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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-2322C
Plant ID No.: 073-00002
Applicant: St. Marys Refining Company
Facility Name: St. Marys Terminal
Location: St. Marys, Pleasants County
SIC Code: 5171
Application Type: Modification
Received Date: December 18, 2009
Engineer Assigned: Steven R. Pursley, PE
Fee Amount: \$2,000
Date Received: December 22, 2009
Complete Date: January 12, 2010
Due Date: April 12, 2010
Applicant Ad Date: January 6, 2010
Newspaper: *St. Marys Oracle*
UTM's: Easting: 482.2 km Northing: 4,359.41 km Zone: 17
Description: Modification to instal two new ethanol storage tanks, and replace the existing loading racks with a new loading rack and vapor recovery unit.

DESCRIPTION OF PROCESS

St. Marys Refining Company (SMRC) operates an existing bulk gasoline and diesel storage/loading terminal in St. Marys, WV. SMRC proposes to add the capability to store denatured fuel ethanol at the St. Marys bulk terminal, and then load-out to tanker trucks a typical blend of 90% gasoline and 10% denatured fuel ethanol. However, this blend ratio may change in the future due to market demands or government mandates.

Specifically, SMRC proposes to operate two new underground storage tanks, Fuel Ethanol Storage Tank #1 and Fuel Ethanol Storage Tank #2. Each of these storage tanks will have a storage capacity of approximately 39,500 gallons.

Additionally, SMRC proposes to replace the existing loading racks (Loading Racks #1 & #2) with a new replacement loading rack (Loading Rack #3). The existing Loading

Racks #1 and #2 will be dismantled and removed from the site once the new loading rack is completed and fully functional. The new Loading Rack #3 will have its gasoline and ethanol loading emissions controlled by the new vapor recovery unit control device. This vapor recovery unit will be required to meet the 40 CFR 60 Subpart XX requirement of 35 mg VOC per liter of gasoline loaded.

Also, SMRC proposes to reduce the terminals maximum gasoline throughput to 249,000 gallons per day while retaining the existing permitted diesel throughput at 150,000 gallons per day, in order to more accurately reflect the sites maximum operational capacity.

SITE INSPECTION

A site inspection of the facility was performed by the writer on March 9, 2010. The new tanks appeared to have already been installed. To get to the facility from Charleston take I-77 north to exit 179. Then take Route 2 north approximately 24 miles. The facility is on the right shortly after coming into St. Marys.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Permitted emissions from the new sources will be as follows:

Table 1

	VOC		Total Hap	
	lb/hr	tpy	lb/hr	tpy
Loading Rack-Gasoline	11.04	11.97	0.51	0.55
Loading Rack-Den. Eth.	1.23	1.46	0.02	0.02
Loading Rack - Diesel	0.30	0.22	0.18	0.13
Fugitives	0.31	1.35	0.02	0.07
T601	6.22	0.87	0.08	0.01
T602	6.22	0.87	0.08	0.01
Total	25.32	16.74	0.89	0.79

Emissions from the removed sources (**2008 actual emissions as reported to emissions inventory**) were as follows:

Table 2

	VOC	HAPs
	tpy	tpy
Loading Racks (1&2) -Gasoline	130.89	5.93
Loading Racks (1&2) - Diesel	0.05	0.03
Total	130.94	5.96

The change in emissions due to the issuance of this permit will be as follows:

Table 3

	VOC	HAPs
	tpy	tpy
Total	-114.2	-5.17

REGULATORY APPLICABILITY

The following state and local rules are applicable to the facility:

STATE RULES:

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation.

The modification is subject to 45CSR13 because VOC emissions from the new sources exceed 6 pounds per hour and 10 tons per year. Additionally, the new equipment is subject to several substantive rules.

45CSR16 Standards of Performance for New Stationary Sources.

The facility is subject to 45CSR16 because it is subject to 40 CFR 60 Subpart XX and Subpart Kb.

45CSR30 Requirements for Operating Permits.

The facility is a Title V major source with an existing Title V permit.

FEDERAL REGULATIONS:

40 CFR 60 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.

The applicant reported in the application that the design capacity of the new ethanol tanks were 940 barrels each (149.45 cubic meters). However, the dimensions given by the applicant indicated that the "design capacity" of the tanks are actually 152.04 cubic meters. Note that USEPA requires "design capacity" to be calculated by multiplying the internal cross sectional area of the tank by the tanks height (length in this case). See EPA Document Control Number 9800034. Therefore, the requirements of §60.110b(a) would apply to the tanks. However, after further discussions with the applicant it was determined that the dimensions originally given in the application were outer dimension. After accounting for the tank wall thickness (5/16th inch) the actual design capacity of the tanks are 150.63 cubic meters, which means that only the minor recordkeeping and notification requirements of subpart Kb apply (maximum true vapor pressure of the fuel ethanol is 24.4 kPa).

40 CFR 60 Subpart XX

The new loading rack is subject to Subpart XX. The main requirements under the subpart are that 1) the loading rack be equipped with a vapor collection system and that 2) emissions from said system not exceed 35 mg of total organic compounds per liter of gasoline loaded. §60.503 of the subpart requires testing to confirm that the aforementioned standards are met.

It should be noted that the facility is NOT subject to 40CFR63 Subpart R because, according to their 2007 Title V permit, they are not a major source of Hazardous Air Pollutants.

It should also be pointed out that although the facility appears to be subject to 40CFR63 SubpartBBBBBB, no requirements are discussed here nor will any requirements be included in the permit because WVDAQ has not accepted delegation of that rule.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The HAPs included in the Table 1 above include the following:

HAP	TPY
Benzene	0.19
Toluene	0.20
Ethylbenzene	0.01
Xylene	0.04
Hexane	0.22
Naphthalene	0.13

None of these HAPs will be emitted in any quantities which would trigger additional regulations.

AIR QUALITY IMPACT ANALYSIS

Since this is a minor modification, no modeling was performed.

MONITORING OF OPERATIONS

In addition to the monitoring already required by R13-2322B, 40 CFR 60 Subpart XX and 40 CFR 60 Subpart Kb the facility shall maintain records of the amount of:

- * Gasoline, ethanol, and diesel loaded out from the new loading rack
- * ethanol throughput in tanks T601 and T602

CHANGES TO PERMIT R13-2322B

The following changes will be made to R13-2322B

- * The permit will be put into the most recent boilerplate.
- * The GACT disclaimer language will be added.
- * Table 1.0 will be updated

- * Requirements will be added for the new loading rack and two new storage tanks.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R13-2322C for the modification of a bulk plant in St. Marys be granted to St. Marys Refining Company.

Steven R. Pursley, PE
Engineer

Date