

RKI Exploration & Production LLC

210 Park Avenue, Suite 900, Oklahoma City, OK 73102
405-949-2221 Fax 405-949-2223

September 23, 2014

Cole Anderson
NSR Program Manager
Department of Environmental Quality, Air Quality Division
Herschler Building, 2-E
122 West 25th Street
Cheyenne, WY 82002



Re: *Air Permit Application*
RKI Exploration & Production LLC
Shelden Temporary Compressor Station

Dear Mr. Anderson:

Pursuant to the requirements of the Wyoming Air Quality Standards and Regulations New Source Review permitting program and the associated Chapter 6 Section 2 (C6 S2) Oil and Gas Production Facilities Permitting Guidance document dated September 2013, RKI Exploration & Production LLC (RKI) submits this *C6 S2 Application for an Air Quality Permit* for the subject facility.

RKI has constructed a temporary facility at the proposed Shelden Station natural gas compression facility in Section 16, T37N, R70W, Converse County.

New equipment consists of an inlet liquids slug catcher, compressor, solid desiccant dehy skid, water storage tank, and load out line. The compressor itself will be electrically powered.

Two (2) 350 kW natural gas fired electric generator sets were also be installed at the location. Each unit is a lean burn NOx configuration with a 3-way catalyst system to further control emissions.

Should you have any questions concerning this request, please contact me at the phone number or email address listed in the application.

Sincerely,

Handwritten signature of Jeffrey L. Ingerson.

Jeffrey L. Ingerson
Senior Air Permitting Engineer

Reviewer BMO
Copy to: _____
Cynthia _____
D.E. _____
File: A0000099



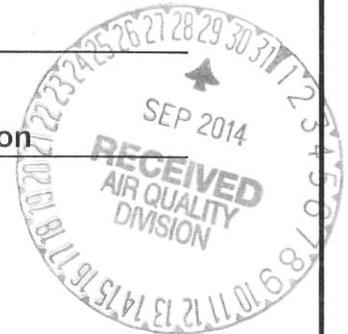
STATE OF WYOMING



Department of Environmental Quality - Air Quality Division
Oil & Gas Production Facilities C6 S2 Permit Application

Company Name: RKI Exploration & Production, LLC

Facility Name: Shelden Temporary Compressor Station



To Be Completed by WDEQ-AQD

Reviewer _____

Copy to _____

D.E. _____

File: _____



STATE OF WYOMING
 Department of Environmental Quality - Air Quality Division
 Oil and Gas Production Facilities C6 S2 Permit Application
 Application Cover Sheet



submit (1) one signed original copy AND (1) one electronic copy of the application OR (3) paper copies, one w/ original signature

Company Name RKI Exploration & Production, LLC
 Facility Name Shelden Temorary Compressor Station
 API Number NA

For more than one well, list additional wells & associated API numbers on Form AQD-OG8.

OFFICIAL CONTACT PERSON

Name Jeffrey L. Ingerson Title Senior Air Permitting Engineer
 Address 210 Park Avenue, Suite 900 Oklahoma City, Oklahoma 73102
 Telephone (405) 987-2181 Fax (405) 949-2223 E-mail jingerson@rkixp.com

LOCATION

County Converse County
 Legal Description 1/4 1/4 nw nw Section 16 T 37N R 70W
 Latitude 43.406484 Longitude 105.274651

FACILITY INFORMATION

Type of Facility: Single Well PAD X Central Tank Battery
 Type of Application: New Construction X Modified Facility
 First Date of Production 13-Aug-14 Date of Modification
 Producing Field Name Shelden Draw
 Producing Formation(s) Niobrara, Teapot, Parkman
 Existing Air Quality Permit / Waiver Numbers NA
 Pending Air Quality Permit Application Numbers NA

I, Jeffrey L. Ingerson Senior Air Permitting Engineer
 Responsible Official Title

state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further certify that the emission rates listed on this certification reflect the anticipated emissions due to the operation of this facility. The facility will operate in compliance with all Wyoming Air Quality Standards and Regulations.

Signature Date September 23, 2014
Signature Required

FORM AQD-OG1



STATE OF WYOMING

Department of Environmental Quality - Air Quality Division
Oil and Gas Production Facilities C6 S2 Permit Application
Storage Tanks, Pressurized Vessels & Pneumatic Pumps



Use as many copies of this form as necessary to include all tanks, vessels and pumps.

Company Name RKI Exploration & Production, LLC
Facility Name Shelden Temporary Compressor Station

STORAGE TANKS

Below, list all atmospheric tanks used to store liquids transferred from an upstream vessel or wellhead. Upstream vessels include separators, treaters, flash tanks, FWKOs, gun barrels, tanks, etc. If more than one tank of the same size is used for the same purpose, receiving fluids from the same upstream vessel, those tanks may be combined on one line.

Table with 5 columns: size (bbl), use (condensate / oil / H2O), total throughput (bpd), upstream vessel, upstream vessel pressure (psig). Row 1: 1 x 400, Water, 4.5, Slug Catcher/Separator, 50.

PRESSURIZED VESSELS List each vessel separately.

Pressurized vessels include FWKO's, heater-treaters, separators (2-phase & 3-phase), gas boots, gun barrels, flash tanks, etc...

Table with 4 columns: vessel, operating pressure (psig), upstream vessel, upstream vessel pressure (psig). Rows: Slug Catcher/Separator (50 psig, Gathering System), Dehy Unit (650 psig, Electric Compressor).

What is the API gravity of the SALES oil or condensate at this facility? 40
Does this facility handle sour oil / gas? YES NO X

EMISSION CONTROL DEVICES & SYSTEMS FOR FLASH VAPORS & PRESSURE VESSEL PROCESS STREAMS

Identify each emission control system or device and the date(s) of installation for each.

E X A M P L E: 30-foot ACME smokeless combustor for tank vapor emissions control, installed 1/1/2008

Table for listing emission control devices and installation dates.

Combustion Device Emission Controls (if applicable)

Date of Installation
Manufacturer
Smokeless Design? Yes No
Excess Oxygen (%)
VOC Destruction Efficiency (%)
HAP Destruction Efficiency (%)
Maximum Design Throughput (SCFD)
Minimum Design throughput (SCFD)
Actual Waste Gas Volume (SCFD)
Waste Gas Heat Content (Btu/SCF)
Burner Rating (MMBtu/hr)
Ignition System: Pilot Electric Spark Other
Continuous Pilot? Yes No
Pilot Gas Volume (SCFM)
Is the Combustion Device Monitored? Yes No How?

PNEUMATIC PUMPS

Describe each pneumatic pump using natural gas as the motive gas. Indicate where motive gas is vented (atmosphere or other).

E X A M P L E: 50 SCFH Acme brand heat trace circulation pump operated w/ produced gas, vented to gas collection system.

Table for listing pneumatic pumps and their details.



STATE OF WYOMING

Department of Environmental Quality - Air Quality Division
Oil and Gas Production Facilities C6 S2 Permit Application
Dehydration Units



Use multiple copies of this form to provide the required information for each dehydration unit at the facility.

Company Name RKI Exploration & Production, LLC
Facility Name Shelden Temorary Compressor Station

Fill in all information below for each dehydration unit.

P-BACT control scenario (check appropriate box) SCENARIO 1 X SCENARIO 2
Design Rating (MMSCFD) 1.5
Type of Glycol: TEG DEG EG other Dry Desiccant
Reboiler Heater Rating (MMBtu/hr)

Wet Gas (Upstream of Contact Tower)
Temperature (°F) 100 Pressure (psig) 650
Is the Wet Gas Saturated? YES X NO
If NO, Wet Gas Water Content (lbs H2O/MMSCF)

Dry Gas (Upstream of Contact Tower)
Flowrate (MMSCFD) na Water Content (lbs H2O/MMSCF) na

Glycol Circulation Pump
Manufacturer NA
Model NA
Gas Operated Pump? Electric Pump?
Maximum LEAN Glycol Circulation Rate (gpm) na Actual LEAN Glycol Circulation Rate (gpm) na
Limited LEAN Glycol Pump Rate (gpm) (if applicable) na
Source of Motive Gas for Pump na
Pump Volume Ratio (ACFM/gpm) na

Glycol Flash Separator (if applicable)
Operating Temperature (°F) na Operating Pressure (psig) na
Indirect Heater Rating (MMBtu/hr) na
Flash Tank Off Gas Stream (scfh) na
Where are Flash Vapors Routed? na

Stripping Gas (if applicable)
Source of Stripping Gas: Dry Gas na Flash Gas na Nitrogen na
Stripping Gas Rate (scfm) na

Process Vent Emissions Control System / Device

Reboiler Still Vent Condenser (if applicable)
Operating Temperature (°F) na Operating Pressure (psia) na
Where are Non-Condensable Vapors Routed? na

Combustion Device (if applicable)
Date of Installation
Manufacturer
Smokeless Design? Yes No
Excess Oxygen (%)
VOC Destruction Efficiency (%) HAP Destruction Efficiency (%)
Maximum Design Throughput (SCFD) Minimum Design throughput (SCFD)
Actual Waste Gas Volume (SCFD) Waste Gas Heat Content (Btu/SCF)
Burner Rating (MMBtu/hr)
Ignition System: Pilot Electric Spark Other
Continuous Pilot? Yes No
Pilot Gas Volume (SCFM)
Is the Combustion Device Monitored? Yes No How?

Describe any process vent emission control devices or systems not described above.

STATE OF WYOMING
 Department of Environmental Quality - Air Quality Division
 Permit Application

Reciprocating Engine Form

GENERAL INFORMATION

Company Name: RKI Exploration & Production, LLC

Facility Name: Various

ENGINE DATA

Manufacturer: NG Engine
 Model: D219L
 No. of Cylinders: 12
 Compression Ratio: 10.5:1
 Serial Number: TBD
 Date Ordered: TBD
 Date Manufactured: TBD

Type of Engine:
 4 Stroke Cycle: X 2 Stroke Cycle: _____
Fuel Data:
 Coal Bed Methane _____ Other: Nat Gas
 Engine Fuel Consumption (BTU/bhp-hr): 7.110 Fuel Gas Heating Value (BTU/scf) 1.015

Nameplate

Site Rating

Operating Range

Horsepower: 650 < 650 541 to 650
 Speed (rpm): 1,800 1,800 1,500 to 1,800
 Exhaust Stack Height (m): 3.5 Diameter (m): 0.30 Temp. (K): 1,000 Velocity(m/s): 19.4

(Note units)

EMISSIONS DATA

NOx		CO		VOC		HCHO	
g/hp-hr	lb/hr	g/hp-hr	lb/hr	g/hp-hr	lb/hr	g/hp-hr	lb/hr
0.5	0.72	2.0	2.87	0.7	1.00	0.08	0.09

Annual Operating Hours: 8,760

EMISSION CONTROL EQUIPMENT

Lean Burn: _____ NSCR Catalyst: _____ AFR controller: X SCR Catalyst: _____
 Oxidation Catalyst: _____ Other: X Describe: 3-way catalyst

Best Available Control Technology control cost analysis attached: yes _____ no X

ADDITIONAL INFORMATION REQUIRED

On separate sheets of paper, attach a copy of engine manufacturer's site rating, site emission estimates, general rating specification for engine model, and documentation of date of order and date of manufacture for each engine.



STATE OF WYOMING

Department of Environmental Quality - Air Quality Division
Oil and Gas Production Facilities C6 S2 Permit Application



EMISSION SUMMARY

Company Name RKI Exploration & Production, LLC
Facility Name Shelden Draw Temporary Compressor

This form must be completed for each emission source at the facility. A list of the emission sources which must be considered is found in Appendix B of the C6 S2 O&G Production Facilities Permitting Guidance.

UNCONTROLLED EMISSIONS (Tons Per Year)

These are the total uncontrolled, potential emissions from each source.

Table with 7 columns: EMISSION SOURCE, VOCs, total HAPs, NOx, CO, SO2, H2S. Rows include 350 Kw Gas Fired Genset, 400 BBL Water Tank, Water Tank Loadout, and Fugitives.

CONTROLLED EMISSIONS (Tons Per Year)

These are the total emissions from each source. Include controlled emissions from each controlled source and uncontrolled emissions from each source which does not require control, such as process equipment burners.

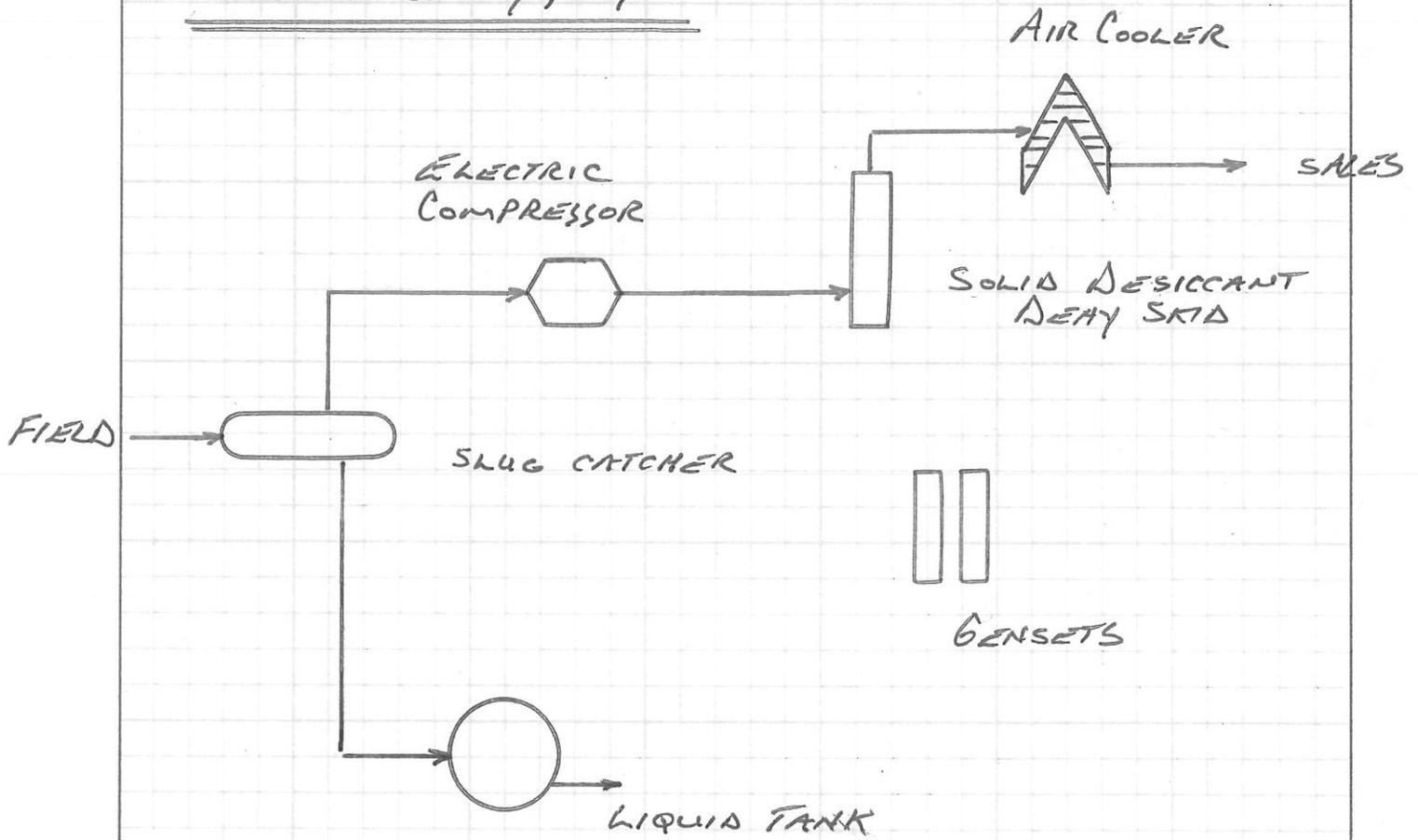
Table with 7 columns: EMISSION SOURCE, VOCs, total HAPs, NOx, CO, SO2, H2S. Rows include 350 Kw Gas Fired Genset, 400 BBL Water Tank, Water Tank Loadout, and Fugitives.

HAZARDOUS AIR POLLUTANT SUMMARY (Tons Per Year)

Complete this section for each emissions source if TOTAL HAPs from that source are 9 TPY or greater.

Table with 6 columns: SOURCE, Benzene, Toluene, Ethyl-Benzene, Xylenes, Other.

SHELDON TEMPORARY COMPRESSOR
16, 37H, 70W
CONVERSE COUNTY, WYO



RKI Exploration & Production, LLC
Shelden Draw Temporary Compressor Station
 nw nw 16-37N-70W
 Converse County, Wyoming

Power Solutions International 21.9 L Natural Gas Fired Engine

Kw: 350 @ 1800 rpm
BHP: 650 @ 1800 rpm
Fuel: 1,020 BTU/scf
Fuel Consumption: 6,930 BTU/hp-hr

Fuel Consumption: 4,416 scf/hr
Fuel Consumption: 38.686 mmscf/yr

UNCONTROLLED

	EF g/hp-hr	EF lb/hr	Emissions ton/yr	Remarks
NOx	1.00	1.43	6.27	EPA Certification spec sheet
CO	2.00	2.86	12.54	EPA Certification spec sheet
VOC	0.70	1.00	4.39	EPA Certification spec sheet
PM	0.08	0.11	0.48	AP42
Formaldehyde	0.08	0.12	0.51	AP42

CONTROLLED

	EF g/hp-hr	EF lb/hr	Emissions ton/yr	Remarks
NOx	0.50	0.72	3.14	WDEQ Permit Requirements
CO	2.00	2.86	12.54	WDEQ Permit Requirements
VOC	0.70	1.00	4.39	WDEQ Permit Requirements
PM	0.30	0.43	1.88	AP42
Formaldehyde	0.06	0.09	0.38	WDEQ Permit Requirements

NOTES:

- * Engine is equipped with 3-way catalyst and AFR controls.
- * Fuel consumption and emissions factors derived from Power Solutions/Moser spec sheet.
- * Fuel BTU value derived from gas analysis at nearby wellsite.

Input
 Calculated

NGE 21.9L Fuel Consumption Data

NG-60 Hz				
Power at Flywheel	kg/hr	m3/hr	ft3/hr	BTU/hr
486.0	107.1	126.3	4.400	4,504,035
570.9	78.9	90.5	3.479	3,513,898
246.6	55.4	69.3	2.445	2,469,511
124.1	33.7	42.1	1.285	1,409,261
48.1	20.6	25.7	907	916,032

NG-50 Hz				
Power at Flywheel	kg/hr	m3/hr	ft3/hr	BTU/hr
379.0	74.6	85.6	3.081	3,474,424
281.7	58.0	72.5	2.593	2,594,002
180.5	41.8	52.2	1.844	1,892,853
96.0	25.9	32.3	1.141	1,152,612
34.9	15.5	19.4	685	692,377

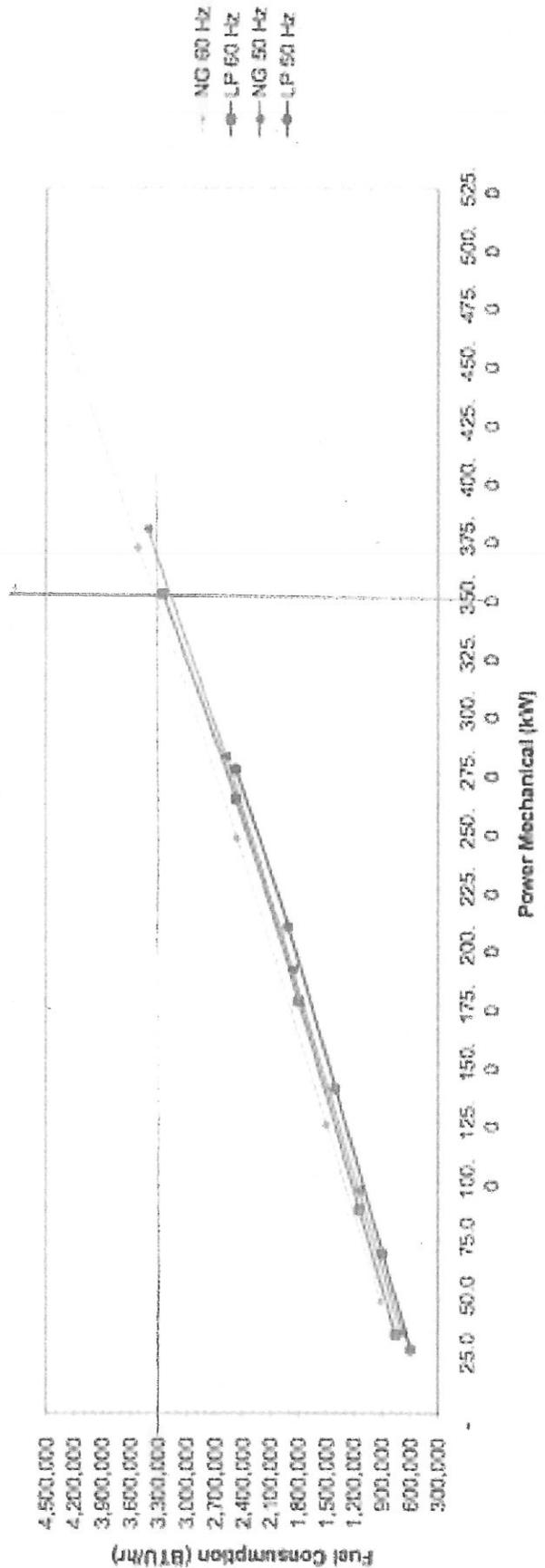
LP-60 Hz				
Power at Flywheel	kg/hr	m3/hr	ft3/hr	BTU/hr
351.3	74.9	86.8	3.075	3,254,933
263.5	57.0	69.3	2.477	2,477,676
176.9	41.3	52.0	1.795	1,795,329
87.9	26.4	34.0	1.147	1,147,679
34.2	17.4	22.2	784	784,076

LP-50 Hz				
Power at Flywheel	kg/hr	m3/hr	ft3/hr	BTU/hr
276.2	56.9	65.3	2.393	2,473,425
205.8	42.9	51.3	1.824	1,908,261
139.6	32.3	37.2	1.336	1,402,386
69.0	20.5	23.9	0.855	862,053
27.7	13.7	15.9	557	566,032

Gas Properties		
	kg/m3	ft3/lb
LP Density	1.832	23.96
NG Density	0.8	10.93

Power Ratings at Flywheel		
Continuous	Prime	Stand-By
NG-50 Hz	350	378
NG-60 Hz	410	456
LP-50 Hz		276
LP-60 Hz		351

NGE 21.9L Fuel Consumption vs. Power



EPA INFORMATION

21.9L

	<p align="center">UNITED STATES ENVIRONMENTAL PROTECTION AGENCY 2014 MODEL YEAR CERTIFICATE OF CONFORMITY WITH THE CLEAN AIR ACT OF 1990</p>	<p align="center">OFFICE OF TRANSPORTATION AND AIR QUALITY ANN ARBOR, MICHIGAN 48105</p>
<p>Certificate Issued To: Power Solutions International, Inc. (U.S. Manufacturer or Importer)</p> <p>Certificate Number: EPSIB21.9NGP-012</p>	<p>Effective Date: 10/28/2013 Expiration Date: 12/31/2014</p>	<p>Issue Date: 10/28/2013 Revision Date: N/A</p>
<p>Manufacturer: Power Solutions International, Inc. Engine Family: EPSIB21.9NGP Certificate Number: EPSIB21.9NGP-012 Certification Type: Mobile and Stationary Fuel: LPG/Propane Natural Gas (CNG/LNG) Emission Standards: CO (g/kW-hr) : 4.4 HC + NOx (g/kW-hr) : 2.7 NMHC + NOx (g/kW-hr) : 2.7 CO (g/Hp-hr) : 2 VOC (g/Hp-hr) : 0.7 Emergency Use Only : N</p>	 <p>Byron J. Bunker, Division Director Compliance Division</p>	
<p>Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 1048, 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 1048, 40 CFR Part 60 and produced in the stated model year.</p> <p>This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 1048, 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 1048, 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.</p> <p>It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 1048, 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void <i>ab initio</i> for other reasons specified in 40 CFR Part 1048, 40 CFR Part 60.</p> <p>This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.</p>		

GRI-HAPCalc® 3.0
Liquid Hydrocarbon Storage Tank Report

Facility ID:	SKELETON	Notes:
Operation Type:	COMPRESSOR STATION	
Facility Name:	SKELETON DRAW TEMPORARY SITE	
User Name:	Ingerson	
Units of Measure:	U.S. STANDARD	

Note: Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero.
 These emissions are indicated on the report with a "0".
 Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

Liquid Hydrocarbon Storage Tank

Unit Name: TANK

Annual Throughput:	1,642.00 bbl/yr	Control Efficiency:	0.00 %
Capacity:	400.00 bbl	Upstream Pressure:	50.00 psia
Tank Type:	VERTICAL	Upstream Temperature:	100.00 °F
Tank Vent:	VENTED TO ATMOSPHERE	Liquid Gravity:	40 °API
Does Liquid Flash When Entering Tank?:	YES	Gas Gravity	0.930 (Air=1.0)

User Concentration Inputs

<u>Chemical Name</u>	<u>Gas Mole %</u>
Methane	67.5426
Ethane	4.4809
Propane	8.4693
Butane	10.1691
Pentane	2.5685
C6+	4.6321
n-Hexane	0.1829
Benzene	0.0170
Toluene	0.0166
Ethylbenzene	0.0015
Xylenes(m,p,o)	0.0159
2,2,4-Trimethylpentane	0.0138
Nitrogen	2.1377
Oxygen	0.0000

Calculated Emissions (ton/yr)

<u>HAPs</u>	<u>Chemical Name</u>	<u>Emissions</u>
	Benzene	0.0021
	Toluene	0.0024
	Ethylbenzene	0.0003
	Xylenes(m,p,o)	0.0027
	2,2,4-Trimethylpentane	0.0025
	n-Hexane	0.0250
Total		0.0350

Other Pollutants

Methane	0.2085
Ethane	0.0259
Propane	0.0719
Butane	0.9391
Pentane	0.2945
C6+	0.6343

RKI Exploration & Production, LLC
 Sheldon Compressor Station
 nw nw 16, T37N, R70W
 Converse County, Wyoming

Tank Loadout

NOTE: Annual volume of 1,642 bbls (68985 gals) of which 5% is hydrocarbons (3,449 gals).

Source ID Number: Liquid Tank Model: Liquid Loading
 Name Truck Loadout

Liquid Temperature (°F): 48.13 Throughput Value (gal/yr): 3449
 Vapor Pressure (psia) 2.57 Molecular Weight (lb/lb-mole): 128.91
 Hours Per Day: 24 Saturation Factor: 0.6
 Load Frequency (trucks/yr): 1 Days Per Year: 365
 Load Duration (min/truck): 60.00

Loading Loss (lb/1000 gal) = $(12.46 * S * P * M) / T$ (AP-42 Section 5.2 (1/95)) where:

S = Saturation Factor = dedicated normal service
 P = True Vapor Pressure of liquid loaded*, psia
 M = Molecular Weight of Vapors, lb/lb-mole
 T = Temp. of bulk liquid loaded, deg. R = (deg. F + 460)

Loading Loss (lb VOC/1000 gal) = 4.87 lb/1000 gal

Uncontrolled Emissions

Pollutant	Loading Loss (lb/1000 gal)	Throughput (gal/yr)	Estimated Emissions (lb/yr)	Source of Emission Factor
VOC	4.87	3449	16.80	AP42

Controlled Emissions

Pollutant	Loading Loss (lb/1000 gal)	Throughput (gal/yr)	Estimated Emissions (lb/yr)	Source of Emission Factor
VOC	0.10	3449	0.34	LP Flare specs

GRI-HAPCalc® 3.0
Fugitive Emissions Report

Facility ID:	SKELETON	Notes:
Operation Type:	COMPRESSOR STATION	
Facility Name:	SKELETON DRAW TEMPORARY SITE	
User Name:	Ingerson	
Units of Measure:	U.S. STANDARD	

Note: Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero. These emissions are indicated on the report with a "0".
Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

Fugitive Emissions

Calculation Method: EPA Average Factors

User Inputs

<u>Component</u>	<u>Gas Service</u>	<u>Light Liquid Service</u>	<u>Heavy Liquid Service</u>
Connections:	737	0	0
Flanges	120	0	0
Open-Ended Lines:	14	0	0
Pumps:	0	0	0
Valves:	257	0	0
Others:	30	0	0

Calculated Emissions (ton/yr)

<u>Chemical Name</u>	<u>Emissions</u>
HAPs	
Benzene	0.0037
Toluene	0.0062
Ethylbenzene	0.0003
Xylenes(m,p,o)	0.0016
Total	0.0118
Criteria Pollutants	
NMHC	1.2712
NMEHC	0.5561