

DUKE POWER COMPANY
PROCEDURE PROCESS RECORD(1) ID No. PM/IG-122Change(s) 0 to1 IncorporatedPREPARATION(2) STATION CNS(3) PROCEDURE TITLE AD - Stand by Shutdown Auxiliary Diesel Engine(4) PREPARED BY J.R. Watts DATE 07-15-86(5) REVIEWED BY JH Helzath DATE 8-30-86Cross-Disciplinary Review By N/R 28

(6) TEMPORARY APPROVAL (If Necessary)

By _____ (SRO) Date _____

By _____ Date _____

(7) APPROVED BY Bernard Brown DATE 9-9-86

(8) MISCELLANEOUS

Reviewed/Approved By _____ Date _____

Reviewed/Approved By _____ Date _____

COMPLETION

(9) DATE(S) PERFORMED _____

(10) PROCEDURE COMPLETION VERIFICATION

☐ Yes ☐ N/A Check lists and/or blanks properly initialed, signed, dated or filled in N/A or N/R, as appropriate?☐ Yes ☐ N/A Listed enclosures attached?☐ Yes ☐ N/A Data sheets attached, completed, dated and signed?☐ Yes ☐ N/A Charts, graphs, etc. attached and properly dated, identified and marked?☐ Yes ☐ N/A Acceptance criteria met?

VERIFIED BY _____ DATE _____

(11) PROCEDURE COMPLETION APPROVED _____ DATE _____

(12) REMARKS

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PM/IG-122
February, 1985
Date 07/15/86 Rev. 1

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
AD - STANDBY SHUTDOWN AUXILIARY DIESEL ENGINE

1.0 PURPOSE

To perform scheduled PM inspection, servicing and lubrication on the Standby Shutdown Auxiliary Diesel Engine and associated equipment.

2.0 REFERENCES

- 2.1 Equipment Data Base
- 2.2 Station Directive 3.1.1, Safety Tags and Delineation Tags
- 2.3 Maintenance Management Procedure 3.2, Station Lubrication Program
- 2.4 Station Directive 3.1.21, Oil Spill Prevention, Control and Countermeasure Plan
- 2.5 Station Lubrication Manual
- 2.6 Cummins Diesel Manual - CNM-1301.02-0058, Vol. 2
- 2.7 Master Sequence No. Q207201301

3.0 SPECIAL TOOLS/TEST EQUIPMENT

Record on Enclosure 7.1.

- 3.1 Normal hand/shop tools
- 3.2 Lint free rags, 1/2 lb.
- 3.3 Unirex N2
- 3.4 XD-3-15W-40 (44 Gal)
- 3.5 Oil Filters (5) 29020814
- 3.6 Bypass Oil Filters (2) 29020815
- 3.7 Fuel Filters (4) 29020812
- 3.8 Water Filters (4) 29020813
- 3.9 Air Filters (2) 29020495

3.10 Anit-freeze 05291000

4.0 SAFETY CONSIDERATIONS

Record on Enclosure 7.1

- 4.1 Ensure Working Copy has been stamped verified with Control Copy.
- 4.2 Use appropriate precautions to avoid injury from hot water, hot oil and pinch points.
- 4.3 Observe all general and posted safety precautions.
- 4.4 Check with Shift Supervisor for equipment availability and isolation.
- 4.5 Ensure all Red Safety Tags are installed prior to any PM being performed.

5.0 STATION/EQUIPMENT STATUS

Record on Enclosure 7.2.

- 5.1 Auxiliary Diesel Engine must be isolated from the power source and Red Safety Tags installed.

6.0 PROCEDURE

Check each item on the Inspection Guide, Enclosure 7.1, to indicate if the item is Satisfactory or Unsatisfactory. Explain what was unsatisfactory and why in the Action Taken section of the Work Request. Record the overall condition of the equipment in the Action Taken section of the Work Request. Use the appropriate codes listed on the Inspection Guide.

6.1 Annual - Mechanical Maintenance will complete Section 6.1

- 6.1.1 Ensure that Operations has installed Red Safety Tags.
- 6.1.2 Perform visual inspection of entire engine and control panel, looking for loose bolts, leaks, broken or loose wires, broken gage glass, bent needles and general condition. Record hours in Section V of Work Request.
- 6.1.3 Check fan belt for breaks or frays. Replace if either of these are found.
- 6.1.4 Drain engine oil from crankcase into appropriate container.
- 6.1.5 Remove and replace oil filters (5 each).
 - 6.1.5.1 Remove old oil filters.
 - 6.1.5.2 Fill each new oil filter with oil and apply a light film of oil on sealing gasket.

- 6.1.5.3 Tighten filter elements by hand until seal touches filter head, tighten an additional one-half to three-fourths turn.
- 6.1.6 Fill crankcase with XD-3-15W-40 to "H" (high level) mark on dipstick.
- 6.1.7 Remove and replace oil bypass filter elements (2 each).
 - 6.1.7.1 Remove drain plug (5), see Figure 1, and drain oil.
 - 6.1.7.2 Remove clamping ring capscrow (1) and lift off cover (2).
 - 6.1.7.3 Unscrew the support hold down assembly (3), lift out the element (4) and hold-down assembly. Discard the old elements.
 - 6.1.7.4 Clean the housing and hold-down assembly with Spot Check and rags.
 - 6.1.7.5 Inspect the hold-down assembly spring and seal. Replace if damaged.
 - 6.1.7.6 Check orifice plug (6) inside the oil outlet standpipe, blow out with air to open and clean.
 - 6.1.7.7 Install drain plug (5) into canister.
 - 6.1.7.8 Install new element in housing.
 - 6.1.7.9 Replace the support hold-down assembly in filter and tighten down to stop.

- 6.1.7.10 Fill each housing with XD-3-15W-40.
- 6.1.7.11 Clean and check filter cover O-ring (7). Replace if damaged.
- 6.1.7.12 Position O-ring seal on housing flange, install cover and clamping ring, tighten capscrew until clamping lugs are indexed.

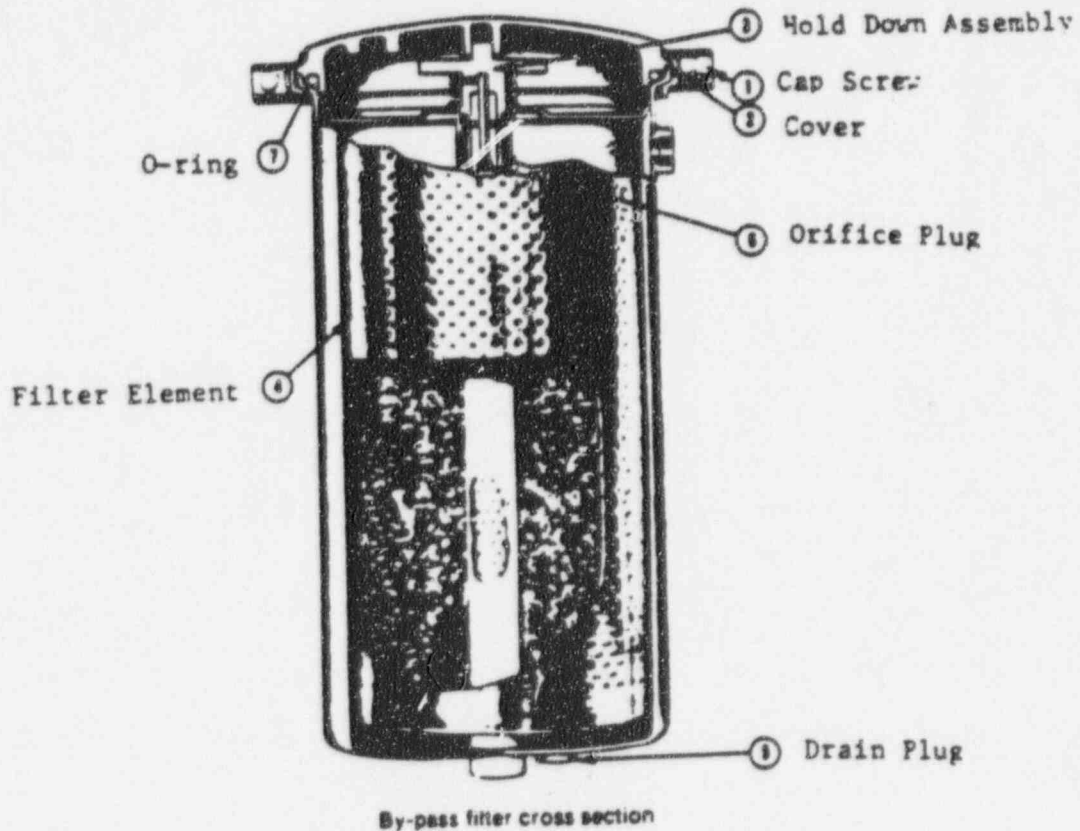


FIGURE 1

- 6.1.8 Remove and replace water filters (4 each).
 - 6.1.8.1 Close shutoff valves on inlet and drain lines.
 - 6.1.8.2 Unscrew elements and discard.
 - 6.1.8.3 Apply a light coat of anti-freeze to gasket sealing surface of filter. Fill each element with a 50-50 mixture of anti-freeze.
 - 6.1.8.4 Install new elements, tighten until the seal touches, tighten an additional one-half to three-fourths turn.
- 6.1.9 Change fuel filter elements (4 each).
 - 6.1.9.1 Unscrew and discard old spin on type fuel filters.
 - 6.1.9.2 Fill each new filter with clean diesel fuel and apply a light coat of oil to gasket sealing surface.

- 6.1.9.3 Install new filter, tighten by hand until seal touches, tighten an additional one-half to three-fourths turn.
- 6.1.10 Grease fan bearings with Unirex N2.
- 6.1.11 Drain exhaust mufflers of any moisture build-up.
 - 6.1.11.1 Remove drain plugs on bottom of mufflers and drain into appropriate container.
 - 6.1.11.2 Install drain plugs into mufflers.
- 6.1.12 Request permanent lift of Red Tags.
- 6.1.13 Have Operations run engine until warm and shut off.
 - 6.1.13.1 Wait 15 minutes and check oil on dipstick. Add oil to crankcase to fill to "H" (high) mark on dipstick.
 - 6.1.13.2 Check for leaks during and after run.
- 6.1.14 Clean up work area of any rags, grease, oil, tool, etc. Properly dispose of all oil in the used lube oil tank.
- 6.1.15 Complete Enclosure 7.1 and enter all comments and unsatisfactory items, as well as any action taken on the Work Request.
- 6.2 Two-Year - Mechanical Maintenance will complete Section 6.2.
 - 6.2.1 Perform Steps 6.1.1 through 6.1.11.
 - 6.2.2 Clean and replace air cleaner elements (2 each).
 - 6.2.2.1 Remove old elements.
 - 6.2.2.2 Wipe out inside of canisters.
 - 6.2.2.3 Install new elements.
 - 6.2.3 Inspect and grease generator with 2 shots of Unirex N2.
 - 6.2.3.1 Remove rear cover of generator. Inspect leads for cracked insulation or loose terminal connections.
 - 6.2.3.2 Wipe down cover and generator.
 - 6.2.3.3 Grease generator bearing with two (2) shots of Unirex N2.
 - 6.2.4 Perform Steps 6.1.12 through 6.1.14.

6.2.5 Complete Enclosure 7.1 and enter all comments and unsatisfactory items, as well as any action taken on the Work Request.

6.3 Four-Year - Mechanical Maintenance will complete Section 6.3.

6.3.1 Perform Steps 6.1.1 through 6.2.11, 6.2.2 through 6.2.3.

6.3.2 Drain and refill cooling system with a new 50-50 mixture of anti-freeze with approximately 104 gallons (engine and radiator) (63 gallons radiator only).

6.3.3 Perform Steps 6.1.12 through 6.1.14.

6.3.4 Complete Enclosure 7.1 and enter all comments and unsatisfactory items, as well as any action taken on the Work Request.

7.0 ENCLOSURES

7.1 Inspection Guide

Equipment Serial No. _____ Date _____

Equipment Description _____

[illegible]

5.0 Station/Equipment Status: _____/_____
Initial/Date

Step	Item	Sat	Unsat
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6.1.1	Ensure Red Safety Tags hung.	_____	_____
6.1.2	Perform inspection of engine.	_____	_____
6.1.3	Check fan belt condition.	_____	_____
6.1.4	Drain oil from crankcase.	_____	_____
6.1.5	Remove and replace oil filters.	_____	_____
6.1.6	Fill crankcase with XD-3-15W-40.	_____	_____
6.1.7	Remove and replace oil by-pass filters.	_____	_____
6.1.8	Remove and replace water filters.	_____	_____
6.1.9	Change fuel filter elements.	_____	_____
6.1.10	Grease fan bearings.	_____	_____
6.1.11	Drain exhaust mufflers.	_____	_____
6.1.12	Request lift or Red Tags.	_____	_____
6.1.13	Have engine run for inspection.	_____	_____

Step	Item	Sat	Unsat
<u>ANNUAL</u>			
6.1.14	Clean up work area.	_____	_____
6.1.15	Complete Enclosure 7.1.	_____	_____
<u>TWO-YEAR</u>			
6.2.1	Perform Steps 6.1.1 through 6.1.11.	_____	_____
6.2.2	Clean and replace air cleaner elements.	_____	_____
6.2.3	Inspect and grease generator.	_____	_____
6.2.4	Perform Steps 6.1.12 through 6.1.14.	_____	_____
6.2.5	Complete Enclosure 7.1.	_____	_____
<u>FOUR YEAR</u>			
6.3.1	Perform Steps 6.1.1 through 6.1.11, 6.3.2 through 6.3.3.	_____	_____
6.3.2	Drain and refill Cooling System.	_____	_____
6.3.3	Perform Steps 6.1.12 through 6.1.14.	_____	_____
6.3.4	Complete Enclosure 7.1.	_____	_____