



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3207A
Plant ID No.: 095-00039
Applicant: CONE Midstream Partners, LP (Cone)
Facility Name: Shirley Station
Location: Middlebourne, Tyler County
NAICS Code: 486210 (Natural Gas Transmission)
Application Type: Modification
Received Date: August 10, 2015
Engineer Assigned: Thornton E. Martin Jr.
Fee Amount: \$4,500.00
Date Received: August 11, 2015
Complete Date: September 16, 2015
Applicant Ad Date: August 12, 2015
Newspaper: *Tyler Star News*
UTM's: Easting: 513.4 km Northing: 4,363.1 km Zone: 17
Description: Applicant proposes to increase the current liquid loading throughputs and increase the existing dehydration unit capacity (from 150 to 200 million standard cubic feet per day), as well as install one (1) additional dehydration unit with associated reboiler and ground flare, one (1) compressor engine, one (1) microturbine generator, one (1) Hot Oil Heater associated with a condensate stabilizer, three (3) storage tanks, one (1) blowdown flare and one (1) backup vapor destruction unit [VDU].

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-3207A:

Natural gas enters the station via a pipeline system and is compressed using one of the five (5) 2,370 HP natural gas fired compressor engines (S1 – S4, S7). The compressed natural gas is then processed through the triethylene glycol (TEG) dehydration units (S5, S10) and associated reboilers (S6, S11), respectively. The dehydration unit will introduce TEG to the gas stream in a contact tower to absorb water vapor from the gas to a level not to exceed 7 pounds per million standard cubic feet (lb/mm scf). The TEG is then sent to the reboiler and discharged, and the glycol is then sent back to the contact tower for reuse. The dehydration unit is equipped with an enclosed ground flare which will control emissions from the dehydration unit still vent, and the emissions from the flash tank will be routed to the reboiler for use as fuel, with backup to the enclosed ground flare when the reboiler is down. The natural gas stream from the contact tower flows into the pipeline to be transported further along the pipeline system. Liquids coming off the low pressure separator will pass through a condensate stabilizer, whose resulting vapors will be routed back to the station inlet pipeline. Following the condensate stabilizer, the liquid will be routed to the six (6) produced water/condensate storage tanks. Emissions from the storage tanks will be controlled by two (2) vapor recovery units (VRU). Vapors from the VRU will be routed to the inlet pipeline of the station for recompression and dehydration. During periods of VRU downtime, emissions from the storage tanks will be routed to a back-up vapor destruction unit (VDU) for control. Once the tanks are filled, the contents are loaded into trucks for transport. Truck loading is vapor balanced and controlled by the VRU, with VDU backup.

In anticipation of increased gas flow to the facility, CONE is proposing to install the following equipment (taken from Permit Application R13-3207A):

- One (1) 200 mm scfd triethylene glycol (TEG) dehydration unit with associated reboiler (rated at 2.86 MMBtu/hr) and enclosed vapors combustor (rated at 6.0 MMBtu/hr), also known as a ground flare.
- Condensate Stabilizer. There will be no emissions associated with this process.
- One (1) natural gas fired 2,370 hp Caterpillar compressor engine, the engine is equipped with an oxidation catalyst for carbon monoxide (CO), volatile organic compounds (VOC) and formaldehyde control.
- Three (3) 400 – bbl condensate storage tanks controlled by the existing VRU's and/or the backup VDU's.
- One (1) backup VDU (rated at 18.4 MMBtu/hr) to control emissions from the three (3) condensate storage tanks.
- One (1) natural gas fired hot oil process heater (rated at 8.0 MMBtu/hr) associated with the condensate stabilizer.
- One (1) blowdown flare (rated at 7660 MMBtu/hr).
- One (1) capstone microturbine generator for Electrical Power (rated at 1.0 MW)
- One (1) 1,000 gallon triethylene glycol (TEG) tank.
- Ten (10) 500 gallon (each) lube oil tanks.
- Two (2) 500 gallon (each) methanol tanks.

Additionally, this modification application (R13-3207A):

- Seeks to increase the current permitted liquid throughput limits (L1) at the facility from 4,599,000 gal/yr (300 barrels per day[bpd]) to 49,543,000 gal/yr (3,232 bpd).
- Seeks to increase the current permit throughput of the existing dehydration unit (S5) from 150 mmscfd to 200 mmscfd and revise the current rating of the existing reboiler (S6) to 2.86 MMBtu/hr.
- Request that the DAQ limit the hours of operation of the existing and new backup VDU's from 8,760 hours to 500 hours in Section 10.1 of the permit.
- Request that the DAQ include the diesel fired emergency generator in Table 1.0 of the permit.
- Request that the DAQ update the VOC emission limit of the Caterpillar Compressor engines in Section 5.1.2 of the permit. The VOC control efficiency of the oxidation catalyst (C1) has been updated from 61% to 70% based on the new vendor guarantee.
- Request that the DAQ update the nitrogen oxides (NOx), CO and VOC emission limits of the Cummins 8.3/M302 engine in Section 5.1.3 of the permit. The engine has been retrofitted with a three way catalyst for NOx, CO and VOC control.
- Convert the feed storage tank to a condensate storage tank. The functionality of the feed storage tank will be handled with a low-pressure separator to perform the phase separation originally performed by that tank.

The current permit (R13-3207) was issued with no sources aggregated with the Shirley Station. No changes have been made with respect to nearby sources and/or wells feeding the station since that time. Therefore, the stationary source determination is expected to remain the same for the modified facility.

SITE INSPECTION

A targeted, full, on-site inspection was conducted by John Money penny of the DAQ Enforcement Section on September 01, 2015. Mr. Money penny stated that during the inspection it was noted that some equipment listed in the permit modification (R13-3207A) had already been installed. The facility received a score of 10 – Out of Compliance. The nearest residence is approximately 3,100 feet away.

Latitude: 39.417317
Longitude: -80.844333

Directions to the facility are as follows:

From Middlebourne: Travel southwest on WV-18 S/Main Street toward Bridgeway Road for approximately 10 miles. Turn right and travel approximately 0.75 mile. The facility is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions from the proposed project (R13-3207A) will result from the TEG dehydration unit, natural gas combustion in the compressor engine, microturbine, hot oil process heater, the reboiler and flashing, working and breathing losses from the storage tanks. Fugitive emissions for the facility are based on calculation methodologies presented in EPA Protocol for Equipment Leak Emission Estimates.

The following table indicates which methodology was used in the emissions determination for the modified facility :

Emission Unit ID#	Process Equipment	Calculation Methodology
S1-S4, S7, E-20, C4, C5, S8	Compressor Engines, Emergency Generator, VRU's, Microturbine	Manufacturer's Data, EPA AP-42 Emission Factors
S5, S10	TEG Dehydrator Still Vent w/ Condenser/Recycle and enclosed combustion device	GRI-GlyCalc 4.0
T1-T6	Storage Tanks	ProMax Process Simulation (Working, Breathing & Flashing)
S6, L1, C2, C3, S11, C7, S9, BDF-1, C6	Liquids Loading, Combustion Devices (Flares, Heater), Reboilers, VDU	EPA AP-42 Emission Factors

Cone is proposing to install additional equipment in order to increase the liquid throughputs, dehydration and compression capacity of natural gas at the Shirley Station. Additionally, Cone is proposing to install a condensate stabilizer which will allow for more effective recovery of the vapors from the lighter hydrocarbons present in the condensate. The following table outlines the proposed facility:

Emission Unit ID#	A M R ¹	Date	Process Equipment	Design Capacity	Type of Change	Control Device
S1 – S4	A M	2014 2015	Caterpillar 3608 Compressor Engine	2,370 hp	Revised Control Efficiency	C1 (Oxidation Catalyst)
S5	A M	2014 2015	TEG Dehydration Unit	200 mmscfd	Throughput Increase	C2
S6	A M	2014 2015	TEG Dehydration Unit Reboiler	2.86 MMBtu/hr	Revised Heat Input Rating	None
T01	A M	2014 2015	Condensate Settling Tank	450 bbl	Increased Throughput	C4/C5 (C3 and/or C6 backup)
T02	A	2014	Produced Water Storage Tank	400 bbl	Existing	C4/C5 (C3 and/or

Emission Unit ID#	A M R ¹	Date	Process Equipment	Design Capacity	Type of Change	Control Device
						C6 backup)
T03	A M	2014 2015	Condensate Storage Tank	400 bbl	Increased Throughput	C4/C5 (C3 backup)
L1	A M	2014 2015	Liquids Loading Product Loadout Rack	49,533,000 gal/yr	Increased Throughput	C4/C5 (C3 and/or C6 backup)
C2	A	2014	Dehydration Unit Enclosed Ground Flare	6.0 MMBTU/hr	Existing	None
C3	A	2014	Backup Vapor Destruction Unit	18.4 MMBTU/hr	Existing	None
C4	A M	2014 2015	Cummins G8.3/H302 VRU	118 hp	Revised Control Efficiency	C8 (3-Way Catalyst)
C5	A	2014	Arrow VRG 3330 VRU	68 hp	Existing	None
E-20	A	2015	Cummins Emergency Generator	464 hp	Existing	None
S7	A	2015	Caterpillar 3608 Compressor Engine	2,370 hp	New	C1 (Oxidation Catalyst)
S10	A	2015	TEG Dehydration Unit #2	200 mmscfd	New	C7
S11	A	2015	TEG Dehydration Unit Reboiler	2.86 MMBtu/hr	New	None
C7	A	2015	Dehydration Unit Enclosed Ground Flare #2	6.00 MMBtu/hr	New	None
S8	A	2015	Capstone Microturbine (comprised of 5 identical 200kW turbines)	1.0 MW	New	None
S9	A	2015	Hot Oil Process Heater	8.0 MMBtu/hr	New	None
T04-T06	A	2015	Condensate Tanks	400 bbl (each)	New	C4/C5 (C3 and/or C6 backup)
T07	A	2015	TEG Storage Tank	1000 gal	New	None
C6	A	2015	Backup Vapor Destruction Unit	18.4 MMBtu/hr	New	None
BDF-1	A	2015	Blowdown Flare	7660 MMBtu/hr	New	None
T08-T17	A	2015	Ten (10) Lube Oil Tanks	500 gal (each)	New	None
T18-T19	A	2015	Two (2) Methanol Tanks	500 gal (each)	New	None

¹ A - Addition; M - Modification; R - Removal

The following table indicates the control device efficiencies that are required for this facility:

Emission Unit	Pollutant	Control Device	Control Efficiency
2,370 hp Caterpillar 3608 RICE (S1 – S4), S7	Carbon Monoxide	C1 (Oxidation Catalyst)	93 %
	Volatile Organic Compounds		70 %
	Formaldehyde		81 %
200 mmscfd TEG Dehydrator Still Vents (S5, S10)	Volatile Organic Compounds	Enclosed Ground Flares (C2, C7)	98 %
	Hazardous Air Pollutants		98 %
Condensate Storage Tanks (T01-T06)	Volatile Organic Compounds	Vapor Recovery Units (C4/C5)	95 %
	Hazardous Air Pollutants		95 %
	Volatile Organic Compounds	Backup Vapor Destruction Units (C3/C6)	98 %
	Hazardous Air Pollutants		98 %
Liquids Loading Rack (L1)	Volatile Organic Compounds	Vapor Recovery Units (C4/C5)	95 %
	Hazardous Air Pollutants		95 %
	Volatile Organic Compounds	Backup Vapor Destruction Units (C3/C6)	98 %
	Hazardous Air Pollutants		98 %
Cummins G8.3/H302 VRU (C4)	Carbon Monoxide	C8 (3-Way Catalyst)	53.5%
	Nitrogen Oxides		84.6%

The total facility PTE for the Shirley Station is shown in the following table:

Pollutant	Current PTE (TPY)	Proposed PTE (TPY)	Proposed Emission Increase (TPY)
Nitrogen Oxides	80.00	82.30	2.30
Carbon Monoxide	46.52	54.30	7.79
Volatile Organic Compounds	65.78	68.00	2.20
Particulate Matter-10/2.5	3.95	5.20	1.24
Sulfur Dioxide	0.20	0.70	0.50
Formaldehyde	4.62	5.80	1.17
Total HAPs	18.95	14.10	-4.85
Carbon Dioxide Equivalent	67,776	88,485	20,710

Maximum detailed controlled point source emissions were calculated by Cone and checked for accuracy by the writer and are summarized in the table on the next page.

REGULATORY APPLICABILITY

The following rules apply to the facility:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units. 45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of the proposed reboiler (S11) and Hot Oil Heater (S9) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2.

Cone would also be subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR6 (To Prevent and Control Air Pollution from the Combustion of Refuse)

The purpose of this rule is to prevent and control air pollution from combustion of refuse.

Cone has proposed to add two (2) enclosed combustion devices (C7 and BDF-1) at the facility. The enclosed combustion devices are subject to section 4, emission standards for incinerators. The enclosed combustion devices have negligible hourly particulate matter emissions. Therefore, the facility's enclosed combustion devices should demonstrate compliance with this section. The facility will demonstrate compliance by maintaining records of the amount of natural gas consumed by the enclosed combustion devices and the hours of operation. The facility will also monitor the flame of the enclosed combustion devices and record any malfunctions that may cause no flame to be present during operation.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

The purpose of 45CSR10 is to establish emission limitations for sulfur dioxide which are discharged from fuel burning units. 45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of the proposed reboiler (S11) and Hot Oil Heater (S9) are below 10 MMBTU/hr. Therefore, this unit is exempt from the aforementioned sections of 45CSR10.

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

45CSR13 applies to this source due to the fact that Cone is subject to a substantive requirement of an emission control rule promulgated by the Secretary (45CSR6, 40CFR60 Subparts IIII, JJJJ and OOOO, 40CFR63 Subpart HH).

Cone paid the appropriate application fee and published the required legal advertisement for a modification permit application.

45CSR16 (Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60)

45CSR16 applies to this source by reference of 40CFR60, Subparts IIII, JJJJ and OOOO. These requirements are discussed under that rule below.

45CSR22 (Air Quality Management Fee Program)

Cone is not subject to 45CSR30. The Shirley Station is subject to 40CFR60 Subparts IIII, JJJJ and OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source.

Cone is required to pay the appropriate annual fees and keep their Certificate to Operate current.

40CFR60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE))

40CFR60 Subpart IIII establishes emission standards for applicable CI ICE.

Cone is subject to this subpart because the emergency engine (E-20) was manufactured after April 1, 2006. The engine emissions for this unit are EPA Tier III Certified.

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE))

40CFR60 Subpart JJJJ establishes emission standards for applicable SI ICE.

The additional 2,370 hp Caterpillar 3608 RICE (S7) was manufactured after the July 1, 2007 date for engines with a maximum rated power capacity greater than or equal to 500 hp.

The proposed 2,370 hp Caterpillar 3608 RICE (S7) will be subject to the following emission limits: NO_x – 1.0 g/hp-hr (5.22 lb/hr); CO – 2.0 g/hp-hr (10.45 lb/hr); and

VOC – 0.7 g/hp-hr (3.66 lb/hr). Based on the manufacturer's specifications for this engine, the emission standards will be met.

The proposed 2,370 hp Caterpillar 3608 RICE (S7) is not certified by the manufacturer to meet the emission standards listed in 40CFR60 Subpart JJJJ. Therefore, Cone will be required to conduct an initial performance test and conduct subsequent performance testing every 8,760 hours or three (3) years, whichever comes first, to demonstrate compliance.

40CFR60 Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

EPA published in the Federal Register new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. 40CFR60 Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO₂) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. The following affected sources which commence construction, modification or reconstruction after August 23, 2011 are subject to the applicable provisions of this subpart: Each gas well affected facility, which is a single natural gas well.

There are no gas wells at this facility. Therefore, all requirements regarding gas well affected facilities under 40 CFR 60 Subpart OOOO would not apply.

- a. Each centrifugal compressor affected facility, which is a single centrifugal compressor using wet seals that is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your centrifugal compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A centrifugal compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are no centrifugal compressors at the Shirley Station. Therefore, all requirements regarding centrifugal compressors under 40 CFR 60 Subpart OOOO would not apply.

- b. Each reciprocating compressor affected facility, which is a single reciprocating compressor located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment. For the purposes of this subpart, your reciprocating compressor is considered to have commenced construction on the date the compressor is installed (excluding relocation) at the facility. A reciprocating compressor located at a well site, or an adjacent well site and servicing more than one well site, is not an affected facility under this subpart.

There are reciprocating internal combustion engines located at the Shirley Station that were constructed after August 23, 2011. Therefore, the requirements

regarding reciprocating compressors under 40 CFR 60 Subpart OOOO will apply. Cone will be required to perform the following:

- Replace the reciprocating compressor rod packing at least every 26,000 hours of operation or 36 months.
- Demonstrate initial compliance by continuously monitoring the number of hours of operation or track the number of months since the last rod packing replacement.
- Submit the appropriate start up notifications.
- Submit the initial annual report for the reciprocating compressors.
- Maintain records of hours of operation since last rod packing replacement, records of the date and time of each rod packing replacement, and records of deviations in cases where the reciprocating compressor was not operated in compliance.

c. Pneumatic Controllers

- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller operating at a natural gas bleed rate greater than 6 scfh which commenced construction after August 23, 2011, and is located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment and not located at a natural gas processing plant.
- Each pneumatic controller affected facility, which is a single continuous bleed natural gas-driven pneumatic controller which commenced construction after August 23, 2011, and is located at a natural gas processing plant.

All pneumatic controllers at the facility will be air driven. Therefore, there are no applicable pneumatic controllers which commenced construction after August 23, 2011. Therefore, all requirements regarding pneumatic controllers under 40 CFR 60 Subpart OOOO would not apply.

- d. Each storage vessel affected facility, which is a single storage vessel, located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment.

40CFR60 Subpart OOOO defines a storage vessel as a unit that is constructed primarily of non-earthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provides structural support and is designed to contain an accumulation of liquids or other materials. The following are not considered storage vessels:

- Vessels that are skid-mounted or permanently attached to something that is mobile (such as trucks, railcars, barges or ships), and are intended to be located at a site for less than 180 consecutive days. If the source does not keep or are not able to produce records, as required by §60.5420(c)(5)(iv), showing that the vessel has been located at a site for less than 180 consecutive days, the vessel described herein is considered to be a storage vessel since the original vessel was first located at the site.
- Process vessels such as surge control vessels, bottoms receivers or knockout vessels.
- Pressure vessels designed to operate in excess of 204.9 kilopascals and without emissions to the atmosphere.

This rule requires that the permittee determine the VOC emission rate for each storage vessel affected facility utilizing a generally accepted model or calculation methodology within 30 days of startup, and minimize emissions to the extent practicable during the 30 day period using good engineering practices. For each storage vessel affected facility that emits more than 6 tpy of VOC, the permittee must reduce VOC emissions by 95% or greater within 60 days of startup. The compliance date for applicable storage vessels is October 15, 2013.

The storage vessels located at the Shirley Station will be controlled by a VRU which will reduce the potential to emit to less than 6 tpy of VOC. Therefore, Cone is not required by this section to further reduce VOC emissions by 95%.

- e. The group of all equipment, except compressors, within a process unit is an affected facility.
- Addition or replacement of equipment for the purpose of process improvement that is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.
 - Equipment associated with a compressor station, dehydration unit, sweetening unit, underground storage vessel, field gas gathering system, or liquefied natural gas unit is covered by §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart if it is located at an onshore natural gas processing plant. Equipment not located at the onshore natural gas processing plant site is exempt from the provisions of §§60.5400, 60.5401, 60.5402, 60.5421 and 60.5422 of this subpart.
 - The equipment within a process unit of an affected facility located at onshore natural gas processing plants and described in paragraph (f) of this section are exempt from this subpart if they are subject to and controlled according to subparts VVa, GGG or GGGa of this part.

The Shirley Station is not a natural gas processing plant. Therefore, Leak Detection and Repair (LDAR) requirements for onshore natural gas processing plants would not apply.

- f. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.
- Each sweetening unit that processes natural gas is an affected facility; and
 - Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.
 - Facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur) are required to comply with recordkeeping and reporting requirements specified in §60.5423(c) but are not required to comply with §§60.5405 through 60.5407 and paragraphs 60.5410(g) and 60.5415(g) of this subpart.
 - Sweetening facilities producing acid gas that is completely reinjected into oil-or-gas-bearing geologic strata or that is otherwise not released to the atmosphere are not subject to §§60.5405 through 60.5407, 60.5410(g), 60.5415(g), and 60.5423 of this subpart.

There are no sweetening units at the Shirley Station. Therefore, all requirements regarding sweetening units under 40 CFR 60 Subpart OOOO would not apply.

40CFR63 Subpart HH (National Emission Standards for Hazardous Air Pollutants for Oil and Natural Gas Production Facilities)

Subpart HH establishes national emission limitations and operating limitations for HAPs emitted from oil and natural gas production facilities located at major and area sources of HAP emissions. The glycol dehydration units (modified unit included) at the Shirley Compressor Station are subject to the area source requirements for glycol dehydration units. However, because the facility is an area source of HAP emissions and the actual average benzene emissions from the glycol dehydration unit is below 0.90 megagram per year (1.0 tons/year) it is exempt from all requirements of Subpart HH except to maintain records of actual average flowrate of natural gas to demonstrate a continuous exemption status.

40CFR63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. The engines at the Shirley Station are subject to the area source requirements for non-emergency spark ignition engines and emergency compression ignition engines.

The applicability requirements for a new emergency CI stationary RICE (E-20) that is located at an area source of HAPs are to meet the requirements of 40CFR60 Subpart IIII.

- a. Change oil and filter every 500 hours of operation or annually, whichever comes first.
- b. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and;
- c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

Beginning January 1, 2015, if you own or operate an existing emergency CI stationary RICE with a site rating of more than 100 brake HP and a displacement of less than 30 liters per cylinder that uses diesel fuel and operates or is contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii) or that operates for the purpose specified in §63.6640(f)(4)(ii), you must use diesel fuel that meets the requirements in 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to January 1, 2015, may be used until depleted.

The applicability requirements for a new four stroke lean burn stationary engine (S7) that is located at an area source of HAPs are to meet the requirements of 40CFR60 Subpart JJJJ. These requirements were outlined above. The proposed engine meet these standards.

Because this engine will not be certified by the manufacturer, Cone will be required to perform an initial performance test within 180 days from startup, and subsequent testing every 8,760 hours or 3 years, whichever comes first.

The following rules do not apply to the facility:

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

The Shirley Compressor Station is located in Tyler County, which is an unclassified county for all criteria pollutants, therefore the Shirley Station is not applicable to 45CSR19.

As shown in the following table, Cone is not a major source subject to 45CSR14 or 45CSR19 review. According to 45CSR14 Section 2.43.e, fugitive emissions are not included in the major source determination because it is not listed as one of the source categories in Table 1. Therefore, the fugitive emissions are not included in the PTE below.

Pollutant	PSD (45CSR14) Threshold (tpy)	NANSR (45CSR19) Threshold (tpy)	Shirley PTE (tpy)	45CSR14 or 45CSR19 Review Required?
Carbon Monoxide	250	NA	54.30	No
Nitrogen Oxides	250	NA	82.30	No
Sulfur Dioxide	250	NA	0.70	No
Particulate Matter 2.5	250	NA	5.20	No
Ozone (VOC)	250	NA	68.00	No
Greenhouse Gas (CO ₂ e)	100,000	NA	88,485	No

45CSR30 (Requirements for Operating Permits)

Cone is not subject to 45CSR30. The Shirley Station is subject to 40CFR60 Subparts III, JJJJ and OOOO, however they are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided they are not required to obtain a permit for a reason other than their status as an area source.

40CFR60 Subpart GG (Standards of Performance for Stationary Gas Turbines)

Subpart GG applies to stationary gas units with a heat input at peak load equal to or greater than 10 MMBtu/hr, based on the lower heating value of the fuel, commencing construction after October 3, 1977. The proposed microturbine generator (S8, Capstone Turbine C1000) is actually comprised of five (5) individual C200 microturbines having a peak load of 200 kW (2.28 MMBtu/hr) and as such, are not subject to this subpart.

§ 60.330

40CFR60 Subpart Kb (Standards of Performance for VOC Liquid Storage Vessels)

40CFR60 Subpart Kb does not apply to storage vessels with a capacity less than 75 cubic meters. The largest tank that Cone has proposed to install is 71.53 cubic meters (18,900 gallons). Therefore, Cone would not be subject to this rule.

40CFR60 Subpart KKK (Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants)

40CFR60 Subpart KKK applies to onshore natural gas processing plants that commenced construction after January 20, 1984, and on or Before August 23, 2011. The Shirley Station is not a natural gas processing facility, therefore, Cone is not subject to this rule.

40CFR60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines)

Subpart KKKK applies to stationary combustion units with a heat input at peak load equal to or greater than 10 MMBtu/hr, based on the higher heating value of the fuel, commencing construction after February 18, 2005. The proposed microturbine generator (S8, Capstone Turbine C1000) is actually comprised of five (5) individual C200

microturbines having a peak load of 200 kW (2.28 MMBtu/hr) and as such, are not subject to this subpart. § 60.4305

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The following HAPs are common to this industry. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

HAPs	Type	Known/Suspected Carcinogen	Classification
Formaldehyde	VOC	Yes	Category B1 - Probable Human Carcinogen
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Ethylbenzene	VOC	No	Inadequate Data
Toluene	VOC	No	Inadequate Data
Xylenes	VOC	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health effects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. For a complete discussion of the known health effects of each compound refer to the IRIS database located at www.epa.gov/iris.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) or 45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment) as shown in the table listed in the Regulatory Discussion section under 45CSR14/45CSR19.

SOURCE AGGREGATION

“Building, structure, facility, or installation” is defined as all the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous

and adjacent properties, and are under the control of the same person. The Shirley Station is located in Tyler County and will be operated by Cone.

- “Contiguous or Adjacent” determinations are made on a case by case basis. These determinations are proximity based, and it is important to focus on this and whether or not it meets the common sense notion of a plant. The terms “contiguous” or “adjacent” are not defined by USEPA. Contiguous has a dictionary definition of being in actual contact; touching along a boundary or at a point. Adjacent has a dictionary definition of not distant; nearby; having a common endpoint or border.

The SHR1 Production Facility and Cone’s Shirley Compressor Station are located less than 0.20 miles from each other. An access road that leads from these facilities has been constructed. There is no other way to access the two facilities without the access road that was non-existent prior to this development. There is no other development or housing associated with this access road. It is the opinion of the writer that these facilities are located on 'adjacent' properties.

- The SHR1 Production Facility will operate under SIC code 1311 (Crude Petroleum and Natural Gas Extraction). Cone’s Shirley Station has an SIC code of 4922 that has been filed with the SEC. Cone’s Shirley Station has the ability to accept gas from several other wellpads in the area.
- Noble is the sole operator of the SHR1 Production Facility. Cone is the operator of the Shirley Station. However, CNX Gas and Noble both own a significant partnership interest in CONE MLP. Therefore, the partnership that exists between these facilities lends itself to common control.

The facilities in question are located on contiguous or adjacent property and are under common control. However, they do not share the same two digit major SIC code. Therefore, the emissions from these two (2) facilities should not be aggregated in determining major source or PSD status.

MONITORING OF OPERATIONS

Cone will be required to perform the following monitoring:

- Monitor and record quantity of natural gas consumed for all engines and combustion sources.
- Monitor all applicable requirements of 40CFR60 Subparts IIII, JJJJ and OOOO, 40CFR63 Subpart HH.
- Monitor the presence of the enclosed combustion devices pilot flame with a thermocouple or equivalent.

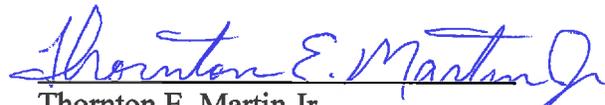
Cone will be required to perform the following recordkeeping:

- Maintain records of the amount of natural gas consumed and hours of operation for all engines and combustion sources.

- Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
- Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
- Maintain records of the visible emission opacity tests conducted per the permit.
- Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment.
- Maintain records of all applicable requirements of 40CFR60 Subparts IIII, JJJJ and OOOO, 40CFR63 Subpart HH.
- Maintain records of the enclosed combustion devices design evaluation.
- The records shall be maintained on site or in a readily available off-site location maintained by Cone for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that Cone meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Shirley Compressor Station should be granted a 45CSR13 modification permit for their facility.


Thornton E. Martin Jr.
Permit Engineer

September 16, 2015
Date