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November 13, 2023

North Dakota Department of Environmental Quality
Division of Air Quality
918 E. Divide Ave., 2nd Floor
Bismarck, ND 58501

*RE: Smokey Compressor Station Permit to Construct Application for Compressor Engine Replacement
Targa Badlands LLC
Smokey Compressor Station
McKenzie County, North Dakota*

To Whom It May Concern:

Targa Badlands LLC (Targa) owns and operates the Smokey Compressor Station (Smokey CS) and the Little Missouri Gas Plant (LMGP) collectively referred to as Little Missouri Plant in the NE quarter of the SE quarter of Section 30 T149N R98W in McKenzie County, North Dakota. The currently active PTCs for both Smokey CS and LMGP are PTC 16012, PTC 17023 (Amendment 2), PTC 19010, PTC ACP 17996, PTC ACP-018111, and PTC-018129. The Little Missouri Plant is subject to Title V permitting requirements and has been issued Title V Permit No. T5015001. An updated Title V permit application will be submitted under a future cover.

Targa is herein submitting this Permit to Construct (PTC) application for a proposed project to replace one (1) 1,480 BHP natural gas-fired engine (SCS-10) with one (1) 1,500 BHP natural gas-fired engine (SCS-10a) at the Smokey CS.

This application is being submitted online via Combined Environmental Regulatory Information System (CERIS) and the required PTC application fee will be paid online.

If you have any questions or comments about the information presented in this application, please do not hesitate to call me at (713) 584-1172.

Sincerely,

Targa Badlands LLC

A handwritten signature in black ink, appearing to read 'Spencer Roberts', written in a cursive style.

Spencer Roberts
Environmental Specialist

PERMIT TO CONSTRUCT APPLICATION UPDATE

**Targa Badlands LLC
Little Missouri Gas Plant**



TARGA

Prepared By:

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November 2023

Project No. 230601.0171

EXECUTIVE SUMMARY

Targa Badlands LLC (Targa) owns and operates the Smokey Compressor Station (Smokey CS) and the Little Missouri Gas Plant (LMGP), located at latitude 47.6961° North and longitude 103.2619° West in McKenzie County, North Dakota. Smokey CS and LMGP operate under Permit to Operate AOP-28407 v2.0, issued December 13, 2022 by the North Dakota Department of Environmental Quality (NDDEQ). The currently active PTCs for both Smokey CS and LMGP are PTC 16012, PTC 17023 (Amendment 2), PTC 19010, PTC ACP 17996, PTC ACP-018111, and PTC-018129. The two facilities (collectively referred to as Little Missouri Plant) are approximately 500 feet apart, and Targa owns a 121-acre tract of land encompassing both Smokey CS and LMGP. The Little Missouri Plant is subject to Title V permitting requirements and has been issued Title V Permit No. T5O15001. An updated Title V permit application will be submitted under a future cover.

As part of this application, Targa proposes to replace one (1) 1,480 BHP natural gas-fired engine (SCS-10) with one (1) 1,500 BHP natural gas-fired engine (SCS-10a) at the Smokey CS.

The following supplemental information can be found in the appendices of this application:

Appendix A: Emission Calculations;

Appendix B: Vendor Data; and

Appendix C: The required PTC application forms (SFN8516, SFN8532, and SFN8891).

Targa will submit the associated \$325 PTC application fee under a separate cover.

PROCESS DESCRIPTION

Targa owns and operates the Little Missouri Plant, comprised of Smokey CS and LMGP, located in McKenzie County, North Dakota.

Smokey CS is a gathering facility and compressor station. Incoming field gas is fed to an inlet separator that removes condensate and produced water from the gas stream. Condensate and produced water streams are stored in the two (2) 400-barrel storage tanks on site before being loaded onto trucks for sale or disposal. The remaining gas stream is compressed and sent to the triethylene glycol (TEG) dehydration unit for water removal. The scrubbed gas stream is then sent to the collocated LMGP for further processing. Organic gases that are removed in the dehydration process are used as fuel for the TEG reboiler or reintroduced into the process stream. Emissions from the regenerator are routed to a BTEX condenser and then routed to the TEG reboiler firebox for combustion.

LMGP Phases 1 and 2 currently processes produced natural gas through a refrigeration process with ethylene glycol (EG) hydrate prevention that extract natural gas liquids for sale. The inlet gas flows to a two-phase inlet separator, where vapors and liquids are separated. Liquid water is sent to storage. Liquid condensate is stabilized, stored in the pressurized storage tanks and trucked from the facility. The overhead gas is then processed through an EG dehydrator where the natural gas liquids are recovered. These liquids are processed through a de-ethanizer, stored in the pressurized storage tanks and trucked from the facility. The overhead gas from the condensate stabilizer, EG dehydrator and de-ethanizer are compressed and directed to the pipeline. LMGP Phase 3 processes natural gas through a 40 MMscfd cryogenic refrigeration process. LMGP Phase 4 processes an additional 200 MMscfd of field gathered natural gas to the LMGP using a refrigerated cryogenic expander process. LMGP Phase 4 produces Y-grade liquid product and pipeline-quality sales gas. LMGP Phase 5 adds an additional 200 MMscfd of natural gas processing capacity, and the ability for the plant to process up to 509 MMscfd of field gas.

The current PTC application will involve the replacement of one (1) 1,480 BHP natural gas-fired engine (SCS-10) with one (1) 1,500 BHP natural gas-fired engine (SCS-10a) at the Smokey CS.

EMISSION CALCULATIONS

The NO_x, CO, VOC, formaldehyde, CO₂, CH₄, and CO_{2e} emission factors for the natural gas-fired engine at Smokey CS were based on manufacturer specification sheets. The formaldehyde emission factor includes an added 40% safety factor and the CO emission factor includes an added 20% safety factor. The VOC emission factor has also been doubled for conservatism.

Total HAPs emission factors were based on AP-42, Table 3.2-3. Appendix A includes detailed emission calculations of the engine.

REGULATORY APPLICABILITY ANALYSIS

The components of the proposed project are subject to certain federal and state air quality regulations. This section of the permit application summarizes the air permitting requirements and the key air quality regulations that apply to the proposed activities covered by this permit application. Specifically, the applicability of the Prevention of Significant Deterioration (PSD) program, New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAPs), and North Dakota air regulations are addressed. Only regulations applicable or potentially applicable to the proposed modification are discussed below; regulations applicable to unchanged units have been addressed in previous applications, and thus are not discussed in this application.

1.1 Federal Regulations

1.1.1 40 CFR Part 52: Prevention of Significant Deterioration (PSD)

The Smokey CS is located in North Dakota, which is designated as attainment or unclassifiable for all criteria pollutants per 40 CFR 81.335. Gas processing plants are not included on the 28 listed source categories in 40 CFR 52.21(b)(1)(i)(a) with a 100 tpy "major" source PSD threshold (PSD MST); therefore, the PSD MST for the Smokey CS is 250 tpy. The potential emissions of individual regulated pollutants from the project and the total site are below the 250 tpy threshold, thus the facility will remain a minor source under PSD.

1.1.2 Title V and Compliance Assurance Monitoring (CAM) Applicability

The PTE of the Little Missouri Plant exceeds 100 tpy for CO, NO_x, and VOC, thus the site is a major source under the Title V program. A Title V permit was issued for the site in October 2015, with a Title V Renewal application submitted on April 17, 2020. A revised Title V permit application will be submitted to include the replacement engine as required by NDAC 33-15-14-06 (4)(a)(1).

Compliance Assurance Monitoring (CAM) requirements can be found in 40 CFR Part 64. As described in §64.2(a), CAM applies to pollutant-specific emissions units at a major source under the Title V program that satisfy all of the following criteria:

- The unit is subject to an emission limitation or standard for the applicable regulated air pollutant;
- The unit uses a control device to achieve compliance with any such emission limitation or standard; and
- The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source (i.e., 100 tpy of NO_x, CO, VOC, SO₂, PM₁₀, PM_{2.5}; 10 tpy of a single HAP; 25 tpy of total HAP).

CAM applicability for the replacement engine will be addressed in the follow up Title V application for this project.

1.1.3 New Source Performance Standards (NSPS)

New Source Performance Standards (NSPS) are nationwide regulations that regulate air pollution from new, modified, and reconstructed stationary source categories that are determined to cause, or contribute significantly, to air pollution and that may reasonably be anticipated to endanger public health. The following NSPS were assessed for applicability to engine replacement at Smokey CS.

1.1.3.1 40 CFR Part 60 Subpart A: General Provisions

Any source subject to a source-specific NSPS is also subject to the general provisions of NSPS Subpart A. Unless specifically excluded by the source-specific NSPS, Subpart A generally requires initial construction notification, initial startup notification, performance tests, performance test date initial notification, flare requirements, general monitoring requirements, general recordkeeping requirements, and semiannual monitoring and/or excess emission reports.

1.1.3.2 40 CFR Part 60: Subpart Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

NSPS Subpart Dc applies to steam generating units for which construction, modification, or reconstruction is commenced after June 9, 1989 and that have a maximum design heat input capacity of greater than or equal to 10 MMBtu/hr and less than or equal to 100 MMBtu/hr. The steam generating units at this facility are not included in this project and thus, there is no change in applicability.

1.1.3.3 40 CFR Part 60 Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

This subpart applies to each storage vessel at a facility with a capacity greater than or equal to 75 cubic meters that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984. The storage vessels at this facility are not included in this project and thus, there is no change in applicability.

1.1.3.4 40 CFR Part 60 Subpart JJJJ: Spark Ignition Reciprocating Internal Combustion Engines

This subpart applies to spark ignition engines for which construction commenced after June 12, 2006 and were manufactured after July 1, 2007 (for lean burn engines)/ manufactured after July 1, 2008 (for rich burn engines). The new replacement engine at this facility is a rich burn engine with a construction date after June 12, 2006 and was manufactured after July 1, 2008. Therefore, the engine will be subject to this subpart and Targa will comply with the applicable requirements of NSPS Subpart JJJJ, including but not limited to the required emission factor standards.

1.1.3.5 40 CFR Part 60 Subpart OOOO: Crude Oil and Natural Gas Facilities for which Construction, Modification, or Reconstruction Commenced after August 23, 2011 and on or before September 18, 2015

This subpart applies to Crude Oil and Natural Gas Production, Transmission, and Distribution Facilities for onshore natural gas processing plants. NSPS Subpart OOOO regulates emissions and work practice standards for compressors, certain storage tanks, pneumatic controllers, and fugitive sources. The fugitives at this facility are not included in this project and thus, there is no change in applicability.

1.1.3.6 40 CFR Part 60 Subpart OOOOa: Crude Oil and Natural Gas Facilities, for which Construction, Modification or Reconstruction Commenced after September 18, 2015

This subpart applies to Crude Oil and Natural Gas Production, Transmission, and Distribution Facilities for onshore natural gas processing plants. NSPS Subpart OOOOa regulates emissions and work practice standards for compressors, certain storage tanks, pneumatic controllers, and fugitive sources.

Pneumatic Controllers and Pumps – For natural gas processing plants, each pneumatic controller facility, which is defined as a “single continuous bleed natural gas driven pneumatic controller,” is subject to NSPS OOOOa. Targa will not install any pneumatic controllers as part of this project, thus this project will not have any pneumatic controller affected facilities subject to Subpart OOOOa. [60.5365a(d)(2)]

Storage Vessel – A storage vessel is an affected facility if it is located in the oil and natural gas production segment and has potential to emit (PTE) of 6 tpy or more VOC emissions. Targa will not install any storage vessels as part of this project; therefore, this project will not have any storage vessels that are subject to 40 CFR § 60.5365a(e).

Equipment leaks at onshore natural gas processing plants – Per 40 CFR § 60.5400a and § 60.5401a, equipment leak components are subject to monitoring and leak detection programs. There are no additional fugitives associated with this project; therefore, there will be no affected equipment leak components subject to Subpart OOOOa for this project.

Reciprocating Compressors – Per §60.5365a(c), each reciprocating compressor affected facility, which is a single reciprocating compressor, is subject to NSPS OOOOa. There are no new or replaced reciprocating compressors associated with this project; therefore, there will be no affected reciprocating compressors subject to Subpart OOOOa for this project.

1.1.4 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

The Little Missouri Plant is characterized as an area source of HAP because potential emissions of any single HAP are less than 10 tons per year and total potential HAP emissions are less than 25 tons per year. As shown in Table 4-1, the site will remain an area source of HAP after the proposed modification at LMGP is complete. The following potentially applicable NESHAPs are addressed below.

1.1.4.1 40 CFR Part 63 Subpart A – General Provisions

Any source subject to a source-specific NESHAP is also subject to the general provisions of NESHAP Subpart A. Unless specifically excluded by the source-specific NESHAP, Subpart A generally requires initial construction notification, initial startup notification, performance tests, performance test date initial notification, general monitoring requirements, general recordkeeping requirements, and semiannual monitoring and/or excess emission reports.

1.1.4.2 40 CFR Part 63 Subpart HH – Oil and Natural Gas Production Facilities

MACT Subpart HH applies to emission points at oil and natural gas production facilities that are HAP major or HAP area sources and that process, upgrade, or store either hydrocarbon liquids or natural gas prior to the point of custody transfer. The Little Missouri Plant is an area source of HAPs and per MACT HH, the affected source at an area source of HAPs is each TEG dehydration unit located at the facility. There are no TEG dehydrators proposed in this revision, and no change in applicability.

1.1.4.3 40 CFR Part 63 Subpart HHH – Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities

MACT Subpart HHH applies to natural gas transmission and storage facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final end user and are major sources of HAP emissions. Per 40 CFR § 63.1270(a), the Little Missouri Plant is not an affected source since it is not considered a natural gas transmission or storage facility.

1.1.4.4 40 CFR Part 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters

MACT Subpart DDDDD establishes emission limits, operational standards, and compliance demonstration requirements for HAP emissions from industrial, commercial, and institutional boilers and process heaters operating within major sources of HAP emissions. There are no process heaters proposed in this revision, and no change in applicability.

1.1.4.5 40 CFR Part 63 - Subpart ZZZZ, SI RICE

The new replacement engine located at the facility are subject to MACT Subpart ZZZZ since they qualify as new stationary spark-ignited RICE located at an area source of HAPs (i.e. the engines were constructed after June 12, 2006). This engine complies with MACT Subpart ZZZZ by complying with NSPS Subpart JJJJ, per 40 CFR 63.6590(c)(1).

1.1.4.6 40 CFR Part 63 Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers at Area Sources

MACT Subpart JJJJJJ establishes standards for HAP emissions from industrial, commercial, and institutional boilers operating within area sources of HAP emissions. According to 63.11194(a)(1), an affected source is the collection of all existing industrial, commercial, and institutional boilers within a subcategory as listed in 40 CFR § 63.11200 (coal, biomass, oil) and defined in § 63.11237. There are no boilers proposed in this revision, and no change in applicability.

1.2 North Dakota State Air Regulations

This project is being permitted under the regulations contained in the North Dakota Administrative Code (NDAC) Air Pollution Control Rules in Article 33-15. North Dakota air rules fall under two main categories: those regulations that are generally applicable (e.g., permitting requirements) and those that have specific applicability (e.g., PM standards for processes). The generally applicable requirements are straightforward (e.g., filing of emission statements, permit fees, stack heights, etc.) and, as such, are not discussed in further detail. Similar to Section 4.1, only regulations applicable or potentially applicable to the proposed modification are discussed below; regulations applicable to unchanged units have been addressed in previous applications, and thus are not discussed in this application.

1.2.1 Federal Regulations Incorporated by Reference

The project is not subject to any additional air-related federal requirements beyond those covered in the Federal Regulations in Section 4.1 for these State Air Regulations.

1.2.2 NDAC 33-15-03 - Restriction of Emission of Visible Contaminants

NDAC Article 33-15-03 establishes standards for visible air contaminants from new and existing installations, fugitive emissions, and flares. The new engine will comply with the opacity requirements in NDAC 33-15-03-02.

1.2.3 NDAC 33-15-05 – Emissions of Particulate Matter Restricted

NDAC Article 33-15-05 applies to any operation, process, or activity from which particulate matter is emitted except the burning of fuel for indirect heating in which the products of combustion do not come into direct contact with process materials, the burning of refuse, and the processing of salvable material by burning.

Emission limits apply to liquid and solid fuel burning equipment under this chapter. Since the equipment associated with this project combusts gaseous fuel only, emission limits do not apply.

1.2.4 NDAC 33-15-06 – Emissions of Sulfur Compounds Restricted

NDAC Article 33-15-06 lists emission standards and restrictions for sulfur compounds. Units that combust pipeline-quality natural gas are exempt from this rule per 33-15-06-01(1)(e). The new engine unit at the Smokey CS will combust pipeline-quality natural gas, and therefore is exempt from this rule.

1.2.5 NDAC 33-15-07 – Control of Organic Compounds Emissions

NDAC Article 33-15-07 establishes standards for organic compounds for new equipment. There are no methanol tanks proposed in this revision, and no change in applicability.

1.2.6 NDAC 33-15-12 - Standards of Performance for New Stationary Sources

NDAC Article 33-15-12 incorporates by reference the NSPS subparts presented in 40 CFR 60. The applicability of this section is described in Section 4.1, above.

1.2.7 NDAC 33-15-13 – Emission Standards for Hazardous Air Pollutants

NDAC Article 33-15-13 incorporates by reference the NESHAP subparts listed in 40 CFR 61. The applicability of this section is described in Section 4.1, above.

1.2.8 NDAC 33-15-14 – Designated Air Contaminant Sources, Permit to Construct, Minor Source Permit to Operate, Title V Permit to Operate

NDAC Article 33-15-14 establishes rules for various permit types. This permit application addresses the requirement to submit an application for a Permit to Construct prior to constructing a new installation or source. Targa will not commence construction on the proposed changes until a Permit to Construct has been issued by the North Dakota Department of Environmental Quality.

As noted in Section 4.1, the facility will remain a major source under the Title V Program after the installation of the proposed additions, and a revised Title V permit application will be submitted to include the modified emission sources as required by NDAC Article 33-15-14-06(4)(a)(1).

1.2.9 NDAC 33-15-15 – Prevention of Significant Deterioration of Air Quality

NDAC Article 33-15-15 incorporates by reference the PSD requirements listed in 40 CFR Part 52. The applicability of this section is described in Section 4.1, above.

1.2.10 NDAC 33-15-16 - General Odor Restrictions

This subpart restricts the release of objectionable odors, including hydrogen sulfide. Targa will take measures to minimize objectionable odors at the site.

1.2.11 NDAC 33-15-22 – Emissions Standards for Hazardous Air Pollutants for Source Categories

NDAC Article 33-15-22 incorporates by reference the NESHAP subparts listed in 40 CFR 63. The applicability of this section is described in Section 4.1, above.

APPENDIX A – EMISSION CALCULATIONS AND SUPPORTING DOCUMENTATION

Little Missouri Gas Plant and Smokey Compressor Station

Summary of Emissions

EU	EP	Source	NO _x		CO		VOC		SO ₂		PM/PM ₁₀ /PM _{2.5}		HAP		Formaldehyde	CO ₂ e		
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy	lb/hr	tpy	
Smokey Compressor Station Emissions																		
SCS-5	18	400 bbl Condensate Tank	¹	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCS-6	18	400 bbl Produced Water Tank	¹	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCS-8	7	Tri-ethylene glycol (TEG) reboiler rated at 0.675 MMBtu/hr and fired on condenser overhead gas or natural gas		0.07	0.29	0.06	0.24	3.64E-03	0.02	3.97E-04	1.74E-03	5.03E-03	0.02	1.06E-03	4.65E-03	1.85E-04	79.88	349.89
SCS-9	7	Tri ethylene glycol (TEG) dehydration unit rated at 22 MMscfd		-	-	-	-	0.74	3.25	-	-	-	-	0.39	1.70	-	-	-
SCS-11	Loading	Truck Loading		-	-	-	-	123.46	1.03	-	-	-	-	8.43	0.07	-	-	-
SCS-10a	10	New - Waukesha Model 7042GSI natural gas-fired compressor engine (4SRB) rated at 1,500 bhp		3.31	14.48	1.98	8.69	1.08	4.75	7.10E-03	0.03	0.23	1.03	0.24	1.04	0.41	1,534.43	6,720.78
SCS-16	16	Waukesha Model L5794GSI natural gas-fired compressor engine (4SRB) rated at 1,380 bhp		1.52	6.66	0.76	3.33	2.16	9.47	6.99E-03	0.03	0.23	1.01	0.18	0.77	0.15	1,585.09	6,942.68
SCS-17	17	Waukesha Model L5794GSI natural gas-fired compressor engine (4SRB) rated at 1,380 bhp		1.52	6.66	0.76	3.33	2.16	9.47	6.99E-03	0.03	0.23	1.01	0.18	0.77	0.15	1,585.09	6,942.68
SCS-FUG	Fugitive	Fugitive Emissions		-	-	-	-	0.55	2.40	-	-	-	-	6.28E-03	0.03	-	-	-
SCS-18	18	Vapor Combustion Unit	¹	0.05	0.04	0.24	0.18	0.21	1.46	2.19E-05	9.59E-05	-	-	1.42E-02	0.10	2.61E-05	112.05	490.77
PRE-PROJECT EMISSIONS FROM SMOKEY				6.42	27.95	2.44	9.79	129.87	29.63	0.02	0.09	0.57	2.51	9.42	4.48	1.12	5,153.42	22,571.97
POST-PROJECT EMISSIONS FROM SMOKEY				6.47	28.14	3.80	15.78	130.38	31.86	0.02	0.09	0.70	3.07	9.42	4.47	0.70	4,896.53	21,446.82

1. Emissions from the two condensate tanks and one produced water tank are routed through the Vapor Combustor, and thus are included in the vapor combustor emission totals.

Little Missouri Gas Plant and Smokey Compressor Station

Summary of Emissions

EU	EP	Source	ass														
			NO _x		CO		VOC		SO ₂		PM/PM ₁₀ /PM _{2.5}		HAP		Formaldehyde	CO ₂ e	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy
LMGP-1A	1A	Waukesha L7042GSI natural gas-fired compressor engine rated at 1480 bhp (4SRB); propane refrigeration, (C-1210)	4.08	17.86	4.08	17.86	0.42	1.86	6.45E-03	0.03	0.21	0.93	0.12	0.72	0.14	1,284.19	5,624.76
LMGP-3	3	Caterpillar G342 natural gas-fired compressor engine rated at 265 bhp (4SRB); De-ethanizer/Stabilizer Ovhd, (C-1010)	0.58	2.56	2.33	10.23	0.58	2.56	1.22E-03	5.32E-03	0.04	0.18	0.07	0.32	0.19	241.64	1,058.39
LMGP-4A	4A	Waukesha L5794GSI natural gas-fired compressor engine rated at 1380 bhp (4SRB); Residue Compressor, (C-1110)	3.04	13.31	6.08	26.63	2.13	9.32	6.33E-03	0.03	0.21	0.91	0.23	1.00	0.67	1,577.58	6,909.79
LMGP-5	5	Caterpillar G3408TA natural gas-fired compressor engine rated at 335 bhp (4SRB) ; De-ethanizer/Stabilizer Ovhd, (C-1020)	0.74	3.23	1.48	6.46	0.74	3.23	1.47E-03	6.43E-03	0.05	0.21	0.09	0.39	0.22	291.80	1,278.10
LMGP-6	6	Caterpillar G398 natural gas-fired generator engine rated at 700 bhp; (G-5901)	¹ 3.08	0.15	6.17	0.31	1.54	0.08	2.81E-03	1.40E-04	0.09	4.64E-03	0.23	1.13E-02	7.71E-03	558.51	27.93
LMGP-7	7	Caterpillar G398 natural gas-fired generator engine rated at 700 bhp; (G-5902)	¹ 3.08	0.15	6.17	0.31	1.54	0.08	2.81E-03	1.40E-04	0.09	4.64E-03	0.23	1.13E-02	7.71E-03	558.51	27.93
LMGP-10 - Min Flow	10	Ethylene glycol (EG) unit rated at 30 MMscfd	-	-	-	-	0.21	0.94	-	-	-	-	0.21	0.91	-	-	-
LMGP-11	11	500 gal Methanol storage tank	-	-	-	-	6.00E-03	0.03	-	-	-	-	6.00E-03	0.03	-	-	-
LMGP-12	12	Flare	0.03	0.12	0.13	0.56	1.33E-02	0.06	3.79E-04	1.66E-03	-	-	4.31E-04	1.89E-03	-	48.71	213.34
LMGP-13 - Min Flow	10/12	Ethylene glycol (EG) unit rated at 34 MMscfd	-	-	-	-	1.29	5.63	-	-	-	-	1.26	5.52	-	-	-
LMGP-15A	15A	400 bbl Produced Water Storage Tank	-	-	-	-	2.20	0.04	-	-	-	-	0.26	9.53E-04	-	-	-
LMGP-15B	15B	400 bbl Produced Water Storage Tank	-	-	-	-	2.20	0.04	-	-	-	-	0.26	9.53E-04	-	-	-
LMGP-16	N/A	Pressurized Bullet Tanks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LMGP-17	17	Truck Loading Racks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LMGP-18	18	2,000 gal Methanol Storage Tank	-	-	-	-	4.00E-03	0.02	-	-	-	-	6.00E-03	0.02	-	-	-
LMGP-19	19	Waukesha F3524GSI natural gas-fired compressor engine rated at 840 bhp (4SRB); Residue Compressor (C-103)	1.85	8.10	3.70	16.21	1.85	8.10	3.95E-03	0.02	0.13	0.57	0.12	0.52	0.08	785.60	3,440.93
LMGP-20	20	Waukesha F3524GSI natural gas-fired compressor engine rated at 840 bhp (4SRB); Residue Compressor (C-103B)	1.85	8.10	3.70	16.21	0.93	4.05	3.95E-03	0.02	0.13	0.57	0.07	0.29	0.08	785.60	3,440.93
LMGP-21	21	Waukesha Model 2895G natural gas-fired compressor engine rated at 313 bhp ; Stab Ovhd Comp (C-100A)	0.69	3.02	1.38	6.04	0.69	3.02	1.47E-03	6.45E-03	0.05	0.21	0.04	0.20	0.03	292.73	1,282.16
LMGP-22	22	Waukesha Model 3521G natural gas-fired compressor engine rated at 445 bhp ; Stab Ovhd Comp (C-100B)	0.49	2.15	0.98	4.29	0.69	3.01	2.09E-03	9.17E-03	0.07	0.30	0.06	0.28	0.04	416.18	1,822.87
LMGP-23	23	Caterpillar Model G3406TA natural gas-fired compressor engine rated at 292 bhp ; De-ethanizer Ovhd Comp (C-101)	0.66	2.89	1.32	5.79	0.66	2.89	1.41E-03	6.18E-03	0.05	0.20	0.09	0.37	0.22	280.57	1,228.90
LMGP-25	25	Natural gas-fired hot oil heater rated at approximately 8 million Btu/hr; (H-701)	0.78	3.44	0.66	2.89	0.04	0.19	4.71E-03	0.02	0.06	0.26	6.05E-04	2.65E-03	2.58E-03	935.94	4,099.43
LMGP-26	26	Natural gas-fired hot oil heater rated at approximately 3.3 million Btu/hr; (H-702)	0.32	1.42	0.27	1.19	0.02	0.08	1.94E-03	8.50E-03	0.02	0.11	2.49E-04	1.09E-03	2.98E-05	385.79	1,689.74
LMGP-29	29	Natural gas-fired hot oil heater rated at approximately 7.9 million Btu/hr; (H-101)	0.77	3.39	0.65	2.85	0.04	0.19	1.39E-02	0.06	0.06	0.26	1.30E-02	0.06	2.54E-03	924.24	4,048.19
LMGP-36	36	210 bbl Produced Water Storage Tank	² -	-	-	-	9.37	0.18	-	-	-	-	1.05	0.02	-	-	-
LMGP-37	37	Pressurized Unloading Emissions	² -	-	-	-	5.05	4.44	-	-	-	-	0.45	0.42	-	-	-
LMGP-38	38	Atmospheric Truck Loading - Produced Water	² -	-	-	-	1.24	0.08	-	-	-	-	0.14	9.01E-03	-	-	-
LMGP-38	38	Atmospheric Truck Loading - Condensate	-	-	-	-	2.19	1.92	-	-	-	-	0.37	0.33	-	-	-
LMGP-30	30	Caterpillar Model G3516G natural gas-fired compressor engine (4SLB) rated at 1,380 bhp and manufactured in 2014	1.52	6.66	0.86	3.78	0.99	4.34	6.36E-03	0.03	0.11	0.47	0.41	1.81	1.15	1,761.10	7,713.67
LMGP-31	31	Caterpillar Model G3516G natural gas-fired compressor engine (4SLB) rated at 1,380 bhp and manufactured in 2014	1.52	6.66	0.86	3.78	0.99	4.34	6.36E-03	0.03	0.11	0.47	0.41	1.81	1.15	1,761.10	7,713.67
LMGP-35	35	Emergency generator set driven by a Caterpillar Model 3456 DITA natural diesel-fired engine rated at 764 bhp manufactured in 2002	18.34	0.92	4.20	0.21	0.54	0.03	6.18	0.31	0.37	0.02	7.28E-03	3.64E-04	2.11E-05	887.60	44.38
LMGP3 Tanks	Multiple	Miscellaneous Tanks (Produced Water and Oil Tanks)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LMGP3-TK1	LMGP3-TK1	Methanol Tank	-	-	-	-	0.02	4.33E-03	-	-	-	-	0.02	4.33E-03	-	-	-

Little Missouri Gas Plant and Smokey Compressor Station

Summary of Emissions

EU	EP	Source	NO _x		CO		VOC		SO ₂		PM/PM ₁₀ /PM _{2.5}		HAP		Formaldehyde	CO ₂ e	
			lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy	lb/hr	tpy
LMGP-32	32	Natural gas-fired regeneration gas heater rated at approximately 5.7 million Btu/hr (H-7741)	0.56	2.45	0.47	2.06	0.03	0.13	1.01E-02	0.04	0.03	0.14	7.08E-03	0.03	1.84E-03	666.86	2,920.85
LMGP-33	33	Natural gas-fired hot oil heater rated at approximately 4.3 million Btu/hr (H-7781)	0.42	1.85	0.35	1.55	0.02	0.10	6.45E-03	0.03	0.04	0.19	9.39E-03	0.04	1.38E-03	503.07	2,203.45
LMGP-FUG	LMGP-FUG	Fugitive Emissions	³ -	-	-	-	5.38	23.57	-	-	-	-	0.22	0.98	-	34.60	151.55
LMGP-FUG - NEW	FUG	Fugitive Emissions - New	³ -	-	-	-	6.93E-03	0.03	-	-	-	-	1.28E-02	0.06	-	0.06	0.26
LMGP-39	39	Res. Compressor; Solar Centaur 50-6100S Turbine	8.23	19.32	11.92	23.87	9.37	26.30	0.02	0.09	0.35	1.55	0.17	0.40	0.34	6,291.88	27,558.44
LMGP-40	40	Res. Compressor; Solar Centaur 50-6100S Turbine	8.23	19.32	11.92	23.87	9.37	26.30	0.02	0.09	0.35	1.55	0.17	0.40	0.34	6,291.88	27,558.44
LMGP-41	41	Res. Compressor; Solar Centaur 50-6100S Turbine	8.23	19.32	11.92	23.87	9.37	26.30	0.02	0.09	0.35	1.55	0.17	0.40	0.34	6,291.88	27,558.44
LMGP-45	45	Turbine Compressor Exhaust Venting	-	-	-	-	2.90	12.68	-	-	-	-	-	-	-	1,520.94	6,661.70
LMGP-46	46	Flare	0.46	2.03	2.11	9.25	0.32	1.42	7.77E-05	3.40E-04	-	-	0.00E+00	0.00E+00	-	797.98	3,495.13
LMGP4-TK1	LMGP4-TK1	Methanol Tank	-	-	-	-	0.02	4.33E-03	-	-	-	-	0.02	4.33E-03	-	-	-
LMGP4-TK2	LMGP4-TK2	Produced Water Tank	-	-	-	-	1.93	0.05	-	-	-	-	0.23	2.99E-03	-	1.72	0.15
LMGP4-FUG	FUG	Phase 4 Fugitive Emissions	⁴ -	-	-	-	0.44	1.92	-	-	-	-	8.92E-03	0.04	-	2.09	9.14
LMGP-47	47	Vapor Combustion Unit	⁵ 0.30	0.43	1.37	1.94	3.87	5.29	2.19E-05	9.59E-05	-	-	0.58	0.57	1.84E-04	631.47	2,765.84
LMGP-48	48	Emergency Generator	¹ 1.33	0.07	2.39	0.12	0.93	0.05	2.73E-03	1.36E-04	0.09	4.50E-03	0.15	7.52E-03	4.76E-03	670.00	33.50
LMGP-49 through -53	47	5 Condensate Tanks	⁵ -	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LM5 Emissions Sources																	
LMGP 54 - NEW	54	Res. Compressor; Solar Centaur 50-6100S Turbine	8.23	19.32	11.92	23.87	9.37	26.30	0.02	0.09	0.35	1.55	0.17	0.40	0.34	6,291.88	27,558.44
LMGP 55 - NEW	55	Res. Compressor; Solar Centaur 50-6100S Turbine	8.23	19.32	11.92	23.87	9.37	26.30	0.02	0.09	0.35	1.55	0.17	0.40	0.34	6,291.88	27,558.44
LMGP 56 - NEW	56	Res. Compressor; Solar Centaur 50-6100S Turbine	8.23	19.32	11.92	23.87	9.37	26.30	0.02	0.09	0.35	1.55	0.17	0.40	0.34	6,291.88	27,558.44
LMGP 57 - NEW	57	Turbine Compressor Exhaust Venting	-	-	-	-	2.90	12.68	-	-	-	-	-	-	-	1,520.94	6,661.70
LMGP 58 - NEW	58	Flare	0.46	2.03	2.11	9.25	0.32	1.42	7.77E-05	3.40E-04	-	-	-	-	-	797.98	3,495.13
LMGP5-TK1 - NEW	LMGP5-TK1	Methanol Tank	-	-	-	-	0.02	4.33E-03	-	-	-	-	0.02	4.33E-03	-	-	-
LMGP5-TK2 - NEW	LMGP5-TK2	Produced Water Tank	-	-	-	-	1.93	0.05	-	-	-	-	0.23	2.99E-03	-	1.72	0.15
LMGP5-TK3 - NEW	LMGP5-TK3	Produced Water Tank	-	-	-	-	1.93	0.05	-	-	-	-	0.23	2.99E-03	-	1.72	0.15
LMGP5-TK4 - NEW	LMGP5-TK4	Produced Water Tank	-	-	-	-	1.93	0.05	-	-	-	-	0.23	2.99E-03	-	1.72	0.15
LMGP-MSS	LMGP-MSS	MSS Emissions	-	9.33	-	19.53	-	71.97	-	-	-	1.38	-	1.27	-	-	-
LMGP5-FUG - NEW	FUG	Fugitive Emissions	-	-	-	-	0.10	0.44	-	-	-	-	9.48E-04	4.15E-03	-	0.85	3.74
PRE-PROJECT EMISSIONS FROM LMGP			96.36	218.25	125.33	312.52	119.39	350.42	6.39	1.18	4.15	16.70	9.18	20.47	6.00	58,682.38	245,418.36
POST-PROJECT EMISSIONS FROM LMGP			96.36	218.25	125.33	312.52	119.39	350.42	6.39	1.18	4.15	16.70	9.18	20.47	6.00	58,682.38	245,418.36
PRE-PROJECT TOTAL FACILITY EMISSIONS			102.78	246.20	127.77	322.31	249.26	380.05	6.41	1.27	4.72	19.21	18.61	24.95	7.13	63,835.80	267,990.33
POST-PROJECT TOTAL FACILITY EMISSIONS			102.83	246.39	129.13	328.30	249.77	382.29	6.41	1.28	4.85	19.77	18.61	24.95	6.70	63,578.91	266,865.17
PROJECT EMISSION CHANGE			0.04	0.19	1.37	5.99	0.51	2.24	8.68E-04	3.80E-03	0.13	0.56	-1.01E-03	-4.43E-03	-4.23E-01	-2.57E+02	-1.13E+03

NOTES:

- ¹ LMGP6 and LMGP7 are emergency generators and emissions are based on 100 hours per year operation, which is the maximum number of hours allowed for maintenance, testing and other non-emergency operations under 40 CFR 63.6640(f). The LMGP-48 emergency generator engine emissions are based on 500 hours per year of operation.
- ² Any emissions from this unit are from associated equipment leaks and are included in plant fugitive emissions.
- ³ LMGP3 has 1 produced water tank and 6 lube oil tanks which have negligible emissions (emissions are considered < 0.01 lb/hr and < 0.01 tpy).
- ⁴ LMGP4 has 24 lube oil tanks which have negligible emissions (emissions are considered < 0.01 lb/hr and < 0.01 tpy).
- ⁵ Condensate tank emissions already accounted for in LMGP-47.
- ⁶ The facility-wide criteria pollutant emissions exclude fugitives when compared to the major source thresholds.

	NO _x		CO		VOC		SO ₂		PM		Total HAP		Formaldehyde	CO ₂ e	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	tpy	lb/hr	tpy
Total Site-wide Emissions	102.83	246.39	129.13	328.30	249.77	382.29	6.41	1.28	4.85	19.77	18.61	24.95	6.70	63,579	266,865
Facility-wide Emissions minus fugitives ⁶	102.83	246.39	129.13	328.30	243.30	353.92	6.41	1.28	4.85	19.77	18.35	23.84	6.70	63,541	266,700
Title V Thresholds		100		100		100		100		100		25	10	-	100,000
Total emissions exceed Title V thresholds?		YES		YES		YES		NO		NO		NO	NO	-	YES
PSD SERs	-	40	-	100	-	40	-	40	-	25	-	-	-	-	-
Project emissions exceed PSD SERs?	-	NO	-	NO	-	NO	-	NO	-	NO	-	-	-	-	-
PSD Thresholds		250		250		250		250		250		-	-		
Total emissions exceed PSD thresholds?		NO		YES		YES		NO		NO		-	-		

Targa Badlands LLC
Smokey Compressor Station
Engines Emission Calculation
EU-SCS10a

Smokey Compressor Station Engine Data Rich Burn		
IC Engine Make ¹	Waukesha	
IC Engine Model ¹	7042GSI	
Power Rating ¹	1,500	bhp
Heat Rate (HHV) ¹	8,046	Btu/bhp-hr
Duty (input)	12.07	MMBtu/hr
Fuel Flow (100% load)	194.00	scfm
Hours per Year	8,760	hr/yr

Criteria Pollutant	Emission Factors		Emission Rate		Source of Emission Factors
			(lb/hr)	(tpy)	
NO _x	1.00	g/bhp-hr	3.31	14.48	Manufacturer
CO	0.60	g/bhp-hr	1.98	8.69	Manufacturer
VOC	0.33	g/bhp-hr	1.08	4.75	Manufacturer
Formaldehyde	0.028	g/bhp-hr	0.09	0.41	Manufacturer
SO ₂ ²	5.88E-04	lb/MMBtu	0.01	0.031	AP-42 Tbl 3.2-3; 4SRB (7/00)
PM ₁₀ ³	0.019	lb/MMBtu	0.23	1.03	AP-42 Tbl 3.2-3; 4SRB (7/00)
PM _{2.5} ³	0.019	lb/MMBtu	0.23	1.03	AP-42 Tbl 3.2-3; 4SRB (7/00)
TSP	0.019	lb/MMBtu	0.23	1.03	AP-42 Tbl 3.2-3; 4SRB (7/00)
Total HAP	-	-	0.24	1.04	AP-42 Tbl 3.2-3; 4SRB (7/00); Manufacturer

GHG	Emission Factors		GHG Emissions		Source of Emission Factors
			lb/hr	tpy	
CO ₂	450.00	g/bhp-hr	1,488.13	6,518.00	Manufacturer
CH ₄	0.52	g/bhp-hr	1.72	7.53	Manufacturer
CO ₂ e	464.00	g/bhp-hr	1,534.43	6,720.78	Manufacturer

Sample Calculations:

$(\text{bhp}) (\text{Btu}/\text{bhp}\text{-hr}) (\text{MM}/10^6) = \text{MMBtu}/\text{hr}$; $(\text{MMBtu}/\text{hr}) / (\text{Btu}/\text{scf}) (10^6/\text{MM}) = \text{scf}/\text{hr}$
 $(\text{g}/\text{bhp}\text{-hr}) (\text{bhp}) (\text{lb}/453.59 \text{ g}) = \text{lb}/\text{hr}$; $(\text{lb}/\text{MMBtu}) (\text{MMBtu}/\text{hr}) = \text{lb}/\text{hr}$

$(\text{lb}/\text{hr}) (\text{hrs}/\text{yr}) (\text{ton}/2000 \text{ lb}) = \text{tons}/\text{yr}$

- Information from manufacturer's specification sheet provided by Targa on 10/13/2023.
- SO₂ emissions based on AP-42 Section 3.2, Table 3.2-3 footnote e (7/00), which is based on 100% conversion of sulfur to SO₂ at 2,000 grains/MMscf.
- Emission factor for TSP, PM₁₀ and PM_{2.5} from AP-42 Section 3.2, Table 3.2-3 (7/00); includes PM₁₀/PM_{2.5} filterable (9.50e-03 lb/MMBtu) and PM condensable (9.91e-3 lb/MMBtu) = 0.01941 lb/MMBtu.

HAP	Emission Factors ¹ (lb/MMBtu)	HAP Emissions	
		(lb/hr)	(tpy)
1,1,2,2-Tetrachloroethane	2.53E-05	3.05E-04	1.34E-03
1,1,2-Trichloroethane	1.53E-05	1.85E-04	8.09E-04
1,3-Butadiene	6.63E-04	8.00E-03	0.04
1,3-Dichloropropene	1.27E-05	1.53E-04	6.71E-04
Acetaldehyde	2.79E-03	0.03	0.15
Acrolein	2.63E-03	0.03	0.14
Benzene	1.58E-03	0.02	0.08
Carbon Tetrachloride	1.77E-05	2.14E-04	9.36E-04
Chlorobenzene	1.29E-05	1.56E-04	6.82E-04
Chloroform	1.37E-05	1.65E-04	7.24E-04
Ethylbenzene	2.48E-05	2.99E-04	1.31E-03
Ethylene Dibromide	2.13E-05	2.57E-04	1.13E-03
Formaldehyde ²	2.80E-02	0.09	0.41
Methanol	3.06E-03	0.04	0.16
Methylene Chloride	4.12E-05	4.97E-04	2.18E-03
Naphthalene	9.71E-05	1.17E-03	5.13E-03
PAH	1.41E-04	1.70E-03	7.45E-03
Styrene	1.19E-05	1.44E-04	6.29E-04
Toluene	5.58E-04	6.73E-03	0.03
Vinyl Chloride	7.18E-06	8.67E-05	3.80E-04
Xylene	1.95E-04	2.35E-03	0.01
Total HAP Emissions		0.24	1.04

1. HAP emission factors from AP-42 Section 3.2, Table 3.2-3 (7/00).

2. Formaldehyde emission factor from catalyst manufacturer specification sheet, provided by Targa on 10/13/2023, with an added 10% safety factor. Emission Factor is in g/hp-hr

Manufacturer Control Efficiency Calculations		
Pollutant	Engine Output ¹ (g/hp-hr)	Post-Catalyst Engine Output ¹ (g/hp-hr)
NO _x	12.4	1.00
CO ²	9.0	0.60
VOC ²	0.16	0.30
Formaldehyde ²	0.02	0.03

1. Information from engine spec sheet, provided by Targa on 10/13/2023.

2. Post-catalyst output emission factor from catalyst spec sheet provided by Targa on 10/13/2023 with an added 40% safety factor for formaldehyde and a 20% safety factor for CO. The VOC emission factor has also been doubled for conservatism.

APPENDIX B – VENDOR DATA



Targa Genric at Elevatin and PL Spec Fuel - TBD

VHP - L7042GSI S5

RJ Mann Gary Thompson

Gas Compression

ENGINE SPEED (rpm):	1200	NOx SELECTION (g/bhp-hr):	Customer Catalyst
DISPLACEMENT (in3):	7040	COOLING SYSTEM:	JW, IC + OC
COMPRESSION RATIO:	9.7:1	INTERCOOLER WATER INLET (°F):	130
IGNITION SYSTEM:	ESM2	JACKET WATER OUTLET (°F):	180
EXHAUST MANIFOLD:	Water Cooled	JACKET WATER CAPACITY (gal):	100
COMBUSTION:	Rich Burn, Turbocharged	AUXILIARY WATER CAPACITY (gal):	11
ENGINE DRY WEIGHT (lbs):	24250	LUBE OIL CAPACITY (gal):	190
AIR/FUEL RATIO SETTING:	0.38% CO	MAX. EXHAUST BACKPRESSURE (in. H2O):	20
ENGINE SOUND LEVEL (dBA)	104	MAX. AIR INLET RESTRICTION (in. H2O):	15
IGNITION TIMING:	ESM2 Controlled	EXHAUST SOUND LEVEL (dBA)	111

SITE CONDITIONS:

FUEL:	Natural Gas	ALTITUDE (ft):	2000
FUEL PRESSURE RANGE (psig):	40 - 60	MAXIMUM INLET AIR TEMPERATURE (°F):	100
FUEL HHV (BTU/ft3):	1,035.2	FUEL WKI:	91.8
FUEL LHV (BTU/ft3):	935.8		

SITE SPECIFIC TECHNICAL DATA

POWER RATING	UNITS	MAX RATING AT 100 °F AIR TEMP	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE OF 100 °F		
			100%	75%	50%
CONTINUOUS ENGINE POWER	BHP	1500	1500	1125	757
OVERLOAD	% 2/24 hr	0	0	-	-
MECHANICAL EFFICIENCY (LHV)	%	35.0	35.0	33.8	31.3
CONTINUOUS POWER AT FLYWHEEL	BHP	1500	1500	1125	757

based on no auxiliary engine driven equipment

AVAILABLE TURNDOWN SPEED RANGE	RPM	900 - 1200
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FUEL CONSUMPTION				100%	75%	50%
FUEL CONSUMPTION (LHV)	BTU/BHP-hr		7274	7274	7533	8147
FUEL CONSUMPTION (HHV)	BTU/BHP-hr		8046	8046	8333	9012
FUEL FLOW	SCFM	<i>based on fuel analysis LHV</i>	194	194	151	110

HEAT REJECTION				100%	75%	50%
JACKET WATER (JW)	BTU/hr x 1000		3055	3055	2439	1848
LUBE OIL (OC)	BTU/hr x 1000		458	458	415	366
INTERCOOLER (IC)	BTU/hr x 1000		428	428	229	80
EXHAUST	BTU/hr x 1000		2818	2818	2162	1553
RADIATION	BTU/hr x 1000		544	544	529	515

EMISSIONS (ENGINE OUT):				100%	75%	50%
NOx (NO + NO2)	g/bhp-hr		12.42	12.42	12.81	12.67
CO	g/bhp-hr		9.02	9.02	9.28	9.74
THC	g/bhp-hr		0.58	0.58	0.75	0.94
NMHC	g/bhp-hr		0.058	0.058	0.075	0.093
NM,NEHC (VOC)	g/bhp-hr		0.016	0.016	0.020	0.025
CO2	g/bhp-hr		450	450	467	505
CO2e (Methane GWP: 25)	g/bhp-hr		464	464	483	526
CH2O	g/bhp-hr		0.050	0.050	0.050	0.050
CH4	g/bhp-hr		0.52	0.52	0.68	0.85

AIR INTAKE / EXHAUST GAS				100%	75%	50%
INDUCTION AIR FLOW	SCFM		2042	2042	1586	1155
EXHAUST GAS MASS FLOW	lb/hr		9492	9492	7373	5369
EXHAUST GAS FLOW	ACFM	<i>at exhaust temp, 14.5 psia</i>	6488	6488	4987	3596
EXHAUST TEMPERATURE	°F		1078	1078	1062	1047

HEAT EXCHANGER SIZING ¹²			
TOTAL JACKET WATER CIRCUIT (JW)	BTU/hr x 1000		3465
TOTAL AUXILIARY WATER CIRCUIT (IC + OC)	BTU/hr x 1000		1004

COOLING SYSTEM WITH ENGINE MOUNTED WATER PUMPS			
JACKET WATER PUMP MIN. DESIGN FLOW	GPM		450
JACKET WATER PUMP MAX. EXTERNAL RESTRICTION	psig		16
AUX WATER PUMP MIN. DESIGN FLOW	GPM		79
AUX WATER PUMP MAX. EXTERNAL RESTRICTION	psig		36


Targa Generic at Elevatin and PL Spec Fuel - TBD

RJ Mann Gary Thompson

VHP - L7042GSI S5

Gas Compression

FUEL COMPOSITION

<u>HYDROCARBONS:</u>		<u>Mole or Volume %</u>	FUEL:	Natural Gas
Methane	CH4	93	FUEL PRESSURE RANGE (psig):	40 - 60
Ethane	C2H6	4	FUEL WKI:	91.8
Propane	C3H8	1		
Iso-Butane	I-C4H10	0	FUEL SLHV (BTU/ft3):	919.50
Normal Butane	N-C4H10	0	FUEL SLHV (MJ/Nm3):	36.16
Iso-Pentane	I-C5H12	0		
Normal Pentane	N-C5H12	0	FUEL LHV (BTU/ft3):	935.78
Hexane	C6H14	0	FUEL LHV (MJ/Nm3):	36.80
Heptane	C7H16	0		
Ethene	C2H4	0	FUEL HHV (BTU/ft3):	1035.15
Propene	C3H6	0	FUEL HHV (MJ/Nm3):	40.71
	SUM HYDROCARBONS	98	FUEL DENSITY (SG):	0.60
<u>NON-HYDROCARBONS:</u>				
Nitrogen	N2	0	Standard Conditions per ASTM D3588-91 [60°F and 14.696psia] and ISO 6976:1996-02-01[25, V(0;101.325)]. Based on the fuel composition, supply pressure and temperature, liquid hydrocarbons may be present in the fuel. No liquid hydrocarbons are allowed in the fuel. The fuel must not contain any liquid water. Waukesha recommends both of the following: 1) Dew point of the fuel gas to be at least 20°F (11°C) below the measured temperature of the gas at the inlet of the engine fuel regulator. 2) A fuel filter separator to be used on all fuels except commercial quality natural gas. Refer to the 'Fuel and Lubrication' section of 'Technical Data' or contact the Waukesha Application Engineering Department for additional information on fuels, or LHV and WKI* calculations. * Trademark of INNIO Waukesha Gas Engines Inc.	
Oxygen	O2	0		
Helium	He	0		
Carbon Dioxide	CO2	2		
Carbon Monoxide	CO	0		
Hydrogen	H2	0		
Water Vapor	H2O	0		
	TOTAL FUEL	100		

FUEL CONTAMINANTS

Total Sulfur Compounds	0 % volume	Total Sulfur Compounds	0 µg/BTU
Total Halogen as Chloride	0 % volume	Total Halogen as Chloric	0 µg/BTU
Total Ammonia	0 % volume	Total Ammonia	0 µg/BTU
		Total Siloxanes (as Si)	0 µg/BTU
<u>Siloxanes</u>			
Tetramethyl silane	0 % volume		
Trimethyl silanol	0 % volume		
Hexamethyldisiloxane (L2)	0 % volume		
Hexamethylcyclotrisiloxane (D3)	0 % volume		
Octamethyltrisiloxane (L3)	0 % volume		
Octamethylcyclotetrasiloxane (D4)	0 % volume		
Decamethyltetrasiloxane (L4)	0 % volume		
Decamethylcyclopentasiloxane (D5)	0 % volume		
Dodecamethylpentasiloxane (L5)	0 % volume		
Dodecamethylcyclohexasiloxane (D6)	0 % volume		
Others	0 % volume		

Calculated fuel contaminant analysis will depend on the entered fuel composition and selected engine model.



Targa Genric at Elevatin and PL Spec Fuel - TBD

RJ Mann Gary Thompson

VHP - L7042GSI S5

Gas Compression

NOTES

1. All data is based on engines with standard configurations unless noted otherwise.
2. Power rating is adjusted for fuel, site altitude, and site air inlet temperature, in accordance with ISO 3046/1 with tolerance of $\pm 3\%$.
3. Fuel consumption is presented in accordance with ISO 3046/1 with a tolerance of $-0 / +5\%$ at maximum rating. Fuel flow calculation based on fuel LHV and fuel consumption with a tolerance of $-0/+5\%$. For sizing piping and fuel equipment, it is recommended to include the 5% tolerance.
4. Heat rejection tolerances are $\pm 30\%$ for radiation, and $\pm 8\%$ for jacket water, lube oil, intercooler, and exhaust energy.
5. Emission levels for engines with Waukesha supplied 3-way catalyst are given at catalyst outlet flange. For all other engine models, emission levels are given at engine exhaust outlet flange prior to any after treatment. Values are based on a new engine operating at indicated site conditions, and adjusted to the specified timing and air/fuel ratio at rated load. Catalyst out emission levels represent emission levels the catalyst is sized to achieve. Manual adjustment may be necessary to achieve compliance as catalyst/engine age. Catalyst-out emission levels are valid for the duration of the engine warranty. Emissions are at an absolute humidity of 75 grains H₂O/lb (10.71 g H₂O/kg) of dry air. Emission levels may vary subject to instrumentation, measurement, ambient conditions, fuel quality, and engine variation. Engine may require adjustment on-site to meet emission values, which may affect engine performance and heat output. NO_x, CO, THC, and NMHC emission levels are listed as a not to exceed limit, all other emission levels are estimated. CO₂ emissions based on EPA Federal Register/Vol. 74, No. 209/Friday, October 30, 2009 Rules and Regulations 56398, 56399 (3) Tier 3 Calculation Methodology, Equation C-5.
6. Air flow is based on undried air with a tolerance of $\pm 7\%$.
7. Exhaust temperature given at engine exhaust outlet flange with a tolerance of $\pm 50^{\circ}\text{F}$ (28°C).
8. Exhaust gas mass flow value is based on a "wet basis" with a tolerance of $\pm 7\%$.
9. Inlet air restrictions based on full rated engine load. Exhaust backpressure based on 140.6 PSI BMEP and 1200 RPM. Refer to the engine specification section of Waukesha's standard technical data for more information.
10. Cooling circuit capacity, lube oil capacity, and engine dry weight values are typical.
11. Fuel must conform to Waukesha's "Gaseous Fuel Specification" S7884-7 or most current version. Fuel may require treatment to meet current fuel specification.
12. Heat exchanger sizing values given as the maximum heat rejection of the circuit, with applied tolerances and an additional 5% reserve factor.
13. Fuel volume flow calculation in english units is based on 100% relative humidity of the fuel gas at standard conditions of 60°F and 14.696 psia (29.92 inches of mercury; 101.325 kPa).
14. Fuel volume flow calculation in metric units is based on 100% relative humidity of the fuel gas at a combustion temperature of 25°C and metering conditions of 0°C and 101.325 kPa (14.696 psia; 29.92 inches of mercury). This is expressed as [25, V(0;101.325)].
15. Engine sound data taken with the microphone at 1 m (3.3 ft) from the side of the engine at the approximate front-to-back centerline. Microphone height was at intake manifold level. Engine sound pressure data may be different at front, back and opposite side locations. Exhaust sound data taken with microphone 1 meter (3.3 ft) away and 1 meter (3.3 ft) to the side of the exhaust outlet.
16. Due to variation between test conditions and final site conditions, such as exhaust configuration and background sound level, sound pressure levels under site conditions may be different than those tabulated above.
17. Cooling system design flow is based on minimum allowable cooling system flow. Cooling system maximum external restriction is defined as the allowable restriction at the minimum cooling system flow.
18. Continuous Power Rating: The highest load and speed that can be applied 24 hours per day, seven days per week, 365 days per year except for normal maintenance at indicated ambient reference conditions and fuel. No engine overload power rating is available.
19. emPact emission compliance available for entire range of operable fuels; however, fuel system and/or O₂ set point may need to be adjusted in order to maintain compliance.
20. In cold ambient temperatures, heating of the engine jacket water, lube oil and combustion air may be required. See Waukesha Technical Data.
21. Available Turndown Speed Range refers to the constant torque speed range available. Reduced power may be available at speeds outside of this range. Contact application engineering.

SPECIAL REQUIREMENTS

Equipment Specification

Proposal Information

Proposal Number: RJM-23-006709 Rev(1) Date: **10/12/2023**
 Project Reference: Targa ND 7042GSI S5

Engine Information

Engine Make:	Waukesha	Speed:	Rated
Engine Model:	7042GSI	Power Output:	1,500 bhp
Rated Speed:	1200 RPM	Exhaust Flow Rate:	9,492 lb/hr
Fuel Description:	Natural Gas	Exhaust Temperature:	1,078 ° F
Hours Of Operation:	8760 Hours per year	O ₂ :	0.38%
Load:	100%	H ₂ O:	15%

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	tons/yr	ppmvd @ 15% O ₂	ppmvd	g/kW-hr	lb/MW-hr	g/bhp-hr	tons/yr	ppmvd @ 15% O ₂	ppmvd	g/kW-hr	lb/MW-hr	
NO _x *	12.42	179.9	923	3,211	16.655	36.72	1	14.48	74	259	1.341	2.96	91.9%
CO	9.02	130.65	1,101	3,830	12.096	26.67	0.5	7.24	61	212	0.671	1.48	94.5%
NMNEHC**	0.16	2.32	34	119	0.215	0.47	0.14	2.03	30	104	0.188	0.41	12.5%
CH ₂ O	0.05	0.72	6	20	0.067	0.15	0.02	0.29	2	8	0.027	0.06	60%

Replacement Element
Catalyst (Replacement Catalyst)

Element Model Number: MECB-TW-RL-3075-0000-350
 Number of Catalyst Layers: 2
 Catalyst Back Pressure: 4.0 inH₂O (Clean)
 Design Exhaust Flow Rate: 9,492 lb/hr
 Design Exhaust Temperature: 1,078° F
 Dimensions: Ø 30.75 in
 Exhaust Temperature Limits***: 750° F – 1250° F (catalyst inlet); 1350° F (catalyst outlet)
 System Pressure Loss: 4.0 inH₂O (Clean)

* MW referenced as NO₂

** MW referenced as CH₄. Propane in the exhaust shall not exceed 15% by volume of the NMHC compounds in the exhaust, excluding aldehydes. The 15% (vol.) shall be established on a wet basis, reported on a methane molecular weight basis. The measurement of exhaust NMHC composition shall be based upon EPA method 320 (FTIR), and shall exclude formaldehyde.

*** General catalyst temperature operating range. Performance is based on the Design Exhaust Temperature.

APPENDIX C – APPLICATION FORMS



PERMIT APPLICATION FOR AIR CONTAMINANT SOURCES
 NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
 DIVISION OF AIR QUALITY
 SFN 8516 (9-2021)

SECTION A - FACILITY INFORMATION

Name of Firm or Organization Targa Badlands LLC				
Applicant's Name Dwayne Burks				
Title Vice President Operations		Telephone Number (918) 574-3862	E-mail Address hburks@targaresources.com	
Contact Person for Air Pollution Matters Spencer Roberts				
Title Environmental Specialist		Telephone Number (713) 584-1172	E-mail Address Spencer.Roberts@targaresources.com	
Mailing Address (Street & No.) 1939 125th Avenue NW				
City Watford City		State ND	ZIP Code 58854	
Facility Name Little Missouri Gas Plant				
Facility Address (Street & No.) 1939-125th Avenue NW				
City Watford City		State ND	ZIP Code 58854	
County McKenzie	Coordinates NAD 83 in Decimal Degrees (to fourth decimal degree)			
Latitude 47.69611111		Longitude -103.26194444		
Legal Description of Facility Site				
Quarter NE	Quarter SE	Section 30	Township 149N	Range 98W
Land Area at Facility Site 121 Acres (or) _____ Sq. Ft.		MSL Elevation at Facility 2,200 ft		

SECTION B - GENERAL NATURE OF BUSINESS

Describe Nature of Business	North American Industry Classification System Number	Standard Industrial Classification Number (SIC)
Natural Gas Processing	213112	1321

SECTION C - GENERAL PERMIT INFORMATION

Type of Permit? <input checked="" type="checkbox"/> Permit to Construct (PTC) <input type="checkbox"/> Permit to Operate (PTO)	
If application is for a Permit to Construct, please provide the following data:	
Planned Start Construction Date TBD	Planned End Construction Date TBD

SECTION D – SOURCE IDENTIFICATION AND CATEGORY OF EACH SOURCE INCLUDED ON THIS PERMIT APPLICATION

Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	Permit to Construct				Minor Source Permit to Operate						
		New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
SCS-10a	One (1) 1,500 bhp engine	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Add additional pages if necessary

SECTION D2 – APPLICABLE REGULATIONS

Source ID No.	Applicable Regulations (NSPS/MACT/NESHAP/etc.)
Facility-wide	NSPS JJJJ/MACT ZZZZ

SECTION E – TOTAL POTENTIAL EMISSIONS

Pollutant	Amount (Tons Per Year)
NO _x	246.39
CO	328.30
PM	19.77

Pollutant	Amount (Tons Per Year)
PM ₁₀ (filterable and condensable)	19.77
PM _{2.5} (filterable and condensable)	19.77
SO ₂	1.28
VOC	382.29
GHG (as CO ₂ e)	266,865
Largest Single HAP	Formaldehyde; 6.70
Total HAPS	24.95

*If performance test results are available for the unit, submit a copy of test with this application. If manufacturer guarantee is used provide spec sheet.

SECTION F1 – ADDITIONAL FORMS

Indicate which of the following forms are attached and made part of the application	
<input checked="" type="checkbox"/> Air Pollution Control Equipment (SFN 8532)	<input type="checkbox"/> Fuel Burning Equipment Used for Indirect Heating (SFN 8518)
<input type="checkbox"/> Construct/Operate Incinerators (SFN 8522)	<input type="checkbox"/> Hazardous Air Pollutant (HAP) Sources (SFN 8329)
<input type="checkbox"/> Natural Gas Processing Plants (SFN 11408)	<input type="checkbox"/> Manufacturing or Processing Equipment (SFN 8520)
<input type="checkbox"/> Glycol Dehydration Units (SFN 58923)	<input type="checkbox"/> Volatile Organic Compounds Storage Tank (SFN 8535)
<input type="checkbox"/> Flares (SFN 59652)	<input checked="" type="checkbox"/> Internal Combustion Engines and Turbines (SFN 8891)
<input type="checkbox"/> Grain, Feed, and Fertilizer Operations (SFN 8524)	<input type="checkbox"/> Oil/Gas Production Facility Registration (SFN 14334)

SECTION F2 – OTHER ATTACHMENTS INCLUDED AS PART OF THIS APPLICATION

1.	Application Report	4.	Site Layout
2.	Emission Calculations	5.	
3.	Vendor Provided Information	6.	

I, the undersigned applicant, am fully aware that statements made in this application and the attached exhibits and statements constitute the application for Permit(s) to Construct and/or Operate Air Contaminant sources from the North Dakota Department of Environmental Quality and certify that the information in this application is true, correct and complete to the best of my knowledge and belief. Further, I agree to comply with the provisions of Chapter 23.1-06 of the North Dakota Century Code and all rules and regulations of the Department, or revisions thereof. I also understand the permit is nontransferable and, if granted a permit, I will promptly notify the Department upon sale or legal transfer of this permitted establishment.

Signature	DocuSigned by: <i>Dwayne Burks</i> 66949D23B6AA47A...	Date	11/14/2023
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PERMIT APPLICATION FOR INTERNAL COMBUSTION ENGINES AND TURBINES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF AIR QUALITY

SFN 8891 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- Must include SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Name of Firm or Organization Targa Badlands LLC	Facility Name Smokey Compressor Station
--	--

SECTION B – FACILITY AND UNIT INFORMATION

Source ID Number (From form SFN 8516) SCS-10a		
Type of Unit (check all that apply)	<input checked="" type="checkbox"/> Stationary Natural Gas-Fired Engine	<input type="checkbox"/> Emergency Use Only
	<input type="checkbox"/> Stationary Diesel and Dual Fuel Engine	<input checked="" type="checkbox"/> Non-Emergency Use
	<input type="checkbox"/> Stationary Gasoline Engine	<input type="checkbox"/> Peaking
	<input type="checkbox"/> Stationary Natural Gas-Fired Turbine	<input type="checkbox"/> Demand Response
	<input type="checkbox"/> Other – Specify:	

SECTION C – MANUFACTURER DATA

Make Waukesha	Model 7042GSI	Date of Manufacture 03/2021	
Reciprocating Internal Combustion Engine			
<input checked="" type="checkbox"/> Spark Ignition	<input type="checkbox"/> Compression Ignition	<input type="checkbox"/> Lean Burn	
<input checked="" type="checkbox"/> 4 Stroke	<input type="checkbox"/> 2 Stroke	<input checked="" type="checkbox"/> Rich Burn	
Maximum Rating (BHP @ rpm) 1,500 BHP @ 1200 rpm	Operating Capacity (BHP @ rpm) 1,500 BHP @ 1200 rpm		
Engine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart IIII			
<input checked="" type="checkbox"/> 40 CFR 60, Subpart JJJJ			
<input checked="" type="checkbox"/> 40 CFR 63, Subpart ZZZZ			
<input type="checkbox"/> 40 CFR 60, Subpart OOOO (for compressors)			
<input type="checkbox"/> 40 CFR 60, Subpart OOOOa (for compressors)			
Turbine			
Dry Low Emissions? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Heat Input (MMBtu/hr)	Maximum Rating (HP)	75% Rating (HP)	Efficiency
Turbine Subject to:			
<input type="checkbox"/> 40 CFR 60, Subpart GG <input type="checkbox"/> 40 CFR 60, Subpart KKKK			

SECTION D – FUELS USED

Natural Gas (10 ⁶ cu ft/year) 102.0 MMscf/yr	Percent Sulfur	Percent H ₂ S
Oil (gal/year)	Percent Sulfur	Grade No.
LP Gas (gal/year)	Other – Specify:	

SECTION E – NORMAL OPERATING SCHEDULE

Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Hours Per Year 8,760	Peak Production Season (if any)
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SECTION F – STACK PARAMETERS

Emission Point ID Number SCS-10a	Stack Height Above Ground Level (feet) 48		
Stack Diameter (feet at top) 1.33	Gas Discharged (SCFM) 6,488	Exit Temp (°F) 1,078	Gas Velocity (FPS) 77

SECTION G – EMISSION CONTROL EQUIPMENT

Is any emission control equipment installed on this unit?

 No Yes – Complete and attach form SFN 8532**SECTION H – MAXIMUM AIR CONTAMINANTS EMITTED**

Pollutant	Maximum Pounds Per Hour	Amount (Tons Per Year)	Basis of Estimate*
NO _x	3.31	14.48	Manufacturer
CO	1.98	8.69	Manufacturer w/ safety factor
PM	0.23	1.03	AP-42 Tbl 3.2-3; 4SRB (7/00)
PM ₁₀ (filterable and condensable)	0.23	1.03	AP-42 Tbl 3.2-3; 4SRB (7/00)
PM _{2.5} (filterable and condensable)	0.23	1.03	AP-42 Tbl 3.2-3; 4SRB (7/00)
SO ₂	0.01	0.03	AP-42 Tbl 3.2-3; 4SRB (7/00)
VOC	1.08	4.75	Manufacturer w/ safety factor
GHG (as CO _{2e})	1,534.43	6,720.78	Manufacturer
Largest Single HAP	0.09	0.41	Formaldehyde; Manufacturer w/ safety factor
Total HAPS	0.24	1.04	AP-42 Tbl 3.2-3; 4SRB (7/00); Manufacturer

* If performance test results are available for the unit, submit a copy of test with this application, if manufacture data used, submit manufacturers specification sheets.

IS THIS UNIT IN COMPLIANCE WITH ALL APPLICABLE AIR POLLUTION RULES AND REGULATIONS?

YES NO

If "NO" a Compliance Schedule (SFN 61008) must be completed and attached.

Attach and label separate sheet(s) if you need more space to explain any system or answers or to provide complete listings of Emissions, Contaminants, or other items.

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Environmental Quality
 Division of Air Quality
 4201 Normandy Street, 2nd Floor
 Bismarck, ND 58503-1324
 (701) 328-5188



PERMIT APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF AIR QUALITY

SFN 8532 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.

- **Must also include forms SFN 8516 or SFN 52858**

SECTION A – GENERAL INFORMATION

Name of Firm or Organization Targa Badlands LLC	Facility Name Smokey Compressor Station
Source ID No. of Equipment being Controlled SCS-10a	

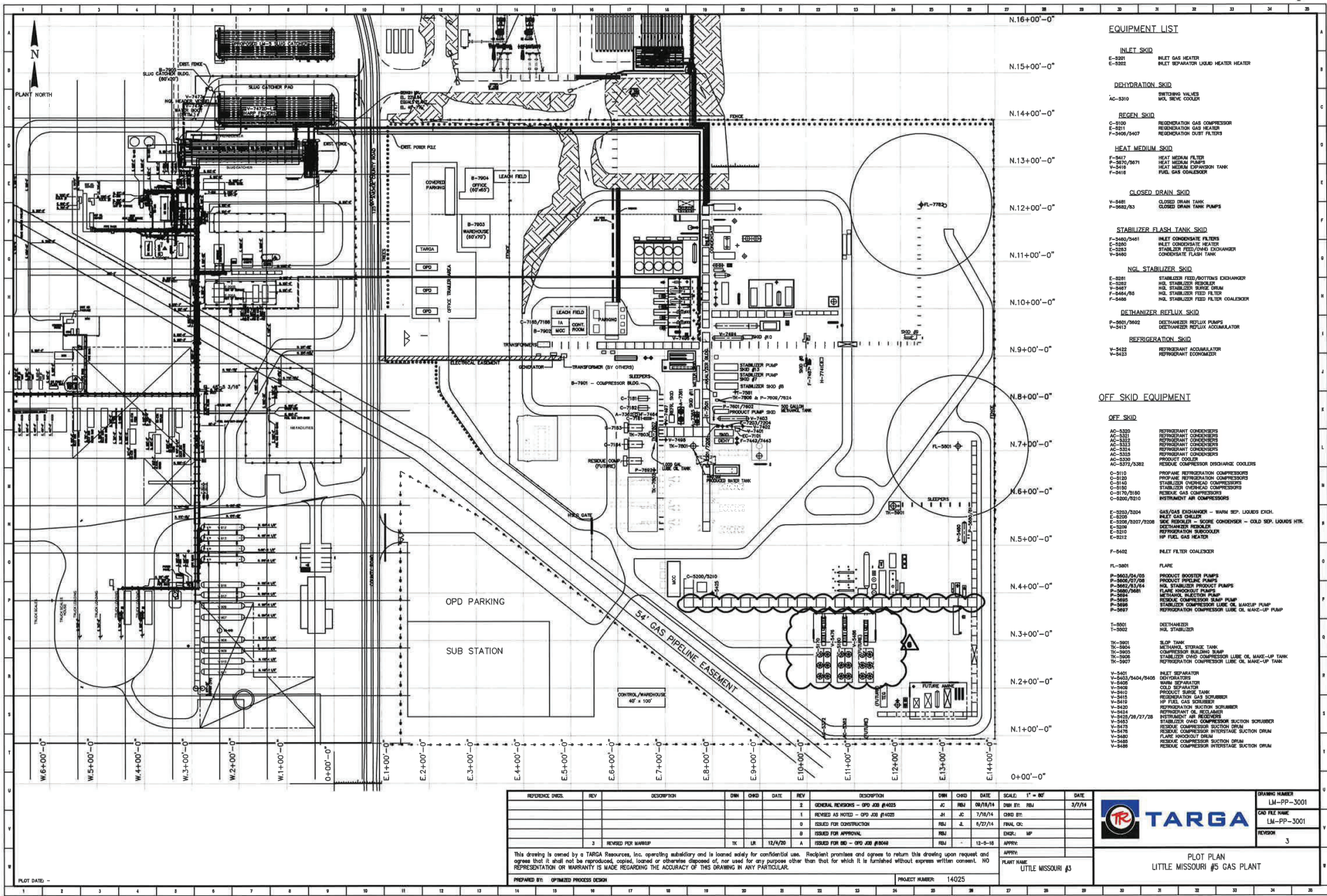
SECTION B – EQUIPMENT

Type:	<input type="checkbox"/> Cyclone	<input type="checkbox"/> Multiclone	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Electrostatic Precipitator
	<input type="checkbox"/> Wet Scrubber	<input type="checkbox"/> Spray Dryer	<input type="checkbox"/> Flare/Combustor	
	<input checked="" type="checkbox"/> Other – Specify: NSCR, Standard			
Name of Manufacturer Miratech	Model Number MECB-TW-RL-3075-0000-350	Date to Be Installed TBD		
Application:	<input type="checkbox"/> Boiler	<input type="checkbox"/> Kiln	<input checked="" type="checkbox"/> Engine	<input type="checkbox"/> Other – Specify:
Pollutants Removed	NOx	CO	HCHO	VOC
Design Efficiency (%)	91.9	94.5	60	12.5
Operating Efficiency (%)	91.9	94.5	60	12.5
Describe method used to determine operating efficiency: Assumed operating efficiency was equal to design efficiency.				

SECTION CD – GAS CONDITIONS

Gas Conditions	Inlet	Outlet	
Gas Volume (SCFM; 68°F; 14.7 psia)		6,488	
Gas Temperature (°F)		1,078	
Gas Pressure (in. H ₂ O)			
Gas Velocity (ft/sec)		77	
Pollutant Concentration (Specify Pollutant and Unit of Concentration)	Pollutant	Unit of Concentration	
Pressure Drop Through Gas Cleaning Device (in. H ₂ O)			

APPENDIX D – SITE LAYOUT



EQUIPMENT LIST

INLET SKID
 E-3201 INLET GAS HEATER
 E-3202 INLET SEPARATOR LIQUID HEATER

DEHYDRATION SKID

AC-5310 WETTED VALVES
 MAI SEVE COOLER

REGEN SKID

C-3100 REGENERATOR GAS COMPRESSOR
 E-3211 REGENERATOR GAS HEATER
 F-3406/3407 REGENERATOR DUST FILTERS

HEAT MEDIUM SKID

F-3417 HEAT MEDIUM FILTER
 F-3510/3417 HEAT MEDIUM PUMPS
 V-3419 HEAT MEDIUM EXPANSION TANK
 F-3418 FUEL GAS COOLER

CLOSED DRAIN SKID

V-3481 CLOSED DRAIN TANK
 F-3552/343 CLOSED DRAIN TANK PUMPS

STABILIZER FLASH TANK SKID

F-3460/3461 INLET CONDENSATE FILTERS
 E-3580 INLET CONDENSATE HEATER
 E-3583 STABILIZER FUEL/OVERHEAD CONDENSER
 V-3460 CONDENSATE FLASH TANK

NGL STABILIZER SKID

E-3591 STABILIZER FUEL/OVERHEAD EXCHANGER
 E-3592 NGL STABILIZER REFLUX
 F-3467 NGL STABILIZER SURGE DRAIN
 F-3468/3465 NGL STABILIZER FUEL FILTER
 F-3466 NGL STABILIZER FUEL FILTER COOLER

DETHANIZER REFLUX SKID

F-3460/3462 DETHANIZER REFLUX PUMPS
 N-3512 DETHANIZER REFLUX ACCUMULATOR

REFRIGERATION SKID

V-3422 REFRIGERANT ACCUMULATOR
 V-3423 REFRIGERANT ECONOMIZER

OFF SKID EQUIPMENT

- OFF SKID**
- AC-3200 REFRIGERANT CONDENSERS
 - AC-3201 REFRIGERANT CONDENSERS
 - AC-3202 REFRIGERANT CONDENSERS
 - AC-3203 REFRIGERANT CONDENSERS
 - AC-3204 REFRIGERANT CONDENSERS
 - AC-3205 REFRIGERANT CONDENSERS
 - AC-3206 REFRIGERANT CONDENSERS
 - AC-3207 REFRIGERANT CONDENSERS
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 - AC-3209 REFRIGERANT CONDENSERS
 - AC-3210 REFRIGERANT CONDENSERS
 - AC-3211 REFRIGERANT CONDENSERS
 - AC-3212 REFRIGERANT CONDENSERS
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 - AC-3233 REFRIGERANT CONDENSERS
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 - AC-3235 REFRIGERANT CONDENSERS
 - AC-3236 REFRIGERANT CONDENSERS
 - AC-3237 REFRIGERANT CONDENSERS
 - AC-3238 REFRIGERANT CONDENSERS
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 - F-3402 INLET FILTER COOLER
 - FL-3601 FLARE
 - FL-3602/3403/3404 PRODUCT BOOSTER PUMPS
 - FL-3605/3406/3407 PRODUCT PIPELINE PUMPS
 - FL-3608/3409/3410 NGL STABILIZER PRODUCT PUMPS
 - FL-3611/3412 FLARE DROUGHT PUMP
 - FL-3613/3414 REFINING SUCTION PUMPS
 - FL-3615/3416 REFINING COMPRESSOR SEAM PUMP
 - FL-3617/3418 STABILIZER COMPRESSOR LIQUID OIL MAKE-UP PUMP
 - FL-3619/3420 REFRIGERANT COMPRESSOR LIQUID OIL MAKE-UP PUMP
 - T-3601 DETHANIZER
 - T-3602 NGL STABILIZER
 - S-3601 SLOP TANK
 - S-3602 METHANOL STORAGE TANK
 - S-3603 COMPRESSOR BUILD-UP DRUM
 - S-3604 STABILIZER OVERHEAD COMPRESSOR LIQUID OIL MAKE-UP TANK
 - S-3605 STABILIZER OVERHEAD COMPRESSOR LIQUID OIL MAKE-UP TANK
 - S-3607 REFRIGERATION COMPRESSOR LIQUID OIL MAKE-UP TANK
 - V-3401 INLET SEPARATOR
 - V-3402/3403/3404/3405 SEPARATOR
 - V-3406 GAS SEPARATOR
 - V-3407 PRODUCT SURGE TANK
 - V-3408 REFRIGERANT GAS SCRUBBER
 - V-3409 HP FUEL GAS SCRUBBER
 - V-3410 REFRIGERANT GAS SCRUBBER
 - V-3411 HP FUEL GAS SCRUBBER
 - V-3412 REFRIGERANT SURGE TANK
 - V-3413 INSTRUMENT AIR RECEIVER
 - V-3414/3415 STABILIZER COMPRESSOR LIQUID OIL MAKE-UP DRUM
 - V-3416/3417 REFINING COMPRESSOR LIQUID OIL MAKE-UP DRUM
 - V-3418 FLARE DROUGHT DRUM
 - V-3419/3420 REFINING COMPRESSOR LIQUID OIL MAKE-UP DRUM
 - V-3421 REFINING COMPRESSOR LIQUID OIL MAKE-UP DRUM

REFERENCE DWG.	REV	DESCRIPTION	DNW	DNW DATE	REV	DESCRIPTION	DNW	DNW DATE	SCALE: 1" = 30'	DATE
		GENERAL REVISIONS - OPD JOB #4023	JC	RJH	09/18/14					3/7/14
	1	REVISED AS NOTED - OPD JOB #4025	JH	JC	7/8/14					
	2	ISSUED FOR CONSTRUCTION	RJH	JL	8/27/14					
		ISSUED FOR APPROVAL	RJH							
	3	REVISED PER MARKUP	TK	LR	12/4/20	A	ISSUED FOR BID - OPD JOB #8048			

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PREPARED BY: OPTIMIZED PROCESS DESIGN PROJECT NUMBER: 14025

