

Summary Report for Individual Task
091-91J-1024
Operate Laundry Advanced System (LADS)
Status: Approved

Distribution Restriction: Approved for public release; distribution is unlimited.

Destruction Notice: None

Foreign Disclosure: FD5 - This product/publication has been reviewed by the product developers in coordination with the CASCOC and Fort Lee foreign disclosure authority. This product is releasable to students from all requesting foreign countries without restrictions.

Condition: As a Quartermaster and Chemical Equipment Repairer in an operational environment, given a Laundry Advanced System , Maintenance Request or Inspection Worksheet, General Mechanics Tool Kit and appropriate Technical Manuals. Some iterations of this task should be performed in MOPP 4.

Standard: Operate the laundry advanced system in accordance with the applicable technical publications. When the task is completed, all shortcomings and deficiencies have been identified on the proper maintenance forms.

Special Condition: None

Safety Risk: Low

MOPP 4: Sometimes

Task Statements

Cue: Quartermaster and Chemical Equipment Repairer is given a Maintenance Request or Inspection Worksheet stating a malfunction.

DANGER

None

WARNING

Prior to removing power from the LADS a cooldown cycle must be run. This allows piping and system components to cool down to safe temperatures prior to performing AFTER PMCS procedures. Thermal fluid can reach temperatures near 400 °F while the heating system is operating. Failure to perform the cool down procedure could result in personnel being exposed to hot fluids and external surfaces causing severe burn injury or death. Seek immediate medical attention if injury occurs.

CAUTION

Do not load more than 200 lbs or less than 50 lbs of laundry into one drum to avoid causing stress to drum structure leading to premature failure of equipment. Only use specified detergent. Never add more than 1 ounce of detergent per load to avoid excessive sudsing, overflowing of tanks, and still boil-overs. NEVER use chlorine bleach in the LADS. If chlorine bleach enters the still, hydrochloric acid will be produced, causing rapid deterioration of the still, still condenser, and condensate plumbing.

Remarks: None

Notes: If you have a C model LAD follow the operating instructions that refers to the TM.

Performance Steps

1. Ensure all BEFORE PMCS procedures have been completed.

(1) FUEL SUPPLY: Check for adequate supply of fuel in fuel tank. Ensure supply hoses are not damaged and are connected at fuel tank and heater. Ensure supply hose is not damaged and is connected at supply hose and generator.

(2) HEATER: Ensure blower air inlet screen is not blocked with debris. Check fuel lines for evidence of leakage.

(3) THERMAL FLUID PLUMBING: Check thermal fluid plumbing for evidence of leakage.

(4) STILL: Ensure doors are closed and knobs are hand tight. Ensure handles on drain valves are in the closed/forward position.

(5) STILL CONDENSER: Ensure all three heat exchanger inlet screens are not blocked with debris.

(6) WATER SUPPLY: Check for adequate supply of water in external container. Ensure supply hoses are not damaged and are connected at external container, water supply pump, and LADS piping connections.

(7) WATER SUPPLY PUMP: Check electrical cable on water supply pump for damage and proper connection at junction box.

(8) WATER PUMPS: Ensure manual valves are closed. Ensure pump cover is properly installed.

(9) WATER PLUMBING: Check water plumbing for evidence of leakage. Ensure shut-off valve for utility hose is closed.

(10) WASHING/DRYING DRUMS: Ensure dryer inlet screens are installed and there is no debris blocking air flow. Ensure load binders are not installed.

(11) INVERTER ENCLOSURE: Ensure inlet door is open and not blocked with debris.

Page 11

(12) AIR SYSTEM: Ensure shutoff valve is open.

(13) ELECTRICAL SUPPLY: Ensure external electrical power is available. If power is supplied by Tactical Quiet Generator (TQG) ensure all PMCS has been done per TM 9-6115-644-0. Check main electrical cable for damage and proper connection at external power source and at the LADS electrical box. Check ground wires for proper connection at ISO frame and trailer.

(14) DRYER AIR OUTLET GUARDS: Ensure dryer blower outlet guards are not blocked with debris.

(15) STILL CONDENSER: Ensure fan guard and inlet shroud are not blocked with debris.

(16) HEATER: Ensure exhaust duct is not blocked with debris.

(17) ANTI-FOAM SUPPLY: Check for adequate supply of anti-foam in external container. Shake anti-foam container to mix solution. Ensure hand pump is inserted completely into container.

(18) DETERGENT SUPPLY: Check for adequate supply of detergent in external container.

(19) PREWASH MAINIFOLD: Ensure Pre-Wash manifold is properly connected to LADS piping connections.

Check electrical cable for proper connection. Ensure hose is properly connected and routed to drain area. Ensure both operation levers are set to AUTO.

(20) SUBCOLLER: Ensure inlet screen is not blocked with debris. Ensure eight (8) manual valves are closed.

(21) PRE-FILTER: Ensure manual valve is closed.

(22) COALESCER: Ensure manual valve is closed. Ensure petcock is closed.

(23) DISTILLATE PUMP: Ensure manual valve is closed.

(24) AIR SYSTEM: Ensure three (3) Manual valves are closed (See Figure 10, Item 51). Ensure manual valve is open (See Figure 10, Item 52).

(25) INVERTER ENCLOSURE: Ensure inlet door and outlet door are open and not blocked with debris.

(26) WASHING/DRYING DRUMS: Ensure sluice lids are closed and latches are engaged. Ensure retaining points are not installed. Ensure four (4) air bag manual valves are closed. Ensure lint filters are cleaned and installed and latches are engaged.

(27) INVERTER ENCLOSURE FAN: At start-up, ensure fan is blowing air out of enclosure after start-up.

2. Bring MEP-805A generator on line (TM 9-6115-644-10) or apply external power as required.

3. Set generator output to 210 VAC, 60 HZ.

4. Verify EMERGENCY STOP switch is pulled out.

5. Position MAIN DISCONNECT switch to ON.

6. Verify MAIN POWER lamp is on.

7. Perform DURING PMCS items 1 and 2. (WP 0041)

(1) INVERTER ENCLOSURE FAN: At start-up, ensure fan is blowing air out of enclosure after start-up. (See Figure 1, Item 1).

(2) DRUM MOTOR COOLING FANS: At start-up, ensure fans are blowing air around drive motors after start-up (See Figure 1, Item 2).

h. Position CONTROL POWER switch to ON.

8. Position CONTROL POWER switch to ON.

Note: LADS contains a monitor that verifies correct electrical phasing with external power source. If phasing is not correct, CONTROL POWER lamp will not come on, with CONTROL POWER switch in ON position.

9. Verify POWER lamp is ON.

Note: If indications displayed at touch screen are not as stated in the following procedures refer to the Troubleshooting Index, WP 0024, to determine the proper action to take.

If the control system detects a system failure the audible alarm will go on and off intermittently. Further operations may or may not be interrupted, depending on the nature of the fault. If this occurs touch screen will display an Alarm Message. In either case, refer to WP 0024, Troubleshooting Procedures to determine the proper action to take.

10. Monitor touch screen. System will take approximately 30 to 40 seconds to boot up to START MENU to be displayed.

11. Press UTILITY OPERATION on touchscreen. UTILITY OPERATION MENU will be displayed and air compressor will automatically start if system senses low air pressure.

Note: Only AIR SYSTEM STATUS, USE UTILITY HOSE, and RETURN will be selectable on touchscreen until air pressure in system reaches 80 psi.

12. Press AIR SYSTEM STATUS on touchscreen and verify display advances to START AIR SYSTEM screen.

13. Once air system has pressurized, verify touchscreen displays the message READY TO PERFORM UTILITY OPERATIONS. Press RETURN to go to UTILITY OPERATION MENU.

14. Check rotation and prime water supply pump as follows:

- (1) Press USE UTILITY HOSE on touchscreen.
- (2) Press START WATER PUMP on touchscreen.
- (3) Unplug electrical cable or position water supply pump power switch to OFF.
- (4) When pump starts to slow down check rotation of the fan on the pump motor and ensure that it is rotating in the same direction as pump direction arrow.
- (5) Plug electrical cable back into water supply pump or position power switch back to ON.
- (6) Press STOP WATER PUMP then press RETURN.
- (7) Press RETURN to return to UTILITY OPERATION MENU.

15. Press FILL WATER TANKS on touchscreen. (Utility Operation Menu).

Note: Water tanks take between 10-15 minutes to fill. At any point in filling cycle OVERRIDE FILLING can be selected on touchscreen to stop filling process and return to UTILITY OPERATION MENU.

16. Observe touchscreen and verify FILL WATER TANKS MODE screen is displayed.

17. Verify touchscreen has returned to UTILITY OPERATION MENU once water tanks are full.

18. If water heating is desired press HEAT RINSE 2 WATER. Set at desired temperature then press HEAT WATER. Note: Setting temperature above or below allowable range of 70-160 degrees will cause the temperature "to return to the default value of 150 degrees".

19. Observe touchscreen and verify the following screens display in succession as HEAT RINSE 2 WATER cycle progresses.

20. Verify touchscreen shows Heat Rinse Water cycle is complete.

Note: If one drum is already operating and the other drum is selected the touchscreen will display STAGGERING CYCLES. The laundry menu will appear for the second drum as soon as the first drum reaches the DRAIN TO RINSE 1 TANK step. This typically occurs 18-20 minutes after the first cycle is started. During continuous laundry operations refer to WP 0041, During PMCS after each cycle and at shift change. Perform actions as indicated.

21. Start Laundry Operation.

22. Press RETURN to go to START MENU, then press LAUNDRY OPERATION.

Note: After selecting OPERATE DRUM A or OPERATE DRUM B, condensor fan and heating system will automatically come on and remain on until LAUNDRY OPERATION MENU is exited.

23. Select OPERATE DRUM A or OPERATE DRUM B as desired.

24. Select Laundry Cycle.

25. Determine type of items to be laundered.

26. Press CHANGE CYCLE to toggle through available cycles until desired laundry cycle is displayed. (Laundry Cycle Screen).

Note: Default washing temperature is 150 degrees and default drying temperature is 160 degrees.

27. Load Laundry.

28. Open drum door.

29. Add 1 ounce (stroke) of detergent onto any bag of laundry being loaded.

30. Load laundry bags. A typical load should be 20 to 30 properly loaded mesh bags.

31. Close drum door then push in on handle to lock door. Ensure that laundry is clear of door.

32. Laundry Cycle Operation

Note: A typical laundry lasts 65-75 minutes. Once a laundry cycle starts, operation is automatic until the cycle is complete. When a continuous audible alarm sounds, this indicates that some type of operator action is required or the cycle is complete.

a. Press START CYCLE on touchscreen.

b. Observe display to verify system is progressing through laundry cycle.

c. Wait for laundry cycle to reach DRAIN TO STILL.

d. When audible alarm sounds, press ACKNOWLEDGE ALARM.

e. Add one stroke of anti-foam with hand pump.

f. If FRS or sanitizer need to be added unlock latch and open lid and add FRS or sanitizer and then close lid and engage latch.

g. Press CONTINUE CYCLE on touchscreen.

h. Wait for cycle to complete. When audible alarm sounds, press ACKNOWLEDGE ALARM.

33. Unload Laundry.

a. Pull out on handle and open drum door.

b. Unload laundry.

Note: After laundry is unloaded it should be removed from the mesh bag as soon as possible. Laundry will be extremely wrinkled if left in mesh bags.

- c. Clean lint filter.

34. System Shutdown

Note: If the LADS needs to be drained to change the water for sanitary reasons, dirty water, prevent over-night freezing, or in preparation for movement, refer to WP 0017, Draining Procedures.

Laundry cycle must be completed for both systems before a cooldown cycle can be initiated.

A normal cooldown lasts about 30 minutes. Once a cooldown cycle starts, operation is automatic until cycle is completed. When a continuous audible alarm sounds this indicates the cycle is complete. Operator can override cooldown at any time by selecting OVERRIDE COOLDOWN on touchscreen.

- a. Press SYSTEM COOLDOWN.

b. Observe touchscreen to verify system is progressing through Cool Down Mode, Boiling Down the Still Screen and Cooling thermal Fluid Screen.

- c. When cooldown is complete, alarm will sound. Press ACKNOWLEDGE ALARM.

- d. Perform AFTER PMCS (WP 0042)

- (1) Ensure dryer inlet screens are not blocked with debris.
- (2) Ensure dryer outlet guards are not blocked with debris.
- (3) Clean/Inspect strainers.
- (4) Drain and clean still.
- (5) Ensure three heat exchanger air inlet screens are not blocked with debris.
- (6) Ensure air inlet screens are not blocked with debris.

- e. Position CONTROL POWER switch to OFF.

- f. Position MAIN DISCONNECT switch to OFF and apply lock-out by pushing the table to apply padlock.

- g. Discontinue operation of MEP-805A generator (TM 9-6115-644-10) or remove external power as required.

(Asterisks indicates a leader performance step.)

Evaluation Guidance: The Soldier scores a GO if all performance measures were passed. The Soldier scores a NO-GO if any performance measure was failed. If any performance measure was failed, then show the Soldier what was done wrong and how it should have been done to score a GO.

Evaluation Preparation: Ensure all equipment and special tools are available before evaluation. All initial set up and equipment conditions must be performed in accordance with appropriate references to successfully complete the task.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Ensured before PMCS procedures have been completed.			
2. Applied external power as required with generator.			
3. Positioned generartor output to 210 VAC, 60 HZ.			
4. Verified emergency stop switch is pulled out.			
5. Positioned main disconnect switch is on.			
6. Verified main power lamp is on.			
7. Performed during PMCS.			
8. Positioned control power switch to on.			
9. Verified power lamp is on.			
10. Monitored touchscreen.			
11. Pressed utility operation on touchscreen.			
12. Pressed air system status on touchscreen.			
13. Verified touchscreen displays the message ready to perform.			
14. Checked rotation and prime water supply.			
15. Pressed fill water tanks on touchscreen.			
16. Observed touchscreen and verified fill water tanks mode screen is displayed.			
17. Verified touchscreen has returned to utility operation menu once water tanks are full.			
18. Pressed heat 2 rinse water.			
19. Observed touchscreen and verified the following screens display in succession as heat rinse 2 water cycle.			
20. Verified touchscreen shows heat rinse 2 water cycle is complete.			
21. Started laundry operation.			
22. Pressed RETURN to go to START MENU, then pressed LAUNDRY OPERATION.			
23. Selected OPERATE DRUM A or OPERATE DRUM B as desired.			
24. Selected laundry cycle.			
25. Determined type of items to be laundered.			
26. Pressed CHANGE CYCLE to toggle through available cycles until desired laundry cycle is displayed.			
27. Loaded laundry.			
28. Opened drum door.			
29. Added 1 ounce (stroke) of detergent onto any bag of laundry being loaded.			
30. Loaded laundry bags.			
31. Closed drum door then push in on handle to lock door. Ensured that laundry is clear of door.			
32. Selected laundry cycle operation.			
33. Unloaded laundry.			
34. Conducted system shutdown.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TM 10-3510-221-10	OPERATORS MANUAL FOR LAUNDRY ADVANCED SYSTEM (LADS) (NSN 3510-01- 463-0114)	No	No
	TM 10-3510-221-23	FIELD MAINTENANCE FOR LAUNDRY ADVANCED SYSTEM (LADS) (NSN 3510-01-463-0114) MODEL C (3510-01-558-6662) MODEL D	No	No
	TM 9-6115-644-10	Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet 30 KW, 50/60 and 400 HZ MEP-805A (50/60 HZ), MEP-815A (400 HZ) {TO 35C2-3-446-11; TM 09249A/09246A-10/1} (Reprinted W/Basic Incl C1-2) (This item is included on EM 0086)	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT. All operations will conform to the Army Environmental Policy, local, state and federal environmental regulations, AR 385-10, the Clean Air Act (CAA) and CAA amendments.

Safety: In a training environment, leaders must perform a risk assessment in accordance with ATP 5-19, Risk Management. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination. All operations will be performed to protect and preserve Army personnel and property against accidental loss. Procedures will provide for public safety incidental to Army operations and activities and safe and healthful work places, procedures, and equipment. Observe all safety and/or environment precautions regarding electricity, fuel, lubricants and high pressures. Provide ventilation for exhaust fumes during equipment operation and use hearing protection when required in accordance with AR 385-10, the Clean Air Act (CAA) and the CAA amendments, and the OSHA Hazard Communication Standard.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
091-91J-1025	Perform Field Level Maintenance on the Laundry Advanced System (LADS)	091 - Ordnance (Individual)	Approved
091-91J-1026	Troubleshoot Electrical Malfunctions on the Laundry Advanced System (LADS)	091 - Ordnance (Individual)	Approved

Supported Individual Tasks :

Task Number	Title	Proponent	Status
091-91J-1025	Perform Field Level Maintenance on the Laundry Advanced System (LADS)	091 - Ordnance (Individual)	Approved
091-91J-1026	Troubleshoot Electrical Malfunctions on the Laundry Advanced System (LADS)	091 - Ordnance (Individual)	Approved

Supported Collective Tasks : None