

Facility:
North Dakota Well #1

Emission Summary
North Dakota Department of Health*

*The NDDH PTE is post-control

Emission Source	PTE (TPY)					
	VOC	HAP	NOx	CO	H ₂ S	SO ₂
Oil/Condensate Tanks	24.48	0.69	0.35	1.90	N/A	N/A
Treater Flare	40.16	0.63	1.68	9.12	0.00	0.00
Treater Burner	0.01	0.00	0.21	0.18	N/A	N/A
RICE Engine	2.90	NA	1.93	4.83		
Truck Loading	2.48	NA				
Pneumatic Pump	0.00	0.00				
Pneumatic Controllers	0.00	0.00				
Glycol Dehydrator	0.00	0.00				
Totals (TPY)	70.03	1.32	4.17	16.03	0.00	0.00

Emission Control Requirements

Emission Source	Controls Required	Initial Control Installation Deadline	Additional Control Installation Deadline
Oil/Condensate Tanks	YES	6/1/2011	8/30/2011
Treater	YES	6/1/2011	
Pneumatic Pump	NO	NA	
Glycol Dehydrator	NO	NA	

Document/Permit Requirements*

Document/Permit Required	YES/NO	Due Date
Registration Packet	YES	8/30/2011
Title V Permit	NO	NA
PSD Permit	NO	NA

*Owners and operators of O&G facilities with the potential to emit at or above major source thresholds must adequately control emissions or follow the normal permitting process established in Chapters 33-15-14 and 33-15-15 of the North Dakota Air Pollution Control Rules.

RICE Input Data

Line 1	Number of Engines	2	Enter the number of engines that will be installed at the production facility.
RICE Engine #1			Description
Line 2	Hours of Operation	8760	Engine is assumed to operate 8,760 hours per year.
Line 3	Maximum HP Rating	100	Manufacturer's maximum hp rating.
Line 4	NOx g/hp-hr	10	Manufacturer's emission factor, actual test results or AP-42 factor in grams per horsepower hour (g/hp-hr) for nitrogen oxides (NOx).
Line 5	CO g/hp-hr	10	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for carbon monoxide (CO).
Line 6	VOC g/hp-hr	5	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for total organic compounds (TOC or THC).
Line 7	NOx Control Efficiency	90%	NOx control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 8	CO Control Efficiency	75%	CO control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 9	VOC Control Efficiency	70%	VOC control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.

RICE Engine #2			Description
Line 10	Hours of Operation	8760	Engine is assumed to operate 8,760 hours per year.
Line 11	Maximum HP Rating	100	Manufacturer's maximum hp rating.
Line 12	NOx g/hp-hr	10	Manufacturer's emission factor, actual test results or AP-42 factor in grams per horsepower hour (g/hp-hr) for nitrogen oxides (NOx).
Line 13	CO g/hp-hr	10	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for carbon monoxide (CO).
Line 14	VOC g/hp-hr	5	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for total organic compounds (TOC or THC).
Line 15	NOx Control Efficiency	90%	NOx control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 16	CO Control Efficiency	75%	CO control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 17	VOC Control Efficiency	70%	VOC control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.

RICE Engine #3			Description
Line 18	Hours of Operation	0	Engine is assumed to operate 8,760 hours per year.
Line 19	Maximum HP Rating	100	Manufacturer's maximum hp rating.
Line 20	NOx g/hp-hr	10	Manufacturer's emission factor, actual test results or AP-42 factor in grams per horsepower hour (g/hp-hr) for nitrogen oxides (NOx).
Line 21	CO g/hp-hr	5	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for carbon monoxide (CO).
Line 22	VOC g/hp-hr	4	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for total organic compounds (TOC or THC).
Line 23	NOx Control Efficiency	90%	NOx control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 24	CO Control Efficiency	75%	CO control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 25	VOC Control Efficiency	70%	VOC control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.

RICE Engine #4			Description
Line 26	Hours of Operation	0	Engine is assumed to operate 8,760 hours per year.
Line 27	Maximum HP Rating	100	Manufacturer's maximum hp rating.
Line 28	NOx g/hp-hr	10	Manufacturer's emission factor, actual test results or AP-42 factor in grams per horsepower hour (g/hp-hr) for nitrogen oxides (NOx).
Line 29	CO g/hp-hr	5	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for carbon monoxide (CO).
Line 30	VOC g/hp-hr	4	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for total organic compounds (TOC or THC).
Line 31	NOx Control Efficiency	90%	NOx control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 32	CO Control Efficiency	75%	CO control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 33	VOC Control Efficiency	70%	VOC control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.

RICE Engine #5			Description
Line 34	Hours of Operation	0	Engine is assumed to operate 8,760 hours per year.
Line 35	Maximum HP Rating	100	Manufacturer's maximum hp rating.
Line 36	NOx g/hp-hr	10	Manufacturer's emission factor, actual test results or AP-42 factor in grams per horsepower hour (g/hp-hr) for nitrogen oxides (NOx).
Line 37	CO g/hp-hr	5	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for carbon monoxide (CO).
Line 38	VOC g/hp-hr	4	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for total organic compounds (TOC or THC).
Line 39	NOx Control Efficiency	90%	NOx control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 40	CO Control Efficiency	75%	CO control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 41	VOC Control Efficiency	70%	VOC control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.

RICE Engine #6			Description
Line 42	Hours of Operation	0	Engine is assumed to operate 8,760 hours per year.
Line 43	Maximum HP Rating	100	Manufacturer's maximum hp rating.
Line 44	NOx g/hp-hr	10	Manufacturer's emission factor, actual test results or AP-42 factor in grams per horsepower hour (g/hp-hr) for nitrogen oxides (NOx).
Line 45	CO g/hp-hr	5	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for carbon monoxide (CO).
Line 46	VOC g/hp-hr	4	Manufacturer's emission factor, actual test results or AP-42 factor in g/hp-hr for total organic compounds (TOC or THC).
Line 47	NOx Control Efficiency	90%	NOx control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 48	CO Control Efficiency	75%	CO control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.
Line 49	VOC Control Efficiency	70%	VOC control efficiency of any applicable controls (NSCR catalyst, AFRC, etc) obtained from manufacturer data or actual test results.

Input Data



GREEN = Requires input
RED = No input required. This is a calculated value.

Facility Information

e 1	North Dakota Well #1
e 2	6/1/2011
e 3	8/15/2011

Name of the facility and the well number.
First date of production or the date of modification of the facility.
Date registration packet is submitted to the NDDoH.

Production Data

		Description	
e 4	BOPD	240	Average daily production in barrels of oil per day (BOPD), based on the first 30 days of production.
e 5	Mscfd	150	Average daily production of gas in Mscf per day, based on the first 30 days of production.
e 6	Decline Factor	0.6	Expected decline factor for the first year of operation. Enter the default value 0.6; anything lower needs prior approval from the NDDoH.
e 7	Adjusted BOPD	144	This is the calculated BOPD expected to be produced using the above entered decline factor.
e 8	Adjusted Treater Gas (Mscfd)	90	This is the calculated mcf of gas the well is expected to produce using the above entered decline factor.

Oil/Condensate Tank Data

		Description	
e 9	Flash Gas Method: Default Bakken EF	Use the drop down menu to choose the appropriate flash gas method.	
e 10	Bakken EF scf/bbl	97.91	The scf/bbl from direct measurement or representative sample. If specific data is not available, use the Bakken default of 97.91.
e 11	Estimated Tank Vapors (scfd)	14099.04	This is the estimated scfd of tank vapors based on the following: adjusted BOPD multiplied by the scf/bbl entered on Line 9.
e 12	Lower Heating Value	2000	Lower heating value (Btu/scf) of tank vapors. If site specific data is not available, use the Bakken default value of 2000.
e 13	Molecular Weight	45.19	Molecular weight of the tank vapors in pounds per pound-mole (lb/lb-mole). If site specific data is not available, use the Bakken default value of 45.19.
e 14	VOC%	79.80%	VOC weight fraction of the tank vapor gas (C3+). If site specific data is not available, use the Bakken default value of 79.8%.
e 15	HAP%	2.26%	HAP weight fraction of the tank vapor gas. If site specific data is not available, use the Bakken default value of 2.26%.
e 16	H ₂ S weight %	0.000%	H ₂ S weight percent of the tank vapor gas.
e 17	H ₂ S mole %	0.000%	H ₂ S mole percent of the tank vapor gas.
e 18	Ground Pit Flare		Use the drop down menu to choose the appropriate emission control type.
e 19	Control Destruction Efficiency	90%	Control efficiency of any applicable controls. This is a fixed number based on control type.

Treater Gas Data

		Description	
e 20	Btu/scf	1500	Btu/scf of wellstream gas.
e 21	Molecular Weight	28.96	Average molecular weight of the wellstream gas in lb/lb-mole.
e 22	Specific Gravity	1	If necessary to convert specific gravity to molecular weight, enter the specific gravity of the wellstream gas.
e 23	Calculated Molecular Weight	28.96	This is the calculated molecular weight based on the specific gravity entered above. Please enter this number on Line 21.
e 24	VOC%	32.00%	VOC weight fraction of the wellstream gas (Note: Weight%, not Mole%).
e 25	HAP%	0.50%	HAP weight fraction of the wellstream gas. (Note: Weight%, not Mole%).
e 26	H ₂ S weight %	0.000%	H ₂ S weight percent of the wellstream gas
e 27	H ₂ S mole %	0.000%	H ₂ S mole percent of the wellstream gas
e 28	Ground Pit Flare		Use the drop down menu to choose the appropriate emission control type.
e 29	Control Destruction Efficiency	90%	Control efficiency of any applicable controls (combustor, pit flare, utility flare, etc).

Treater Burner(s)

		Description	
e 30	Total Btu/hr	500,000	Total burner rating for the heater treater burner(s) in btu/hr. If there are multiple burners, add the total heat input together.
e 31	Hours of Operation	8,760	The burner(s) is/are assumed to operate 8,760 hours per year.

Truck Loading

		Description	
e 32	Oil is hauled by truck	Use the drop down menu to choose the appropriate oil sales method. If oil is sold through a LACT, no input values are required in Lines 30-35.	
e 33	Submerged loading: dedicated vapor balance service	1	Use the drop down list to choose the appropriate mode of operation. The saturation factor will automatically be selected based on mode of operation.
e 34	Molecular Weight	50.00	Molecular weight of tank vapors in lb/lb-mole. If no site specific data is available, please refer to Table 2 on the Truck Loading tab.
e 35	Vapor Pressure	2.30	True vapor pressure of liquid loaded, pounds per square inch absolute (psia) If no site specific data is available, please refer to Table 2 on the Truck Loading tab.
e 36	Temperature	50.00	Temperature of bulk liquid loaded in Fahrenheit. If no site specific data is available, use an estimated average annual temperature.
e 37	Load Rate (bbl/hr)	180	Load rate of liquid loaded in barrels per hour.
e 38	Load Time (hrs)	1.00	The time it takes to loadout one load (hrs).

Pneumatic Pumps

		Description	
e 39	Number of Pneumatic Pumps	2	Number of pneumatic pumps at facility.
e 40	Hours of Operation	4380	Hours the pump is in operation annually. For winter months only, please enter 4380 hours.
e 41	scf/min	0.50	Pneumatic source consumption rate as per manufacturer data (scf/min).
e 42	Routed exhaust back into closed loop system		Use the drop down menu to choose the appropriate emission control type.
e 43	Control Efficiency	100%	Control efficiency of any applicable controls (combustor, routing exhaust to fuel supply, VRU, etc).

Pneumatic Controllers

		Description	
e 44	Number of Pneumatic Controllers	10	Number of pneumatic controllers at facility.
e 45	Bleed rate (scf/hr)	0.00	Average bleed rate of device (scf/hr).

Glycol Dehydrator

		Description	
e 46	VOC (TPY)	0.00	VOC emissions calculated in GRI-GLYCalc software (if no glycol dehydrator enter 0).
e 47	HAP (TPY)	0.00	HAP emissions calculated in GRI-GLYCalc software (if no glycol dehydrator enter 0).



OIL/GAS PRODUCTION FACILITY REGISTRATION
 NORTH DAKOTA DEPARTMENT OF HEALTH
 DIVISION OF AIR QUALITY
 SFN 14334 (2-11)

GENERAL

Type of Report <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Amended	Well Status <input checked="" type="checkbox"/> Initial Completion <input type="checkbox"/> Recompletion		
Name of Owner/Operator GENERIC ENERGY LLC			
Official to Contact on Air Pollution Matters JOE SMITH	Email address JS@123.COM	Title ADMINISTRATIVE SPECIALIST	Telephone Number 123-123-1234
Name of Applicant BILL SMITH		Title ENVIRONMENTAL SPECIALIST	Telephone Number 123-123-1234
Mailing Address 123 DAKOTA WAY		City ANYWHERE	State ND Zip Code 58123

FACILITY DATA

Well(s) Name BEST WELL H1234	Producing Pool BAKKEN	Field Name TWIN BUTTES
Legal Description of Well Site Surface Location NW 1/4 NW 1/4, Section 1, Twp. 151 N., Rge. 93	Permit Number NDIC #2000	Date of Completion/Recompletion 06/01/2011
Location of Treater <input checked="" type="checkbox"/> On-site * <input type="checkbox"/> At Central Tank Battery, Specify Location 1/4 1/4, Section , Twp. N, Rge. W		
Location of Storage Tanks <input checked="" type="checkbox"/> On-site * <input type="checkbox"/> At Central Tank Battery, Specify Location 1/4 1/4, Section , Twp. N, Rge. W		
Location of Flare <input checked="" type="checkbox"/> On-site * <input type="checkbox"/> At Central Tank Battery, Specify Location 1/4 1/4, Section , Twp. N, Rge. W		
Other Air Pollution Equipment (e.g., Internal Combustion Engines @ x HP - compressors, generators, etc., whose collective HP rating exceeds 500 HP), Specify: *NONE		

* The emissions for the entire facility must be included in the section titled "EMISSIONS". Include well name and file number in the section titled "COMMENTS" on any additional well(s) using the central tank battery.

GAS INFORMATION

Gas/Oil Ratio (cf/bbl) 335.5	Date of GOR 8/1/2011	H2S Content in Gas "ATTACH GAS ANALYSIS" ppm or mole % (1% = 10,000 ppm) 0.000
Disposition of Gas (check all that apply) <input type="checkbox"/> Flared, Estimate Amount _____ Mcf/day <input type="checkbox"/> Sold to _____		<input type="checkbox"/> Used on Lease, Estimate Amount _____ Mcf/day <input checked="" type="checkbox"/> Currently Flared Scheduled to be Tied-in To BURN NG BURN LLC By 8/20/2011

EQUIPMENT

Flare System <input checked="" type="checkbox"/> Equipped with Automatic Ignitor <input type="checkbox"/> Equipped with Continuous Pilot, Specify Pilot Fuel	Flare Stack Height Above Ground 5 Feet	
STORAGE TANKS		
Number of Saltwater 1	Number of Oil 4	Estimate Total Amount of Gas Generated From Storage Tanks .002 Mcf/day with 0 ppm H ₂ S
Tank Gas Emissions Are: <input type="checkbox"/> Controlled by Vapor Recovery Unit <input checked="" type="checkbox"/> Burned by Flare (Include Amount of SO ₂ Produced in "EMISSIONS" Section) <input type="checkbox"/> Burned by Treater (Include Amount of SO ₂ Produced in "EMISSIONS" Section)		<input type="checkbox"/> Vented to Atmosphere <input type="checkbox"/> Other, Specify
TREATER		
Treater Fuel CASINGHEAD GAS	If Sour ppm H ₂ S	Treater Stack Height Above Ground 30 Feet

EMISSIONS

Annual Total S Emissions (Note: For facilities comp/recomp prior to 7/1/87, if Total S is 10 T/yr or greater, registration must be submitted. All facilities comp/recomp on or after 7/1/87 must submit registration.)

S = (Flared + Lease Use + Vented) (mole % H₂S) (0.00042)

Mcf/Day .002	*	0 % H ₂ S	*	Days/Year 365	*	0.00042	=	0 Tons/year (total S)
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Annual Total SO₂ Emissions (Note: This calculation is necessary to determine if prevention of significant deterioration (PSD) or Title V permitting is required.)

SO₂ (tons/year) = (Flared + Lease Use) (mole % H₂S) (days operation/year) (0.00084)

Mcf/Day .002	*	0 % H ₂ S	*	Days/Year 365	*	0.00084	=	0 Tons/year (SO ₂)
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If SO₂ ≥ 100 tons/year, additional permitting is required.

Annual Total VOC Emissions
 VOC Emissions: **700.3** tons/year (uncontrolled) **70.03** tons/year (controlled)

COMMENTS

Bakken well is a sweet crude/gas well.
Well will be tied into sales line on 8/20/2011. Will resubmit calculations only after well is tied in.
Well is the only well on the pad, not a multi-well pad site.

Certification of Truth, Accuracy and Completeness

As an authorized company representative, I certify that to the best of my knowledge the information contained in this Oil/Gas Production Facility form and additional sheets is true, accurate and complete.

Signature of Applicant X [signed]	Date 8/15/2011
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ND Department of Health
 Division of Air Quality
 918 E Divide, 2nd Floor
 Bismarck, ND 58501-1947

Telephone: (701)328-5188
 Fax: (701)328-5185