/LF/.1905

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Air Conditioner Control, P-5 /4 Switch, Pressure, PE-4, PE-6 through PE-12	REMOVE: Disconnect control air piping. Remove mounting hardware and defective pressure switch. Place defective item on truck. INSTALL: Install replacement pressure switch and mounting hardware. Connect control air piping. Connect wiring. Place circuit breakers No. 5 and No. 7 in LDA Panel in ON position and remove Warning Placard. CHECKOUT: Check the replacement pressure switch by moving the switch set points and observing the action of the controlled equipment. ADJUST: Refer to Switch, Pressure, Line 10, Adjust, Steps a(1) thru a(8).	Common Hand Tools	211/1 111/1 111/1 221/1 221/1 221/1 211/1 221/1	.15/LF/.0001 .10/LF/.0001 .05/LF/.0001 .10/LF/.0001 .15/LF/.0001 .15/LF/.0001 .05/LF/.0001 .10/LF/.0001 .00/LF/.0001
/3 Panel, Alarm Sensor, P-6	TEST: High or low temperature mixed air discharge. Observe temperature at duct indicators and check TA-2 for alarm actuation when settings are moved beyond control set points. High cooling coil discharge temperature. Observe temperature at cooling coil discharge and check TA-1 for actuation when setting is moved beyond control set points. Low mixed air discharge flow rate. Using velocity meter, measure airflow and check FA-1 for alarm actuation when setting is moved beyond control set points. High or low temperature in Launcher Tube. Observe Launcher Tube temperature and check TA-4 for actuation when setting is moved beyond control set points. Low airflow to Launcher Tube. Using velocity meter, measure airflow and check FA-2 for alarm actuation when setting is moved beyond control set point. Low airflow switchover. Using velocity meter, measure airflow and check FA-4 for actuation of PE-25 when setting is moved beyond control set point.	Stop Watch Common Hand Tools Tool Kit, Thermostat Adjustment and Repair. Common Hand Tools Meter, Air Velocity	221/1 221/1 221/1 221/1 221/1 221/1	.10/LF/.0237 .10/LF/.0237 .10/LF/.0237 .10/LF/.0237 .10/LF/.0237 .10/LF/.0237

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Alarm Sensor /4 Controller, Airflow	CALIBRATE: Install adapter kit to controller. Observe differential pressure readings. Perform comparison check, using master gage to check system alarm flow controller. Set controller to calibration data, adjusting dial set point as required. Remove master gage. Mark position of damper setting; close damper to determine if alarm actuates, then reset damper. REMOVE: Place circuit breaker in Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect control air piping. Remove mounting hardware and defective airflow controller. Place defective item on truck. INSTALL: Install replacement controller and mounting hardware. Connect control air piping. Place circuit breaker in ON position and remove Warning Placard. CHECKOUT: Check for alarm actuation when low airflow is indicated. ADJUST: Adjust FA-1 to actuate low flow alarm when below 1670 cfm. Adjust FA-2 to actuate low flow alarm when below 900 cfm. Adjust FA-4 to actuate FE-25 when airflow is below 930 cfm.	Common Hand Tools Tool Kit, Thermostat Adjustment and Repair gage, Differential Pressure, Dial Indicating	221/1 222/1 222/1 222/1 211/1 221/1 111/1 221/1 111/1 111/1 221/1 221/1 111/1 221/1 222/1 222/1 222/1	.10/LF/36M .15/LF/36M .40/LF/36M .10/LF/36M .05/LF/36M .10/LF/36M .05/LF/.0002 .20/LF/.0002 .05/LF/.0002 .05/LF/.0002 .10/LF/.0002 .20/LF/.0002 .05/LF/.0002 .10/LF/.0002 .30/LF/.0002 .30/LF/.0002 .30/LF/.0002

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Alarm Sensor /4 Thermostat, Remote Bulb	CALIBRATE: Perform comparison check of master thermometer with system thermostat. Perform calibration to required setting. Remove master kit and adapters.	Common Hand Tools Tool Kit, Thermostat Adjustment and Repair Thermometer Set, Self- Indicating, Liquid in Glass	222/1 222/1 211/1	.10/LF/36M .10/LF/36M .10/LF/36M
	REPAIR: Remove and replace following defective items as required: Gage. Place defective item on truck.	4031 Truck, Mechanical Maintenance	221/1 111/1	.05/LF/.0140 .05/LF/.0140
	CHECKOUT: Check for pressure indication.		221/1	.05/LF/.0140
	REMOVE: Place circuit breaker in Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect control air piping. Remove mounting hardware and defective unit. Place defective item on truck.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 221/1 211/1 111/1	.05/LF/.0234 .10/LF/.0234 .10/LF/.0234 .05/LF/.0234
	INSTALL: Install replacement unit and mounting hardware. Connect control air piping. Place circuit breaker in Panel in ON position and remove Warning Placard.	Common Hand Tools	222/1 221/1 111/1	.15/LF/.0234 .10/LF/.0234 .05/LF/.0234
	CHECKOUT: Check alarm actuation when thermostat setting is removed beyond set point. Check damper operation when temperature controller setting is moved beyond set point.		222/1 222/1	.05/LF/.0234 .05/LF/.0234
	ADJUST: Install adapter kit to controller. Observe comparison readings and adjust system thermostat. Adjust to specified readings. Disconnect and remove adapter kit.		121/1 222/1 211/1 211/1	.10/LF/.0234 .10/LF/.0234 .10/LF/.0234 .10/LF/.0234

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ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Heating and Ventilation Sub- system, Launcher Tube	TEST: Too high temperature (1) Check thermostat for proper setting (2) Check that linkage on pneumatic operator of Variac unit operates freely. Too low temperature. (1) Check heating coil for operation. (2) Check if damper is open. (3) Test circuit breakers, switches and relays for 120 vac. Low flow of air. (1) Check if damper is open. (2) Test circuit breakers, switches and relays for 120 vac. (3) Test flow of air from fan with velocity meter for specified requirement. No flow of air. (1) Check circuit breaker in Panel for ON position. (2) Check circuit breaker and switch in control panel for 120. vac. (3) Check for 120 vac across fan. (4) Check for 120 vac across control relay. (5) Check if damper is open. (6) Check settings of TC-4 and TC-5 REPAIR: Open circuit breaker in Panel and attach Warning Placard in conspicuous position. a. Remove and replace following defective items as required: (1) Flexible hose. (2) Air duct hose. b. Place defective item on truck. CHECKOUT: Close circuit breaker in Panel and remove Warning Placard. Using air velocity meter check fan discharge for 1000 cfm.	4001 Multimeter. Meter, Air Velocity Lantern, Electric Thermometer, Self- Indicating, Liquid in Glass.	111/1 221/1 111/1 111/1 221/1 111/1 221/1 221/1 111/1 111/1 221/1 221/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 121/1	.05/LF/ .05/LF/ .05/LF/ .05/LF/ .20/LF/ .10/LF/ .20/LF/ .10/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .10/LF/ .50/LF/ .05/LF/ .05/LF/ .25/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3	CHECKOUT: Check louvers on damper D-6 for open position. Check Launcher Tube temperature with thermometer.	Thermometer, Self Indicating Liquid in Glass	211/1 111/1	.10/LF/ .15/LF/
/2 Heating and Ventilation Subsystem, Launcher Tube	ADJUST: Adjust remote bulb thermostat TC-4 for a setting of 62 deg F minimum. Adjust remote bulb thermostat TC-5 for a setting of 73.8 deg F maximum.	Common Hand Tools Lantern, Electric	221/1 221/1	.05/LF/ .05/LF/
/3 Heater, Space, Electric	REPAIR: Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: (a) Impeller. (b) Alternating-current motor. (c) Heating element, electrical. Place defective item on truck.	Common Hand Tools Stepladder, 6-Foot Lantern, Electric Placard, Warning Truck, Mechanical Maintenance	111/1 221/1 221/1 221/1 111/1	.05/LF/ .25/LF/ .25/LF/ .25/LF/ .10/LF/
	CHECKOUT: Place circuit breaker No. in Panel OFF position and remove Warning Placard. Turn switch SW-6 in Panel, P-3, to ON position. Check that motor and fan are operating without excessive vibration. Check that heating coil heats up. Using air velocity meter check S-3 discharge for 1000 cfm. Check louvers on D-6 for open position.	Meter, Air Velocity Lantern, Electric Stepladder, 6-Foot	111/1 111/1 111/1 111/1 121/1 211/1	.05/LF/ .05/LF/ .05/LF/ .25/LF/ .25/LF/ .10/LF/
/3 Panel, Launch Tube Heater P-3	TEST: Check pressure gage for 15 psig control air supply through solenoid valve PNV-4, (CEG-90317). Vary thermostat setting on TC-4 and check pressure gage for output air to pressure selecting valve C-3 (CPJ-90317). Vary thermostat setting on TC-5 and check pressure gage for output air to pressure selecting valve C-3. Vary thermostat setting on HL-1 (CEJ-90302) and check pressure gage for output air to pressure selecting valve C-3. During the preceding Steps b, c and d, check that the pneumatic piston operator actuates the heater control unit. Check for 120 vac. 60 cycles across terminals of solenoid valve PNV-4(CEG-90317). Check for 208 vac across input terminals of variable transformer of the Variac control unit. Check for 208 vac across output terminals of the variable transformer of the Variac control unit. Return thermostat settings of TC-4, TC-5 and HL-1 to original settings.	Common Hand Tools Lantern, Electric Multimeter	221/1 221/1 221/1 121/1 221/1 221/1 221/1	.05/LF/ .05/LF/ .05/LF/ .15/LF/ .10/LF/ .05/LF/ .05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Heating and Ventilation Sub-System, Launcher Tube /3 Panel, Launch Tube Heater P-3	REPAIR: Place circuit breaker No. in Panel to OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: (1) Control relay R-1. (2) Circuit breaker. (3) Duplex pressure selector DP8-1. (4) Solenoid valve PNV-4. (5) Radio interference filter. Place defective item on truck.	4031 Common Hand Tools Lantern, Electric Placard, Warning Truck, Mechanical Maintenance	111/1	.05/LF/
	CHECKOUT: Place circuit breaker No. in Panel to ON position and remove Warning Placard. Place circuit breaker in launch tube heater panel, P-3, to ON position. Adjust thermostat setting to actuate fan and heater coil. Check that fan starts, before heating coil. Return thermostat to original setting.		221/1 221/1 221/1 221/1 221/1 111/1	.20/LF/ .20/LF/ .20/LF/ .20/LF/ .20/LF/ .10/LF/
	REPAIR: Place circuit breaker in launch tube heater panel, P-3, to OFF position and attach Warning Placard in conspicuous out position. Remove and replace following defective items as required. (1) Overload heater. Place circuit breaker in launch tube heater panel, P-3, in ON position and remove Warning Placard.		111/1 221/1 111/1	.05/LF/ .05/LF/ .05/LF/
	CHECKOUT: Place motor starter in ON position. Check that fan motor starts.		111/1 111/1	.05/LF/ .05/LF/
	REMOVE: Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position. Remove mounting hardware and disconnect electrical wiring. Remove defective motor starter. Place defective item on truck.		111/1 221/1 111/1 111/1	.05/LF/ .20/LF/ .05/LF/ .05/LF/
	INSTALL: Connect electrical wiring and install mounting hardware. Place circuit breaker No. in Panel in ON position and remove Warning Placard. Place motor starter in ON position.		221/1 111/1 111/1	.20/LF/ .05/LF/ .05/LF/
	CHECKOUT: Refer to Motor Starter, Line 2, Checkout, Steps a and b.		111/1	.10/LF/
/4 Starter, Motor, MEJ-05163		Common Hand Tools Lantern, Electric Placard, Warning	111/1	.05/LF/

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ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Heating and Ventilation Sub-system, Launcher Tube /3 Panel, Launch Tube Heater P-3 /4 Modulator, Heater, HMD-1	REPAIR: Place circuit breaker No. in Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required. (1) Pneumatic piston operator/positioner.	Common Hand Tools Lantern, Electric Placard, Warning	111/1	.05/LF/
	CHECKOUT: Place circuit breaker No. in Panel to ON position and remove Warning Placard. Refer to Panel, Launch Tube Heater, P-3, TEST., the first five duties and the last duty. Check for leaks in the pneumatic lines and fittings.	Common Hand Tools Lantern, Electric	221/1	.25/LF/
	ADJUST: Adjust pneumatic piston operator linkage for proper movement.	Common Hand Tools Lantern, Electric	111/1	.05/LF/
	REMOVE: Place circuit breaker No. in Panel to OFF position and attach Warning Placard in conspicuous position. Disconnect electrical wiring and actuating linkage. Remove mounting hardware and defective unit. Place defective item on truck.	4031 Common Hand Tools Truck, Mechanical Maintenance Lantern, Electric Placard, Warning	221/1 111/1 111/1	.40/LF/
/5 Heater Modulator, Variac	INSTALL: Install replacement unit and mounting hardware. Reconnect electrical wiring and actuating linkage. Place circuit breaker No. in Panel to ON and remove Warning Placard.	Common Hand Tools Lantern, Electric	111/1	.10/LF/
	CHECKOUT: Refer to Panel Launch Tube Heater, TEST., the first two steps.	Common Hand Tools Lantern, Electric	221/1	.15/LF/
	ADJUST: Adjust pneumatic piston operator linkage for proper movement.	Common Hand Tools Lantern, Electric	111/1	.05/LF/
	CALIBRATE: Install adapters and master thermometer set to system. Perform comparison check of master thermostat with system thermostats. Disconnect Kit.	Common Hand Tools Tool Kit, Thermostat Adjustment and Repair	221/1	.10/LF/
/4 Thermostat, Remote Bulb	REPAIR: Remove and replace the defective pressure gage. Place defective item on truck.	Thermometer set, Self-indicating, Liquid in Glass Common Hand Tools Truck, Mechanical Maintenance	222/1 222/1	.20/LF/36M .20/LF/36M
	CHECKOUT: Check for gage reading.	4031	221/1 111/1	.20/LF/36M .15/LF/
				.05/LF/
			221/1	.05/LF/

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Heating and Ventilation Subsystem, Launcher Tube /3 Panel, Launch Tube Heater P-3 /4 Thermostat, Remote Bulb	REMOVE: Place circuit breaker in panel in OFF position. Disconnect pneumatic lines and cap. Remove mounting hardware and defective thermostat. Place defective item on truck. Use lantern to facilitate removal. INSTALL: Install mounting hardware and replacement thermostat. Connect Pneumatic lines. Place circuit breaker in Panel in ON position. Check pneumatic tubing and fittings for leaks. Use lantern to facilitate installation. CHECKOUT: Vary thermostat setting. Observe branch air pressure reading. Observe piston operator actuates. ADJUST: Return thermostat setting to specified operational setting.	4031 Common Hand Tools Truck, Mechanical Maintenance Lantern, Electric Common Hand Tools Lantern, Electric Lantern, Electric Common Hand Tools Common Hand Tools Lantern, Electric	111/1 221/1 221/1 111/1 221/1 211/1 111/1 111/1 121/1 221/1 221/1 221/1	.05/LF/ 10/LF/ .15/LF/ .05/LF/ .15/LF/ .10/LF/ .05/LF/ .10/LF/ .05/LF/ 221/1 .05/LF/ .05/LF/

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SUBSYSTEM / OPERATION: INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Emergency Subsystem.	CHECKOUT: Open circuit breakers No. 5 and No. 7 on the LDA Power Distribution Panel to simulate a power failure. After loss of normal and standby power, check the following: (1) D-4 damper closed. (2) D-3 damper open. (3) S-2 fan operating. (4) D-6 damper closed. Check airflow to electronic equipment, using the air velocity meter and ladder. Close circuit breakers No. 5 and No. 7. TEST: Fan not operating. (a) Place circuit breaker Panel in OFF position. (b) Attach Warning Placard in conspicuous position. (c) Check manual lock switch SW-7 in emergency fan panel, P-4 for ON position. (d) Test for 28 vdc across fuse with multimeter. (e) Check for circuit continuity through: (1) D-C contractor. (2) Overload relay. (3) Radio interference filter. (4) Pressure switch PE-5. (f) Test for 28 VAC across fan S-2 motor. Low airflow: (a) Check for no control air pressure to dampers, D-3, D-4 and D-6. (b) Check general condition of damper operator and linkage.	Meter, Air Velocity Sextaladder 6-Foot Common Hand Tools Multimeter AN/ FSM-6 Placard, Warning	111/1 211/1 211/1 111/1 111/1 111/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1	.05/LF/ .10/LF/ .10/LF/ .05/LF/ .05/LF/ .05/LF/ .10/LF/ .10/LF/ .10/LF/ .10/LF/ .10/LF/ .10/LF/ .10/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Emergency Subsystem	REPAIR: Disconnect power to emergency fan panel, P-4 and attach Warning Placard in conspicuous position. Remove and replace following defective items as required. Wiring. Place defective item on truck. Restore power to panel and remove warning placard. CHECKOUT: Check that fan S-2 activates when control air supply is shut off.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	211/1 221/1 111/1 211/1 211/1	.05/LF/ .20/LF/ .05/LF/ .05/LF/ .05/LF/
	REMOVE: Disconnect power to emergency fan control panel P-4 and attach Warning Placard in conspicuous position. Disconnect wiring. Remove duct connecting hardware from flanged ends of fan. Remove mounting hardware and defective fan. Place defective item on truck. INSTALL: Install replacement fan. Install duct connecting hardware. Connect wiring. Restore power and remove Warning Placard.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning Scaffold, 6-foot Placard, Warning Scaffold, 6-foot Common Hand Tools	211/1 211/1 111/1 111/1 111/1 211/1 111/1 211/1 211/1	.05/LF/ .05/LF/ .20/LF/ .20/LF/ .10/LF/ .10/LF/ .10/LF/ .25/LF/ .10/LF/ .05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, 1211.3 /2 Emergency Subsystem /3 Damper Set Modulating	REPAIR: Remove and replace the pneumatic piston operator. Place defective item on truck.	4031 Truck, Mechanical Maintenance Step ladder, 6-foot Common Hand Tools	221/1 111/1	.40/LF/ .05/LF/
	CHECKOUT: Check the following damper positions when control supply air is not available to emergency subsystem: D-4 is closed. D-3 is open. D-6 is closed. Use step ladder to facilitate checkout. ADJUST: Adjust damper linkage as required		221/1 221/1 221/1	.10/LF/ .10/LF/ .10/LF/
/3 Panel, Emergency Fan	REPAIR: Disconnect DC power to panel P-4 and attach Warning Placard in conspicuous position. Remove and replace the following defective items as required: Fuse. DC contactor Overload relay. Selector switch. Radio interference filter. Pressure switch. Restore power to panel P-4 and remove Warning Placard. Place defective item on truck.	4031 Common Hand Tools Step ladder, 6-foot Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1	.05/LF/
	CHECKOUT: Check manual lock switch SW-7 for ON position. Place circuit breaker in panel in OFF position and check that fan S-2 operates.		221/1 111/1	.10/LF/ .05/LF/
			111/1 221/1	.05/LF/ .05/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 / 2 Control Air Subsystem	TEST: Insufficient or no air pressure: Check subsystem for obvious damage. Check compressor manual starter switch for ON position. Check relief valve for closed position. Use multimeter to check 208 VAC across starter switch overload relay. Check 208 VAC across starter switch. Check 208 VAC across motor terminals. Check air intake filter and check valve for functional integrity. Check pressure reducing valve PRV-1 integrity by observing: Inlet pressure gage reading for approximately 50 psig. Outlet pressure gage reading for approximately 15 psig. Excessive air pressure: Check separator air filter for functional integrity. Check pressure reducing valve PRV-1 for operation. Check relief valve for operation. Check unloader for operation. REPAIR: Place circuit breaker No. 5 in LDA Panel to OFF position and attach warning placard in conspicuous position. Remove and replace following defective items as required: Pressure relief valve. Pressure reducing valve. Pressure gage. Motor starter overload relay. Pipe and associated fittings. Electrical wiring. Place circuit breaker No. 5 in LDA Panel in ON position and remove warning placard. CHECKOUT: Start compressor. Refer to Control Air Subsystem, TEST. Check subsystem for air leaks. ADJUST: Adjust pressure reducing valve PRV-1 to specified requirements.	4001 Common Hand Tools Multimeter Placard, Warning 4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning Common Hand Tools	221/1 111/1 121/1 221/1 221/1 221/1 121/1 121/1 121/1 111/1 221/1 221/1 221/1 221/1 111/1 111/1 121/1 221/1 221/1	.10/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .10/LF/ .10/LF/ .10/LF/ .10/LF/ 1.0/LF/ 1.0/LF/ .05/LF/ .05/LF/ .10/LF/ .10/LF/ .10/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYS- TEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Control Air Subsystem /3 Compressor Unit, Air	REPAIR: Place circuit breaker No. 5 in LDA Panel to OFF position and attach warning placard in conspicuous position. Remove and replace following defective items as required: - Flow control valve. - Check valve. - Air unloader assembly. - Air intake filter. Place circuit breaker No. 5 in LDA Panel in ON position and remove warning placard. CHECKOUT: Start compressor. Check for discharge pressure of approximately 50 psig. Check subsystem for air leaks.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 121/1 121/1 121/1 121/1 111/1	.05/LF/ .25/LF/ .25/LF/ .10/LF/ .10/LF/ .05/LF/
	CHECKOUT: Start compressor. Check for discharge pressure of approximately 50 psig. Check subsystem for air leaks.		111/1 111/1 111/1	.05/LF/ .05/LF/ .10/LF/
	REMOVE: Place circuit breaker No. 5 in LDA Panel to OFF position and attach warning placard in conspicuous position. Disconnect electrical wiring. Disconnect piping. Remove mounting hardware.	Common Hand Tools Placard, Warning	111/1 221/1 122/1 122/1	.05/LF/ .10/LF/ .10/LF/ .10/LF/
	INSTALL: Attach mounting hardware. Connect piping and reconnect electrical wiring. Place circuit breaker No. 5 in LDA Panel to ON position and remove warning placard. CHECKOUT: Start compressor. Check for discharge pressure of 50 psig.	Common Hand Tools	211/1 221/1 111/1	.20/LF/ .20/LF/ .05/LF/
/4 Starter, Motor	REPAIR: Place circuit breaker No. 5 in LDA Panel in OFF position and attach warning placard in conspicuous position. Remove and replace defective overload heater as required. Place circuit breaker No. 5 in LDA Panel in ON position and remove warning placard. CHECKOUT: Place motor starter in ON position. Check that fan motor starts.	4031 Common Hand Tools Lantern, Electric Placard, Warning Truck, Mechanical Maintenance	111/1 111/1 111/1 221/1	.05/LF/ .05/LF/ .05/LF/ .25/LF/
			111/1 111/1	.05/LF/ .05/LF/

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ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 / 2 Control Air Subsystem / 3 Compressor Unit, Air / 4 Starter, Motor	REMOVE: Place circuit breaker No. 5 in LDA Panel in OFF position and attach warning placard inconspicuous position. Remove mounting hardware and disconnect electrical wiring. Remove defective motor starter. Place defective item on truck.	Common Hand Tools Placard, Warning Lantern, Electric Truck, Mechanical Maintenance 4031	111/1 221/1 111/1 111/1	.05/LF/ .20/LF/ .05/LF/ .10/LF/
	INSTALL: Connect electrical wiring and install mounting hardware. Place circuit breaker No. 5 in LDA Panel in ON position and remove warning placard.	Common Hand Tools Lantern, Electric	221/1 111/1	.20/LF/ .05/LF/
	CHECKOUT: Place motor starter in ON position. Check that compressor motor starts.		111/1 111/1	.05/LF/ .05/LF/
	TEST: Check for 208 VAC at S-1 fan motor terminals. Check for 208 VAC at E-1 fan motor terminals. Check operation of modulating dampers.	Multimeter 4001	221/1 221/1 221/1	.10/LF/ .10/LF/ .10/LF/
/ 2 Supply and Exhaust Air Subsystem	REPAIR: Place circuit breakers in OFF position and attach warning placard in conspicuous position. Remove and replace following defective items as required: Flexible duct. Damper operator. Close circuit breaker and remove warning placard. Place defective item on truck.	Truck, Mechanical Maintenance Placard, Warning Common Hand Tools Stapladder, 6-foot 4031	111/1 111/1 111/1 111/1	.05/LF/ .30/LF/ .55/LF/ .05/LF/ .05/LF/
	CHECKOUT: Check the following: Supply and exhaust fans for operation. Modulating damper set for satisfactory positioning. Flexible duct for air tightness.		221/1 221/1 111/1	.10/LF/ .20/LF/ .05/LF/
	ADJUST: Adjust linkage for proper positioning of damper.	Common Hand Tools	221/1	.20/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Supply and Exhaust Air Sub-system /3 Fan, Supply and Exhaust	REMOVE: Disconnect power to control panel and attach Warning Placard in conspicuous position. Disconnect wiring. Remove duct connecting hardware from flanged ends of fan. Remove mounting hardware and defective fan. INSTALL: Attach mounting hardware Attach duct to flanged ends of fan with duct connecting hardware Connect wiring to fan motor. Connect wiring to control panel and remove Warning Placard. CHECKOUT: Check key operated manual switch in control panel for ON position. Check that fan operates. REPAIR: Remove and replace defective pneumatic piston operator. Place defective item on truck. CHECKOUT: Check the damper position when the chiller is operating. ADJUST: Adjust damper linkage as required.	Common Hand Tools 4031 Truck, Mechanical Maintenance Placard, Warning Platform 0121 Truck, Hand Elevating Platform Common Hand Tools 4031 Truck, Mechanical Maintenance Common Hand Tools Common Hand Tools	111/1 221/1 111/1 111/1 221/1 211/1 211/1 111/1 111/1 221/1 111/1 221/1 221/1	.05/LF/ .10/LF/ .20/LF/ .20/LF/ .20/LF/ .10/LF/ .05/LF/ .05/LF/ .05/LF/ .40/LF/ .05/LF/ .20/LF/ .10/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Supply and Exhaust Air Subsystem /3 Panel, Control, Ventilation	REPAIR: Place circuit breakers for LCC-Sub C and for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: Fuse. Circuit breaker. Control relay. Pneumatic electric relay. Temperature controller. Static pressure regulator. Rectifier. Stepper switch. Time delay relay. Push button switch. Place circuit breakers for LCC-Sub-C and for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in ON position and remove Warning Placard. Place defective item on truck. CHECKOUT: Check fuse and circuit breakers by observing that fans start. Check stepper, pneumatic electric relays and time delay relays by observing proper restart attempt and starting sequence. Check pneumatic controls by observing proper temperature control.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 211/1 111/1 221/1 221/1 221/1 221/1	.05/LF/ .05/LF/ .30/LF/ .30/LF/ .30/LF/ .30/LF/ .30/LF/ .30/LF/ .30/LF/ .30/LF/ .30/LF/ .05/LF/ .05/LF/ .05/LF/ .50/LF/ .50/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Supply and Exhaust Air Subsystem /3 Panel, Control, Ventilation /4 Starter, Motor	REPAIR: Place circuit breakers for LCC-Sub-C and for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace defective heater. Restore power and remove Warning Placard. Place defective item on truck. CHECKOUT: Check that fan operates with switches in ON position. REMOVE: Place circuit breakers for LCC-Sub-C and for LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect wiring. Remove mounting hardware. Remove defective starter. Place defective item on truck. INSTALL: Replace defective starter. Replace mounting hardware. Connect wiring. Restore power and remove Warning Placard. CHECKOUT: Check that fan operates when switches are placed in ON position.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning 4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning Common Hand Tools	111/1 221/1 111/1 111/1 211/1 211/1 221/1 111/1 111/1 111/1 111/1 111/1 221/1 221/1	.05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .05/LF/ .10/LF/ .05/LF/ .10/LF/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Brine Subsystem, Chilled	TEST: (Cont.) With chiller not operating: Check brine pump circuit breaker CB-1 in brine chiller control panel, P-1 for ON position. Check refrigerant compressor circuit breaker CB-2 in brine chiller control panel, P-1 for ON position. Use multimeter to check for 120 VAC across key switch, SW-1, in brine chiller control panel, P-1 and key switch, SW-2, in vent system control panel, P-2. Check for 120 VAC across the following switches: Oil pressure cutout, SW-3. Low temperature cutout, SW-4. High and pressure cutouts, SW-2. REPAIR: Place circuit breaker No. 3 for LCC-Sub C or LCC-SRCC in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Place brine chiller key switch SW-1, and vent system key SW-2 in OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: Gate, plug and check valves. Sediment strainer. Quick-disconnect coupling. Rubber hose assembly. Pipe and associated fittings. Compressor muffler. Heat exchanger. Wiring. Flow meter. Place brine chiller key switch and vent system key switch in ON position and remove Warning Placard. Place circuit breaker No. 3 in LCC Sub C, or LCC-SRCC in LCDS Panel in ON position and remove Warning Placard. Place defective item on truck.	Common Hand Tools Truck, Mechanical Maintenance Placard, Warning 4031	111/1 111/1 221/1 221/1 111/1 111/1 111/1 •	.05/LCC/.46259 .05/LCC/.46259 .05/LCC/.46259 .15/LCC/.46259 .05/LCC/.01165 .05/LCC/.01165 .25/LCC/.01165 .05/LCC/.01165 .05/LCC/.01165 .10/LCC/.01165

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Brine Subsystem, Chilled	SERVICE: Place brine pump circuit breaker CB-1 in brine chiller control panel P-1 in OFF position and attach Warning placard in conspicuous position. Add brine solution to required level in expansion tank, ET-1 using pump, after checking hydrometer to determine strength of solution to be added. Place circuit breaker in ON position and remove Warning placard. CHECKOUT: Refer to steps in Environmental Control System, LCC.	Common Hand Tools Placard, Warning Hydrometer Lantern, Electric Container, 5-Gallon Container, 1-Gallon Step ladder- 6 foot	111/1 111/1 121/1 111/1 221/1	.05/LCC/Unk .05/LCC/Unk .30/LCC/Unk .05/LCC/Unk .55/LCC/Unk
1/3 Chiller, Brine, Refrigerating	TEST: With chiller operating but not sufficient cooling capacity: Check brine pump BP-1 suction and discharge pressures. Check brine temperatures at inlet and outlet to chiller. Check refrigerant compressor CP-1 suction and discharge pressures. Check damper opening for proper airflow. Check flow of refrigerant through sight glass. Check power distribution lines for proper voltage. Check condenser coil CC-1 for clogging. With chiller not operating: Check for 120 VAC across fuse. Check that PE-1, PE-2, and PE-3 operate. Check that supply fan S-1 and exhaust fan E-1 are operating. Check for 120 VAC across motor starter overload heater. Check for power continuity across brine pump, motor starter, ST-1 in panel P-1 and compressor motor starter ST-2 in panel P-1. Check that relays R-1 and R-3 are energized. Located in vent system control panel P-2. Check that solenoid valve PNV-2 in panel P-1 and PNV-5 in panel P-2 operate. Check that brine pump BR-1 and compressor CP-1 operate. Check for evidence of air, brine and refrigerant leaks.	4001 3039 Common Hand Tools Multimeter Detector, Air Leak Thermometer Set, Leak Detector, Refrigerant Gas	111/1 111/1 111/1 111/1 211/1 221/1 221/1 221/1 221/1 221/1 221/1 111/1 111/1	.05/LCC/.44977 .05/LCC/.44977 .05/LCC/.44977 .05/LCC/.44977 .05/LCC/.44977 .05/LCC/.44977 .05/LCC/.44977 .05/LCC/.44977 .10/LCC/.44977 .10/LCC/.44977 .05/LCC/.44977 .05/LCC/.44977

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating	REPAIR: Place circuit breaker No. 3 for LCC-Sub C or LCC-SRCC in LCDS Panel and brine chiller key switch SW-1 and vent system key switch, SW-2 in OFF position and attach Warning Placard in conspicuous position. Remove and replace the following defective items as required: Flexible connection. Pressure gage. Drain valve. Place circuit breaker, brine chiller key switch SW-1 and vent system key switch SW-2 in ON position and remove Warning Placard. Place defective item on truck.	Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031	111/1	05/LCC/. 00651
	CHECKOUT: Check circuit breakers in control panel for ON position. Place chiller key switch SW-1 and vent system key switch SW-2 to ON position and observe starting sequence of fans, brine pump and compressor. Check brine pump suction and discharge pressure gages for proper pressure readings. Check compressor suction and discharge pressure gages for proper pressure readings. Check brine line valves for required open or closed position. Check brine temperature at chiller outlet for specified reading.		111/1 111/1 111/1 111/1 111/1 111/1	15/LCC/. 00651 15/LCC/. 00651 15/LCC/. 00651 05/LCC/. 00651 05/LCC/. 00651 05/LCC/. 00651
	REMOVE: Place circuit breaker No. 3 for LCC-Sub C or No. 3 and in LCDS Panel, in OFF position and attach Warning Placard. Place chiller key switch SW-1 in Panel P-1 and vent system key switch SW-2 in P-2 in OFF position. Uncouple quick-disconnect fittings for brine supply and return lines. Disconnect inlet and discharge air ducts from brine chiller. Disconnect air lines to chiller control panel, P-1. Disconnect electrical wiring. Remove brine chiller mounting hardware.		111/1 111/1 111/1 111/1 111/1 111/1	05/LCC/. 17170 05/LCC/. 17170 20/LCC/. 17170 20/LCC/. 17170 10/LCC/. 17170 10/LCC/. 17170

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating	INSTALL: Install brine chiller mounting hardware. Connect inlet and discharge air ducts. Connect electrical wiring. Connect supply and return lines to brine chiller. Connect air lines to chiller control panel, P-1. ADJUST: Perform the following: Adjust PE(TDIS) until exhaust fan E-1 starts as specified. Adjust PE(TD25) until supply fan S-1 and brine pump BP-1 starts as specified. Adjust PE-3 until refrigerant compressor CP-1 starts as specified. Adjust pressure controller PC-1 for specified refrigerant condensing pressure. Adjust high-low pressure cutout for proper setting. REPAIR: By means of a vacuum pump, evacuate refrigerant from receiver and the rest of system into water cooled refrigerant drum until pressure in brine chiller system is reduced to 1 psig. Close nondefective valves in brine chiller. Disconnect lines coupled to defective item. Cap disconnected lines if needed. Remove mounting hardware and defective item. Install replacement item and mounting hardware. Open valves in brine chiller, using vacuum pump evacuate system of air and moisture. Operate vacuum pump until pressure in brine chiller is reduced to 150 microns of mercury. Fill system with refrigerant through a dryer in charging line. Start brine chiller, check for leaks at connections and purge as required. Close receiver discharge valve. Pump refrigerant from system to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig. Remove mounting hardware and defective items.	Common Hand Tools Stop Watch Common Hand Tools Common Hand Tools Receiver, Refrigerant Truck, Refrigerating System Servicing 4316	111/1 111/1 222/1 111/1 111/1 222/1 222/1 222/1 222/1 111/1 111/1 111/1 111/1 222/1 222/1 221/1 111/1 222/1 221/1	15/LCC/. 17170 50/LCC/. 17170 20/LCC/. 17170 20/LCC/. 17170 20/LCC/. 17170 10/LCC/. 17170 10/LCC/. 17170 20/LCC/. 17170 15/LCC/. 17170 50/LCC/. 06848 05/LCC/. 06848 20/LCC/. 06848 10/LCC/. 06848 20/LCC/. 06848 50/LCC/. 06848 25/LCC/. 06848 10/LCC/. 06848 05/LCC/. 06848 50/LCC/. 06848 10/LCC/. 06848

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYS- TEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC- Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Brine Subsystem, Chilled 1/3 Chiller, Brine, Refrigerating	REPAIR: (Cont.) Open valves in brine chiller and using a vacuum pump evacuate system from air and moisture. Operate vacuum pump until pressure in brine chiller is reduced to 150 microns of mercury. Fill system with refrigerant through a dryer in charging line. Start brine chiller check for leaks at connections and purge it as required.		222/1	.50/LCC/.06048
	CHECKOUT: Connect unit to test bench and outside air ducts. Connect electrical wiring to chiller unit for electrical power supply. Check that circuit breakers in panel are in ON position. Make necessary hose and piping connections to brine supply. Place brine chiller lock switch to ON position to start brine chiller. Observe brine pump flow rate for 26 gpm and bring temperature readings of 36°F (Maximum outlet when inlet is 40°F).	4560 Test Stand, Brine Chiller 4316 Truck, Refrigeration System Servicing.	221/1 221/1	.20/LCC/.06048 .10/LCC/.06048
	ADJUST: Regulate flow of brine as specified by adjusting plug valves on brine supply line.	Common Hand Tools	222/1	.10/LCC/.06048
	REPAIR: Close off control air supply to PC-1 in Brine Chiller Control Panel. Disconnect linkage, air line and remove mounting hardware. Remove and replace defective operator. Install mounting hardware and connect linkage and air line. Open control air valve.	4031 Common Hand Tools Truck, Mechanical Maintenance.	221/1 221/1 221/1 221/1	.10/LCC/.005 .10/LCC/.005 .10/LCC/.005 .20/LCC/.005 .05/LCC/.005
	CHECKOUT: Observe damper operation when air supply to PC-1 is closed off.		221/1	.10/LCC/.005
	ADJUST: Adjust linkage for proper positioning of damper.	Common Hand Tools	221/1	.20/LCC/.005
	1/4 Damper Set, Modulating			

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYS- TEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC- Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Brine Subsystem, Chilled 1/3 Chiller, Brine, Refrigerating 1/4 Pump, Centrifugal, Power Driven	REMOVE: Place pump motor circuit breaker CB-1 in Panel P-1 in OFF position and attach Warning Placard in conspicuous position. Disconnect electrical wiring. Disconnect piping from pump and remove mounting hardware. INSTALL: Install mounting hardware. Connect piping and electrical wiring. Place pump motor circuit breaker in ON position and remove Warning Placard.	Common Hand Tools Placard, Warning Common Hand Tools	221/1 221/1 111/1 111/1 221/1 221/1	05/LCC/.08566 10/LCC/.08566 20/LCC/.08566 10/LCC/.08566 30/LCC/.08566 05/LCC/.08566

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYS- TEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC- Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /4 Panel, Brine Chiller, Control	TEST: If refrigeration is not functioning: Check circuit breaker No. 3 in LCDS Panel and key switch SW-1 in chiller control panel P-1 for ON position. Reset levers for ON position. Check for 110 VAC across fuse. Check circuit continuity through thermal overload heater fuse. Check LPCO or HPCO and OPCO switches in Panel P-1 for closed position. Check solenoid valve PNV-2 in Panel P-1. Check brine pump BP-1 refrigerating compressor CP-1 for operational status. Brine not circulating. Refer to Panel, Power Distribution Air not flowing. Refer to Panel, Brine Chiller Control. Temperature or pressures not indicating. Refer to Panel, Brine Chiller Control and check gages for proper reading. REPAIR: Place circuit breaker No. 3 for LCC-Sub C, or for LCC-SRCC and LCC-SRCC/ACP in LCDS Panel of OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: Fuse. Control relay. Circuit breaker. Key switch. Solenoid valve PNV-2 Fluid flow restrictor R-1. Pressure switch. Thermostatic switch. Pressure gage. Thermometer. Plug Valve. Close circuit breaker and remove warning placard. Place defective item on truck.	4001 Common Hand Tools Multimeter 4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 111/1 221/1 221/1 222/1 222/1 111/1 222/1 222/1 111/1 221/1 221/1 221/1 111/1 221/1 111/1 111/1 111/1 111/1 111/1	.05/LCC/.02463 .05/LCC/.02463 .10/LCC/.02463 .05/LCC/.02463 .20/LCC/.02463 .05/LCC/.02463 .10/LCC/.02463 .25/LCC/.02463 .60/LCC/.02463 .60/LCC/.02463 .05/LCC/.02332 .05/LCC/.02332 .10/LCC/.02332 .35/LCC/.02332 .35/LCC/.02332 .40/LCC/.02332 .30/LCC/.02332 .35/LCC/.02332 .35/LCC/.02332 .30/LCC/.02332 .30/LCC/.02332 .30/LCC/.02332 .05/LCC/.02332 .10/LCC/.02332

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 12123 1/2 Brine Subsystem, Chilled 1/3 Chiller, Brine Refrigerating 1/4 Panel, Brine Chiller, Control	CHECKOUT: Refer to environmental Control System, LCC for steps. Observe replacement thermometer and/or pressure gages for indications. REPAIR: Place circuit breaker No. 3 for LCC-Sub C, or LCC SRCC and LCC-SRCC/ACP in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace the thermal overload element as required. Restore power and remove warning placard. Place defective item on truck. CHECKOUT: Place motor starter in ON position. Check that refrigerant compressor, or brine pump motor start.	Stop Watch	221/1 221/1 211/1 221/1 111/1 111/1 111/1 111/1 211/1	.60/LCC/.02332 .10/LCC/.02332 .05/LCC/.00001 .20/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .10/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .12/LCC/.00001 .05/LCC/.00001 .20/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .20/LCC/.00001 .05/LCC/.00001
1/5 Starter, Motor	REMOVE: Place circuit breaker No. 3 for LCC-Sub C, or LCC-SRCC and LCC-SRCC/ACP in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect wiring and remove mounting hardware. Remove defective starter. Place defective item on truck. INSTALL: Connect wiring and install mounting hardware. Place circuit breakers in ON position and remove Warning Placard. ADJUST: Manually adjust pressure switches to activate within	4031 4031	212/1 111/1 111/1 111/1	.20/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .20/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .20/LCC/.00001 .05/LCC/.00001
1/5 Switch, Pressure, PE-3	REMOVE: Place circuit breaker No. 3 for LCC-Sub C, or LCC-SRCC and LCC-SRCC/ACP in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Shut off air at line valve closest to pressure switch. Disconnect pressure switch wiring, tubing and pressure switch. Place defective item on truck.	4031	111/1 111/1	.05/LCC/.00001 .05/LCC/.00001

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /4 Panel, Brine Chiller, Control /5 Starter, Motor	INSTALL: Install replacement switch. Connect electrical wiring and tubing. Reactivate circuit by opening air line shutoff valves. Place circuit breakers in ON position and remove Warning Placard. CHECKOUT: Check that air valves are OPEN. Check that switches operate. ADJUST: Manually adjust pressure switches to activate within the respective pressure/time delay ranges. ADJUST: Note condensing pressure and change pressure regulator setting to this pressure. Check branch air pressure for approximately 7-1/2 psig. Reset to 15' psig. REMOVE: Close instrument air supply valve. Disconnect control air lines. Remove pressure regulator. Place defective item on truck. INSTALL: Install new pressure regulator. Connect control air lines. CHECKOUT: Check for air leaks at pressure regulator connections. Check that pressure regulator operates dampers by varying controls. ADJUST: Adjust pressure regulator to specified setting.	Common Hand Tools Common Hand Tools Stop Watch Common Hand Tools 4031 Common Hand Tools Truck, Mechanical Maintenance Common Hand Tools Common Hand Tools	221/1 221/1 221/1 211/1 211/1 211/1 212/1 221/1 221/1 221/1 221/1 111/1 221/1 111/1 111/1 111/1 221/1 111/1 111/1 221/1	.05/LCC/.00001 .10/LCC/.00001 .10/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .05/LCC/.00001 .20/LCC/.00001 .05/LCC/.00128 .05/LCC/.00128 .05/LCC/.00128 .01/LCC/.00128 .05/LCC/.00128 .05/LCC/.00128 .05/LCC/.00128 .10/LCC/.00128 .25/LCC/.00128 .05/LCC/.00128 .05/LCC/.00128 .05/LCC/.00128

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Brine Subsystem, Chilled /3 Tank, Expansion	REPAIR: Place brine pump circuit breaker CB-1 in P-1 in OFF position and attach Warning Placard in conspicuous position. Remove and replace following items as required: (1) Safety relief valve. (2) Gate valve.	Common Hand Tools Placard Warning.	111/1	.05/LCC/.00112
/2 Distribution Subsystem, Cooling Air	TEST: High temperature alarm: If fan S-4 is not operating, check the following: Check circuit breakers for LCC-Sub C and LCC-SRCC and LCC-SRCC/ACP in LCDA Panel fan for ON position. Check for continuity across fuse. Test for 208 VAC across fan motor starter. If fan S-4 is operating perform the following: Using air velocity meter check air flow downstream from the following points: Past damper HC-1D Past damper HC-4D Past filter F-2 Past damper HC-2D Past damper Past damper Past damper HC-3D Using thermometer set, check air temperature leaving cooling coil. Visually check temperature and pressure indicators on duct. Check pressure electric switches PE-10 thru PE-12 by varying settings on thermostats TA-1 and TA-2 then return settings to normal position. Check switch PE-9 by varying settings on flow controller FA-1 then replace setting to normal operating position.	4001 Common Hand Tools Multimeter Stephader, 6-foot Meter, Air Velocity Placard, Warning Thermometer Set, Self-Indicating Liquid in Glass Gage Set, Pressure Dial Indicating	111/1 111/1 111/1	.20/LCC/.00112 .20/LCC/.00112
			111/1	.05/LCC/
			221/1 221/1	.05/LCC/ .05/LCC/
			222/1 222/1 222/1 222/1 222/1 222/1 221/1	.05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .10/LCC/
			211/1	.05/LCC/
			221/1	.20/LCC/
			221/1	.10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Distribution Subsystem, Cooling Air	TEST: Check mixed air discharge thermostat TC-1 by varying settings, then replace setting to normal operating position. Check that PNV-1 solenoid activates TC-1 controller upon startup of S-4 fan. Check D-5 damper operator by activating TC-1 controller. With multimeter, check for short across terminals to PE-10 at alarm panel terminal board. Check wiring, ducting and flexible connections for deteriorations. Low temperature alarm: With multimeter, check for short across the terminals to PE-11 at alarm panel terminal board. Low flow alarm: With multimeter, check for short across terminals at PE-9 at alarm panel terminal board. Check wiring, ducting and flexible connections for deteriorations. REPAIR: Place circuit breakers for LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach warning placard in conspicuous position. Remove and replace the following defective items as required: Thermometer Pressure gage. Flexible connection Sound trap Air duct hose Wiring Place defective item on truck. Place circuit breakers for LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDS Panel in ON position and remove warning placard. CHECKOUT: Check brine chiller lock switch for ON position and observe start of fan S-4 Check thermometer and pressure gage for indication. TEST: Check fan S-4 discharge using air velocity meter. Check toggle switch for ON position if plenum light not on.	Placard, Warning Stepladder, 6-foot Common Hand Tools Truck, Mechanical Maintenance 4031 Meter, Air Velocity Common Hand Tools	221/1 221/1 221/1 221/1 221/1 221/1 221/1 211/1 211/1 211/1 111/1 221/1 221/1 111/1 211/1 221/1 221/1 111/1	.10/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ .05/LCC/ .15/LCC/ .15/LCC/ .40/LCC/ .30/LCC/ .40/LCC/ .40/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .15/LCC/ .05/LCC/
/3 Air Conditioner, AC-1				

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLAGE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Distribution Subsystem, Cooling Air /3 Air Conditioner, AC-1	REPAIR: Place circuit breakers for LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace the following defective items as required: Flexible connection. Incandescent lamp. Tumble switch. Place circuit breakers for LCC-Sub C, and/or LCC-SRCC LCC-SRCC/ACP in LCDA Panel in ON position and remove Warning Placard. Place defective item on truck. CHECKOUT: Check flexible connection for air tightness. Check that plenum light activates when toggle switch is placed in ON position.	Common Hand Tools Placard, Warning Stepladder, 6-foot Truck, Mechanical Maintenance 4031	211/1 211/1 211/1 211/1 211/1 111/1 211/1 211/1 111/1	05/LCC/ 30/LCC/ 10/LCC/ 20/LCC/ 05/LCC/ 05/LCC/ 10/LCC/ 05/LCC/ 05/LCC/ 10/LCC/ 20/LCC/ 20/LCC/ 20/LCC/ 20/LCC/ 10/LCC/ 05/LCC/ 10/LCC/
/4 Fan, Centrifugal, Power Driven	REMOVE: Place circuit breakers for LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in the OFF position and attach Warning Placard in conspicuous position. Tag and disconnect wiring of motor. Disconnect ducts and flexible connections. Remove mounting hardware. INSTALL: Replace fan mounting hardware. Connect duct work and flexible connections. Connect wiring to motor. Place circuit breaker in ON position and remove Warning Placard. CHECKOUT: Check air flow to electronic equipment for specified airflow, using air velocity meter.	Common Hand Tools Placard, Warning Lantern, Electric Common Hand Tools	111/1 221/1 111/1 111/1 211/1 211/1 211/1 221/1	05/LCC/ 10/LCC/ 20/LCC/ 20/LCC/ 20/LCC/ 20/LCC/ 10/LCC/ 05/LCC/ 10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Distribution Subsystem, Cooling Air /3 Air Conditioner, AC-1 /4 Damper Set, Modulating	REPAIR: Remove and replace the defective piston damper operator by: Place circuit breakers LCC-Sub C, and/or LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in the OFF position and attach Warning Placard. Disconnect air piping and linkage. Remove and replace defective item. Place circuit breaker to ON position and remove Warning Placard. Place defective item on truck. CHECKOUT: Check damper activation when solenoid air valve is actuated through fan S-4 motor starter. ADJUST: With test thermometer and air velocity meter in supply duct, adjust damper linkage to modulate in the required range.	4031 Common Hand Tools Placard, Warning Truck, Mechanical Maintenance	111/1 221/1 221/1 111/1 111/1 211/1 222/1	05/LCC/ 30/LCC/ 25/LCC/ 05/LCC/ 10/LCC/ 10/LCC/ 30/LCC/
/3 Fan, Centrifugal, Power Driven	REMOVE: Place circuit breaker in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect electrical wiring. Loosen clamps and remove flexible ducts. Remove mounting hardware and defective exhaust fan. Place defective item on truck and secure. INSTALL: Install replacement fan and mounting hardware. Connect flexible ducts. Connect electrical wiring. Place circuit breaker in LCDA Panel in ON position and remove Warning Placard. CHECKOUT: Check for specified airflow.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning Stepladder, 6-foot Common Hand Tools Thermometer Set, Self-Indicating, Liquid in Glass Stepladder, 6-foot	111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1	05/LCC/ 25/LCC/ 15/LCC/ 15/LCC/ 05/LCC/ 15/LCC/ 15/LCC/ 25/LCC/ 05/LCC/ 10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYS- TEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC- Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Distribution Subsystem, Cooling Air /3 Starter, Motor .	REPAIR: Place circuit breaker in LCDA Panel in OFF position and attach Warning Placard in conspicuous position Remove and replace defective overload heater. Place circuit breaker in LCDA Panel in ON position and remove Warning Placard Place defective item on truck. CHECKOUT: Check that fan operates. REMOVE: Place circuit breaker in LCDA Panel in OFF posi- tion and attach Warning Placard in conspicuous position. Remove mounting hardware and disconnect electrical wiring. Remove defective motor starter. Place defective item on truck. INSTALL: Install replacement starter, connect electrical wiring and install mounting hardware. Place circuit breaker in ON position and remove Warning Pla- card. Place motor starter in ON position. TEST: If fan S-4 is not operating: Test for 120 VAC across pressure switch PE-4 with multi- meter. Test for 208 VAC across fan circuit breaker. REPAIR: Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace the following defective items as required: Fuse. Circuit breaker Solenoid valve, PNV-1. Plug valve. Airflow control, FA-1	Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031 Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031 Common Hand Tools Common Hand Tools Multimeter 4001 Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031	111/1 221/1 111/1 111/1 111/1 211/1 111/1 111/1 221/1 221/1 211/1 221/1 221/1 111/1 111/1	05/LCC/ 25/LCC/ 05/LCC/ 10/LCC/ 05/LCC/ 05/LCC/ 20/LCC/ 05/LCC/ 05/LCC/ 20/LCC/ 05/LCC/ 05/LCC/ 05/LCC/ 05/LCC/ 05/LCC/ 05/LCC/ 05/LCC/ 05/LCC/ 05/LCC/ 05/LCC/ 30/LCC/ 30/LCC/ 30/LCC/ 30/LCC/
/3 Panel, Control, Air Conditioner				

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2. Distribution Subsystem, Cooling Air	REPAIR: (Cont.) Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in ON position and remove Warning Placard Place defective item on truck. CHECKOUT: Check fuse and circuit breaker by observing that fan starts. Check solenoid valve PNV-1 by observing indication of control air to thermostat TC-1 after fan starts. Check airflow controller, FA-1 by varying controller setting to actuate pressure switch PE-4. Adjust airflow controller FA-1 to specified setting.		211/1	.05/LCC/
			111/1	.05/LCC/
			221/1	.05/LCC/
			221/1	.05/LCC/
			221/1	.05/LCC/
			222/1	.05/LCC/
		Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031	111/1	.05/LCC/
			221/1	.05/LCC/
			111/1	.05/LCC/
			211/1	.05/LCC/
		Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031	211/1	.05/LCC/
			221/1	.05/LCC/
			111/1	.05/LCC/
			111/1	.05/LCC/
		Common Hand Tools	111/1	.05/LCC/
			111/1	.05/LCC/
			221/1	.10/LCC/
			211/1	.05/LCC/
			221/1	.10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL / CRITICALITY	TIME / PLACE / FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Distribution Subsystem, Cooling Air 1/3 Panel, Control, Air Conditioner 1/4 Switch, Pressure, PE-4	ADJUST: Manually adjust pressure switch to actuate within specified pressure/time delay range, using stop watch. Perform this adjustment by restarting brine chiller. REMOVE: Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect wiring. Disconnect control air line and remove defective switch. INSTALL: Secure replacement switch in place. Connect wiring. Connect control air lines. Restore power and remove Warning Placard. CHECKOUT: Observe that fan starts. CALIBRATE: Install adapters and master thermometer set in system. Perform comparison check of master thermometer with system thermostats. Remove adapters and master thermometer set. REPAIR: Remove and replace the defective pressure gage. Place defective item on truck. CHECKOUT: Observe pressure indication.	Stop Watch Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031 Common Hand Tools Common Hand Tools Common Hand Tools Thermometer Set, Self-indicating, Liquid in Glass. Tool kit, Thermostat Adjustment and Repair Common Hand Tools Truck, Mechanical Maintenance.	221/1 111/1 221/1 221/1 111/1 221/1 221/1 221/1 221/1 222/1 222/1 221/1 111/1 111/1 211/1	.20/LCC/36M .05/LCC/ .10/LCC/ .15/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .25/LCC/36M .30/LCC/36M .20/LCC/36M .15/LCC/ .05/LCC/ .05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Distribution Subsystem, Cooling Air /3 Panel, Control, Air Conditioner /4 Switch, Pressure, PZ-4 /4 Thermostat, Remote Bulb	REMOVE: Disconnect control air piping and cap. Remove mounting hardware and defective item. Place defective item on truck. INSTALL: Install replacement item and mounting hardware. Connect control air piping. CHECKOUT: TA-1 or TA-2: Vary thermostat setting and observe that temperature alarm actuates. TC-1: Vary thermostat TC-1 and observe modulating damper actuates. ADJUST: Adjust thermostat setting to specified values.	4031 Common Hand Tools Truck, Mechanical Maintenance Common Hand Tools Common Hand Tools Tool Kit, Thermostat Adjustment and repair Common Hand Tools Truck, Mechanical Maintenance. Placard, Warning	221/1 211/1 111/1 222/1 222/1 222/1 222/1 111/1 111/1	.20/LCC/ .10/LCC/ .05/LCC/ .15/LCC/ .20/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/
/4 Switch, Pressure	REMOVE: Place circuit breaker in LCB Panel in OFF position and attach Warning Placard in conspicuous position. Warning: Circuit breaker in LCB Panel, is power source for: generator alarm condition main gate operator and limit switch flood lighting contactor, room 103 4 - gang J - box in access shaft door operator of door in room 105. Disconnect electrical wiring. Disconnect control air lines and cap. Remove defective pressure switch. Place defective item on truck.	4031	211/1 211/1 211/1 111/1	.05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Distribution Subsystem, Cooling Air 1/3 Panel, Control, Air Conditioner 1/4 Switch, Pressure, PE-4 1/4 Switch, Pressure	INSTALL: Install replacement pressure switch. Connect control air lines. Connect electrical wiring. Place circuit breaker in LCB Panel in ON position and remove Warning Placard. CHECKOUT: For PE-10, PE-11, and PE-12 refer to Thermostat, Remote Bulb, TA-1 Line 6, Checkout, step a. Check that FA-1 flow controller discharges control air to PE-9 pressure switch, activating alarm when it is moved beyond set point, thus producing an increased demand. Return thermostats to normal operating setting. Return flow controller to normal operating setting. SERVICE: Lubricate pump and fan bearings as required. Clean strainer in brine line. CHECKOUT: Shut down normal system and attach Warning Placard in conspicuous position. Check that emergency fan starts. Check that emergency pump starts. Check damper for closed position and damper for open position. Check airflow (3500 cfm) to electronic equipment through damper. Checkout emergency cooling water for 40°F. Temperature at start of emergency cycle. Start normal system. Check damper for open position and damper for closed position when normal system is in operation. Check that emergency pump stops when normal system is in operation.	Common Hand Tools	211/1 211/1 221/1 111/1 222/1 222/1 222/1 222/1 111/1 221/1 221/1 221/1 211/1 111/1 221/1 211/1	.10/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .20/LCC/3M .05/LCC/3M .05/LCC/3M .05/LCC/3M .10/LCC/3M .05/LCC/3M .10/LCC/3M .05/LCC/3M
1/2 Emergency Subsystem		Lantern, Electric Screwdriver, 6-foot Kit, Lubrication Common Hand Tools Meter, Air Velocity Placard, Warning Screwdriver, 6-foot Lantern, Electric		

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Emergency Subsystem	CHECKOUT: (Cont.) Check that odor absorbing unit starts when manual switch is placed in ON position. TEST: No airflow: Check emergency fan manual switch for ON position. Test continuity across pressure switch. Test for 28 VDC across emergency fan. Check wiring. High air temperature: Check damper for open position. Check airflow to electronic equipment for specific rate using air velocity meter. Check emergency pump manual switch for ON position. Test continuity across pressure switch. Test for 28 VDC across emergency pump. Check emergency cooling water temperatures for specified indications. Check for leaks in emergency cooling water lines. Odor control not operating. Check odor control unit manual switch for ON position and test for continuity across manual switch. REPAIR: Drain cooling water as required for dry access by opening pump drain valve. Close drain valve when sufficient quantity of water is drained. Remove and replace the following defective items as required: Shock attenuator. Gate valve. Sediment strainer. Rubber hose assembly. Place defective item on truck. SERVICE: Use hand pump to add coolant solution to required level in emergency cooling water tank.	4001 Common Hand Tools Multimeter Meter, Air Velocity Staple, 8-foot Lantern, Electric Thermometer Set, Self Indicating, Liquid in Glass 4031 Common Hand Tools Truck, Mechanical Maintenance Common Hand Tools Lantern, Electric Container, 5-Gallon Pump, Rotary, Hand Driven Staple, 6-foot	211/1 111/1 221/1 221/1 221/1 111/1 111/1 221/1 111/1 221/1 221/1 111/1 111/1 221/1 111/1 111/1 111/1	.05/LCC/3M .05/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .20/LCC/ .05/LCC/ .20/LCC/ .05/LCC, .20/LCC/ .20/LCC/ .20/LCC/ .20/LCC/ .05/LCC, .05/LCC,

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem /3 Cooling Unit, Emergency	TEST: High air temperature: Check chilled water pump for ON position. Test for 28 VAC across chilled water pump. Check water temperature to coil. REPAIR: Close suction line gate valve and drain cooling water from piping for removal of defective items. Remove and replace the following defective items as required: Check valve. Plug valve. Gate valve. Quick-disconnect coupling. Open gate valve and close drain valve. Place defective item on truck. REMOVE: Place circuit breaker in LCDS Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect electrical power to unit. Close all valves to package unit. Disconnect all piping to unit and cap. Disconnect all flexible hoses to unit and cap. Remove mounting hardware holding package unit in place. INSTALL: Attach mounting hardware. Connect all flexible hoses to unit. Connect all piping to unit. Open all valves to package unit. Connect wiring, restore electrical power to unit and remove Warning Placard. ADJUST: Adjust cooling water flow by line valve for specified temperature difference.	4001 Common Hand Tools Multimeter 4031 Common Hand Tools Truck, Mechanical Maintenance Common Hand Tools Placard, Warning Common Hand Tools Thermometer Set, Self Indicating, Liquid in Glass	111/1 221/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 221/1 111/1 121/1 121/1 121/1 121/1 121/1 121/1 111/1 221/1 221/1	.05/LCC/ .05/LCC/ .05/LCC/ .25/LCC/ 1.0/LCC/ 1.0/LCC/ 1.0/LCC/ .50/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .10/LCC/ .15/LCC/ .50/LCC/ .20/LCC/ .50/LCC/ .50/LCC/ .20/LCC/ .50/LCC/ .15/LCC/ .10/LCC/ .10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem /3 Cooling Unit, Emergency /4 Cooling Coil, Air	REMOVE: Place circuit breaker in LCDB Panel in OFF position and attach Warning Placard in conspicuous position. Remove power to pump. Close cooling water line valves. Open piping quick disconnects. Remove coil mounting hardware. INSTALL: Replace mounting hardware. Couple disconnects. Open cooling water valves. Restore power to pump. Place circuit breaker in ON position and remove Warning Placard. SERVICE: Add coolant solution, as required, with portable pump. CHECKOUT: Check that emergency cooling system is operating and that the pump is operational. REMOVE: Remove power to fan and attach Warning Placard in conspicuous position. Remove ring clamp and flexible ducting. Disconnect electrical wiring Remove mounting hardware. Remove defective fan assembly and place on dolly truck. Roll truck to elevator and place on elevator. INSTALL: Place fan assembly in cabinet and attach mounting hardware. Connect electrical wiring. Replace flexible ducting and ring clamp. Restore power and remove Warning Placard.	Common Hand Tools Placard, Warning Common Hand Tools Common Hand Tools Container, 5-Gallon Pump, Rotary, Hand Driven Lantern, Electric Common Hand Tools Truck, Mechanical Maintenance. Truck, Dolly Placard, Warning Ramp Set, Loading Common Hand Tools Truck, Dolly	111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 122/1 221/1 111/1 112/1 122/1 111/1 122/1 111/1 221/1 122/1 112/1 111/1	.03/LCC/ .03/LCC/ .03/LCC/ .05/LCC/ .10/LCC/ .15/LCC/ .10/LCC/ .03/LCC/ .03/LCC/ .03/LCC/ .03/LCC/ .10/LCC/ .15/LCC/ .15/LCC/ .15/LCC/ .05/LCC/ .15/LCC/ .15/LCC/ .05/LCC/
/4 Fan, Axial, Power Driven				

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem /3 Cooling Unit, Emergency /4 Fan, Axial, Power Driven	CHECKOUT: Simulate an emergency condition to activate fan by closing off control air supply to pneumatic-electric valve. Check that fan activates. Check for open control air supply to.		111/1 111/1 111/1	.05/LCC/ .03/LCC/ .03/LCC/
/4 Pump, Centrifugal, Power	REMOVE: Removed d-c power to pump and attach Warning placard in conspicuous position. Close cooling water shut off valves. Disconnect piping at unions. Remove mounting hardware. Disconnect wiring. Remove defective pump and place on truck. Roll truck to elevator and place on elevator. INSTALL: Place pump in cabinet and connect wiring in junction box. Replace mounting hardware.	4031 Common Hand Tools Truck, Mechanical Placard, Warning	111/1 111/1 111/1 111/1 221/1 122/1 111/1 221/1 111/1	.05/LCC/ .05/LCC/ .10/LCC/ .10/LCC/ .05/LCC/ .10/LCC/ .15/LCC/ .10/LCC/ .10/LCC/
/4 Panel, Power Distribution	TEST: Excessive heat: Check thermostat for a setting of 187°F. Check that the pneumatic piston operator linkage to variac transformer is free and not jammed. Check thermostat for a setting of 75°F. Check target gage for an alarm condition. Insufficient or no heat: Check thermostat for a setting of 75°F. Vary setting of thermostat until it actuates and check pressure gage for output air to pneumatic piston operator. Tests for 120 VAC across input terminals. Test for 208 VAC to heating coil. Test for 120 VAC to Check pressure gage for 15 psig supply air. Check pressure gages at emergency pump inlet and outlet.	4001 Common Hand Tools Multimeter Thermometer Set, Self, Indicating Liquid in Glass Lantern, Electric	221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1 221/1	.05/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC/LCC-SRCC/ACP 1212.3 / 2 Emergency Subsystem / 3 Cooling Unit, Emergency / 4 Panel, Power Distribution	REPAIR: Place circuit breaker in LCDB Panel, in OFF position and attach Warning Placard in conspicuous position. Remove and replace the following defective items as required: Fuse. Circuit breaker. Contact. Solenoid valve. Fluid flow restrictor. Pressure gage. Plug valve. Target gage. Place defective item on truck.	4031 Common Hand Tools Truck, Mechanical Placard, Warning Lantern, Electric	111/1 221/1 221/1 221/1 221/1 221/1 111/1 221/1 111/1	.05/LCC/ .10/LCC/ .20/LCC/ .20/LCC/ .20/LCC/ .10/LCC/ .10/LCC/ .20/LCC/ .10/LCC/
	CHECKOUT: Place circuit breaker in LCDB Panel in ON position and remove Warning Placard. For checkout of fuse, circuit breaker, contactor, solenoid valve, fluid flow restrictor and plug valve: Vary room thermostat setting and observe that heater starts. Return to original setting. Check pressure gage for pressure indication. Check target gage by varying emergency water high temperature alarm thermostat and observing for indication at target gage.	Common Hand Tools Lantern, Electric	111/1 221/1 221/1 111/1 221/1	.05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/
	REPAIR: Place circuit breaker in LCDB Panel to OFF position and attach Warning Placard in conspicuous position. Remove and replace the overload heater when defective. Place circuit breaker in ON position and remove Warning Placard. Place defective item on truck.	4031 Common Hand Tools Placard, Warning Truck, Mechanical Maintenance	111/1 221/1 111/1 111/1	.05/LCC/ .25/LCC/ .05/LCC/ .05/LCC/
	CHECKOUT: Check the following: Pump is operating. Fan is operating. Fan in KO ₂ unit is operating.		111/1	.15/LCC/
	REMOVE: Place circuit breaker in LCDB Panel in OFF position and attach Warning Placard in conspicuous position. Remove mounting hardware and disconnect electrical wiring. Remove defective motor starter. Place defective item in truck.	4031 Common Hand Tools Placard, Warning Truck, Mechanical Maintenance	111/1 221/1 111/1 111/1	.05/LCC/ .20/LCC/ .05/LCC/ .05/LCC/

/5 Starter, Motor

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem /3 Cooling Unit, Emergency /4 Panel, Power Distribution /5 Starter, Motor	INSTALL: Connect electrical wiring and install mounting hardware. Place circuit breaker in ON position and remove Warning Placard. Place motor starter in ON position. ADJUST: Manually adjust pressure switches to activate within the respective pressure-time delay ranges.	Common Hand Tools	211/1	.20/LCC/
/5 Switch, Pressure	REMOVE: Open circuit breakers for Sub C and SRCC in the SCDA Panel and attach Warning Placard in conspicuous position. Close air supply valve. Disconnect electrical wiring. Remove mounting hardware and defective pressure switch. Place defective item on truck. INSTALL: Install pressure switch and mounting hardware. Connect pneumatic tubing. Connect electrical wiring. Open air supply valve. Close circuit breakers for Sub C and SRCC in the SCDA Panel and remove Warning Placard. CHECKOUT: Close supply air valve and observe that pressure switches position and activate associated equipment. Observe that delays 25 seconds (40 sec in SRCC) before heating coil is energized. Open supply air valve and observe that pressure switches re-position. ADJUST: Adjust to activate within the specified pressure/time delay range.	Common Hand Tools Stop Watch Placard, Warning Common Hand Tools Truck, Mechanical Maintenance 4031 Common Hand Tools	111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 111/1 112/1	.05/LCC/ .05/LCC/ .05/LCC/ .15/LCC/ 3AM .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .15/LCC/

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem /3 Cooling Unit, Emergency /4 Panel, Power Distribution /5 Thermostat, Remote Bulb	CALIBRATE: Install adapters and master thermostat set to system. Perform comparison check of master thermostat with system thermostat Disconnect kit. REMOVE: Close air shutoff valve on branch line supplying air Disconnect pneumatic lines to thermostat. Remove mounting hardware and defective thermostat. Place defective item on truck. INSTALL: Install mounting hardware and replacement thermostat. Connect pneumatic lines. Open air shutoff valve supplying air. CHECKOUT: Move thermostat setting below set point and observe the following: stops control airflow to solenoid valve and actuates target gage (shows RED). ADJUST: Adjust thermostat to 18°F.	Common Hand Tools Tool Kit, Thermostat Adjustment & Repair Thermometer Set, Self-Indicating, Liquid in Glass Lantern, Electric 4031 Common Hand Tools Truck, Mechanical Maintenance Lantern, Electric Common Hand Tools Lantern, Electric Lantern, Electric Tool Kit, Thermostat Adjustment & Repair Lantern, Electric Common Hand Tools Common Hand Tools 4001 Multimeter	222/1 122/1 222/1 111/1 221/1 221/1 111/1 221/1 111/1 111/1 211/1 211/1 221/1 221/1 221/1 111/1 221/1	.20/LCC/3404 .20/LCC/3404 .20/LCC/3404 .05/LCC/ .10/LCC/ .20/LCC/ .05/LCC/ .15/LCC/ .10/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .20/LCC/
/5 Filter, Radio Interference	REMOVE: Disconnect electrical wiring. Remove mounting hardware and defective filter. INSTALL: Install replacement filter and mounting hardware. Connect electrical wiring. CHECKOUT: Check for continuity across filter.			

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem /3 Odor Absorbing Unit	SERVICE: Replace chemical cartridge. REPAIR: Place odor absorbing unit manual switch to OFF and attach Warning Placard in conspicuous position. Remove and replace defective fan assembly and radio interference filter as required. Place defective item on truck. Restore power and remove Warning Placard. CHECKOUT: Observe odor absorbing unit operate.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 111/1 221/1 111/1 111/1 111/1 111/1	.10/LCC/ .05/LCC/ .20/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .20/LCC/
/3 Damper Set, Modulating	REPAIR: Remove and replace following defective items as required: Piston operator Place defective item on truck. Use stepladder to facilitate repair. CHECKOUT: Shut down fan in air conditioner unit and observe: Damper set open and close. ADJUST: Adjust operator linkage for specified airflow using air velocity meter.	4031 Common Hand Tools Stepladder, 6-Foot Truck, Mechanical Maintenance	111/1 111/1	.20/LCC/
/4 Starter, Motor	REPAIR: Open circuit breaker in LCDS Panel and attach Warning Placard in conspicuous position. Remove and replace the defective overload heater as required. Restore power and remove Warning Placard. Place defective item on truck. CHECKOUT: Observe odor absorbing unit operate.	Common Hand Tools Meter, Air Velocity Stepladder, 6-Foot Lantern, Electric Common Hand Tools Placard, Warning	111/1 221/1 111/1 111/1 111/1	.05/LCC/ .20/LCC/ .05/LCC/ .10/LCC/ .05/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Emergency Subsystem /3 Odor Absorbing Unit /4 Starter, Motor	REMOVE: Place circuit breaker in LCDB Panel and attach Warning Placard in conspicuous position. Remove wiring and defective starter. Place defective item on truck. INSTALL: Install replacement motor starter. Attach wiring. Restore power and remove Warning Placard. CHECKOUT: Place manual motor starter to ON position and observe that odor absorbing unit starts. SERVICE: Lubricate the compressor and motor as required. Clean air intake filter as required. Drain water from air receiver. TEST: Insufficient air pressure: Test for the following: Compressor manual starter switch for ON position. Relief valve for closed position. For 120/208 VAC across starter switch overload relay with multimeter. For 120/208 VAC across starter switch. For 120/208 VAC across motor terminals. Air intake filter and check valve for being clear of obstructions. Pressure reducing valve integrity by observing: Inlet pressure gage reading for approximately 50 psig. Outlet pressure gage reading for approximately 15 psig. Check separator air filter for functional integrity. Excessive air pressure: Check pressure reducing valve for operation. Check relief valve for operation. Check unloader for operation.	Common Hand Tools Placard, Warning Truck, Mechanical Maintenance 4031 Common Hand Tools Common Hand Tools Kit, Lubrication Common Hand Tools Multimeter	111/1 221/1 111/1 221/1 221/1 221/1 111/1 111/1 111/1 111/1 111/1 121/1 221/1 221/1 221/1 121/1 121/1 121/1 121/1 121/1 121/1 121/1	.05/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .10/LCC/AM .10/LCC/AM .10/LCC/AM .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/
/2 Control Air Subsystem				

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Control Air Subsystem	REPAIR: Place circuit breaker in LCDA Panel to OFF position and attach Warning Placard in conspicuous position. Remove and replace the following defective items as required: Pressure relief valve. Pressure reducing valve. Pressure gage. Motor starter overload relay. Pipe and associated fittings. Electrical wiring. CHECKOUT: Place circuit breaker in LCDA Panel to ON position and remove Warning Placard. Start - compressor. Refer to Control Air Subsystem, Test, steps. ADJUST: Adjust pressure reducing valve to specified requirements.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 221/1 221/1 221/1 221/1 221/1 111/1 111/1 121/1 221/1	.05/LCC/ .10/LCC/ .10/LCC/ .10/LCC/ 1.0/LCC/ 1.0/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .10/LCC/
/3 Compressor Unit, Air	REPAIR: Place circuit breaker in LCDA Panel to OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: Flow control valve. Check valve. Air unloader assembly. Air intake filter. CHECKOUT: Place circuit breaker in LCDA Panel to ON position and remove Warning Placard. Start compressor. Check for discharge pressure of approximately 50 psig.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 121/1 121/1 121/1 111/1 111/1 111/1 111/1 221/1 122/1 111/1	.05/LCC/ .25/LCC/ .25/LCC/ .25/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .10/LCC/ .10/LCC/
/4 Compressor, Power Driven	REMOVE: Place circuit breaker in LCDA Panel to OFF position and attach Warning Placard in conspicuous position. Disconnect electrical wiring. Disconnect piping. Remove mounting hardware.	4031 Common Hand Tools Truck, Mechanical Maintenance Placard, Warning	111/1 221/1 122/1 111/1	.05/LCC/ .10/LCC/ .10/LCC/ .10/LCC/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Control Air Subsystem 1/3 Compressor Unit, Air 1/4 Compressor, Power Driven	INSTALL: Attach mounting hardware. Connect piping and reconnect electrical wiring. Place circuit breaker in LCDA Panel to ON position and remove Warning Placard. CHECKOUT: Start compressor. Check for discharge pressure of approximately 50 psig. REPAIR: Place circuit breaker No. in LCDA Panel to OFF position and attach Warning Placard in conspicuous position. Remove and replace following defective items as required: Overload heater. Place defective item on truck. Place circuit breaker No. in LCDA Panel to ON position and remove Warning Placard. CHECKOUT: Place motor starter in ON position and observe that compressor starts. REMOVE: Place circuit breaker No. in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Remove mounting hardware and disconnect electrical wiring. Remove defective motor starter. Place defective item on truck. INSTALL: Connect electrical wiring and install mounting hardware. Place circuit breaker No. in LCDA Panel in ON position and remove Warning Placard. CHECKOUT: Place motor starter in ON position and observe that compressor starts.	Common Hand Tools Common Hand Tools Lantern, Electric Placard, Warning Truck, Mechanical Maintenance. 4031 Common Hand Tools Placard, Warning Lantern, Electric Truck, Mechanical Maintenance. 4031 Common Hand Tools Lantern, Electric	211/1 221/1 111/1 111/1 111/1 111/1 221/1 111/1 111/1 111/1 111/1 111/1	.20/LCC/ .20/LCC/ .05/LCC/ .05/LCC/ .15/LCC/ .05/LCC/ .15/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .20/LCC/ .05/LCC/ .05/LCC/ .20/LCC/ .05/LCC/ .05/LCC/

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL CRITICALITY	TIME PLACE FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Supply and Exhaust Air Subsystem	SERVICE: Lubricate the fan motors as required. TEST: Check for 208 VAC at S-1 fan motor terminals. Check for 208 VAC at E-1 fan motor terminals. Check operation of modulating dampers. REPAIR: Place circuit breakers in OFF position and attach Warning Placard in conspicuous position. Remove and replace the following defective items as required: Flexible duct. Damper operator. Close circuit breaker and remove Warning Placard. Place defective item on truck. CHECKOUT: Check the following: Supply and exhaust fans for operation. Modulating damper set for satisfactory positioning. Flexible duct for air tightness. ADJUST: Adjust linkage for proper positioning of damper. REMOVE: Disconnect power to control panel and attach Warning Placard in conspicuous position. Disconnect wiring. Remove duct connecting hardware from flanged ends of fan. Remove mounting hardware and defective fan. INSTALL: Attach mounting hardware. Attach duct to flanged ends of fan with duct connecting hardware. Connect wiring to fan motor. Connect wiring to control panel and remove Warning Placard. CHECKOUT: Check key operated manual switch in control panel for ON position. Check that fan operates.	Common Hand Tools Kit, Lubrication 4001 Multimeter 4031 Truck, Mechanical Maintenance Placard, Warning Stepladder, 6-foot Common Hand Tools Common Hand Tools Common Hand Tools Truck, Mechanical Maintenance. Placard, Warning Truck, Hand Elevating Platform Common Hand Tools	211/1 221/1 221/1 221/1 111/1 111/1 211/1 111/1 111/1 221/1 221/1 111/1 221/1 111/1 211/1 211/1 211/1 111/1 211/1 211/1 211/1 111/1 111/1 111/1	.15/LCC/6M .10/LCC/ .10/LCC/ .10/LCC/ .05/LCC/ .30/LCC/ .55/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .20/LCC/ .05/LCC/ .20/LCC, .05/LCC/ .10/LCC/ .20/LCC/ .20/LCC/ .20/LCC/ .20/LCC/ .20/LCC/ .10/LCC/ .05/LCC/ .05/LCC/ .05/LCC/

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SUBSYSTEM OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-Sub C, LCC-SRCC, LCC-SRCC/ACP 1212, 3 /2 Supply and Exhaust Air Subsystem /3 Panel, Control, Ventilation /4 Starter, Motor	REPAIR: Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Remove and replace defective heater. Restore power and remove Warning Placard. Place defective item on truck. CHECKOUT: Check that fan operates with switches in ON position. REMOVE: Place circuit breakers for LCC-Sub C, LCC-SRCC and LCC-SRCC/ACP in LCDA Panel in OFF position and attach Warning Placard in conspicuous position. Disconnect wiring hardware. Remove mounting hardware. Remove defective starter. Place defective item on truck. INSTALL: Replace defective starter. Replace mounting hardware. Connect wiring. Restore power and remove Warning Placard. CHECKOUT: Check that fan operates when switches are placed in ON position.	Common Hand Tools Placard, Warning 4031 Truck, Mechanical Maintenance Common Hand Tools Truck, Mechanical Maintenance Placard, Warning Common Hand Tools	111/1 221/1 111/1 111/1 211/1 211/1 221/1 111/1 111/1 111/1 111/1 111/1 221/1 211/1 221/1	.05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .05/LCC/ .10/LCC/ .05/LCC/ .10/LCC/

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VENTILATION SYSTEM, LCSB Ventilation System, LCSB - 1390.3	REPAIR:	Common Hand Tools Placard, Warning Stepladder, 8-foot Ladder, Extension	111/1	20/LCC/Unit
	TEST:	Common Hand Tools Stepladder, 8-foot Ladder, Extension Multimeter Thermometer Set, Self- Indicating, Liquid in Glass Meter, Air Velocity	221/1	3.15/LCC/.07231
	REPAIR:	Common Hand Tools Placard, Warning Stepladder, 8-foot Ladder, Extension	211/1	40/LCC/.00508
	CHECKOUT:	Ladder, Extension	221/1	15/LCC/.00508

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM Ventilation System (LCB) - 1436.3	REPAIR: NOTE: NO MAINTENANCE ANALYSIS INFORMATION IS AVAILABLE			

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 2 Brine Subsystem, Chilled 3 Chiller, Brine, Refrigerating	REPAIR: Remove and replace following defective items as required. Safety relief valve. Gate valve. Refrigerant charging valve. Filter-drier. Solenoid valve. Pressure gage isolating valve. Expansion valve. Isolating valve. Proceed as follows to repair items a thru e By means of a vacuum pump, evacuate refrigerant from receiver and the rest of system into water cooled refrigerant drum until pressure in brine chiller system is reduced to 1 psig. Close nondefective valves in brine chiller. Disconnect lines coupled to defective item. Cap disconnected lines if needed. Remove mounting hardware and defective item. Install replacement item and mounting hardware. Open valves in brine chiller. Using vacuum pump evacuate system of air and moisture. Operate vacuum pump until pressure in brine chiller is reduced to 150 microns of mercury. Fill system with refrigerant through a dryer in charging line. Start brine chiller, check for leaks at connections and purge as required. Proceed as follows to repair items f thru h: Close receiver discharge valve. Pump refrigerant from system to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig. Isolate defective item. Remove mounting hardware and defective item. Open valves in brine chiller and, using a vacuum pump, evacuate system from air and moisture. Operate vacuum pump until pressure in brine chiller is reduced to 150 microns of mercury. Fill system with refrigerant through a dryer in charging line. Start brine chiller check for leaks at connections and purge it as required.	Common Hand Tools Receiver, Refrigerant 4316 Truck, Refrigeration System Servicing.	222/1 222/1 111/1 111/1 111/1 222/1 222/1 221/1 222/1 222/1 221/1 222/1 222/1	1. 0.5B / .55 .50/5B / .55 .05/5B / .55 .20/5B / .55 .10/5B / .55 .20/5B / .55 .50/5B / .55 .25/5B / .55 .10. 5B / .55 .05/5B / .55 .50/5B / .55 .10/5B / .55 .50/5B / .55 .25/5B / .55 .10/5B / .55

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ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating	CHECKOUT: Connect unit to test bench and outside air ducts. Connect electric wiring to chiller unit for electric power supply. Check that circuit breakers in panel are in ON position. Place brine chiller key switch to ON position to start brine chiller. Observe brine pump flow rate for 26 gpm and brine temperature readings of 35 ± 5 deg F outlet when inlet is 41.5 ± 5 deg F. ADJUST: With brine chiller package unit connected to test bench and operating at maximum load, perform the following: Regulate flow of brine as specified by adjusting plug valves on brine supply line.	4560 Test Stand Brine Chiller	221/1 221/1 111/1 111/1 211/1 222/1	.20/ SB / .10/ SB / .05/ SB / .05/ SB / .20/ SB / .10/ SB /

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher - 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /4 Chiller	REMOVE: Close receiver discharge valve. Pump refrigerant from system to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig. Close receiver inlet valve and compressor suction and discharge. INSTALL: Tighten chiller mounting hardware. Connect refrigerant and brine lines to chiller. Heat and evacuate chiller with a vacuum pump to 150 microns of mercury. Break vacuum with Freon 12 and reevacuate. Open refrigerant valves. Check for leaks.	4316 Common Hand Tools Drum 50-Gallon Truck, Refrigeration System Servicing	111/1 221/1	.05/SB/ .50/SB/ .10/SB
	SERVICE: Add refrigerant as needed through a dryer in charging line.	4316 Truck, Refrigeration System Servicing	111/1 221/1	.15/SB .15/SB .30/SB
	CHECKOUT: Refer to Chiller Brine, Refrigerating, CH-1, Line 14, Checkout, Steps a thru e.	4360 Test Stand, Brine Chiller	221/1	.60/SB
	REMOVE: Close compressor inlet and discharge valve. Disconnect electrical wiring from compressor. Bleed off pressure prior to disconnecting lines. Disconnect and cap refrigerant lines from compressor. Remove mounting hardware. INSTALL: Install compressor mounting hardware. Connect refrigerant lines to compressor. Replace refrigerant dryer element. Connect electrical wiring to compressor motor.	4316 Common Hand Tools Truck, Refrigeration System Servicing	221/1 221/1 111/1 111/1	.20/SB .10/SB .20/SB .10/SB
1/4 Compressor, Reciprocating Power Driven CP-1	SERVICE: Heat and evacuate the compressor to about 150 microns. Break vacuum with refrigerant Freon 12 through a refrigerant dryer in charging line. Charge slightly above 0 psig. Repeat this step two times then open compressor inlet and discharge valves. Recharge system with Freon 12 through dryer. Fill compressor with moisture-free oil to proper level.	4316 Truck, Refrigeration System Servicing	111/1 111/1 221/1	.20/SB .05/SB .20/SB .10/SB
	CHECKOUT: Refer to Chiller, Brine, Refrigerating, CH-1, Line 14, Checkout, Steps a thru e.	4560 Test Stand, Brine Chiller	221/1	.60/SB

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LAUNCHER Environmental Control System, Launcher 1211.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /4 Condenser, Refrigerating, Air	REMOVE: Close receiver discharge valve. Pump refrigerant from system to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig. Close receiver inlet valve and compressor suction and discharge valves. Blend off pressure prior to disconnecting lines. Disconnect refrigerant lines to condenser. Remove condenser mounting bolts.	4316 Common Hand Tools Stepladder, 6-Foot Truck, Refrigeration System Servicing.	111/1 221/1 111/1 222/1 111/1 111/1	.05/SB/ .15/SB/ .05/SB/ .30/SB/ .20/SB/ .05/SB/
	INSTALL: Install mounting hardware. Connect suction and discharge lines to condenser unit. Evacuate system to 150 microns of mercury. Break vacuum with Freon 12 and reevacuate. Open receiver and compressor valves. Check for leaks.	3039 4316 Common Hand Tools Stepladder 6-Foot Leak Detector, Refrigerant Gas Truck, Refrigeration System Servicing	111/1 111/1 222/1 111/1 111/1	.05/SB/ .05/SB/ .25/SB/ .05/SB/ .05/SB/
	SERVICE: Add refrigerant as required through dryer in charging line.	4316 Truck, Refrigeration System Service Common Hand Tools	221/1	.30/SB/
	CHECKOUT: Refer to Chiller, Brine, Refrigerating, CH-1, Line 14, Checkout, Steps a through e.	Test Stand, Brine Chiller	221/1	.60/SB/
	REMOVE: Evacuate refrigerant from system into temporary receiver. Blend off pressure prior to disconnecting refrigerant lines. Disconnect system receiver refrigerant lines. Cap off lines. Remove mounting hardware.	4316 Common Hand Tools Truck, Refrigeration System Servicing, Receiver, Refrigerant.	211/1 111/1 111/1 111/1	.25/SB/ .05/SB/ .20/SB/ .10/SB/
/4 Receiver, Liquid Refrigerant	INSTALL: Install mounting hardware. Uncap refrigerant lines and connect to receiver. Open valves on lines to receiver.	Common Hand Tools	111/1 111/1 111/1	.10/SB/ .15/SB/ .05/SB/
	SERVICE: Heat and evacuate the system. Break vacuum with refrigerant Freon 12 through a refrigerant dryer in charging line. Charge slightly above 0 psig. Repeat this step two times. Charge system with Freon 12 through a dryer in charging line.	4316 Truck, Refrigeration System Service	211/1 211/1	.50/SB/ .20/SB/
	CHECKOUT: Refer to Refrigerating Brine Chiller CH-1, Line 14, Checkout, Steps a through e.	4560 Test Stand, Brine Chiller	211/1 221/1	.15/SB/ .60/SB/

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Brine Subsystem, Chilled 1/3 Chiller, Brine, Refrigerating 1/4 Chiller	REMOVE: Close receiver discharge valve. Pump refrigerant from system, to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig. Close receiver inlet valve and compressor suction and discharge valves. Disconnect refrigerant lines on chiller. Close brine valves and drain brine from chiller. Disconnect brine lines from chiller. Loosen mounting hardware. INSTALL: Tighten chiller mounting hardware. Connect refrigerant and brine lines to chiller. Evacuate chiller with vacuum pump to 150 microns of mercury. Break vacuum with Freon 12 and re-evacuate. SERVICE: Add refrigerant as needed through a dryer in charging lines. CHECKOUT: Refer to steps in Chiller, Brine, Refrigerating, CH-1.	Common Hand Tools Drum, 50-Gallon 4316 Truck, Refrigeration System Servicing	111/1 221/1 111/1 111/1 221/1 111/1	05/SB/. 00537 50/SB/. 00537 10/SB/. 00537 05/SB/. 00537 30/SB/. 00537 05/SB/. 00537
1/4 Compressor, Reciprocating	REMOVE: Close compressor inlet and discharge valve. Disconnect electrical wiring from compressor. Bleed off pressure prior to disconnecting lines. Disconnect and cap refrigerant lines from compressor. Remove mounting hardware. INSTALL: Install compressor mounting hardware. Connect refrigerant lines to compressor. Replace refrigerant dryer element. Connect electrical wiring to compressor motor.	Common Hand Tools Truck, Refrigeration System Servicing 4316 4560 Test Stand, Brine Chiller	221/1 221/1 221/1 221/1 221/1 221/1	20/SB/. 09701 10/SB/. 09701 20/SB/. 09701 10/SB/. 09701 10/SB/. 09701 20/SB/. 09701 10/SB/. 09701

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 /2 Brine Subsystem, Chilled /3 Chiller, Brine, Refrigerating /4 Compressor, Reciprocating	SERVICE: Heat and evacuate the compressor to 150 microns vacuum. Break vacuum with refrigerant Freon 12 through a refrigerant dryer in charging line. Charge slightly above Opsig. Repeat this step two times, then open compressor inlet and discharge valves. Fill compressor with moisture-free oil to proper level. CHECKOUT: Refer to steps in Chiller, Brine, Refrigerating, CH-1.	4316 Truck, Refrigeration System Service	221/1 221/1 221/1 221/1	30/SB/. 09701 10/SB/. 09701 10/SB/. 09701 30/SB/. 09701
/4 Condenser, Refrigerating, Air	REMOVE: Close receiver discharge valve. Pump refrigerant from systems to receiver by allowing compressor to run until system suction pressure is reduced to 1 psig. Close receiver inlet valve and compressor suction and discharge valves. Bleed off pressure prior to disconnecting lines. Disconnect refrigerant lines to condenser. Remove condenser mounting hardware. INSTALL: Install mounting hardware. Connect suction and discharge lines to condenser unit. Evacuate system to 150 microns of mercury. Break vacuum with Freon 12 and re-evacuate. Open receiver and compressor valves. Check for leaks. SERVICE: Add refrigerant as required through dryer in charging line.	4560 Test Stand, Brine Chiller Common Hand Tools Step ladder, 6-foot Truck, Refrigeration System Servicing 3039 Leak Detector, Refrigerant Gas 4316 Truck, Refrigeration System Servicing 4316 Common Hand Tools Truck, Refrigeration System Servicing 4560 Test Stand, Brine Chiller	111/1 221/1 111/1 111/1 111/1 111/1 221/1 111/1 111/1 221/1 221/1 111/1 111/1	05/SB/. 00206 15/SB/. 00206 05/SB/. 00206 30/SB/. 00206 20/SB/. 00206 05/SB/. 00206 05/SB/. 00206 05/SB/. 00206 25/SB/. 00206 05/SB/. 00206 05/SB/. 00206 30/SB/. 00206 60/SB/. 00206
	CHECKOUT: Refer to steps in Chiller, Brine, Refrigerating, CH-1.		221/1	60/SB/. 00206

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYSTEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Brine Subsystem, Chilled 3 Chiller, Brine, Refrigerating 1/4 Receiver, Liquid Refrigerant	REMOVE: Evacuate refrigerant from system into temporary receiver to 1 psig. Close valves on system receiver. Bleed off pressure prior to disconnecting refrigerant lines. Disconnect system receiver refrigerant lines. Cap off lines. Remove mounting hardware. INSTALL: Install mounting hardware. Unacp refrigerant lines and connect to receiver. Open valves on lines to receiver. SERVICE: Evacuate the system. Break vacuum with refrigerant Freon 12 through a refrigerant dryer in charging line. Charge slightly above 0 psig. Repeat this step two times. Charge system with Freon 12 through a dryer in charging line. CHECKOUT: Refer to steps in Chiller, Brine, Refrigerating, CH-1.	4316 Common Hand Tools Truck, Refrigeration System Service Receiver, Refrigerant Common Hand Tools 4316 Truck, Refrigeration System Service 4560 Test Stand, Brine Chiller	211/1 211/1 111/1 111/1 111/1 111/1 111/1 111/1 211/1 211/1 211/1 221/1	.25/SB/.00002 .05/SB/.00002 .20/SB/.00002 .10/SB/.00002 .10/SB/.00002 .10/SB/.00002 .15/SB/.00002 .05/SB/.00002 .50/SB/.00002 .20/SB/.00002 .15/SB/.00002 .60/SB/.00002

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SUBSYSTEM / OPERATION INVOLVED	DUTIES AND TASKS	SPECIAL TOOLS TEST EQUIPMENT AND GSE USED	SKILL LEVEL/ CRITICALITY	TIME/ PLACE/ FREQUENCY
ENVIRONMENTAL CONTROL SYS- TEM, LCC-SUB C, LCC-SRCC, LCC-SRCC/ACP Environmental Control System, LCC Sub C, LCC-SRCC, LCC-SRCC/ACP 1212.3 1/2 Emergency Subsystem 1/3 Cooling Unit, Emergency 1/4 Control, Heater	REPAIR: Remove and replace following defective items as required: Piston operator and positioner. CHECKOUT: Check piston operator actuates variac on air pressure. ADJUST: Adjust linkage for minimum and maximum position. REMOVE: Disconnect electrical wiring. Remove mounting hardware and defective heater control. INSTALL: Install replacement heater control and mounting hardware. Reconnect electrical wiring. CHECKOUT: Check heater control for electrical continuity. ADJUST: Adjust linkage and check variac heater control cursor setting.	Common Hand Tools Common Hand Tools Common Hand Tools Common Hand Tools 4001 Multimeter	211/1 211/1 211/1 221/1 111/1 221/1 221/1 221/1 221/1	40/SB/ 20/SB/ 10/SB/ 05/SB/ 10/SB/ 10/SB/ 05/SB/ 40/SB/ 20/SB/

/5 Heater Control, Variac

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