Preventive Maintenance Checklist:

Code: GN43MO  Frequency: Monthly  Estimated Time (hours): 1.5
Description: MO - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)
Asset Type: GENERATOR

(T)ools, (S)afety Equipment, and (M)aterials Required

2. Cleaning materials.
3. Battery tester and distilled water.
4. Replacement zincs.
5. Ladder

Safety Procedures

1. Schedule equipment downtime with operating personnel.
2. De-energize, tag, and lock out circuits and machinery. Disable automatic starting circuits. DANGER - CHECK THAT CIRCUITS ARE DEAD BEFORE STARTING WORK.
3. Have approved type fire extinguishers readily available.
4. Allow no open flame or smoking in area.
5. Use safety type fuel cans only.
6. Use extreme caution when removing the radiator pressure relief cap. Steam may spray outward under high pressure.
7. Follow site safety procedures and your supervisor instructions.
8. Record and report equipment damage or deficiencies.
9. Record all test results in the component maintenance log.
10. Obtain and review manufacturer maintenance instructions.
11. Tests to conform with manufacturer test procedures and values.
12. Use proper personnel protective equipment when handling hazardous materials, fuels, and lubricants.
13. Complete RCM procedures CM-0002 (Qualitative Infrared Thermography) and CM-0003 (Insulation Test, Motor).

Procedures

- Perform a walk around inspection
- Inspect and wipe down the generator.
- Check electrical connections for evidence of looseness or overheating.
- Check engine oil level.
- Check coolant level.
- Check radiator hoses for wear and cracks. Plan for replacement if necessary.
- Check the jacket water heater for proper operation.
- Inspect zinc rods. Change if necessary.
- Engine Air Precleaner – Clean
- Engine Air Cleaner Service Indicator – Inspect
- Check and record fuel level of all tanks and note down in litres.
- Drain water and sediment from the day tank. Clean fuel strainer.
- Check space heater.
- Perform a one hour system operational test under full load conditions.
Preventive Maintenance Checklist:

Code: GN43MO  Frequency: Monthly  Estimated Time (hours): 1.5

Description: MO - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)

Asset Type: GENERATOR

☐ Operation for indication of defects of possible malfunctions.
☐ Inspect the annuanciator panel for proper operation.
☐ After unit has operated for 50 minutes, log the operation to show at least the following information: engine and generator speed in R.P.M., voltage, amperes, frequency, power factor, engine temperatures, engine oil pressure, hour meter readings.
☐ Inspect safety devices.
☐ Test safety shut-off controls.
☐ Measure and record stator winding temperature.
☐ Measure and record bearing temperature
☐ Check charging system for proper operation.
☐ Check battery electrolyte level.
☐ Determine specific gravity of starting batteries. Add distilled water if necessary. Clean terminals. Set charge rate after generator has been operated.
☐ Note any exhaust, oil, coolant, or fuel leakage. Plan for correction.
☐ Cool down and stop the unit.
☐ Note condition indicators for air and fuel filters. Clean or change filters if installed gages or operating conditions show necessity.
☐ Drain the exhaust condensate trap.
☐ Return the unit to service.
Preventive Maintenance Checklist:

Asset Type: GENERATOR

Description: SA - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)

Frequency: Semi-Annual

Estimated Time (hours): 4

(T)ools, (S)afety Equipment, and (M)aterials Required

2. Cleaning materials.
3. Battery tester and distilled water.
4. Replacement zins.
5. Ladder.
6. Vibration measuring equipment.

Safety Procedures

1. Schedule equipment downtime with operating personnel.
2. De-energize, tag, and lock out circuits and machinery. Disable automatic starting circuits. DANGER - CHECK THAT CIRCUITS ARE DEAD BEFORE STARTING WORK.
3. Have approved type fire extinguishers readily available.
4. Allow no open flame or smoking in area.
5. Use safety type fuel cans only.
6. Use extreme caution when removing the radiator pressure relief cap. Steam may spray outward under high pressure.
7. Follow site safety procedures and your supervisor instructions.
8. Record and report equipment damage or deficiencies.
9. Record all test results in the component maintenance log.
10. Obtain and review manufacturer maintenance instructions.
11. Tests to conform with manufacturer test procedures and values.
12. Use proper personnel protective equipment when handling hazardous materials, fuels, and lubricants.
13. Complete RCM procedures CM-0002 (Qualitative Infrared Thermography) and CM-0003 (Insulation Test, Motor).

Procedures

☐ Perform a walk around inspection
☐ Inspect and wipe down the generator.
☐ Check electrical connections for evidence of looseness or overheating.
☐ Check engine oil level.
☐ Check coolant level.
☐ Check the jacket water heater for proper operation.
☐ Check radiator hoses for wear and cracks. Plan for replacement if necessary.
☐ Inspect zinc rods. Change if necessary.
☐ Engine Air Precleaner – Clean
☐ Engine Air Cleaner Service Indicator – Inspect
☐ Check and recod fuel level of all tanks and note down in litres.
☐ Drain water and sediment from the day tank. Clean fuel strainer.
☐ Check space heater.
☐ Perform a one hour system operational test under full load conditions.
Preventive Maintenance Checklist:

Code: GN43SA
Frequency: Semi-Annual
Estimated Time (hours): 4
Description: SA - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)
Asset Type: GENERATOR

- Operation for indication of defects of possible malfunctions.
- Inspect the annunciator panel for proper operation.
- After unit has operated for 50 minutes, log the operation to show at least the following information:
  - engine and generator speed in R.P.M., voltage, amperes, frequency, power factor, engine temperatures, engine oil pressure, hour meter readings.
- Inspect safety devices.
- Test safety shut-off controls.
- Measure and record stator winding temperature.
- Measure and record bearing temperature.
- Test for vibration at various loads on the load bank.
- Check charging system for proper operation.
- Check battery electrolyte level.
- Determine specific gravity of starting batteries. Add distilled water if necessary. Clean terminals. Set charge rate after generator has been operated.
- Note any exhaust, oil, coolant, or fuel leakage. Plan for correction.
- Cool down and stop the unit.
- Note condition indicators for air and fuel filters. Clean or change filters if installed gages or operating conditions show necessity.
- Drain the exhaust condensate trap.
- Return the unit to service.
Preventive Maintenance Checklist:

Code: GN43AN  Frequency: Annual  Estimated Time (hours): 2
Description: AN - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)
Asset Type: GENERATOR

(T)ools, (S)afety Equipment, and (M)aterials Required

2. Battery tester and distilled water.
3. Coolant sampling collection bottles.
4. Replacement zincs.
5. Oil sampling collection bottle.
7. Oil filters.
8. Air filters.
10. Collection container for used oil.
11. Plastic bags for used oil filters.
12. Ladder.
13. Insulation Tester.
15. Cleaning materials.

Safety Procedures

1. Schedule equipment downtime with operating personnel.
2. De-energize, tag, and lock out circuits and machinery. Disable automatic starting circuits. DANGER - CHECK THAT CIRCUITS ARE DEAD BEFORE STARTING WORK.
3. Have approved type fire extinguishers readily available.
4. Allow no open flame or smoking in area.
5. Use safety type fuel cans only.
6. Use extreme caution when removing the radiator pressure relief cap. Steam may spray outward under high pressure.
7. Follow site safety procedures and your supervisor instructions.
8. Record and report equipment damage or deficiencies.
9. Record all test results in the component maintenance log.
10. Obtain and review manufacturer maintenance instructions.
11. Tests to conform with manufacturer test procedures and values.
12. Use proper personnel protective equipment when handling hazardous materials, fuels, and lubricants.
13. Complete RCM procedures CM-0002 (Qualitative Infrared Thermography) and CM-0003 (Insulation Test, Motor).

Procedures

- Perform a walk around inspection
- Inspect and wipe down the generator.
- Check electrical connections for evidence of looseness or overheating.
- Rotating Rectifier - Check
Preventive Maintenance Checklist:

Asset Type: GENERATION

Description: AN - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)

Frequency: Annual

Estimated Time (hours): 2

- Speed Sensor - Clean / Inspect
- Starting Motor - Inspect
- Stator Lead - Check
- Perform CM-0003 (Insulation Test, Motor).
- Check coolant level.
- Cooling System Coolant Sample (Level 2) - Obtain
- Belts - Inspect / Adjust / Replace
- Check the jacket water heater for proper operation.
- Check radiator hoses for wear and cracks. Plan for replacement if necessary.
- Inspect zinc rods. Change if necessary.
- Radiator - Clean
- Water Pump - Inspect
- Engine Air Pre cleaner – Clean
- Engine Air Cleaner Service Indicator – Inspect
- Engine Air Cleaner Element (Dual Element) - Clean / Replace
- Engine Air Cleaner Element (Single Element) - Clean / Replace
- Check fuel level.
- Drain water and sediment from the day tank. Clean fuel strainer.
- Check space heater.
- Bearing (Ball)-Lubricate
- Bearing (Spherical Roller) - Lubricate
- Crankshaft Vibration Damper - Inspect
- Engine - Clean
- Engine Crankcase Breather - Clean
- Engine Mounts - Check
- Engine Oil Sample - Obtain
- Check engine oil level for excessive usage. Change oil and filter.
- Prelube Pump - Inspect
- Engine Protective Devices - Check
- Engine Valve Lash - Inspect / Adjust
- Fan Drive Bearing - Lubricate
- Fuel Control Linkage - Check / Lubricate
- Fuel Injector - Inspect / Adjust
- Fuel System Primary Filter - Clean / Inspect / Replace
- Fuel System Secondary Filter - Replace
- Perform a one hour system operational test under full load conditions.
  - Operation for indication of defects of possible malfunctions.
  - Inspect the annunciator panel for proper operation.
Preventive Maintenance Checklist:

Description: AN - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)

Frequency: Annual

Estimated Time (hours): 2

Asset Type: GENERATOR

- After unit has operated for 50 minutes, log the operation to show at least the following information:
  - engine and generator speed in R.P.M., voltage, amperes, frequency, power factor, engine
  - temperatures, engine oil pressure, hour meter readings.

- Inspect safety devices.
- Test safety shut-off controls.
- Measure and record stator winding temperature.
- Measure and record bearing temperature
- Test for vibration at various loads on the load bank.
- Open covers and complete CM-0002 (infrared testing) on all conductors and connections. Note: For the
test to be effective unit needs to be loaded to at least 40% of full load current. Correct identified
deficiencies while unit is de-energized. (Perform with unit running.)

- Check charging system for proper operation.
- Check battery electrolyte level.
- Determine specific gravity of starting batteries. Add distilled water if necessary. Clean terminals. Set
  charge rate after generator has been operated.

- Note any exhaust, oil, coolant, or fuel leakage. Plan for correction.

- Cool down and stop the unit.
- Drain the exhaust condensate trap.
- Re-accomplish CM-0002 on any problem areas.
Preventive Maintenance Checklist:

Code: GN433Y       Frequency: Every Three Years       Estimated Time (hours): 2

Description: 3Y - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)

Asset Type: GENERATOR

(T)ools, (S)afety Equipment, and (M)aterials Required

2. Battery tester and distilled water.
3. Batteries
5. Coolant life extender (ELC).
6. Cooling system water temperature regulator.
7. Replacement zinzs.
8. Oil sampling collection bottle.
10. Oil filters.
11. Air filters.
13. Collection container for used oil.
15. Ladder.
16. Insulation Tester.
17. Infrared Measurement Meter.
18. Cleaning materials.

Safety Procedures

1. Schedule equipment downtime with operating personnel.
2. De-energize, tag, and lock out circuits and machinery. Disable automatic starting circuits. DANGER - CHECK THAT CIRCUITS ARE DEAD BEFORE STARTING WORK.
3. Have approved type fire extinguishers readily available.
4. Allow no open flame or smoking in area.
5. Use safety type fuel cans only.
6. Use extreme caution when removing the radiator pressure relief cap. Steam may spray outward under high pressure.
7. Follow site safety procedures and your supervisor instructions.
8. Record and report equipment damage or deficiencies.
9. Record all test results in the component maintenance log.
10. Obtain and review manufacturer maintenance instructions.
11. Tests to conform with manufacturer test procedures and values.
12. Use proper personnel protective equipment when handling hazardous materials, fuels, and lubricants.
13. Complete RCM procedures CM-0002 (Qualitative Infrared Thermography) and CM-0003 (Insulation Test, Motor).

Procedures

Printed Wednesday, April 05, 2017
Perform a walk around inspection.
- Inspect and wipe down the generator.
- Check electrical connections for evidence of looseness or overheating.
- Rotating Rectifier - Check
- Speed Sensor - Clean / Inspect
- Starting Motor - Inspect
- Replace Batteries.
- Stator Lead - Check
- Perform CM-0003 (Insulation Test, Motor).
- Check coolant level.
- Cooling System Coolant Sample (Level 2) - Obtain
- Add cooling system life extender (ELC).
- Replace cooling system water temperature regulator.
- Belts - Inspect / Adjust / Replace
- Check the jacket water heater for proper operation.
- Check radiator hoses for wear and cracks. Plan for replacement if necessary.
- Inspect zinc rods. Change if necessary.
- Radiator - Clean
- Water Pump - Inspect
- Engine Air Pre cleaner – Clean
- Engine Air Cleaner Service Indicator – Inspect
- Engine Air Cleaner Element (Dual Element) - Clean / Replace
- Engine Air Cleaner Element (Single Element) - Clean / Replace
- Check fuel level.
- Drain water and sediment from the day tank. Clean fuel strainer.
- Check space heater.
- Bearing (Ball) - Lubricate
- Bearing (Spherical Roller) - Lubricate
- Crankshaft Vibration Damper - Inspect
- Inspect the turbochargers.
- Engine - Clean
- Engine Crankcase Breather - Clean
- Engine Mounts - Check
- Engine Oil Sample - Obtain
- Check engine oil level for excessive usage. Change oil and filter.
- Prelube Pump - Inspect
- Engine Protective Devices - Check
- Engine Valve Lash - Inspect / Adjust
Preventive Maintenance Checklist:

Code: GN433Y  Frequency: Every Three Years  Estimated Time (hours): 2

Description: 3Y - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)
Asset Type: GENERATOR

- Fan Drive Bearing - Lubricate
- Fuel Control Linkage - Check / Lubricate
- Fuel Injector - Inspect / Adjust
- Fuel System Primary Filter - Clean / Inspect / Replace
- Fuel System Secondary Filter - Replace
- Perform a one hour system operational test under full load conditions.
  - Operation for indication of defects of possible malfunctions.
  - Inspect the annunciator panel for proper operation.
  - After unit has operated for 50 minutes, log the operation to show at least the following information:
    - engine and generator speed in R.P.M., voltage, amperes, frequency, power factor, engine temperatures, engine oil pressure, hour meter readings.
- Inspect safety devices.
- Test safety shut-off controls.
- Measure and record stator winding temperature.
- Measure and record bearing temperature
- Test for vibration at various loads on the load bank.
- Open covers and complete CM-0002 (infrared testing) on all conductors and connections. Note: For the test to be effective unit needs to be loaded to at least 40% of full load current. Correct identified deficiencies while unit is de-energized. (Perform with unit running.)
- Check charging system for proper operation.
- Check battery electrolyte level.
- Determine specific gravity of starting batteries. Add distilled water if necessary. Clean terminals. Set charge rate after generator has been operated.
- Note any exhaust, oil, coolant, or fuel leakage. Plan for correction.
- Cool down and stop the unit.
- Drain the exhaust condensate trap.
- Re-accomplish CM-0002 on any problem areas.
Preventive Maintenance Checklist:

Asset Type: GENERATOR

Description: 6Y - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)

Code: GN436Y  Frequency: Every Six Years  Estimated Time (hours): 6

(T)ools, (S)afety Equipment, and (M)aterials Required

2. Battery tester and distilled water.
5. Engine coolant (ELC).
6. Cooling system water temperature regulator.
7. Replacement zinzs.
8. Oil sampling collection bottle.
10. Oil filters.
11. Air filters.
13. Collection container for used oil.
15. Ladder.
16. Insulation Tester.
17. Infrared Measurement Meter.
18. Cleaning materials.

Safety Procedures

1. Schedule equipment downtime with operating personnel.
2. De-energize, tag, and lock out circuits and machinery. Disable automatic starting circuits. DANGER - CHECK THAT CIRCUITS ARE DEAD BEFORE STARTING WORK.
3. Have approved type fire extinguishers readily available.
4. Allow no open flame or smoking in area.
5. Use safety type fuel cans only.
6. Use extreme caution when removing the radiator pressure relief cap. Steam may spray outward under high pressure.
7. Follow site safety procedures and your supervisor instructions.
8. Record and report equipment damage or deficiencies.
9. Record all test results in the component maintenance log.
10. Obtain and review manufacturer maintenance instructions.
11. Tests to conform with manufacturer test procedures and values.
12. Use proper personnel protective equipment when handling hazardous materials, fuels, and lubricants.
13. Complete RCM procedures CM-0002 (Qualitative Infrared Thermography) and CM-0003 (Insulation Test, Motor).

Procedures

☐ Perform a walk around inspection.
Preventive Maintenance Checklist:

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</table>

**Perform a walk around inspection.**

- Check electrical connections for evidence of looseness or overheating.
- Rotating Rectifier - Check
- Speed Sensor - Clean / Inspect
- Starting Motor - Inspect
- Replace Batteries.
- Stator Lead - Check
- Perform CM-0003 (Insulation Test, Motor).
- Check coolant level.
- Cooling System Coolant Sample (Level 2) - Obtain
- Change cooling system coolant (ELC)
- Replace cooling system water temperature regulator.
- Belts-Inspect / Adjust / Replace
- Check the jacket water heater for proper operation.
- Check radiator hoses for wear and cracks. Plan for replacement if necessary.
- Inspect zinc rods. Change if necessary.
- Radiator - Clean
- Water Pump - Inspect
- Engine Air Preseparator – Clean
- Engine Air Cleaner Service Indicator – Inspect
- Engine Air Cleaner Element (Dual Element) - Clean / Replace
- Engine Air Cleaner Element (Single Element) - Clean / Replace
- Check fuel level.
- Drain water and sediment from the day tank. Clean fuel strainer.
- Check space heater.
- Bearing (Ball)-Lubricate
- Bearing (Spherical Roller) - Lubricate
- Crankshaft Vibration Damper - Inspect
- Inspect the turbochargers.
- Engine - Clean
- Engine Crankcase Breather - Clean
- Engine Mounts - Check
- Engine Oil Sample - Obtain
- Check engine oil level for excessive usage. Change oil and filter.
- Prelube Pump - Inspect
- Engine Protective Devices - Check
- Engine Valve Lash - Inspect / Adjust
- Fan Drive Bearing - Lubricate
- Fuel Control Linkage - Check / Lubricate
Preventive Maintenance Checklist:

Code:    GN436Y  Frequency:    Every Six Years  Estimated Time (hours):   6
Description:  6Y - GENERATOR, EMERGENCY (CATERPILLAR) (File # 1944)
Asset Type:  GENERATOR

☐ Fuel Injector - Inspect / Adjust
☐ Fuel System Primary Filter - Clean / Inspect / Replace
☐ Fuel System Secondary Filter - Replace
☐ Perform a one hour system operational test under full load conditions.
  ☐ Operation for indication of defects of possible malfunctions.
  ☐ Inspect the annuanciator panel for proper operation.
  ☐ After unit has operated for 50 minutes, log the operation to show at least the following information:
    engine and generator speed in R.P.M., voltage, amperes, frequency, power factor, engine
    temperatures, engine oil pressure, hour meter readings.
☐ Inspect safety devices.
☐ Test safety shut-off controls.
☐ Measure and record stator winding temperature.
☐ Measure and record bearing temperature
☐ Test for vibration at various loads on the load bank.
☐ Open covers and complete CM-0002 (infrared testing) on all conductors and connections. Note: For the
test to be effective unit needs to be loaded to at least 40% of full load current. Correct identified
deficiencies while unit is de-energized. (Perform with unit running.)
☐ Check charging system for proper operation.
☐ Check battery electrolyte level.
☐ Determine specific gravity of starting batteries. Add distilled water if necessary. Clean terminals. Set
charge rate after generator has been operated.
☐ Note any exhaust, oil, coolant, or fuel leakage. Plan for correction.
☐ Cool down and stop the unit.
☐ Drain the exhaust condensate trap.
☐ Re-accomplish CM-0002 on any problem areas.