

APPENDIX II: DIESEL OIL PM CHECKLIST

PM No.	Maintenance Task	Frequency
E28	CONTROLLER	ANNUAL EVERY THREE YRS

NOTE: FOR MOTOR CONTROL CIRCUITS, RCM PROCEDURE CM-0002 (QUALITATIVE INFRARED THERMOGRAPHY) IS TO BE COMPLETED IN CONJUNCTION WITH THIS MAINTENANCE CHECKLIST.

MAINTENANCE TASK DESCRIPTION:

1. Clean and inspect controller.
2. Operational test controller.

SPECIAL INSTRUCTIONS (ANNUAL):

1. Schedule outage with operating personnel.
2. Follow site safety procedures and your supervisor's instructions.
3. De-energize, tag, and lock out circuit. Check for secondary sources of voltage.
4. Record and report to your supervisor any equipment damage or deficiencies found during this maintenance task.
5. Record all test results in the component maintenance log.
6. Obtain and review manufacturer's operation and maintenance instructions.
7. All tests shall conform to the manufacturer's test procedures and standard values.

PROCEDURES: (ANNUAL)

NOTE: FOR MOTOR CONTROL CIRCUITS, COMPLETE RCM PROCEDURE CM-0002 (QUALITATIVE INFRARED THERMOGRAPHY)

1. Visually inspect for broken parts, contact arcing, or any evidence of overheating.
2. Check line and load connections for tightness (check manufacturer's instructions for torque specifications).
3. Check heater mounting screws for tightness.
4. Check all control wiring connections for tightness.
5. On units equipped with two stage starting, check dash pots and timing controls for proper operation. Adjust as required.
6. Clean interior and exterior of cabinet.
7. Energize circuit and check operation of starter. Replace burned out pilot lights. Check alarm and remote indicators where applicable.

TOOLS, MATERIALS, AND EQUIPMENT: (ANNUAL)

1. Electrician's tool set.
2. Cleaning equipment and materials.
3. Vacuum cleaner.
4. Lamps
5. Electrical contact lubricant.
6. Ladder.

PROCEDURES: (3 YEARS)

1. Perform infrared test in accordance with test equipment manufacturer's instructions.

2. Recover panels at conclusion of test.
 3. Analyze hot spots. If severe, initiate corrective action.
- GUIDELINES FOR INTREPRETING THERMOGRAPHIC-INFRA-RED SURVEY DATA:

1. Up to 3 °C above ambient: No immediate action necessary.
2. 3 °C to 7 °C: Correct at next routine shutdown.
3. 7 °C to 15 °C: Correct prior to routine maintenance.
4. Over 15 °C: Correct as soon as possible.

TOOLS, MATERIALS, AND EQUIPMENT: (INFRARED TESTING)

1. Electrician's tool set.
2. Infrared test equipment.

PM No. M03

Title: TRANSITION SUMP

Frequency: ANNUAL

NOTE: THIS PROCEDURE IS NOT APPLICABLE TO CONFINED SPACE ENTRIES.

MAINTENANCE TASK DESCRIPTION:

1. Observe and inspect transition sump for leaks and damage.

SPECIAL INSTRUCTIONS:

1. Verify that Confined Space Entry Procedures are not applicable.
2. Follow site safety procedures and your supervisor's instructions.
3. Record and report to your supervisor any equipment damage or deficiencies found while performing this maintenance task.
4. Obtain and review manufacturer's operation and maintenance instructions.
5. No open flames or smoking.

PROCEDURES:

1. If wet, pump out water. Determine source.
2. Clean out trash, debris, etc., and dispose of properly.
3. Inspect piping, valves, connectors; repair as necessary.
4. Check status of fuel detector.
5. Inspect structural features.

TOOLS, MATERIALS, AND EQUIPMENT:

1. Cleaning materials.
2. Flashlight.

PM No.

P07

**Title
PUMP, FUEL (ABUJA - SUBMERGED)**

**Frequency
ANNUAL**

MAINTENANCE TASK

DESCRIPTION:

1. Test the pump. (Annual)

SPECIAL INSTRUCTIONS:

1. Use proper precautions in handling flammable liquids.
2. Don't spill diesel fuel or gasoline.
3. Schedule outage with operating personnel.
3. Follow site safety procedures and your supervisor's instructions.
4. Record and report to your supervisor any equipment damage or deficiencies found while performing this maintenance task.
5. Record all test results in the component maintenance log.
6. Obtain and review manufacturer's O&M instructions.
7. All tests shall conform to the manufacturer's test procedures and standard values.

PROCEDURES (ANNUAL) :

1. Inspect electrical wiring for damage.
2. Verify pump is pumping at capacity by measuring the time required to transfer a specific volume of fuel. If possible transfer from one tank to another or to a day tank.
3. Measure actual current draw and compare to nameplate readings.

TOOLS, EQUIPMENT, AND MATERIALS (SEMI ANNUAL) :

1. Mechanic's tool box.
2. Clamp-on Ammeter.
3. Measured container for flow test.

PM No.	Title	Frequency
P12	FUEL DISTRIBUTION SYSTEMS	ANNUAL

MAINTENANCE TASK

DESCRIPTION:

1. Check fuel system for leaks.
2. Clean all fuel system filters.
3. Cycle all fuel system valves.

SPECIAL INSTRUCTIONS:

1. Schedule maintenance checklist accomplishment with operating personnel.
2. Follow site safety procedures and your supervisor's instructions.
3. Record and report to your supervisor any equipment damage or deficiencies found while performing this maintenance task.
4. Record results in the component maintenance log.
5. Obtain and review manufacturer's operation and maintenance instructions.

PROCEDURES:

1. Check fuel lines, fittings, valves, etc. for leakage.
2. Clean all fuel line filters and oil/water separators.
3. Ensure tank level and leak detectors are working properly.
4. Cycle all fuel valves.

TOOLS, MATERIALS, AND EQUIPMENT FOR JOCKEY PUMP:

1. Mechanic's tool set.
2. Cleaning materials for filter units.

NOTE: Properly dispose of oily rags and debris.

PM No.	Title	Frequency
T03	TANK, FUEL OIL (DAY TANK)	QUARTERLY ANNUAL

MAINTENANCE TASK

DESCRIPTION:

1. Inspect fuel oil tank.
2. Test operation of fuel oil tank.

SPECIAL INSTRUCTIONS:

1. If a person must enter tank, test for oxygen deficiency, and supply proper respirator as needed.
2. Safety harness must be worn.
3. Perform applicable lockout/tagout steps of site safety procedures to ensure machinery will not start.
4. Schedule outage with operating personnel.
5. Follow site safety procedures and your supervisor's instructions.
6. Record and report to your supervisor any equipment damage or deficiencies found during this maintenance task.

7. Record all test results in the component maintenance log.
8. Obtain and review manufacturer's operation and maintenance instructions.
9. All tests shall conform to the manufacturer's test procedures and standard values.

PROCEDURES: (QUARTERLY)

1. Test operate system and ensure all elements function in accordance with operational requirements.
2. Check tank and piping for leaks.

PROCEDURES: (ANNUAL)

1. Clean and inspect control panels.
 - a. Clean exterior of panel and inspect front panel components for damage.
 - b. Clean interior panel components of dust and foreign material.
 - c. Inspect electrical wiring for damage and loose connections.
 - d. Inspect relays for damaged contacts and signs of over-heating.
 - e. Remove tags and energize circuit.
2. Operational Test panel/electronic control units.
 - a. Verify that all alarm, and control circuits operate correctly.
 - b. Verify that level indicating and control devices are functioning properly.
3. Drain water and sediment from the tank.
4. If normal engine/generator testing does not consume one tank of fuel each year, the tank should be drained and refilled with fresh fuel.
5. Remove the inspection port from the day tank. Examine interior of the tank. Using an inspection lamp examine all internal day tank components. With tank drained, test sending unit operation. Install a new inspection port gasket and replace port cover.
6. Depress the Press-To-Test button and observe pump and motor performance.
7. Inspect pump/motor alignment and wear. Inspect pump for leaks.
8. Re-tighten hose clamps at pump/hose connections. Re-tighten the pump bracket, motor bracket, and pump/motor coupler hardware.
9. Inspect all plumbing connections for leaks.

TOOLS, MATERIALS, AND EQUIPMENT: (ANNUAL)

1. Controls tool set.
2. Vacuum cleaner.
3. Storage container for fuel.
4. Personal protective equipment.

NOTES: Follow regulations concerning removal and disposal of any oil/fuel/sludge. Comply with EPA regulations as appropriate.

PM No.	Title	Frequency
T07	TANK, FUEL WITH CONTROLS	ANNUAL
		EVERY TWO YEAR

MAINTENANCE TASK DESCRIPTION:

1. Inspect fuel tank. (ANNUAL)
2. Test operation of fuel tank. (ANNUAL)
3. Test operation of controls. (ANNUAL)
4. Clean fuel tank (2 YEARS)

SPECIAL INSTRUCTIONS:

1. If a person must enter tank, test for oxygen deficiency, and supply proper respirator as needed.
2. Safety harness must be worn.
3. Perform applicable lockout/tagout steps of site safety procedures.
4. Schedule outage with operating personnel.
5. Follow site safety procedures and your supervisor's instructions.
6. Record and report to your supervisor any equipment damage or deficiencies.

7. Record all test results in the component maintenance log.
8. Obtain and review manufacturer's operation and maintenance instructions.
9. All tests shall conform to the manufacturer's test procedures and values.

PROCEDURES: (ANNUAL)

1. Check for signs of tank leakage.
2. Verify all locking devices in place.
3. Validate operation of automatic controls including leak and level detection.

TOOLS, MATERIALS, AND EQUIPMENT: (ANNUAL)

1. Electrician's tool set.

PROCEDURES: (2 YEAR)

1. Remove manhole cover.
2. Pump oil tank down to within 6" of bottom of tank. Test fuel quality and if appropriate, store for tank refilling.
3. Pump sludge from bottom of tank and flush. Dispose of properly.
4. Examine tank for leaks, condition of piping connections.
5. Clean and adjust oil transfer pumps.
6. Examine, clean, and adjust operation of strainers, traps, control valves, oil flow meter, oil temperature, and pressure gauges.
7. Check floats and leveling devices in tank. Check float adjustment with depth level indicators.
8. Clean breather vents, conservation vents, and flame arrestors where appropriate.
9. Clean up work area and remove all debris.

TOOLS, MATERIALS, AND EQUIPMENT: (2 YEARS)

1. Mechanic's tool set.
2. Personal protective equipment.
3. Safety harness.
4. Storage container for fuel.
5. 5W30 SAE oil for lubrication.

NOTES: Follow regulations concerning removal and disposal of any oil/fuel/sludge. Comply with EPA regulations as appropriate.

PM No.	Title	Frequency
P05	PUMP, GASOLINE	SEMIANNUAL ANNUAL

MAINTENANCE TASK DESCRIPTION FOR GASOLINE PUMP:

1. Check for damage (WEEKLY).
2. Check for internal & external leaks (QUARTERLY).
3. Lubricate locks (QUARTERLY).
4. Battery test (QUARTERLY).
5. Washing and waxing, washing as needed (QUARTERLY).
6. Inspecting and testing of shear valves (SEMI-ANNUAL).
7. Change filters and strainers (ANNUAL).

When working around gasoline and gasoline dispersing equipment take proper safety precautions to include (but not limited to) no smoking, no sparking tools or devices. When spills occur follow proper cleanup procedures. Refer to manufacturers operating guide for questions and detailed instructions on the operation and maintenance of gasoline pumps.

SPECIAL INSTRUCTIONS:

1. Perform applicable lockout/tagout steps of site safety procedures to ensure machinery will not start. When work is being performed barricades should be erected to stop flow of traffic.
2. Schedule outage with operating personnel.
3. Talk to users about problems or deficiencies.

4. Follow site safety procedures and your supervisor's instructions.
5. Record and report to your supervisor any equipment damage or deficiencies found during this maintenance task.
6. Record all test results in the component maintenance log.
7. Obtain and review manufacturer's operation and maintenance instructions.

PROCEDURES: (SEMI-ANNUAL)

1. Shear valves should be checked every time filters are changed, hydraulics are serviced or once every six months.
2. Close valve.
3. Authorize dispenser and activate operating handle.
4. Place nozzle in authorized container.
5. Squeeze nozzle lever. If flow continues after several seconds, valve may be sticking. Clean area around lever and lubricate with SAE-10 oil. If valve is still inoperable, replace it. Put unit in service and have shear valve replaced.
6. Put a few drops of SAE-10 oil on valve shaft after testing, servicing, or replacing.
7. Tag out unit.
8. Thoroughly clean inside of unit.
9. Check belt tension, adjust as necessary. Change belt if necessary.
10. Clean and lubricate pump motor.
11. Check all electrical connections for tightness.
12. Remove tags and return to service.

PROCEDURES: (ANNUAL)

1. Tag out unit.
2. Change oil filter and clean strainers at least once every year or more if pump shows signs of slower flow rate, following correct safety procedures.
3. Close shear valve and inspect operation of valve.
4. Bleed valve by lifting operating handle and authorizing unit, place nozzle in an approved container, open nozzle to reduce system pressure, turn off operating handle.
5. Turn OFF involved STP (submerged turbine pump) circuit breakers (dispensers only).
6. Turn OFF pump/dispenser unit circuit breaker.
7. Use approved containers to collect residual fuel (high hose models may have fuel collectors). Use rags to mop up spilled fuel.
8. Turn filter slowly counterclockwise and remove.
9. Drain removed filter into approved container and dispose of filter in an acceptable manner.
10. Locate strainer as a flat disk directly under filter. Use needle nose pliers for removing strainer by provided tabs.
11. Clean strainer. If strainer is clogged or damaged, discard.
12. Install cleaned or new strainer back in bore with tabs to outside.
13. Do not operate unit without a strainer or warranty may be voided.
14. Read instructions printed on new filter.
15. Coat the gasket on the new filter with a thin film of oil.
16. Hand tighten only per instructions on filter.
17. Restore power and open shear valve on dispenser.
18. Lift nozzle hook and authorize pump.
19. Check for leaks.
20. Bleed system of air by dispensing ten gallons (forty liters).
21. Check for leaks again.
22. Perform any corrective or preventive maintenance that warrants

attention at the time.

23. Check controller for proper operation. Check electrical connections for tightness. Relamp as necessary.

24. Remove tags and return to service.

TOOLS, MATERIALS, AND EQUIPMENT FOR THE PUMP:

1. Non-Sparking Tool Set.

2. Grease gun, grease, and oil.

3. Cleaning equipment and materials. Follow safety procedures for handling hazardous materials and wear proper personal protective equipment (PPE).

4. Lubricants. Consult the safety procedures for handling hazardous materials and wear proper PPE.

5. Vacuum.

6. Belts.

7. Filters.

NOTES:

DO NOT PUT USED FUEL SOAKED RAGS AND FILTERS IN "TRASH" BARREL AT STATION. FOLLOW REGULATIONS CONCERNING REMOVAL AND DISPOSAL OF ANY LUBRICANT/OIL SOAKED PARTS. COMPLY WITH EPA REGULATIONS AS APPROPRIATE.