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Memorandum

To:	Tina Proctor NuStar Terminals Operations Partnership, L.P. (NuStar)
From:	Michael Doerner Air Quality Specialist
Subject:	NuStar Jacksonville Main Terminal Vapor Combustion Unit (VCU) Alternative Sampling Plan (ASP)
Date:	October 18, 2013
Project No.:	205854.0000.0000

NuStar is requesting approval of an ASP for the required testing of the Main Terminal VCU at their Jacksonville Florida facility in accordance with 62-297 F.A.C. This memorandum contains the reasons for the request and an explanation of the changes requested in the standard procedure in 40 CFR 60 Subpart XX. Attached is a proposed ASP for the Main Terminal VCU testing to show compliance with the 35 milligrams of total organic compounds per liter of gasoline loaded (mg/L) emissions limit. This testing will be required when the new VCU begins operation with subsequent testing required prior to Title V permit renewals.

Reasons for ASP

The Main Terminal loading rack does not load gasoline in trucks but does load distillate into trucks whose previous load was gasoline so it meets the regulatory definition in 40 CFR 63, Subpart BBBBBB of loading gasoline trucks. Since “gasoline trucks” are loaded at the rack, the requirement to meet a 35 mg/L emission rate while loading gasoline applies to this rack and the requirement to complete testing in accordance with 40 CFR 60.503.

The referenced test procedure in 40 CFR 60.503 requires the test be performed over a 6-hour period during which at least 300,000 liters of gasoline is loaded. However, NuStar would have a very difficult time meeting the 300,000 liters of gasoline loading rate in any reasonable timetable since the customers provide the truck and determine when they want to load products. Looking at the historical information for the last 5 years, the annual average number of gasoline trucks loaded at the rack ranged from 2 to 15 trucks per week. It would be very difficult to schedule a performance test on the VCU and arrange to have the 10 gasoline trucks to be loaded on that that date and especially within the 6 hours specified in the procedure with the typical frequency that a customer brings a gasoline truck to the rack to be loaded.

Requested VCU Testing Procedure Revisions

NuStar is requesting this ASP that will involve some modifications to the standard testing procedure detailed in 40 CFR 60.503. A review of the testing procedure by the stack testing personnel has determined that testing during the gasoline truck loading of about 100,000 liters will provide reliable test results. The major requested change in the procedure is a reduction in the required loading volume from 300,000 liters in 6 hours to 100,000 liters over 24 hours. The ASP does not request any revisions to the testing methods as listed in the 40 CFR 60.503.

NuStar should be able to schedule the loading of 100,000 liters of product into gasoline trucks in a 24-hour period. This will enable the testing to be scheduled for the VCU. The attached procedures include a track changes mark-up of the 40 CFR 60.503 regulation and a clean version of the proposed procedure.

Main Terminal VCU Testing Frequency

The potential volatile organic compound (VOC) emissions for the VCU as shown in Table 1 below are less than 100 tons per year (tpy). NuStar requests that the testing frequency for this VCU be in accordance with 62-297,310 (a1) and (a3) F.A.C.

The VCU would be tested after the reconstructed VCU begins operation to demonstrate compliance with the 35 mg/L emissions limit while loading gasoline trucks. Subsequent performance tests will not be due until prior to the submittal of the Title V renewal application every 5 years.

Table 1
Emission Unit 37 – Main Terminal Loading Rack

FUEL TYPE	PTE ANNUAL THRUPUT (1,000 gal)	S	MOLE WEIGHT	P (psia)	T (^oF)	EFF (%)	L_L (lb/kgal)	PTE EMISSIONS	
								(lbs)	(tons)
#2 Fuel Oil	50,000	1	57	5.58	60	90	0.7621	38,106	19.05
#2 Fuel Oil[(1)]	50,000	N/A	N/A	N/A	N/A	N/A	0.2918	14,590	7.30
#6 Fuel Oil	210,240	1	190	0.00004	60	90	0.000018	3.83	0.002
Asphalt	210,240	1	525	0.00387	200	90	0.003832	805.8	0.403
#2 Rail	58,400	1	130	0.0074	60	0	0.0231	1,346.2	0.673
							Totals	54,852	**27.43**

(1) Loading #2 Fuel Oil into gasoline truck

Memorandum
October 18, 2013

Attachment 1
Proposed 40 CFR 60.503 Procedure
Mark-up for Alternative Sampling Plan

NuStar Jacksonville – Main Terminal VCU

Proposed Alternate Sampling Plan

§ 40 CFR 60.503 Test methods and procedures.

60.503(a)
In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b). The three-run requirement of §60.8(f) does not apply to this subpart.

60.503(b)
Immediately before the performance test required to determine compliance with §60.502 (b), (c), and (h), the owner or operator shall use Method 21 to monitor for leakage of vapor all potential sources in the terminal's vapor collection system equipment while a ~~gasoline~~ tank truck is being loaded. The owner or operator shall repair all leaks with readings of 10,000 ppm (as methane) or greater before conducting the performance test.

60.503(c)
The owner or operator shall determine compliance with the standards in §60.502 (b) and (c) as follows:

60.503(c)(1)
The performance test shall be ~~6 hours long during~~completed when ~~which~~ at least ~~300~~100,000 liters of ~~gasoline~~ product is loaded into gasoline tank trucks in a 6 hour period. If this is not possible, the test may be continued the same day until ~~300~~100,000 liters of ~~gasoline~~ product is loaded into gasoline tank trucks.~~or the test may be resumed the next day with another complete 6-hour period. In the latter case, the 300,000-liter criterion need not be met~~. However, as much as possible, testing should be conducted during the 6-hour period in which the highest throughput normally occurs.

60.503(c)(2)
If the vapor processing system is intermittent in operation, the performance test shall begin at a reference vapor holder level and shall end at the same reference point. The test shall include at least two startups and shutdowns of the vapor processor. If this does not occur under automatically controlled operations, the system shall be manually controlled.

60.503(c)(3)
The emission rate (E) of total organic compounds shall be computed using the following equation:

$$E = K\sum_{i=1}^{n}\left(V_{esi}C_{ei}\right) / \left(L10^{6}\right)$$

where:
E=emission rate of total organic compounds, mg/liter of ~~gasoline~~ product loaded into a gasoline tank truck.
V_{esi}=volume of air-vapor mixture exhausted at each interval "i", scm.
C_{ei}=concentration of total organic compounds at each interval "i", ppm.
L=total volume of ~~gasoline~~ product loaded, liters.
n=number of testing intervals.
i=emission testing interval of 5 minutes.
K=density of calibration gas, 1.83×10^{6} for propane and 2.41×10^{6} for butane, mg/scm.

60.503(c)(4)
The performance test shall be conducted in intervals of 5 minutes. For each interval "i", readings from each measurement shall be recorded, and the volume exhausted (V_{esi}) and the corresponding average total organic compounds concentration (C_{ei}) shall be determined. The sampling system response time shall be considered in determining the average total organic compounds concentration corresponding to the volume exhausted.

60.503(c)(5)
The following methods shall be used to determine the volume (V_{esi}) air-vapor mixture exhausted at each interval:

60.503(c)(5)(i)
Method 2B shall be used for combustion vapor processing systems.

60.503(c)(5)(ii)
Method 2A shall be used for all other vapor processing systems.

60.503(c)(6)
Method 25A or 25B shall be used for determining the total organic compounds concentration (C_{ei}) at each interval. The calibration gas shall be either propane or butane. The owner or operator may exclude the methane and ethane content in the exhaust vent by any method (e.g., Method 18) approved by the Administrator.

60.503(c)(7)
To determine the volume (L) of ~~gasoline~~ product dispensed into gasoline tank trucks during the performance test period at all loading racks whose vapor emissions are controlled by the processing system being tested, terminal records or readings from ~~gasoline~~ product dispensing meters at each loading rack shall be used.

60.503(d)
The owner or operator shall determine compliance with the standard in §60.502(h) as follows:

60.503(d)(1)
A pressure measurement device (liquid manometer, magnehelic gauge, or equivalent instrument), capable of measuring up to 500 mm of water gauge pressure with ±2.5 mm of water precision, shall be calibrated and installed on the terminal's vapor collection system at a pressure tap located as close as possible to the connection with the gasoline tank truck.

60.503(d)(2)
During the performance test, the pressure shall be recorded every 5 minutes while a gasoline truck is being loaded; the highest instantaneous pressure that occurs during each loading shall also be recorded. Every loading position must be tested at least once during the performance test.

60.503(e)
The performance test requirements of paragraph (c) of this section do not apply to flares defined in §60.501 and meeting the requirements in §60.18(b) through (f). The owner or operator shall demonstrate that the flare and associated vapor collection system is in compliance with the requirements in §§60.18(b) through (f) and 60.503(a), (b), and (d).

60.503(f)
The owner or operator shall use alternative test methods and procedures in accordance with the alternative test method provisions in §60.8(b) for flares that do not meet the requirements in §60.18(b).

Memorandum
October 18, 2013

Attachment 2
Clean Copy of Proposed Alternative Sampling Plan

NuStar Jacksonville – Main Terminal VCU

Proposed Alternate Sampling Plan

A. In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b). The three-run requirement of §60.8(f) does not apply to this subpart.

B. Immediately before the performance test required to determine compliance with §60.502 (b), (c), and (h), the owner or operator shall use Method 21 to monitor for leakage of vapor all potential sources in the terminal's vapor collection system equipment while a tank truck is being loaded. The owner or operator shall repair all leaks with readings of 10,000 ppm (as methane) or greater before conducting the performance test.

C. The owner or operator shall determine compliance with the standards in §60.502 (b) and (c) as follows:

1. The performance test shall be completed when at least 100,000 liters of product is loaded into gasoline tank trucks in a 6 hour period. If this is not possible, the test may be continued the same day until 100,000 liters of product is loaded into gasoline tank trucks.. However, as much as possible, testing should be conducted during the 6-hour period in which the highest throughput normally occurs.

2. If the vapor processing system is intermittent in operation, the performance test shall begin at a reference vapor holder level and shall end at the same reference point. The test shall include at least two startups and shutdowns of the vapor processor. If this does not occur under automatically controlled operations, the system shall be manually controlled.

3. The emission rate (E) of total organic compounds shall be computed using the following equation:

$$E = K\sum_{i=1}^{n}\left(V_{esi}C_{ei}\right) / \left(L10^{6}\right)$$

where:
E=emission rate of total organic compounds, mg/liter of product loaded into a gasoline tank truck.
V_{esi}=volume of air-vapor mixture exhausted at each interval “i”, scm.
C_{ei}=concentration of total organic compounds at each interval “i”, ppm.
L=total volume of product loaded, liters.
n=number of testing intervals.
i=emission testing interval of 5 minutes.
K=density of calibration gas, 1.83×10^{6} for propane and 2.41×10^{6} for butane, mg/scm.

4. The performance test shall be conducted in intervals of 5 minutes. For each interval “i”, readings from each measurement shall be recorded, and the volume exhausted (V_{esi}) and the corresponding average total organic compounds concentration (C_{ei}) shall be determined. The sampling system response time shall be considered in determining the average total organic compounds concentration corresponding to the volume exhausted.

5. The following methods shall be used to determine the volume (V_{esi}) air-vapor mixture exhausted at each interval:

   i. Method 2B shall be used for combustion vapor processing systems.

   ii. Method 2A shall be used for all other vapor processing systems.

6. Method 25A or 25B shall be used for determining the total organic compounds concentration (C_{ei}) at each interval. The calibration gas shall be either propane or butane. The owner or operator may exclude the methane and ethane content in the exhaust vent by any method (e.g., Method 18) approved by the Administrator.

7. To determine the volume (L) of product dispensed into gasoline tank trucks during the performance test period at all loading racks whose vapor emissions are controlled by the processing system being tested, terminal records or readings from product dispensing meters at each loading rack shall be used.

D. The owner or operator shall determine compliance with the standard in §60.502(h) as follows:

1. A pressure measurement device (liquid manometer, magnehelic gauge, or equivalent instrument), capable of measuring up to 500 mm of water gauge pressure with ±2.5 mm of water precision, shall be calibrated and installed on the terminal's vapor collection system at a pressure tap located as close as possible to the connection with the gasoline tank truck.

2. During the performance test, the pressure shall be recorded every 5 minutes while a gasoline truck is being loaded; the highest instantaneous pressure that occurs during each loading shall also be recorded. Every loading position must be tested at least once during the performance test.

E. The performance test requirements of paragraph (c) of this section do not apply to flares defined in §60.501 and meeting the requirements in §60.18(b) through (f). The owner or operator shall demonstrate that the flare and associated vapor collection system is in compliance with the requirements in §§60.18(b) through (f) and 60.503(a), (b), and (d).

F. The owner or operator shall use alternative test methods and procedures in accordance with the alternative test method provisions in §60.8(b) for flares that do not meet the requirements in §60.18(b).