

TRUE OIL LLC

Environmental Division

Bob Dundas, Environmental Coordinator
Kate Forsting, Assistant Environmental Coordinator

Reply to:

P.O. Drawer 2360 (82602)
455 North Poplar
Casper, WY 82601
Phone: (307) 237-9301
Fax: (307) 266-0357

January 9, 2015

NSR Program Manager / attn: O&G Production Facilities
Air Quality Division
Wyoming Department of Environmental Quality
Herschler Building
122 W. 25th St.
Cheyenne, WY 82002

Re: Permit Application for True Oil LLC, True Federal 11-25H

Dear Permit Engineer:

True Oil LLC (True Oil) requests a permit for the True Federal 11-25H oil production site located in NW NW Section 25, Township 43N, Range 76W in Campbell County. This facility began production the end of October 2014.

The following equipment was installed and is currently in-use at this facility:

- Vertical 6x20 Sivalls Treater
- 0.5 MMBTU Sivalls Flame Arrested Burner (for the treater)
- Sivalls 2 Phase Separator
- Abutec 100 Flare Combustor (controls associated gas) with Enardo Detonation Arrestor
- 2 – 400 bbl cone bottom Produced Water Tanks
- 6 – 400 bbl cone bottom Crude Oil Tanks
- Abutec 20 Flare Combustor (controls tank emissions) with Enardo Detonation Arrestor

This well uses electricity to power the plunger lift. The fluid stream containing natural gas, crude oil and produced water is first routed to the two phase separator. The remaining fluid is sent to the vertical heater treater. Three streams are generated in the treater including gas, oil, and water.

The crude oil stream is sent to one of the six oil tanks. The tank vapor emissions are captured and sent to the on-site tank combustor. The combustion efficiency is estimated at 98 percent. The crude oil is hauled offsite by truck.

The gas phase stream leaves the treater and is sent to a sales line. Gas is combusted at the associated gas flare during emergency situations where it cannot be sold. The combustion efficiency is estimated at 98 percent.

The water is sent to one of the two 400-barrel produced water storage tanks and sent off site by truck. Since little water is produced and the water is from a treated stream, emissions are assumed to be minimal.

Fugitive emissions are associated with the valves, gauges, tank vents, hatches and connectors at the site. The components

were estimated based on similar facilities. An exact component count was not performed.

The applicable WDEQ IMPACT Permit Application Forms are attached as well as a facility map/plan and emission calculations.

If you have any questions or require additional information, please contact me at (307) 266-0260 or Lynn Olson with Trihydro Corporation at (307) 745-7474.

Sincerely,


Kate Forsting
Assistant Environmental Coordinator
True Oil LLC

File: True Oil LLC, True Fed 11-25 WAQD



Department of Environmental Quality Air Quality Division
Permit Application Form

Is this a revision to an existing application?
Yes _____ No X _____
Previous Application #: _____

Date of Application: 1/12/2015

COMPANY INFORMATION:

Company Name: True Oil LLC
Address: 455 N. Poplar St
City: Casper State: Wyoming Zip Code: 82602
Country: USA Phone Number: 3072660260

FACILITY INFORMATION:

Facility Name: True Federal 11-25H Battery
New Facility or Existing Facility: New
Facility Description: Oil and Gas Production Battery
Facility Class: Minor Operating Status: Operating
Facility Type: Production Site

For Oil & Gas Production Sites ONLY:

First Date of Production (FDOP)/Date of Modification: 10/31/2014
Does production at this facility contain H2S?*: No

*If yes, contact the Division.

API Number(s): 49-005-61505

NAICS Code: 211111 Crude Petroleum and Natural Gas Extraction

FACILITY LOCATION:

*Enter the facility location in either the latitude/longitude area or section/township/range area. Both are not required.

Physical Address: _____

City: _____ Zip Code: _____
State: WY County: _____

OR

Latitude: 43.678069 Longitude: -105.94699 County: Campbell
Quarter Quarter: NW Quarter: NW
Section: 25 Township: 43N Range: 76W

For longitude and latitude, use NAD 83/WGS84 datum and 5 digits after the decimal (i.e. 41.12345, -107.56789)

CONTACT INFORMATION:

*Note that an Environmental AND NSR Permitting Contact is required for your application to be deemed complete by the agency.

Title: Ms. First Name: Kate
Last Name: Forsting

Company Name: True Oil LLC

Job Title: Assistance Environmental Coordinator

Address: P.O. Drawer 2360

City: Casper State: Wyoming

Zip Code: 82602

Primary Phone No.: 307-266-0260

E-mail: Kate.Forsting@truecos.com

Mobile Phone No.: _____ Fax No.: _____

Contact Type: Environmental contact

Start Date: _____

Specific Emission Unit Attributes:

Heater/Chiller

Company Equipment ID: True Fed 11-25 Heater Treater heater
Company Equipment Description: Heater Treater heater

Operating Status: Operating
Initial Construction Commencement Date: September 2014
Initial Operation Commencement Date: 10/31/2014
Most Recent Construction/ Modification Commencement Date: NA

Most Recent Operation Commencement Date: NA

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is **Reconstruction** or **Temporary Permit** or **Other**, please explain below:

Firing Type: Direct
Heat Input Rating: 0.50 Units: MMBtu/hr
Primary Fuel Type: Field Gas
Secondary Fuel Type:
Heat Content of Fuel: 1428 Units: BTU/scf
Fuel Sulfur Content: 0 Units: ppm

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

2310010100

Potential Operating Schedule: Provide the operating schedule for this emission unit.
Hours/day: 24
Hours/year: 8760

Control Equipment:

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS):

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61):

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63):

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD):

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review:

These rules are found under WAQSR Chapter 6, Section 13.

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Criteria Pollutants:

1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)					
2.)	PM #10 microns in diameter (PE/PM10)					
3.)	PM #2.5 microns in diameter (PE/PM2.5)					
4.)	Sulfur dioxide (SO2)	0.0006	lb/MMBtu	0.000	0.001	AP-42
5.)	Nitrogen Oxides (NOx)	0.0980	lb/MMBtu	0.049	0.215	AP-42
6.)	Carbon monoxide (CO)	0.0824	lb/MMBtu	0.041	0.181	AP-42
7.)	Volatile organic compounds (VOC)	0.0054	lb/MMBtu	0.003	0.012	AP-42
8.)	Lead (Pb)					
9.)	Total Hazardous Air Pollutants (HAPs)	See attached			0.004	AP-42
10.)	Fluoride (F)					
11.)	Hydrogen Sulfide (H2S)					
12.)	Mercury (Hg)					
13.)	Total Reduced Sulfur (TRS)					
14.)	Sulfuric Acid Mist (SAM)					

**Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.*

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Pollutants:

1.)	See Attached					
2.)						
3.)						
4.)						
5.)						
6.)						
7.)						
8.)						

Greenhouse Gases (GHGs)

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Pollutants:

1.)						
2.)						
3.)						
4.)						
5.)						
6.)						
7.)						
8.)						

Specific Emission Unit Attributes:

Separator/Treater

Company Equipment ID: True Fed 11-25 Heater Treater
Company Equipment Description: Heater Treater

Operating Status:
Initial Construction Commencement Date: September 2014
Initial Operation Commencement Date: 10/31/2014
Most Recent Construction/ Modification Commencement Date: NA

Most Recent Operation Commencement Date: NA
Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason:

If reason is **Reconstruction** or **Temporary Permit** or **Other**, please explain below:

Type of Vessel: Is Vessel Heated?
Operating Temperature (F): 80-115
Operating Pressure (psig): 75

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

31000129

Potential Operating Schedule: Provide the operating schedule for this emission unit.
Hours/day: 24
Hours/year: 8760

Control Equipment:

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed BACT: Presumptive BACT- Smokeless Combustor 98% control

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS):

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61):

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63):

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD):

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review:

These rules are found under WAQSR Chapter 6, Section 13.

Specific Emission Unit Attributes:

Separator/Treater

Company Equipment ID: True Fed 11-25 gas separator
Company Equipment Description: associated gas 2-phase separator

Operating Status: Operating
Initial Construction Commencement Date: September 2014
Initial Operation Commencement Date: 10/31/2014
Most Recent Construction/ Modification Commencement Date: NA

Most Recent Operation Commencement Date: NA

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is **Reconstruction** or **Temporary Permit** or **Other**, please explain below:

Type of Vessel: 2-Phase Separator Is Vessel Heated? No
Operating Temperature (F): 80-115
Operating Pressure (psig): 125

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

31000129

Potential Operating Schedule: Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Control Equipment:

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed BACT: Presumptive BACT- Smokeless Combustor 98% control

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS):

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61):

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63):

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD):

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review:

These rules are found under WAQSR Chapter 6, Section 13.

Control Equipment:

Flare/Combustor

Manufacturer: Abutec Date Installed: Sep-14
 Model Name and Number: Abutec 100 Company Control: TrueFed Associated Gas Flare
 Company Control Equipment Description: True Fed 11-25 Abutec Associated Gas Flare Combustor

Pollutant(s) Controlled:		<input type="checkbox"/> CO	<input type="checkbox"/> NOx	<input type="checkbox"/> Pb	<input type="checkbox"/> SO2	<input checked="" type="checkbox"/> VOC	<input type="checkbox"/> PM
<input type="checkbox"/> PM (FIL)	<input type="checkbox"/> PM Condensable	<input type="checkbox"/> PM 10 (FIL)	<input type="checkbox"/> PM 2.5 (FIL)	<input type="checkbox"/> PM 10	<input type="checkbox"/> PM 2.5		
<input checked="" type="checkbox"/> Other							

NOTE: The following fields require numeric values unless otherwise denoted with an asterisk*

Maximum Design Capacity (MMSCF/hr): 9.2 mmbTU/Hr
 Minimum Design Capacity (MMSCF/hr): _____
 Design Control Efficiency (%): 98 Capture Efficiency (%): _____
 Operating Control Efficiency (%): 98

Flare Type:* Enclosed Elevated Flare Type:* Non-Assisted
 Ignition Device:* Yes Flame Presence Sensor:* Yes
 Inlet Gas Temp (F): ambient at 90F Flame Presence Type:* Other
 Gas Flow Rate (acfm): 107 Outlet Gas Temp (F): _____

This is the only control equipment on this air contaminant source

If not, this control equipment is: Primary Secondary Parallel

List all other emission units that are also vented to this control equipment:*

List all release point IDs associated with this control equipment:*

Emergency use for associated gas
Heater Treater/2-phase Separator

Specific Emission Unit Attributes:

Fugitives

Company Equipment ID: Fugs

Company Equipment Description: Fugitive Emissions

Operating Status: Operating

Initial Construction Commencement Date: Sep-14

Initial Operation Commencement Date: 10/31/2014

Most Recent Construction/ Modification Commencement Date: NA

Most Recent Operation Commencement Date: NA

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is **Reconstruction** or **Temporary Permit** or **Other**, please explain below:

Type of Fugitive Emission: Fugitive Leaks at O&G

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

31088811

Potential Operating Schedule: Provide the operating schedule for this emission unit.

Hours/day: 24

Hours/year: 365

Control Equipment:

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS):

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61):

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63):

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD):

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review:

These rules are found under WAQSR Chapter 6, Section 13.

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Criteria Pollutants:

1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)					
2.)	PM #10 microns in diameter (PE/PM10)					
3.)	PM #2.5 microns in diameter (PE/PM2.5)					
4.)	Sulfur dioxide (SO2)					
5.)	Nitrogen Oxides (NOx)					
6.)	Carbon monoxide (CO)					
7.)	Volatile organic compounds (VOC)			0.83	3.64	Other
8.)	Lead (Pb)					
9.)	Total Hazardous Air Pollutants (HAPs)			0.1	0.43	Other
10.)	Fluoride (F)					
11.)	Hydrogen Sulfide (H2S)					
12.)	Mercury (Hg)					
13.)	Total Reduced Sulfur (TRS)					
14.)	Sulfuric Acid Mist (SAM)					

**Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.*

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Pollutants:

1.)					
2.)					
3.)					
4.)					
5.)					
6.)					
7.)					
8.)					

Greenhouse Gases (GHGs)

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Pollutants:

1.)					
2.)					
3.)					
4.)					
5.)					
6.)					
7.)					
8.)					

Specific Emission Unit Attributes:

Loading/Unloading/Dump

Company Equipment ID: Truck Loading
Company Equipment Description: Loading

Operating Status: Operating

Initial Construction Commencement Date: Sep-14

Initial Operation Commencement Date: 10/31/2014

Most Recent Construction/ Modification Commencement Date: NA

Most Recent Operation Commencement Date: NA

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is **Reconstruction** or **Temporary Permit** or **Other**, please explain below:

Type of Material: Liquid
Material Description: Crude Oil and Produced Water

Maximum Annual Throughput: 95300 Units: barrels/yr

Maximum Hourly Throughput: 85 Units: barrels/hr

Detailed Description of Loading/Unloading/Dump Source:
Crude Oil and Produced water from oil well

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

2310010800

Potential Operating Schedule: Provide the operating schedule for this emission unit.

Hours/day: 4

Hours/year: 1460

Control Equipment:

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS):

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61):

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63):

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD):

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review:

These rules are found under WAQSR Chapter 6, Section 13.

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Criteria Pollutants:

1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)					
2.)	PM #10 microns in diameter (PE/PM10)					
3.)	PM #2.5 microns in diameter (PE/PM2.5)					
4.)	Sulfur dioxide (SO2)					
5.)	Nitrogen Oxides (NOx)					
6.)	Carbon monoxide (CO)					
7.)	Volatile organic compounds (VOC)	1.366**		4.10	2.99	AP-42
8.)	Lead (Pb)					
9.)	Total Hazardous Air Pollutants (HAPs)			0.48	0.35	AP-42
10.)	Fluoride (F)					
11.)	Hydrogen Sulfide (H2S)					
12.)	Mercury (Hg)					
13.)	Total Reduced Sulfur (TRS)					
14.)	Sulfuric Acid Mist (SAM)					

**Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.*

** lb/1000 gallons, uncontrolled PTE

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Pollutants:

1.)					
2.)					
3.)					
4.)					
5.)					
6.)					
7.)					
8.)					

Greenhouse Gases (GHGs)

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Pollutants:

1.)					
2.)					
3.)					
4.)					
5.)					
6.)					
7.)					
8.)					

Specific Emission Unit Attributes:

Storage Tank/Silo

Company Equipment ID: True Fed Crude Oil Tanks 1-6
Company Equipment Description: Crude Tanks 16643, 16644, 16645, 16646, 16647, & 16648

Operating Status: Operating
Initial Construction Commencement Date: Sep-14
Initial Operation Commencement Date: 10/1/2014
Most Recent Construction/ Modification Commencement Date: NA

Most Recent Operation Commencement Date: NA

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is **Reconstruction** or **Temporary Permit** or **Other**, please explain below:

Material Type: Liquid
Description of Material Stored: Crude Oil from Oil well production

Capacity: 400 Units: barrels
Maximum Throughput: 290 Units: barrels/day
Maximum Hourly Throughput: NA Units:
Operating Pressure (psig): Atmosphere
Vapor Pressure of Material Stored (psig): RVP 3.83
Is Tank Heated?: No

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

2310010200

Potential Operating Schedule: Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 365

Control Equipment:

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS):

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61):

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63):

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD):

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review:

These rules are found under WAQSR Chapter 6, Section 13.

Specific Emission Unit Attributes:

Storage Tank/Silo

Company Equipment ID: True Fed Produced Water Tanks
Company Equipment Description: Produced Water 1, Produced Water 2

Operating Status: Operating
Initial Construction Commencement Date: Sep-14
Initial Operation Commencement Date: 10/1/2014
Most Recent Construction/ Modification Commencement Date: NA

Most Recent Operation Commencement Date: NA

Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification):

Reason: Construction (Greenfield/New Facility)

If reason is **Reconstruction** or **Temporary Permit** or **Other**, please explain below:

Material Type: Liquid
Description of Material Stored: Produced water from Oil well production

Capacity: 400 Units: barrels
Maximum Throughput: 290 Units: barrels/day
Maximum Hourly Throughput: NA Units:
Operating Pressure (psig): Atmosphere
Vapor Pressure of Material Stored (psig): 1 (water)
Is Tank Heated?: No

SCC Codes: List all Source Classification Code(s) (SCC) that describe the process(es) performed by the emission source (e.g., 1-02-002-04).

2310010200

Potential Operating Schedule: Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 365

Control Equipment:

If yes, please fill out and attach the appropriate Control Device and Release Point Information worksheets.

Best Available Control Technology (BACT): Was a BACT Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

Lowest Achievable Emission Rate (LAER): Was a LAER Analysis completed for this emission unit?

Yes No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS):

New Source Performance Standard are listed under 40 CFR 60- Standards of Performance for New Stationary Sources.

NSPS Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61):

National Emissions Standards for Hazardous Air Pollutants (NESHAP Part 61) are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

Part 61 NESHAP Subpart: _____

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63):

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63) standards are listed under 40 CFR 63

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD):

These rules are found under WAQSR Chapter 6, Section 4.

Non-Attainment New Source Review:

These rules are found under WAQSR Chapter 6, Section 13.

Control Equipment:

Flare/Combustor

Manufacturer: Abutec Date Installed: September 2014
 Model Name and Number: Abutec 20 Company Control: TrueFed Tank Comb
 Company Control Equipment Description: True Fed 11-25 Abutec Tank Combustor

Pollutant(s) Controlled:		<input type="checkbox"/> CO	<input type="checkbox"/> NOx	<input type="checkbox"/> Pb	<input type="checkbox"/> SO2	<input checked="" type="checkbox"/> VOC	<input type="checkbox"/> PM
<input type="checkbox"/> PM (FIL)	<input type="checkbox"/> PM Condensable	<input type="checkbox"/> PM 10 (FIL)	<input type="checkbox"/> PM 2.5 (FIL)	<input type="checkbox"/> PM 10	<input type="checkbox"/> PM 2.5		
<input checked="" type="checkbox"/> Other							

NOTE: The following fields require numeric values unless otherwise denoted with an asterisk*

Maximum Design Capacity (MMSCF/hr): 2.39 mmbTU/hr
 Minimum Design Capacity (MMSCF/hr): _____
 Design Control Efficiency (%): 98 Capture Efficiency (%): _____
 Operating Control Efficiency (%): 98

Flare Type:* Enclosed Elevated Flare Type:* Non-Assisted
 Ignition Device:* Yes Flame Presence Sensor:* Yes
 Inlet Gas Temp (F): ambient at 90F Flame Presence Type:* Other
 Gas Flow Rate (acfm): 27.89 Outlet Gas Temp (F): _____

This is the only control equipment on this air contaminant source

If not, this control equipment is: Primary Secondary Parallel

List all other emission units that are also vented to this control equipment:*

List all release point IDs associated with this control equipment:*

This Flare controls vent gas from the oil and water tanks
Water and Oil Tanks

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements.

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Criteria Pollutants:

1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)		0.14	lb/MMBtu	0.56	2.45	AP-42
6.)	Carbon monoxide (CO)		0.37	lb/MMBtu	1.48	6.48	AP-42
7.)	Volatile organic compounds (VOC)	805.74			3.68	16.11	Other
8.)	Lead (Pb)						
9.)	Total Hazardous Air Pollutants (HAPs)	24.73			0.11	0.49	Other
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

**Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.*

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Pollutants:

1.)					
2.)					
3.)					
4.)					
5.)					
6.)					
7.)					
8.)					

Greenhouse Gases (GHGs)

Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards		Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
	Potential to Emit (PTE)	Units			

Pollutants:

1.)					
2.)					
3.)					
4.)					
5.)					
6.)					
7.)					
8.)					

Release Point Information:

Complete the table below for *each* release point. Please include release point information for each emission unit. Multiple attachments may be necessary. A release point is a point at which emissions from an emission unit are released into the ambient (outside)air. List each individual release point on a separate pair of lines (release point ID and description). *For longitude and latitude, use NAD 83/WGS84 datum and 5 digits after the decimal (i.e. 41.12345, -107.56789)*

Stack Release Point Information	
Company Release Point ID:	Release Point Type: <input type="text" value="Vertical"/>
Tank Emissions	Release Point Latitude: <u>43.678069</u>
	Release Point Longitude: <u>-105.94699</u>
Company Release Point Description:	Base Elevation (ft): <u>4978</u>
TrueFed Tank vapor combustor emissions	Stack Height (ft): <u>20</u>
	Stack Diameter (ft): <u>1.54</u>
	Exit Gas Velocity (ft/s): _____
	Exit Gas Temp (F): _____
	Exit Gas Flow Rate (acfm): _____
Company Release Point ID:	Release Point Type: <input type="text" value="Vertical"/>
Controlled Produced Gas Emissions	Release Point Latitude: <u>43.678069</u>
	Release Point Longitude: <u>-105.94699</u>
Company Release Point Description:	Base Elevation (ft): <u>4978</u>
TrueFed AssocGas Combustor emissions	Stack Height (ft): <u>20</u>
	Stack Diameter (ft): <u>2.75</u>
	Exit Gas Velocity (ft/s): _____
	Exit Gas Temp (F): _____
	Exit Gas Flow Rate (acfm): _____
Company Release Point ID:	Release Point Type: <input type="text" value="Vertical"/>
Heater Treater heater	Release Point Latitude: <u>43.678069</u>
	Release Point Longitude: <u>-105.94699</u>
Company Release Point Description:	Base Elevation (ft): <u>4978</u>
	Stack Height (ft): <u>20</u>
	Stack Diameter (ft): <u>0.25</u>
	Exit Gas Velocity (ft/s): _____
	Exit Gas Temp (F): _____
	Exit Gas Flow Rate (acfm): _____
Company Release Point ID:	Release Point Type: <input type="text"/>
	Release Point Latitude: _____
	Release Point Longitude: _____
Company Release Point Description:	Base Elevation (ft): _____
	Stack Height (ft): _____
	Stack Diameter (ft): _____
	Exit Gas Velocity (ft/s): _____
	Exit Gas Temp (F): _____
	Exit Gas Flow Rate (acfm): _____

Complete the table below for each fugitive (area, volume, line) release point. List each individual release point on a separate line.

Fugitive Release Point Information	
Company Release Point ID:	Release Point Latitude: 43.678069
Fugs	Release Point Longitude: -105.94699
Company Release Point Description:	Release Height (ft): between 1 and 30
Fugitives, which by definition do not have a point, volume or line	
Company Release Point ID:	Release Point Latitude: _____
	Release Point Longitude: _____
Company Release Point Description:	Release Height (ft): _____
Company Release Point ID:	Release Point Latitude: _____
	Release Point Longitude: _____
Company Release Point Description:	Release Height (ft): _____
Company Release Point ID:	Release Point Latitude: _____
	Release Point Longitude: _____
Company Release Point Description:	Release Height (ft): _____

**TRUE OIL, TRUE FED 11-25H
COMBUSTION EMISSIONS**

Compound	Emission Factor (lb/10 ⁶ ft ³)	Emission Factor (lb/MMBtu)	Treaters - 0.5 MMBtu/hr PTE (TPY)	Emission Factor Source
CO	84	0.082352941	0.180	AP-42 Table 1.4-1
NO _x	100	0.098039216	0.215	AP-42 Table 1.4-1
SO ₂	0.6	0.000588235	0.001	AP-42 Table 1.4-2
VOC	5.5	0.005392157	0.012	AP-42 Table 1.4-2
Total HAPs	--	--	0.004	--
2-Methylnaphthalene	2.4E-05	2.4E-08	5.2E-08	AP-42 Table 1.4-3
3-Methylchloranthrene	1.8E-06	1.8E-09	3.9E-09	AP-42 Table 1.4-3
7,12-Dimethylbenz(a)anthracene	1.6E-05	1.6E-08	3.4E-08	AP-42 Table 1.4-3
Acenaphthene	1.8E-06	1.8E-09	3.9E-09	AP-42 Table 1.4-3
Acenaphthylene	1.8E-06	1.8E-09	3.9E-09	AP-42 Table 1.4-3
Anthracene	2.4E-06	2.4E-09	5.2E-09	AP-42 Table 1.4-3
Benz(a)anthracene	1.8E-06	1.8E-09	3.9E-09	AP-42 Table 1.4-3
Benzene	2.1E-03	2.1E-06	4.5E-06	AP-42 Table 1.4-3
Benzo(a)pyrene	1.2E-06	1.2E-09	2.6E-09	AP-42 Table 1.4-3
Benzo(b)fluoranthene	1.8E-06	1.8E-09	3.9E-09	AP-42 Table 1.4-3
Benzo(g,h,i)perylene	1.2E-06	1.2E-09	2.6E-09	AP-42 Table 1.4-3
Benzo(k)fluoranthene	1.8E-06	1.8E-09	3.9E-09	AP-42 Table 1.4-3
Chrysene	1.8E-06	1.8E-09	3.9E-09	AP-42 Table 1.4-3
Dibenzo(a,h)anthracene	1.2E-06	1.2E-09	2.6E-09	AP-42 Table 1.4-3
Dichlorobenzene	1.2E-03	1.2E-06	2.6E-06	AP-42 Table 1.4-3
Fluoranthene	3.0E-06	2.9E-09	6.4E-09	AP-42 Table 1.4-3
Fluorene	2.8E-06	2.7E-09	6.0E-09	AP-42 Table 1.4-3
Formaldehyde	7.5E-02	7.4E-05	1.6E-04	AP-42 Table 1.4-3
Hexane	1.8E+00	1.8E-03	3.9E-03	AP-42 Table 1.4-3
Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	3.9E-09	AP-42 Table 1.4-3
Naphthalene	6.1E-04	6.0E-07	1.3E-06	AP-42 Table 1.4-3
Phenanthrene	1.7E-05	1.7E-08	3.7E-08	AP-42 Table 1.4-3
Pyrene	5.0E-06	4.9E-09	1.1E-08	AP-42 Table 1.4-3
Toluene	3.4E-03	3.3E-06	7.3E-06	AP-42 Table 1.4-3
Arsenic	2.0E-04	2.0E-07	4.3E-07	AP-42 Table 1.4-4
Beryllium	1.2E-05	1.2E-08	2.6E-08	AP-42 Table 1.4-4
Cadmium	1.1E-03	1.1E-06	2.4E-06	AP-42 Table 1.4-4
Chromium	1.4E-03	1.4E-06	3.0E-06	AP-42 Table 1.4-4
Cobalt	8.4E-05	8.2E-08	1.8E-07	AP-42 Table 1.4-4
Manganese	3.8E-04	3.7E-07	8.2E-07	AP-42 Table 1.4-4
Mercury	2.6E-04	2.5E-07	5.6E-07	AP-42 Table 1.4-4
Nickel	2.1E-03	2.1E-06	4.5E-06	AP-42 Table 1.4-4
Selenium	2.4E-05	2.4E-08	5.2E-08	AP-42 Table 1.4-4

TRUE OIL, TRUE FED 11-25
FUGITIVE EMISSIONS

Component Source Counts					
Equipment Type	Storage Tank	Wellhead	Separator	Heater-treater	Header
Number of units	8	1	1	1	1
Valves	6	5	6	8	5
Flanges	4	10	12	12	10
Connectors	20	4	10	20	4
Open-ended lines	2	0	0	0	0
Other components	2	1	0	0	0

Emissions				
Total Component Count	Hydrocarbon EF (lb/component-day)	TPY HC	HC VOC Wt. Fraction	TPY VOCs
Valves	72	1.71	1	1.71
Flanges	76	0.0058	1	0.08
Connectors	198	0.011	1	0.40
Open-ended lines	16	0.074	1	0.22
Other components	17	1.24	1	1.24
Total	379	3.64		3.64

Total HCs = 3.64 TPY
 Total VOC's = 3.64 TPY
 Total VOC's = 0.83 lb/hr
 Total HAPs = 0.43 TPY
 Total HAPs = 0.10 lb/hr

- Component counts were derived from Table W-1C of Subpart W (Oil and Natural Gas Systems) of 40 CFR Part 98 for Western U.S. oil production equipment for wellheads and heater treater. Tank components are based on engineering estimates.
- Emission Factors (in lb/component-day) from Wyoming Air Quality Division Oil and Gas Permitting Guidance, 2007
- Light Oil VOC Weight fraction assumed to be 1.0 to be conservative
- To be conservative, all Speciated Fugitive Emission Factors (Wt Fractions) from light crude - Wyoming Air Quality Division Oil and Gas Permitting Guidance, 2007 (HAP Fraction of Hydrocarbon Emissions 0.2585)
- Total HAPs calculated by multiplying Total HCs in TPY by weight fraction HAPs

**TRUE OIL, TRUE FED 11-25H
LOADING EMISSIONS**

Truck Loading Emission Methodology

$$L_L = 12.46 \times \frac{SPM}{T}$$

Where:

- L_L = loading loss (lb/1,000 gallon liquid loaded)
- S = saturation factor (AP-42 Table 5.2-1)
- P = true vapor pressure of liquid loaded (psia), (from AP-42 Table 7.1-2)
- M = molecular weight of vapor (Table 7.1-2)
- T = Temperature of liquid loaded (°R = 460 + °F)

Variables		Source
S	0.6	AP-42 Table 5.2-1 (Submerged loading: dedicated normal service)
P (psia)	1.9	AP-42 Table 7.1-2 (Crude Oil RVP 5 at 40F)
M (lb/lbmole)	50	AP-42 Table 7.1-2 (Crude Oil RVP 5)
T (°R)	520	Annual average temperature (60°F)
L _L (lb/1,000 gal)	1.366	--
Loading (bbl/day)	286	Total production from well (including a decline factor of 40% to account for the decrease in production during the first year)
Loading (bbl/yr)	104,390	--
HAP Fraction (wt.)	0.12	Low Pressure Oil Sample

Truck Loading Emission Estimates

$$\begin{aligned} \text{VOC (TPY)} &= \frac{\text{Annual Production (bbl)}}{\text{yr}} \times \frac{42 \text{ (gal)}}{\text{bbl}} \times \frac{1}{1000} \times \frac{L_L \text{ (lb)}}{1,000 \text{ gallon}} \\ & \times \frac{1 \text{ (ton)}}{2,000 \text{ (lb)}} = \mathbf{2.99} \quad \text{Ton VOC/yr} \end{aligned}$$

$$\begin{aligned} \text{VOC (lb/hr)} &= \frac{\text{VOC (ton)}}{\text{yr}} \times \frac{2,000 \text{ (lb)}}{1 \text{ (ton)}} \times \frac{1 \text{ yr}}{1,460 \text{ hrs}} \\ &= \mathbf{4.10} \quad \text{lb VOC/hr} \end{aligned}$$

$$\begin{aligned} \text{HAP (TPY)} &= \frac{\text{VOC (ton)}}{\text{yr}} \times \text{HAP Fraction} = \mathbf{0.35} \quad \text{Ton HAP/yr} \end{aligned}$$

$$\begin{aligned} \text{HAP (lb/hr)} &= \frac{\text{VOC (lb)}}{\text{hr}} \times \text{HAP Fraction} = \mathbf{0.48} \quad \text{lb HAP/hr} \end{aligned}$$

TRUE OIL, TRUE FED 11-25H
CONTROLLED TANK EMISSIONS

CO and NOx Emissions From Combustion of Tank Vapors				
True Federal 11-25H				
Compound	Emission Factor (lb/MMBtu)	Throughput (MMBtu/yr)	Controlled Emissions (TPY)	Emission Factor Source
CO	0.37	35,001	6,475	AP-42 Table 13.5-1
NO _x	0.14	35,001	2,450	AP-42 Table 13.5-1

Flare Info 2.39 MMBtu/hr
 1428 Btu/scf 1428 Btu/scf
 27 8945 1673.67 scf/hr 0.00167 MMscf/hr
 40168.1 scfd
 27 8945

HC Vapor emissions (MSCFD) = 29,8900
 Gas Heat Content (Btu/SCF) = 3,208.24
 Annual heat throughput (Btu/yr) = 35,001,417,164

* Both the throughput and heat content are from the E&P Tanks modeling results - attached

VOC and HAPs Emissions From Combustion of Tank Vapors				
Compound	Throughput (TPY)	Burner Control Efficiency (%)	Controlled Emissions (TPY)	Emission Factor Source
VOC	805.74	98	16.115	WY Oil and Gas Guidance -2010
HAPs	24.73	98	0.495	WY Oil and Gas Guidance -2010

Emissions are based on 98% control efficiency
 Production values put in E&P Tanks is incorporating a decline factor of 40% to account for the decrease in production during the first year

True Fed 11-25 Tanks

* Project Setup Information

*

Project File : H:\Inbox\rbradley\Upstream Permiting\True Fed 11-25
Tanks.ept
Flowsheet Selection : Oil Tank with Separator
Calculation Method : RVP Distillation
Control Efficiency : 98.0%
Known Separator Stream : Low Pressure Oil
Entering Air Composition : No

Filed Name : True Fed 11-25H
Well Name : True Oil
Date : 2014.12.12

* Data Input

*

Separator Pressure : 60.00[psig]
Separator Temperature : 115.00[F]
Ambient Pressure : 14.70[psia]
Ambient Temperature : 70.00[F]
C10+ SG : 0.79952
C10+ MW : 213.833

-- Low Pressure Oil

No.	Component	mol %
1	H2S	0.0000
2	O2	0.0000
3	CO2	0.0050
4	N2	0.0192
5	C1	0.1020
6	C2	0.4780
7	C3	3.0508
8	i-C4	1.3588
9	n-C4	5.8121
10	i-C5	4.4129
11	n-C5	5.8645
12	C6	4.7885
13	C7	12.0928
14	C8	11.9908
15	C9	3.1315
16	C10+	31.0183
17	Benzene	1.0210
18	Toluene	5.4006
19	E-Benzene	0.3855
20	Xylenes	4.3665
21	n-C6	4.0708
22	224Trimethylp	0.6303

-- Sales Oil

Production Rate : 286[bb]/day]

True Fed 11-25 Tanks
 Days of Annual Operation : 365 [days/year]
 API Gravity : 36.5
 Reid Vapor Pressure : 3.83[psia]

 * Calculation Results
 *

-- Emission Summary

Item	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
Total HAPs	24.730	5.646	0.495	0.113
Page 1-----				E&P TANK
Total HC	824.711	188.290	16.494	3.766
VOCs, C2+	822.771	187.847	16.455	3.757
VOCs, C3+	805.738	183.958	16.115	3.679

Uncontrolled Recovery Info.

Vapor	29.8900	[MSCFD]
HC Vapor	29.8300	[MSCFD]
GOR	104.51	[SCF/bbl]

-- Emission Composition

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.000	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.261	0.060	0.261	0.060
4	N2	0.637	0.145	0.637	0.145
5	C1	1.939	0.443	0.039	0.009
6	C2	17.033	3.889	0.341	0.078
7	C3	158.731	36.240	3.175	0.725
8	i-C4	85.167	19.445	1.703	0.389
9	n-C4	311.880	71.205	6.238	1.424
10	i-C5	93.492	21.345	1.870	0.427
11	n-C5	82.677	18.876	1.654	0.378
12	C6	20.505	4.682	0.410	0.094
13	C7	20.073	4.583	0.401	0.092
14	C8	7.591	1.733	0.152	0.035
15	C9	0.852	0.195	0.017	0.004
16	C10+	0.039	0.009	0.001	0.000
17	Benzene	2.900	0.662	0.058	0.013
18	Toluene	5.251	1.199	0.105	0.024
19	E-Benzene	0.150	0.034	0.003	0.001
20	Xylenes	1.496	0.342	0.030	0.007
21	n-C6	13.960	3.187	0.279	0.064
22	224Trimethylp	0.973	0.222	0.019	0.004
	Total	825.607	188.495	16.512	3.770

-- Stream Data

No. Component	MW	LP Oil	Flash Oil	Sale Oil	Flash Gas	W&S Gas
Total Emissions		mol %	mol %	mol %	mol %	mol %
mol %						

		True Fed	11-25 Tanks			
1	H2S	34.80	0.0000	0.0000	0.0000	0.0000
0.0000						
2	O2	32.00	0.0000	0.0000	0.0000	0.0000
0.0000						
3	CO2	44.01	0.0050	0.0048	0.0000	0.3031
0.0412						0.0394
4	N2	28.01	0.0192	0.0128	0.0000	7.9906
0.1581						0.1059
5	C1	16.04	0.1020	0.0888	0.0000	16.4643
0.8398						0.7358
6	C2	30.07	0.4780	0.4660	0.0000	15.3695
3.9351						3.8590
7	C3	44.10	3.0508	3.0303	0.0154	28.5660
25.0058						24.9821
8	i-C4	58.12	1.3588	1.3560	0.1394	4.8939
10.1789						10.2141
9	n-C4	58.12	5.8121	5.8050	1.4621	14.6405
37.2753						37.4259
10	i-C5	72.15	4.4129	4.4131	3.7785	4.2084
9.0016						9.0335
11	n-C5	72.15	5.8645	5.8659	5.5748	4.1297
7.9603						7.9858
12	C6	86.16	4.7885	4.7915	5.2161	1.0561
1.6958						1.7001
13	C7	100.20	12.0928	12.1018	13.5659	0.8820
1.4376						1.4413
14	C8	114.23	11.9908	12.0002	13.5829	0.2744
0.4751						0.4764
15	C9	128.28	3.1315	3.1340	3.5578	0.0246
0.0481						0.0483
16	C10+	213.83	31.0183	31.0433	35.3066	0.0004
0.0013						0.0013
17	Benzene	78.11	1.0210	1.0217	1.1265	0.1620
0.2579						0.2586
18	Toluene	92.13	5.4006	5.4048	6.0925	0.2385
0.3959						0.3970
19	E-Benzene	106.17	0.3855	0.3858	0.4374	0.0056
0.0098						0.0099
20	Xylenes	106.17	4.3665	4.3700	4.9567	0.0548
0.0979						0.0982
21	n-C6	86.18	4.0708	4.0735	4.4780	0.6993
1.1253						1.1282
22	2,2,4-Trimethylp	114.24	0.6303	0.6308	0.7093	0.0365
0.0592						0.0593
	MW		127.44	127.50	137.12	42.73
57.35						57.45
	Stream Mole Ratio		1.0000	0.9992	0.8785	0.0008
0.1215						0.1207
	Heating Value [BTU/SCF]					2296.65
3208.24						3214.31
	Gas Gravity [Gas/Air]					1.48
1.98						1.98
	Bubble Pt. @ 100F [psia]		21.53	20.40	4.02	
	RVP @ 100F [psia]		13.47	13.42	3.84	
Page 2	-----					E&P TANK
	Spec. Gravity @ 100F		0.698	0.698	0.705	

True Fed 11-25 Tanks



Client:	True Oil	Analysis Date:	11/15/2014
Sample ID:	True Federal 11-25H	Date Sampled:	10/29/14
Unique #:	NI	Purpose:	NI
Sample Temperature:	78 DEG F	Sample Pressure:	60 PSI
Sampled By:	A. McKerchie	Type Sample:	Spot
County:	Campbell, WY		

<u>Components</u>	<u>Mole %</u>	<u>Weight %</u>	<u>Liq. Vol. %</u>
Carbon Dioxide.....	1.5396	2.712	1.299
Hydrogen Sulfide.....	0.0000	0.000	0.000
Nitrogen.....	1.1758	1.318	0.640
Methane.....	71.0561	45.621	59.566
Ethane.....	7.3125	8.800	9.670
Propane.....	9.8489	17.381	13.417
iso-Butane.....	1.5219	3.540	2.463
n-Butane.....	3.8186	8.883	5.953
iso-Pentane.....	1.0972	3.168	1.984
n-Pentane.....	1.1788	3.404	2.113
Cyclopentane.....	0.0795	0.223	0.116
n-Hexane.....	0.3177	1.096	0.646
Cyclohexane.....	0.1477	0.497	0.248
Other Hexanes	0.4085	1.409	0.831
Heptanes.....	0.3068	1.230	0.700
Methylcyclohexane.....	0.0875	0.344	0.174
2,2,4-Trimethylpentane...	0.0000	0.000	0.000
Benzene.....	0.0563	0.176	0.078
Toluene.....	0.0182	0.067	0.030
Ethylbenzene.....	0.0004	0.002	0.001
Xylenes.....	0.0000	0.000	0.000
Octanes.....	0.0269	0.123	0.068
Nonanes.....	0.0012	0.006	0.003
Decanes+.....	0.0003	0.002	0.001
Totals	100.000	100.000	100.000

ADDITIONAL BETX DATA

<u>Components</u>	<u>Mole %</u>	<u>Weight %</u>	<u>Liq. Vol. %</u>
Cyclopentane	0.0795	0.223	0.116
Cyclohexane	0.1477	0.497	0.248
2-Methylpentane	0.2571	0.887	0.523
3-Methylpentane	0.1514	0.522	0.308
n-Hexane	0.3177	1.096	0.646
Methylcyclohexane	0.0875	0.344	0.174
2,2,4-Trimethylpentane	0.0000	0.000	0.000
Benzene	0.0563	0.176	0.078
Toluene	0.0182	0.067	0.030
Ethylbenzene	0.0004	0.002	0.001
m-Xylene	0.0000	0.000	0.000
p-Xylene	0.0000	0.000	0.000
o-Xylene	0.0000	0.000	0.000

SPECIFIC GRAVITY @ 60/60 F, calculated.....	0.8627
TOTAL GPM (Ethane Inclusive).....	7.763
CALCULATED BTU / REAL CF @ 14.73 PSIA, dry basis.....	1438.644
CALCULATED BTU / REAL CF @ 14.73 PSIA, wet basis.....	1414.347
AVERAGE MOLECULAR WEIGHT.....	24.987
MOLAR MASS RATIO.....	0.8627
RELATIVE DENSITY (G x Z (Air) / Z), calculated.....	0.8672
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF @ 14.696 PSIA.....	1427.865
COMPRESSIBILITY FACTOR (Z).....	0.99479

PROPANE GPM	2.7064
BUTANE GPM	1.6975
GASOLINE GPM (PENTANE AND HEAVIER)	1.4084

TOTAL ACID GAS MOLE %.....	1.5396
H2S MOLE %	0.0000
H2S PPM	0

VOC WEIGHT FRACTION	0.415
HIGHER HEATING VALUE (BTU/ft³).....	1433.180
LOWER HEATING VALUE (BTU/ft³).....	1305.190

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.



**EXTENDED HYDROCARBON LIQUID STUDY
 CERTIFICATE OF ANALYSIS**

Company:	True Oil	Sample Name:	True Federal 11-25H
Date Sampled:	10/29/2014	Sample Number:	14110302-04
Sample Location:	Wyoming	Date Tested:	11/05/2014
Sample Pressure:	60 PSI	Test Method:	GPA 2186M
Sample Temperature:	115 DEG F		
County:	Campbell	Date Reported:	11/17/2014
		Note: Due to the nature of H2S, the values of H2S reported may be lower than actual.	
Sampling Method:	GPA-2174		
Type Sample:	SPOT		

Components	Mole %	Weight %	Liq. Vol. %
Hydrogen Sulfide	0.0000	0.000	0.000
Oxygen	0.0000	0.000	0.000
Carbon Dioxide	0.0050	0.002	0.002
Nitrogen	0.0192	0.004	0.004
Methane	0.1020	0.013	0.032
Ethane	0.4780	0.112	0.234
Propane	3.0508	1.047	1.537
iso-Butane	1.3588	0.615	0.813
n-Butane	5.8121	2.630	3.351
iso-Pentane	4.4129	2.479	2.951
n-Pentane	5.8645	3.295	3.887
Hexanes	4.7885	3.213	3.601
Heptanes	12.0928	9.435	10.202
Octanes	11.9908	10.665	11.233
Nonanes	3.1315	3.127	3.222
Decanes+	31.0183	51.646	48.071
Benzene	1.0210	0.621	0.522
Toluene	5.4006	3.875	3.305
Ethylbenzene	0.3855	0.319	0.272
Xylenes	4.3665	3.610	3.102
n-Hexane	4.0708	2.732	3.061
2,2,4-Trimethylpentane	0.6303	0.561	0.599
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
2-Methylpentane	3.424	2.297	2.575
3-Methylpentane	1.365	0.916	1.026
n-Hexane	4.071	2.732	3.061
2,2,4-Trimethylpentane	0.630	0.561	0.599
Benzene	1.021	0.621	0.522
Toluene	5.401	3.875	3.305
Ethylbenzene	0.386	0.319	0.272
m-Xylene	0.502	0.415	0.357
p-Xylene	3.122	2.581	2.218
o-Xylene	0.742	0.614	0.527

RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	0.79952
AVERAGE MOLECULAR WEIGHT	128.427
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	213.833
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	21.318
AVERAGE BOILING POINT, F, calculated	276.868
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	20.498
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	122,469.18
LBS / GALLON OF LIQUID, calculated	6.204

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

**FLASHED CRUDE OIL LIQUID STUDIES
CERTIFICATE OF ANALYSIS**

Sample Name: **True Federal 11-25H**
Sample Number: 14110302-05

TEST PERFORMED	RESULTS	DATE TESTED
API GRAVITY AT 60/60 F, (ASTM D-7777), calculated from SG	36.5	11/13/2014
REID VAPOR PRESSURE (ASTM D-5191), PSIG AT 100 F, measured	3.83	11/07/2014

