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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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April 11, 2017

17-NWP-039

Mr. Doug Shoop, Manager  
Richland Operations Office  
United States Department of Energy  
PO Box 550, MSIN: H5-20  
Richland, Washington 99352

Re: Inspection Close-Out Letter for Air Operating Permit (AOP) Discharge Points Managed by Washington River Protection Solutions (WRPS): 1.4.46, 1.4.47, 1.4.56, 1.4.64, 1.4.65, 1.4.66, 1.4.67, 1.4.68, 1.4.69, and 1.4.70

Dear Mr. Shoop:

As part of continuous compliance verification, the Department of Ecology (Ecology) conducts facility inspections of units subject to the Hanford Site AOP and Approval Orders. This letter communicates the results of an inspection Ecology performed on August 9, 2016, of WRPS's discharge points: 1.4.46, 1.4.47, 1.4.56, 1.4.64, 1.4.65, 1.4.66, 1.4.67, 1.4.68, 1.4.69, and 1.4.70.

Compliance with applicable conditions of AOP 00-05-06 Renewal 2, Revision B was the basis for the inspection. Records were reviewed for time periods January 1, 2015, to August 9, 2016.

The results of the inspection and compliance status are provided below along with recommendations.

**1.4.46 222-SE**

- Two different stationary engines were in place during the 2015 and 2016 inspection timeframe. The old engine was discontinued on September 8, 2015, and the new stationary engine was installed on November 9, 2015, with installation and testing lasting through September 6, 2016.

Work documents were provided for the installation and testing, along with the United States Environmental Protection Agency certification for the new engine. Operations experienced some vibrational problems with the new engine and had used a non-permitted non-road engine during demonstration, testing, and troubleshooting with the intent of leaving it in place for less than one year allowing for exemptions under non-road regulations. The new stationary engine became fully operational on September 10, 2016, after the timeframe of this inspection.

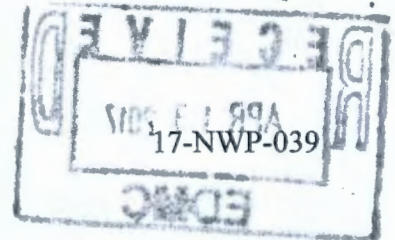
- Ecology has determined that the 222-SE engine was in intermittent compliance from January 1, 2015, to August 9, 2015. Details of compliance determination are provided below.



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- The old engine operations and maintenance (O&M) manual has requirements to perform the following daily: check air cleaner pre-cleaner and dust pan, engine operation report, check coolant additive concentration, inspect cooling fan, check coolant level, inspect belts, check belt tension, drain fuel-water separator, check oil level, and check for unusual noise.  
WRPS provided a copy of an email from the manufacturer which stated that these daily requirements are intended for an engine that operates on a daily basis. However, since this is an emergency back-up engine that does not run on a daily basis, the manufacturer allows for these daily requirements to be performed upon shut-down of the engine (engine starts automatically in emergency situations and thus cannot perform on start-up). Therefore, Ecology has determined that these daily requirements are being performed accordingly.
- The old engine O&M manual has requirements to perform the following every week: clean/check air cleaner element, inspect air intake hoses, pipes and clamps, drain air tanks, check inlet air restriction indicators, and check raw water inlet screens.  
The WRPS reference procedure 2S09001 provides for these weekly maintenance requirements on a monthly basis. The requirements to drain air tanks and check raw water inlet screens do not appear to be listed in the 2S09001 procedure. Therefore, Ecology has determined that these weekly requirements were not performed accordingly.
- The old engine O&M manual has requirements to perform the following every 250 hours or every six months: change engine oil, change fuel filters, and clean/change crankcase breather. The records indicate that these requirements are provided for in the six month maintenance requirements in procedure 2S09001 and were performed accordingly.
- The old engine O&M manual has requirements to adjust crossheads, valve, and injectors every 1,500 hours or every year. The records indicate that these requirements were provided for in procedure 2S09001 and were performed accordingly.
- The old engine O&M manual has requirements to perform the following every year: check batteries, check crankshaft end clearance, check heat exchanger zinc plugs, check/replace hoses, check/tighten engine mounting bolts, steam clean engine, check thermal aids, and inspect turbocharger mounting nuts. The records indicate that the requirements to check crankshaft and clearance, check heat exchanger zinc plugs, steam clean engine, and inspect turbocharger mounting nuts do not appear to be provided under the yearly maintenance in procedure 2S09001. Therefore, Ecology has determined that these yearly maintenance requirements were not performed accordingly.
- The old engine O&M manual has requirements to perform the following every two years: clean and calibrate injectors and fuel pump, inspect turbocharger, vibration damper, air compressor, fan hub, idler pulley assembly and water pump, and to clean and flush the cooling system. The records indicate that the requirements to clean and calibrate the injectors and fuel pump and inspect vibration damper, air compressor and idler pulley assembly do not appear to be provided under the two year maintenance in procedure 2S09001. Therefore, Ecology has determined that the two year maintenance requirements were not performed accordingly.

- **Ecology Recommendation:** Develop a maintenance schedule that matches the requirements listed in the O&M manual. Also provide which exact procedures numbers listed in 2S09901 (or other) are performed in the Data Sheets/Work Document.  
Currently, the Data Sheets/Work Documents do not indicate which set of maintenance (monthly, six month, one year, two years) was specifically performed.
- A high priority violation (HPV) was issued for discharge point 1.4.46 222-SE emergency backup engine on December 5, 2016 (Ecology Letter 16-NWP-206). The HPV was for operating the engine in a manner that Ecology determined was inconsistent with “emergency use” under 40 CFR 63.6640. WRPS subsequently exceeded their allotted hours of operation under “non-emergency” use. The necessary corrective actions have since been completed and the HPV will be closed out in the Integrated Compliance Information System database.

#### 1.4.47 242-A Evaporator

- **Ecology has determined that the 242-A Evaporator engine was in intermittent compliance for 2015 and 2016.** See below for details of compliance determination.
  - The 242-A engine operated for approximately 13 hours for the timeframe in question.
  - The O&M manual has requirements to drain the water and sediment from the fuel tank and water separator and to lubricate the clutch shift collar every 10 hours. The records indicate that these requirements were not performed as the 242-A engine operated for approximately 13 hours for the timeframe in question.
  - The O&M manual also has requirements to lubricate fittings on the clutch control lever, clutch pilot bearing, and clutch main shaft bearings every 125 hours. The engine has not surpassed the hours requiring the respective maintenance. However, Ecology noticed that those particular maintenance requirements were not provided in either the EL22047 or 5-EGEN-910 maintenance procedures and could likewise potentially go unnoticed in future maintenance activities.
- **Ecology recommendation:** Develop procedures and maintenance schedule that meets the requirements provided in the O&M manual/AOP.

#### 1.4.56 TEDF Pump Station 2 (225E)

- **Ecology has determined that TEDF Pump Station 2 (225E) was in intermittent compliance for 2015 and 2016.** See below for details of compliance determination.
  - The AOP has requirements to change the oil and oil filter every 500 hours or annually, inspect the air cleaner every 1,000 hours or annually, and inspect all hoses and belts every 500 hours or annually. The O&M manual also has similar maintenance requirements which may or may not be more restrictive than what is listed in the AOP.  
For the items below, the O&M manual is the more restrictive than the AOP specific requirements, as such, it was used as a basis for the inspection. The records indicate that the engine operated for approximately 25 hours for the timeframe in question.



- The O&M manual has a requirement to inspect the exhaust system every 3 months or 120 hours, whichever comes first. The quarterly and annual preventative maintenance (PM) provides for inspecting the exhaust system but the records indicate that quarterly or annual PM was not performed on the exhaust system between January 29, 2016 and September 16, 2016.

- The O&M manual has requirements to perform the following every 6 months or every 100 hours, whichever comes first: change the engine oil and filter, lubricate engine controls, service engine air cleaner, service engine fuel filter, inspect AC generator, test engine safety controls, inspect fan belts, check optional starting aids, check engine compression, and check/test annunciator panel.

WRPS's quarterly and annual PM provides for servicing the air cleaner, but the records indicate that quarterly or annual PM was not performed on the air cleaner between January 29, 2016 and August 9, 2016. WRPS's annual PM provides for changing the engine oil and inspecting the fan belts, but the records indicate that annual PM was not performed from January 29, 2016 to August 9, 2016.

The requirements to lubricate the engine controls, service engine fuel filter, inspect AC generator, test engine safety controls, check optional starting aids, check engine compression, and check/test annunciator panel do not appear to be included with any of the monthly, quarterly or annual PMs. Therefore, Ecology has determined that these requirements were not performed accordingly.

- The O&M manual has requirements to perform the following every year or 600 hours of operation: check engine valve clearance, test fuel injection nozzles, test injection timing, inspect all wiring, drain water from fuel tank, and re-torque fan bolts. The records indicate that these requirements do not appear to be included on any monthly, quarterly or annual PMs. Therefore, Ecology has determined that these requirements were not performed accordingly.
- The O&M manual also distinguishes maintenance which is to be performed by an "authorized operator" and "authorized service technician." Ecology is unsure if WRPS personnel are "authorized service technicians."

- **Ecology recommendation:** Develop maintenance schedules and PMs that meet the requirements provided in the O&M manual/AOP.

#### 1.4.69 C and AN Farm Compressors

- No records were provided for C and AN Farm Compressors as the engine was operated as a non-road engine. The engine was not placed at that location long enough to trigger stationary engine requirements. WRPS is in the process of drafting a letter requesting its removal from the AOP. Ecology will remove 1.4.69 C and AN Farm Compressors from the AOP upon receipt and evaluation of the request.
- Vendor certifications for diesel fuel sulfur content were provided for all fuel purchases for 2015 and 2016.



**Light Towers: 1.4.64, 1.4.65, 1.4.66, 1.4.67, 1.4.68, and 1.4.70**

- The AOP has a number of discharge points associated with the Light Towers. The AOP allows for the engines to be interchanged between the various discharge points as the engines provide the same form and function with the same permit conditions (40 CFR 60, Subpart IIII). Therefore, findings and recommendations, which are provided below, are grouped by engines with the same O&M manuals/requirements. The engines identification number and their associated discharge points are provided for reference.
- Ecology has determined that the discharge points 1.4.64, 1.4.65, 1.4.66, 1.4.67, 1.4.68, and 1.4.70 were in intermittent compliance for 2015 and 2016. Details of the compliance determination are provided below.

**Isuzu 4LE2**

- The Isuzu 4LE2 O&M manual (generator O&M manual) requirements to:
  - Check the: engine fluid levels, air cleaner, battery acid levels, fan belt condition, leaks, and for loosing of parts on a daily basis.
  - Perform the following every 250 hours: replace engine oil and filter, clean air filter, and the clean unit inside and out.
  - Perform the following every 500 hours: change fuel filter, clean radiator and check coolant levels, replace air filter element.
- No maintenance records were provided for engines 393538 (1.4.65) or 557629 (1.4.65) as WRPS claimed the engine did not run enough to trigger a maintenance interval. Ecology has determined that the daily maintenance requirements were not performed on these engines accordingly and discharge point 1.4.65 was in intermittent compliance for the timeframe these engines were in that location.
- The maintenance records that were provided for engine 74-04571 (1.4.68) only contained Work Documents with no accompanying Data Sheets or reference procedures which typically indicate what specific maintenance was performed. Therefore, Ecology was unable to determine if these specific maintenance requirements were being performed accordingly. However, the work documents do indicate that the engine ran approximately 962 hours in 2016. Therefore, Ecology has determined that the daily, 250 hour and 500 hour maintenance requirements were not performed accordingly and discharge point 1.4.68 was in intermittent compliance for the timeframe this engines was in that location.

**Kubota V3600, V3800, and V3300**

- The Kubota V3600, V3800, and V3300 O&M manual has requirements to:
  - Check the fuel pipes and clamps bands and drain the water separator every 50 hours of operation.
  - Perform the following every 250 hours of operation: clean air filter element, clean fuel filter, check the fan belt tightness, check radiator hoses and clamp bands, and to check air intake line.
  - Perform the following every 500 hours of operation: replace oil filter, replace fuel filter, remove sediment in fuel tank, clean water jacket, replace fan belt, and clean water separator.



- The Fleet maintenance records provided for engine 74-03738 (1.4.68) are incomplete, as only Work Documents were submitted with no accompanying Data Sheets or reference to procedures which typically indicate what specific maintenance was performed. Therefore, Ecology has determined that the 50, 250, and 500 hour maintenance requirements were not performed accordingly and discharge point 1.4.68 was in intermittent compliance for the timeframe this engine was in that location.

#### **Kubota D1005, D1105**

- The Kubota D1005, D1105 O&M manual has requirements to:
  - Check the fuel pipes and clamps bands every 50 hours.
  - Perform the following every 100 hours: clean the air cleaner element, clean the fuel filter, check the battery electrolyte level, check fan belt tightness, and drain the water separator.
  - Perform the following every 200 hours: change engine oil, check radiator hoses and clamp bands, and check the air intake line.
  - Perform the following every 400 hours: replace the oil filter and clean the water separator.
  - Perform the following every 500 hours: removal of sediment in fuel tank, clean water jacket, and replace fan belt.
  - Check the valve clearance every 800 hours.
  - Check fuel injection nozzle injection pressure every 1,500 hours.
- The Sunbelt maintenance records submitted for engine 233827 (1.4.64) indicate that the following requirements were not performed accordingly: (1) the 50, 100 and 500 hour requirements and (2) check radiator hoses and clamp bands, check the air intake line, and clean the water separator.
- The Sunbelt maintenance records submitted for engine 449068 (1.4.66) indicate that the following requirements were not performed accordingly: (1) the 50 and 100 hour requirements and (2) clean the air cleaner element, clean the fuel filter, check the battery electrolyte level, and drain the water separator.
- The Sunbelt maintenance records submitted for engine 468373 (1.4.65) indicate that the 50, 100, 200, 400, and 500 hour maintenance requirements were not being performed accordingly.
- The Sunbelt maintenance records submitted for engine 632070 (1.4.65) indicate that all the following requirements were not performed accordingly: (1) the 50, 100, and 200 hour maintenance requirements and (2) clean the water separator.
- The Sunbelt maintenance records submitted for engine 239031 (1.4.64) indicate that the 50, 100, 200, 400, 500, and 800 maintenance requirements were not being performed accordingly.
- The Sunbelt maintenance records submitted for engine 242664 (1.4.64) indicate that the 50, 100, 200, 400, 500, 800, and 1500 maintenance requirements were not performed accordingly.



- The Fleet maintenance records submitted for engine 74-3808 (1.4.67) indicate that the 50 and 100 hour maintenance requirements were not performed accordingly.
- The Sunbelt maintenance records submitted for engine 466324 (1.4.66) indicate that the 50, 100, 200, 400, 500, 800 and 1500 hour maintenance requirements were not performed accordingly.
- The Sunbelt maintenance records submitted for engine 466325 (1.4.65) indicate that the 50, 100, 200, 400, 500, and 800 maintenance requirements were not performed accordingly.
- The Sunbelt maintenance records submitted for engine 466805 (1.4.65) indicate that the 50, 100, 200, 400, 500, 800 and 1500 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-3809 (1.4.67) indicate that the 50, 100, 200, 400, and 500 hour maintenance requirements were not performed accordingly.
- The Sunbelt maintenance records submitted for engine 467049 (1.4.65) indicate that the 50, 100, 200, 400, 500, 800 and 1500 hour maintenance requirements were not performed accordingly.
- The Sunbelt maintenance records submitted for engine 468369 (1.4.65) indicate that the 50, 100, 200, 400, 500, 800 and 1500 hour maintenance requirements were not performed accordingly.
- The Sunbelt maintenance records submitted for engine 473296 (1.4.64) indicate that the 50, 100, 200, 400, 500, 800 and 1500 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-3810 (1.4.67) indicate that the 50, 100, 200, 400, 500 hour maintenance requirements were not performed accordingly.
- The Sunbelt maintenance records submitted for engine 528712 (1.4.65) indicate that the flowing maintenance requirements were not performed accordingly: (1) 50, 100, 200 hour requirements and (2) clean the water separator, clean water jacket, and replace fan belt.
- The Sunbelt maintenance records submitted for engine 528714 (1.4.70) appears to have a discrepancy in the recorded hour readings and Ecology is unable to determine if the respective maintenance requirements were being performed accordingly.
- The Sunbelt maintenance records submitted for engine 528716 (1.4.65) indicate that the 50, 100, 200, 400, 500 and 800 hour maintenance requirements. There also appears to be discrepancy in the hour reading on February 5, 2015.
- The Sunbelt maintenance records submitted for engine 595524 (1.4.70) indicate that the 50, 100, and 200 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-4526 (1.4.65) are incomplete as only Work Documents were submitted with no accompanying Data Sheets or reference to procedures which typically indicate what specific maintenance was performed. Ecology is unable to determine if the respective maintenance requirements were performed accordingly.



- The Fleet maintenance records submitted for engine 74-4528 (1.4.67) indicate that the required maintenance was performed accordingly. The engine was not operated in 2015 or 2016.
- The Fleet maintenance records submitted for engine 74-4529 (1.4.64) indicate that the 50, 100, 200, 400, and 500 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-4530 (1.4.67) indicate that the required maintenance was performed accordingly as the engine was not operated in 2015 or 2016.
- The Fleet maintenance records submitted for engine 74-4531 (1.4.66) indicate that the required maintenance was performed accordingly. The engine was not operated in 2015 or 2016.
- The Fleet maintenance records submitted for engine 74-4532 (1.4.67) indicate that the 50, 100, and 200 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-4533 (1.4.64) indicate that the 50, 100, 200, 400, 500, and 800 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-4534 (1.4.70) indicate that the 50, 100, and 200 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-4535 (1.4.70 & 1.4.65) indicate that the 50, 100, 200, 400, and 500 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-4536 (1.4.64) indicate that the following maintenance requirements were not performed accordingly: (1) 50, 100, and 200 hour requirements, and (2) removal of sediment in fuel tank and replace fan belt.
- The Fleet maintenance records submitted for engine 74-4537 (1.4.64) indicate that the 50, 100, and 200 hour maintenance requirements were not performed accordingly.
- The Fleet maintenance records submitted for engine 74-4538 (1.4.70) indicate that the required maintenance was performed accordingly. The engine was not operated in 2015 or 2016.
- The Fleet maintenance records submitted for engine 74-4539 (1.4.70) indicate that the 50, 100, and 200 hour maintenance requirements were not performed accordingly.
- The Sunbelt maintenance records submitted for engine 239034 (1.4.66) indicate that the 50, 100, 200, 400, and 500 hour maintenance requirements were not performed accordingly.
- **Therefore, Ecology has determined that discharge points 1.4.64, 1.4.65, 1.4.66, 1.4.67, and 1.4.70 were in intermittent compliance.**
- Vendor certifications for diesel fuel sulfur content were provided for all fuel purchases for 2015 and 2016.



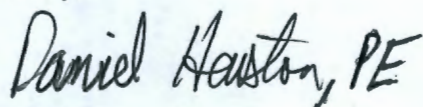
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- **Ecology recommendation:** Provide Data Sheets and Reference Procedures for conducted maintenance.
- **Ecology recommendation:** Develop a maintenance schedule which meets the requirements of respective O&M manuals/AOP. As of September 2016, WRPS has developed their own maintenance plan under 40 CFR 60.4211, which mandates maintaining and operating the engine in a manner consistent with good air pollution control practices for minimizing emissions.

If you have any questions, please contact me at [daniel.heuston@ecy.wa.gov](mailto:daniel.heuston@ecy.wa.gov) or (509) 372-7895.

Sincerely,



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