

To: File
From: John Legg
Date: July 29, 2015



Subj: G70-A001B - Class I Administrative Update (to G70-A001A)
Noble Energy Inc. (Noble); Oxford 1 Natural Gas Production Facility (OXF 1)
Oxford, Doddridge County, WV
Registration No.: G70-A001B; Company ID No: 017-00072

On July 23, 2015 the Division of Air Quality (DAQ) received a Class I Administrative Update from Noble for the OXF 1. The update was assigned to the writer on July 24, 2015.

The following information is found in Noble's application cover letter:

Noble plans to change equipment at the OXF 1 as warranted by decline in production. This update reflects the removal of one (1) Caterpillar 3508B engine rated at 674 horsepower (hp), used for compression of flash gas associated with condensate stabilization. In lieu of the Caterpillar 3508B, Noble intends to install one (1) Caterpillar 342NA engine rated at 225 hp to serve the same function in process, sized commensurate with the decline of production.

The replacement engine is equipped with an interlocked catalyst that is integral to the unit such that operation of the engine is precluded in the absence of a properly functioning catalyst. As such, the potential to emit has been calculated for this source based on post control values pursuant to 45 CSR 13.2.19a.

As the facility change constitutes a decrease in emissions pursuant to limitations outlined in 45 CSR 13.4.2.a.8, Noble hereby requests a Class I Administrative Update.

Additionally, the replacement engine was manufactured prior to June 12, 2006 with no subsequent overhauls triggering reconstruction or modification provisions of New Source Performance Standards (NSPS). The initial engine was subject to NSPS and registered as such. The change of engines therefore does not add substantive control requirements.

The writer reviewed Noble's Class I Administrative Update and found the proposed changes to be warranted. A compare file has been attached to this evaluation that shows the changes made to G70-A001A that resulted in updated G70-A001B.

Please note that the replacement engine (Caterpillar 342NA) was manufactured before June 12, 2006 and is therefore not subject to 40 CFR 60 Subpart JJJJ.

Emission decreases resulting from Noble's proposed compressor engine replacement are provided in Table 1 below:

Table 1: Decrease in Emissions from Replacement of Compressor Engine.

Pollutant	674 hp CAT G3508B Initial Engine		225 hp CAT 342NA Replacement Engine		Emission Change (tpy)
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
NOx	1.49	6.51	0.74	3.24	-3.27
CO	2.97	13.02	1.47	6.45	-6.56
VOC	1.04	4.56	0.52	2.26	-2.30
CO2	739.99	3241.14	236.61	1036.36	-2204.78
SOx	0.00	0.01	0.00	0.00	-0.01
PM	0.05	0.20	0.02	0.07	-0.13
PM10	0.05	0.20	0.02	0.07	-0.13
Formaldehyde	0.10	0.44	0.03	0.15	-0.29
Benzene	0.10	0.03	0.00	0.01	-0.02
Toluene	0.00	0.01	0.00	0.00	-0.01
Ethylbenzene	0.00	0.00	0.00	0.00	0.00
Xylene	0.00	0.00	0.00	0.00	0.00
CH4	1.12	4.93	0.38	1.68	-3.24
CO2e	0.00	364.27	0.0	1078.39	-2285.88

*West Virginia Department of Environmental Protection
Division of Air Quality*

*Earl Ray Tomblin
Governor*

*Randy C. Huffman
Cabinet Secretary*

**Update to Class II General Permit
G70-A Registration ~~to Modify~~**

COMPARE FILE



for the
Prevention and Control of Air Pollution in regard to the
Construction, Modification, Relocation, Administrative Update and
Operation of Oil and Natural Gas Production Facilities
Located at the Well Site

*The permittee identified at the facility listed below is authorized to
construct the stationary sources of air pollutants identified herein in accordance
with all terms and conditions of General Permit G70-A.*

G70-~~A001A~~A001B

Issued to:
Noble Energy, Inc.
Oxford 1 (OXFD1) Production Facility
017-00072

*William F. Durham
Director*

Issued: ~~November 5, 2014~~ Effective: ~~November 5, 2014~~

July 27, 2015

29

Facility Location: Oxford, Doddridge County, West Virginia
Mailing Address: 333 Technology Drive, Suite 110, Canonsburg, PA 15317
Facility Description: Natural Gas Production Facility
NAICS Code: 211111
SIC Code: 1311
UTM Coordinates: 515.067 km Easting • 4343.72 km Northing • Zone 17
LongitudeLat/Long Coordinates: 39.24278
LatitudeCoordinates: — • -80.82542 Longitude
Directions to Facility: I-77 Exit 176. Turn right onto US-50 East. Travel 40.6 miles on US-50 East and turn right onto CR11. Travel 0.5 mile and stay on CR11. Travel 2.4 miles to site.

Alternate Directions: From US 50 (just after mile post 50 if traveling east or just before mile post 50 if traveling west) make right if traveling east or a left if traveling west onto CR50/30 (Olde US 50 – Sunnyside Road) and travel 1.87 miles to CR 21 (Oxford Road), make a left onto Oxford Road and travel approximately 2.9 miles to CR 11/3 (Elliott Road), make a left onto Elliott Road and travel 1.18 miles to lease road on the right.

Registration Type: Modification Class I Administrative Update
Description of Change: G70-A001B - Replace flash gas compressor engine associated with condensate stabilization to accommodate decline in production of wells.

G70-A001A - Modification to ensure a design adequate to handle —increased production by adding —four (4) condensate storage tanks, nine (9) produced water storage tanks, one (1) flash gas —compressor vapor recovery unit (VRU) engines, and one (1) process flare with associated —pilot flame will also be installed for upset conditions.

Subject to 40CFR60, Subpart OOOO? Yes

Subject to 40CFR60, Subpart JJJJ? Yes, engine (3S-ENG1) and it is not certified. Because this engine will not be certified by the manufacturer, Noble 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. No, engines (3S-ENG1 and 3S-ENG2) are not subject to JJJJ because they were manufactured < 6/12/2006.

Subject to 40CFR63, Subpart ZZZZ? Yes, compliance is demonstrated by compliance with NSPS, Subpart JJJJ for engine engines (3S-ENG1, Engine and 3S-ENG2 is) are existing under this rule and is are less than 100500 hp and located at an area source of HAPs. Therefore, engine 3S-ENG2 is engines are required to minimize idle time at startup, and change engine oil and filter, inspect spark plugs, and inspect/replace as necessary all hoses and belts every 1,440 hours or annually (whichever comes first)-) as prescribed in Table 2.d.

Subject to 40CFR63, Subpart HH? No

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit or registration issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§ 22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §22-5-14.

The source is not subject to 45CSR30.

Forma

Forma

Permit Section Applicability for the Registrant

All registered facilities under General Permit G70-A are subject to Sections 1.0, 2.0, 3.0, and 4.0 of General Permit G70-A.

The following additional sections of General Permit G70-A apply to the registrant:

Section 5	Natural Gas Well Affected Facility	<input checked="" type="checkbox"/>
Section 6	Storage Vessels*	<input checked="" type="checkbox"/>
Section 7	Gas Production Units, In-Line Heaters, Heater Treaters, and Glycol Dehydration Reboilers	<input checked="" type="checkbox"/>
Section 8	Pneumatic Controllers Affected Facility (NSPS, Subpart OOOO)	<input type="checkbox"/>
Section 9	<i>Reserved</i>	<input type="checkbox"/>
Section 10	Natural Gas-Fired Compressor Engine (s) (RICE)**	<input checked="" type="checkbox"/>
Section 11	Tank Truck Loading Facility***	<input checked="" type="checkbox"/>
Section 12	Standards of Performance for Storage Vessel Affected Facilities (NSPS, Subpart OOOO)	<input type="checkbox"/>
Section 13	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (NSPS, Subpart JJJJ)	<input type="checkbox"/> <input checked="" type="checkbox"/>
Section 14	Control Devices not subject to NSPS, Subpart OOOO	<input checked="" type="checkbox"/>
Section 15	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40CFR63, Subpart ZZZZ)	<input checked="" type="checkbox"/>
Section 16	Glycol Dehydration Units	<input type="checkbox"/>
Section 17	Dehydration Units With Exemption from NESHAP Standard, Subpart HH § 63.764(d) (40CFR63, Subpart HH)	<input type="checkbox"/>
Section 18	Dehydration Units Subject to NESHAP Standard, Subpart HH and Not Located Within an UA/UC (40CFR63, Subpart HH)	<input type="checkbox"/>
Section 19	Dehydration Units Subject to NESHAP Standard, Subpart HH and Located Within an UA/UC (40CFR63, Subpart HH)	<input type="checkbox"/>

* The registrant may also be subject to the applicable control device requirements of Section 12 if the registrant is subject to the NSPS, Subpart OOOO control requirements or may be subject to the control device requirements of Section 14.

** The registrant may also be subject to the applicable RICE requirements of Section 13 and/or Section 15.

*** The registrant may also be subject to the applicable control device requirements of Section 14.

1.0 Emission Units Table

Emission Unit ID	Emission Point ID	Emission Unit Description	Control Device ID	Year Installed / Modified	Max. Design Capacity	Design Capacity Unit of Measure	G70-A Applicable Sections
1S-TK1-10	8E-COMB	Ten (10) Condensate Storage Tanks	8C-COMB	2014	400	bbl	6.0, 14.0
2S-TK11-21	8E-COMB	Eleven (11) Produced Water Storage Tanks	8C-COMB	2014	400	bbl	6.0, 14.0
3S-ENG1	3E-ENG1	Caterpillar 3508B <u>4SLB</u> <u>G342NA Model; 4SRB</u> Engine; <u>Integral Interlocked Catalyst</u>	3C - OxCat <u>N</u> <u>SCR</u> <u>(ENG1)</u>	2014 <u>2015</u> (Eng. Installed) <6/12/06 (Eng. Man. Date)	400 <u>674225</u>	hp	10.0, 13.0 , 15.0
3S-ENG2	3E-ENG2	Gas Jack GJ230 4SRB Engine	3C-NSCR <u>(ENG2)</u>	2014 (7/16/2004 Eng. Manu. Date)	46	hp	10.0, 13.0 , 15.0
4S-GPU1-6	4E-GPU1-6	Six (6) Gas Processing Units	None	2013	1.0	MMBtu/hr	7.0
5S-LP	5E-LP	LP Separator Heater	None	2013	0.5	MMBtu/hr	7.0
6S-TL1	6E-TL1	Condensate Truck Loading	None	2014	21,462,000	gal/yr	11.0
7S-TL2	7E-TL2	Produced Water Truck Loading	None	2014	38,325,000	gal/yr	11.0
8S-COMB	8E-COMB	Vapor Combustor Unit	8C-COMB	2014	5,833	scfh	14.0
9S-PILOT	9E-PILOT	Vapor Combustor Pilot	NA	2014	40	scfh	14.0
10S-COMB	10E-COMB	Flare	NA	2014	3	mmscfd	14.0
11S-PILOT	11E-PILOT	Flare Pilot	NA	2014	60	scfh	14.0
12S-TE GEN	12E-TE GEN	Thermoelectric Generator	None	2014	Demin	NA	NA

Control Devices

Control Device ID	Control Efficiency %	Control Device Description	Year Installed / Modified	Max. Design Capacity	Design Capacity Unit of Measure	G-70A Applicable Sections
8C	98% - VOC 98% - HAP	Vapor Combustor Unit	2014	5,833	scfh	14.0
10C	98% - VOC 98% - HAP	Backup Flare	2014	3	mmscfd	14.0
3C NSCR OxCat (ENG1)	22.487.6% NOx 75.3% - CO 48.0% - VOC	Oxidation Catalyst NSCR (Non-selective catalytic reduction for rich burn engines)	2014 <u>2015</u> (Eng. Installed) <6/12/2006 (Man. Date)	NA	NA	10.0, 13.0 , 15.0
3C	88.0% -	NSCR (Non-selective catalytic	2013	NA	NA	10.0, 13.0,

NSCR (ENG2)	NOx 78.3% CO	reduction for rich burn engines)			15.0
Emission Reduction Systems				Yes or No	G-70A Applicable Sections
Was a vapor recovery system (VRU) used to determine emission limits?				Yes	6.0, 14.0
Was a low pressure tower(s) used to determine emission limits?				No	NA

Forma
Forma

2.0 Oil and Natural Gas Wells Table

API number	API number	API number
047-17-06000	047-17-06001	047-17-06002
047-17-06003	047-017-06004	047-17-06005

3.0 Emission Limitations

Emission Unit ID	Emission Point ID	Emission Unit Description	Regulated Pollutant	Maximum Potential Emissions*	
				Hourly (lb/hr)	Annual (tpy)
3S-ENG1	3E-ENG1	694225 hp Caterpillar G3508BG342NA Engine	Nitrogen Oxides	1,490.74	6,513.24
			Carbon Monoxide	2,971.47	13,026.45
			Volatile Organic Compounds	1,040.52	4,562.26
3S-ENG2	3E-ENG2	46 hp Gas Jack GJ230 Engine	Nitrogen Oxides	0.20	0.89
			Carbon Monoxide	0.41	1.78
			Volatile Organic Compounds	0.10	0.44
8S-COMB	8E-COMB	Storage Tanks / Condensate Truck Loading / Vapor Combustor Unit	Volatile Organic Compounds	7.38	3.28
10S-COMB	10E-COMB	Backup Flare	Volatile Organic Compounds	6.73	29.49

Forma
Auto
Forma

4.0 Throughput Limitations

Throughput limits are on a 12-month rolling total basis.

Emission Unit ID	Emission Point ID	Emission Unit Description	Annual Throughput Limit
1S-TK1-10	8E-COMB	Ten (10) - 400 bbl Condensate Storage Tanks	21,462,000 gal/yr (all tanks combined)
2S-TK11-21	8E-COMB	Eleven (11) 400 bbl Produced Water Storage Tanks	38,325,000 gal/yr (all tanks combined)
3S-ENG1	3E-ENG1	Caterpillar 342NA; G3508B 4SLB Engine	38.1113.02 MMscf/yr
3S-ENG2	3E-ENG2	Gas Jack GJ230 4SRB Engine	2.6 MMscf/yr
6S-TL1	8E-COMB	Condensate Truck Loading	21,462,000 gal/yr
7S-TL2	7E-TL2	Produced Water Truck Loading	38,325,000 gal/yr

Forma

5.0 Reciprocating Internal Combustion Engines (R.I.C.E.) Information

Emission Unit ID	Engine Manufacturing Date	Subject to 40CFR60, Subpart JJJJ?	Subject to 40CFR63, Subpart ZZZZ?	Subject to Sections 10.1.4 / 10.2.1 (Catalytic Reduction Device)
3S-ENG1	2014 < 6/12/2006	Yes No	Yes	Yes
3S-ENG2	7/16/2004	No	Yes	Yes