



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-3031A
Plant ID No.: 095-00024
Applicant: Statoil USA Onshore Properties, Inc.
Facility Name: Ball Station
Location: Middlebourne, Tyler County
NAICS Code: 211111
Application Type: Construction
Received Date: October 16, 2015
Engineer Assigned: Caraline Griffith
Fee Amount: \$2,000
Date Received: October 16, 2015
Complete Date: November 3, 2015
Due Date: February 1, 2016
Applicant Ad Date: October 7, 2015
Newspaper: *Tyler Star News*
UTM's: Easting: 521.08 km Northing: 4,372.76 km Zone: 17
Description: Applicant proposes to replace the existing permitted compressor engine, vapor recovery unit, loading rack, and storage tanks with similar equipment that meets Statoil specifications. Applicant also proposes to add a natural gas-fueled generator engine to the site.

DESCRIPTION OF PROCESS

Natural gas is produced by surrounding natural gas wells and sent to one (1) Line Heater HE-1 and then on to a gas separator. The gas from the gas separator goes to a compressor to be raised to a higher pressure. The compressor is powered by engine CE-1 (DOM August 2001) which is a 945 bhp four-stroke lean-burn Caterpillar G3512 TALE natural gas fired engine with has an EMIT oxidation catalyst to meet the 93% CO reduction required due to subpart ZZZZ. The compressed natural gas goes to a header where liquids are sent to Water Tank T-102. The natural gas stream leaves the header and is sent to the dehydration unit to reduce the water vapor from the natural gas stream. TEG

is circulated counter current to the natural gas stream in a contactor. The dehydrated compressed natural gas then exits the facility via the natural gas sales pipeline. The water latent TEG is sent to the flash tank FT-1. After the more volatile fractions flash in the flash tank the liquid is sent to the regenerator RSV-1 where water and some additional emissions are vented. The regenerator is heated by reboiler RBV-1. Condensate from HE-1 are sent to a low-pressure separator which is routed to two (2) 16,500 gallon tanks (T-100 and T-101). Condensate from HE-1 is sent to a 16,500 gallon tank T-102. The vapors from T-100, T-101, and T102 are sent to a vapor recovery unit which sends the vapors back to the process stream just before the compressor. The vapor recovery unit is powered by a 71 bhp Bucks 4.3L four-stroke lean-burn natural gas fired engine CE-2 (DOM June 2008).

Statoil proposes the following changes:

1. Replace permitted 945 HP natural gas compressor engine (CE-1) with two new compressor engines: 1,005 HP Caterpillar G3512 lean burn compressor engine (CE-3) and 2,370 HP Caterpillar G3608 lean burn compressor engine (CE-4).
2. Replace permitted 71 HP natural gas VRU engine (CE-2) with an electric motor-driven VRU system (VRU-2).
3. Add a new 449 HP natural gas-fueled generator engine (G-1) to provide electricity to the Station.
4. Add the new LP Flare (FL-1) to control emergency venting emissions at the Station.
5. Add three new line heaters (HE-2, HE-3, HE-4).
6. Add new heater treater (HTR-1).
7. Replace permitted truck loadout rack (TT-1) with the new truck loadout rack (TT-2).
8. Replace all currently permitted storage tanks with new storage tanks.
9. Remove the Glycol Dehydration System.

SITE INSPECTION

Douglas Hammell from DAQ's Compliance and Enforcement Section performed a site visit on January 14, 2014. The location received a site rating of 30.

Directions:

From the intersection of WV Route 18 and WV Route 180, travel north on WV Route 180 for approximately 0.2 miles, then turn right onto County Hwy 11/Elk Ford Road. Travel approximately 7.7 miles, then turn right onto County Hwy 42/Scales Run Road. Travel

Fact Sheet R13-3031A
Statoil USA Onshore Properties, Inc.
Ball Station

approximately 0.7 miles to the Ball Station access gate which will be on your left. Follow the access road straight up the hill until you've reached the well site.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The Caterpillar G3512 (CE-3) (DOM 5/2005), the Caterpillar G3608 (CE-4) (DOM 4/2015) and the Power Solutions International, Inc. EPSIB14.6NGP (G-1) Generator Engine emission factors and calculations are from the engine manufacturer (EM) and AP-42.

The Line Heaters HE-2, HE-3, and HE-4 and the Heater Treater HTR-1 use emission factors from AP-42. The emission factors in lb/MMscf are: NO_x, 100; CO, 84; SO₂, 0.6; PM, 7.6; and VOC, 5.5.

The LP Flare FL-1 also uses AP-42 to calculate emissions. The emissions factors in lb/MMscf are: NO_x, 0.068; CO, 0.31; SO₂, 0.60; PM, 7.6; VOC, 0.57.

Emissions from Storage Tanks TA710-TA760 were calculated using EPA Tanks 4.0 emissions software.

The following table summarizes the estimated controlled emissions:

Source ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
CE-3	Compressor Engine Caterpillar G3512 TALE 1,005 bhp	NO _x	3.32	14.56
		CO	4.65	20.38
		VOC	0.75	3.30
		SO ₂	<0.01	0.02
		PM	0.08	0.36
		PM ₁₀	0.08	0.36
		Formaldehyde	0.55	2.43
		CO ₂ e	1,224.1	5,361.6
CE-4	Compressor Engine Caterpillar G3608 TALE 2,370 bhp	NO _x	2.61	11.44
		CO	10.09	44.21
		VOC	3.29	14.42
		SO ₂	0.01	0.05
		PM	0.18	0.35
		PM ₁₀	0.18	0.35
		CO ₂ e	3,000.3	13,141.1
G-1	Generator Engine Power Solutions International, Inc. EPSIB14.6NGP 449 bhp	NO _x	0.99	4.34
		CO	1.98	8.67
		VOC	0.69	3.03
		SO ₂	<0.01	0.01
		PM	0.08	0.33
		PM ₁₀	0.08	0.33
		CO ₂ e	450.3	1,972.4
HE-2	Line Heater 1.5 MMBTU/hr	NO _x	0.14	0.61
		CO	0.12	0.51
		VOC	0.01	0.03
		SO ₂	<0.01	<0.01
		PM	0.01	0.05
		PM ₁₀	0.01	0.05
		CO ₂ e	167.5	733.7
HE-3	Line Heater 1.5 MMBTU/hr	NO _x	0.14	0.61
		CO	0.12	0.51
		VOC	0.01	0.03
		SO ₂	<0.01	<0.01
		PM	0.01	0.05
		PM ₁₀	0.01	0.05
		CO ₂ e	167.5	733.7

HE-4	Line Heater 1.5 MMBTU/hr	NO _x	0.14	0.61
		CO	0.12	0.51
		VOC	0.01	0.03
		SO ₂	<0.01	<0.01
		PM	0.01	0.05
		PM ₁₀	0.01	0.05
		CO _{2e}	167.5	733.7
HTR-1	Heater Treater 1.5 MMBTU/hr	NO _x	0.14	0.61
		CO	0.12	0.51
		VOC	0.01	0.03
		SO ₂	<0.01	<0.01
		PM	0.01	0.05
		PM ₁₀	0.01	0.05
		CO _{2e}	167.5	733.7
FL-1	LP Flare 11.9 MMBTU/hr	NO _x	0.81	0.35
		CO	3.69	1.62
		VOC	6.78	2.97
		SO ₂	0.01	<0.01
		PM	0.08	0.04
		PM ₁₀	0.08	0.04
		CO _{2e}	1,328.8	582.0
TA710	Storage Tank Condensate Tank #1	VOC	--	0.18
		Total HAP	--	0.02
TA720	Storage Tank Condensate Tank #2	VOC	--	0.18
		Total HAP	--	0.02
TA730	Storage Tank Condensate Tank #3	VOC	--	0.18
		Total HAP	--	0.02
TA740	Storage Tank Waste Oil Tank	VOC	--	0.03
		Total HAP	--	<0.01
TA750	Storage Tank Produced Water Tank #1	VOC	--	<0.01
		Total HAP	--	<0.01
TA760	Storage Tank Produced Water Tank #2	VOC	--	<0.01
		Total HAP	--	<0.01

The following table shows the facility's fugitive emissions:

Emission Source	Pollutant	Maximum Potential Emissions (TPY)
Rod Packing Fugitives from Engines CE-3 and CE-4	VOC	0.04
	Benzene	<0.01
	Ethylbenzene	<0.01
	n-Hexane	<0.01
	Toluene	<0.01
	Xylenes	<0.01
	Total HAP	<0.01
	CO2e	8.67
Loadout Rack TT-2 Uncaptured Fugitives	VOC	14.22
	Benzene	0.02
	Ethylbenzene	0.02
	n-Hexane	0.10
	Toluene	0.02
	Xylenes	0.02
	Total HAP	0.16
Component Leak Fugitives	VOC	3.95
	Total HAP	0.04
	CO2e	285.1
Venting Episode Fugitives	VOC	4.59
	Total HAP	0.09
	CO2e	854.5

The following table represents the estimated total controlled facility wide emissions:

Pollutant	Maximum Annual Facility Wide Emissions (tons/year)
Nitrogen Oxides	33.56
Carbon Monoxide	77.27
Volatile Organic Compounds	24.47
Particulate Matter	1.73
PM ₁₀	1.73
Sulfur Dioxide	0.10
Formaldehyde	8.73
Benzene	0.08
n-Hexane	0.01
Methanol	0.14
Toluene	0.06
Xylenes	0.03
Total HAPs	11.48
Carbon Dioxide Equivalent	23,995.2

REGULATORY APPLICABILITY

The following rules and regulations apply to this modification:

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

The purpose of 45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers) 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 heat input of all the existing and proposed fuel burning units (HE-1, HE-2, HE-3, and HE-4) is below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However, Statoil would be subject to the

opacity requirements in 45CSR2, which is 10% opacity based on a six minute block average.

45CSR4 (To Prevent and Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to an Objectionable Odor or Odors)

This facility shall not cause the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public. 45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable.

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. Statoil has one (1) flare at the facility. The flare is subject to section 4, emission standards for incinerators. The flare has an allowable emission rate of 0.50 pounds of particulate matter per hour (assuming a natural gas density of 0.044 lb/ft³). The flare has negligible amounts of particulate matter emissions per hour (0.08 lb/hr). Therefore, the facility's flare should demonstrate compliance with this section. The facility will demonstrate compliance by maintaining records of the amount of natural gas consumed by the flare and the hours of operation. The facility will also monitor the flame of the flare 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)

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 heat input of all the existing and proposed fuel burning units (HE-1, HE-2, HE-3, and HE-4) is below 10 MMBTU/hr. Therefore, these units are 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 the changes proposed under this permitting action results in an emissions increase above permitting thresholds. Therefore, Statoil is required to submit a modification application. Statoil

has published the required Class I legal advertisement in *The Tyler Star News* on October 7, 2015 notifying the public of their permit application.

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source, not subject to 45CSR30, and the NSPS are Title V exempt. This facility is required to keep their Certificate to Operate current. Statoil USA Onshore Properties, Inc. paid a \$1,000 modification application fee and \$1,000 NSPS fee. Since this facility has a total reciprocating engine capacity of greater than 1,000 hp (3,824 hp) this facility is subject to 8D with an annual fee of \$500.

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

EPA issued its new source performance standards (NSPS) and air toxics rules for the oil and gas sector on April 17, 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:

- a. Each gas well affected facility, which is a single natural gas well.

The one (1) gas well that currently exists was drilled principally for the production of natural gas and was done so after August 23, 2011. Therefore, this well would be considered affected facilities under this subpart.

- b. 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 this facility. Therefore, this section would not apply.

- c. 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 three (3) reciprocating compressors located at this facility. These compressors were delivered after the effective date of this regulation. Therefore, this section would apply.

- d.
 1. 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.
 2. 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.

The pneumatic controllers at this facility will be intermittent or vent less than 6 scf/hr and therefore this facility is not subject to this section of this regulation.

- e. 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 nonearthen 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:

1. 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.

2. Process vessels such as surge control vessels, bottoms receivers or knockout vessels.

3. 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.

Tank TA710 Condensate Tank #1 located at this facility will emit less than 6 tpy of VOC without controls (0.18 tons/year) and therefore this section of this regulation does not apply.

Tank TA720 Condensate Tank #2 located at this facility will emit less than 6 tpy of VOC without controls (0.18 tons/year) and therefore this section of this regulation does not apply.

Tank TA730 Condensate Tank #3 located at this facility will emit less than 6 tpy of VOC without controls (0.18 tons/year) and therefore this section of this regulation does not apply.

Tank TA740 Waste Oil Tank located at this facility will emit less than 6 tpy of VOC without controls (0.03 tons/year) and therefore this section of this regulation does not apply.

Tank TA750 Produced Water Tank #1 located at this facility will emit less than 6 tpy of VOC without controls (0.01 tons/year) and therefore this section of this regulation does not apply.

Tank TA760 Produced Water Tank #2 located at this facility will emit less than 6 tpy of VOC without controls (0.01 tons/year) and therefore this section of this regulation does not apply.

Tank TA800 Lube Oil Tank located at this facility will emit less than 6 tpy of VOC without controls (<0.01 tons/year) and therefore this section of this regulation does not apply.

Tank TA810 Sump Tank located at this facility will emit less than 6 tpy of VOC without controls (<0.01 tons/year) and therefore this section of this regulation does not apply.

Tank TA820 Methanol Totes located at this facility will emit less than 6 tpy of VOC without controls (<0.01 tons/year) and therefore this section of this regulation does not apply.

f. The group of all equipment, except compressors, within a process unit is an affected facility.

1. 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.

2. 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.

3. 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.

This facility is not a natural gas processing plant. Therefore, LDAR for onshore natural gas processing plants does not apply.

g. Sweetening units located at onshore natural gas processing plants that process natural gas produced from either onshore or offshore wells.

and 1. Each sweetening unit that processes natural gas is an affected facility;

2. Each sweetening unit that processes natural gas followed by a sulfur recovery unit is an affected facility.

3. 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.

4. 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 this facility. Therefore, this section would not apply.

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 Ball Station is subject to the area source requirements for non-emergency spark ignition engines.

Engine CE-3 is an "Existing Stationary RICE" source at an area source of HAPs and is an affected source because construction will commence before June 12, 2006 [63.6590(a)(1)(iii)] due to the manufacturer's date (Engine DOM May 2005) of the engine. CE-4 is a "New Stationary RICE" source at an area source of HAPs and is an affected source because construction will commence after June 12, 2006 [63.6590(a)(2)(iii)] due to the manufacturer's date (DOM April 2015) of the engine. G-1 is a "New Stationary RICE" source at an area source of HAPs and is an affected source because construction will commence after June 12, 2006 [63.6590(a)(2)(iii)] due to the manufacturer's date (DOM May 2014) of the engine.

Engine CE-4 was manufactured after June 12, 2006 and has engine power greater than 500 hp (2,370 hp) and is therefore subject to Subpart JJJJ. Subpart ZZZZ states engine CE-4 must meet the requirements of 40CFR60 subpart JJJJ.

Engine G-1 was manufactured after June 12, 2006 and has engine power of 500 hp or less (449 hp) and is therefore subject to Subpart JJJJ. Subpart ZZZZ states engine G-1 must meet the requirements of 40CFR60 subpart JJJJ.

Engine CE-3 due to the manufacturer's date of the engine must comply with the applicable emission limitations, operating limitations, and other requirements in this subpart. Engine CE-3 is a non-emergency, non-black start 4SLB stationary RICE >500 HP that is not remote and operates more than 24 hours per calendar year (Table 2d.9). Engine CE-3 will also have to abide by all limitations outlined in Table 5 of this rule.

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

40CFR60.4230 states that a source that commenced construction after June 12, 2006 whose SI ICE was less than 500 hp and was manufactured on or after July 1, 2008 is subject to this regulation. G-1, based on the manufacture date this engine is subject to this regulation.

40CFR60.4230 states that a source that commenced construction after June 12, 2006 whose SI ICE was greater than 500 hp and was manufactured on or after July 1, 2007 is subject to this regulation. CE-4, based on the manufacture date this engine is subject to this regulation.

G-1 engine is certified and must maintain compliance by keeping records of conducted maintenance. The CE-4 Caterpillar engine is non-certified, so it must show compliance by keeping a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, Statoil must conduct an initial performance test within 1 year of engine startup to demonstrate compliance.

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 tanks that this facility has proposed to install are 63.60 cubic meters or less each. Therefore this facility would not be subject to this regulation.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Benzene

Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence

of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

Formaldehyde

Formaldehyde is used mainly to produce resins used in particleboard products and as an intermediate in the synthesis of other chemicals. Exposure to formaldehyde may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air. Acute (short-term) and chronic (long-term) inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Limited human studies have reported an association between formaldehyde exposure and lung and nasopharyngeal cancer. Animal inhalation studies have reported an increased incidence of nasal squamous cell cancer. EPA considers formaldehyde a probable human carcinogen (Group B1).

Hexane

Hexane is used to extract edible oils from seeds and vegetables, as a special-use solvent, and as a cleaning agent. Acute (short-term) inhalation exposure of humans to high levels of hexane causes mild central nervous system (CNS) effects, including dizziness, giddiness, slight nausea, and headache. Chronic (long-term) exposure to hexane in air is associated with polyneuropathy in humans, with numbness in the extremities, muscular weakness, blurred vision, headache, and fatigue observed. Neurotoxic effects have also been exhibited in rats. No information is available on the carcinogenic effects of hexane in humans or animals. EPA has classified hexane as a Group D, not classifiable as to human carcinogenicity.

Toluene

The acute toxicity of toluene is low. Toluene may cause eye, skin, and respiratory tract irritation. Short-term exposure to high concentrations of toluene (e.g., 600 ppm) may produce fatigue, dizziness, headaches, loss of coordination, nausea, and stupor; 10,000 ppm may cause death from respiratory failure. Ingestion of toluene may cause nausea and vomiting and central nervous system depression. Contact of liquid toluene with the eyes causes temporary irritation. Toluene is a skin irritant and may cause redness and pain when trapped beneath clothing or shoes; prolonged or repeated

contact with toluene may result in dry and cracked skin. Because of its odor and irritant effects, toluene is regarded as having good warning properties. The chronic effects of exposure to toluene are much less severe than those of benzene. No carcinogenic effects were reported in animal studies. Equivocal results were obtained in studies to determine developmental effects in animals. Toluene was not observed to be mutagenic in standard studies. The major use of toluene is as a mixture added to gasoline to improve octane ratings. Toluene is also used to produce benzene and as a solvent in paints, coatings, synthetic fragrances, adhesives, inks, and cleaning agents. Toluene is also used in the production of polymers used to make nylon, plastic soda bottles, and polyurethanes and for pharmaceuticals, dyes, cosmetic nail products, and the synthesis of organic chemicals.

Xylenes

Commercial or mixed xylene usually contains about 40-65% *m*-xylene and up to 20% each of *o*-xylene and *p*-xylene and ethyl benzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity. Mixed xylenes are used in the production of ethylbenzene, as solvents in products such as paints and coatings, and are blended into gasoline.

AIR QUALITY IMPACT ANALYSIS

Based on the annual emission rates this facility will not be a major source as defined by 45CSR14, so air quality modeling was not performed.

MONITORING OF OPERATIONS

Statoil will be required to perform the following monitoring associated with this permit application:

1. Monitor and record quantity of natural gas consumed for all engines, and combustion sources.

2. Monitor opacity from all fuel burning units.

Statoil will be required to perform the following recordkeeping associated with this modification application:

1. Maintain records of the amount of natural gas consumed in each combustion source.
2. 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
3. Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
4. Maintain records of the visible emission opacity tests conducted per the permit.
5. 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.
6. The records shall be maintained on site or in a readily available off-site location maintained by this facility for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates Statoil's natural gas well pad site should meet the applicable requirements. It is recommended that Statoil's proposed Ball Station modification should be granted a 45CSR13 construction permit for their facility.

Caraline Griffith
Permit Engineer

11/3/15

Fact Sheet R13-3031A
Statoil USA Onshore Properties, Inc.
Ball Station