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Notice of Construction Worksheet

NOC No. 1236a	Source: Ferndale Storage Terminal 4100 Unick Rd Ferndale, WA 98248
Permit Engineer: Crystal Rau	
NOC Received: 5/4/17	NOC Contact: Gary McSpadden NWCAA No.: 1395-EM03-W

A. Project Description

In Notice of Construction Application 1236, Petrogas proposed to construct and operate (2) new reciprocating compressors driven by (2) new natural gas-fired Caterpillar G3606LE 1835 bhp Ultra Lean Burn Engines (210 and 211) with SileNOx Catalytic Oxidizers, replacing their existing (2) reciprocating compressors driven by (2) existing natural gas-fired Waukesha 1108 bhp Lean Burn Engines (205 and 206); and replacing a 535 bhp diesel-fired emergency generator with a 1005 bhp diesel-fired emergency generator. The 1005 bhp generator was categorically exempt from NSR due to being in emergency service.

In this revision request, OAC 1236a, Petrogas is proposing to retain the (2) existing reciprocating compressors driven by (2) existing natural gas-fired Waukesha 1108 bhp Lean Burn Engines (205 and 206) as emergency and back up for the (2) new reciprocating compressors driven by (2) new natural gas-fired Caterpillar Engines (210 and 211), and have requested a 1,000 hour limitation (combined) on the use of the two existing engines.

As such, OAC 452, originally approved for construction and installation of the two existing Waukesha engines, a 400,000 barrel refrigerated liquefied petroleum gas (LPG) storage tank (Tank T2), and diesel-fired emergency generator (replaced by the 1005 hp generator approved in this OAC) will be superseded by this OAC, with any applicable requirements for the equipment still in use at the site incorporated into the OAC approval conditions.

Other existing air emission sources on-site, but not covered by this OAC, include (1) 1005 hp diesel-fired emergency generator mentioned above, (3) 225 hp firewater diesel pumps, (1) 1.96 MMBtu/hr natural gas glycol heater, (1) 1.8 MMBtu/hr LPG vaporizer, (1) 500 gallon odorant tank, (4) 60,000 gallon pressurized LPG storage tanks, (6) 30,000 gallon pressurized LPG storage tanks, (3) 300 gallon diesel storage tanks, (1) 2,000 gallon diesel storage tank, (1) 550 waste oil tank, (1) 300 gallon gasoline storage tank, (1) 350,000 barrel refrigerated LPG storage tank (Tank T1, constructed in 1975), truck and railcar loading, and fugitive emissions from leaking equipment components.

B. New Source Review (NSR) Fees

NWCAA NSR fees have been assessed in accordance with the fee schedule effective January 1, 2017. The NSR fees assessed and amount paid are listed in the NSR Fee Worksheet posted on the OAC Whiteboard for this project.

C. Public Notice

In accordance with NWCAA Section 305.1, an internet notice that the NWCAA received this OAC revision request was posted on the NWCAA website for a minimum of 15 consecutive days ending on May 25, 2017.

Formal public involvement and notification is required for this project because a public comment period/public hearing has been requested by an individual during the period that the NOC was posted on the NWCAA website.

D. SEPA Review

State Environmental Policy Act (SEPA) review under NWCAA Section 155 is addressed as follows.

A new SEPA determination is not required because this is a permit revision that will not result in an increase in pollutant emissions, or affect other environmental factors.

Emissions from the existing engines are not increasing; this permit revision limits (decreases) operation of the Waukesha engines to not more than 1,000 hours (combined), per year.

Further, the original project for the construction and installation of the new engines, OAC 1236, was already reviewed under SEPA, and a DNS was issued by Whatcom County on February 19, 2016. A copy of this DNS is included in the NOC folder and is being relied upon for this project.

Accordingly, the following exemption is being exercised; *NWCAA 155.2 A. which references WAC 197-11-600 When to use existing environmental documents.*

E. Permit History

OAC 1236 was issued May 4, 2016 for installation and operation of (2) reciprocating compressors driven by (2) new natural gas-fired Caterpillar 1835 bhp G3606 Ultra Lean Burn Engines (210 and 211) with SileNOx Catalytic Oxidizers. OAC 1236 is being superseded by OAC 1236a.

OAC 452 was issued May 5, 1994 for installation and operation of (2) natural gas compressor engines (205 and 206) rated at 1108 bhp, a 400,000 barrel refrigerated LPG storage tank, and ancillary equipment at the existing Ferndale Terminal. It was revised:

- January 19, 1995, to add a 535 bhp diesel-fired emergency generator.
- October 6, 1997, to correct compressor horsepower rating, adjust criteria pollutant emission rates to correspond to the adjusted rating, and revise formaldehyde emission rate to correlate with achievable values and still remain below ASIL.

OAC 452, and its two revisions, is being superseded by OAC 1236a. Appropriate applicable requirements for the 400,000 barrel refrigerated LPG storage tank and the (2) natural gas engines that drive the (2) reciprocating compressors will be incorporated into OAC 1236a. Two new conditions will be added for the Waukesha engines, as requested by Petrogas in the revision application: a 1,000 hour limit on the use of the Waukesha engines (combined) during any consecutive 12-month period; and a restriction that the engines be used for testing, emergency, and back up, only.

Conditions 5, 6, 10 and 11 from OAC 452 will not be carried over into OAC 1236a as they are not enforceable as a practical matter, have already been met, are obsolete or are not consistent with our current permitting practices.

F. Basis for New Source Review Applicability

Not applicable to this request for a revision.

G. Criteria Air Pollutant Total Project Emissions and Impacts

Not applicable to this request for a revision. There are no changes to the assumptions or calculations of criteria pollutant emissions as a result of the request to keep the original existing, previously permitted, reciprocating compressor engines with a 1,000 hour limit on the operation of the Waukesha engines (combined) used for testing, emergency, and back up, only.

Note: unlike the toxic air pollutant analysis (below), the analysis previously provided for OAC 1236 for criteria pollutants did not include any credit taken for the shutdown of the two (2) existing Waukesha engines. Therefore, the analysis did not need to be re-done.

H. Toxic Air Pollutant Project Emissions and Impacts

There are (4) toxic air pollutants (TAPs) whose controlled PTE based on 100% capacity and 8760 hours of operation per year for both engines are above the small quantity emission rates (SQER) in WAC 173-460-150: 1,3-Butadiene, Acrolein, Benzene, and Nitrogen Dioxide. TAP emissions for the new engines are based on EPA AP-42, Fifth edition, Section 3-2-2, with destruction efficiency from catalytic oxidation applied based on 97.3% for formaldehyde, acrolein, acetaldehyde and 1,3-butadiene, 0% for NO₂ and SO₂, and 79.6% for VOC and all remaining TAP VOCs.

Emissions of these toxics were previously evaluated under OAC 1236. During that review, only the increase in each TAP emitted by the new emission unit after application of tBACT was reviewed, as allowed under WAC 173-460-050(2). Since the controlled actual TAP emissions from shutting down the existing engines was greater than the controlled TAP PTEs of the new engines, no additional ambient analysis was required.

When Petrogas requested to operate the Waukesha engines as emergency and back up to the Caterpillar engines instead of shutting them down, the calculations had to be re-done and the resulting air emissions modeled using AERMOD. The revised calculations in Table 3

do not take any credit (i.e., emission offset) for the shutdown of the two (2) existing Waukesha engines.

Table 3: Toxic Air Pollutant Emissions – PTE Controlled as Permitted

Toxic Air Pollutant	Emissions from New Engines (lb/averaging period)	SQER (lb/averaging period)	Modeling Required?	ASIL (ug/m ³)	Model Predicted Concentration (µg/m ³)
1,3-Butadiene	1.8 lb/yr ^a	1.13 lb/yr	Yes	0.00588	0.00020
Acrolein	0.0822 lb/24-hr ^a	0.00789 lb/24-hr	Yes	0.06	0.02
Benzene	19 lb/yr ^b	6.62 lb/yr	Yes	0.0345	0.0025
Nitrogen Dioxide	4.042 lb/hr	1.0 lb/hr	Yes	470	105
Notes:					
a. Destruction efficiency of 97.3% for catalytic oxidation provided by manufacturer applied to emission estimate					
b. Destruction efficiency of 79.6% for catalytic oxidation provided by manufacturer applied to emission estimate					

Emissions of 1,3-Butadiene, Acrolein, Benzene, and Nitrogen Dioxide were modeled by Petrogas using AERMOD and found to be less than 35% of their corresponding Ambient Source Impact Levels (ASILs) in WAC 173-460-150. Therefore, the increases in toxics from this project can be approved in accordance with NWCAA Section 300 and WAC 173-460-070. The modeling files were evaluated by NWCAA and copies are stored in J:\NOC\AA Non Title 5\1200-1249\1236a – Petrogas Ferndale Storage Terminal\Modeling files.

I. Prevention of Significant Deterioration (PSD) Program

The emissions from this facility are below PSD levels.

J. Registration Program

Petrogas’s registration category was increased to EMO3 when OAC 1236 was under review. Further changes to the registration category may be warranted based on actual emissions reported from the facility in the future.

K. Air Operating Permit (AOP) Program

Applicability with the Title V Air Operating Permit (AOP) program was evaluated.

The Title V AOP thresholds are based on any of the following:

- Criteria air pollutants: PTE 100 tpy of any one pollutant.
- Hazardous air pollutants: PTE 10 tpy for any single HAP, or 25 tpy of any combination of HAPs.
- Applicability of any federal NSPS or NESHAP regulation unless it is specifically exempt.

' "Potential-to-emit" is the maximum capacity of a stationary source to emit under its physical and operational design. Any physical or operational limitation on the source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation, or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the (EPA) Administrator.'

Based on the definition, the facility-wide PTE for Petrogas includes emissions from construction of this project, based on installation of new engines that must comply with federally enforceable emission limitations in 40 CFR 60 Subpart JJJJ and meet BACT. A review of Petrogas' facility-wide PTE, even without hour limitations on the Waukesha engines, shows the facility PTE does not exceed any Title V emission thresholds. The source continues to be considered a "**natural minor**".

L. Confidential Business Information (CBI)

The NOC application does not contain any information deemed by the applicant to be CBI.

M. Changes to Approval Conditions Resulting From Revision

1.) The condition was modified to apply to all four (4) compressor engine stacks (205, 206, 210 and 211). This incorporates the opacity limit for the two (2) Waukesha compressor engines from Condition 8 in OAC 452.

2.) – 10.) Specific reference to Caterpillar G3606LE engine or Caterpillar G3606LE compressor engine added to clarify that these conditions only apply to the new Caterpillar G3606LE engines.

12.) References OAC 1236a.

13.) Incorporates Condition 3 from OAC 452 – Record of throughput for LPG Tank T2

14.) Limit hours of operation of the existing natural gas-fired Waukesha 1108 bhp Lean Burn Engine (205 and 206) to 1,000 hours during any consecutive 12-month rolling period (combined), consistent with the language used in NWCAA 300.4 i) used to categorize stationary internal combustion engines whose operation is limited to emergency situations and required testing and maintenance.

15.) Limit use of (2) existing natural gas-fired Waukesha 1108 bhp Lean Burn Engines to emergency, testing, and back up for the new Caterpillar Engines (210 and 211), only.

16.) Incorporates part of Condition 1, Table 1 from OAC 452 – Emission limits, and hourly emission limits, for NO_x, CO, VOC, SO₂, and Formaldehyde. These are the emission limits

and associated rates identified as part of BACT in the original OAC and used by the facility for emission calculations. Does not include annual emission limits (combined), because the existing engines are limited to 1,000 hours, combined, and will be used for testing, emergency, and back up only, so should not ever reach those annual limits.

17.) Incorporates part of Condition 2 from OAC 452 - Requires Petrogas to test both Waukesha engines within 90 days of issuance of OAC 1236a. It is being retained to trigger testing of the Waukesha engines to ensure the engines still meet the emission limits following the significant maintenance recently performed on the engines.

18.) Incorporates Condition 4 from OAC 452 – requirements to maintain annual records of fuel consumption and hours of operation for each Waukesha compressor engine. Added the requirement to record hours of operation for each consecutive 12-month rolling period for each Waukesha engine.

19.) Incorporates Condition 7 from OAC 452 – requirement for O&M plan.

20.) Incorporates Condition 9 from OAC 452 – requirement to burn only pipeline quality natural gas in Waukesha compressor engines.

Timeline and Review

Timeline	Date
NOC Received	5/4/17
NOC Incompleteness Determined (due 30 days from receipt)	
NOC Completeness Determined	5/30/17
Public Comment Period	7/31/17 – 9/6/17
Public Hearing	9/5/17
Final Decision Due (due 60 days from complete)	7/29/17
Final OAC issued	

Review		Date
NWCAA Engineering	Dan Mahar	5/31/17
NWCAA Compliance	Rebecca Brown & Agata McIntyre	6/2/17
Source	Gary McSpadden, Petrogas & Erin Hallenburg, ERM	6/5/17

N. Correspondence

5/11-25/17 Erin Hallenburg, ERM (email & phone)

Discussions regarding proposed modeling protocol for air toxics, resubmittal of modeling protocol.

5/15/17 Wendy Harris (email)

Request for public hearing on Petrogas Ferndale Storage Facility permit revision. Forwarded to G. King NWCAA public records officer to respond.

5/15-25/17 Michelle Smith, ERM (phone)

Notification regarding request for public hearing, discussions regarding timing for permitting process w/r/t public hearing, notification of removal of temporary engine approved in RO 45 and replacement of existing Waukesha engine approved in OAC 452.

5/19/17 Carl Weimer, Whatcom County (email)

Requested copy of permit application to respond to inquiries from constituents received by his office. Returned by A. McIntyre.

6/1/17 Dustin Pittman (email & phone)

Asked for color isopleths for each toxic air pollutant showing plot of highest receptor from model. Received same day.

6/28/17 Erin Hallenburg, ERM (emails)

Comments from ERM and Petrogas on preliminary draft OAC.

7/13/17 Erin Hallenburg, ERM (phone)

Discussion of options to resolve comments on OAC and worksheet.

7/17-25/17 Erin Hallenburg, ERM (email & phone)

Selection of options and agreement resolving comments on OAC and worksheet and complete listing of air emitting units on-site, including those not addressed in OAC 1236a.