

March 2, 2018

Ms. Mary Mattix  
Port of Vancouver  
3103 NW Lower River Road  
Vancouver, WA 98660

Subject: Notification of Emergency Fire Pump Engine Installation -  
Centennial Industrial Building (SUN – 163)

Dear Ms. Mattix:

The Southwest Clean Air Agency (SWCAA) received your Small Unit Notification (SUN) on February 16, 2018 for installation and operation of an emergency fire pump engine at the Centennial Industrial Building. For administrative and tracking purposes SWCAA has assigned tracking number SUN-163 to this notification. This notification was filed in accordance with SWCAA 400-072 and applies to the installation of one emergency fire pump engine. The new unit was identified as:

- (1) 86 bhp diesel-fired John Deere model 4045HF280G engine to drive a Clarke fire pump. The engine is EPA Tier 3 certified and meets the standards for stationary emergency engines.

SWCAA has completed a review of your notification and the associated support information and has determined that the notification meets the requirements of SWCAA 400-072(2). Once installed, affected equipment must maintain compliance with the requirements of SWCAA 400-072(5)(c) "**Emergency service internal combustion engines**". A copy of the relevant SWCAA 400-072 section is attached for your information.

Be advised that emission units installed pursuant to SWCAA 400-072 are subject to source registration and periodic inspection. Registration fees for this equipment will be invoiced consistent with SWCAA 400-100.

If you need further assistance or have any questions regarding these matters, please contact me at (360) 574-3058 extension 130.

Sincerely,



Paul T. Mairose  
Chief Engineer



## SWCAA 400-072 Emission Standards for Selected Small Source Categories

[Statutory Authority: Chapter 70.94.141 RCW. Original adoption 09-21-056 filed 10/15/09, effective 11/15/09, 16-19-009 filed 9/8/16, effective 10/9/16; 17-11-078 filed 5/18/17, effective 6/18/17]

### (5) Source categories.

#### (c) Emergency service internal combustion engines.

- (i) **Applicability.** The provisions of this section apply to emergency service internal combustion engines with a rating of 50 or more, but less than 1,000 horsepower (e.g., emergency generators, fire pumps, sewer lift stations, etc.).
- (ii) **Emission limits and standards.**
  - (A) Visible emissions from diesel fired engine exhaust stacks shall not exceed ten percent opacity for more than 3 minutes in any one hour period as determined in accordance with SWCAA Method 9 (See SWCAA 400, Appendix A). This limitation shall not apply during periods of cold start-up.
- (iii) **General requirements.**
  - (A) Liquid fueled engines shall only be fired on #2 diesel or biodiesel. Fuel sulfur content of liquid fuels shall not exceed 0.0015% by weight (15 ppmw). A fuel certification from the fuel supplier may be used to demonstrate compliance with this requirement.
  - (B) Gaseous fueled engines shall only be fired on natural gas or propane.
  - (C) Each compression ignition engine shall be EPA Tier certified and manufactured no earlier than January 1, 2008.
  - (D) Engine operation shall be limited to maintenance checks, readiness testing, and actual emergency use.
  - (E) Engine operation for maintenance checks and readiness testing shall not exceed 100 hours per year. Actual emergency use is unrestricted.
  - (F) Each engine shall be equipped with a nonresettable hourmeter for the purpose of documenting hours of operation.
  - (G) Engine exhaust shall be discharged vertically. Any device that obstructs or prevents vertical discharge is prohibited.
- (iv) **Monitoring and recordkeeping requirements.** The information listed below shall be recorded at the specified intervals, and maintained in a readily accessible form for a minimum of 3 years. With the exception of data logged by a computerized data acquisition system, each required record shall include the date and the name of the person making the record entry.
  - (A) Total hours of operation for each engine shall be recorded annually;
  - (B) Hours of emergency use for each engine shall be recorded annually;
  - (C) Fuel sulfur certifications shall be recorded for each shipment of liquid fuel;
  - (D) Maintenance activities shall be recorded for each occurrence consistent with the provisions of 40 CFR 60.4214;
  - (E) Upset conditions that cause excess emissions shall be recorded for each occurrence; and
  - (F) All air quality related complaints received by the permittee and the results of any subsequent investigation or corrective action shall be recorded promptly after each occurrence.
- (v) **Testing requirements.** None.

- (vi) **Reporting requirements.**
  - (A) The owner or operator of an affected emission unit shall provide written notification of initial operation to SWCAA within 10 days of occurrence.
  - (B) All air quality related complaints received by the owner or operator shall be reported to SWCAA within three calendar days of receipt.
  - (C) The owner or operator of an affected emergency engine shall report the following information to the Agency no later than March 15<sup>th</sup> for the preceding calendar year:
    - (I) Hours of engine operation; and
    - (II) Air emissions of criteria air pollutants, VOCs, and toxic air pollutants (TAPs).

Centennial Industrial Building Emergency Fire Pump Engine. Potential annual emissions from the combustion of ultra-low sulfur diesel (<0.0015% sulfur by weight) were calculated with the assumption that the equipment will operate at full load for up to 200 hours per year.

<b>Centennial Industrial Building Emergency Fire Pump Engine</b>						
Hours of Operation =	200 hours					
Power Output =	86 horsepower (64 kW)					
Diesel Density =	7.206 pounds per gallon					
Fuel Sulfur Content =	0.0015 % by weight					
Fuel Consumption Rate =	4.38 gal/hr (78.5 mm <sup>3</sup> /stroke)					
Fuel Heat Content =	0.138 MMBtu/gal (for use with GHG factors from 40 CFR 98)					
Pollutant	Emission Factor g/(hp-hr)	Emissions lb/hr	Emissions tpy	Emission Factor Source		
NO <sub>x</sub>	3.1	0.59	0.059	John Deere Emissions Data Sheet		
CO	0.6	0.11	0.011	John Deere Emissions Data Sheet		
VOC	0.2	0.038	0.0038	John Deere Emissions Data Sheet		
SO <sub>x</sub> as SO <sub>2</sub>		0.0009	0.00009	Mass Balance		
PM	0.17	0.03	0.0032	John Deere Emissions Data Sheet		
PM <sub>10</sub>	0.17	0.03	0.0032	John Deere Emissions Data Sheet		
PM <sub>2.5</sub>	0.17	0.03	0.0032	John Deere Emissions Data Sheet		
Greenhouse Gases	kg/MMBtu	GWP	CO <sub>2</sub> e lb/MMBtu	CO <sub>2</sub> e lb/gallon	tpy, CO <sub>2</sub> e	Emission Factor Source
CO <sub>2</sub>	73.96	1	163.05	23	10	40 CFR 98
CH <sub>4</sub>	0.003	25	0.165	0.023	0.01	40 CFR 98
N <sub>2</sub> O	0.0006	298	0.394	0.054	0.02	40 CFR 98
<b>Total GHG - CO<sub>2</sub>e</b>	<b>74.0</b>		<b>163.6</b>	<b>23</b>	<b>10</b>	

**Summary Information (by SWCAA) for SUN-163  
Port of Vancouver  
Centennial Industrial Building (CIB) Emergency Fire Pump Engine**

A diesel-engine powered Clark fire pump has been installed in the Centennial Industrial Building. The following equipment details were available:

Location:	3300 NW 32 <sup>nd</sup> Ave., Vancouver, WA Fire Pump Room (south side of indent on west side of building) ~ 45°38'46.68"N, 122°42'15.49"W
Engine Make / Model:	John Deere / 4045HF280G
Engine Serial Number:	PE4045N001860
Fuel:	Diesel
Fuel Consumption:	4.38 gallons per hour at full load (78.5 mm <sup>3</sup> /stroke, 1,760 rpm from EPA certification test)
Horsepower Rating:	86 hp (64 kW)
Installation Date:	January 2018
Engine Built (Date):	January 3, 2017
Engine Certification:	EPA Tier 3 for stationary emergency engines
Fire Pump Make / Model:	Clarke / JU4H-UFADJ8
Stack Description:	(Estimated from photographs) ~2.5" diameter stack discharging out the side of the building, oriented vertically ~14' above grade. Stack flow and temperature not available.
Applicable Federal Regulations:	40 CFR 60 Subpart IIII 40 CFR 63 Subpart ZZZZ