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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-2334S
Plant ID No.: 029-00008
Applicant: Ergon Corporation - West Virginia, Inc.
Facility Name: Newell (Congo Plant)
Location: Newell, Hancock County
SIC Code: 2911 (Petroleum refining and related industries - petroleum refining); 2992 (Petroleum refining and related industries - lubricating oils and greases)

Application Type: Modification
Received Date: March 27, 2012
Engineer Assigned: Laura Jennings
Fee Amount: \$1,000.00
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UTM's: Easting: 531.0 km Northing: 4495.1 km Zone: 17
Description: EWVI plans to upgrade heaters H-101R and H-102R in order to increase reliability and provide energy savings. EWVI will also be installing a new tank (Tank 4063) and constructing a new ISOM unit. In addition, the throughput of the Crude Distillation Unit will increase from 20,000 bpd to 23,000 bpd. Due to the CDU throughput increase, the throughputs for Tanks 4000, 4001, 4060, 4061 will also change. The change in throughput will also affect throughputs to the Truck Loading Rack and the Marine Loading Dock. The content of Tank 4002 will be changing to diesel, and the content for Tank 4062 will be changing to crude oil with a vapor pressure of less than or equal to 11.0. In addition, the facility is installing a thermal oxidizer at the marine loading dock. The total change in permitted emissions as a result of this modification are: -3.27 tpy CO, +2.14 tpy NOx, -1.59 tpy PM, +1.14 tpy PM10, +1.12 tpy PM2.5, -1.53 tpy SO2, -20.77 tpy VOC, and -0.53 tpy Benzene.

DESCRIPTION OF PROCESS

EWVI plans on replacing heaters H-101 and H-102 with H101R and H102R in order to increase reliability and provide energy savings at the facility. EWVI will also construct an ISOM unit and a new Tank 4063 as well as increase the throughput of the CDU from 20,000 bpd to 23,000 bpd. Due to the CDU throughput increase, the throughputs for Tanks 4000, 4001, 4002, 4060, and 4061 will also change. The content of Tank 4002 will be changing to diesel. Tank 4062 will now contain crude oil with vapor pressure less than or equal to 11.0 and will also have an increase in annual throughput. This change in throughput will also affect throughputs to the Truck Loading Rack, the existing Thermal Oxidizer [00A-02], and the Marine Loading Dock. A thermal oxidizer will also be added to the marine loading dock.

The heaters will be the same basic design as the existing heaters, and they will be equipped with Next Generation Ultra Low NOx burners. Previously, the heaters were permitted with a maximum firing rate of 58MMBtu/hr [H-101] and 24.8 MMBtu/hr [H-102]. The maximum firing capacity for the new heaters will be 54.5 MMBtu/hr [H-101R] and 29.4 MMBtu/hr [H-102R]. At no time will H-101 and H-102 operate concurrently with H-101R and H-102R.

The construction of the ISOM Unit will help to reduce the benzene concentration of the light to intermediate naphthas coming from the Naptha Splitter. MSAT Phase 2, promulgated by the EPA, requires the benzene content of gasoline to be below 0.62% by July 1, 2014. The ISOM Unit will get the benzene concentrations in the naphthas that will become gasoline to promulgated levels. The resulting naphthas will then be fed to the depropanizer.

The proposed Tank 4063 will contain light crude oils, and the expected throughput for the tank is 10,000 bpd, feeding directly to the marine loading dock. Tank 4063 will be paired with Tank 4062 to form a new Raw Material/Product Type tank grouping for tanks that contain crude oil with vapor pressure less than or equal to 11.0 psia. The combined maximum throughput rate for this grouping will be 306.6 MM gal/yr.

The proposed marine loading dock thermal oxidizer [MLDOX] will help to control VOC emissions associated with the loading of gasoline and light crude oil to the barges.

Throughput changes requested in this modification are summarized in Table 1 below.

Table 1 - Throughput increases

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed / Modified	Existing permitted throughput	Requested permitted throughput
CDU	CDU	Crude Distillation Unit	Installed 1972/2012	730,000 barrels/mo	803,000 barrels/mo
009-001	TLoad	Truck Loading	Installed 1972/2012	404.8 MMgal/yr	no increase requested

009-02	MLD	Marine Barge Loading	Installed 1972/2012	101.2 MMgal/yr	440.6 Mgal/yr (includes throughput to MLDOX)
00A-02	OXIDIZER	Thermal Oxidizer	Installed 1994/2012	throughput not permitted	throughput not permitted
4000	TK 4000	Crude Oil	Installed 1999/2012	613,200,000 gallons/yr (Including TK 4002 and TK 4062)	705,180,000 gallons/yr
4001	TK 4001		Installed 1973/2012		
4060	TK 4060		Installed 1999/2012		
4061	TK 4061		Installed 2008/2012		
4002	TK-4002	Diesel	Installed 1970	n/a	limited by current charge rate on the CDU
4062	TK-4062	Light Crude Oil	Installed 2008/2012	n/a	153,300,000 gallons/yr (Including new TK 4063)

The emissions unit table below represents the physical changes that were requested in the permit modification application.

Table 2 - Emissions Unit Table

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed / Modified	Design Capacity	Type and Date of Change	Control Device
001-01	H-101	CDU Atmospheric Heater; refinery fuel gas/ natural gas blend or fuel oil	1972	58 MMBtu/hr	Replace with H-101R	N/A
001-01	H-101R	CDU Atmospheric Heater; refinery fuel gas/ natural gas blend	Replaced - 2012	54.5 MMBtu/hr	New 2012	N/A
001-02	H-102	CDU Atmospheric Heater; refinery fuel gas/ natural gas blend or fuel oil	1972	24.8 MMBtu/hr	Replace with H-102R	N/A

001-02	H-102R	CDU Vacuum Heater; refinery fuel gas/ natural gas blend	Replaced - 2012	29.4 MMBtu/hr	New 2012	N/A
4063	TK-4063	Internal floating roof tank with mechanical shoes; crude oil	Install - 2012	5,040,000 gallons	New 2012	N/A
ISOM	ISOM	Processing Unit for benzene reduction	Install - 2012	21.6 Mmgal/yr	New 2012	N/A
00A-04	MLDOX	Barge Loading Thermal Oxidizer	Install - 2012	59.0 MMBtu/hr 98% min efficiency	New 2012	N/A

The schedule of installation provided in the application provided the following information:

Begin Foundation Work	April 2012
Tank 4063 Start-up	September 2012
Marine Oxidizer Start-up	October 2012
ISOM Unit Start-up	March 2013
H-101R and H-102 R Start-up	April 2013

SITE INSPECTION

WVDAQ has a long history with Ergon, WV, Newell facility located in Hancock County, WV. The last full on site inspection was conducted by Steven Sobotka of the Compliance and Enforcement Section on May 1, 2012. They were found to be out of compliance at the time of the inspection for exceedance of monthly and annual permit limits for the main flare. A notice of violation was issued June 12, 2012. The out of compliance issue is not related to any of the emission units associated with this permit modification application.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Review of emissions is organized by equipment type.

Heater Emissions Calculations:

Heaters H-101R and H-102R emissions were calculated using emission factors based on the manufacturer's "Guaranteed Emission Values" unless otherwise specified. PM₁₀ emissions are considered the same as PM emissions from the manufacturer. PM_{2.5} emissions were calculated using the CEIDARS (California Emission Inventory Development and Reporting System) PM2.5 emission factor table for gas fired petroleum and industrial

external combustion process heaters. Emissions for SO₂ were calculated using 160 ppm of H₂S from the fuel gas composition because there was no guarantee from the manufacturer. SO₂ emissions were calculated using the Ideal Gas Law. There are no AP-42 factors that can be used for the heaters that use refinery fuel gas. The SO₂ emission factor is comparable to the existing heaters after back calculating from the SO₂ permitted emissions and heater ratings.

The same emission factor for NO_x was used for the replacement process heaters [H-101R and H-102R] that was used for the existing process heaters [H-101 and H-102]. The NO_x emission factor for H-101 was provided as an emission limit in Consent Decree Civil No. 3:03SV114010S V.11.B and is 0.065 lb/MMBTU. The consent decree provided NO_x emission limits for boilers and process heaters greater than 40 mmBTU/hr heat input capacity. Process heater H-102 was less than 40 mmBTU/hr heat input capacity and the consent decree did not provide a NO_x emission limit. Although the NO_x emissions factor didn't specifically include both process heaters, the same factor is being applied to both heaters because they have the same burners and will be combusting the same fuel. Annual and monthly emission limits are permitted. Monthly emission limits are the annual emission limit divided by 10 to allow for monthly fluctuations.

The emission calculations were reviewed and verified by the writer.

Table 3 - Comparison of H-101R and H-102R replacement heaters

Regulated Pollutant	Current Permitted Emissions H-101 and H-102	Proposed Emissions H-101R and H-102R	Change in Emissions
	tpy	tpy	tpy
PM	2.7	1.10	-1.60
PM ₁₀	n/a	1.10	+1.10
PM _{2.5}	n/a	1.08	+1.08
SO ₂	9.59	7.43	-2.16
NO _x	21.78	23.89	+2.11
CO	14.47	11.02	-3.45
Total VOCs	3.62	1.84	-1.78
CO ₂ e	n/a	43,323	43,323

The greenhouse gas calculations are based on the AP-42 emission factors from Chapter 1.4 External Natural Gas Combustion Sources.

Greenhouse Gas CO₂e Calculation for process heaters

Greenhouse Gases	Global Warming Potential	Proposed Emissions H-101R (tpy)	Proposed Emissions H-101R CO ₂ e (tpy)
Carbon Dioxide (CO ₂)	1 ton CO ₂ = 1 ton CO ₂ e	28,083.53	28,084
Methane (CH ₄)	1 ton CH ₄ = 21 tons CO ₂ e	0.54	11.30
Nitrous Oxide (N ₂ O)	1 ton N ₂ O = 310 tons CO ₂ e	0.15	46.40
H-101R Total CO ₂ e			28,142
Greenhouse Gases	Global Warming Potential	Proposed Emissions H-102R (tpy)	Proposed Emissions H-102R CO ₂ e (tpy)
Carbon Dioxide (CO ₂)	1 ton CO ₂ = 1 ton CO ₂ e	15,150	15,150.03
Methane (CH ₄)	1 ton CH ₄ = 21 tons CO ₂ e	0.08	25.03
Nitrous Oxide (N ₂ O)	1 ton N ₂ O = 310 tons CO ₂ e	0.018	6.10
H-102R Total CO ₂ e			15,181
Total CO ₂ e			43,323

As determined by Table A-1 in 40 CFR 98, Subpart A

Storage Tanks Emissions Calculations:

Calculations for tanks 4000, 4001, 4002, 4060, 4061, 4062, and 4063 were done using EPA's calculation model TANKS 4.0.9d.

Ergon's existing air permit limits are based on monthly emission rates that are calculated by dividing the annual emissions rate by 10 to provide operational flexibility. The TANKS 4.09d reports were reviewed and verified by the writer.

Table 4 - Comparison of tank emission calculations

Tank	Current permitted VOC emissions	Proposed VOC emissions	Change in VOC emissions
	tpy	tpy	tpy
4000	1.115	1.47	0.355
4001	0.870	1.47	0.600
4002	0.834	0.14	-0.692
4060	2.120	2.21	0.009
4061	2.130	2.21	0.08

4062	7.880	12.27	4.39
4063	0	12.27	12.27
Total	14.949	32.04	17.091

Note: Current permitted VOC emissions are combined for all tanks and cannot be verified against the permit. The current permitted VOC emissions provided in this table are taken from the application to show the increase in emissions.

Table 5 - Storage tank HAP emissions

Hazardous Air Pollutant	Emissions (tpy)							
	Tank 4000	Tank 4001	Tank 4002	Tank 4060	Tank 4061	Tank 4062	Tank 4063	Total
Hexane	0.0094	0.0094	0.0001	0.0193	0.0198	0.4914	0.4914	1.04
Benzene	0.0107	0.0107	0.0001	0.0191	0.0194	0.0042	0.0042	0.07
Toluene	0.0117	0.0117	0.0007	0.0137	0.0134	0.0093	0.0093	0.07
Ethylbenzene	0.0040	0.0040	0.0004	0.0036	0.0034	0.0005	0.0005	0.02
Xylene	0.0140	0.0140	0.0008	0.0121	0.0113	0.0066	0.0066	0.07
Cumene (Isopropyl benzene)	0.0010	0.0010	0	0.0008	0.0007	0.0001	0.0001	0.01
2,2,4-Trimethylpentane (Isooctane)	0.0013	0.0013	0	0.0019	0.0019	0.0003	0.0003	0.01
Total HAP	0.0520	0.0520	0.0020	.0705	0.0699	0.5123	0.5123	1.27

Loading Area Emissions Calculations:

The OXIDIZER controls the emissions for gasoline at the truck loading rack. CO, NOX, PM, PM10, PM2.5, and SO2 are emitted as a byproduct of combustion of the thermal oxidizer. All other products (diesel, No. 6 fuel oil, kerosene, and lube oil/heavy products) are uncontrolled loadings associated with the TLOAD emission point. This includes 1.3% of the total gasoline loaded that is not captured by the thermal oxidizer. The control efficiency of the OXIDIZER is 95%.

The MLDOX controls the emissions for gasoline, and crude oil (with vapor pressure up to 11.0 psia) from the barge loading operation. CO, NOX, PM, PM10, PM2.5, and SO2 are emitted as a byproduct of combustion of the thermal oxidizer. MLD emissions are VOC from the loading of diesel, kerosene, and lube oil/heavy products, and 1.3% of total gasoline and crude oil (with vapor pressure up to 11.0 psia) not captured by the thermal oxidizer. The control efficiency of the MLDOX is 98%.

Calculations for the loading emissions were performed using equations taken from AP-42, Chapter 5.2, *Transportation and Marketing of Petroleum Liquids*. Equation (1) was used

to calculate the emissions from the truck loading operation and from the barge loading of diesel, kerosene, and lube oil/heavy products. Gasoline MLDOX loading emissions were calculated using a given loading loss factor of 3.9 lb/Mgal from Table 5.2-2 for gasoline barge loading. Equation 2 was used for barge loading of crude oil. There is no ballasting of marine vessels at the barge loading area. Loading loss factors for MLDOX and OXIDIZER locations include the control efficiencies of the thermal oxidizers.

The maximum loading rate for the truck loading operation [TLOAD] is 0.75 Mgal/min for all products. The maximum loading rate at the barge loading [MLD] is 1.40 Mgal/min for all products except for light crude that has a loading rate of 3.50 Mgal/min.

The writer verified the loading loss factors and the VOC emissions and HAP emissions. It should be noted that although hourly emission rates are included in the evaluation, the permit emission limits have annual and monthly rates and are not based on hourly rates.

Table 6 - Summary of VOC Loading Emissions

Location	Product	Quantity	Loading Losses	VOC Emissions	
		Mgal/yr	lb/Mgal	lb/hr	tpy
MLDOX	Gasoline	39,862	7.8E-02	6.34	1.56
	Light Crude Oil	302,614	3.06E-02	6.21	4.63
MLD	Gasoline	525	3.90E+00	327.60	1.03
	Light Crude Oil	3,986	1.53E+00	321.30	3.05
	Diesel	37,065	1.56E-02	1.31	0.29
	Kerosene	46,000	1.23E-02	1.03	0.29
	Lube Oil/Heavy Products	10,500	2.23E-03	0.19	0.02
OXIDIZER	Gasoline	81,337	2.42E-01	10.76	9.86
TLOAD	Diesel	134,904	1.30E-02	0.59	0.88
	Gasoline	1,072	4.85E+0.0	218.25	2.60
	No. 6 Fuel Oil	13,650	1.23E-03	.06	0.01
	Kerosene	15,330	1.23E-02	.56	0.10
	Lube Oil/Heavy Products	157,500	2.23E-03	0.10	0.18

The VOC emissions from the MLD, MLDOX, TLOAD, and OXIDIZER were broken down into HAP speciation for benzene, hexane, toluene, ethylbenzene and xylene. The HAP speciation data was taken from TANKS 4.9.9d for jet kerosene speciation for the diesel calculations to determine the weight percentage of each HAP of the total VOC emissions. This compositions are provided in Table 7 and the HAP emissions for the loading area are

provided in the loading area emissions comparison table, Table 8.

Table 7 - HAP Speciation Data for Loading Area

Product	HAP Composition (wt%)				
	Benzene	Hexane	Toluene	Ethyl Benzene	Xylene
Gasoline	1.80	1.00	7.00	1.40	7.00
Light Crude Oil	0.08	6.11	0.52	0.06	0.75
Diesel	0.00	0.01	0.13	0.13	0.31
Kerosene	0.00	0.01	0.13	0.13	0.31
Lube Oil/ Heavy Products	0.17	0.40	1.00	0.40	1.40

Criteria pollutant emissions and Greenhouse Gas emissions were calculated for the thermal oxidizer at the truck loading area [OXIDIZER] and the thermal oxidizer at the marine terminal [MLDOX]. The applicant provided the following information that was used in the calculations: (1) The TO pilots are rated at 0.15 MMBtu/hr and fired with purchased natural gas. Enriching gas was estimated at 0.1 MMBtu/hr; (2) The total product combusted in OXIDIZER is 127,043 lbs/yr and in MLDOX is 325,074 lbs/yr; (3) Heating values were taken from the Hydrogen Analysis Resource Center; (4) PM2.5 is 100% of PM10 emissions, from CEIDARS PM2.5 emission factor table; and (5) emission factors for NOX, CO, and VOC were obtained from EPA AP-42, Chapter 13.5 Flares and for PM and GHG from EPA AP-42, Chapter 1.4.

Table 8 - Loading Area Emissions Comparison

Emission Point ID	Throughput (Mgal/yr)		Regulated Pollutant	Current Permitted Emission Limit	Proposed Potential Emissions	Change in emissions
	Current	Proposed		tpy	tpy	tpy
TLOAD OXIDIZER	404,800	403,864	VOC	13.08	13.61	0.53
			Benzene	0.61	0.23	-0.38
			Hexane	n/a	0.13	0.13
			Toluene	n/a	0.87	0.87
			Ethylbenzene	n/a	0.18	0.18
			Xylene	n/a	0.88	0.88
			CO	1.67	0.47	-1.20
			NOX	0.31	0.09	-0.22
			PM	0.03	0.01	-0.02

			PM10	n/a	0.01	0.01
			PM2.5	n/a	0.01	0.01
			SO2	0.14	0.05	-0.09
			CO ₂ e	n/a	149.32	149.32
MLD MLDOX	135,485	440,553	VOC	51.16	10.83	-40.33
			Benzene	0.20	0.05	-0.15
			Hexane	0.55	0.50	-0.05
			Toluene	0.31	0.22	-0.09
			Ethylbenzene	0.11	0.05	-0.06
			Xylene	0.40	0.25	-0.15
			CO	n/a	1.38	1.38
			NOX	n/a	0.25	0.25
			PM	n/a	0.03	0.03
			PM10	n/a	0.03	0.03
			PM2.5	n/a	0.03	0.03
			SO2	n/a	0.72	0.72
			CO ₂ e	n/a	440.14	440.14

ISOM Unit Emissions Calculations:

The ISOM unit has fugitive emissions only. The methodology for calculating these emission was taken from the Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017, November 1995) Table 2-10. The calculations were made as follows:

- The screening value (SV) for each non leaking component was 1 ppm less than the leak definition of 500 ppm for valves and 2,000 ppm for pumps
- The screening value (SV) for all leaking components was 20,000 ppm
- The equations listed below were used to calculate the emission rate for both leaking and non-leaking components

$$\text{Leak Rate valves (kg/hr)} = (\# \text{ of non-leakers}) * 2.29\text{E-}06 * (\text{SV})^{0.746} + (\# \text{ of leakers}) * 2.29\text{E-}06 * (\text{SV})^{0.746}$$

$$\text{Leak Rate pumps (kg/hr)} = (\# \text{ of non-leakers}) * 5.03\text{E-}05 * (\text{SV})^{0.610} + (\# \text{ of leakers}) * 5.03\text{E-}05 * (\text{SV})^{0.610}$$

$$\text{Leak Rate connectors (kg/hr)} = (\# \text{ of non-leakers}) * 1.53\text{E-}06 * (\text{SV})^{0.735} + (\# \text{ of leakers}) * 1.53\text{E-}06 * (\text{SV})^{0.735}$$

$$\text{Leak Rate other (kg/hr)} = (\# \text{ of non-leakers}) * 1.36\text{E-}05 * (\text{SV})^{0.589} + (\# \text{ of leakers}) * 1.36\text{E-}05 * (\text{SV})^{0.589}$$

The writer verified the methodology used against EPA-453/R-95-017, November 1995. The EPA Correlation Approach is the preferred approach when actual screening values are available. Table 2-10 provides the Petroleum Industry leak rate/screening value correlations.

Table 9 - ISOM Unit VOC Emissions

Leak Rate	Component Count							
	Valves		Pumps		Connectors		Other	
	Total	Leakers	Total	Leakers	Total	Leakers	Total	Leakers
3%	374	11	4	0	1,122	33.66	2	0
EPA Correlation Approach								
Emission Rate (kg/hr)	0.127		0.023		0.235		0.001	
TOTAL VOC Emissions Rate (lbs/yr)	7,437							
TOTAL VOC Emissions Rate (tpy)	3.72							

The HAP speciation for the ISOM unit is taken from TANKS 4.09d for gasoline to be conservative. The table below shows the specific HAP breakdown and corresponding emissions.

Table 10 - ISOM Unit HAP Emissions

HAP	wt%	Emissions
		(tpy)
Hexane	1.00	0.037
Benzene	1.80	0.067
Isooctane	4.00	0.149
Toluene	7.00	0.260
Ethylbenzene	1.40	0.052
Xylene	7.00	0.260
Isopropyl Benzene	0.50	0.019
Total HAPs	22.7	0.844

Naphtha Splitter Emissions Calculations:

The Naphtha Splitter was installed in 2011 and is associated with the proposed ISOM unit and is included in this section because the emissions are used in the PSD applicability analysis in the regulatory section of this engineering evaluation. The Naphtha Splitter has fugitive emissions only. The methodology for calculating these emissions was taken from the Protocol for Equipment Leak Estimates (EPA-453/R-95-017, November 1995) Table 2-10. The calculations are the same as those provided in the ISOM Unit emissions calculation section. The Naphtha Splitter VOC emissions are provided in Table X.

Table 11 - Naptha Splitter VOC Emissions

Leak Rate	Component Count							
	Valves		Pumps		Connectors		Other	
	Total	Leakers	Total	Leakers	Total	Leakers	Total	Leakers
3%	60	2	4	0	180	5.4	2	0
EPA Correlation Approach								
Emission Rate (kg/hr)	0.020		0.023		0.038		0.001	
TOTAL VOC Emissions Rate (lbs/yr)	1,580.94							
TOTAL VOC Emissions Rate (tpy)	0.79							

The emissions summary in Table 12 provides a summary of each of the emission points that has been discussed and reviewed in this section. The existing practice of providing monthly and annual emission limits for Ergon will continue because of the volumes represented. Monthly emission limits are calculated by dividing the annual emission limit by 10 instead of 12 to provide operational flexibility throughout the year. The hourly emissions are reviewed in the technical evaluation but do not appear in the permit.

Table 12 - Emissions Summary

Emission Point ID	Emission Unit ID	Emission Unit Source	Control Device ID	Regulated Pollutant	Maximum Potential Uncontrolled Emissions		Maximum Potential Controlled Emissions		Emission Change
					lb/hr	tpy	lb/hr	tpy	tpy
H-101R	001-01	CDU Heater	N/A	CO	1.64	7.16	1.64	7.16	-3.45
				NOx	3.54	15.52	3.54	15.52	2.11
				PM	0.16	0.72	0.16	0.72	-1.60
				PM10	0.16	0.72	0.16	0.72	1.10
				PM2.5	0.16	0.70	0.16	0.70	1.08
				SO2	1.10	4.83	1.10	4.83	-2.16
				VOC	0.27	1.19	0.27	1.19	-1.78
		CO2e	6,412	28,084	6,412	28,142	28,142		
H-102R	001-002	CDU Heater	N/A	CO	0.88	3.86	0.88	3.86	Included with H-101R
				NOx	1.92	8.37	1.92	8.37	
				PM	0.09	0.39	0.09	0.39	
				PM10	0.09	0.39	0.09	0.39	
				PM2.5	0.09	0.38	0.09	0.38	
				SO2	0.59	2.60	0.59	2.60	

				VOC	0.15	0.64	0.15	0.64	
				CO2e	3,459	15,181	3,459	15,181	15,181
TK-4000	4000	Tank	N/A	VOC	0.15 tpm	1.47	0.15 tpm	1.47	+17.09
TK-4001	4001	Tank	N/A	VOC	0.15 tpm	1.47	0.15 tpm	1.47	
TK-4002	4002	Tank	N/A	VOC	0.02 tpm	0.14	0.02 tpm	0.14	
TK-4060	4060	Tank	N/A	VOC	0.23 tpm	2.21	0.23 tpm	2.21	
TK-4061	4061	Tank	N/A	VOC	0.23 tpm	2.21	0.23 tpm	2.21	
TK-4062	4062	Tank	N/A	VOC	1.23 tpm	12.27	1.23 tpm	12.27	
TK-4063	4063	Tank	N/A	VOC	1.23 tpm	12.27	1.23 tpm	12.27	
ISOM	ISOM	Isom Unit	N/A	VOC		3.72		3.72	+3.72
T Load OXIDIZER	009-01	Truck Loading	00A-02 Oxidizer* *Gasoline	CO	n/a	0.47	n/a	0.47	-1.20
				NOx	n/a	0.09	n/a	0.09	-0.22
				PM	n/a	0.01	n/a	0.01	-0.02
				PM10	n/a	0.01	n/a	0.01	0.01
				PM2.5	n/a	0.01	n/a	0.01	0.01
				SO2	n/a	0.47	n/a	0.47	-0.09
				VOC	435	201	230	13.61	0.53
				Benzene	n/a	3.61	n/a	0.23	-0.38
				CO2e	n/a	149.32	n/a	149.32	149.32
MLD MLDOX	009-02	Marine Loading	00A-04 Oxidizer* *Gasoline and Light Crude Oils	CO	n/a	1.38	n/a	1.38	1.38
				NOx	n/a	0.25	n/a	0.25	0.25
				PM	n/a	0.03	n/a	0.03	0.03
				PM10	n/a	0.03	n/a	0.03	0.03
				PM2.5	n/a	0.03	n/a	0.03	0.03
				SO2	n/a	0.72	n/a	0.72	0.72
				VOC	1,279	309.05	664	10.83	-40.33
				Benzene	n/a	1.62	n/a	0.05	-0.15
				CO2e	n/a	440.14	n/a	440.14	440.14
TOTAL change in permitted emissions				CO					-3.27
				NOx					
				PM					-1.59
				PM10					1.14

	PM2.5	1.12
	SO2	-1.53
	VOC	-20.77
	Benzene	-0.53
	CO2e	43,913

* Only the products listed are controlled. The remaining products are uncontrolled.

Table 13 - Fugitive Emissions Table

Fugitive Emissions Summary	Regulated Pollutant	Maximum Potential Uncontrolled Emissions		Maximum Potential Controlled Emissions	
		lb/hr	tpy	lb/hr	tpy
Truck Loading	VOC	435	201	230	13.61
Barge Loading	VOC	1279	309.05	664	10.83
ISOM Unit	VOC	0.85	3.72	N/A	N/A
Naptha Splitter*	VOC	0.18	0.79		

* Naptha Splitter installed April 2011 provided for PSD analysis purposes only.

REGULATORY APPLICABILITY

STATE REGULATIONS:

45CSR2 TO PREVENT AND CONTROL PARTICULATE AIR POLLUTION FROM COMBUSTION OF FUEL IN INDIRECT HEAT EXCHANGERS

EWVI is subject to 45CSR2 for the process heaters H-101R and H-102R that are replacing the existing process heaters H-101 and H-102. The existing process heaters H-101 and H-102 have existing permit requirements for the following sections of the rule: 45CSR2-3.1, -2.4-1.b, -2-9.1, -2-9.2, -2.9.3, -2-10.1, and -2-10.2. The replacement process heaters H-101R and H-102R will be subject to the same requirements.

EWVI has demonstrated compliance with the weight emission standard 45CSR2-4.1.b for the replacement heaters. H-101R has a total design heat input of 54.5 MMBtu/hr and a corresponding weight emission limit of 4.91 lbs/hr with a maximum PTE of 0.16 lb/hr for particulate matter. H-102R has a total design heat input of 29.4 MMBtu/hr and a corresponding weight emission limit of 2.65 lbs/hr with a maximum PTE of 0.09 lb/hr for particulate matter. Both units are well below the standard.

EWVI will demonstrate compliance with the remaining requirements by maintaining compliance with the permit requirements.

45CSR6 CONTROL OF AIR POLLUTION FROM COMBUSTION OF REFUSE

EWVI is subject to 45CSR6 for the proposed thermal oxidizer [MLDOX] at the Barge Loading facility. The emission standard is established by a formula provided in 45CSR6-4.1.

The estimated total combustibles to MLDOX is 2,988,000 ACF/hr and 2.3 tons/hr. The corresponding PM emissions limit is 12.5 lb/hr. Based on the potential to emit emissions provided in Table 12, EWVI will be in compliance with this requirement.

The estimated total combustibles to OXIDIZER will be 2.24 tons/hr with the increased throughput.

The other applicable requirements of 45CSR6 include 45CSR6-4.3 and 45CSR6-4.6. Compliance to these requirements will be demonstrated by demonstrating compliance with the permit requirements.

45CSR10 TO PREVENT AND CONTROL AIR POLLUTION FROM THE EMISSION OF SULFUR OXIDES

EWVI is subject to 45CSR10 for the process heaters H-101R and H-102R that are replacing the existing process heaters H-101 and H-102. The existing process heaters H-101 and H-102 have existing permit requirements for the following sections of the rule: 45CSR10-3.1.e, -3.8, -8.2a, -8.2c, -8.3a, -8.3.b, and 8.3c.

EWVI has demonstrated compliance with the weight emission standard 45CSR10-3.1.e for the replacement heaters. H-101R has a total design heat input of 54.5 MMBtu/hr and a corresponding weight emission limit of 169 lbs/hr with a maximum PTE of 0.16 lb/hr for particulate matter. H-102R has a total design heat input of 29.4 MMBtu/hr and a corresponding weight emission limit of 91 lbs/hr with a maximum PTE of 0.09 lb/hr for particulate matter. Both units are well below the standard.

EWVI will demonstrate compliance with the remaining requirements by maintaining compliance with the permit requirements.

45CSR13 PERMITS FOR CONSTRUCTION, MODIFICATION, RELOCATION AND OPERATION OF STATIONARY SOURCES OF AIR POLLUTANTS, NOTIFICATION REQUIREMENTS, ADMINISTRATIVE UPDATES, TEMPORARY PERMITS, GENERAL PERMITS, PERMISSION TO COMMENCE CONSTRUCTION, AND PROCEDURES FOR EVALUATION

EWVI is subject to 45CSR13 and meets the definition of a “modification” permit because the changes result in an emissions increase of six (6) lb/hr

and ten (10) tons per year.

The facility has met the applicable requirements of this rule by publishing a Class I Legal Advertisement, paid the \$1,000.00 application fee for a modification permit for a major stationary source, and submitted a complete permit application.

45CSR14 PERMITS FOR CONSTRUCTION AND MAJOR MODIFICATION OF MAJOR STATIONARY SOURCES OF AIR POLLUTION FOR THE PREVENTION OF SIGNIFICANT DETERIORATION

EWVI is located in Newell, Hancock County, WV that is an area that is designated as an attainment area for all criteria pollutants except for PM_{2.5}. Hancock County is a PM_{2.5} nonattainment area for both the 1997 annual and the 2006 24-hour standards by the EPA in 2009. NO_x and SO₂ have been designated by the EPA as precursors to PM_{2.5} and therefore, the major source status of the source for PM_{2.5}, NO_x, and SO₂ is determined under 45CSR19.

Hancock County is in attainment with the National Ambient Air Quality Standards (NAAQS) for all other regulated pollutants. The major source status of the source for PM, PM₁₀, ozone (VOCs), and CO is therefore determined under 45CSR14 .

Determination of Major Source Status:

The EWVI petroleum refinery is an existing major source of criteria pollutants for purposes of New Source Review according to the definition provided in 45 CSR §14-2.43.a and 45CSR19-2.35.a. Petroleum refineries are one of the identified source categories where the “major source” threshold is one hundred tons per year (100 tpy) of any regulated NSR pollutant and EWVI has the potential to emit 100 tpy or more of at least one of the regulated NSR pollutants on a facility-wide basis.

Determination of Major Modification:

EWVI is proposing a “physical change in or change in the method of operation of a major stationary source” and therefore a determination must be made regarding whether or not the proposed changes described in the permit application meet the definition of a major modification.

A “major modification” is defined under section 2.40 of 45CSR14 as a:

. . . physical change in or change in the method of operation of a major stationary source which results in: a significant emissions increase (as defined in subsection 2.75) of any regulated NSR pollutant (as defined in subsection 2.66); and a significant net

emissions increase of that pollutant from the major stationary source. [. . .]

Section 3.4 of 45CSR14 provides guidance on the process of determining if proposed changes are a major modification. §45-14-3.4(a) states that:

. . . consistent with the definition of major modification contained in subsection 2.40, a project is a major modification for a regulated NSR pollutant if it causes two types of emissions increases -- a significant emissions increase (as defined in subsection 2.75), and a significant net emissions increase (as defined in subsections 2.46 and 2.74). The proposed project is not a major modification if it does not cause a significant emissions increase. [. . .]

Therefore, for the proposed changes to meet the definition of a major modification, the changes themselves must result in a significant emissions increase. The methodology for calculating the emissions increase under the first step is given under Sections 3.4(b), 3.4(c), 3.4(d) and 3.4(f). The substantive language of each is given below:

[§45-14-3.4(b)]

The procedure for calculating (before beginning actual construction) whether a significant emissions increase (i.e., the first step of the process) will occur depends upon the type of emissions units being modified, according to subdivisions 3.4.c through 3.4.f.

[§45-14-3.4(c)]

Actual-to-projected-actual applicability test for projects that only involve existing emissions units. -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions (as defined in subsection 2.63) and the baseline actual emissions (as defined in subdivisions 2.8.a and 2.8.b), for each existing emissions unit, equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

[§45-14-3.4(d)]

Actual-to-potential test for projects that only involve construction of a new emissions unit(s). – A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the potential to emit (as defined in subsection 2.58) from each new emissions unit following completion of the project and the baseline actual emissions (as defined in subdivision 2.8.c) of these units before the project equals or exceeds the significant amount for that pollutant (as defined in

subsection 2.74).

[§45-14-3.4(f)]

Hybrid test for projects that involve multiple types of emissions units. -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the emissions increases for each emissions unit, using the method specified in subdivisions 3.4.c through 3.4.d as applicable with respect to each emissions unit, for each type of emissions unit equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

Further, under the definition of “projected actual emissions” - Section 2.63(a)(4), the applicant may use an emission unit’s PTE in lieu of projecting actual emissions. Ergon has elected to provide PTE after construction in lieu of projected actual emissions.

It is important to note that when any emissions decrease is claimed (including those associated with the proposed modification), the second step of the test is triggered - a determination if the project results in a “significant net emissions increase.” This determination is defined under the definition of “net emissions increase” [§45-14-2.46] and must include “any other increases and decreases in actual emissions at the major source that are contemporaneous with the particular change and are otherwise creditable.” A change is contemporaneous if it “occurs not more than five (5) years prior to the date on which construction on the particular change commences nor later than the date on which the increase from the particular change occurs.” This determination will not include any decreases in emissions and will stay within the first step of the test.

EWVI is proposing the following changes in this permit application that will be included in the PSD Applicability Analysis: (1) replacement of process heaters H-101 with H-101R and H-102 with H-102R; (2) addition of a new ISOM unit; (3) addition of a new thermal oxidizer [MLDOX] at the marine loading dock; (4) addition of a new storage tank [TK 4063]; (5) a change in throughput for existing tanks 4000, 4001, 4002, 4060, 4061, and 4062 due to an increase in throughput through the crude unit [CDU]; (6) a change in throughput for existing tank 4062 which will now contain crude oil with a vapor pressure ≤ 11.0 psia; (7) a change in the product mix to the existing truck loading throughput [TLOAD] that includes the overall previous throughput increase submitted in April 2011; (8) an increase in throughput to the marine loading area and the addition of the thermal oxidizer for marine loading of gasoline and light crude oil [OXIDIZER and MLD]; and (9) the addition of a naptha splitter that was submitted in April of 2011 that is being included in the PSD review for completeness.

The determination of major modification will be conducted in accordance with §45CSR14-3.4(f) which is the hybrid test because the change involves both the addition of new emission units that will use the “actual-to-potential” method in accordance with §45CSR14-3.4(d) and the “actual-to-projected-actual” method for existing units in accordance with §45CSR14-3.4(c). New units are: H-101R, H-102R, ISOM Unit, MLDOX, TK 4062, and the Naptha Splitter. Existing units are: TK4000, TK 4001, TK4002, TK 4060, TK 4061, TK 4062, MLD, TLOAD, and OXIDIZER.

PSD Applicability Analysis:

Step 1 - Determination of Emission increase under 45CSR14 for the NSR regulated pollutants PM10, Ozone (VOC), and CO are provided in Table 14. Based on the results of the analysis of PM10, it was decided that the analysis for PM was not required. The baseline emissions for the new units Naptha Splitter, ISOM, TK 4063, and MLDOX are zero. The new replacement heaters H-101R and H-102R will use the baseline actual emissions from heaters H-101 and H-102 that are being replaced. The baseline actual emissions provided by EWWI are the average emissions from 2009 and 2010. Greenhouse gases are included only for the combustion units.

Table 14 - Step 1 - Determination of Emission Increase under 45CSR14

Emission Point ID	Baseline Past Actual Emissions	Maximum Potential Emissions	Emission Increase	Significant Limit
Regulated NSR Pollutant: PM10				
TK 4000	0	0	0	15
TK 4001	0	0	0	15
TK 4002	0	0	0	15
TK 4060	0	0	0	15
TK 4061	0	0	0	15
TK 4062	0	0	0	15
TK 4063	0	0	0	15
Naptha Splitter	0	0	0	15
ISOM Unit	0	0	0	15
H-101 and H-102	1.78	1.10	0	15
Barge Loading (MLD)	0	0	0	15
Barge Loading Oxidizer (MLDOX)	0	0.02	0.02	15

Truck Loading (TLOAD)	0	0	0	15
Truck Loading Oxidizer (OXIDIZER)	0.03	0.01	0	15
Total	1.81	1.13	0.02	15
Regulated NSR Pollutant: Ozone (VOC)				
TK 4000	1.41	1.47	0.06	40
TK 4001	1.13	1.47	0.34	40
TK 4002	0.34	0.14	0	40
TK 4060	0.91	2.21	1.30	40
TK 4061	0.91	2.21	1.30	40
TK 4062	7.14	12.27	5.13	40
TK 4063	0	12.27	12.27	40
Naptha Splitter	0	0.79	0.79	40
ISOM Unit	0	3.72	3.72	40
H-101 and H-102	2.39	1.84	0	40
Barge Loading (MLD)	19.51	4.65	0	40
Barge Loading Oxidizer (MLDOX)	0	6.18	6.18	40
Truck Loading (TLOAD)	0.38	3.75	3.38	40
Truck Loading Oxidizer (OXIDIZER)	7.19	9.86	2.68	40
Total	41.31	62.83	37.15	40
Regulated NSR Pollutant: CO				
TK 4000	0	0	0	100
TK 4001	0	0	0	100
TK 4002	0	0	0	100
TK 4060	0	0	0	100
TK 4061	0	0	0	100
TK 4062	0	0	0	100
TK 4063	0	0	0	100
Naptha Splitter	0	0	0	100
ISOM Unit	0	0	0	100

H-101 and H-102	9.57	11.02	1.45	100
Barge Loading (MLD)	0	0	0	100
Barge Loading Oxidizer (MLDOX)	0	1.14	1.14	100
Truck Loading (TLOAD)	0	0	0	100
Truck Loading Oxidizer (OXIDIZER)	1.44	0.47	0	100
Total	11.01	12.63	2.59	100
Regulated NSR Pollutant: CO ₂ e				
H-101 and H-102	48,439	43,323	0	75,000
Barge Loading Oxidizer (MLDOX)	0	363	363	75,000
Truck Loading Oxidizer (OXIDIZER)	0	149	149	75,000
Total	48,439	43,835	512	75,000

The proposed changes described in this engineering evaluation for EWVI does not meet the definition of a major modification of an existing major stationary source because there is not a “significant emissions increase” per the definitions provided in 45CSR14-2.40, 2.74 and 2.75. These proposed changes are not a major modification if they do not cause a significant emissions increase as stated in the applicability criteria provided in section 45CSR14-3.4. No additional analysis is required.

The proposed new GHG emission units MLDOX and the replacement heaters H-101R and H-102R are *not subject to regulation* as defined in 40 CFR §51.166(b)(48) to PSD rule 45CSR14 because they fall below 75,000 TPY for existing sources that are not otherwise subject to PSD.

45CSR19 PERMITS FOR CONSTRUCTION AND MAJOR MODIFICATION OF MAJOR STATIONARY SOURCES OF AIR POLLUTION WHICH CAUSE OR CONTRIBUTE TO NONATTAINMENT

EWVI is located in Newell, Hancock County, WV that is an area that is designated as an attainment area for all criteria pollutants except for PM_{2.5}. Hancock County is a PM_{2.5} nonattainment area for both the 1997 annual and the 2006 24-hour standards by the EPA in 2009. NO_x and SO₂ have been designated by the EPA as precursors to PM_{2.5} and therefore, the major source status of the source for PM_{2.5}, NO_x, and SO₂ is determined under 45CSR19.

Determination of Major Modification:

The methodology that was described under 45CSR14 will be used in the determination of a major modification for PM_{2.5}, NO_x, and SO₂ under 45CSR19.

PSD Applicability Analysis:

Step 1 - Determination of emission increase under 45CSR19 for the NSR regulated pollutants PM_{2.5}, NO_x, and SO₂ for the Larvin production unit are provided below in Table 15 for each emission point associated with the change in this permit modification.

Table 15 - Step 1 - Determination of Emission Increase under 45CSR19

Emission Point ID	Baseline Past Actual Emissions	Maximum Potential Emissions	Emission Increase	Significant Limit
Regulated NSR Pollutant: PM2.5				
TK 4000	0	0	0	10
TK 4001	0	0	0	10
TK 4002	0	0	0	10
TK 4060	0	0	0	10
TK 4061	0	0	0	10
TK 4062	0	0	0	10
TK 4063	0	0	0	10
Naptha Splitter	0	0	0	10
ISOM Unit	0	0	0	10
H-101 and H-102	1.74	1.08	0	10
Barge Loading (MLD)	0	0	0	10
Barge Loading Oxidizer (MLDOX)	0	0.02	0.02	10
Truck Loading (TLOAD)	0	0	0	10
Truck Loading Oxidizer (OXIDIZER)	0.03	0.01	0	10
Total	1.77	1.11	0.02	10
Regulated NSR Pollutant: SO2				
TK 4000	0	0	0	40

TK 4001	0	0	0	40
TK 4002	0	0	0	40
TK 4060	0	0	0	40
TK 4061	0	0	0	40
TK 4062	0	0	0	40
TK 4063	0	0	0	40
Naptha Splitter	0	0	0	40
ISOM Unit	0	0	0	40
H-101 and H-102	4.90	7.43	2.53	40
Barge Loading (MLD)	0	0	0	40
Barge Loading Oxidizer (MLDOX)	0	0.54	0.54	40
Truck Loading (TLOAD)	0	0	0	40
Truck Loading Oxidizer (OXIDIZER)	0.12	0.05	0	40
Total	5.02	8.02	3.07	40
Regulated NSR Pollutant: NO _x				
TK 4000	0	0	0	40
TK 4001	0	0	0	40
TK 4002	0	0	0	40
TK 4060	0	0	0	40
TK 4061	0	0	0	40
TK 4062	0	0	0	40
TK 4063	0	0	0	40
Naptha Splitter	0	0	0	40
ISOM Unit	0	0	0	40
H-101 and H-102	12.20	23.89	11.69	40
Barge Loading (MLD)	0	0	0	40
Barge Loading Oxidizer (MLDOX)	0	0.21	0.21	40
Truck Loading (TLOAD)	0	0	0	40

Truck Loading Oxidizer (OXIDIZER)	0.27	0.09	0	40
Total	12.47	22.00	11.90	40

The preconstruction permit program requirements apply to the construction of any new major stationary source or major modification that is major for the pollutant for which the area is designated nonattainment under 40 CFR Part 81, Subpart C. The proposed project is not a major modification because it does not cause a “significant emissions increase” per the applicability criteria in section 3.4.a. This proposed project is not a major modification and no additional analysis is required.

45CSR16 STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES PURSUANT TO 40 CFR PART 60

EWVI is subject to 45CSR16 because they are subject to Federal NSPS requirements that are defined further in the Federal Regulations section.

45CSR21 REGULATION TO PREVENT AND CONTROL AIR POLLUTION FROM THE EMISSION OF VOLATILE ORGANIC COMPOUNDS

EWVI is not subject to 45CSR21 because they are located in Hancock County. Hancock County is not included in the scope of applicability.

45CSR30 REQUIREMENTS FOR OPERATING PERMITS

EWVI is subject to 45CSR30 and currently operates under permit R30-02900008-2010 (MM02). The applicant submitted a combined application for NSR permit and Title V permit revision.

FEDERAL REGULATIONS:

40 CFR Part 60 NEW SOURCE PERFORMANCE STANDARDS (NSPS):

Subpart A STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES. GENERAL PROVISIONS

The general provisions section of the NSPS requirements apply for all applicable Subparts.

MLDOX is subject to the control device requirements for flares

in §60.18 because the flare is subject to NSPS, Subpart Ja.

Subpart Dc

STANDARDS OF PERFORMANCE FOR SMALL INDUSTRIAL-COMMERCIAL-INSTITUTIONAL STEAM GENERATING UNITS

Process heaters H-101R and H-102 R both have heat input capacities between 10 and 100 MMBtu/hr; however, do not meet the definition of a “steam generating unit” because the term does not include process heaters in this subpart.

Subpart Ja

STANDARDS OF PERFORMANCE FOR PETROLEUM REFINERIES FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER MAY 14, 2007

On June 1, 2012, the EPA issued final amendments to the new source performance standards for process heaters and flares at petroleum refineries. With these final amendments, EPA is lifting the stay of effectiveness of the process heater and flare requirements in these standards.

The EPA has signed the notice on June 1, 2012 and is submitting it for publication in the Federal Register (FR). At the time of this engineering evaluation, the official version is not yet in the FR and therefore, Docket No. EPA-HQ-OAR-2007-0011; FRL-9672-3 was used for this evaluation. The rule writer was contacted and it is not anticipated that the official version will be in the Federal Register until July.

It should be noted that only the emission units associated with this permit modification have been reviewed against the final amendments to this subpart.

Process heaters H-101R and H-102R and the proposed marine dock loading flare MLDOX are subject to the requirements of NSPS, Subpart Ja because they meet the applicability requirements in §60.100a and §60.100b.

Process heaters H-101R and H-102R meets the definition of a “fuel gas combustion device”. The final amendments include four subcategories of process heaters. H-101R and H-102R meet the definition of “natural draft process heaters” which is any process heater in which the combustion air is supplied under ambient or negative pressure without the use of an inlet air (forced draft) fan. The manufacturer’s data sheet provided in the application indicates that the draft type is natural.

The marine dock loading flare MLDOX meets the definitions of “flare” and “non-emergency flare”. For this Subpart Ja, “fuel gas combustion devices” do not include “flares”.

The existing tank truck loading are flare OXIDIZER will not be physically altered as part of this project and therefore was not reviewed for applicability to the amendments of this Subpart.

Process heaters H-101R and H-102R and the marine loading dock flare MLDOX are subject to the following requirements of NSPS, Subpart Ja:

- Process heaters H-101R and H-102R are subject to either an SO₂ emission limit or a fuel gas concentration limit for H₂S (§60.102a (g)(1)(i) or §60.102a (g)(1)(ii)). EWVI will demonstrate compliance with the fuel gas concentration limit in the initial performance test.
- Process heater H-101R is subject to either a NO_x concentration-based emission limit or a heating value-based No_x emission limit, both determined daily on a 30-day rolling average basis (§60.102a (g)(2)(i)(A) or §60.102a (g)(2)(i)(B)). EWVI will demonstrate compliance with in the initial performance test.
- MLDOX is subject to the design, equipment, work practice, or operational standards in §60.103a (a), §60.103a (b), §60.103a (c), §60.103a (d), §60.103a (e), and §60.103a (h).
- Process heaters H-101R and H-102R are subject to the design, equipment, work practice, or operational standards in §60.103a (c), §60.103a (d), and §60.103a (e).
- H-101R, H-102R, and MLDOX are subject to the performance tests requirements in §60.104a (a), (c), (i), and (j).
- H-101R and H-102R are subject to the monitoring requirements in §60.107a (a), and (i)
- H-101R is subject to the monitoring requirements in §60.107a (c), and (d).
- MLDOX is subject to the monitoring requirements in §60.107a (a), (e), (f), and (l).
- H-101R, H-102R, and MLDOX are subject to the recordkeeping and reporting requirements in §60.108a (a), (b), (c), and (d)

Based on the information provided in the application for H101-R and H-102R, EWVI will monitor fuel gas flow using flow meters and will continuously monitor the concentration of H₂S

in refinery fuel gas; will continuously record the H₂S concentration, and will conduct a NO_x performance test at the request of the Director.

Based on the information provided in the application for MLDOX, EWVI will continuously monitor and record the combustion chamber temperature, will monitor PM emissions, and will submit an excess emissions report.

EWVI will demonstrate compliance with this Subpart Ja by demonstrating compliance with the permit requirements.

Subpart Kb

STANDARDS OF PERFORMANCE FOR VOLATILE ORGANIC LIQUID STORAGE VESSELS (INCLUDING PETROLEUM LIQUID STORAGE VESSELS) FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER JULY 23, 1984

EWVI is subject to this Subpart for the proposed Tank 4063 according to the applicability of §60.110b (a). Tank 4063 is an internal floating roof tank with a mechanical shoe meets the specifications defined in §60.112b (a)(1)(ii)(c). Tank 4063 is the same design as existing storage tanks at EWVI that are subject to this Subpart. EWVI is subject to the following: §60.112b, §60.113b, §60.115b, and §60.116b. Demonstration of compliance will be determined by compliance with permit requirements.

Tank 4001 will be subject to this Subpart as a result of the changes associated with this permit application because it meets the definition of “modification” per §60.2. Tank 4001 is currently subject to Subpart K. Demonstration of compliance will be determined by compliance with permit requirements.

Tank 4002 will not be subject to this Subpart because the change in tank contents and throughput does not meet the definition of “modification” per §60.2 because it does not result in an increase in emissions.

Subpart VVa

STANDARDS OF PERFORMANCE FOR EQUIPMENT LEAKS OF VOC IN THE SYNTHETIC ORGANIC CHEMICALS MANUFACTURING INDUSTRY FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER NOVEMBER 7, 2006

EWVI is currently subject to and permitted for the requirements

of this Subpart Vva. The proposed changes submitted in this permit modification do not affect the applicability of this subpart.

EWVI has proposed monitoring of valves and pumps in accordance with this subpart & has proposed compliance with recordkeeping, reporting, and testing requirements of this subpart for the ISOM Unit to the existing program.

Demonstration of compliance will be determined by compliance with permit requirements.

Subpart XX

STANDARDS OF PERFORMANCE FOR BULK GASOLINE TERMINALS

EWVI is not subject to this subpart for the proposed modification of the tank truck loading facility [Tload] because it does not meet the definition of a “bulk gasoline terminal”. The gasoline that is loaded by EWVI is produced on-site through their refining processes.

Bulk gasoline terminal means any gasoline facility which receives gasoline by pipeline, ship or barge, and has a gasoline throughput greater than 75,700 liters per day (19,682 gal/day). Gasoline throughput shall be the maximum calculated design throughput as may be limited by compliance with an enforceable condition under Federal, State or local law and discoverable by the Administrator and any other person. (§ 60.501)

Subpart GGGa

STANDARDS OF PERFORMANCE FOR EQUIPMENT LEAKS OF VOC IN PETROLEUM REFINERIES FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER NOVEMBER 7, 2006

EWVI is not subject to this subpart for the proposed ISOM Unit because they are subject to Subpart VVa. The exclusion reference is §60.590a (d).

Subpart RRR

STANDARDS OF PERFORMANCE FOR VOLATILE ORGANIC COMPOUND EMISSIONS FROM SYNTHETIC ORGANIC CHEMICAL MANUFACTURING INDUSTRY (SOCMI) REACTOR PROCESSES

Naptha (CAS # 64741-70-4) is not on the affected chemicals list for Subpart RRR in §60.707; therefore, Subpart RRR is not

applicable to the ISOM Unit at EWVI.

40 CFR 63

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (HAPS) FOR SOURCE CATEGORIES

EWVI is not a major source for HAPs. They are a major source for criteria pollutants. The subparts in this section are those that have area source requirements.

Unless otherwise stated, the writer did not determine whether the applicant is subject to an area source air toxics standard requiring Generally Achievable Control Technology (GACT) promulgated after January 1, 2007 pursuant to 40 CFR 63, including the area source air toxics provisions of 40 CFR 63, Subpart BBBBBB.

Subpart Y

NATIONAL EMISSION STANDARDS FOR MARINE TANK VESSEL LOADING OPERATIONS

The barge loading at EWVI was installed in 1972 and is an existing source. With the addition of MLDOX, the emission point is changing as the emissions from MLD will be controlled by the thermal oxidizer in the future. The applicability review covers: (a) MACT standards, (b) RACT standards, (c) General Provisions, and (d) Exemptions from MACT and RACT standards of §63.560.

(A) Maximum achievable control technology (MACT) standards applicability. (1) MACT standards §63.562 (b) and (d) apply to existing and new sources with emissions of 10 or 25 tons and to new sources with emissions less than 10 and 25 tons. EWVI is not subject to this requirement because they are an existing source with emissions less than 10 and 25 tons. (2) Existing sources with emissions less than 10 and 25 tons are not subject to the emissions standards in §63.562(b) and (d). EWVI not subject to this requirement. (3) The recordkeeping requirements of §63.567(j)(4) and the emission estimation requirements of §63.565(l) apply to existing sources with emissions less than 10 and 25 tons. EWVI is subject to this requirement. (4) Existing sources with emissions less than 10 and 25 tons must meet the submerged fill standards of 46 CFR 153.282. This submerged fill requirement does not apply to petroleum refineries. EWVI is not subject to this requirement because they are a petroleum refinery.

Reasonably available control technology (RACT) standards applicability. (1) RACT standards §63.562 (c) and (d) apply to

sources with annual throughput of 10 million barrels of gasoline or 200 million barrels of crude oil. EWVI is not subject to this requirement because the throughput of gasoline is 1 million barrels and the throughput of crude oil is 7.3 million barrels. (2) Sources with throughput less than 10 M barrels and 200 M barrels are not subject to the emissions standards in §63.562 (c) and (d).

General provisions applicability. Owners or operators of “affected sources” must comply with the requirements of Subpart A in accordance with Table 1. EWVI is not subject to this requirement because it does not meet the definition of an “affected source” per §63.561.

Exemptions from MACT and RACT standards. This subpart does not apply to emissions resulting from marine tank vessel loading operations with vapor pressures less than 1.5 psia at standard conditions, 20°C and 760 mm Hg. EWVI is exempt from MACT and RACT standards when loading diesel, kerosene, and lube oil because the vapor pressures of these products are less than 1.5 psia at standard conditions. Gasoline and Light Crude Oil loading at EWVI are not exempt.

Subpart BBBBBB NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORY: GASOLINE DISTRIBUTION BULK TERMINALS, BULK PLANTS, AND PIPELINE FACILITIES

This subpart establishes national emission limitations and management practices for hazardous air pollutants (HAP) emitted from area source gasoline distribution bulk terminals, bulk plants, and pipeline facilities. This subpart also establishes requirements to demonstrate compliance with the emission limitations and management practices.

WV DAQ does not have delegation of this Subpart. It therefore, has not been reviewed for applicability for the 45CSR13 permit.

Subpart JJJJJJ NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL BOILERS AREA SOURCES

EWVI is not subject to this subpart because process heaters H-101R and H-102 R meet the “gas-fired boiler” exemption in §63.11195(e). A “gas-fired boiler” includes any boiler that burn

gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. The fuel-gas for H-101R and H-102R is process gas supplemented as needed with natural gas.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There are no new non-criteria regulated pollutants associated with this permit modification.

AIR QUALITY IMPACT ANALYSIS

The proposed project does not meet the definition of a major modification according to the definitions in 45CSR14 and 45CSR19; therefore, modeling is not required for this permit application.

MONITORING OF OPERATIONS

H-101R and H-102R:

- The same monitoring requirements that were in place for H-101 and H-102 to demonstrate compliance with 45CSR2, 45CSR10 will be established for the replacement process heaters.
- Monitoring requirements to demonstrate compliance with NSPS, Subpart Ja §60.104a will include: (1) monitoring fuel gas flow using flow meters; (2) continuously monitoring & recording the concentration of H₂S in refinery fuel gas consumed by the heater ; (3) maintain monthly records of the amount of fuel gas (refinery fuel gas plus purchased natural gas) consumed within the heater; and (4) initial performance testing.

MLDOX:

- PM VE emissions monitoring to demonstrate compliance with 40 CFR 60,Appendix A, Method 9.
- EWVI will conduct an initial performance test to demonstrate a minimum control efficiency of 98% and establish operating parameters for the thermal oxidizer.
- EWVI will meet the performance test requirements of NSPS, Subpart Ja §104.a.
- EWVI will meet the monitoring requirements of §60.107a
- EWVI will meet the general control device and work practice requirements of §60.18 and the general provisions monitoring, testing, recordkeeping, and reporting requirements of NSPS, Subpart A.
- EWVI will keep monthly records of each product/product type and volume, including whether or not they were controlled by MLDOX;

TLoad:

- There is no change in the monitoring requirements for Tload as a result of this application.

ISOM Unit:

- EWVI will incorporate the ISOM unit into the leak detection program in accordance with 40 CFR60.485

Tank 4063:

- Monitoring requirements per 40 CFR 60.113b, the recordkeeping and reporting requirements per 40 CFR 60.115b, and the monitoring of operations requirements per 40 CFR 60.116b.

CHANGES TO PERMIT R13-2334R

- Cover page - added disclaimer language that GACT standards, including 40 CFR 63, Subpart BBBBBB were not reviewed for applicability.
- General changes to the permit including references to the permit revision, description of change, table of contents, and effective dates.
- Table of contents - updated titles sections 4, 5, and 6.
- Section 1.0 - (1) updated the Emissions Unit table as described in the process description section of the evaluation and added a control device column; and (2) removed "or fuel oil" in description for Boiler A and Boiler B.
- Section 4.0 - inserted cross reference table at the beginning of the section
- Section 4.1 - (1) replaced emissions from H-101 and H-102 with H-101R and H-102R in section 4.1.5 and 4.15 as described in Table 3 of the emissions section of this evaluation; (2) replaced H-101 with H-101R and H-102 with H-102 R in section headings; (3) moved previously numbered section 4.1.24 to 4.1.5 under "all boilers and heaters" section and renumbered other sections accordingly; (4) inserted sections 4.1.17 - 4.1.19 for NSPS, Subpart Ja requirements and renumbered accordingly; and (5) deleted previously numbered requirement 4.1.20 because it was the same as previously numbered requirement 4.1.19.
- Section 4.2 - (1) corrected section references in 4.2.2 , 4.2.3, and 4.2.4 to correspond to the revised numbering in section 4.1; (2) removed H-101 and H-102 from 4.2.2 and 4.2.3; and (3) added 4.2.7.
- Section 4.3 - added NSPS, Subpart Ja language as described in the regulatory section of this evaluation for H-101R and H-102R.
- Section 4.4 - (1) replaced H-101 with H-101R and H-102 with H-102R in 4.4.7 and 4.4.8; (2) corrected section references in 4.4.9 - 4.4.13 to correspond with the revised numbering in section 4.1; and (3) added 4.4.18.
- Section 4.5 - (1) replaced H-101 with H-101R and H-102 with H-102R in sections 4.5.1 and 4.5.2; and (2) added section 4.5.5.
- Section 5.0 - changed the title to add MLD and MLDOX to source specific requirements.

- Section 5.1 - (1) added MLDOX PM Emission limit to previously numbered 5.1.1 as described in the regulatory section of the evaluation; (2) replacing previously numbered 5.1.5 with more general NSPS, Subpart Ja language because of the timing of the 6-1-12 amended requirements as described in the regulatory section of this evaluation; (3) re-arranged the order of requirements in section 5.1; (4) updated the emission limits for truck loading in previously numbered 5.1.7 as described in the emissions section of this evaluation; (5) moved & updated the marine loading emissions from section 6.1.2 as described in the emissions section of the evaluation; (6) moved & updated the marine loading throughput limits from section 6.1.4 as described in the emissions section of this evaluation; (7) combined previously numbered requirements 5.1.1, 5.1.2 and 5.1.3; (8) moved previously numbered 6.1.3 requirement; (9) added an annual throughput requirement for truck loading; (10) added NSPS, Subpart A Flare requirements for MLDOX; (11) added NSPS, Subpart Ja language as described in the regulatory section of this evaluation.
- Section 5.2 - (1) corrected section references; (2) added NSPS, Subpart Ja language as described in the regulatory section of this evaluation; and (3) added NSPS, Subpart A monitoring requirements.
- Section 5.3 - (1) added initial performance test to demonstrate compliance with 98% control efficiency; (2) added NSPS, Subpart Ja language as described in the regulatory section of this evaluation; (3) added NSPS, Subpart A requirements; and (4) added 5.3.4.
- Section 5.4 - (1) corrected section references; (2) added NSPS, Subpart Ja language as described in the regulatory section of this evaluation; (3) moved 6.2.2 and 6.2.3 to section 5.3; and (4) added 5.4.5.
- Section 5.5 - added NSPS, Subpart Ja language as described in the regulatory section of this evaluation.
- Section 6.0 - (1) updated sources in title; (2) moved 6.1.2, 6.1.3, and 6.1.4 to section 5; (3) added limit for ISOM unit; (4) moved 6.2.2 and 6.2.3 to section 5; and (5) corrected references in 6.2.2 to correspond with updated section numbering.
- Requirement 7.1.1 - updated tank contents as indicated in the process description section and adjusted tank throughput rates as follows: Crude oil from 613,200,000 to 705,180; light crude oil from 68,997,600 to 306,600,000; and heavy products or kerosene from 304,259,760 to 406,459,760. Also increased VOC emissions from 8.99 TPM to 10.70 TPM and from 35.94 TPY to 53.03 TPY.
- Requirement 7.1.2 - replaced the speciated HAP emissions for tanks 4000, 4001, 4002, 4003, 4009, 4011, 4012, 4013, 4054, and 4055 with a total HAP limit for all tanks listed in section 7.1.1 and moved the VOC and Benzene emissions from section 7.1.1 to section 7.1.2.
- Removed Tank 4001 from requirements 7.1.5, 7.1.6., and 7.3.3.
- Requirement 7.1.7, 7.2.3, 7.3.4, and 7.3.5 - added tank 4001 and 4063 to the NSPS, Subpart Kb requirements.
- Requirement 7.2.1 - corrected reference from sections 7.1.2 and 7.1.3 to 7.1.4 and 7.1.5.

RECOMMENDATION TO DIRECTOR

Based on the information provided in the application, including all supplemental information provided, Ergon - West Virginia, Inc. will be in compliance with all applicable state and federal air quality regulations. It is therefore, the recommendation of the writer that permit modification R13-2334S be granted to Ergon - West Virginia, Inc., Newell Facility located in Hancock County, WV.

Laura M. Jennings
Permit Engineer

Date