eog resources

EOG Resources, Inc.
600 Seventeenth Street
Suite 1000N
Denver, CO 80202
Main: 303-572-9000
Fax: 303-824-5400

December 23, 2014

Reviewer BKO
cc:
Modeler
D.E.
File A0000375
IMP FID 26289

Attn: O&G Production Facilities
Wyoming Department of Environmental Quality
Air Quality Division
Herschler Building, 2-E
122 West 25th Street
Cheyenne, Wyoming 82002

RE: **EOG Resources, Inc.**
Air Permit Application – Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H Facility
Laramie, Wyoming

Dear WDEQ:

EOG Resources, Inc. (EOG) is submitting the enclosed Chapter 6 Section 2 (C6 S2) air permit application using the IMPACT Data System Forms. The air permit application is being submitted for Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H Facility which is a facility with four new wells.

Well Name	First Date of Production	Natural Gas Rate (MMSCFD)	Crude Oil Rate (BPD)	Produced Water Rate (BPD)
Jubilee 155-2210H	10/8/2014	0.141	412	480
Jubilee 156-2227H	10/8/2014	0.052	71	1040
Jubilee 529-2227H	9/30/2014	0.596	768	800
Jubilee 531-2210H	9/27/2014	0.640	908	694

The four wells produce both crude oil and natural gas. The four well pad consists of the following sources of emissions:

- (6) Crude Oil Storage Tanks (500 bbl capacity each) for Jubilee 155-2210H
- (6) Crude Oil Storage Tanks (500 bbl capacity each) for Jubilee 531-2210H;
- (6) Crude Oil Storage Tanks (500 bbl capacity each) for Jubilee 156-2227H;
- (6) Crude Oil Storage Tanks (500 bbl capacity each) for Jubilee 529-2227H;
- One (1) Produced Water/Emergency Combination Storage Tank (500 bbl capacity) for Jubilee 155-2210H, Jubilee 531-2210H, Jubilee 156-2227H, and for Jubilee 529-2227H;
- One (1) Treater (1 MMBtu/hr burner capacity) for Jubilee 155-2210H, Jubilee 531-2210H, Jubilee 156-2227H, and for Jubilee 529-2227H;
- One (1) Vapor Recovery Tower (VRT) for Jubilee 155-2210H, Jubilee 531-2210H, Jubilee 156-2227H, and for Jubilee 529-2227H;

- One (1) Trace Line Heater (0.5 MMBtu/hr burner capacity) shared between Jubilee 155-2210H and Jubilee 531-2210H;
- One (1) Trace Line Heater (0.5 MMBtu/hr burner capacity) shared between Jubilee 156-2227H and Jubilee 529-2227H;
- One (1) Engineered Combustor shared between Jubilee 155-2210H and Jubilee 531-2210H;
- One (1) Engineered Combustor shared between Jubilee 156-2227H and Jubilee 529-2227H;
- One (1) Engineered Flare shared between Jubilee 155-2210H and Jubilee 531-2210H;
- One (1) Engineered Flare shared between Jubilee 156-2227H and Jubilee 529-2227H;
- Truck Loading Operations with vapors routed and vented to Combustors;
- Blowdowns; and
- Fugitive Components.

Gas and liquids rise to the surface through each well head. The gas/liquid mixture from each well enters a treater to separate the natural gas, crude oil, and produced water. The natural gas stream is tied into a pipeline. In the event of pipeline shut-in, the gas from the heater treater can be flared. Crude oil is sent to a vapor recovery tower (VRT) and water is sent to the produced water tanks. Oil from the VRT is sent to production oil tanks, and the flashed gas from the VRT and the tanks is sent to the flare. The crude oil from each well is produced in six storage tanks and hauled away by truck. The water from each well is produced in one storage tank and also hauled away by truck as necessary. The tank vapors from the well's crude and produced water tanks are controlled and routed to a combustor that has a destruction efficiency of 98%. The truck loading vapor emissions are controlled and routed to the flare with a capture efficiency of 70%.

Each well at the facility operates an engine for electricity generation that was exempted under permit waivers: Jubilee 155-2210H operates an MGG210N2 D11.1L under permit waiver wv-16941; Jubilee 156-2227H operates an MGG210N2 D11.1L under permit waiver wv-16940; Jubilee 529-2227H operates a Moser D11.1L under permit waiver wv-16942; and Jubilee 155-2210H operates a Volvo KD-300 under permit waiver wv-16939.

Supporting documents are found in the following attachments:

- Attachment A: Signed original copy of the IMPACT permit application.
- Attachment B: Flow diagram/plot plan of the emissions unit.
- Attachment C: Facility process description.
- Attachment D: Current well production rates.
- Attachment E: Gas/oil analyses
- Attachment F: Detailed emission calculations and supporting documentation.

We trust the attached permit application package will meet your expectations and that you will not hesitate to call me at (303) 262-9914 or James VanAssche of Conestoga-Rovers & Associates (CRA) at 720-974-0953 if you have any questions or need additional information. We appreciate your prompt attention to this most important project.

Sincerely,

Jason Rauen
EOG Environmental – Denver Division

cc: File – Well
James VanAssche

Attachments: As stated

Attachment A

Signed Original Copy of IMPACT Permit Application

Wyoming Department of Environmental Quality
Air Quality Division
New Source Review Permit Application Form

DEC 2014

Is this a revision to an existing application?
Yes_____ No ✓
Previous Application # N/A

Date of Application: 12/24/2014

COMPANY INFORMATION:

Company Name: EOG Resources, Inc.

Address: 600 17th Street, Suite 1000N
City: Denver
State: CO Zip Code: 80202
Country: USA
Phone Number: 303-262-9914

FACILITY INFORMATION:

Facility Name: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H PAD

New Facility or Existing Facility: New

Operating Status : Operating

Facility Description: Oil and Gas Production

Facility Class: Synthetic Minor

Facility Type: Production Site
API Number(s): 49-021-21027, 49-021-21026, 49-021-21110, 49-021-21108

NAICS Code(s): 211111 Crude Petroleum and Natural Gas Extraction

FACILITY LOCATION:

City: Cheyenne

State: WY Zip Code:

County: Laramie

Physical Address:

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

EITHER

Latitude: Longitude:

OR

Quarter Quarter: NW/NW Quarter:

Section: 22

Township: 13N

Range: 65W

CONTACT INFORMATION:

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

Title: Mr.

First Name: Jason

Last Name: Rauen

Company Name: EOG Resources, Inc.

Job Title: Senior Environmental Specialist

Address: 600 17th Street, Suite 1000N

City: Denver

State: CO Zip Code: 80202

Primary Phone No.: (303) 262-9914

Mobile Phone No.: (970) 270-8733

FAX No.: (303) 262-9449

E-mail: Jason_Rauen@eogresources.com

Contact Type:	Environmental Contact
Additional Contact Type (if needed):	
Additional Contact Type (if needed):	

Additional Contacts?

Title:

First Name:

Last Name:

Company Name:

Job Title:

Address:

City:

State: Zip Code:

Primary Phone No.:

Mobile Phone No.:

FAX No.:

E-mail:

Contact Type:	
Additional Contact Type (if needed):	
Additional Contact Type (if needed):	

FACILITY APPLICATION INFORMATION:

General Info

Has the facility changed location or is it a new/ greenfield facility?	Yes
Has a Land Use Planning document been included in this application?	No
Does production at this facility contain H2S?	No
Is the facility located in sage grouse core area? *	No

If yes, what is the WER number? N/A

** For questions about sage grouse core area, contact WY Game & Fish Department.*

Federal Rules Applicability - Facility Level

Prevention of Significant Deterioration (PSD):	No
Non-Attainment New Source Review:	No

Modeling Section

Has the Air Quality Division been contacted to determine if modeling is required?	No
Is a modeling analysis part of this application?	No
Is the proposed project subject to Prevention of Significant Deterioration (PSD) requirements?	No
Has the Air Quality Division been notified to schedule a pre-application meeting?	No
Has a modeling protocol been submitted to and approved by the Air Quality Division?	No
Has the Air Quality Division received a Q/D analysis to submit to the respective FLMs to determine the need for an AQRV analysis?	No

REQUIRED ATTACHMENTS

Facility Map

Modeling Analysis (if applicable)

Detailed Project Description

Land Use Planning Document

Sign (wet ink) and print this page and submit it with your application.

I, Jason Rauen

Printed Name (Title)

an Official Representative of the Company, 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 operational information provided and emission rates listed on this application reflect the anticipated emissions due to the operation of this facility. The facility will operate in compliance with all applicable Wyoming Air Quality Standards and Regulations.

Signature: (wet ink)

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT1

Emission Unit Type:	Treater	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	HT1
Emission Unit Description Used by Company:	Heater Treater for Jubilee 155-2210H		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011100	On-Shore Oil Production /Heater Treater	Heater Treater
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.43			0.10	0.43	AP-42/ ProMax
Carbon monoxide (CO)	0.36			0.08	0.36	AP-42/ ProMax
Volatile organic compounds (VOC)	359.61			1.65	7.22	AP-42/ ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	9.60			0.05	0.20	AP-42/ ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Benzene	4.18			0.02	0.08	AP-42/ ProMax
Toluene	0.30			0.00	0.01	AP-42/ ProMax
Ethylbenzene	0.74			0.00	0.01	AP-42/ ProMax
Xylenes	2.86			0.01	0.06	AP-42/ ProMax
n-Hexane	22.67			0.10	0.45	AP-42/ ProMax
2,2,4-Trimethylpentane	1.51			0.01	0.03	AP-42/ ProMax

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

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
BU Type: Treater BUID: HT1

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	128.09			29.24	128.09	40 CFR 98.37 Table C-1
Methane	0.01			0.00	0.01	40 CFR 98.37 Table C-1

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT1

Emissions Unit Specific Information

Type of Vessel: Heater-Treater

Is Vessel Heated? Yes

Operating Temperature (F): 135

Operating Pressure (psig): 70

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If> 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

If other emission units are vented to this control equipment, List them below:

Two heater treaters and vapor recovery towers

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

Flare

Manufacturer: Steffes

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 6

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
BU Type: Treater BUID: HT1

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL1
Company Release Point Description:	Flare Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	40
Stack Diameter (ft):	0.25
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT2

Emission Unit Type:	Treater	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	HT2
Emission Unit Description Used by Company:	Heater Treater for Jubilee 531-2210H		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011100	On-Shore Oil Production /Heater Treater	Heater Treater
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT2

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.43			0.10	0.43	AP-42/ ProMax
Carbon monoxide (CO)	0.36			0.08	0.36	AP-42/ ProMax
Volatile organic compounds (VOC)	1942.18			1.65	7.22	AP-42/ ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	50.87			0.23	1.03	AP-42/ ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Benzene	22.83			0.10	0.46	AP-42/ ProMax
Toluene	1.77			0.01	0.04	AP-42/ ProMax
Ethylbenzene	4.71			0.02	0.09	AP-42/ ProMax
Xylenes	13.66			0.06	0.27	AP-42/ ProMax
n-Hexane	111.02			0.51	2.22	AP-42/ ProMax
2,2,4-Trimethylpentane	7.91			0.04	0.16	AP-42/ ProMax

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

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT2

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	128.09			29.24	128.09	40 CFR 98.37 Table C-1
Methane	0.01			0.00	0.01	40 CFR 98.37 Table C-1

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT2

Emissions Unit Specific Information

Type of Vessel: Heater-Treater

Is Vessel Heated? Yes

Operating Temperature (F): 149

Operating Pressure (psig): 70

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

If other emission units are vented to this control equipment, List them below:

Two heater treaters and vapor recovery towers

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

Flare

Manufacturer: Steffes

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 6

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT2

Horizontal or Vertical Release Point Information:

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL1
Company Release Point Description:	Flare Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	40
Stack Diameter (ft):	0.25
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT3

Emission Unit Type:	Treater	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	HT3
Emission Unit Description Used by Company:	Heater Treater for Jubilee 529-2227H		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date:	9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:	
*If Reason = **Modification**, enter modification date or date modification began:*	Date:	
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:	
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:	

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?		No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date:	9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011100	On-Shore Oil Production /Heater Treater	Heater Treater
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT3

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.43			0.10	0.43	AP-42/ ProMax
Carbon monoxide (CO)	0.36			0.08	0.36	AP-42/ ProMax
Volatile organic compounds (VOC)	2004.71			9.16	40.12	AP-42/ ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	48.23			0.22	0.97	AP-42/ ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Benzene	22.32			0.10	0.45	AP-42/ ProMax
Toluene	1.46			0.01	0.03	AP-42/ ProMax
Ethylbenzene	4.75			0.02	0.09	AP-42/ ProMax
Xylenes	13.60			0.06	0.27	AP-42/ ProMax
n-Hexane	96.87			0.44	1.94	AP-42/ ProMax
2,2,4-Trimethylpentane	6.09			0.03	0.12	AP-42/ ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT3

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	512.36			116.98	512.36	40 CFR 98.37 Table C-1
Methane	0.04			0.01	0.04	40 CFR 98.37 Table C-1
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT3

Emissions Unit Specific Information

Type of Vessel: Heater-Treater

Is Vessel Heated? Yes

Operating Temperature (F): 157.5

Operating Pressure (psig): 80

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Two vapor recovery towers and two heater treaters

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

Flare

Manufacturer: Steffes

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 5

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT3

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL2
Company Release Point Description:	Flare Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	40
Stack Diameter (ft):	0.25
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT4

Emission Unit Type:	Treater	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	HT4
Emission Unit Description Used by Company:	Heater Treater for Jubilee 156-2227H		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date:	9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:	
*If Reason = **Modification**, enter modification date or date modification began:*	Date:	
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:	
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:	

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?		No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date:	9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011100	On-Shore Oil Production /Heater Treater	Heater Treater
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT4

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.43			0.10	0.43	AP-42/ ProMax
Carbon monoxide (CO)	0.36			0.08	0.36	AP-42/ ProMax
Volatile organic compounds (VOC)	133.02			0.61	2.68	AP-42/ ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	3.95			0.02	0.09	AP-42/ ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Benzene	1.50			0.01	0.03	AP-42/ ProMax
Toluene	0.12			0.00	0.00	AP-42/ ProMax
Ethylbenzene	0.31			0.00	0.01	AP-42/ ProMax
Xylenes	1.40			0.01	0.03	AP-42/ ProMax
n-Hexane	9.60			0.04	0.19	AP-42/ ProMax
2,2,4-Trimethylpentane	0.62			0.00	0.01	AP-42/ ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater BUID: HT4

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	512.36			116.98	512.36	40 CFR 98.37 Table C-1
Methane	0.04			0.01	0.04	40 CFR 98.37 Table C-1
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT4

Emissions Unit Specific Information

Type of Vessel: Heater-Treater

Is Vessel Heated? Yes

Operating Temperature (F): 140

Operating Pressure (psig): 50

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Two vapor recovery towers and two heater treaters

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

Flare

Manufacturer: Steffes

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 5

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Treater EUID: HT4

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL2
Company Release Point Description:	Flare Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	40
Stack Diameter (ft):	0.25
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH1

Emission Unit Type:	Heater	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	LH1
Emission Unit Description Used by Company:		Trace Line Heater	

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)****, enter date contruction began:*	Date: 9/26/2014
If Reason = ***Synthetic Minor****, enter date emissions unit became new synthetic minor:*	Date:
If Reason = ***Modification****, enter modification date or date modification began:*	Date:
If Reason = ***Temporary Permit****, enter beginning date for temporary permit:*	Date:
If Reason = ***Reconstruction****, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310010100	Oil & Gas Expl & Prod /Crude Petroleum /Oil Well Heaters	Oil Well Heaters
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH1

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.21			0.05	0.21	AP-42
Carbon monoxide (CO)	0.18			0.04	0.18	AP-42
Volatile organic compounds (VOC)	0.01			0.00	0.01	AP-42
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.00			0.00	0.00	AP-42
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH1

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	4.51E-06			1.03E-06	4.51E-06	AP-42
Toluene	7.30E-06			1.67E-06	7.30E-06	AP-42
Ethylbenzene	0.00			0.00	0.00	AP-42
Xylenes	0.00			0.00	0.00	AP-42
n-Hexane	3.86E-03			8.82E-04	3.86E-03	AP-42
2,2,4-Trimethylpentane	0.00			0.00	0.00	AP-42

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	512.36			233.95	1024.72	40 CFR 98.37 Table C-1
Methane	0.00			0.00	0.00	40 CFR 98.37 Table C-1

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH1

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH1

Emissions Unit Specific Information

Firing Type:	Direct		
Heat Input Rating:	0.5	Units:	MMBtu/hr
Primary Fuel Type:	Field Gas		
Secondary Fuel Type:			
Heat Content of Fuel:	1561.8	Units:	BTU/scf
Fuel Sulfur Content:	0	Units:	ppm

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Fugitive Release Point Information:

Fugitive Release Point 1

Company Release Point ID:	LH1
Company Release Point Description:	Trace Line Heater
Release Point Type:	**Fugitive**

For longitude and latitude, use NAD 83/WGS84 datum

Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Release Height (ft):	N/A

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH2

Emission Unit Type:	Heater	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	LH2
Emission Unit Description Used by Company:	Trace Line Heater		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)****, enter date contruction began:*	Date: 9/26/2014
If Reason = ***Synthetic Minor****, enter date emissions unit became new synthetic minor:*	Date:
If Reason = ***Modification****, enter modification date or date modification began:*	Date:
If Reason = ***Temporary Permit****, enter beginning date for temporary permit:*	Date:
If Reason = ***Reconstruction****, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310010100	Oil & Gas Expl & Prod /Crude Petroleum /Oil Well Heaters	Oil Well Heaters
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH2

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.21			0.05	0.21	AP-42
Carbon monoxide (CO)	0.18			0.04	0.18	AP-42
Volatile organic compounds (VOC)	0.01			0.00	0.01	AP-42
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.00			0.00	0.00	AP-42
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH2

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	4.51E-06			1.03E-06	4.51E-06	AP-42
Toluene	7.30E-06			1.67E-06	7.30E-06	AP-42
Ethylbenzene	0.00			0.00	0.00	AP-42
Xylenes	0.00			0.00	0.00	AP-42
n-Hexane	3.86E-03			8.82E-04	3.86E-03	AP-42
2,2,4-Trimethylpentane	0.00			0.00	0.00	AP-42

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	512.36			233.95	1024.72	40 CFR 98.37 Table C-1
Methane	0.00			0.00	0.00	40 CFR 98.37 Table C-1

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH2

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Heater EUID: LH2

Emissions Unit Specific Information

Firing Type:	Direct		
Heat Input Rating:	0.5	Units:	MMBtu/hr
Primary Fuel Type:	Field Gas		
Secondary Fuel Type:			
Heat Content of Fuel:	1561.8	Units:	BTU/scf
Fuel Sulfur Content:	0	Units:	ppm

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Fugitive Release Point Information:

Fugitive Release Point 1

Company Release Point ID:	LH2
Company Release Point Description:	Trace Line Heater
Release Point Type:	**Fugitive**

For longitude and latitude, use NAD 83/WGS84 datum

Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Release Height (ft):	N/A

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT1

Emission Unit Type:	Vapor Recovery Tower	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	VRT1
Emission Unit Description Used by Company:	Vapor Recovery Tower for Jubilee 155-2210H		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	3100017	Crude Oil Production /Oil/Gas/Water/Separation	Oil/Gas/Water/Separation
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT1

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	331.73			6.63	6.63	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	11.80			0.05	0.24	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	0.07			0.00	0.00	ProMax
Toluene	5.22			0.02	0.10	ProMax
Ethylbenzene	0.37			0.00	0.01	ProMax
Xylenes	0.89			0.00	0.02	ProMax
n-Hexane	3.40			0.02	0.07	ProMax
2,2,4-Trimethylpentane	1.86			0.01	0.04	ProMax

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT1

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

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT1

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	5.61			1.28	5.61	ProMax
Methane	20.97			0.10	0.42	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: 100% Capture Efficiency and 98% Destruction Efficiency by Flare

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT1

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Flow Rate or Throughput: 71.74 Units: scfm

VOC Concentration (%): 85.95

HAPs Concentration (%): 3.06

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Two heater treaters and vapor recovery towers

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

Flare

Manufacturer: Steffes

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 6.43

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT1

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL1
Company Release Point Description:	Flare Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	40
Stack Diameter (ft):	0.25
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT2

Emission Unit Type:	Vapor Recovery Tower	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	VRT2
Emission Unit Description Used by Company:	Vapor Recovery Tower for Jubilee 531-2210H		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Sec Level 4 Name
SCC Code 1 (Required Field):	3100017	Crude Oil Production /Oil/Gas/Water/Separation	Oil/Gas/Water/Separati on
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower BUID: VRT2

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	836.66			16.73	16.73	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	29.77			0.14	0.60	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	0.17			0.00	0.00	ProMax
Toluene	13.57			0.06	0.27	ProMax
Ethylbenzene	1.04			0.00	0.02	ProMax
Xylenes	2.67			0.01	0.05	ProMax
n-Hexane	7.69			0.04	0.15	ProMax
2,2,4-Trimethylpentane	4.63			0.02	0.09	ProMax

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H

EU Type: Vapor Recovery Tower EUID: VRT2

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
BU Type: Vapor Recovery Tower EUID: VRT2

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	11.56			2.64	11.56	ProMax
Methane	44.98			0.21	0.90	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: 100% Capture Efficiency and 98% Destruction Efficiency by Flare

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Company: EOG Resources, Inc. **Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H**
BU Type: Vapor Recovery Tower EUID: **VRT2**

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Flow Rate or Throughput: 71.74 Units: scfm

VOC Concentration (%): 85.95

HAPs Concentration (%): 3.06

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Two heater treaters and vapor recovery towers

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

Flare

Manufacturer: Steffes

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 6.43

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT2

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL1
Company Release Point Description:	Flare Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	40
Stack Diameter (ft):	0.25
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT3

Emission Unit Type:	Vapor Recovery Tower	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	VRT3
Emission Unit Description Used by Company:	Vapor Recovery Tower for Jubilee 529-2227H		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	3100017	Crude Oil Production /Oil/Gas/Water/Separation	Oil/Gas/Water/Separati on
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT3

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	857.59			17.15	17.15	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	28.76			0.13	0.58	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	0.17			0.00	0.00	ProMax
Toluene	13.57			0.06	0.27	ProMax
Ethylbenzene	0.87			0.00	0.02	ProMax
Xylenes	2.73			0.01	0.05	ProMax
n-Hexane	7.77			0.04	0.16	ProMax
2,2,4-Trimethylpentane	3.65			0.02	0.07	ProMax

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT3

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Carbon Dioxide	11.29			2.58	11.29	ProMax
Methane	36.91			0.17	0.74	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: 100% Capture Efficiency and 98% Destruction Efficiency by Flare

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT3

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Flow Rate or Throughput: 71.74 Units: scfm

VOC Concentration (%): 85.95

HAPs Concentration (%): 3.06

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Two vapor recovery towers and two heater treaters

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

Flare

Manufacturer: Steffes

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 4.66

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
BU Type: Vapor Recovery Tower EUID: VRT3

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL2
Company Release Point Description:	Flare Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	40
Stack Diameter (ft):	0
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT4

Emission Unit Type:	Vapor Recovery Tower	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	VRT4
Emission Unit Description Used by Company:	Vapor Recovery Tower for Jubilee 156-2227H		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date:	9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:	
*If Reason = **Modification**, enter modification date or date modification began:*	Date:	
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:	
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:	

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?		No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date:	9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	3100017	Crude Oil Production /Oil/Gas/Water/Separation	Oil/Gas/Water/Separation
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT4

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	45.38			0.91	0.91	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	1.69			0.01	0.03	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAP's) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	0.01			0.00	0.00	ProMax
Toluene	0.65			0.00	0.01	ProMax
Ethylbenzene	0.05			0.00	0.00	ProMax
Xylenes	0.13			0.00	0.00	ProMax
n-Hexane	0.58			0.00	0.01	ProMax
2,2,4-Trimethylpentane	0.26			0.00	0.01	ProMax

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT4

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	2.27			0.52	2.27	ProMax
Methane	3.72			0.02	0.07	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: 100% Capture Efficiency and 98% Destruction Efficiency by Flare

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT4

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Flow Rate or Throughput: 71.74 Units: scfm

VOC Concentration (%): 85.95

HAPs Concentration (%): 3.06

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Two vapor recovery towers and two heater treaters

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

Flare

Manufacturer: Steffes

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 4.66

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Vapor Recovery Tower EUID: VRT4

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL2
Company Release Point Description:	Flare Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	40
Stack Diameter (ft):	0
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T1 (6489)

Emission Unit Type: Tank
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: T1 (6489)
Emission Unit Description Used by Company: Oil Storage Tank 6489 -500 bbl

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)****, enter date contruction began:*	Date: 9/26/2014
If Reason = ***Synthetic Minor****, enter date emissions unit became new synthetic minor:*	Date:
If Reason = ***Modification****, enter modification date or date modification began:*	Date:
If Reason = ***Temporary Permit****, enter beginning date for temporary permit:*	Date:
If Reason = ***Reconstruction****, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T1 (6489)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.45			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	5.04E-05			2.30E-07	1.01E-06	ProMax
Toluene	8.70E-03			3.97E-05	1.74E-04	ProMax
Ethylbenzene	0.00			2.19E-06	9.58E-06	ProMax
Xylenes	0.00			4.23E-06	1.85E-05	ProMax
n-Hexane	0.00			1.52E-05	6.65E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.87E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T1 (6489)
Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.07			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T1 (6489)

Emissions Unit Specific Information

Material Type:	Liquid		
Description of Material Stored:	Crude Oil		
Capacity:	500	Units:	barrels
Maximum Throughput:	1295.046	Units:	barrels/day
Maximum Hourly Throughput:	53.96025	Units:	barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric

Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 283.16

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T1 (6489)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T2 (6490)

Emission Unit Type: Tank
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: T2 (6490)
Emission Unit Description Used by Company: Oil Storage Tank 6489 -500 bbl

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = Construction (greenfield/new facility) will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T2 (6490)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.45			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	5.04E-05			2.30E-07	1.01E-06	ProMax
Toluene	8.70E-03			3.97E-05	1.74E-04	ProMax
Ethylbenzene	0.00			2.19E-06	9.58E-06	ProMax
Xylenes	0.00			4.23E-06	1.85E-05	ProMax
n-Hexane	0.00			1.52E-05	6.65E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.87E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T2 (6490)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.07			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T2 (6490)
Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids
Enter information below, if Material Type = Liquid
Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:
Does this emission unit employ emissions control equipment? Yes
Yes- fill out the applicable information below.
No- Go to Release Point Section.

Flare
Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes
If other emission units are vented to this control equipment, List them below:
Twelve oil tanks and two produced water/emergency tanks
List all release point IDs associated with this control equipment below:
Combustor
Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T2 (6490)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: ROG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T3(6491)

Emission Unit Type: Tank
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: T3(6491)
Emission Unit Description Used by Company: Oil Storage Tank 6491 -500 bbl

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:* Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:* Date:
*If Reason = **Modification**, enter modification date or date modification began:* Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:* Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:* Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued? NO

if previous question's answer is No" (production not waiting until after permit), then provide first date of production: Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T3(6491)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.45			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	5.04E-05			2.30E-07	1.01E-06	ProMax
Toluene	8.70E-03			3.97E-05	1.74E-04	ProMax
Ethylbenzene	0.00			2.19E-06	9.58E-06	ProMax
Xylenes	0.00			4.23E-06	1.85E-05	ProMax
n-Hexane	0.00			1.52E-05	6.65E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.87E-05	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T3(6491)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.07			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T3(6491).

Emissions Unit Specific Information

Material Type:	Liquid		
Description of Material Stored:	Crude Oil		
Capacity:	500	Units:	barrels
Maximum Throughput:	1295.046	Units:	barrels/day
Maximum Hourly Throughput:	53.96025	Units:	barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric

Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 283.16

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T3(6491)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T4 (6492)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T4 (6492)
Emission Unit Description Used by Company:	Oil Storage Tank 6492 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Sec Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T4 (6492)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.45			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	5.04E-05			2.30E-07	1.01E-06	ProMax
Toluene	8.70E-03			3.97E-05	1.74E-04	ProMax
Ethylbenzene	0.00			2.19E-06	9.58E-06	ProMax
Xylenes	0.00			4.23E-06	1.85E-05	ProMax
n-Hexane	0.00			1.52E-05	6.65E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.87E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T4 (6492)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.07			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T4 (6492)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T4 (6492)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: BOG Resources, Inc. **Facility:** Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank **EUID:** T5 (6493)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T5 (6493)
Emission Unit Description Used by Company:		Oil Storage Tank 6493 -500 bbl	

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T5 (6493)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.45			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	5.04E-05			2.30E-07	1.01E-06	ProMax
Toluene	8.70E-03			3.97E-05	1.74E-04	ProMax
Ethylbenzene	0.00			2.19E-06	9.58E-06	ProMax
Xylenes	0.00			4.23E-06	1.85E-05	ProMax
n-Hexane	0.00			1.52E-05	6.65E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.87E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T5 (6493)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.07			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T5 (6493)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T5 (6493)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T6 (6494)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T6 (6494)
Emission Unit Description Used by Company:	Oil Storage Tank 6494 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T6 (6494)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.45			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	5.04E-05			2.30E-07	1.01E-06	ProMax
Toluene	8.70E-03			3.97E-05	1.74E-04	ProMax
Ethylbenzene	0.00			2.19E-06	9.58E-06	ProMax
Xylenes	0.00			4.23E-06	1.85E-05	ProMax
n-Hexane	0.00			1.52E-05	6.65E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.87E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T6 (6494)
Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.07			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T6 (6494)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T6 (6494)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T8 (6495)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T8 (6495)
Emission Unit Description Used by Company:	Oil Storage Tank 6495 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T8 (6495)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.96			0.01	0.04	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	6.54E-05			2.99E-07	1.31E-06	ProMax
Toluene	1.20E-02			5.50E-05	2.41E-04	ProMax
Ethylbenzene	0.00			3.30E-06	1.45E-05	ProMax
Xylenes	0.00			6.81E-06	2.98E-05	ProMax
n-Hexane	0.00			1.84E-05	8.06E-05	ProMax
2,2,4-Trimethylpentane	0.00			2.09E-05	9.15E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T8 (6495)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.05			0.01	0.05	ProMax
Methane	0.08			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T8 (6495)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T8 (6495)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T9 (6496)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T9 (6496)
Emission Unit Description Used by Company:	Oil Storage Tank 6496 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = Construction (greenfield/new facility) will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T9 (6496)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.96			0.01	0.04	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	6.54E-05			2.99E-07	1.31E-06	ProMax
Toluene	1.20E-02			5.50E-05	2.41E-04	ProMax
Ethylbenzene	0.00			3.30E-06	1.45E-05	ProMax
Xylenes	0.00			6.81E-06	2.98E-05	ProMax
n-Hexane	0.00			1.84E-05	8.06E-05	ProMax
2,2,4-Trimethylpentane	0.00			2.09E-05	9.15E-05	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T9 (6496)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.05			0.01	0.05	ProMax
Methane	0.08			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T9 (6496)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T9 (6496)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T10 (6497)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T10 (6497)
Emission Unit Description Used by Company:	Oil Storage Tank 6497 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T10 (6497)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.96			0.01	0.04	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	6.54E-05			2.99E-07	1.31E-06	ProMax
Toluene	1.20E-02			5.50E-05	2.41E-04	ProMax
Ethylbenzene	0.00			3.30E-06	1.45E-05	ProMax
Xylenes	0.00			6.81E-06	2.98E-05	ProMax
n-Hexane	0.00			1.84E-05	8.06E-05	ProMax
2,2,4-Trimethylpentane	0.00			2.09E-05	9.15E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T10 (6497)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.05			0.01	0.05	ProMax
Methane	0.08			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T10 (6497)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T10 (6497)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T11 (6498)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T11 (6498)
Emission Unit Description Used by Company:	Oil Storage Tank 6498 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Sec Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T11 (6498)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.96			0.01	0.04	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	6.54E-05			2.99E-07	1.31E-06	ProMax
Toluene	1.20E-02			5.50E-05	2.41E-04	ProMax
Ethylbenzene	0.00			3.30E-06	1.45E-05	ProMax
Xylenes	0.00			6.81E-06	2.98E-05	ProMax
n-Hexane	0.00			1.84E-05	8.06E-05	ProMax
2,2,4-Trimethylpentane	0.00			2.09E-05	9.15E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T11 (6498)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.05			0.01	0.05	ProMax
Methane	0.08			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T11 (6498)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T11 (6498)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T12 (6499)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T12 (6499)
Emission Unit Description Used by Company:	Oil Storage Tank 6499 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T12 (6499)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.96			0.01	0.04	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	6.54E-05			2.99E-07	1.31E-06	ProMax
Toluene	1.20E-02			5.50E-05	2.41E-04	ProMax
Ethylbenzene	0.00			3.30E-06	1.45E-05	ProMax
Xylenes	0.00			6.81E-06	2.98E-05	ProMax
n-Hexane	0.00			1.84E-05	8.06E-05	ProMax
2,2,4-Trimethylpentane	0.00			2.09E-05	9.15E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T12 (6499)
Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.05			0.01	0.05	ProMax
Methane	0.08			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc, Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
BU Type: Tank EUID: T12 (6499)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T12 (6499)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T13 (6500)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T13 (6500)
Emission Unit Description Used by Company:	Oil Storage Tank 6500 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date:	9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:	
*If Reason = **Modification**, enter modification date or date modification began:*	Date:	
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:	
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:	

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?		NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date:	9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Sec Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T13 (6500)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.96			0.01	0.04	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	6.54E-05			2.99E-07	1.31E-06	ProMax
Toluene	1.20E-02			5.50E-05	2.41E-04	ProMax
Ethylbenzene	0.00			3.30E-06	1.45E-05	ProMax
Xylenes	0.00			6.81E-06	2.98E-05	ProMax
n-Hexane	0.00			1.84E-05	8.06E-05	ProMax
2,2,4-Trimethylpentane	0.00			2.09E-05	9.15E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T13 (6500)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.05			0.01	0.05	ProMax
Methane	0.08			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T13 (6500)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.
No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T13 (6500)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T7

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T7
Emission Unit Description Used by Company:	Produced Water/Emergency Tank -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* Other *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/26/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310000550	Oil & Gas Expl & Prod /All Processes /Produced Water	Produced Water
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T7

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination ***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	0.91			0.00	0.02	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.05			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination ***
Benzene	2.59E-05			1.18E-07	5.18E-07	ProMax
Toluene	2.64E-02			1.20E-04	5.27E-04	ProMax
Ethylbenzene	1.87E-03			8.54E-06	3.74E-05	ProMax
Xylenes	3.28E-03			1.50E-05	6.56E-05	ProMax
n-Hexane	1.40E-02			6.40E-05	2.80E-04	ProMax
2,2,4-Trimethylpentane	3.27E-04			1.49E-06	6.54E-06	ProMax

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

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T7
Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	0.37			8.35E-02	3.66E-01	ProMax
Methane	0.01			6.51E-05	2.85E-04	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T7

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Produced Water
Capacity: 400 Units: barrels
Maximum Throughput: 3013.78 Units: barrels/day
Maximum Hourly Throughput: 125.6 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number: HV 48"
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T7

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T14

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T14
Emission Unit Description Used by Company:	Produced Water/Emergency Tank-500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	2310000550	Oil & Gas Expl & Prod /All Processes /Produced Water	Produced Water
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T14

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.42			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.07			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Benzene	3.78E-05			1.72E-07	7.55E-07	ProMax
Toluene	4.07E-02			1.86E-04	8.14E-04	ProMax
Ethylbenzene	3.13E-03			1.43E-05	6.26E-05	ProMax
Xylenes	5.86E-03			2.68E-05	1.17E-04	ProMax
n-Hexane	1.89E-02			8.62E-05	3.77E-04	ProMax
2,2,4-Trimethylpentane	4.91E-04			2.24E-06	9.82E-06	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T14

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	0.48			1.08E-01	4.75E-01	ProMax
Methane	0.02			9.37E-05	4.11E-04	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T14

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Produced Water
Capacity: 400 Units: barrels
Maximum Throughput: 3013.78 Units: barrels/day
Maximum Hourly Throughput: 125.6 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number: HV 48"
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 283.16
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T14

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T15 (6501)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T15 (6501)
Emission Unit Description Used by Company:	Oil Storage Tank 6501 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = Construction (greenfield/new facility) will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T15 (6501)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	2.06			0.01	0.04	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	6.72E-05			3.07E-07	1.34E-06	ProMax
Toluene	1.24E-02			5.65E-05	2.47E-04	ProMax
Ethylbenzene	0.00			2.86E-06	1.25E-05	ProMax
Xylenes	0.00			7.23E-06	3.17E-05	ProMax
n-Hexane	0.00			1.93E-05	8.45E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.69E-05	7.41E-05	ProMax

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

Company: EOG Resources, Inc, Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T15 (6501)
Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.06			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T15 (6501)
Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids
Enter information below, if Material Type = Liquid
Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:
Does this emission unit employ emissions control equipment? Yes
Yes- fill out the applicable information below.
No- Go to Release Point Section.

Flare
Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes
If other emission units are vented to this control equipment, List them below:
Twelve oil tanks and two produced water/emergency tanks
List all release point IDs associated with this control equipment below:
Combustor
Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T15 (6501)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T16 (6502)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T16 (6502)
Emission Unit Description Used by Company:	Oil Storage Tank 6502 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T16 (6502)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.47			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	4.93E-05			2.25E-07	9.85E-07	ProMax
Toluene	0.01			4.16E-05	1.82E-04	ProMax
Ethylbenzene	0.00			2.49E-06	1.09E-05	ProMax
Xylenes	0.00			5.13E-06	2.25E-05	ProMax
n-Hexane	0.00			1.39E-05	6.07E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.89E-05	ProMax

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

Company: ROG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T16 (6502)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.03			0.00	0.00	ProMax
Methane	0.06			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T16 (6502)
Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids
Enter information below, if Material Type = Liquid
Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:
Does this emission unit employ emissions control equipment? Yes
Yes- fill out the applicable information below.
No- Go to Release Point Section.

Flare
Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes
If other emission units are vented to this control equipment, List them below:
Twelve oil tanks and two produced water/emergency tanks
List all release point IDs associated with this control equipment below:
Combustor
Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T16 (6502)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T17 (6503)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T17 (6503)
Emission Unit Description Used by Company:	Oil Storage Tank 6503 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = Construction (greenfield/new facility) will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Sec Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T17 (6503)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.47			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	4.93E-05			2.25E-07	9.85E-07	ProMax
Toluene	0.01			4.16E-05	1.82E-04	ProMax
Ethylbenzene	0.00			2.49E-06	1.09E-05	ProMax
Xylenes	0.00			5.13E-06	2.25E-05	ProMax
n-Hexane	0.00			1.39E-05	6.07E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.89E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T17 (6503)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.03			0.00	0.00	ProMax
Methane	0.06			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T17 (6503)
Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids
Enter information below, if Material Type = Liquid
Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:
Does this emission unit employ emissions control equipment? Yes
Yes- fill out the applicable information below.
No- Go to Release Point Section.

Flare
Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes
If other emission units are vented to this control equipment, List them below:
Twelve oil tanks and two produced water/emergency tanks
List all release point IDs associated with this control equipment below:
Combustor
Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T17 (6503)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. **Facility:** Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T18 (6504)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T18 (6504)
Emission Unit Description Used by Company:	Oil Storage Tank 6504 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T18 (6504)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.47			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	4.93E-05			2.25E-07	9.85E-07	ProMax
Toluene	0.01			4.16E-05	1.82E-04	ProMax
Ethylbenzene	0.00			2.49E-06	1.09E-05	ProMax
Xylenes	0.00			5.13E-06	2.25E-05	ProMax
n-Hexane	0.00			1.39E-05	6.07E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.89E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T18 (6504)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.03			0.00	0.00	ProMax
Methane	0.06			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T18 (6504)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T18 (6504)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T19 (6505)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T19 (6505)
Emission Unit Description Used by Company:	Oil Storage Tank 6505-500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T19 (6505)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.47			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	4.93E-05			2.25E-07	9.85E-07	ProMax
Toluene	0.01			4.16E-05	1.82E-04	ProMax
Ethylbenzene	0.00			2.49E-06	1.09E-05	ProMax
Xylenes	0.00			5.13E-06	2.25E-05	ProMax
n-Hexane	0.00			1.39E-05	6.07E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.89E-05	ProMax

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

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T19 (6505)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.03			0.00	0.00	ProMax
Methane	0.06			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T19 (6505)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T19 (6505)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T20 (6506)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T20 (6506)
Emission Unit Description Used by Company:	Oil Storage Tank 6506-500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = Construction (greenfield/new facility) will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T20 (6506)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.47			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.02			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	4.93E-05			2.25E-07	9.85E-07	ProMax
Toluene	0.01			4.16E-05	1.82E-04	ProMax
Ethylbenzene	0.00			2.49E-06	1.09E-05	ProMax
Xylenes	0.00			5.13E-06	2.25E-05	ProMax
n-Hexane	0.00			1.39E-05	6.07E-05	ProMax
2,2,4-Trimethylpentane	0.00			1.57E-05	6.89E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
BU Type: Tank EUID: T20 (6506)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.03			0.00	0.00	ProMax
Methane	0.06			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T20 (6506)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T20 (6506)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T22 (6507)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T22 (6507)
Emission Unit Description Used by Company:	Oil Storage Tank 6507 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = Construction (greenfield/new facility) will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T22 (6507)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	0.45			0.00	0.01	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.01			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	2.18E-05			9.97E-08	4.37E-07	ProMax
Toluene	2.57E-03			1.17E-05	5.15E-05	ProMax
Ethylbenzene	0.00			7.12E-07	3.12E-06	ProMax
Xylenes	0.00			1.43E-06	6.27E-06	ProMax
n-Hexane	0.00			6.10E-06	2.67E-05	ProMax
2,2,4-Trimethylpentane	0.00			5.27E-06	2.31E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T22 (6507)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.03			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T22 (6507)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T22 (6507)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T23 (6508)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T23 (6508)
Emission Unit Description Used by Company:	Oil Storage Tank 6508-500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)****, enter date contruction began:*	Date:	9/26/2014
If Reason = ***Synthetic Minor****, enter date emissions unit became new synthetic minor:*	Date:	
If Reason = ***Modification****, enter modification date or date modification began:*	Date:	
If Reason = ***Temporary Permit****, enter beginning date for temporary permit:*	Date:	
If Reason = ***Reconstruction****, enter beginning date for reconstruction:*	Date:	

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?		NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date:	9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Sec Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T23 (6508)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	0.45			0.00	0.01	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.01			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	2.18E-05			9.97E-08	4.37E-07	ProMax
Toluene	2.57E-03			1.17E-05	5.15E-05	ProMax
Ethylbenzene	0.00			7.12E-07	3.12E-06	ProMax
Xylenes	0.00			1.43E-06	6.27E-06	ProMax
n-Hexane	0.00			6.10E-06	2.67E-05	ProMax
2,2,4-Trimethylpentane	0.00			5.27E-06	2.31E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T23 (6508)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Effielency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.03			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T23 (6508)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T23 (6508)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T24 (6509)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T24 (6509)
Emission Unit Description Used by Company:	Oil Storage Tank 6509 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Sec Level 4 Name
SCC Code 1 (Required Field):	23100110 20	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T24 (6509)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	0.45			0.00	0.01	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.01			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	2.18E-05			9.97E-08	4.37E-07	ProMax
Toluene	2.57E-03			1.17E-05	5.15E-05	ProMax
Ethylbenzene	0.00			7.12E-07	3.12E-06	ProMax
Xylenes	0.00			1.43E-06	6.27E-06	ProMax
n-Hexane	0.00			6.10E-06	2.67E-05	ProMax
2,2,4-Trimethylpentane	0.00			5.27E-06	2.31E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T24 (6509)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.03			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T24 (6509)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T24 (6509)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T25 (6510)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T25 (6510)
Emission Unit Description Used by Company:	Oil Storage Tank 6510 -500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date:	9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:	
*If Reason = **Modification**, enter modification date or date modification began:*	Date:	
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:	
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:	

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = Construction (greenfield/new facility) will production commence after permit is issued?		NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date:	9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T25 (6510)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	0.45			0.00	0.01	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.01			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	2.18E-05			9.97E-08	4.37E-07	ProMax
Toluene	2.57E-03			1.17E-05	5.15E-05	ProMax
Ethylbenzene	0.00			7.12E-07	3.12E-06	ProMax
Xylenes	0.00			1.43E-06	6.27E-06	ProMax
n-Hexane	0.00			6.10E-06	2.67E-05	ProMax
2,2,4-Trimethylpentane	0.00			5.27E-06	2.31E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T25 (6510)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.03			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T25 (6510)
Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids
Enter information below, if Material Type = Liquid
Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:
Does this emission unit employ emissions control equipment? Yes
Yes- fill out the applicable information below.
No- Go to Release Point Section.

Flare
Is this the only Control Equipment for this emissions unit? Yes
If > 1 control for this emissions unit, then this control equipment is:
Are other emission units vented to this control equipment? Yes
If other emission units are vented to this control equipment, List them below:
Twelve oil tanks and two produced water/emergency tanks
List all release point IDs associated with this control equipment below:
Combustor
Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T25 (6510)
Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T26 (6511)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T26 (6511)
Emission Unit Description Used by Company:	Oil Storage Tank 6511-500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T26 (6511)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	0.45			0.00	0.01	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.01			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	2.18E-05			9.97E-08	4.37E-07	ProMax
Toluene	2.57E-03			1.17E-05	5.15E-05	ProMax
Ethylbenzene	0.00			7.12E-07	3.12E-06	ProMax
Xylenes	0.00			1.43E-06	6.27E-06	ProMax
n-Hexane	0.00			6.10E-06	2.67E-05	ProMax
2,2,4-Trimethylpentane	0.00			5.27E-06	2.31E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T26 (6511)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.03			0.00	0.00	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank BUID: T26 (6511)
Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids
Enter information below, if Material Type = Liquid
Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:
Does this emission unit employ emissions control equipment? Yes
Yes- fill out the applicable information below.
No- Go to Release Point Section.

Flare
Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes
If other emission units are vented to this control equipment, List them below:
Twelve oil tanks and two produced water/emergency tanks
List all release point IDs associated with this control equipment below:
Combustor
Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T26 (6511)
Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T27 (6512)

Emission Unit Type:	Tank	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	T27 (6512)
Emission Unit Description Used by Company:	Oil Storage Tank 6512-500 bbl		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	2310011020	On-Shore Oil Production /Storage Tanks: Crude Oil	Storage Tanks: Crude Oil
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T27 (6512)

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM =10 microns in diameter (PE/PM10)						
PM =2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	0.45			0.00	0.01	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.01			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	2.18E-05			9.97E-08	4.37E-07	ProMax
Toluene	2.57E-03			1.17E-05	5.15E-05	ProMax
Ethylbenzene	0.00			7.12E-07	3.12E-06	ProMax
Xylenes	0.00			1.43E-06	6.27E-06	ProMax
n-Hexane	0.00			6.10E-06	2.67E-05	ProMax
2,2,4-Trimethylpentane	0.00			5.27E-06	2.31E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T27 (6512)

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	0.04			0.01	0.04	ProMax
Methane	0.03			0.00	0.00	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T27 (6512)

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Crude Oil
Capacity: 500 Units: barrels
Maximum Throughput: 1295.046 Units: barrels/day
Maximum Hourly Throughput: 53.96025 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T27 (6512)

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T21

Emission Unit Type: Tank
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: T21
Emission Unit Description Used by Company: Produced Water/Emergency Tank-500 bbl

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:* Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:* Date:
*If Reason = **Modification**, enter modification date or date modification began:* Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:* Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:* Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued? NO

if previous question's answer is No" (production not waiting until after permit), then provide first date of production: Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310000550	Oil & Gas Expl & Prod /All Processes /Produced Water	Produced Water
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T21

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.83			0.01	0.04	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.09			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Benzene	4.56E-05			2.08E-07	9.12E-07	ProMax
Toluene	4.89E-02			2.23E-04	9.77E-04	ProMax
Ethylbenzene	3.17E-03			1.45E-05	6.33E-05	ProMax
Xylenes	7.25E-03			3.31E-05	1.45E-04	ProMax
n-Hexane	2.30E-02			1.05E-04	4.61E-04	ProMax
2,2,4-Trimethylpentane	4.68E-04			2.14E-06	9.36E-06	ProMax

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

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T21

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	0.61			1.38E-01	6.06E-01	ProMax
Methane	0.02			1.07E-04	4.69E-04	ProMax
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
BU Type: Tank EUID: T21

Emissions Unit Specific Information

Material Type: Liquid
Description of Material Stored: Produced Water
Capacity: 400 Units: barrels
Maximum Throughput: 3013.78 Units: barrels/day
Maximum Hourly Throughput: 125.6 Units: barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric
Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks, two produced water/emergency tanks, and two vapor recovery towers

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

Flare

Manufacturer: Steffes
Model Name and Number:
Date Installed: 9/26/2014
Company Control Equipment ID:
Company Control Equipment Description: 40 ft. flare with 4 in diameter with pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes
Flame Presence Type: Thermocouple
Inlet Gas Temp (F): 143
Inlet Gas Flow Rate (acfm): 234
Outlet Gas Temp (F): 1400
Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T21

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T28

Emission Unit Type: Tank
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: T28
Emission Unit Description Used by Company: Produced Water/Emergency Tank-500 bbl

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310000550	Oil & Gas Expl & Prod /All Processes /Produced Water	Produced Water
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T28

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	1.74			0.01	0.03	ProMax
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.11			0.00	0.00	ProMax
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Benzene	7.17E-05			3.27E-07	1.43E-06	ProMax
Toluene	5.44E-02			2.48E-04	1.09E-03	ProMax
Ethylbenzene	4.27E-03			1.95E-05	8.54E-05	ProMax
Xylenes	7.79E-03			3.55E-05	1.56E-04	ProMax
n-Hexane	3.95E-02			1.80E-04	7.90E-04	ProMax
2,2,4-Trimethylpentane	6.98E-04			3.19E-06	1.40E-05	ProMax

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T28

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	2.08			4.76E-01	2.08E+00	ProMax
Methane	0.04			2.04E-04	8.93E-04	ProMax

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT: Presumptive BACT

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Tank EUID: T28

Emissions Unit Specific Information

Material Type:	Liquid		
Description of Material Stored:	Produced Water		
Capacity:	400	Units:	barrels
Maximum Throughput:	3013.78	Units:	barrels/day
Maximum Hourly Throughput:	125.6	Units:	barrels/hr

Is Tank Heated?: No

Information Specific to Storage Tanks or Silos that Contain Liquids

Enter information below, if Material Type = Liquid

Operating Pressure (psig): atmospheric

Vapor Pressure of Material Stored (psig):

Control Equipment:

Does this emission unit employ emissions control equipment? Yes

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

r

Manufacturer: Cimmaron

Model Name and Number:

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 234

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
BU Type: Tank BUID: T28

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4.00
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-221011, Jubilee 156-222711, Jubilee 529-222711, Jubilee 531-221011
EU Type: Flare EUID: FL1

Emission Unit Type:	Flare	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	FL1
Emission Unit Description Used by Company:		Flare for Jubilee 155-221011 and 531-221011	

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule.*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date:	9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:	
*If Reason = **Modification**, enter modification date or date modification began:*	Date:	
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:	
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:	

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?		NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date:	9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	31000160	Crude Oil Production /Flares	Flares
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL1

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	16.27			3.71	16.27	AP-42
Carbon monoxide (CO)	4.07			0.93	4.07	AP-42
Volatile organic compounds (VOC)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: The VOC and HAP emissions from the flare are accounted for in the VRT and heater treater operations.

Hazardous Air Pollutants (HAP's) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Benzene				0.12	0.55	Mass Balance
Toluene				0.03	0.14	Mass Balance
Ethylbenzene				0.07	0.32	Mass Balance
Xylenes				0.00	0.00	Mass Balance
n-Hexane				0.05	0.22	Mass Balance
2,2,4-Trimethylpentane				0.07	0.32	Mass Balance

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination *
Carbon Dioxide	20,996.40			4793.70	20,996.40	40 CFR 98.233(v) Equ W-36
Methane	1.38			0.32	1.38	40 CFR 98.233(v) Equ W-36

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare BUID: FL1

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Maximum Design Capacity (MMscf/hr):

Minimum Design Capacity (MMscf/hr):

Pilot Gas Volume (scf/min): 0.14

Emergency Flare Only: No

Ignition Device Type: Pilot

Smokeless Design: Yes

Btu Content (Btu/scf): 2502.27

Assist Gas Utilized? No

Waste Gas Volume: 4274 Units: scf/hr

Installation Date: 9/26/2014

Continuously Monitored? No

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL1

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL1
Company Release Point Description:	Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003.00000
Stack Height (ft):	40.00000
Stack Diameter (ft):	0.25000
Exit Gas Velocity (ft/s):	65.00000
Exit Gas Temp (F):	1400.00000
Exit Gas Flow Rate (acfm):	

Emission Unit Type: Flare
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: FL2
Emission Unit Description Used by Company: Flare for Jubilee 155-22101I and 531-22101I

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	31000160	Crude Oil Production /Flares	Flares
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	13.93			3.71	13.93	AP-42
Carbon monoxide (CO)	3.48			0.93	3.48	AP-42
Volatile organic compounds (VOC)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: The VOC and HAP emissions from the flare are accounted for in the VRT and heater treater operations.

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene				0.11	0.48	Mass Balance
Toluene				0.07	0.32	Mass Balance
Ethylbenzene				0.03	0.12	Mass Balance
Xylenes				0.08	0.36	Mass Balance
n-Hexane				0.04	0.17	Mass Balance
2,2,4-Trimethylpentane				0.05	0.21	Mass Balance

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	18,121.84			4137.41	18,121.84	40 CFR 98.233(v) Eqn W-36
Methane	1.25			0.29	1.25	40 CFR 98.233(v) Eqn W-36

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Maximum Design Capacity (MMscf/hr):

Minimum Design Capacity (MMscf/hr):

Pilot Gas Volume (scf/min): 0.14

Emergency Flare Only: No

Ignition Device Type: Pilot

Smokeless Design: Yes

Btu Content (Btu/scf): 2502.27

Assist Gas Utilized? No

Waste Gas Volume: 4274 Units: scf/hr

Installation Date: 9/26/2014

Continuously Monitored? No

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL2
Company Release Point Description:	Stack
Release Point Type:	Vertical

For longitude and latitude, use NAD 83/WGS84 datum

Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003.00000
Stack Height (ft):	40.00000
Stack Diameter (ft):	0.25000
Exit Gas Velocity (ft/s):	65.00000
Exit Gas Temp (F):	1400.00000
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Combustor EUID: COM1

Emission Unit Type: Combustor
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: COM1
Emission Unit Description Used by Company: Flare

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date construction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

	Enter SCC Code	*SCC Short Name*	**See Level 4 Name**
SCC Code 1 (Required Field):	31000160	Crude Oil Production /Flares	Flares
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: HOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Combustor EUID: COM1

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.37			3.71	0.37	AP-42
Carbon monoxide (CO)	0.09			0.93	0.09	AP-42
Volatile organic compounds (VOC)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: The VOC and HAP emissions from the combustor are accounted for in the crude oil and produced water tanks, and Truck Loading Operations

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene				0.00	0.00	Mass Balance
Toluene				0.00	0.00	Mass Balance
Ethylbenzene				0.00	0.00	Mass Balance
Xylenes				0.00	0.00	Mass Balance
n-Hexane				0.00	0.00	Mass Balance
2,2,4-Trimethylpentane				0.00	0.00	Mass Balance

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	674.17			153.92	674.17	40 CFR 98.233(v) Eqn W-36
Methane	0.10			0.02	0.10	40 CFR 98.233(v) Eqn W-36

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Combustor EUID: COM1

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Maximum Design Capacity (MMscf/hr):

Minimum Design Capacity (MMscf/hr):

Pilot Gas Volume (scf/min): 0.14

Emergency Flare Only: No

Ignition Device Type: Pilot

Smokeless Design: Yes

Btu Content (Btu/scf): 2502.27

Assist Gas Utilized? No

Waste Gas Volume: 4274 Units: scf/hr

Installation Date: 9/26/2014

Continuously Monitored? No

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Combustor EUID: COM1
Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003.00000
Stack Height (ft):	20.00000
Stack Diameter (ft):	4.00000
Exit Gas Velocity (ft/s):	65.00000
Exit Gas Temp (F):	1400.00000
Exit Gas Flow Rate (acfm):	

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Emission Unit Type:	Flare	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	FL2
Emission Unit Description Used by Company:		Flare	

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ONLY

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	NO
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous MSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	See Level 4 Name
SCC Code 1 (Required Field):	31000160	Crude Oil Production /Flares	Flares
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day:	24
Hours/year:	8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Criteria Pollutants

The following tables request information that is needed to determine the applicable requirements and the compliance status of this emission unit with these requirements.

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	1.76			3.71	1.76	AP-42
Carbon monoxide (CO)	0.44			0.93	0.44	AP-42
Volatile organic compounds (VOC)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: The VOC and HAP emissions from the combustor are accounted for in the crude oil and produced water tanks, and Truck Loading Operations

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene				0.00	0.00	Mass Balance
Toluene				0.00	0.00	Mass Balance
Ethylbenzene				0.00	0.00	Mass Balance
Xylenes				0.00	0.00	Mass Balance
n-Hexane				0.00	0.00	Mass Balance
2,2,4-Trimethylpentane				0.00	0.00	Mass Balance

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Carbon Dioxide	488.29			111.48	488.29	40 CFR 98.233(v) Eqn W-36
Methane	0.07			0.02	0.07	40 CFR 98.233(v) Eqn W-36

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

Company: EOG Resources, Inc. Facility: Jubilee 155-22101I, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-22101I
EU Type: Flare EUID: FL2

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Maximum Design Capacity (MMscf/hr):

Minimum Design Capacity (MMscf/hr):

Pilot Gas Volume (scf/min): 0.14

Emergency Flare Only: No

Ignition Device Type: Pilot

Smokeless Design: Yes

Btu Content (Btu/scf): 2502.27

Assist Gas Utilized? No

Waste Gas Volume: 4274 Units: scf/hr

Installation Date: 9/26/2014

Continuously Monitored? No

Company: BOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2
Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM3
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003.00000
Stack Height (ft):	20.00000
Stack Diameter (ft):	4.00000
Exit Gas Velocity (ft/s):	65.00000
Exit Gas Temp (F):	1400.00000
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Fugitives EUID: FUG

Emission Unit Type: Fugitives
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: FUG
Emission Unit Description Used by Company: All Fugitives (Valves, Flanges, Connections, Seals, Drains)

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code.

Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310011500	On-Shore Oil Production /Fugitives: All Processes	Fugitives: All Processes
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Fugitives EUID: FUG

Criteria Pollutants

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

		Criteria Pollutants				
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	14.46			3.30	14.46	Note 1 (see below)
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	0.34			0.08	0.34	Note 1 (see below)
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: EPA Protocol for Equipment Leak Emission Estimates, November 1995, Table 2-4, Pages 2-15.

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Fugitives EUID: FUG

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	0.00			0.00	0.00	Note 1 (see below)
Toluene	0.07			0.02	0.07	Note 1 (see below)
Ethylbenzene	0.02			0.01	0.02	Note 1 (see below)
Xylenes	0.03			0.01	0.03	Note 1 (see below)
n-Hexane	0.12			0.03	0.12	Note 1 (see below)
2,2,4-Trimethylpentane	0.10			0.02	0.10	Note 1 (see below)
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Note 1: EPA Protocol for Equipment Leak Emission Estimates, November 1995, Table 2-4, Pages 2-15.

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
*Provide your calculations as an attachment and explain how all process variables and emissions factors were selected.						

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Fugitives EUID: FUG

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Fugitives EUID: FUG

Emissions Unit Specific Information

Type of Fugitive Emission: Fugitive Leaks at O&G

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Fugitive Release Point Information:

Fugitive Release Point 1

Company Release Point ID: FUG

Company Release Point Description: All Fugitives (Valves, Flanges, Connections, Seals, Drains)

Release Point Type: **Fugitive**

For longitude and latitude, use NAD 83/WGS84 datum

Release Point Latitude (5 digits to right of decimal pt.): 41.08649

Release Point Longitude (5 digits to right of decimal pt.): -104.65290

Release Height (ft): N/A

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Loading/Unloading EUID: TLO1

Emission Unit Type: Loading/Unloading
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: TLO1
Emission Unit Description Used by Company: Truck Oil Loading from Storage Tanks

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

*If Reason = **Construction (greenfield/new facility)**, enter date contruction began:*	Date: 9/26/2014
*If Reason = **Synthetic Minor**, enter date emissions unit became new synthetic minor:*	Date:
*If Reason = **Modification**, enter modification date or date modification began:*	Date:
*If Reason = **Temporary Permit**, enter beginning date for temporary permit:*	Date:
*If Reason = **Reconstruction**, enter beginning date for reconstruction:*	Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

*Oil and Gas Production Site **ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?	No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310010800	Oil & Gas Expl & Prod /Crude Petroleum /Oil Well Truck Loading	Oil Well Truck Loading
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Loading/Unloading EUID: TLO1

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	54.13			17.22	16.24	AP-42
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	5.06E-01			0.13	0.15	AP-42
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determinatio n*
Benzene	1.44E-03			3.66E-04	4.33E-04	AP-42
Toluene	2.66E-01			6.75E-02	7.98E-02	AP-42
Ethylbenzene	1.60E-02			4.05E-03	4.79E-03	AP-42
Xylenes	0.06			8.35E-03	9.87E-03	AP-42
n-Hexane	0.16			2.26E-02	2.67E-02	AP-42
2,2,4-Trimethylpentane	0.19			2.56E-02	3.03E-02	AP-42

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Loading/Unloading EUID: TL01

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Type of Material: Liquid

Material Description: Crude Oil

Maximum Annual Throughput: 472691.79 Units: barrels/yr

Maximum Hourly Throughput: 200 Units: barrels/hr

Detailed Description of Loading/Unloading/Dump Source: Oil and produced water truck loading is controlled with vapor return lines to the storage tanks with a 70% capture efficiency and routed to the combustor.

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Flare

Is this the only Control Equipment for this emissions unit? Yes

If > 1 control for this emissions unit, then this control equipment is:

Are other emission units vented to this control equipment? Yes

If other emission units are vented to this control equipment, List them below:

Twelve oil tanks and two produced water/emergency tanks

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

Combustor

Manufacturer: Cimmaron

Model Name and Number: HV 48"

Date Installed: 9/26/2014

Company Control Equipment ID:

Company Control Equipment Description: 48 in. diameter, 20 ft. stack, continuous, pilot flame

Ignition Device: Yes

Flame Presence Sensor: Yes

Flame Presence Type: Thermocouple

Inlet Gas Temp (F): 143

Inlet Gas Flow Rate (acfm): 283.16

Outlet Gas Temp (F): 1400

Outlet Gas Flow Rate (acfm):

Pollutants Controlled

Pollutants Controlled				
Pollutant	In Control? (yes/no)	Design Control Efficiency (%):	Capture Efficiency (%):	Operating Control Efficiency (%):
VOC - Volatile Organic Compounds	Yes	98.00%	100.00%	98.00%
HAPS - Total Combined Hazardous Air Pollutants	Yes	98.00%	100.00%	98.00%

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Loading/Unloading EUID: TLO1

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003
Stack Height (ft):	20
Stack Diameter (ft):	4
Exit Gas Velocity (ft/s):	65
Exit Gas Temp (F):	1400
Exit Gas Flow Rate (acfm):	

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Planned MSS Emissions EUID: BD

Emission Unit Type:	Planned MSS Emissions	Date of Application:	12/24/2014
AQD Emission Unit ID:		EU ID used by Company:	BD
Emission Unit Description Used by Company:	Blowdowns		

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)****, enter date contruction began:*	Date:	9/26/2014
If Reason = ***Synthetic Minor****, enter date emissions unit became new synthetic minor:*	Date:	
If Reason = ***Modification****, enter modification date or date modification began:*	Date:	
If Reason = ***Temporary Permit****, enter beginning date for temporary permit:*	Date:	
If Reason = ***Reconstruction****, enter beginning date for reconstruction:*	Date:	

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued?		No
if previous question's answer is No" (production not waiting until after permit), then provide first date of production:	Date:	9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	2310021603	On-Shore Gas Production / Gas Well Venting - Blowdowns	Gas Well Venting - Blowdowns
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date:	9/26/2014
Initial Operation Commencement Date:	9/27/2014
Most Recent Construction/ Modification Commencement Date:	
Most Recent Operation Commencement Date:	

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 0.5

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Planned MSS Emissions EUID: BD

Hours/year: 1.5

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)						
Carbon monoxide (CO)						
Volatile organic compounds (VOC)	8.55E-02			28.48829	8.55E-02	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	5.05E-03			30.17116	9.05E-02	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Planned MSS Emissions EUID: BD

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*
Benzene	1.1E-04			3.6E-02	1.1E-04	
Toluene	1.6E-04			5.4E-02	1.6E-04	
Ethylbenzene	2.8E-05			9.5E-03	2.8E-05	
Xylenes	9.0E-05			3.0E-02	9.0E-05	
n-Hexane	4.4E-03			1.5E+00	4.4E-03	
2,2,4-Trimethylpentane	2.6E-04			8.8E-02	2.6E-04	

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	Pre-Controlled Potential Emissions (tons/yr)	Potential to Emit (PTE)*	Units*	Potential to Emit (lbs/hr)*	Potential to Emit (tons/yr)*	Basis for Determination*

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Planned MSS Emissions EUID: BD

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Planned MSS Emissions EUID: BD

Emissions Unit Specific Information

Type of Event: Blow-down

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Fugitive Release Point Information:

Fugitive Release Point 1

Company Release Point ID: BD

Company Release Point Description: Blowdowns

Release Point Type: **Fugitive**

For longitude and latitude, use NAD 83/WGS84 datum

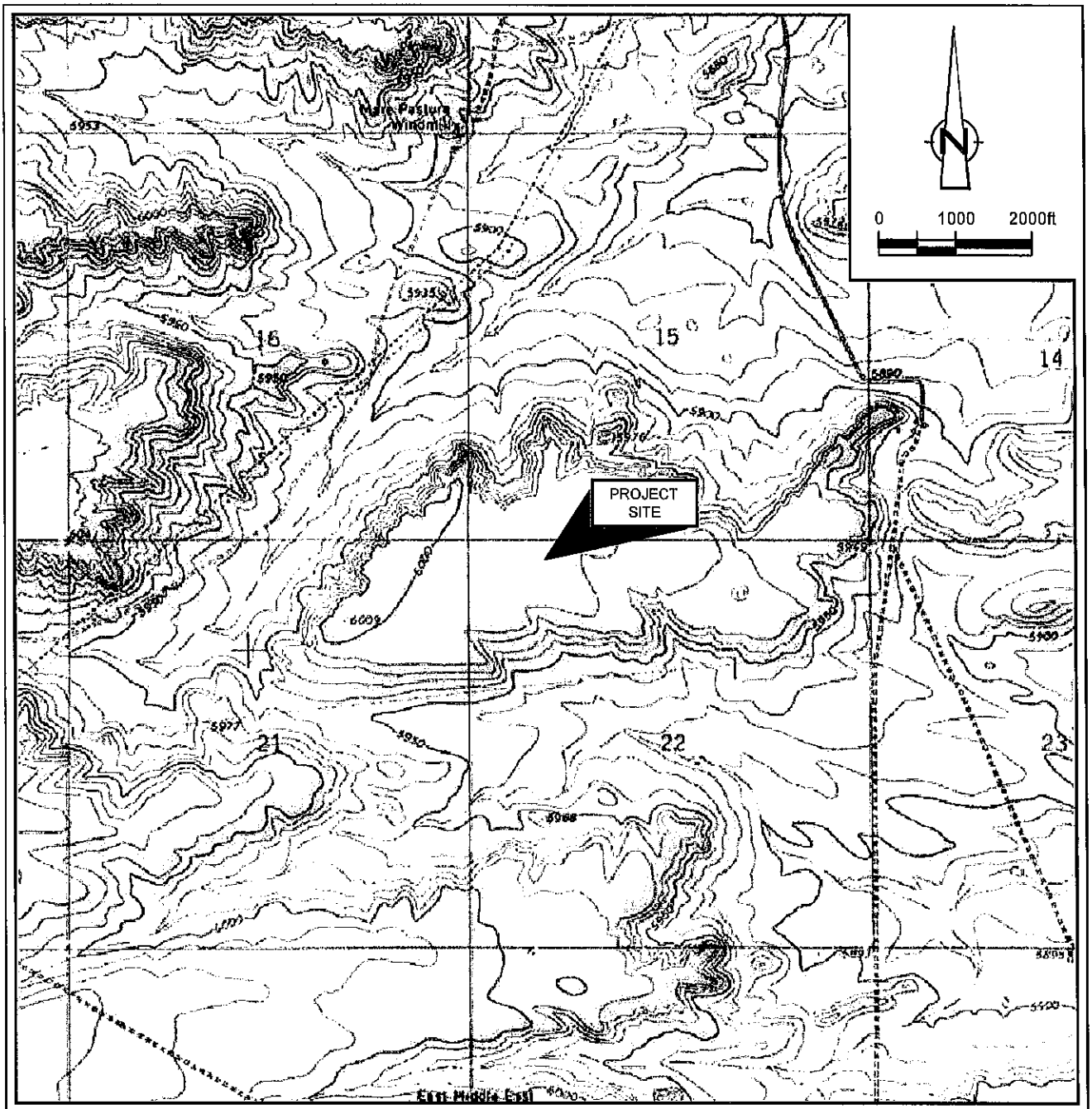
Release Point Latitude (5 digits to right of decimal pt.): 43.43606

Release Point Longitude (5 digits to right of decimal pt.): -105.48730

Release Height (ft): N/A

Attachment B

Flow Diagram/Plot Plan of Emissions Units



SOURCE: USGS 7.5 MINUTE QUAD
"ALTVAN AND CAMPSTOOL, WYOMING"

LAT/LONG: 41.0865° NORTH, 104.6529° WEST
COORDINATE: NAD83 DATUM, U.S. FOOT
STATE PLANE ZONE - WYOMING EAST

figure 1

SITE LOCATION MAP
EOG RESOURCES
JUBILEE 155-2210H, JUBILEE 156-2227H,
JUBILEE 529-2227H, JUBILEE 531-2210H
Laramie County, Wyoming

086379-00(000)GN-DL003 DEC 22/2014

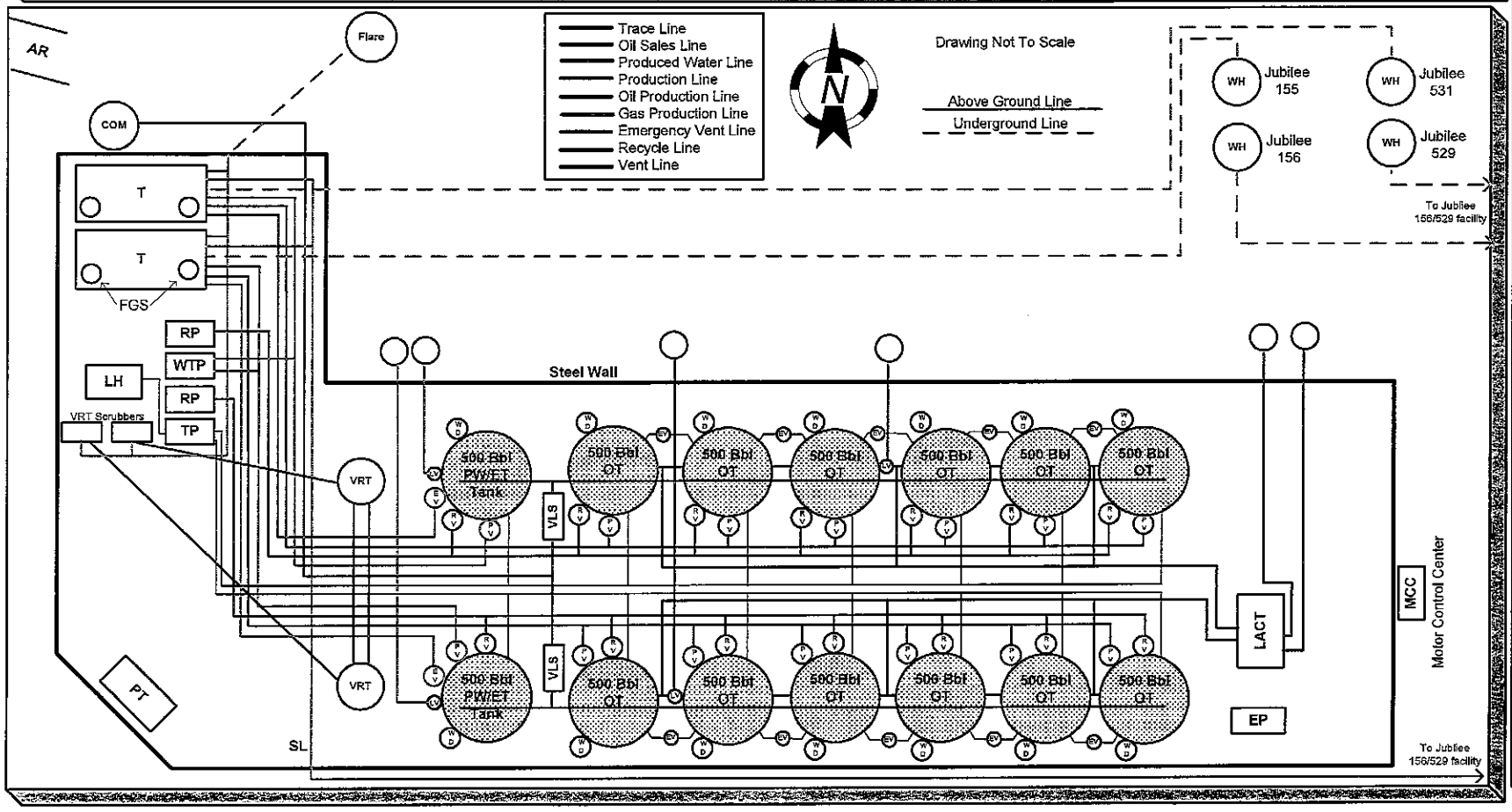
eog resources
Site Facility Diagram

Well Name: Jubilee 155-2210H & 531-2210H
1/4 1/4: NW/NW Sec: 22 T: 13N R: 65W
Latitude: 41.086492 Longitude: -104.652933 (155)
Latitude: 41.086492 Longitude: -104.652756 (531)
County: Laramie State: Wyoming
Lease: ST 06-00042
Type of well: Oil

EOG Resources, Inc. site facility diagrams & site security plans are available electronically at all EOG Resources, Inc. offices. Normal business hours are 7:00am to 4:30pm MST.

Revised: 12/17/2014

Valve	Production Phase	Sales Phase	Water Drain
PV	SO	SC	SC
SV	SC	SO	SC
EV	SO	SC	SC
LV	SC	SO	SC
RV	SC	SC	SC



Abbreviations

AM= Allocation Meter
AR = Access Road
CHP = Chemical Pump
CHT = Chemical Tank
COM = Combustor
COMP = Compressor
COMT – Composite Treater
CONT = Containment Tub
CP = Charge Pump
CT = Condensate Tank
DH = Dehydrator
DL = Dump Line
EP = Electrical Panel
ET = Emergency Tank
EV = Equalizer Valve
FE = Fire Extinguisher
FGS = Fuel Gas Scrubber
FT = Fiberglass Tub
FW = Firewall (dimensions feet)
FWKO = Free Water Knockout
GB = Gas Buster
GEN = Generator
HP = High Pressure
LACT = LACT Unit
LH = Line Heater
LP = Low Pressure
LV = Load Valve
MAN = Manifold
MB = Methanol Bath
MBT = Methanol Bulk Tank
MP = Methanol Pump
OT = Oil Tank
PIGL = Pig Launcher
PIGR = Pig Receiver
PL = Production Line
POC = Pump Off Controller
PP = Power Pole
PRT = Product Tank
PT = Propane Tank
PU = Pumping Unit
PV = Production Valve
PW = Produced Water
RL = Recycle Line
RP = Recycle Pump
RV = Recycle Valve
SC = Sealed Closed
SGS = Sales Gas Scrubber
SL = Sales Line
SM = Sales Meter
SO = Sealed Open
SP = Separator
SUMP = Sump Pump
SV = Sales Valve
TM = Test Meter
TP = Trace Pump
TRFP = Transfer Pump
TT = Test Treater
VM = Vent Meter
VRT = Vapor Recovery Tower
UNP = Unload Pump
WDP = Water Disposal Pump
WD = Water Drain
WFP = Water Flood Pump
WH = Wellhead

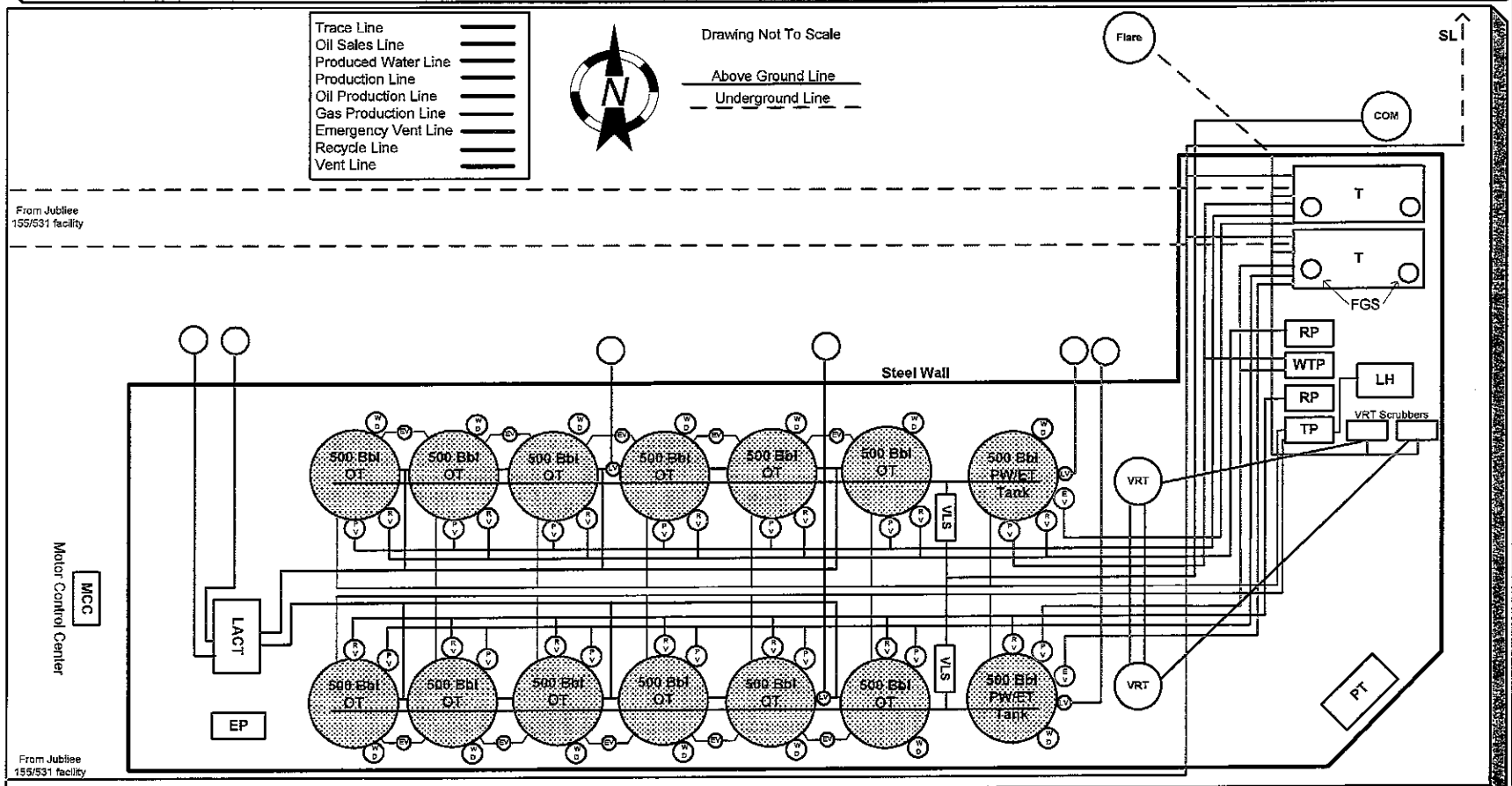
eog resources
Site Facility Diagram

Well Name: Jubilee 156-2227H & 529-2227H
1/4 1/4: NW/NW Sec: 22 T: 13N R: 65W
Latitude: 41.086067 Longitude: -104.652942 (156)
Latitude: 41.086067 Longitude: -104.652758 (529)
County: Laramie State: Wyoming
Lease: ST 06-00042
Type of well: Oil

EOG Resources, Inc. site facility diagrams & site security plans are available electronically at all EOG Resources, Inc. offices. Normal business hours are 7:00am to 4:30pm MST.

Revised: 12/17/2014

Valve	Production Phase	Sales Phase	Water Drain
PV	SO	SC	SC
SV	SC	SO	SC
EV	SO	SC	SC
LV	SC	SO	SC
RV	SC	SC	SC



Abbreviations

AM= Allocation Meter
AR = Access Road
CHP = Chemical Pump
CHT = Chemical Tank
COM = Combustor
COMP = Compressor
COMT – Composite Treater
CONT = Containment Tub
CP = Charge Pump
CT = Condensate Tank
DH = Dehydrator
DL = Dump Line
EP = Electrical Panel
ET = Emergency Tank
EV = Equalizer Valve
FE = Fire Extinguisher
FGS = Fuel Gas Scrubber
FT = Fiberglass Tub
FW = Firewall (dimensions feet)
FWKO = Free Water Knockout
GB = Gas Buster
GEN = Generator
HP = High Pressure
LACT = LACT Unit
LH = Line Heater
LP = Low Pressure
LV = Load Valve
MAN = Manifold
MB = Methanol Bath
MBT = Methanol Bulk Tank
MP = Methanol Pump
OT = Oil Tank
PIGL = Pig Launcher
PIGR = Pig Receiver
PL = Production Line
POC = Pump Off Controller
PP = Power Pole
PRT = Product Tank
PT = Propane Tank
PU = Pumping Unit
PV = Production Valve
PW = Produced Water
RL = Recycle Line
RP = Recycle Pump
RV = Recycle Valve
SC = Sealed Closed
SGS = Sales Gas Scrubber
SL = Sales Line
SM = Sales Meter
SO = Sealed Open
SP = Separator
SUMP = Sump Pump
SV = Sales Valve
TM = Test Meter
TP = Trace Pump
TRFP = Transfer Pump
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VM = Vent Meter
VRT = Vapor Recovery Tower
UNP = Unload Pump
WDP = Water Disposal Pump
WD = Water Drain
WFP = Water Flood Pump
WH = Wellhead

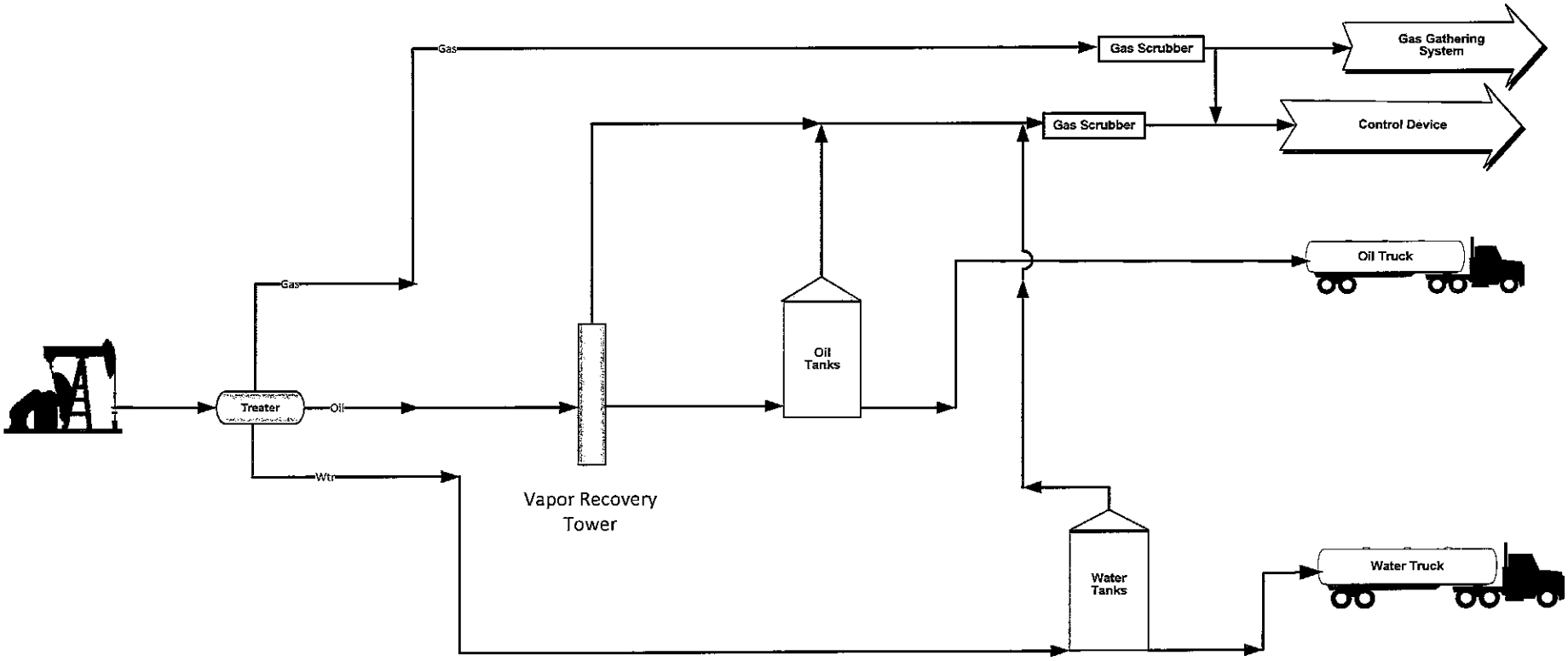

Figure 3
Simplified Process Flow Diagram
Jubilee 155-2210H, Jubilee 156-2227H,
Jubilee 529-2227H, Jubilee 531-2210H
Laramie County, Wyoming

Note: Number of tanks will vary with production.

Attachment C

Facility Process Description

Process Description
Jubilee 155-2210H, 156-2227H, 529-2227H, 531-2210H
Production Facility

Jubilee 155-2210H, 156-2227H, 529-2227H, 531-2210H is an oil and gas production facility located in Laramie County, Wyoming that receives production from four separate new wells (Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, and Jubilee 531-2210H). The four wells produce both crude oil and natural gas. The four well pad consists of the following sources of emissions:

- (6) Crude Oil Storage Tanks (500 bbl capacity each) for Jubilee 155-2210H
- (6) Crude Oil Storage Tanks (500 bbl capacity each) for Jubilee 531-2210H;
- (6) Crude Oil Storage Tanks (500 bbl capacity each) for Jubilee 156-2227H;
- (6) Crude Oil Storage Tanks (500 bbl capacity each) for Jubilee 529-2227H;
- One (1) Produced Water/Emergency Combination Storage Tank (500 bbl capacity) for Jubilee 155-2210H, Jubilee 531-2210H, Jubilee 156-2227H, and for Jubilee 529-2227H;
- One (1) Treater (1 MMBtu/hr burner capacity) for Jubilee 155-2210H, Jubilee 155-2210H, Jubilee 531-2210H, Jubilee 156-2227H, and for Jubilee 529-2227H;
- One (1) Vapor Recovery Tower (VRT) for Jubilee 155-2210H, Jubilee 155-2210H, Jubilee 531-2210H, Jubilee 156-2227H, and for Jubilee 529-2227H;
- One (1) Trace Line Heater (0.5 MMBtu/hr burner capacity) shared between Jubilee 155-2210H and Jubilee 531-2210H;
- One (1) Trace Line Heater (0.5 MMBtu/hr burner capacity) shared between Jubilee 156-2227H and Jubilee 529-2227H;
- One (1) Engineered Combustor shared between Jubilee 155-2210H and Jubilee 531-2210H;
- One (1) Engineered Combustor shared between Jubilee 156-2227H and Jubilee 529-2227H;
- One (1) Engineered Flare shared between Jubilee 155-2210H and Jubilee 531-2210H;
- One (1) Engineered Flare shared between Jubilee 156-2227H and Jubilee 529-2227H;
- Truck Loading Operations with vapors routed and vented to Combustors;
- Blowdowns; and
- Fugitive Components.

Gas and liquids rise to the surface through each well head. The gas/liquid mixture from each well enters a treater to separate the natural gas, crude oil, and produced water. The natural gas stream is tied into a pipeline. In the event of pipeline shut-in, the gas from the heater treater

can be flared. Crude oil is sent to a vapor recovery tower (VRT) and water is sent to the produced water tanks. Oil from the VRT is sent to production oil tanks, and the flashed gas from the VRT and the tanks is sent to the flare. The crude oil from each well is produced in six storage tanks and hauled away by truck. The water from each well is produced in one storage tank and also hauled away by truck as necessary. The tank vapors from the well's crude and produced water tanks are controlled and routed to a combustor that has a destruction efficiency of 98%. The truck loading vapor emissions are controlled and routed to the flare with a capture efficiency of 70%.

Each well at the facility operates an engine for electricity generation that was exempted under permit waivers: Jubilee 155-2210H operates an MGG210N2 D11.1L under permit waiver wv-16941; Jubilee 156-2227H operates an MGG210N2 D11.1L under permit waiver wv-16940; Jubilee 529-2227H operates a Moser D11.1L under permit waiver wv-16942; and Jubilee 155-2210H operates a Volvo KD-300 under permit waiver wv-16939.

Attachment D

Current Well Production Rates

Production Data

JUBILEE 155-2210H

Date	Gas Prod (MSCFD)	Oil Prod (BPD)	Water Prod (BPD)
12/14/2014	100	193	151
12/13/2014	106	217	158
12/12/2014	97	217	156
12/11/2014	105	225	185
12/10/2014	86	218	150
12/9/2014	275	212	128
12/8/2014	180	214	193
12/7/2014	125	232	181
12/6/2014	138	287	204
12/5/2014	154	252	308
12/4/2014	72	274	611
11/2/2014	108	172	94
11/1/2014	130	274	110
10/31/2014	130	283	177
10/30/2014	136	285	189
10/29/2014	136	289	200
10/28/2014	138	311	197
10/27/2014	137	334	146
10/26/2014	157	334	192
10/25/2014	171	348	296
10/24/2014	182	322	379
10/23/2014	201	694	405
10/22/2014	142	408	445
10/21/2014	101	398	490
10/20/2014	106	441	534
10/19/2014	124	565	619
10/18/2014	99	414	586
10/17/2014	138	677	602
10/16/2014	146	593	757
10/15/2014	157	655	785
10/14/2014	187	761	853
10/13/2014	181	730	948
10/12/2014	186	826	1,125
10/11/2014	170	567	1,326
10/10/2014	190	512	1,376
10/9/2014	187	739	1,625
10/8/2014	33	759	873

Production Data

JUBILEE 156-2227H

Date	Gas Prod (MSCFD)	Oil Prod (BPD)	Water Prod (BPD)
12/14/2014	18	68	400
12/13/2014	10	29	443
11/10/2014	12	45	407
11/9/2014	11	52	505
11/8/2014	11	45	478
11/7/2014	33	43	554
11/6/2014	35	55	614
11/5/2014	35	67	634
11/4/2014	39	52	717
11/3/2014	40	58	761
11/2/2014	47	53	818
11/1/2014	54	78	784
10/31/2014	63	52	746
10/30/2014	70	76	782
10/29/2014	90	73	920
10/28/2014	70	18	819
10/27/2014	48	65	698
10/26/2014	56	72	703
10/25/2014	61	74	757
10/24/2014	67	75	815
10/23/2014	75	84	913
10/22/2014	81	89	954
10/21/2014	90	94	1,026
10/20/2014	92	118	1,186
10/19/2014	50	63	889
10/18/2014	84	130	1,339
10/17/2014	56	162	1,226
10/16/2014	45	107	1,720
10/15/2014	43	84	1,567
10/14/2014	47	85	1,838
10/13/2014	60	165	2,064
10/12/2014	67	35	2,125
10/11/2014	70	12	2,479
10/10/2014	35	33	2,683

Production Data

JUBILEE 529-2227H

Date	Gas Prod (MFCSD)	Oil Prod (BPD)	Water Prod (BPD)
12/14/2014	489	470	306
12/13/2014	513	476	338
12/12/2014	476	491	352
12/11/2014	427	463	353
12/10/2014	413	592	371
12/9/2014	370	527	421
12/8/2014	236	605	370
12/7/2014	206	35	9
12/6/2014	472	511	386
12/5/2014	642	511	341
12/4/2014	439	439	308
12/3/2014	432	556	386
12/2/2014	267	347	211
12/1/2014	498	499	366
11/30/2014	512	539	379
11/29/2014	526	540	395
11/28/2014	505	554	418
11/27/2014	471	558	401
11/26/2014	392	527	379
11/25/2014	334	375	253
11/24/2014	521	604	433
11/23/2014	512	555	404
11/22/2014	541	578	422
11/21/2014	550	594	440
11/20/2014	558	611	440
11/19/2014	573	614	450
11/18/2014	588	619	460
11/17/2014	588	650	459
11/16/2014	603	682	481
11/15/2014	567	637	450
11/14/2014	509	590	453
11/13/2014	599	687	496
11/12/2014	552	673	420
11/11/2014	673	702	473
11/10/2014	684	707	563
11/9/2014	694	742	546
11/8/2014	702	769	551
11/7/2014	724	763	569
11/6/2014	739	805	598
11/5/2014	742	812	633
11/4/2014	757	837	680
11/3/2014	769	880	692

Production Data

Date	Gas Prod (MFCSD)	Oil Prod (BPD)	Water Prod (BPD)
11/2/2014	765	923	768
11/1/2014	770	951	808
10/31/2014	777	956	809
10/30/2014	659	935	785
10/29/2014	708	992	932
10/28/2014	696	994	928
10/27/2014	600	953	819
10/26/2014	709	1,040	922
10/25/2014	709	1,078	979
10/24/2014	658	1,076	1,081
10/23/2014	641	1,009	1,005
10/22/2014	694	1,010	996
10/21/2014	734	1,102	1,041
10/20/2014	738	1,064	1,081
10/19/2014	523	786	752
10/18/2014	769	1,064	1,065
10/17/2014	789	1,096	929
10/16/2014	765	1,072	1,040
10/15/2014	777	1,089	1,358
10/14/2014	710	1,023	1,181
10/13/2014	772	1,092	1,359
10/12/2014	715	1,101	1,246
10/11/2014	746	1,092	1,517
10/10/2014	737	1,081	1,575
10/9/2014	602	973	1,575
10/8/2014	570	918	1,751
10/7/2014	572	877	1,898
10/6/2014	580	971	1,983
10/5/2014	560	861	1,922
10/4/2014	586	761	2,254
10/3/2014	629	1,222	2,118
10/2/2014	495	944	2,849

Production Data

JUBILEE 531-2210H

Date	Gas Prod (MFCSD)	Oil Prod (BPD)	Water Prod (BPD)
12/9/2014	227	142	40
12/8/2014	156	411	145
12/7/2014	196	285	96
12/6/2014	520	524	251
12/5/2014	684	697	429
12/4/2014	534	703	513
12/3/2014	267	721	574
12/2/2014	335	309	317
12/1/2014	432	567	510
11/30/2014	535	648	335
11/29/2014	730	819	359
11/28/2014	746	838	385
11/27/2014	685	803	395
11/26/2014	499	798	328
11/25/2014	432	773	298
11/24/2014	750	739	361
11/23/2014	769	865	435
11/22/2014	606	832	407
11/21/2014	641	835	432
11/20/2014	637	858	405
11/19/2014	638	888	437
11/18/2014	663	803	417
11/17/2014	751	886	482
11/16/2014	752	908	492
11/15/2014	751	912	477
11/14/2014	764	933	536
11/13/2014	622	926	471
11/12/2014	730	813	476
11/11/2014	763	1,045	551
11/10/2014	766	1,068	618
11/9/2014	765	1,023	627
11/8/2014	781	1,032	649
11/7/2014	783	1,075	637
11/6/2014	798	1,096	700
11/5/2014	794	1,120	714
11/4/2014	794	1,106	759
11/3/2014	776	1,119	745
11/2/2014	815	1,152	829
11/1/2014	845	1,231	910
10/31/2014	802	1,217	882
10/30/2014	757	1,182	904
10/29/2014	740	1,156	973

Production Data

Date	Gas Prod (MFCSD)	Oil Prod (BPD)	Water Prod (BPD)
10/28/2014	750	1,086	911
10/27/2014	743	1,119	837
10/26/2014	766	1,114	884
10/25/2014	777	1,133	919
10/24/2014	783	1,098	945
10/23/2014	761	1,158	945
10/22/2014	748	1,079	914
10/21/2014	754	1,073	854
10/20/2014	696	1,002	852
10/19/2014	730	1,040	917
10/18/2014	671	970	471
10/17/2014	700	1,001	950
10/16/2014	641	976	970
10/15/2014	627	966	1,040
10/14/2014	162	579	535
10/11/2014	554	683	748
10/10/2014	507	760	825
10/9/2014	578	896	817
10/8/2014	688	1,050	1,264
10/7/2014	688	1,158	1,230
10/6/2014	666	1,074	1,376
10/5/2014	736	1,580	1,402
10/4/2014	754	979	1,574
10/3/2014	449	1,102	1,312
10/2/2014	556	869	1,613
10/1/2014	4	329	790

Attachment E

Gas/Oil Analyses

PRECISION ANALYSIS

GAS MEASUREMENT EMISSIONS TESTING LABORATORY

307.856.0866
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Client:	EOG-DJ Basin	**Analysis Date:**	10/10/2014
Sample ID:	Jubilee 155-2210H	**Date Sampled:**	10/10/2014
Unique #:	0	**Purpose:**	NI
Sample Temperature:	135 DEG F	**Sample Pressure:**	70 PSI
Sampled By:	Jacob Stephens	**Type Sample:**	SPOT
County:	NI		

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide.....	2.8640	4.567	2.295
Nitrogen.....	0.7074	0.718	0.365
Methane.....	60.6663	35.264	48.287
Ethane.....	11.7263	12.776	14.724
Propane.....	13.0139	20.793	16.833
iso-Butane.....	1.4852	3.128	2.282
n-Butane.....	5.6318	11.860	8.336
iso-Pentane.....	1.1888	3.108	2.041
n-Pentane.....	1.5300	4.000	2.604
Cyclopentane.....	0.0824	0.209	0.115
n-Hexane.....	0.2633	0.822	0.508
Cyclohexane.....	0.0838	0.256	0.134
Other Hexanes	0.3896	1.217	0.752
Heptanes.....	0.2381	0.864	0.516
Methylcyclohexane.....	0.0355	0.126	0.067
2,2,4-Trimethylpentane...	0.0001	0.000	0.000
Benzene.....	0.0598	0.169	0.079
Toluene.....	0.0205	0.068	0.032
Ethylbenzene.....	0.0006	0.002	0.001
Xylenes.....	0.0014	0.005	0.003
Octanes.....	0.0098	0.041	0.024
Nonanes.....	0.0014	0.007	0.004
Decanes+.....	0.0000	0.000	0.000
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
Cyclopentane	0.082	0.209	0.115
Cyclohexane	0.084	0.256	0.134
2-Methylpentane	0.245	0.766	0.473
3-Methylpentane	0.144	0.451	0.279
n-Hexane	0.263	0.822	0.508
Methylcyclohexane	0.035	0.126	0.067
2,2,4-Trimethylpentane	0.000	0.000	0.000
Benzene	0.060	0.169	0.079
Toluene	0.020	0.068	0.032
Ethylbenzene	0.001	0.002	0.001
m-Xylene	0.000	0.001	0.000
p-Xylene	0.001	0.004	0.002
o-Xylene	0.000	0.001	0.000

SPECIFIC GRAVITY @ 60/60 F, calculated	0.9529
TOTAL GPM (Ethane Inclusive)	10.419
CALCULATED BTU / REAL CF @ 14.73 PSIA, dry basis	1556.844
CALCULATED BTU / REAL CF @ 14.73 PSIA, wet basis	1530.480
AVERAGE MOLECULAR WEIGHT	27.599
MOLAR MASS RATIO	0.9528
RELATIVE DENSITY (G x Z (Air) / Z), calculated	0.9591
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF @ 14.696 PSIA	1543.325
COMPRESSIBILITY FACTOR (Z)	0.99360

PROPANE GPM	3.5761
BUTANE GPM	2.2557
GASOLINE GPM (PENTANE AND HEAVIER)	1.4593
VOC WEIGHT FRACTION	0.467

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.

PRECISION ANALYSIS GAS MEASUREMENT EMISSIONS TESTING LABORATORY

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Client:	EOG-DJ Basin	**Analysis Date:**	10/10/2014
Sample ID:	Jubilee 156-2227H	**Date Sampled:**	10/10/2014
Unique #:	0	**Purpose:**	NI
Sample Temperature:	140 DEG F	**Sample Pressure:**	50 PSI
Sampled By:	Jacob Stephens	**Type Sample:**	SPOT
County:	NI		

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide.....	8.7677	13.945	7.327
Nitrogen.....	1.0236	1.036	0.551
Methane.....	64.1288	37.180	53.237
Ethane.....	7.1114	7.728	9.313
Propane.....	7.9122	12.609	10.674
iso-Butane.....	1.0543	2.215	1.689
n-Butane.....	4.4774	9.405	6.912
iso-Pentane.....	1.2355	3.221	2.212
n-Pentane.....	1.7920	4.673	3.181
Cyclopentane.....	0.1455	0.369	0.211
n-Hexane.....	0.5562	1.732	1.120
Cyclohexane.....	0.2243	0.682	0.374
Other Hexanes	0.7018	2.186	1.413
Heptanes.....	0.5807	2.103	1.312
Methylcyclohexane.....	0.0757	0.269	0.149
2,2,4-Trimethylpentane...	0.0001	0.000	0.000
Benzene.....	0.1520	0.429	0.208
Toluene.....	0.0414	0.138	0.068
Ethylbenzene.....	0.0009	0.003	0.002
Xylenes.....	0.0016	0.006	0.003
Octanes.....	0.0147	0.061	0.037
Nonanes.....	0.0020	0.009	0.005
Decanes+.....	0.0001	0.000	0.000
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
Cyclopentane	0.145	0.369	0.211
Cyclohexane	0.224	0.682	0.374
2-Methylpentane	0.442	1.376	0.889
3-Methylpentane	0.260	0.810	0.524
n-Hexane	0.556	1.732	1.120
Methylcyclohexane	0.076	0.269	0.149
2,2,4-Trimethylpentane	0.000	0.000	0.000
Benzene	0.152	0.429	0.208
Toluene	0.041	0.138	0.068
Ethylbenzene	0.001	0.003	0.002
m-Xylene	0.000	0.001	0.000
p-Xylene	0.001	0.004	0.002
o-Xylene	0.000	0.001	0.001

SPECIFIC GRAVITY @ 60/60 F, calculated	0.9554
TOTAL GPM (Ethane Inclusive)	7.917
CALCULATED BTU / REAL CF @ 14.73 PSIA, dry basis	1401.660
CALCULATED BTU / REAL CF @ 14.73 PSIA, wet basis	1378.011
AVERAGE MOLECULAR WEIGHT	27.670
MOLAR MASS RATIO	0.9553
RELATIVE DENSITY (G x Z (Air) / Z), calculated	0.9611
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF @ 14.696 PSIA	1390.097
COMPRESSIBILITY FACTOR (Z)	0.99403

PROPANE GPM	2.1742
BUTANE GPM	1.7521
GASOLINE GPM (PENTANE AND HEAVIER)	2.0937
VOC WEIGHT FRACTION	0.401

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.

PRECISION ANALYSIS
GAS MEASUREMENT EMISSIONS TESTING LABORATORY
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EXTENDED HYDROCARBON LIQUID STUDY
CERTIFICATE OF ANALYSIS

Company:	**EOG Resources- DJ Basin**	Sample Name:	**Jubilee 152-1034H**
Date Sampled:	8/20/2014	Sample Number:	14082516-02
Sample Location:	Wyoming	Date Tested:	8/26/2014
Sample Pressure:	74 PSI	Test Method:	GPA 2186M
Sample Temperature:	160 DEG F		
County:	NI	Date Reported:	8/27/2014
Sampling Method:	GPA 2174	Note: Due to the nature of H2S, the values of H2S reported may be lower than actual.	
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	0.1072	0.024	0.022
Nitrogen	0.0100	0.001	0.001
Methane	0.9544	0.079	0.196
Ethane	1.0561	0.164	0.342
Propane	3.4309	0.783	1.143
iso-Butane	0.8099	0.243	0.321
n-Butane	4.0168	1.208	1.532
iso-Pentane	1.8952	0.707	0.838
n-Pentane	3.0931	1.154	1.356
Hexanes	2.2617	1.008	1.125
Heptanes	6.0800	3.151	3.393
Octanes	5.7253	3.383	3.548
Nonanes	1.7123	1.136	1.165
Decanes+	62.3513	83.787	81.918
Benzene	0.3806	0.154	0.129
Toluene	1.3741	0.655	0.556
Ethylbenzene	0.2268	0.125	0.106
Xylenes	1.1630	0.639	0.546
n-Hexane	2.6270	1.171	1.307
2,2,4-Trimethylpentane	0.7243	0.428	0.455
Totals	100.000	100.000	100.000

EXTENDED ANALYSIS DATA

Components	Mole %	Weight %	Liq. Vol. %
Hydrogen Sulfide	0.0000	0.000	0.000
Carbon Dioxide	0.1072	0.024	0.023
Nitrogen	0.0100	0.001	0.001
Methane	0.9544	0.079	0.201
Ethane	1.0561	0.164	0.351
Propane	3.4309	0.783	1.174
iso-Butane	0.8099	0.244	0.329
n-Butane	4.0168	1.209	1.573
iso-Pentane	1.8952	0.708	0.861
n-Pentane	3.0931	1.156	1.393
Hexanes	2.2617	1.009	1.155
Heptanes	6.0800	3.155	3.485
Octanes	5.7253	3.386	3.644
Nonanes	1.7123	1.137	1.197
Decanes	4.6250	3.407	3.526
Benzene	0.3806	0.154	0.132
Toluene	1.3741	0.656	0.571
Ethylbenzene	0.2268	0.125	0.109
Xylenes	1.1630	0.639	0.561
n-Hexane	2.6270	1.172	1.342
2,2,4-Trimethylpentane	0.7243	0.428	0.467
Undecanes(C11)	3.6350	2.942	3.003
Dodecanes(C12)	4.1256	3.639	3.671
Tridecanes(C13)	5.0195	4.792	4.789
Tetradecanes(C14)	3.8764	3.982	3.944
Pentadecanes(C15)	4.3310	4.764	4.688
Hexadecanes(C16)	4.4978	5.274	5.117
Heptadecanes(C17)	3.3036	4.114	3.955
Octadecanes(C18)	3.0616	4.035	3.853
Nonadecanes(C19)	1.8628	2.590	2.433
Eicosanes (C20)	2.8378	4.152	4.002
Heneicosanes (C21)	2.5815	3.964	3.805
Docosanes (C22)	2.3155	3.724	3.639
Tricosanes (C23)	1.9262	3.238	3.089
Tetracosanes (C24)	1.3051	2.289	2.183
Pentacosanes (C25)	2.0022	3.656	3.470
Hexacosanes (C26)	1.2411	2.357	2.303
Heptacosanes (C27)	1.9242	3.793	3.697
Octacosanes (C28)	2.0255	4.140	3.901
Nonacosanes (C29)	1.5461	3.273	3.079
Triacosanes (C30)	1.3859	3.034	2.848
Hentriacontane Plus (C31+)	2.9220	6.610	6.434
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
2-Methylpentane	1.617	0.721	0.804
3-Methylpentane	0.645	0.287	0.321
n-Hexane	2.627	1.171	1.307
2,2,4-Trimethylpentane	0.724	0.428	0.455
Benzene	0.381	0.154	0.129
Toluene	1.374	0.655	0.556
Ethylbenzene	0.227	0.125	0.106
m-Xylene	0.134	0.073	0.063
p-Xylene	0.832	0.457	0.391
o-Xylene	0.198	0.109	0.093

RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	**0.75798**
AVERAGE MOLECULAR WEIGHT	**193.123**
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	**259.805**
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	**66.628**
AVERAGE BOILING POINT, F, calculated	**491.444**
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	**17.946**
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	**124,495.11**
LBS / GALLON OF LIQUID, calculated	**6.178**

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: **Jubilee 152-1034H**
Sample Number: 14082516-01

TEST PERFORMED	RESULTS	DATE TESTED
API GRAVITY AT 60/60 F, (ASTM D-7777), calculated from SG	34.4	8/28/2014
API GRAVITY AT 100/100 F, (ASTM D-7777), calculated from SG	35.2	8/28/2014
REID VAPOR PRESSURE (ASTM D6377), PSIG AT 100 F, measured	9.51	8/26/2014
BOTTOM SEDIMENT & WATER (ASTM D-4007), weight %, measured	<0.025	8/29/2014
CLOUD POINT (ASTM D-97), deg C, measured	-5.0	8/29/2014
POUR POINT (ASTM D-97), deg C, measured	-25.0	8/29/2014
SULFUR CONTENT BY XRAY (ASTM D-4294), weight %, measured	0.2775	8/28/2014
PARAFFIN CONTENT (UOP-46), weight %, measured	29.859	8/27/2014
EOG GRINDOUT (EOG METHOD), volume %, measured	16.250	8/28/2014
KINEMATIC VISCOSITY AT 100 F (ASTM D-445),	45.900	9/4/2014
KINEMATIC VISCOSITY AT 120 F (ASTM D-445),	41.041	9/5/2014
ASPHALTENES (ASTM D-3279), weight %, CL	0.1	9/3/2014

PRECISION ANALYSIS GAS MEASUREMENT EMISSIONS TESTING LABORATORY

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Client:	EOG-DJ Basin	**Analysis Date:**	10/3/2014
Sample ID:	Jubilee 529-2227H	**Date Sampled:**	10/02/2014
Unique #:	0	**Purpose:**	NI
Sample Temperature:	157.5 DEG F	**Sample Pressure:**	80 PSI
Sampled By:	Jacob Stephens	**Type Sample:**	SPOT
County:	NI		

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide	2.5935	3.714	1.975
Nitrogen	0.6907	0.630	0.339
Methane	54.2411	28.315	41.032
Ethane	11.9570	11.699	14.269
Propane	14.6861	21.072	18.054
iso-Butane	1.9141	3.620	2.795
n-Butane	7.1259	13.477	10.024
iso-Pentane	1.8321	4.301	2.990
n-Pentane	2.1849	5.129	3.534
Cyclopentane	0.1526	0.348	0.202
n-Hexane	0.5466	1.533	1.003
Cyclohexane	0.2596	0.711	0.394
Other Hexanes	0.7670	2.151	1.407
Heptanes	0.7068	2.305	1.455
Methylcyclohexane	0.1363	0.435	0.244
2,2,4-Trimethylpentane	0.0002	0.001	0.000
Benzene	0.1478	0.376	0.184
Toluene	0.0435	0.131	0.065
Ethylbenzene	0.0004	0.001	0.001
Xylenes	0.0012	0.004	0.002
Octanes	0.0113	0.042	0.026
Nonanes	0.0014	0.006	0.003
Decanes+	0.0000	0.000	0.000
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
Cyclopentane	0.153	0.348	0.202
Cyclohexane	0.260	0.711	0.394
2-Methylpentane	0.483	1.354	0.886
3-Methylpentane	0.284	0.797	0.522
n-Hexane	0.547	1.533	1.003
Methylcyclohexane	0.136	0.435	0.244
2,2,4-Trimethylpentane	0.000	0.001	0.000
Benzene	0.148	0.376	0.184
Toluene	0.044	0.131	0.065
Ethylbenzene	0.000	0.001	0.001
m-Xylene	0.000	0.001	0.000
p-Xylene	0.001	0.003	0.001
o-Xylene	0.000	0.001	0.000

SPECIFIC GRAVITY @ 60/60 F, calculated	1.0611
TOTAL GPM (Ethane Inclusive)	12.661
CALCULATED BTU / REAL CF @ 14.73 PSIA, dry basis	1732.362
CALCULATED BTU / REAL CF @ 14.73 PSIA, wet basis	1702.926
AVERAGE MOLECULAR WEIGHT	30.732
MOLAR MASS RATIO	1.0610
RELATIVE DENSITY (G x Z (Air) / Z), calculated	1.0700
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF @ 14.696 PSIA	1714.054
COMPRESSIBILITY FACTOR (Z)	0.99171

PROPANE GPM	4.0356
BUTANE GPM	2.8655
GASOLINE GPM (PENTANE AND HEAVIER)	2.5698
VOC WEIGHT FRACTION	0.556

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.

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Date Tested:	**8/28/2014**	**Qualifiers:**
	% Recovery	DEG C @ 300mm Hg
	Intial Boiling Point	49
	5	94
	10	115
	20	143
	30	202
	40	257
	50	299
	51	300
	Final Boiling Point	N/A
	Volume % Recovery	51
	Volume % Residue	49
	Volume % Loss	0

Comments: Residue and loss observed
Temperatures are uncorrected for barometric pressure

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EXTENDED HYDROCARBON LIQUID STUDY
CERTIFICATE OF ANALYSIS

Company:	**EOG Resources-DJ Basin**	Sample Name:	**JUBILEE 529-2227H**
Date Sampled:	10/30/2014	Sample Number:	14110504-04
Sample Location:	Wyoming	Date Tested:	11/11/2014
Sample Pressure:	66 PSI	Test Method:	GPA 2186M
Sample Temperature:	124 DEG F		
County:	Laramie	Date Reported:	11/13/2014
Sample Source:	Separator	Note: Due to the nature of H2S, the values of	
Sampling Method:	GPA-2174	H2S reported may be lower than actual.	
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	0.2541	0.064	0.061
Nitrogen	0.0242	0.004	0.004
Methane	0.9160	0.084	0.220
Ethane	1.4047	0.241	0.532
Propane	4.6558	1.169	1.818
iso-Butane	1.0409	0.345	0.483
n-Butane	4.4125	1.461	1.971
iso-Pentane	2.1979	0.903	1.139
n-Pentane	4.0819	1.677	2.097
Hexanes	2.3195	1.138	1.352
Heptanes	5.4030	3.083	3.533
Octanes	4.3084	2.803	3.128
Nonanes	1.2250	0.895	0.977
Decanes+	61.5914	82.753	79.291
Benzene	0.3105	0.138	0.123
Toluene	1.6545	0.868	0.785
Ethylbenzene	0.2442	0.148	0.134
Xylenes	1.6094	0.973	0.886
n-Hexane	1.6981	0.833	0.990
2,2,4-Trimethylpentane	0.6479	0.421	0.477
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
2-Methylpentane	1.658	0.814	0.967
3-Methylpentane	0.661	0.324	0.385
n-Hexane	1.698	0.833	0.990
2,2,4-Trimethylpentane	0.648	0.421	0.477
Benzene	0.310	0.138	0.123
Toluene	1.654	0.868	0.785
Ethylbenzene	0.244	0.148	0.134
m-Xylene	0.185	0.112	0.102
p-Xylene	1.151	0.696	0.634
o-Xylene	0.274	0.165	0.151

RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	**0.82300**
AVERAGE MOLECULAR WEIGHT	**175.596**
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	**235.927**
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	**70.331**
AVERAGE BOILING POINT, F, calculated	**387.530**
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	**18.409**
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	**123,816.68**
LBS / GALLON OF LIQUID, calculated	**6.574**

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: **JUBILEE 529-2227H**
Sample Number: 14110504-03

TEST PERFORMED	RESULTS	DATE TESTED
API GRAVITY AT 60/60 F, (ASTM D-7777), calculated from SG	34.4	11/14/2014
API GRAVITY AT 100/100 F, (ASTM D-7777), calculated from SG	35.2	11/14/2014
REID VAPOR PRESSURE (ASTM D6377), PSIG AT 100 F, measured	3.58	11/07/2014
BOTTOM SEDIMENT & WATER (ASTM D-4007), weight %, measured	<0.025	11/24/2014
CLOUD POINT (ASTM D-97), deg F, measured	-0.4	11/20/2014
POUR POINT (ASTM D-97), deg F, measured	-20.2	11/20/2014
SULFUR CONTENT BY XRAY (ASTM D-4294), weight %, measured	0.1946	11/14/2014
PARAFFIN CONTENT (UOP-46), weight %, measured	39.323	11/13/2014
EOG GRINDOUT (EOG METHOD), volume %, measured	62.500	11/20/2014
KINEMATIC VISCOSITY AT 100 F (ASTM D-445),	58.600	11/25/2014
KINEMATIC VISCOSITY AT 120 F (ASTM D-445),	48.649	11/25/2014
ASPHALTENES (ASTM D-3279), weight %, CL	<0.10	11/12/2014

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Date Tested:	**11/24/2014**	**Qualifiers:**
	% Recovery	DEG C @ 300mm Hg
	Intial Boiling Point	30
	5	76
	10	84
	20	129
	30	160
	40	201
	50	280
	58	300
	Final Boiling Point	N/A
	Volume % Recovery	58
	Volume % Residue	42
	Volume % Loss	0

Comments: Residue and loss observed
Temperatures are uncorrected for barometric pressure

PRECISION ANALYSIS GAS MEASUREMENT EMISSIONS TESTING LABORATORY

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Client:	EOG-DJ Basin	**Analysis Date:**	10/3/2014
Sample ID:	Jubilee 531-2227H	**Date Sampled:**	10/02/2014
Unique #:	0	**Purpose:**	NI
Sample Temperature:	149 DEG F	**Sample Pressure:**	70 PSI
Sampled By:	Jacob Stephens	**Type Sample:**	SPOT
County:	NI		

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide.....	2.4977	3.878	1.970
Nitrogen.....	0.6856	0.678	0.349
Methane.....	58.5488	33.140	45.878
Ethane.....	12.7543	13.531	15.766
Propane.....	13.8721	21.582	17.665
iso-Butane.....	1.5090	3.095	2.282
n-Butane.....	5.6541	11.595	8.239
iso-Pentane.....	1.2244	3.117	2.070
n-Pentane.....	1.4897	3.792	2.496
Cyclopentane.....	0.0908	0.225	0.124
n-Hexane.....	0.3061	0.931	0.582
Cyclohexane.....	0.1623	0.482	0.255
Other Hexanes	0.4430	1.347	0.842
Heptanes.....	0.4541	1.605	0.968
Methylcyclohexane.....	0.1290	0.447	0.239
2,2,4-Trimethylpentane...	0.0003	0.001	0.001
Benzene.....	0.0973	0.268	0.126
Toluene.....	0.0538	0.175	0.083
Ethylbenzene.....	0.0008	0.003	0.001
Xylenes.....	0.0019	0.007	0.003
Octanes.....	0.0223	0.090	0.053
Nonanes.....	0.0028	0.013	0.007
Decanes+.....	0.0000	0.000	0.000
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
Cyclopentane	0.091	0.225	0.124
Cyclohexane	0.162	0.482	0.255
2-Methylpentane	0.279	0.848	0.530
3-Methylpentane	0.164	0.499	0.312
n-Hexane	0.306	0.931	0.582
Methylcyclohexane	0.129	0.447	0.239
2,2,4-Trimethylpentane	0.000	0.001	0.001
Benzene	0.097	0.268	0.126
Toluene	0.054	0.175	0.083
Ethylbenzene	0.001	0.003	0.001
m-Xylene	0.000	0.001	0.001
p-Xylene	0.001	0.005	0.002
o-Xylene	0.000	0.001	0.001

SPECIFIC GRAVITY @ 60/60 F, calculated	0.9786
TOTAL GPM (Ethane Inclusive)	11.176
CALCULATED BTU / REAL CF @ 14.73 PSIA, dry basis	1605.842
CALCULATED BTU / REAL CF @ 14.73 PSIA, wet basis	1578.620
AVERAGE MOLECULAR WEIGHT	28.343
MOLAR MASS RATIO	0.9785
RELATIVE DENSITY (G x Z (Air) / Z), calculated	0.9854
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF @ 14.696 PSIA	1591.111
COMPRESSIBILITY FACTOR (Z)	0.99311

PROPANE GPM	3.8120
BUTANE GPM	2.2705
GASOLINE GPM (PENTANE AND HEAVIER)	1.6912
VOC WEIGHT FRACTION	0.488

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.

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EXTENDED HYDROCARBON LIQUID STUDY
CERTIFICATE OF ANALYSIS

Company:	**EOG Resources-DJ Basin**	Sample Name:	**JUBILEE 531-2210H**
Date Sampled:	10/30/2014	Sample Number:	14110504-02
Sample Location:	Wyoming	Date Tested:	11/11/2014
Sample Pressure:	78 PSI	Test Method:	GPA 2186M
Sample Temperature:	133 DEG F		
County:	Laramie	Date Reported:	11/13/2014
Sample Source:	Separator	Note: Due to the nature of H2S, the values of	
Sampling Method:	GPA-2174	H2S reported may be lower than actual.	
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	0.1184	0.030	0.029
Nitrogen	0.0419	0.007	0.007
Methane	1.1390	0.105	0.274
Ethane	1.1749	0.203	0.447
Propane	3.7173	0.942	1.455
iso-Butane	0.8480	0.283	0.394
n-Butane	4.3085	1.439	1.930
iso-Pentane	2.1201	0.879	1.102
n-Pentane	4.1479	1.720	2.137
Hexanes	2.3851	1.181	1.394
Heptanes	5.8893	3.391	3.861
Octanes	4.2075	2.762	3.063
Nonanes	1.3000	0.958	1.040
Decanes+	62.4509	82.694	79.440
Benzene	0.3324	0.149	0.132
Toluene	1.5233	0.807	0.725
Ethylbenzene	0.2697	0.165	0.148
Xylenes	1.4571	0.889	0.804
n-Hexane	1.8021	0.892	1.053
2,2,4-Trimethylpentane	0.7665	0.503	0.566
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
2-Methylpentane	1.705	0.845	0.997
3-Methylpentane	0.680	0.337	0.397
n-Hexane	1.802	0.892	1.053
2,2,4-Trimethylpentane	0.767	0.503	0.566
Benzene	0.332	0.149	0.132
Toluene	1.523	0.807	0.725
Ethylbenzene	0.270	0.165	0.148
m-Xylene	0.168	0.102	0.093
p-Xylene	1.042	0.636	0.575
o-Xylene	0.248	0.151	0.137

RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	**0.81568**
AVERAGE MOLECULAR WEIGHT	**174.011**
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	**230.416**
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	**77.691**
AVERAGE BOILING POINT, F, calculated	**386.009**
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	**18.325**
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	**123,949.55**
LBS / GALLON OF LIQUID, calculated	**6.533**

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: **JUBILEE 531-2210H**
Sample Number: 14110504-01

TEST PERFORMED	RESULTS	DATE TESTED
API GRAVITY AT 60/60 F, (ASTM D-7777), calculated from SG	34.6	11/14/2014
API GRAVITY AT 100/100 F, (ASTM D-7777), calculated from SG	35.5	11/14/2014
REID VAPOR PRESSURE (ASTM D6377), PSIG AT 100 F, measured	4.01	11/07/2014
BOTTOM SEDIMENT & WATER (ASTM D-4007), weight %, measured	<0.025	11/24/2014
CLOUD POINT (ASTM D-97), deg F, measured	-9.4	11/20/2014
POUR POINT (ASTM D-97), deg F, measured	-40.0	11/20/2014
SULFUR CONTENT BY XRAY (ASTM D-4294), weight %, measured	0.2179	11/14/2014
PARAFFIN CONTENT (UOP-46), weight %, measured	40.945	11/13/2014
EOG GRINDOUT (EOG METHOD), volume %, measured	6.000	11/20/2014
KINEMATIC VISCOSITY AT 100 F (ASTM D-445),	49.100	11/25/2014
KINEMATIC VISCOSITY AT 120 F (ASTM D-445),	43.944	11/25/2014
ASPHALTENES (ASTM D-3279), weight %, CL	<0.10	11/12/2014

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Date Tested:	**11/24/2014**	**Qualifiers:**
	% Recovery	DEG C @ 300mm Hg
	Intial Boiling Point	31
	5	75
	10	86
	20	134
	30	165
	40	195
	50	274
	52	300
	Final Boiling Point	N/A
	Volume % Recovery	52
	Volume % Residue	46
	Volume % Loss	2

Comments: Residue and loss observed
Temperatures are uncorrected for barometric pressure

Attachment F

Detailed Emission Calculations and Supporting Documentation

TABLE 1
FACILITY INFORMATION SUMMARY

FACILITY INFORMATION

Facility ID	Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H	Name of the facility

PRODUCTION DATA		**DESCRIPTION**
Daily Average Oil Production Rate	1295.046	Average daily production in barrels of oil per day (BOPD), based on the first 365 days of production considering a decline factor of 0.6.
Produced Water Tank Throughput	3013.78	Average daily production in barrels of water per day (BWPD), based on the first 365 days of production considering a decline factor of 0.6.
Daily Average Gas Production Rate	857.382	Average daily production of gas in Mscf per day, based on the first 365 days of production.
Decline Factor	0.6	Decline factor built into oil and gas production expectations, default is set to 0.6.

OIL/CONDENSATE TANKS		**DESCRIPTION**
Molecular Weight	44.73	Molecular weight of the tank vapors in pounds per pound-mole (lb/lb-mole). Obtained from promax.
VOC%	79.80	VOC weight fraction of the tank vapor gas (C3+). Obtained from Promax.
HAP%	0.94	HAP weight fraction of the tank vapor gas. Obtained from Promax.
H_2S weight %	0.00	H_2S weight percent of the tank vapor gas. Obtained from Promax.
Flare Efficiency	98%	Flare destruction efficiency to control tank vapor emissions

TREATER GAS DATA		**DESCRIPTION**
Heating Value	1,561.8	Btu/scf of wellstream gas.
Molecular Weight	27.66	Average molecular weight of the wellstream gas in lb/lb-mole.
Specific Gravity	0.95	If necessary to convert specific gravity to molecular weight, enter the specific gravity of the wellstream gas.
Calculated Molecular Weight	27.66	Calculated molecular weight based on the specific gravity entered above.
VOC%	48.59%	VOC weight fraction of the wellstream gas (C3+).
HAP%	4.05%	HAP weight fraction of the wellstream gas.
H_2S weight %	0.000%	H_2S weight percent of the wellstream gas
H_2S mole %	0.000%	H_2S mole percent of the wellstream gas

HEATER TREATER		**DESCRIPTION**
Firing Rate	4,000,000	Burner rating for the heater treater in Btu/hr.
Hours of Operation	8,760	The burner is assumed to operate 8,760 hours per year.

TRUCK LOADING		**DESCRIPTION**
Oil is hauled by truck		If sales oil pipeline is unavailable, oil will be hauled by truck
Submerged loading: dedicated normal service	0.6	Submerged loading: dedicated normal service
Molecular Weight	44.7	Molecular weight of tank vapors in lb/lb-mole (obtained from Promax)
Vapor Pressure	9.96	True vapor pressure of liquid loaded, pounds per square inch absolute (psia).
Temperature	47	Estimated average annual temperature of liquid loaded in °F
Load Rate (bbl/hr)	200	Maximum load rate of liquid loaded in barrels per hour.
Load Time (hrs)	1	The time it takes to loadout one load (hrs).

MISCELLANEOUS		**DESCRIPTION**
Pilot Fuel consumption	0.14	Fuel consumption in scf/min

TABLE 2

EMISSIONS SUMMARY

UNCONTROLLED EMISSIONS

SOURCE	VOC	HAP	NOx	CO	H_2S	SO_2	CO_2e[a]
	(TPY)						(MT/yr)
Oil Tanks and VRT	2,107	72.44	--	--	0.00	--	
Water Tanks	5.90	0.30	--	--	--	--	
Treater Burner	0.09	0.03	1.72	1.44	0.00	0.00	
Truck Loading	54.13	0.51	--	--	--	--	
Fugitive	14.47	0.34	--	--	--	--	
Line Heater	0.02	0.01	0.43	0.36	0.00	0.00	
Blowdowns	0.09	0.09					
Totals	**2,181.45**	**73.63**	**2.15**	**1.80**	**0.00**	**0.00**	**388.71**

CONTROLLED EMISSIONS

SOURCE	VOC	HAP	NOx	CO	H_2S	SO_2	CO_2e
	(TPY)						(MT/yr)
VRT (Flashing)	41.43	1.44	--	--	0.00	--	
Oil Tanks	0.71	0.01	--	--	0.00	--	
Water Tanks	0.12	0.01	--	--	0.00	--	
Flare/Combustor[b]	21.36	8.83	32.33	8.08	0.00	0.00	
Treater Burner	0.09	0.03	1.72	1.44	0.00	0.00	
Truck Loading	16.24	0.15	--	--	--	--	
Fugitive	14.47	0.34	--	--	--	--	
Line Heater	0.02	0.01	0.43	0.36	0.00	0.00	
Blowdowns	0.09	0.09					
Totals	**94.53**	**10.90**	**34.05**	**9.53**	**0.00**	**0.00**	**37,890**

Notes:

[a]Uncombusted GHG

[b]VRT and Heater Treater are controlled by flare while Oil Tanks, Water Tanks, and Truck Loading emissions are controlled by combustor.

TABLE 3

HAZARDOUS AIR POLLUTANT (HAP) EMISSIONS SUMMARY

UNCONTROLLED HAP EMISSION SUMMARY

SOURCE	POTENTIAL TO EMIT (TPY)					
	BENZENE	TOLUENE	ETHYLBENZENE	XYLENE	2,2,4 TMP	N-HEXANE
Oil Tanks and VRT	0.43	33.22	2.34	6.45	10.49	19.51
Water Tanks	0.00	0.17	0.01	0.02	0.00	0.10
Flare/Combustor	51.26	37.04	12.85	38.00	26.68	19.56
Heater Treater	0.00	0.00	0.00	0.00	0.00	0.03
Truck Loading	0.00	0.27	0.02	0.03	0.10	0.09
Fugitive	0.00	0.07	0.02	0.03	0.10	0.12
Total	**51.70**	**70.77**	**15.24**	**44.53**	**37.37**	**39.41**

CONTROLLED HAP EMISSION SUMMARY

SOURCE	POTENTIAL TO EMIT (TPY)					
	BENZENE	TOLUENE	ETHYLBENZENE	XYLENE	2,2,4 TMP	N-HEXANE
Oil Tanks and VRT	0.01	0.66	0.05	0.13	0.21	0.39
Water Tanks	0.00	0.00	0.00	0.00	0.00	0.00
Flare/Combustor	1.03	0.74	0.26	0.52	0.32	0.22
Heater Treater	0.00	0.00	0.00	0.00	0.00	0.03
Truck Loading	0.00	0.27	0.02	0.03	0.10	0.09
Fugitive	0.00	0.07	0.02	0.03	0.10	0.12
Total	**1.04**	**1.74**	**0.34**	**0.71**	**0.72**	**0.85**

Notes:

[a]No Gas Pipeline - gas produced from treater will be sent to engineered flare

[b]With Gas Pipeline - gas produced from treater will be sent to the gas pipeline

TABLE 4
WORKING, BREATHING & FLASHING EMISSIONS-OIL TANKS

Flashing Emissions

Flare Control Efficiency % 98

Component	Uncontrolled Emissions		Controlled Emissions	
	TPY	lb/hr	TPY	lb/hr
Water	19.789	4.518	0.396	0.090
Hydrogen Sulfide	0.000	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000	0.000
Carbon Dioxide	30.731	7.016	0.615	0.140
Nitrogen	0.848	0.194	0.017	0.004
Methane	106.575	24.332	2.131	0.487
Ethane	165.781	37.850	3.316	0.757
Propane	604.279	137.963	12.086	2.759
iso-Butane	126.481	28.877	2.530	0.578
n-Butane	501.360	114.466	10.027	2.289
Iso-Pentane	163.070	37.231	3.261	0.745
n-Pentane	236.877	54.082	4.738	1.082
Heptanes	156.139	35.648	3.123	0.713
Octanes	56.565	12.914	1.131	0.258
Nonanes	7.464	1.704	0.149	0.034
Decanes+	147.098	33.584	2.942	0.672
Benzene	0.431	0.098	0.009	0.002
Toluene	33.004	7.535	0.660	0.151
Ethylbenzene	2.327	0.531	0.047	0.011
Xylenes	6.421	1.466	0.128	0.029
n-Hexane	19.441	4.439	0.389	0.089
2,2,4-Trimethylpentane	10.404	2.375	0.208	0.048
Total	2395.085	546.823	47.902	10.936

Flashing Emissions Summary

Component	Uncontrolled Emissions		Controlled Emissions	
	TPY	lb/hr	TPY	lb/hr
VOC	2071.362	472.914	41.427	9.458
H2S	0.000	0.000	0.000	0.000
HAPs	72.029	16.445	1.441	0.329

Working & Breathing Emissions

Flare Control Efficiency % 98

Component	Uncontrolled Emissions		Controlled Emissions	
	TPY	lb/hr	TPY	lb/hr
Water	0.000	0.000	0.000	0.000
Hydrogen Sulfide	0.000	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000	0.000
Carbon Dioxide	0.833	0.190	0.017	0.004
Nitrogen	0.003	0.001	0.000	0.000
Methane	1.366	0.312	0.027	0.006
Ethane	6.756	1.542	0.135	0.031
Propane	16.485	3.764	0.330	0.075
iso-Butane	2.267	0.518	0.045	0.010
n-Butane	8.546	1.951	0.171	0.039
Iso-Pentane	2.160	0.493	0.043	0.010
n-Pentane	3.035	0.693	0.061	0.014
Heptanes	1.501	0.343	0.030	0.007
Octanes	0.359	0.082	0.007	0.002
Nonanes	0.037	0.008	0.001	0.000
Decanes+	0.577	0.132	0.012	0.003
Benzene	0.001	0.000	0.000	0.000
Toluene	0.218	0.050	0.004	0.001
Ethylbenzene	0.013	0.003	0.000	0.000
Xylenes	0.027	0.006	0.001	0.000
n-Hexane	0.073	0.017	0.001	0.000
2,2,4-Trimethylpentane	0.083	0.019	0.002	0.000
Total	44.340	10.123	0.887	0.202

Working & Breathing Emissions Summary

Component	Uncontrolled Emissions		Controlled Emissions	
	TPY	lb/hr	TPY	lb/hr
VOC	35.382	8.078	0.708	0.162
H2S	0.000	0.000	0.000	0.000
HAPs	0.415	0.095	0.008	0.002

Notes:
Oil is flashed in a Vapor Recovery Tower and is captured by the flare.
Working, Breathing & Flashing emissions obtained from Promax

TABLE 5

WORKING, BREATHING & FLASHING EMISSIONS-WATER TANKS

Flashing Emissions

Flare Control Efficiency % 98

Component	Uncontrolled Emissions		Controlled Emissions	
	TPY	lb/hr	TPY	lb/hr
Water	0.358	0.082	0.007	0.002
Hydrogen Sulfide	0.000	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000	0.000
Carbon Dioxide	3.365	0.768	0.067	0.015
Nitrogen	0.103	0.023	0.002	0.000
Methane	7.183	1.640	0.144	0.033
Ethane	2.281	0.521	0.046	0.010
Propane	2.708	0.618	0.054	0.012
Iso-Butane	0.215	0.049	0.004	0.001
n-Butane	1.670	0.381	0.033	0.008
Iso-Pentane	0.280	0.064	0.006	0.001
n-Pentane	0.464	0.106	0.009	0.002
Heptanes	0.136	0.031	0.003	0.001
Octanes	0.020	0.005	0.000	0.000
Nonanes	0.004	0.001	0.000	0.000
Decanes+	0.100	0.023	0.002	0.000
Benzene	0.000	0.000	0.000	0.000
Toluene	0.170	0.039	0.003	0.001
Ethylbenzene	0.012	0.003	0.000	0.000
Xylenes	0.024	0.006	0.000	0.000
n-Hexane	0.095	0.022	0.002	0.000
2,2,4-Trimethylpentane	0.002	0.000	0.000	0.000
Total	19.191	4.382	0.384	0.088

Flashing Emissions Summary

Component	Uncontrolled Emissions		Controlled Emissions	
	TPY	lb/yr	TPY	lb/yr
VOC	5.902	1.347	0.118	0.027
H2S	0.000	0.000	0.000	0.000
HAPs	0.304	0.069	0.006	0.001

Working & Breathing Emissions

Flare Control Efficiency % 98

Component	Uncontrolled Emissions		Controlled Emissions	
	TPY	lb/hr	TPY	lb/hr
Water	0.413	0.094	0.008	0.002
Hydrogen Sulfide	0.000	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000	0.000
Carbon Dioxide	0.119	0.027	0.002	0.001
Nitrogen	0.000	0.000	0.000	0.000
Methane	0.021	0.005	0.000	0.000
Ethane	0.006	0.001	0.000	0.000
Propane	0.002	0.000	0.000	0.000
Iso-Butane	0.000	0.000	0.000	0.000
n-Butane	0.000	0.000	0.000	0.000
Iso-Pentane	0.000	0.000	0.000	0.000
n-Pentane	0.000	0.000	0.000	0.000
Heptanes	0.000	0.000	0.000	0.000
Octanes	0.000	0.000	0.000	0.000
Nonanes	0.000	0.000	0.000	0.000
Decanes+	0.000	0.000	0.000	0.000
Benzene	0.000	0.000	0.000	0.000
Toluene	0.000	0.000	0.000	0.000
Ethylbenzene	0.000	0.000	0.000	0.000
Xylenes	0.000	0.000	0.000	0.000
n-Hexane	0.000	0.000	0.000	0.000
2,2,4-Trimethylpentane	0.000	0.000	0.000	0.000
Total	0.562	0.128	0.011	0.003

Working & Breathing Emissions Summary

Component	Uncontrolled Emissions		Controlled Emissions	
	TPY	lb/hr	TPY	lb/hr
VOC	0.002	0.000	0.000	0.000
H2S	0.000	0.000	0.000	0.000
HAPs	0.000	0.000	0.000	0.000

Notes:

Water is flashed in the tanks and is captured by the flare.

Working, Breathing & Flashing emissions obtained fromPromax

TABLE 6
ENGINEERED FLARE 1 EMISSIONS

Volume of Gas sent to Flare	407,747.2	scf/day
Lower Heating Value	1,562	Btu/scf
Average Molecular Weight	27.66	lb/lb-mole
Standard Molar Volume		
VOC Weight %	48.59%	
HAP Weight %	4.05%	
H_2S Weight %	0.00%	
H_2S Mole %	0.00%	
Flare Destruction Efficiency	98.00%	
Pipeline Downtime[2]	80%	

EMISSION RATE CALCULATION

Pollutant	Volume of Gas		Std Mol Vol	MW	Wt%	Usage	Flare Inlet (Uncontrolled) Emissions		Flare Outlet (Controlled) Emissions	
							Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*wt%*	*hrs/yr*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC	407,747	16,989	379	27.66	48.59%	8760	1693.90	1693.90	33.88	33.88
HAP	407,747	16,989	379	27.66	4.05%	8760	64.90	284.26	1.30	5.69
H_2S	407,747	16,989	379	27.66	0.00%	8760	0.00	0.00	0.00	0.00
	Volume of Gas		Std Mol Vol	MW	E.F.[1]	Usage	Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*lb/ MMBtu*	*hr/yr*	*lbs/hr*	*tpy*	*lb/hr*	*tpy*
NO_x	407,747	16,989			0.14	8760	0.00	0.00	3.71	16.27
CO	407,747	16,989			0.035	8760	0.00	0.00	0.93	4.07
SO_2	407,747	16,989	379	64		8760	0.00	0.00	0.00	0.00

HAP SPECIATED EMISSIONS

		Emissions	
		Uncontrolled	Controlled
HAP	Weight	Total	Total
	%	*tpy*	
Benzene	0.00	27.2548	0.5451
Toluene	0.49	20.8515	0.4170
Ethylbenzene	0.03	6.8527	0.1371
Xylenes	0.06	20.0780	0.4016
2,2,4-Trimethylpentane	0.19	15.9055	0.3181
n-hexane	0.16	11.0901	0.2218

Sample Calculations

Uncontrolled Emissions (VOC, HAP, and H_2S) = (volume of gas, scf/hr) * (weight, %) * (MW, lb/lbmol) * (conversion factor, scf/lbmol)
Controlled Emissions (VOC, HAP, and H_2S) = (emission rate, lbs/hr) * (1-destruction efficiency, %)
Emissions from NO_x and CO = (volume of gas, scf/hr) * (Lower heating value, Btu/scf) * (Emission factor, lb/MMBtu) * (Btu/MMBtu)

[1]NOx & CO emission factors are from AP-42 Table 13.5-1 ((Emission Factors for Flare Operations).)
HAP Speciation based on Extended Gas Analysis for Tank Vapor
[2]In the event of pipeline shut-in, the gas from the heater treater is flared.

TABLE 6
ENGINEERED FLARE 2 EMISSIONS

Volume of Gas sent to Flare	337,351.8	scf/day
Lower Heating Value	1,616	Btu/scf
Average Molecular Weight	27.66	lb/lb-mole
Standard Molar Volume		
VOC Weight %	48.59%	
HAP Weight %	4.05%	
H_2S Weight %	0.00%	
H_2S Mole %	0.00%	
Flare Destruction Efficiency	98.00%	
Pipeline Downtime[2]	80%	

EMISSION RATE CALCULATION

Pollutant	Volume of Gas		Std Mol Vol	MW	Wt%	Usage	Flare Inlet (Uncontrolled) Emissions		Flare Outlet (Controlled) Emissions	
							Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*wt%*	*hrs/yr*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC	337,352	14,056	379	27.66	48.59%	8760	1391.03	1391.03	27.82	27.82
HAP	337,352	14,056	379	27.66	4.05%	8760	52.22	228.74	1.04	4.57
H_2S	337,352	14,056	379	27.66	0.00%	8760	0.00	0.00	0.00	0.00
	Volume of Gas		Std Mol Vol	MW	E.F.[1]	Usage	Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*lb/ MMBtu*	*hr/yr*	*lbs/hr*	*tpy*	*lb/hr*	*tpy*
NO_X	337,352	14,056			0.14	8760	0.00	0.00	3.18	13.93
CO	337,352	14,056			0.035	8760	0.00	0.00	0.79	3.48
SO_2	337,352	14,056	379	64		8760	0.00	0.00	0.00	0.00

HAP SPECIATED EMISSIONS

		Emissions	
		Uncontrolled	Controlled
HAP	Weight	Total	Total
	%	*tpy*	
Benzene	0.00	24.0062	0.4801
Toluene	0.49	15.7940	0.3159
Ethylbenzene	0.03	5.9765	0.1195
Xylenes	0.06	17.8670	0.3573
2,2,4-Trimethylpentane	0.19	10.6221	0.2124
n-hexane	0.16	8.3510	0.1670

Sample Calculations

Uncontrolled Emissions (VOC, HAP, and H_2S) = (volume of gas, scf/hr) * (weight, %) * (MW, lb/lbmol) * (conversion factor, scf/lbmol)
Controlled Emissions (VOC, HAP, and H_2S) = (emission rate, lbs/hr) * (1-destruction efficiency, %)
Emissions from NO_X and CO = (volume of gas, scf/hr) * (Lower heating value, Btu/scf) * (Emission factor, lb/MMBtu) * (Btu/MMBtu)

[1]NOx & CO emission factors are from AP-42 Table 13.5-1 ((Emission Factors for Flare Operations).)
HAP Speciation based on Extended Gas Analysis for Tank Vapor
[2]In the event of pipeline shut-in, the gas from the heater treater is flared.

TABLE 6
COMBUSTOR 1 EMISSIONS

Volume of Gas sent to Flare	9,259.5	scf/day
Lower Heating Value	1,562	Btu/scf
Average Molecular Weight	27.66	lb/lb-mole
Standard Molar Volume		
VOC Weight %	48.59%	
HAP Weight %	4.05%	
H_2S Weight %	0.00%	
H_2S Mole %	0.00%	
Flare Destruction Efficiency	98.00%	

EMISSION RATE CALCULATION

Pollutant	Volume of Gas		Std Mol Vol	MW	Wt%	Usage	Flare Inlet (Uncontrolled) Emissions		Flare Outlet (Controlled) Emissions	
							Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*wt%*	*hrs/yr*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC	9,259	386	379	27.66	48.59%	8760	40.33	56.04	0.81	1.12
HAP	9,259	386	379	27.66	4.05%	8760	0.34	0.67	0.01	0.01
H_2S	9,259	386	379	27.66	0.00%	8760	0.00	0.00	0.00	0.00
	Volume of Gas		Std Mol Vol	MW	E.F.[1]	Usage	Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*lb/ MMBtu*	*hr/yr*	*lbs/hr*	*tpy*	*lb/hr*	*tpy*
NO_x	9,259	386			0.14	8760	0.00	0.00	0.08	0.37
CO	9,259	386			0.035	8760	0.00	0.00	0.02	0.09
SO_2	9,259	386	379	64		8760	0.00	0.00	0.00	0.00

HAP SPECIATED EMISSIONS

		Emissions	
		Uncontrolled	Controlled
HAP	Weight	Total	Total
	%		*tpy*
Benzene	0.00	0.0009	0.0000
Toluene	0.49	0.1779	0.0036
Ethylbenzene	0.03	0.0109	0.0002
Xylenes	0.06	0.0222	0.0004
2,2,4-Trimethylpentane	0.19	0.0692	0.0014
n-hexane	0.16	0.0545	0.0011

Sample Calculations

Uncontrolled Emissions (VOC, HAP. and H_2S) = (volume of gas, scf/hr) * (weight, %) * (MW, lb/lbmol) * (conversion factor, scf/lbmol)

Controlled Emissions (VOC, HAP, and H_2S) = (emission rate, lbs/hr) * (1-destruction efficiency, %)

Emissions from NO_x and CO = (volume of gas, scf/hr) * (Lower heating value, Btu/scf) * (Emission factor, lb/MMBtu) * (Btu/MMBtu)

[1]NOx & CO emission factors are from AP-42 Table 13.5-1 ((Emission Factors for Flare Operations).)
HAP Speciation based on Extended Gas Analysis for Tank Vapor
[2]In the event of pipeline shut-in, the gas from the heater treater is flared.

TABLE 6
COMBUSTOR 2 EMISSIONS

Volume of Gas sent to Flare	42,671.8	scf/day
Lower Heating Value	1,616	Btu/scf
Average Molecular Weight	27.66	lb/lb-mole
Standard Molar Volume		
VOC Weight %	48.59%	
HAP Weight %	4.05%	
H_2S Weight %	0.00%	
H_2S Mole %	0.00%	
Flare Destruction Efficiency	98.00%	

EMISSION RATE CALCULATION

Pollutant	Volume of Gas		Std Mol Vol	MW	Wt%	Usage	Flare Inlet (Uncontrolled) Emissions		Flare Outlet (Controlled) Emissions	
							Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*wt%*	*hrs/yr*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC	42,672	1,778	379	27.66	48.59%	8760	26.62	39.91	0.53	0.80
HAP	42,672	1,778	379	27.66	4.05%	8760	0.25	0.55	0.00	0.01
H_2S	42,672	1,778	379	27.66	0.00%	8760	0.00	0.00	0.00	0.00
	Volume of Gas		Std Mol Vol	MW	E.F.[1]	Usage	Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*lb/ MMBtu*	*hr/yr*	*lbs/hr*	*tpy*	*lb/hr*	*tpy*
NO_X	42,672	1,778			0.14	8760	0.00	0.00	0.40	1.76
CO	42,672	1,778			0.035	8760	0.00	0.00	0.10	0.44
SO_2	42,672	1,778	379	64		8760	0.00	0.00	0.00	0.00

HAP SPECIATED EMISSIONS

		Emissions	
		Uncontrolled	Controlled
HAP	Weight	Total	Total
	%	*tpy*	
Benzene	0.00	0.0011	0.0000
Toluene	0.49	0.2189	0.0044
Ethylbenzene	0.03	0.0126	0.0003
Xylenes	0.06	0.0280	0.0006
2,2,4-Trimethylpentane	0.19	0.0849	0.0017
n-hexane	0.16	0.0624	0.0012

Sample Calculations

Uncontrolled Emissions (VOC, HAP. and H_2S) = (volume of gas, scf/hr) * (weight, %) * (MW, lb/lbmol) * (conversion factor, scf/lbmol)
Controlled Emissions (VOC, HAP, and H_2S) = (emission rate, lbs/hr) * (1-destruction efficiency, %)
Emissions from NO_X and CO = (volume of gas, scf/hr) * (Lower heating value, Btu/scf) * (Emission factor, lb/MMBtu) * (Btu/MMBtu)

[1]NOx & CO emission factors are from AP-42 Table 13.5-1 ((Emission Factors for Flare Operations).)
HAP Speciation based on Extended Gas Analysis for Tank Vapor
[2]In the event of pipeline shut-in, the gas from the heater treater is flared.

TABLE 7
HEATER TREATER BURNER EMISSIONS

Burner Rating: 4,000,000 Btu/hr
Burner Fuel: Natural Gas

Pollutant	Burner Rating	E.F.	Conv.	Usage	Emissions	
	MMBtu/hr	*lb/MMBtu*	*lb/ton*	*hr/yr*	*lb/hr*	*tpy*
VOC	4	0.0054	2000	8760	0.0216	0.0945
HAP	4	1.77E-03	2000	8760	0.0071	0.0310
NO_X	4	0.0980	2000	8760	0.3922	1.7176
CO	4	0.0824	2000	8760	0.3294	1.4428

HAP SPECIATED EMISSIONS

HAP	Burner Rating	HAP Emission Factor	Conv.	Usage	Emissions	
	MMBtu/hr	*lb/MMBtu*	*lb/ton*	*hr/yr*	*lbs/hr*	*tpy*
Benzene	4	2.06E-06	2000	8760	8.24E-06	3.61E-05
Toluene	4	3.33E-06	2000	8760	1.33E-05	5.84E-05
Ethylbenzene	4	0.00	2000	8760	0.00	0.00
Xylenes	4	0.00	2000	8760	0.00	0.00
2,2,4-Trimethylpentane	4	0.00	2000	8760	0.00	0.00
n-hexane	4	1.76E-03	2000	8760	7.06E-03	3.09E-02

NOx, CO & VOC Emission Factors are based on AP-42 Table 1.4-1 and 1.4-2

Emission factors were calculated using AP-42 Emissions for Natural Gas Combustion (Tables 1.4-1 and 1.4-2).

Natural gas heat content 1,020 Btu/scf

Propane Heat Content 91.5×10^6 Btu/1000 gallons

Sample Calculations- Benzene from Treater Burner

Benzene Emissions 4000000 (Btu/hr) x 8760 hrs/year x 0.00000206 lbs/MMBtu x 1/ 1000000 (MMBtu/Btu) (1/2000) (tons/lb) 3.61E-05

TABLE 8
LINE HEATER BURNER EMISSIONS

Burner Rating: 1,000,000 Btu/hr
Burner Fuel: Natural Gas

Pollutant	Burner Rating	E.F.	Conv.	Usage	Emissions	
	MMBtu/hr	*lb/MMBtu*	*lb/ton*	*hr/yr*	*lb/hr*	*tpy*
VOC	1	0.0054	2000	8760	0.0054	0.0236
HAP	1	1.77E-03	2000	8760	0.0018	0.0078
NO_X	1	0.0980	2000	8760	0.0980	0.4294
CO	1	0.0824	2000	8760	0.0824	0.3607

HAP SPECIATED EMISSIONS

HAP	Burner Rating	HAP Emission Factor	Conv.	Usage	Emissions	
	MMBtu/hr	*lb/MMBtu*	*lb/ton*	*hr/yr*	*lbs/hr*	*tpy*
Benzene	1	2.06E-06	2000	8760	2.06E-06	9.02E-06
Toluene	1	3.33E-06	2000	8760	3.33E-06	1.46E-05
Ethylbenzene	1	0.00	2000	8760	0.00	0.00
Xylenes	1	0.00	2000	8760	0.00	0.00
2,2,4-Trimethylpentane	1	0.00	2000	8760	0.00	0.00
n-hexane	1	1.76E-03	2000	8760	1.76E-03	7.73E-03

NOx, CO & VOC Emission Factors are based on AP-42 Table 1.4-1 and 1.4-2

Emission factors were calculated using AP-42 Emissions for Natural Gas Combustion (Tables 1.4-1 and 1.4-2).

Natural gas heat content 1,020 Btu/scf

Propane Heat Content 91.5×10^6 Btu/1000 gallons

Sample Calculations- Benzene from Treater Burner

Benzene Emissions 1000000 (Btu/hr) x 8760 hrs/year x 0.00000206 lbs/MMBtu x 1/ 1000000 (MMBtu/Btu) (1/2000) (tons/lb) 9.02E-06

TABLE 9
TRUCK LOADING EMISSIONS

Formula: $L_L = 12.46 \frac{SPM}{T}$ AP-42, Chap. 5-2, Eq. 1: Loading Loss (lb/10^3 gallon of liquid loaded)

Where:

S =	0.6	Submerged loading: dedicated normal service *Source AP-42, Table 5.2-1*
P =	9.96	True vapor pressure of liquid loaded
M =	46.50	Molecular weight of tank vapors (lb/lb-mol)
T =	506.50	Temperature of bulk liquid loaded (°R = °F+460)
L_L =	6.83	lb/10^3 gallons of Loading loss

Truck Loading Emissions

Pollutant	Truck load rate	Annual Production	Load Time	Conversion Factor	Uncontrolled Emission Rates		Controlled Emission Rates	
	bbl/hr	*bbl/yr*	*hrs*	*gal/bbl*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC (C3+)	200.0	472,691.8	1.00	42	57.40	54.13	17.22	16.24

HAP Speciated Emissions

HAP	HAP Weight %	Uncontrolled Emission Rates		Controlled Emission Rates	
	%	*lb/hr*	*tpy*	*lb/hr*	*tpy*
Benzene	0.00	1.22E-03	1.44E-03	3.66E-04	4.33E-04
Toluene	0.49	2.25E-01	2.66E-01	6.75E-02	7.98E-02
Ethylbenzene	0.03	1.35E-02	1.60E-02	4.05E-03	4.79E-03
Xylenes	0.06	2.78E-02	3.29E-02	8.35E-03	9.87E-03
2,2,4-Trimethylpentane	0.19	8.55E-02	1.01E-01	2.56E-02	3.03E-02
n-Hexane	0.16	7.52E-02	8.89E-02	2.26E-02	2.67E-02
Total HAPs	0.93	0.43	0.51	0.13	0.15

(EPA AP-42 Values) Table 1 below is required to supply the saturation factor variable in the above equation.

Cargo Carrier	Mode of Operation	S Factor
Tank Trucks and Rail Tank Cars	Submerged loading of a clean cargo tank	0.50
	Submerged loading: dedicated normal service	0.60
	Submerged loading: dedicated vapor balance service	1.00

(EPA AP-42 Values) Table 2 below may be used to provide the vapor pressure and molecular weight values for the above equation.

Petroleum Liquid	Vapor MW at 60F Mv(lb/lb-mole)	Condensed Vapor Density at 60F Wvc(lb/gal	Liquid Density at 60F W1(lb/gal)	True Vapor Pressure, Pva (psi) at various temperatures in F						
				40	50	60	70	80	90	100
Crude Oil RVP 5	50	4.5	7.1	1.8	2.3	2.8	3.4	4	4.8	5.7

Sample Calculations- Benzene from Truck Loading Emissions

Benzene Emissions: 0.00 (% Wt Benzene) x 54.13 (TPY VOC) = 1.44E-03 (TPY)

Note: Truck loading vapors are controlled with 70% capture efficiency and routed to the flare.

TABLE 10
FUGITIVE EMISSIONS

Fugitive Components	Stream Type	Number of Components (provided by EOG)	EPA Average Total Hydrocarbon Emission Factors [a] (lb/hr/source)	Fugitive VOC Emission Rates [a] (lbs/hour)	Fugitive VOC Emission Rates [a] (tons/year)	VOC EMISSIONS: Total Gas (tons/year)	VOC EMISSIONS: Total Heavy Oil (tons/year)	VOC EMISSIONS: Total Light Oil (tons/year)	VOC EMISSIONS: Total Water/ Light Oil (tons/year)
Connectors	Gas	395	4.41E-04	0.08	0.37	0.37			
	Heavy Oil	0	1.65E-05	0.00	0.00		0.00		
	Light Oil	1,108	4.63E-04	0.13	0.57			0.57	
	Water/Oil	204	2.43E-04	0.01	0.06				0.06
Valves	Gas	256	9.92E-03	1.23	5.41	5.41			
	Heavy Oil	0	1.85E-05	0.00	0.00		0.00		
	Light Oil	200	5.51E-03	0.28	1.23			1.23	
	Water/Oil	96	2.16E-04	0.01	0.02				0.02
Pumps	Gas	0	5.29E-03	0.00	0.00	0.00			
	Light Oil	4	2.87E-02	0.00	0.00	0.00	0.00	0.00	
	Water/Oil	0	5.29E-05	0.00	0.00				0.00
Flanges	Gas	36	8.60E-04	0.02	0.07	0.07			
	Heavy Oil	0	8.60E-07	0.00	0.00		0.00		
	Light Oil	32	2.43E-04	0.00	0.01			0.01	
	Water/Oil	16	6.39E-06	0.00	0.00				0.00
Open Ended Lines	Gas	28	4.41E-03	0.06	0.26	0.26			
	Heavy Oil	0	3.09E-04	0.00	0.00		0.00		
	Light Oil	12	3.09E-03	0.01	0.04			0.04	
	Water/Oil	20	5.51E-04	0.00	0.01				0.01
Others	Gas	128	1.94E-02	1.21	5.29	5.29			
	Heavy Oil	0	7.05E-05	0.00	0.00		0.00		
	Light Oil	16	1.65E-02	0.07	0.30			0.30	
	Water/Oil	24	3.09E-02	0.19	0.83				0.83
			Total Fugitive Emission Rates	**3.30**	**14.46**	**11.39**	**0.00**	**2.15**	**0.92**

Speciated HAP Weight Fraction

Component	Tank Vapor composition[b] mol%	Tank Vapor composition[b] MW of component	Tank Vapor composition[b] MW of W&S Stream	Tank Vapor composition[b] wt. fraction	Heavy oil composition[b] mol%	Heavy oil composition[b] MW of component	Heavy oil composition[b] MW of Heavy Oil Stream	Heavy oil composition[b] wt. fraction	light oil and water/oil composition[b] mol%	light oil and water/oil composition[b] MW of component	light oil and water/oil composition[b] MW of LP Oil	light oil and water/oil composition[b] wt. fraction
	%	lb/lb-mol	lb/lb-mol		%	lb/lb-mol	lb/lb-mol		%	lb/lb-mol	lb/lb-mol	
Benzene	-	78.11	-	2.67E-05	-	78.11	-	1.05E-03	-	78.11	-	1.05E-03
Toluene	-	92.13	-	4.93E-03	-	92.13	-	3.14E-03	-	92.13	-	3.14E-03
Ethylbenzene	-	106.17	-	2.95E-04	-	106.17	-	6.25E-03	-	106.17	-	6.25E-03
Xylenes	-	106.17	-	6.08E-04	-	106.17	-	7.35E-03	-	106.17	-	7.35E-03
n-hexane	-	86.18	-	1.64E-03	-	86.18	-	3.26E-02	-	86.18	-	3.26E-02
2,2,4-trimethylpentane	-	114.24	-	1.87E-03	-	114.24	-	2.43E-02	-	114.24	-	2.43E-02

TABLE 10

Fugitive HAP Emissions

	Fugitive VOC Emission Rates (tons/yr)	Speciated Fugitive HAP (weight fraction) [b]						Speciated Fugitive Emissions						
		Benzene	Toluene	Ethyl-Benzene	Xylenes	n-hexane	2,2,4 TMP	Benzene (tons/yr)	Toluene (tons/yr)	Ethyl-Benzene (tons/yr)	Xylenes (tons/yr)	n-hexane (tons/yr)	2,2,4 TMP (tons/yr)	Total HAP (tons/yr)
Gas	11.39	2.67E-05	4.93E-03	2.95E-04	6.08E-04	1.64E-03	1.87E-03	0.0003	0.0561	0.0034	0.0069	0.0187	0.0213	
Heavy Oil	0.00	1.05E-03	3.14E-03	6.25E-03	7.35E-03	3.26E-02	2.43E-02	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Light Oil	2.15	1.05E-03	3.14E-03	6.25E-03	7.35E-03	3.26E-02	2.43E-02	0.0023	0.0067	0.0134	0.0158	0.0701	0.0522	
Water/Light Oil	0.92	1.05E-03	3.14E-03	6.25E-03	7.35E-03	3.26E-02	2.43E-02	0.0010	0.0029	0.0057	0.0068	0.0300	0.0223	
Total	**14.47**							**0.0035**	**0.066**	**0.0226**	**0.0295**	**0.1188**	**0.0958**	**0.3360**

Notes:

[a] EPA Protocol for Equipment Leak Emission Estimates, November 1995, Table 2-4, Pages 2-15.

[b] HAP weight fractionsfor Tank Vapors obtained from Promaxs. HAP weight for Heavy Oil and Light Oil obtained from Liquid Analysis

Sample Calculations- Fugitive VOC and HAP (Benene) Emissions from Gas

VOC Emissions (connectors)	395 (# of components) x 0.000441 lbs/hr/source x 29.38% NMVOC from Summary - Extended Gas Analysis	=	0.05	lbs/hr
Benzene Emissions (Gas)	11.39 tons/year AggregateFugitive VOC Emissions from Gas x 0.0000267 Fugitive Emission Factor =		0.0003	tons/year

TABLE 11
GREENHOUSE GAS EMISSIONS

Flare CO_2 and CH_4 Emissions

Components	Mole fraction of treater gas constituents[a]	Volume of treater gas sent to flare	Mole fraction of tank vapor constituents[b]	Volume of flash gas	Volume of W/B sent to Flare	Component volume of gas sent to Flare	Component volume of gas for destruction	Number of carbon atoms	Flare Efficiency	Flared CO_2 Volume[c]	Unflared CO_2 and CH_4 Volume[c]	Volume GHGs Emitted
		scf/year		*scf/year*	*scf/year*	*scf/year*	*scf/year*			*scf/year*	*scf/year*	*scf/year*
CO_2	0.025	217,568,911	0.019	42,776,330	800,222	818,957	6.25E+06	1	0	--	6.25E+06	6.75E+08
Methane	0.007	2.18E+08	0.031	42,776,330	800,222	1,342,440	2.83E+06	1	0.98	2.78E+06	5.67E+04	5.67E+04
Ethane	0.585	2.18E+08	0.152	42,776,330	800,222	6,639,356	1.34E+08	2	0.98	2.63E+08	--	
Propane	0.128	2.18E+08	0.372	42,776,330	800,222	16,200,966	4.40E+07	3	0.98	1.29E+08	--	
i-Butane	0.139	2.18E+08	0.051	42,776,330	800,222	2,228,050	3.24E+07	4	0.98	1.27E+08	--	
n-Butane	0.015	2.18E+08	0.193	42,776,330	800,222	8,398,485	1.17E+07	4	0.98	4.58E+07	--	
Pentane	0.028	2.18E+08	0.117	42,776,330	800,222	5,105,469	1.12E+07	5	0.98	5.49E+07	--	
Hexane	0.009	2.18E+08	0.002	42,776,330	800,222	71,562	2.05E+06	6	0.98	1.21E+07	--	
Benzene	0.001	2.18E+08	0.000	42,776,330	800,222	1,162	2.13E+05	6	0.98	1.25E+06	--	
Heptanes	0.006	2.18E+08	0.034	42,776,330	800,222	1,475,389	2.74E+06	7	0.98	1.88E+07	--	
Toluene	0.001	2.18E+08	0.005	42,776,330	800,222	214,634	3.32E+05	7	0.98	2.28E+06	--	
Octane plus	0.002	2.18E+08	0.024	42,776,330	800,222	1,038,034	1.43E+06	8	0.98	1.12E+07	--	
Ethyl benzene	0.000	2.18E+08	0.000	42,776,330	800,222	12,857	1.46E+04	8	0.98	1.14E+05	--	
Xylenes	0.000	2.18E+08	0.001	42,776,330	800,222	26,491	3.06E+04	8	0.98	2.40E+05	--	
Subtotal										6.68E+08	--	

Flare CO_2 and CH_4 Emissions

Pollutant	Volume Emitted	Density of GHG[d]	Operating Time	Conversion Factor	Emissions[d]		GWF	CO_2e Emissions
	scf/year	*lb/scf*	*hrs/yr*	*lb/ton*	*lbs/hr*	*(tons/yr)*		*MT/yr*
CO_2	6.75E+08	0.12	8760	2000	8.93E+03	3.91E+04	1	35,487.28
CH_4	5.67E+04	0.09	8760	2000	6.02E-01	2.64E+00	25	59.80
Subtotal								35,547.08

Flare N_2O Emissions

N_2O Source	Volume of gas combusted	HHV	Emission Factor	Operating Time	Conversion Factor	Emissions[e]		GWF	CO_2e Emissions
	No Gas Pipeline[f] *scf/year*	*Btu/scf*	*lbs/MMBtu*	*hrs/yr*	*lb/ton*	*lbs/hr*	*tons/yr*		*MT/yr*
Flare	2.18E+08	1,561.8	2.20E-04	8760	2000	8.55E-03	3.75E-02	310	10.53
Subtotal									10.53

TABLE 11
GREENHOUSE GAS EMISSIONS

Heater Treater, Line Heater, and Pilot Emissions

Emission Source	Firing Rate *MMBtu/hr*	Operating Time *hrs/yr*	Fuel Type	CO_2 Emissions Emission Factor[f] *kg/MMBtu*	GWF	Emissions *MT/yr*	CH_4 Emissions Emission Factor[f] *kg/MMBtu*	GWF	Emissions *MT/yr*	N_2O Emissions Emission Factor[f] *kg/MMBtu*	GWF	Emissions *MT/yr*	CO_{2e} Emissions *(MT/yr)*
Line Heater	1.000	8760	Natural Gas	53.06	1	464.81	0.001	25	0.009	0.0001	298	0.0009	465.29
Heater Treater	4.00	8760	Natural Gas	53.06	1	1859.22	0.001	25	0.035	0.0001	298	0.0035	1861.14
Pilot Gas[g]	0.01	8760	Natural Gas	53.06	1	6.10	0.001	25	0.000	0.0001	298	0.0000	6.10
Subtotal													**2,332.53**

GHG Emissions Summary

Emission Sources	CO_2e emissions
Flare (MT/yr)	3.56E+04
Heater Treater, Line Heater, andPilot (MT/yr)	2,332.53
Total Emissions (MT/yr)	3.79E+04

Notes
a Mole Fraction from laboratory reports for Treater Gas
b Mole fraction from promax for Oil tanks
c 40 CFR 98.233 (n)(4): Eqns: W-19, W-20 and W-21
d 40 CFR 98.233(v) Eqn W-36 - density at 60F and 14.7 psia
e 40 CFR 98.233(z)(6) Eqn W-40
[f] 40 CFR 98.37 Table C-1
[g] MMBtu/hr based on fuel consumption and heating value of treater gas

Sample Calculations
Methane Volume for Destruction

(217,568,911 (scf/year-Volume of Treater Gas sent to flare) x 0.01 (mole fraction of methane in treater gas)) + (0.03 (mole fraction of methane in tank vapor) x 42,776,330 scf/year- Volume of flash sent to flare)) + (0.03 (methane mole fraction in tank vapors) x 800,222 scf/year- volume of flash sent to flare))	2,834,092	scf/year

Methane Combusted Volume

2,834,092 (scf/year- methane volume for destruction) x 1 (# of carbon atoms in methane) x0.98 (default fraction of methane combsted)	2,777,410	scf/year

Methane Uncombusted Volume

2,834,092 scf/year- total volume of gas for destruction x(1-0.98)default fraction of gas combusted	56,682	scf/year
56,682 (scf/year- Uncombusted Volume) x 0.093034964(lbs/scf- methane density)/ 8760 hrs/year - operating time	0.60	lbs/hr
0.60 (lbs/hr) x 8760 (hrs/year) x 25 (global warming potential for methane) x 0.9072 (MT/ton) x / 2000 (lb/ton)	59.80	MT/year

TABLE 12
PLANNED MSS EMISSIONS

Number of events per year	12
Duration of each event (hrs)	0.5
Venting Volumetric Flow Rate (scf/hr)	1000

	Hourly Emissions (lb/hr)	*Annual Emissions (tpy)*
VOC	2.85E+01	8.55E-02
Benzene	3.59E-02	1.08E-04
Toluene	5.40E-02	1.62E-04
Ethylbenzene	9.50E-03	2.85E-05
Xylenes	2.99E-02	8.96E-05
2,2,4-Trimethylpentane	8.80E-02	2.64E-04
n-Hexane	1.47E+00	4.40E-03

Jubilee 155-2210H
ProMax Report

Bryan Research & Engineering, Inc.

ProMax® 3.2

with

TSWEET® & PROSIM®

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Simulation Report

Project: 1 - Vertical Battery with 2-Phase.pmx

Licensed to Conestoga-Rovers & Associates, Inc. and Affiliates

Client Name: EOG Wyoming
Location: Larmie County, WY
Job: Jubilee 155-2210H

ProMax Filename: C:\Users\jvanassche\Desktop\Jubilee Permit\1 - Vertical Battery with 2-Phase.pmx
ProMax Version: 3.2.12198.0
Simulation Initiated: 12/23/2014 11:12:27 AM

Bryan Research & Engineering, Inc.
Chemical Engineering Consultants
P.O. Box 4747 Bryan, Texas 77805
Office: (979) 776-5220
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http://www.bre.com/

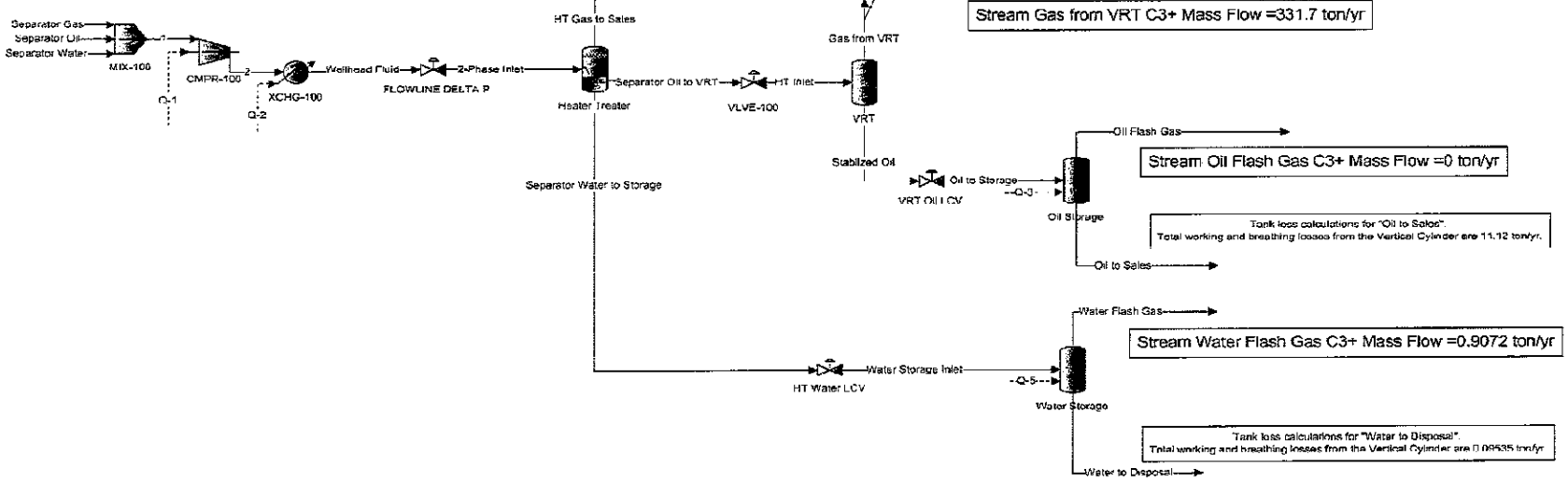
Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

Properties	HT Gas to Sales	
Temperature(Total)	143	°F
Pressure(Total)	80*	psia

Properties	Gas from VRT	
Temperature(Total)	134.2	°F
Pressure(Total)	14.7	psia

Names	Units	Oil to Sales	Water to Disposal
Std Liquid Volumetric Flow	bbl/d	247.02	479.84
True Vapor Pressure	psia	9.9251	17.287
Reid Vapor Pressure	psi	5.8896	1.0477
API Gravity		64.364	10.012

Stream Gas from VRT C3+ Mass Flow =331.7 ton/yr



Stream Oil Flash Gas C3+ Mass Flow =0 ton/yr

Tank loss calculations for "Oil to Sales".
Total working and breathing losses from the Vertical Cylinder are 11.12 ton/yr.

Stream Water Flash Gas C3+ Mass Flow =0.9072 ton/yr

Tank loss calculations for "Water to Disposal".
Total working and breathing losses from the Vertical Cylinder are 0.09535 ton/yr

Process Streams		Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas	Oil to Sales
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	VRT	Heater Treater	VLVE-100	Oil Storage	Oil Storage
	To Block:	--	--	VRT	--	--
Mole Fraction		%	%	%	%	%
Water		2.52186	3.96015	0.215432		0.0268220
H2S		0	0	0		0
Oxygen		0	0	0		0
CO2		1.57644	2.56976	0.134089		0.0161401
Nitrogen		0.0696811	0.712762	0.00535505		9.47481E-05
Methane		16.1607	58.7613	1.28311		0.0664885
Ethane		12.0064	11.3011	1.12992		0.240493
Propane		27.2131	11.6987	3.77140		1.85444
Isobutane		4.15769	1.32828	0.847870		0.577208
n-Butane		16.8126	4.90909	4.19008		3.15787
Isopentane		4.14458	1.04499	1.91933		1.73736
n-Pentane		5.54336	1.36338	3.13823		2.94155
Hexane		4.02680	0.943548	5.79044		5.93466
Heptane		1.53770	0.364658	5.55432		5.88278
Octane		0.177452	0.0433697	1.68208		1.80512
Nonane		2.46965	0.624428	61.5454		66.3764
Decane		0.00628383	0.00166360	0.395672		0.427515
Benzene		0.825869	0.191972	1.28939		1.32730
Toluene		0.0493423	0.0116071	0.220248		0.234223
Ethylbenzene		0.103532	0.0251161	1.14293		1.22792
m-Xylene		0.396110	0.0967491	5.04276		5.42275
2,2,4-Trimethylpentane		0.200877	0.0473464	0.701909		0.742881
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.0465646	0.315113	0.0526209	0	0.00605622
H2S		0	0	0	0	0
Oxygen		0	0	0	0	0
CO2		0.0291079	0.204479	0.0327522	0	0.00364433
Nitrogen		0.00128662	0.0567153	0.00130801	0	2.13935E-05
Methane		0.298397	4.67570	0.313409	0	0.0150126
Ethane		0.221690	0.899240	0.275992	0	0.0543017
Propane		0.502473	0.930882	0.921192	0	0.418719
Isobutane		0.0767691	0.105693	0.207099	0	0.130330
n-Butane		0.310434	0.390622	1.02346	0	0.713025
Isopentane		0.0765271	0.0831508	0.468810	0	0.392283
n-Pentane		0.102355	0.108486	0.766537	0	0.664182
Hexane		0.0743522	0.0750792	1.41436	0	1.34000
Heptane		0.0283926	0.0290163	1.35668	0	1.32829
Octane		0.00327653	0.00345097	0.410859	0	0.407583
Nonane		0.0456005	0.0496864	15.0329	0	14.9873
Decane		0.000116027	0.000132374	0.0966458	0	0.0965298
Benzene		0.0152492	0.0152754	0.314944	0	0.299695
Toluene		0.000911075	0.000923591	0.0537971	0	0.0528860
Ethylbenzene		0.00191165	0.00199852	0.279168	0	0.277257
m-Xylene		0.00731392	0.00769843	1.23173	0	1.22442
2,2,4-Trimethylpentane		0.00370907	0.00376741	0.171446	0	0.167737

Process Streams		Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT	Separator Water
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	VRT Oil LCV	--	--	Heater Treater	--
	To Block:	Oil Storage	MIX-100	MIX-100	VLVE-100	MIX-100
Mole Fraction		%	%	%	%	%
Water		0.0268220	0*	0*	0.215432	100*
H2S		0	0*	0*	0	0*
Oxygen		0	0*	0*	0	0*
CO2		0.0161401	2.86502*	0.1072*	0.134089	0*
Nitrogen		9.47481E-05	0.707651*	0.01*	0.00535505	0*
Methane		0.0664885	60.6878*	0.9544*	1.28311	0*
Ethane		0.240493	11.7305*	1.0561*	1.12992	0*
Propane		1.85444	13.0185*	3.4309*	3.77140	0*
Isobutane		0.577208	1.48573*	0.8099*	0.847870	0*
n-Butane		3.15787	5.63380*	4.0168*	4.19008	0*
Isopentane		1.73736	1.18922*	1.8952*	1.91933	0*
n-Pentane		2.94155	1.61297*	3.0931*	3.13823	0*
Hexane		5.93466	0.238185*	6.08*	5.79044	0*
Heptane		5.88278	0.00980348*	5.7253*	5.55432	0*
Octane		1.80512	0.00140050*	1.7123*	1.68208	0*
Nonane		66.3764	0*	62.3513*	61.5454	0*
Decane		0.427515	0.0598212*	0.3806*	0.395672	0*
Benzene		1.32730	0.0205073*	1.3741*	1.28939	0*
Toluene		0.234223	0.000600213*	0.2268*	0.220248	0*
Ethylbenzene		1.22792	0.00140050*	1.163*	1.14293	0*
m-Xylene		5.42275	0.736962*	4.8887*	5.04276	0*
2,2,4-Trimethylpentane		0.742881	0.000100036*	0.7243*	0.701909	0*
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.00605622	0*	0*	0.0526209	388.883*
H2S		0	0*	0*	0	0*
Oxygen		0	0*	0*	0	0*
CO2		0.00364433	0.225669*	0.0259314*	0.0327522	0*
Nitrogen		2.13935E-05	0.0557396*	0.00241898*	0.00130801	0*
Methane		0.0150126	4.78021*	0.230867*	0.313409	0*
Ethane		0.0543017	0.923975*	0.255468*	0.275992	0*
Propane		0.418719	1.02543*	0.829927*	0.921192	0*
Isobutane		0.130330	0.117026*	0.195913*	0.207099	0*
n-Butane		0.713025	0.443758*	0.971655*	1.02346	0*
Isopentane		0.392283	0.0936716*	0.458445*	0.468810	0*
n-Pentane		0.664182	0.127049*	0.748214*	0.766537	0*
Hexane		1.34000	0.0187611*	1.47074*	1.41436	0*
Heptane		1.32829	0.000772192*	1.38494*	1.35668	0*
Octane		0.407583	0.000110313*	0.414202*	0.410859	0*
Nonane		14.9873	0*	15.0826*	15.0329	0*
Decane		0.0965298	0.00471195*	0.0920663*	0.0966458	0*
Benzene		0.299695	0.00161530*	0.332392*	0.314944	0*
Toluene		0.0528860	4.72770E-05*	0.0548624*	0.0537971	0*
Ethylbenzene		0.277257	0.000110313*	0.281327*	0.279168	0*
m-Xylene		1.22442	0.0580483*	1.18257*	1.23173	0*
2,2,4-Trimethylpentane		0.167737	7.87951E-06*	0.175207*	0.171446	0*

Process Streams		Separator Water to Storage	Stablized Oil	Water Flash Gas	Water Storage Inlet
Composition	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Heater Treater	VRT	Water Storage	HT Water LCV
	To Block:	HT Water LCV	VRT Oil LCV	--	Water Storage
Mole Fraction		%	%	%	%
Water		99.9868	0.0268220	2.70509	99.9868
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.00369805	0.0161401	6.89324	0.00369805
Nitrogen		3.48233E-05	9.47481E-05	0.448402	3.48233E-05
Methane		0.00565158	0.0664885	63.3122	0.00565158
Ethane		0.00108377	0.240493	11.5969	0.00108377
Propane		0.000845391	1.85444	8.65836	0.000845391
Isobutane		3.81425E-05	0.577208	0.493577	3.81425E-05
n-Butane		0.000342895	3.15787	3.82187	0.000342895
Isopentane		4.00710E-05	1.73736	0.483423	4.00710E-05
n-Pentane		6.18652E-05	2.94155	0.750909	6.18652E-05
Hexane		1.64574E-05	5.93466	0.226660	1.64574E-05
Heptane		2.42441E-06	5.88278	0.0326608	2.42441E-06
Octane		4.27270E-07	1.80512	0.00600188	4.27270E-07
Nonane		8.08135E-06	66.3764	0.109181	8.08135E-06
Decane		1.14074E-08	0.427515	0.000160369	1.14074E-08
Benzene		0.000974775	1.32730	0.297329	0.000974775
Toluene		4.86444E-05	0.234223	0.0178822	4.86444E-05
Ethylbenzene		6.96290E-05	1.22792	0.0272228	6.96290E-05
m-Xylene		0.000304528	5.42275	0.116361	0.000304528
2,2,4-Trimethylpentane		1.70364E-07	0.742881	0.00252479	1.70364E-07
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		388.515	0.00605622	0.000700686	388.515
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.0143694	0.00364433	0.00178552	0.0143694
Nitrogen		0.000135312	2.13935E-05	0.000116147	0.000135312
Methane		0.0219601	0.0150126	0.0163994	0.0219601
Ethane		0.00421117	0.0543017	0.00300389	0.00421117
Propane		0.00328490	0.418719	0.00224273	0.00328490
Isobutane		0.000148209	0.130330	0.000127849	0.000148209
n-Butane		0.00133238	0.713025	0.000989957	0.00133238
Isopentane		0.000155702	0.392283	0.000125218	0.000155702
n-Pentane		0.000240387	0.664182	0.000194504	0.000240387
Hexane		6.39480E-05	1.34000	5.87106E-05	6.39480E-05
Heptane		9.42044E-06	1.32829	8.45994E-06	9.42044E-06
Octane		1.66023E-06	0.407583	1.55463E-06	1.66023E-06
Nonane		3.14014E-05	14.9873	2.82607E-05	3.14014E-05
Decane		4.43253E-08	0.0965298	4.15395E-08	4.43253E-08
Benzene		0.00378765	0.299695	7.70155E-05	0.00378765
Toluene		0.000189016	0.0528860	4.63192E-06	0.000189016
Ethylbenzene		0.000270555	0.277257	7.05137E-06	0.000270555
m-Xylene		0.00118329	1.22442	3.01403E-05	0.00118329
2,2,4-Trimethylpentane		6.61977E-07	0.167737	6.53983E-07	6.61977E-07

Process Streams		Water to Disposal	Wellhead Fluid	1	2	2-Phase Inlet
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Water Storage	XCHG-100	MIX-100	CMPR-100	FLOWLINE DELTA P
	To Block:	--	FLOWLINE DELTA P	CMPR-100	XCHG-100	Heater Treater
Mole Fraction		%	%	%	%	%
Water		99.9933	92.3823	92.3823	92.3823	92.3823
H2S		0	0	0	0	0
Oxygen		0	0	0	0	0
CO2		0.00323876	0.0597698	0.0597698	0.0597698	0.0597698
Nitrogen		4.93244E-06	0.0138161	0.0138161	0.0138161	0.0138161
Methane		0.00143118	1.19042	1.19042	1.19042	1.19042
Ethane		0.000310722	0.280187	0.280187	0.280187	0.280187
Propane		0.000268229	0.440756	0.440756	0.440756	0.440756
Isobutane		5.24023E-06	0.0743414	0.0743414	0.0743414	0.0743414
n-Butane		8.81293E-05	0.336243	0.336243	0.336243	0.336243
Isopentane		7.84580E-06	0.131160	0.131160	0.131160	0.131160
n-Pentane		1.18091E-05	0.207926	0.207926	0.207926	0.207926
Hexane		1.34798E-06	0.353843	0.353843	0.353843	0.353843
Heptane		2.47207E-07	0.329187	0.329187	0.329187	0.329187
Octane		2.71769E-08	0.0984233	0.0984233	0.0984233	0.0984233
Nonane		8.03192E-07	3.58301	3.58301	3.58301	3.58301
Decane		7.16980E-10	0.0229905	0.0229905	0.0229905	0.0229905
Benzene		0.000955018	0.0793462	0.0793462	0.0793462	0.0793462
Toluene		4.74555E-05	0.0130443	0.0130443	0.0130443	0.0130443
Ethylbenzene		6.78188E-05	0.0668578	0.0668578	0.0668578	0.0668578
m-Xylene		0.000296791	0.294718	0.294718	0.294718	0.294718
2,2,4-Trimethylpentane		2.05757E-09	0.0416237	0.0416237	0.0416237	0.0416237
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		388.514	388.883	388.883	388.883	388.883
H2S		0	0	0	0	0
Oxygen		0	0	0	0	0
CO2		0.0125839	0.251601	0.251601	0.251601	0.251601
Nitrogen		1.91645E-05	0.0581586	0.0581586	0.0581586	0.0581586
Methane		0.00556071	5.01107	5.01107	5.01107	5.01107
Ethane		0.00120728	1.17944	1.17944	1.17944	1.17944
Propane		0.00104218	1.85536	1.85536	1.85536	1.85536
Isobutane		2.03604E-05	0.312940	0.312940	0.312940	0.312940
n-Butane		0.000342418	1.41541	1.41541	1.41541	1.41541
Isopentane		3.04841E-05	0.552116	0.552116	0.552116	0.552116
n-Pentane		4.58831E-05	0.875263	0.875263	0.875263	0.875263
Hexane		5.23743E-06	1.48950	1.48950	1.48950	1.48950
Heptane		9.60498E-07	1.38571	1.38571	1.38571	1.38571
Octane		1.05593E-07	0.414312	0.414312	0.414312	0.414312
Nonane		3.12073E-06	15.0826	15.0826	15.0826	15.0826
Decane		2.78575E-09	0.0967783	0.0967783	0.0967783	0.0967783
Benzene		0.00371063	0.334007	0.334007	0.334007	0.334007
Toluene		0.000184384	0.0549097	0.0549097	0.0549097	0.0549097
Ethylbenzene		0.000263503	0.281437	0.281437	0.281437	0.281437
m-Xylene		0.00115315	1.24061	1.24061	1.24061	1.24061
2,2,4-Trimethylpentane		7.99449E-09	0.175214	0.175214	0.175214	0.175214

Process Streams	Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas	Oil to Sales
Mass Fraction	%	%	%	%	%
Water	0.938897	2.56946	0.0354633		0.00422267
H2S	0	0	0		0
Oxygen	0	0	0		0
CO2	1.43377	4.07313	0.0539222		0.00620737
Nitrogen	0.0403400	0.719117	0.00137075		2.31948E-05
Methane	5.35779	33.9509	0.188089		0.00932121
Ethane	7.46083	12.2385	0.310453		0.0631942
Propane	24.7987	18.5790	1.51959		0.714599
Isobutane	4.99401	2.78049	0.450297		0.293176
n-Butane	20.1944	10.2762	2.22532		1.60395
Isopentane	6.17967	2.71537	1.26534		1.09540
n-Pentane	8.26527	3.54272	2.06891		1.85464
Hexane	7.17130	2.92844	4.55955		4.46924
Heptane	3.18421	1.31599	5.08552		5.15126
Octane	0.418900	0.178423	1.75569		1.80192
Nonane	6.54584	2.88434	72.1271		74.3949
Decane	0.0184769	0.00852485	0.514413		0.531563
Benzene	1.33316	0.540062	0.920302		0.906025
Toluene	0.0939541	0.0385171	0.185430		0.188593
Ethylbenzene	0.227150	0.0960335	1.10874		1.13922
m-Xylene	0.869065	0.369928	4.89190		5.03101
2,2,4-Trimethylpentane	0.474199	0.194783	0.732627		0.741564
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0.838875	5.67685	0.947979	0	0.109105
H2S	0	0	0	0	0
Oxygen	0	0	0	0	0
CO2	1.28102	8.99902	1.44141	0	0.160385
Nitrogen	0.0360425	1.58879	0.0366418	0	0.000599303
Methane	4.78701	75.0098	5.02785	0	0.240840
Ethane	6.66602	27.0393	8.29882	0	1.63280
Propane	22.1569	41.0478	40.6205	0	18.4637
Isobutane	4.46199	6.14309	12.0370	0	7.57504
n-Butane	18.0431	22.7038	59.4857	0	41.4426
Isopentane	5.52134	5.99923	33.8241	0	28.3027
n-Pentane	7.38476	7.82714	55.3047	0	47.9199
Hexane	6.40733	6.46998	121.883	0	115.475
Heptane	2.84499	2.90749	135.942	0	133.097
Octane	0.374273	0.394200	46.9319	0	46.5576
Nonane	5.84850	6.37254	1928.05	0	1922.20
Decane	0.0165085	0.0188345	13.7509	0	13.7344
Benzene	1.19114	1.19319	24.6009	0	23.4097
Toluene	0.0839450	0.0850982	4.95678	0	4.87283
Ethylbenzene	0.202951	0.212172	29.6379	0	29.4350
m-Xylene	0.776482	0.817304	130.767	0	129.990
2,2,4-Trimethylpentane	0.423682	0.430345	19.5841	0	19.1604

Process Streams	Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT	Separator Water
Mass Fraction	%	%	%	%	%
Water	0.00422267	0*	0*	0.0354633	100*
H2S	0	0*	0*	0	0*
Oxygen	0	0*	0*	0	0*
CO2	0.00620737	4.54782*	0.0427281*	0.0539222	0*
Nitrogen	2.31948E-05	0.715015*	0.00253710*	0.00137075	0*
Methane	0.00932121	35.1158*	0.138667*	0.188089	0*
Ethane	0.0631942	12.7223*	0.287605*	0.310453	0*
Propane	0.714599	20.7056*	1.37017*	1.51959	0*
Isobutane	0.293176	3.11466*	0.426330*	0.450297	0*
n-Butane	1.60395	11.8106*	2.11444*	2.22532	0*
Isopentane	1.09540	3.09472*	1.23839*	1.26534	0*
n-Pentane	1.85464	4.19745*	2.02114*	2.06891	0*
Hexane	4.46924	0.740332*	4.74525*	4.55955	0*
Heptane	5.15126	0.0354312*	5.19573*	5.08552	0*
Octane	1.80192	0.00577014*	1.77144*	1.75569	0*
Nonane	74.3949	0*	72.4257*	72.1271	0*
Decane	0.531563	0.306997*	0.490445*	0.514413	0*
Benzene	0.906025	0.0577770*	0.972093*	0.920302	0*
Toluene	0.188593	0.00199469*	0.189259*	0.185430	0*
Ethylbenzene	1.13922	0.00536282*	1.11824*	1.10874	0*
m-Xylene	5.03101	2.82199*	4.70053*	4.89190	0*
2,2,4-Trimethylpentane	0.741564	0.000412153*	0.749317*	0.732627	0*
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0.109105	0*	0*	0.947979	7005.83*
H2S	0	0*	0*	0	0*
Oxygen	0	0*	0*	0	0*
CO2	0.160385	9.93158*	1.14123*	1.44141	0*
Nitrogen	0.000599303	1.56146*	0.0677638*	0.0366418	0*
Methane	0.240840	76.6863*	3.70368*	5.02785	0*
Ethane	1.63280	27.7830*	7.68169*	8.29882	0*
Propane	18.4637	45.2170*	36.5962*	40.6205	0*
Isobutane	7.57504	6.80184*	11.3869*	12.0370	0*
n-Butane	41.4426	25.7922*	56.4747*	59.4857	0*
Isopentane	28.3027	6.75829*	33.0762*	33.8241	0*
n-Pentane	47.9199	9.16644*	53.9827*	55.3047	0*
Hexane	115.475	1.61675*	126.741*	121.883	0*
Heptane	133.097	0.0773751*	138.773*	135.942	0*
Octane	46.5576	0.0126009*	47.3136*	46.9319	0*
Nonane	1922.20	0*	1934.43*	1928.05	0*
Decane	13.7344	0.670424*	13.0993*	13.7509	0*
Benzene	23.4097	0.126174*	25.9637*	24.6009	0*
Toluene	4.87283	0.00435603*	5.05494*	4.95678	0*
Ethylbenzene	29.4350	0.0117114*	29.8671*	29.6379	0*
m-Xylene	129.990	6.16270*	125.547*	130.767	0*
2,2,4-Trimethylpentane	19.1604	0.000900065*	20.0136*	19.5841	0*

Process Streams	Separator Water to Storage	Stablized Oil	Water Flash Gas	Water Storage Inlet
Mass Fraction	%	%	%	%
Water	99.9735	0.00422267	1.92723	99.9735
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.00903278	0.00620737	11.9972	0.00903278
Nitrogen	5.41424E-05	2.31948E-05	0.496757	5.41424E-05
Methane	0.00503202	0.00932121	40.1670	0.00503202
Ethane	0.00180867	0.0631942	13.7903	0.00180867
Propane	0.00206897	0.714599	15.0988	0.00206897
Isobutane	0.000123042	0.293176	1.13451	0.000123042
n-Butane	0.00110613	1.60395	8.78474	0.00110613
Isopentane	0.000160458	1.09540	1.37933	0.000160458
n-Pentane	0.000247729	1.85464	2.14253	0.000247729
Hexane	7.87130E-05	4.46924	0.772449	7.87130E-05
Heptane	1.34829E-05	5.15126	0.129424	1.34829E-05
Octane	2.70881E-06	1.80192	0.0271127	2.70881E-06
Nonane	5.75254E-05	74.3949	0.553777	5.75254E-05
Decane	9.00818E-08	0.531563	0.000902362	9.00818E-08
Benzene	0.00422593	0.906025	0.918471	0.00422593
Toluene	0.000248757	0.188593	0.0651587	0.000248757
Ethylbenzene	0.000410273	1.13922	0.114294	0.000410273
m-Xylene	0.00179436	5.03101	0.488539	0.00179436
2,2,4-Trimethylpentane	1.08007E-06	0.741564	0.0114054	1.08007E-06
Mass Flow	lb/h	lb/h	lb/h	lb/h
Water	6999.20	0.109105	0.0126231	6999.20
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.632390	0.160385	0.0785798	0.632390
Nitrogen	0.00379054	0.000599303	0.00325367	0.00379054
Methane	0.352295	0.240840	0.263087	0.352295
Ethane	0.126626	1.63280	0.0903241	0.126626
Propane	0.144850	18.4637	0.0988945	0.144850
Isobutane	0.00861423	7.57504	0.00743084	0.00861423
n-Butane	0.0774406	41.4426	0.0575385	0.0774406
Isopentane	0.0112337	28.3027	0.00903435	0.0112337
n-Pentane	0.0173436	47.9199	0.0140332	0.0173436
Hexane	0.00551074	115.475	0.00505941	0.00551074
Heptane	0.000943946	133.097	0.000847703	0.000943946
Octane	0.000189645	46.5576	0.000177583	0.000189645
Nonane	0.00402739	1922.20	0.00362714	0.00402739
Decane	6.30668E-06	13.7344	5.91031E-06	6.30668E-06
Benzene	0.295860	23.4097	0.00601583	0.295860
Toluene	0.0174156	4.87283	0.000426778	0.0174156
Ethylbenzene	0.0287234	29.4350	0.000748608	0.0287234
m-Xylene	0.125624	129.990	0.00319984	0.125624
2,2,4-Trimethylpentane	7.56167E-05	19.1604	7.47035E-05	7.56167E-05

Process Streams	Water to Disposal	Wellhead Fluid	1	2	2-Phase Inlet
Mass Fraction	%	%	%	%	%
Water	99.9827	70.8008	70.8008	70.8008	70.8008
H2S	0	0	0	0	0
Oxygen	0	0	0	0	0
CO2	0.00791112	0.111902	0.111902	0.111902	0.111902
Nitrogen	7.66903E-06	0.0164649	0.0164649	0.0164649	0.0164649
Methane	0.00127432	0.812420	0.812420	0.812420	0.812420
Ethane	0.000518567	0.358406	0.358406	0.358406	0.358406
Propane	0.000656468	0.826803	0.826803	0.826803	0.826803
Isobutane	1.69046E-05	0.183815	0.183815	0.183815	0.183815
n-Butane	0.000284299	0.831389	0.831389	0.831389	0.831389
Isopentane	3.14180E-05	0.402567	0.402567	0.402567	0.402567
n-Pentane	4.72889E-05	0.638185	0.638185	0.638185	0.638185
Hexane	6.44731E-06	1.29719	1.29719	1.29719	1.29719
Heptane	1.37483E-06	1.40322	1.40322	1.40322	1.40322
Octane	1.72301E-07	0.478279	0.478279	0.478279	0.478279
Nonane	5.71751E-06	19.5493	19.5493	19.5493	19.5493
Decane	5.66199E-09	0.139157	0.139157	0.139157	0.139157
Benzene	0.00414039	0.263664	0.263664	0.263664	0.263664
Toluene	0.000242684	0.0511292	0.0511292	0.0511292	0.0511292
Ethylbenzene	0.000399617	0.301955	0.301955	0.301955	0.301955
m-Xylene	0.00174882	1.33106	1.33106	1.33106	1.33106
2,2,4-Trimethylpentane	1.30449E-08	0.202266	0.202266	0.202266	0.202266
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h
Water	6999.19	7005.83	7005.83	7005.83	7005.83
H2S	0	0	0	0	0
Oxygen	0	0	0	0	0
CO2	0.553810	11.0728	11.0728	11.0728	11.0728
Nitrogen	0.000536863	1.62922	1.62922	1.62922	1.62922
Methane	0.0892074	80.3899	80.3899	80.3899	80.3899
Ethane	0.0363017	35.4647	35.4647	35.4647	35.4647
Propane	0.0459554	81.8132	81.8132	81.8132	81.8132
Isobutane	0.00118339	18.1887	18.1887	18.1887	18.1887
n-Butane	0.0199021	82.2669	82.2669	82.2669	82.2669
Isopentane	0.00219939	39.8345	39.8345	39.8345	39.8345
n-Pentane	0.00331041	63.1492	63.1492	63.1492	63.1492
Hexane	0.000451337	128.358	128.358	128.358	128.358
Heptane	9.62437E-05	138.851	138.851	138.851	138.851
Octane	1.20618E-05	47.3262	47.3262	47.3262	47.3262
Nonane	0.000400249	1934.43	1934.43	1934.43	1934.43
Decane	3.96362E-07	13.7698	13.7698	13.7698	13.7698
Benzene	0.289844	26.0899	26.0899	26.0899	26.0899
Toluene	0.0169888	5.05929	5.05929	5.05929	5.05929
Ethylbenzene	0.0279748	29.8788	29.8788	29.8788	29.8788
m-Xylene	0.122425	131.710	131.710	131.710	131.710
2,2,4-Trimethylpentane	9.13199E-07	20.0145	20.0145	20.0145	20.0145

Process Streams		Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas	Oil to Sales
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	VRT	Heater Treater	VLVE-100	Oil Storage	Oil Storage
	To Block:	--	--	VRT	--	--
Property	Units					
Temperature	°F	134.195	143	107.375*	69.4*	69.4
Pressure	psia	14.7	80*	2.20244	14.7	14.7
Mole Fraction Vapor	%	100	100	20.4181		0
Mole Fraction Light Liquid	%	0	0	79.5819		100
Mole Fraction Heavy Liquid	%	0	0	0		0
Molecular Weight	lb/lbmol	48.3888	27.7658	109.439		114.431
Mass Density	lb/ft^3	0.113236	0.351728	0.194125		44.7880
Molar Flow	lbmol/h	1.84644	7.95711	24.4257	0	22.5793
Mass Flow	lb/h	89.3468	220.936	2673.13	0	2583.78
Vapor Volumetric Flow	ft^3/h	789.034	628.145	13770.2		57.6891
Liquid Volumetric Flow	gpm	98.3730	78.3141	1716.80		7.19241
Std Vapor Volumetric Flow	MMSCFD	0.0168167	0.0724704	0.222461	0	0.205644
Std Liquid Volumetric Flow	sgpm	0.331396	1.04759	7.53606	0	7.20466
Compressibility		0.985659	0.976451	0.204039		0.00661490
Specific Gravity		1.67073	0.958679			0.718113
API Gravity						64.3639
Enthalpy	Btu/h	-92775.2	-338034	-2.26529E+06	0	-2.25766E+06
Mass Enthalpy	Btu/lb	-1038.37	-1530.01	-847.432		-873.780
Mass Cp	Btu/(lb*°F)	0.436180	0.476746	0.496822		0.488968
Ideal Gas CpCv Ratio		1.10452	1.18042	1.04719		1.04786
Dynamic Viscosity	cP	0.00910227	0.0113140			0.567620
Kinematic Viscosity	cSt	5.01817	2.00811			0.791180
Thermal Conductivity	Btu/(h*ft*°F)	0.0127025	0.0180224			0.0743129
Surface Tension	lbf/ft					0.001478077
Net Ideal Gas Heating Value	Btu/ft^3	2456.10	1384.52	5519.58		5770.09
Net Liquid Heating Value	Btu/lb	19103.2	18799.3	18980.1		18975.8
Gross Ideal Gas Heating Value	Btu/ft^3	2665.54	1518.10	5941.63		6209.53
Gross Liquid Heating Value	Btu/lb	20745.8	20625.1	20443.5		20433.1

Process Streams		Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT	Separator Water
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	VRT Oil LCV	--	--	Heater Treater	--
	To Block:	Oil Storage	MIX-100	MIX-100	VLVE-100	MIX-100
Property	Units					
Temperature	°F	134.195	143*	143*	143	143*
Pressure	psia	14.7*	68*	68*	80	68*
Mole Fraction Vapor	%	0	100	0	0	0
Mole Fraction Light Liquid	%	100	0	100	100	100
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Molecular Weight	lb/lbmol	114.431	27.7249	110.415	109.439	18.0153
Mass Density	lb/ft^3	42.8804	0.297380	42.3075	42.2880	61.3007
Molar Flow	lbmol/h	22.5793	7.87671	24.1898	24.4257	388.883
Mass Flow	lb/h	2583.78	218.381	2670.91	2673.13	7005.83
Vapor Volumetric Flow	ft^3/h	60.2556	734.350	63.1309	63.2124	114.266
Liquid Volumetric Flow	gpm	7.51238	91.5554	7.87086	7.88103	14.2487
Std Vapor Volumetric Flow	MMSCFD	0.205644	0.0717382*	0.220312	0.222461	3.54180
Std Liquid Volumetric Flow	sgpm	7.20466	1.05806	7.51902*	7.53606	14.0052*
Compressibility		0.00615534	0.980220	0.0274394	0.0320111	0.00308987
Specific Gravity		0.687527	0.957266	0.678342	0.678029	0.982871
API Gravity		64.3639		65.4980	65.5407	10.0053
Enthalpy	Btu/h	-2.17252E+06	-311512	-2.25674E+06	-2.26529E+06	-4.73356E+07
Mass Enthalpy	Btu/lb	-840.829	-1426.46	-844.931	-847.432	-6756.60
Mass Cp	Btu/(lb*°F)	0.528653	0.473643	0.536742	0.537183	0.984186
Ideal Gas CpCv Ratio		1.04332	1.18150	1.04432	1.04474	1.32242
Dynamic Viscosity	cP	0.378220	0.0112243	0.340412	0.336479	0.462417
Kinematic Viscosity	cSt	0.550637	2.35628	0.502304	0.496730	0.470921
Thermal Conductivity	Btu/(h*ft*°F)	0.0684303	0.0180998	0.0670058	0.0669216	0.375148
Surface Tension	lbf/ft	0.00124057?		0.00116059?	0.00115557?	0.00449638
Net Ideal Gas Heating Value	Btu/ft^3	5770.09	1413.91	5571.03	5519.58	0
Net Liquid Heating Value	Btu/lb	18975.8	19254.6	18988.0	18980.1	-1059.76
Gross Ideal Gas Heating Value	Btu/ft^3	6209.53	1548.28	5996.83	5941.63	50.31
Gross Liquid Heating Value	Btu/lb	20433.1	21093.8	20451.4	20443.5	0

Process Streams		Separator Water to Storage	Stablized Oil	Water Flash Gas	Water Storage Inlet
Properties	**Status:**	**Solved**	**Solved**	**Solved**	**Solved**
Phase: **Total**	**From Block:**	**Heater Treater**	**VRT**	**Water Storage**	**HT Water LCV**
	To Block:	**HT Water LCV**	**VRT Oil LCV**	**--**	**Water Storage**
Property	**Units**				
Temperature	°F	143	134.195	69.4*	143.139
Pressure	psia	80	14.7*	13.2	13.2*
Mole Fraction Vapor	%	0	0	100	0.0111342
Mole Fraction Light Liquid	%	100	100	0	99.9889
Mole Fraction Heavy Liquid	%	0	0	0	0
Molecular Weight	lb/lbmol	18.0177	114.431	25.2865	18.0177
Mass Density	lb/ft^3	61.2963	42.8804	0.0590541	51.7337
Molar Flow	lbmol/h	388.566	22.5793	0.0259025	388.566
Mass Flow	lb/h	7001.06	2583.78	0.654983	7001.06
Vapor Volumetric Flow	ft^3/h	114.217	60.2556	11.0912	135.329
Liquid Volumetric Flow	gpm	14.2400	7.51238	1.38280	16.8722
Std Vapor Volumetric Flow	MMSCFD	3.53892	0.205644	0.000236910	3.53892
Std Liquid Volumetric Flow	sgpm	13.9986	7.20466	0.00322481	13.9986
Compressibility		0.00363589	0.00615534	0.995486	0.000710649
Specific Gravity		0.982800	0.687527	0.873074	
API Gravity		10.0140	64.3639		
Enthalpy	Btu/h	-4.72941E+07	-2.17252E+06	-1198.99	-4.72941E+07
Mass Enthalpy	Btu/lb	-6755.29	-840.829	-1830.56	-6755.29
Mass Cp	Btu/(lb*°F)	0.984193	0.528653	0.427734	0.984235
Ideal Gas CpCv Ratio		1.32239	1.04332	1.22596	1.32238
Dynamic Viscosity	cP	0.462199	0.378220	0.0105340	
Kinematic Viscosity	cSt	0.470733	0.550637	11.1359	
Thermal Conductivity	Btu/(h*ft*°F)	0.374897	0.0684303	0.0155231	
Surface Tension	lbf/ft	0.00449566	0.00124057?		
Net Ideal Gas Heating Value	Btu/ft^3	0.160801	5770.09	1177.36	0.160801
Net Liquid Heating Value	Btu/lb	-1056.12	18975.8	17567.7	-1056.12
Gross Ideal Gas Heating Value	Btu/ft^3	50.4771	6209.53	1294.24	50.4771
Gross Liquid Heating Value	Btu/lb	3.63058	20433.1	19321.8	3.63058

Process Streams		Water to Disposal	Wellhead Fluid	1	2	2-Phase Inlet
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	Water Storage	XCHG-100	MIX-100	CMPR-100	FLOWLINE DELTA P
	To Block:	--	FLOWLINE DELTA P	CMPR-100	XCHG-100	Heater Treater
Property	**Units**					
Temperature	°F	69.4	143*	141.849	142.557	143
Pressure	psia	13.2	80	68	80*	80
Mole Fraction Vapor	%	0	1.89028	1.98981	1.88655	1.89028
Mole Fraction Light Liquid	%	100	5.80254	5.71917	5.80515	5.80254
Mole Fraction Heavy Liquid	%	0	92.3072	92.2910	92.3083	92.3072
Molecular Weight	lb/lbmol	18.0172	23.5067	23.5067	23.5067	23.5067
Mass Density	lb/ft^3	62.2814	12.2833	10.3625	12.3094	12.2833
Molar Flow	lbmol/h	388.540	420.949	420.949	420.949	420.949
Mass Flow	lb/h	7000.40	9895.12	9895.12	9895.12	9895.12
Vapor Volumetric Flow	ft^3/h	112.400	805.574	954.897	803.869	805.574
Liquid Volumetric Flow	gpm	14.0134	100.435	119.052	100.223	100.435
Std Vapor Volumetric Flow	MMSCFD	3.53868	3.83385	3.83385	3.83385	3.83385
Std Liquid Volumetric Flow	sgpm	13.9954	22.5822	22.5822	22.5822	22.5822
Compressibility		0.000672551	0.0236713	0.0238958	0.0236386	0.0236713
Specific Gravity		0.998595				
API Gravity		10.0124				
Enthalpy	Btu/h	-4.78004E+07	-4.98975E+07	-4.99038E+07	-4.99014E+07	-4.98975E+07
Mass Enthalpy	Btu/lb	-6828.23	-5042.63	-5043.27	-5043.03	-5042.63
Mass Cp	Btu/(lb*°F)	0.983160	0.852105	0.851419	0.852003	0.852105
Ideal Gas CpCv Ratio		1.32586	1.23448	1.23463	1.23454	1.23448
Dynamic Viscosity	cP	1.00310				
Kinematic Viscosity	cSt	1.00546				
Thermal Conductivity	Btu/(h*ft*°F)	0.346710				
Surface Tension	lbf/ft	0.00504668?				
Net Ideal Gas Heating Value	Btu/ft^3	0.0823218	346.595	346.595	346.595	346.595
Net Liquid Heating Value	Btu/lb	-1057.86	4799.91	4799.91	4799.91	4799.91
Gross Ideal Gas Heating Value	Btu/ft^3	50.3941	420.056	420.056	420.056	420.056
Gross Liquid Heating Value	Btu/lb	1.82311	5985.82	5985.82	5985.82	5985.82

Jubilee 156-2227H
ProMax Report

Bryan Research & Engineering, Inc.

ProMax® 3.2

with

TSWEET® & PROSIM®

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Simulation Report

Project: 1 - Vertical Battery with 2-Phase.pmx

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Client Name: EOG Wyoming
Location: Larmie County, WY
Job: Jubilee 156-2227H

ProMax Filename: C:\Users\jvanassche\Desktop\Jubilee Permit\1 - Vertical Battery with 2-Phase.pmx
ProMax Version: 3.2.12198.0
Simulation Initiated: 12/23/2014 10:58:23 AM

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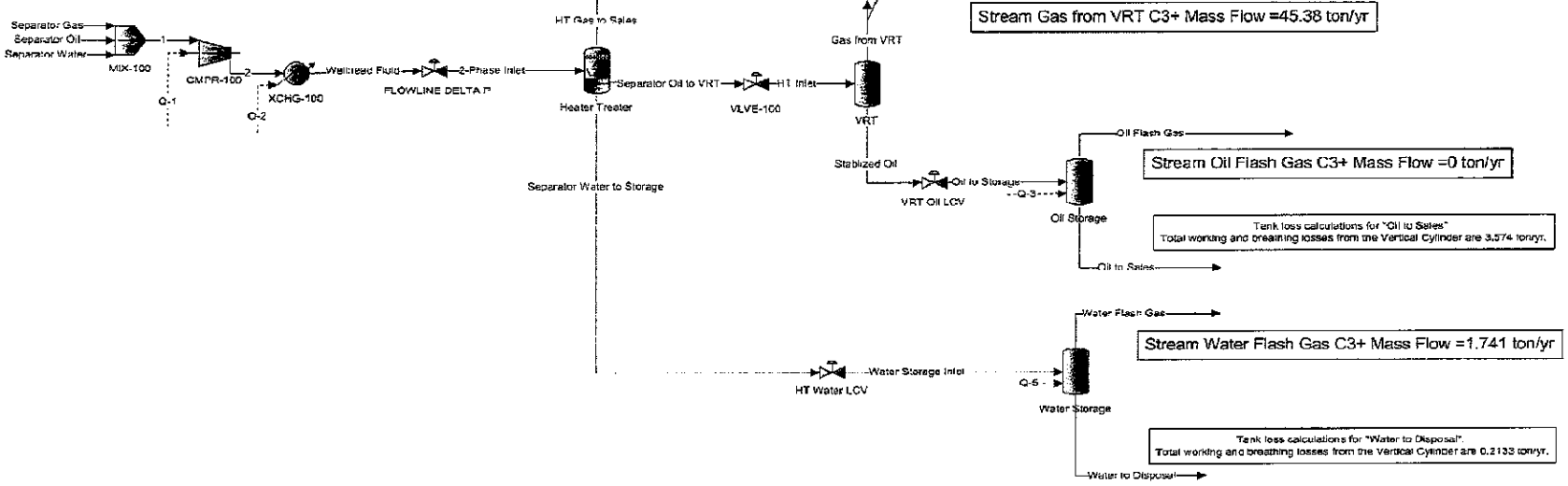
Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

Properties	HT Gas to Sales	
Temperature(Total)	143	°F
Pressure(Total)	80°	psia

Properties	Gas from VRT	
Temperature(Total)	136	°F
Pressure(Total)	14.7	psia

Names	Units	Oil to Sales	Water to Disposal
Std Liquid Volumetric Flow	bbl/d	42.546	1040.1
True Vapor Pressure	psia	9.842	17.307
Reid Vapor Pressure	psi	5.3521	1.0549
API Gravity		64.058	10.009

Stream Gas from VRT C3+ Mass Flow =45.38 ton/yr



Stream Oil Flash Gas C3+ Mass Flow =0 ton/yr

Tank loss calculations for "Oil to Sales"
Total working and breathing losses from the Vertical Cylinder are 3.574 ton/yr.

Stream Water Flash Gas C3+ Mass Flow =1.741 ton/yr

Tank loss calculations for "Water to Disposal"
Total working and breathing losses from the Vertical Cylinder are 0.2133 ton/yr.

Process Streams		Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas
Composition	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	VRT	Heater Treater	VLVE-100	Oil Storage
	To Block:	--	--	VRT	--
Mole Fraction		%	%	%	%
Water		2.97108	3.96762	0.217279	
H2S		0	0	0	
Oxygen		0	0	0	
CO2		4.47990	6.25033	0.325576	
Nitrogen		0.117255	1.01554	0.00755719	
Methane		20.1807	62.2192	1.35237	
Ethane		8.97285	7.34547	0.733178	
Propane		22.0128	8.59355	2.76808	
Isobutane		3.84344	1.14528	0.732103	
n-Butane		16.5729	4.55622	3.89925	
Isopentane		4.50394	1.08900	2.00920	
n-Pentane		6.29857	1.48964	3.44774	
Hexane		4.17737	0.947999	5.85124	
Heptane		1.55011	0.355376	5.45859	
Octane		0.182329	0.0428879	1.68184	
Nonane		2.56853	0.622485	61.9432	
Decane		0.00826462	0.00208317	0.502391	
Benzene		0.726364	0.163433	1.10849	
Toluene		0.0481256	0.0109380	0.209680	
Ethylbenzene		0.105294	0.0245796	1.13230	
m-Xylene		0.478390	0.112316	5.93162	
2,2,4-Trimethylpentane		0.201832	0.0460625	0.688272	
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.00779393	0.133005	0.00902098	0
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.0117520	0.209527	0.0135172	0
Nitrogen		0.000307592	0.0340435	0.000313759	0
Methane		0.0529393	2.08575	0.0561475	0
Ethane		0.0235382	0.246239	0.0304400	0
Propane		0.0577454	0.288078	0.114925	0
Isobutane		0.0100824	0.0383928	0.0303954	0
n-Butane		0.0434752	0.152736	0.161889	0
Isopentane		0.0118151	0.0365060	0.0834180	0
n-Pentane		0.0165228	0.0499366	0.143143	0
Hexane		0.0109584	0.0317794	0.242932	0
Heptane		0.00406634	0.0119131	0.226629	0
Octane		0.000478298	0.00143771	0.0698266	0
Nonane		0.00673793	0.0208673	2.57176	0
Decane		2.16803E-05	6.98331E-05	0.0208582	0
Benzene		0.00190545	0.00547869	0.0460223	0
Toluene		0.000126246	0.000366670	0.00870547	0
Ethylbenzene		0.000276213	0.000823971	0.0470108	0
m-Xylene		0.00125495	0.00376514	0.246269	0
2,2,4-Trimethylpentane		0.000529460	0.00154413	0.0285756	0

Process Streams		Oil to Sales	Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Oil Storage	VRT Oil LCV	--	--	Heater Treater
	To Block:	--	Oil Storage	MIX-100	MIX-100	VLVE-100
Mole Fraction		%	%	%	%	%
Water		0.0315481	0.0315481	0*	0*	0.217279
H2S		0	0	0*	0*	0
Oxygen		0	0	0*	0*	0
CO2		0.0453857	0.0453857	8.76771*	0.1072*	0.325576
Nitrogen		0.000158556	0.000158556	1.02360*	0.01*	0.00755719
Methane		0.0824833	0.0824833	64.1289*	0.9544*	1.35237
Ethane		0.177450	0.177450	7.11141*	1.0561*	0.733178
Propane		1.47012	1.47012	7.91221*	3.4309*	2.76808
Isobutane		0.522257	0.522257	1.05430*	0.8099*	0.732103
n-Butane		3.04447	3.04447	4.47740*	4.0168*	3.89925
Isopentane		1.84094	1.84094	1.23550*	1.8952*	2.00920
n-Pentane		3.25546	3.25546	1.93750*	3.0931*	3.44774
Hexane		5.96414	5.96414	0.656401*	6.08*	5.85124
Heptane		5.72220	5.72220	0.0147000*	5.7253*	5.45859
Octane		1.78298	1.78298	0.00200000*	1.7123*	1.68184
Nonane		65.9478	65.9478	0.000100000*	62.3513*	61.9432
Decane		0.535718	0.535718	0.152000*	0.3806*	0.502391
Benzene		1.13427	1.13427	0.0414000*	1.3741*	1.10849
Toluene		0.220576	0.220576	0.000900001*	0.2268*	0.209680
Ethylbenzene		1.20157	1.20157	0.00160000*	1.163*	1.13230
m-Xylene		6.29942	6.29942	1.48230*	4.8887*	5.93162
2,2,4-Trimethylpentane		0.721080	0.721080	0.000100000*	0.7243*	0.688272
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.00122705	0.00122705	0*	0*	0.00902098
H2S		0	0	0*	0*	0
Oxygen		0	0	0*	0*	0
CO2		0.00176526	0.00176526	0.294301*	0.00445759*	0.0135172
Nitrogen		6.16700E-06	6.16700E-06	0.0343587*	0.000415820*	0.000313759
Methane		0.00320816	0.00320816	2.15258*	0.0396858*	0.0561475
Ethane		0.00690185	0.00690185	0.238705*	0.0439147*	0.0304400
Propane		0.0571798	0.0571798	0.265585*	0.142664*	0.114925
Isobutane		0.0203130	0.0203130	0.0353892*	0.0336772*	0.0303954
n-Butane		0.118414	0.118414	0.150291*	0.167026*	0.161889
Isopentane		0.0716029	0.0716029	0.0414715*	0.0788061*	0.0834180
n-Pentane		0.126620	0.126620	0.0650352*	0.128617*	0.143143
Hexane		0.231973	0.231973	0.0220331*	0.252818*	0.242932
Heptane		0.222563	0.222563	0.000493428*	0.238069*	0.226629
Octane		0.0693483	0.0693483	6.71331E-05*	0.0712008*	0.0698266
Nonane		2.56502	2.56502	3.35665E-06*	2.59269*	2.57176
Decane		0.0208366	0.0208366	0.00510211*	0.0158261*	0.0208582
Benzene		0.0441169	0.0441169	0.00138965*	0.0571378*	0.0460223
Toluene		0.00857922	0.00857922	3.02099E-05*	0.00943079*	0.00870547
Ethylbenzene		0.0467345	0.0467345	5.37065E-05*	0.0483598*	0.0470108
m-Xylene		0.245014	0.245014	0.0497557*	0.203282*	0.246269
2,2,4-Trimethylpentane		0.0280462	0.0280462	3.35665E-06*	0.0301178*	0.0285756

Process Streams		Separator Water	Separator Water to Storage	Stablized Oil
Composition	Status:	Solved	Solved	Solved
Phase: Total	From Block:	--	Heater Treater	VRT
	To Block:	MIX-100	HT Water LCV	VRT Oil LCV
Mole Fraction		%	%	%
Water		100*	99.9819	0.0315481
H2S		0*	0	0
Oxygen		0*	0	0
CO2		0*	0.00898999	0.0453857
Nitrogen		0*	4.95398E-05	0.000158556
Methane		0*	0.00598113	0.0824833
Ethane		0*	0.000705391	0.177450
Propane		0*	0.000622839	1.47012
Isobutane		0*	3.30296E-05	0.522257
n-Butane		0*	0.000319652	3.04447
Isopentane		0*	4.19886E-05	1.84094
n-Pentane		0*	6.79900E-05	3.25546
Hexane		0*	1.66643E-05	5.96414
Heptane		0*	2.38407E-06	5.72220
Octane		0*	4.27042E-07	1.78298
Nonane		0*	8.15749E-06	65.9478
Decane		0*	1.44828E-08	0.535718
Benzene		0*	0.000834280	1.13427
Toluene		0*	4.61710E-05	0.220576
Ethylbenzene		0*	6.87226E-05	1.20157
m-Xylene		0*	0.000356606	6.29942
2,2,4-Trimethylpentane		0*	1.67353E-07	0.721080
Molar Flow		lbmol/h	lbmol/h	lbmol/h
Water		842.200*	842.058	0.00122705
H2S		0*	0	0
Oxygen		0*	0	0
CO2		0*	0.0757146	0.00176526
Nitrogen		0*	0.000417229	6.16700E-06
Methane		0*	0.0503737	0.00320816
Ethane		0*	0.00594088	0.00690185
Propane		0*	0.00524562	0.0571798
Isobutane		0*	0.000278179	0.0203130
n-Butane		0*	0.00269214	0.118414
Isopentane		0*	0.000353633	0.0716029
n-Pentane		0*	0.000572619	0.126620
Hexane		0*	0.000140348	0.231973
Heptane		0*	2.00789E-05	0.222563
Octane		0*	3.59659E-06	0.0693483
Nonane		0*	6.87033E-05	2.56502
Decane		0*	1.21976E-07	0.0208366
Benzene		0*	0.00702639	0.0441169
Toluene		0*	0.000388857	0.00857922
Ethylbenzene		0*	0.000578789	0.0467345
m-Xylene		0*	0.00300337	0.245014
2,2,4-Trimethylpentane		0*	1.40946E-06	0.0280462

Process Streams		Water Flash Gas	Water Storage Inlet	Water to Disposal
Composition	Status:	Solved	Solved	Solved
Phase: Total	From Block:	Water Storage	HT Water LCV	Water Storage
	To Block:	--	Water Storage	--
Mole Fraction		%	%	%
Water		2.70700	99.9819	99.9891
H2S		0	0	0
Oxygen		0	0	0
CO2		16.5173	0.00698999	0.00776173
Nitrogen		0.580116	4.95398E-05	6.38163E-06
Methane		61.6565	0.00598113	0.00139420
Ethane		6.96953	0.000705391	0.000186895
Propane		5.90857	0.000622839	0.000183275
Isobutane		0.388443	3.30296E-05	4.13109E-06
n-Butane		3.27869	0.000319652	7.57337E-05
Isopentane		0.463149	4.19886E-05	7.53245E-06
n-Pentane		0.754141	6.79900E-05	1.18854E-05
Hexane		0.207372	1.66643E-05	1.23657E-06
Heptane		0.0290783	2.38407E-06	2.20756E-07
Octane		0.00540968	4.27042E-07	2.45816E-08
Nonane		0.0997470	8.15749E-06	7.36708E-07
Decane		0.000183589	1.44828E-08	8.24470E-10
Benzene		0.253453	0.000834280	0.000815485
Toluene		0.0168883	4.61710E-05	4.49179E-05
Ethylbenzene		0.0267192	6.87226E-05	6.67398E-05
m-Xylene		0.135505	0.000356606	0.000346550
2,2,4-Trimethylpentane		0.00222501	1.67353E-07	1.81922E-09
Molar Flow		lbmol/h	lbmol/h	lbmol/h
Water		0.00169614	842.058	842.056
H2S		0	0	0
Oxygen		0	0	0
CO2		0.0103494	0.0757146	0.0653652
Nitrogen		0.000363487	0.000417229	5.37427E-05
Methane		0.0386325	0.0503737	0.0117412
Ethane		0.00436694	0.00594088	0.00157393
Propane		0.00370217	0.00524562	0.00154345
Isobutane		0.000243389	0.000278179	3.47899E-05
n-Butane		0.00205435	0.00269214	0.000637790
Isopentane		0.000290198	0.000353633	6.34344E-05
n-Pentane		0.000472527	0.000572619	0.000100092
Hexane		0.000129934	0.000140348	1.04138E-05
Heptane		1.82198E-05	2.00789E-05	1.85909E-06
Octane		3.38958E-06	3.59659E-06	2.07013E-07
Nonane		6.24991E-05	6.87033E-05	6.20417E-06
Decane		1.15033E-07	1.21976E-07	6.94325E-09
Benzene		0.000158808	0.00702639	0.00686759
Toluene		1.05818E-05	0.000388857	0.000378275
Ethylbenzene		1.67416E-05	0.000578789	0.000562048
m-Xylene		8.49041E-05	0.00300337	0.00291847
2,2,4-Trimethylpentane		1.39414E-06	1.40946E-06	1.53205E-08

Process Streams		Wellhead Fluid	1	2	2-Phase Inlet
Composition	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	XCHG-100	MIX-100	CMPR-100	FLOWLINE DELTA P
	To Block:	FLOWLINE DELTA P	CMPR-100	XCHG-100	Heater Treater
Mole Fraction		%	%	%	%
Water		99.1156	99.1156	99.1156	99.1156
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.0351599	0.0351599	0.0351599	0.0351599
Nitrogen		0.00409249	0.00409249	0.00409249	0.00409249
Methane		0.258000	0.258000	0.258000	0.258000
Ethane		0.0332606	0.0332606	0.0332606	0.0332606
Propane		0.0480454	0.0480454	0.0480454	0.0480454
Isobutane		0.00812819	0.00812819	0.00812819	0.00812819
n-Butane		0.0373440	0.0373440	0.0373440	0.0373440
Isopentane		0.0141551	0.0141551	0.0141551	0.0141551
n-Pentane		0.0227903	0.0227903	0.0227903	0.0227903
Hexane		0.0323463	0.0323463	0.0323463	0.0323463
Heptane		0.0280756	0.0280756	0.0280756	0.0280756
Octane		0.00838728	0.00838728	0.00838728	0.00838728
Nonane		0.305125	0.305125	0.305125	0.305125
Decane		0.00246297	0.00246297	0.00246297	0.00246297
Benzene		0.00688789	0.00688789	0.00688789	0.00688789
Toluene		0.00111343	0.00111343	0.00111343	0.00111343
Ethylbenzene		0.00569762	0.00569762	0.00569762	0.00569762
m-Xylene		0.0297791	0.0297791	0.0297791	0.0297791
2,2,4-Trimethylpentane		0.00354486	0.00354486	0.00354486	0.00354486
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		842.200	842.200	842.200	842.200
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.298759	0.298759	0.298759	0.298759
Nitrogen		0.0347745	0.0347745	0.0347745	0.0347745
Methane		2.19227	2.19227	2.19227	2.19227
Ethane		0.282620	0.282620	0.282620	0.282620
Propane		0.408249	0.408249	0.408249	0.408249
Isobutane		0.0690664	0.0690664	0.0690664	0.0690664
n-Butane		0.317317	0.317317	0.317317	0.317317
Isopentane		0.120278	0.120278	0.120278	0.120278
n-Pentane		0.193652	0.193652	0.193652	0.193652
Hexane		0.274851	0.274851	0.274851	0.274851
Heptane		0.238563	0.238563	0.238563	0.238563
Octane		0.0712679	0.0712679	0.0712679	0.0712679
Nonane		2.59269	2.59269	2.59269	2.59269
Decane		0.0209282	0.0209282	0.0209282	0.0209282
Benzene		0.0585274	0.0585274	0.0585274	0.0585274
Toluene		0.00946100	0.00946100	0.00946100	0.00946100
Ethylbenzene		0.0484135	0.0484135	0.0484135	0.0484135
m-Xylene		0.253037	0.253037	0.253037	0.253037
2,2,4-Trimethylpentane		0.0301212	0.0301212	0.0301212	0.0301212

Process Streams	Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas
Mass Fraction	%	%	%	%
Water	1.11576	2.62180	0.0354530	
H2S	0	0	0	
Oxygen	0	0	0	
CO2	4.10990	10.0897	0.129775	
Nitrogen	0.0684723	1.04350	0.00191743	
Methane	6.74875	36.6119	0.196498	
Ethane	5.62428	8.10152	0.199675	
Propane	20.2342	13.8994	1.10552	
Isobutane	4.65670	2.44165	0.385396	
n-Butane	20.0797	9.71347	2.05266	
Isopentane	6.77390	2.88193	1.31294	
n-Pentane	9.47300	3.94220	2.25298	
Hexane	7.50417	2.99653	4.56694	
Heptane	3.23783	1.30614	4.95393	
Octane	0.434157	0.179696	1.74002	
Nonane	6.86713	2.92840	71.9552	
Decane	0.0245126	0.0108718	0.647418	
Benzene	1.18274	0.468257	0.784230	
Toluene	0.0924344	0.0369664	0.174981	
Ethylbenzene	0.233024	0.0957158	1.08877	
m-Xylene	1.05872	0.437373	5.70360	
2,2,4-Trimethylpentane	0.480598	0.192997	0.712079	
Mass Flow	lb/h	lb/h	lb/h	lb/h
Water	0.140410	2.39612	0.162515	0
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.517198	9.22118	0.594887	0
Nitrogen	0.00861670	0.953675	0.00878946	0
Methane	0.849277	33.4605	0.900744	0
Ethane	0.707771	7.40416	0.915303	0
Propane	2.54632	12.7030	5.06770	0
Isobutane	0.586010	2.23148	1.76665	0
n-Butane	2.52687	8.87737	9.40933	0
Isopentane	0.852442	2.63386	6.01851	0
n-Pentane	1.19210	3.60286	10.3276	0
Hexane	0.944341	2.73860	20.9347	0
Heptane	0.407455	1.19372	22.7087	0
Octane	0.0546352	0.164228	7.97619	0
Nonane	0.864174	2.67634	329.841	0
Decane	0.00308471	0.00993598	2.96775	0
Benzene	0.148838	0.427951	3.59489	0
Toluene	0.0116321	0.0337844	0.802108	0
Ethylbenzene	0.0293242	0.0874769	4.99090	0
m-Xylene	0.133231	0.399726	26.1451	0
2,2,4-Trimethylpentane	0.0604794	0.176384	3.26415	0

Process Streams	Oil to Sales	Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT
Mass Fraction	%	%	%	%	%
Water	0.00495851	0.00495851	0*	0*	0.0354530
H2S	0	0	0*	0*	0
Oxygen	0	0	0*	0*	0
CO2	0.0174262	0.0174262	13.7943*	0.0427281*	0.129775
Nitrogen	3.87514E-05	3.87514E-05	1.02509*	0.00253710*	0.00191743
Methane	0.0115445	0.0115445	36.7782*	0.138667*	0.196498
Ethane	0.0465513	0.0465513	7.64437*	0.287605*	0.199675
Propane	0.565568	0.565568	12.4727*	1.37017*	1.10552
Isobutane	0.264828	0.264828	2.19065*	0.426330*	0.385396
n-Butane	1.54380	1.54380	9.30325*	2.11444*	2.05266
Isopentane	1.15880	1.15880	3.18668*	1.23839*	1.31294
n-Pentane	2.04918	2.04918	4.99732*	2.02114*	2.25298
Hexane	4.48403	4.48403	2.02217*	4.74525*	4.56694
Heptane	5.00238	5.00238	0.0526575*	5.19573*	4.95393
Octane	1.77688	1.77688	0.00816717*	1.77144*	1.74002
Nonane	73.7925	73.7925	0.000458502*	72.4257*	71.9552
Decane	0.665001	0.665001	0.773142*	0.490445*	0.647418
Benzene	0.772981	0.772981	0.115607*	0.972093*	0.784230
Toluene	0.177311	0.177311	0.00296449*	0.189259*	0.174981
Ethylbenzene	1.11293	1.11293	0.00607251*	1.11824*	1.08877
m-Xylene	5.83471	5.83471	5.62580*	4.70053*	5.70360
2,2,4-Trimethylpentane	0.718613	0.718613	0.000408358*	0.749317*	0.712079
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0.0221057	0.0221057	0*	0*	0.162515
H2S	0	0	0*	0*	0
Oxygen	0	0	0*	0*	0
CO2	0.0776884	0.0776884	12.9521*	0.196176*	0.594887
Nitrogen	0.000172759	0.000172759	0.962504*	0.0116485*	0.00878946
Methane	0.0514668	0.0514668	34.5327*	0.636658*	0.900744
Ethane	0.207532	0.207532	7.17763*	1.32047*	0.915303
Propane	2.52138	2.52138	11.7111*	6.29084*	5.06770
Isobutane	1.18064	1.18064	2.05690*	1.95739*	1.76665
n-Butane	6.88246	6.88246	8.73523*	9.70794*	9.40933
Isopentane	5.16606	5.16606	2.99211*	5.68576*	6.01851
n-Pentane	9.13550	9.13550	4.69221*	9.27957*	10.3276
Hexane	19.9904	19.9904	1.89871*	21.7867*	20.9347
Heptane	22.3012	22.3012	0.0494425*	23.8550*	22.7087
Octane	7.92155	7.92155	0.00766851*	8.13316*	7.97619
Nonane	328.977	328.977	0.000430508*	332.526*	329.841
Decane	2.96466	2.96466	0.725937*	2.25176*	2.96775
Benzene	3.44605	3.44605	0.108548*	4.46314*	3.59489
Toluene	0.790476	0.790476	0.00278349*	0.868938*	0.802108
Ethylbenzene	4.96157	4.96157	0.00570175*	5.13412*	4.99090
m-Xylene	26.0119	26.0119	5.28231*	21.5814*	26.1451
2,2,4-Trimethylpentane	3.20367	3.20367	0.000383426*	3.44031*	3.26415

Process Streams	Separator Water	Separator Water to Storage	Stablized Oil
Mass Fraction	%	%	%
Water	100*	99.9618	0.00495851
H2S	0*	0	0
Oxygen	0*	0	0
CO2	0*	0.0219572	0.0174262
Nitrogen	0*	7.70180E-05	3.87514E-05
Methane	0*	0.00532508	0.0115445
Ethane	0*	0.00117712	0.0465513
Propane	0*	0.00152420	0.565568
Isobutane	0*	0.000106541	0.264828
n-Butane	0*	0.00103108	1.54380
Isopentane	0*	0.000168125	1.15880
n-Pentane	0*	0.000272236	2.04918
Hexane	0*	7.96969E-05	4.48403
Heptane	0*	1.32577E-05	5.00238
Octane	0*	2.70718E-06	1.77688
Nonane	0*	5.80635E-05	73.7925
Decane	0*	1.14360E-07	0.665001
Benzene	0*	0.00361660	0.772981
Toluene	0*	0.000236092	0.177311
Ethylbenzene	0*	0.000404905	1.11293
m-Xylene	0*	0.00210108	5.83471
2,2,4-Trimethylpentane	0*	1.06091E-06	0.718613
Mass Flow	lb/h	lb/h	lb/h
Water	15172.5*	15169.9	0.0221057
H2S	0*	0	0
Oxygen	0*	0	0
CO2	0*	3.33216	0.0776884
Nitrogen	0*	0.0116880	0.000172759
Methane	0*	0.808118	0.0514668
Ethane	0*	0.178636	0.207532
Propane	0*	0.231309	2.52138
Isobutane	0*	0.0161684	1.18064
n-Butane	0*	0.156473	6.88246
Isopentane	0*	0.0255142	5.16606
n-Pentane	0*	0.0413138	9.13550
Hexane	0*	0.0120946	19.9904
Heptane	0*	0.00201194	22.3012
Octane	0*	0.000410833	7.92155
Nonane	0*	0.00881154	328.977
Decane	0*	1.73549E-05	2.96466
Benzene	0*	0.548844	3.44605
Toluene	0*	0.0358287	0.790476
Ethylbenzene	0*	0.0614472	4.96157
m-Xylene	0*	0.318853	26.0119
2,2,4-Trimethylpentane	0*	0.000161001	3.20367

Process Streams	Water Flash Gas	Water Storage Inlet	Water to Disposal
Mass Fraction	%	%	%
Water	1.85767	99.9618	99.9725
H2S	0	0	0
Oxygen	0	0	0
CO2	27.6902	0.0219572	0.0189580
Nitrogen	0.619042	7.70180E-05	9.92165E-06
Methane	37.6781	0.00532508	0.00124132
Ethane	7.98294	0.00117712	0.000311892
Propane	9.92470	0.00152420	0.000448525
Isobutane	0.860021	0.000106541	1.33258E-05
n-Butane	7.25909	0.00103108	0.000244297
Isopentane	1.27289	0.000168125	3.01614E-05
n-Pentane	2.07263	0.000272236	4.75914E-05
Hexane	0.680727	7.96969E-05	5.91412E-06
Heptane	0.110990	1.32577E-05	1.22765E-06
Octane	0.0235389	2.70718E-06	1.55837E-07
Nonane	0.487320	5.80635E-05	5.24393E-06
Decane	0.000995030	1.14360E-07	6.51044E-09
Benzene	0.754145	0.00361660	0.00353524
Toluene	0.0592744	0.000236092	0.000229693
Ethylbenzene	0.108055	0.000404905	0.000393236
m-Xylene	0.547994	0.00210108	0.00204190
2,2,4-Trimethylpentane	0.00968159	1.06091E-06	1.15331E-08
Mass Flow	lb/h	lb/h	lb/h
Water	0.0305564	15169.9	15169.9
H2S	0	0	0
Oxygen	0	0	0
CO2	0.455470	3.33216	2.87669
Nitrogen	0.0101825	0.0116880	0.00150552
Methane	0.619760	0.808118	0.188358
Ethane	0.131310	0.178636	0.0473267
Propane	0.163249	0.231309	0.0680593
Isobutane	0.0141463	0.0161684	0.00202207
n-Butane	0.119403	0.156473	0.0370697
Isopentane	0.0209374	0.0255142	0.00457671
n-Pentane	0.0340922	0.0413138	0.00722155
Hexane	0.0111971	0.0120946	0.000897411
Heptane	0.00182566	0.00201194	0.000186284
Octane	0.000387186	0.000410833	2.36468E-05
Nonane	0.00801583	0.00881154	0.000795716
Decane	1.63670E-05	1.73549E-05	9.87898E-07
Benzene	0.0124048	0.548844	0.536440
Toluene	0.000974993	0.0358287	0.0348537
Ethylbenzene	0.00177738	0.0614472	0.0596698
m-Xylene	0.00901385	0.318853	0.309839
2,2,4-Trimethylpentane	0.000159251	0.000161001	1.75004E-06

Process Streams	Wellhead Fluid	1	2	2-Phase Inlet
Mass Fraction	%	%	%	%
Water	96.4833	96.4833	96.4833	96.4833
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.0836110	0.0836110	0.0836110	0.0836110
Nitrogen	0.00619474	0.00619474	0.00619474	0.00619474
Methane	0.223646	0.223646	0.223646	0.223646
Ethane	0.0540403	0.0540403	0.0540403	0.0540403
Propane	0.114476	0.114476	0.114476	0.114476
Isobutane	0.0255273	0.0255273	0.0255273	0.0255273
n-Butane	0.117282	0.117282	0.117282	0.117282
Isopentane	0.0551835	0.0551835	0.0551835	0.0551835
n-Pentane	0.0888480	0.0888480	0.0888480	0.0888480
Hexane	0.150618	0.150618	0.150618	0.150618
Heptane	0.152011	0.152011	0.152011	0.152011
Octane	0.0517684	0.0517684	0.0517684	0.0517684
Nonane	2.11457	2.11457	2.11457	2.11457
Decane	0.0189355	0.0189355	0.0189355	0.0189355
Benzene	0.0290718	0.0290718	0.0290718	0.0290718
Toluene	0.00554337	0.00554337	0.00554337	0.00554337
Ethylbenzene	0.0326847	0.0326847	0.0326847	0.0326847
m-Xylene	0.170829	0.170829	0.170829	0.170829
2,2,4-Trimethylpentane	0.0218797	0.0218797	0.0218797	0.0218797
Mass Flow	lb/h	lb/h	lb/h	lb/h
Water	15172.5	15172.5	15172.5	15172.5
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	13.1482	13.1482	13.1482	13.1482
Nitrogen	0.974153	0.974153	0.974153	0.974153
Methane	35.1694	35.1694	35.1694	35.1694
Ethane	8.49810	8.49810	8.49810	8.49810
Propane	18.0020	18.0020	18.0020	18.0020
Isobutane	4.01429	4.01429	4.01429	4.01429
n-Butane	18.4432	18.4432	18.4432	18.4432
Isopentane	8.67788	8.67788	8.67788	8.67788
n-Pentane	13.9718	13.9718	13.9718	13.9718
Hexane	23.6854	23.6854	23.6854	23.6854
Heptane	23.9044	23.9044	23.9044	23.9044
Octane	8.14083	8.14083	8.14083	8.14083
Nonane	332.526	332.526	332.526	332.526
Decane	2.97770	2.97770	2.97770	2.97770
Benzene	4.57168	4.57168	4.57168	4.57168
Toluene	0.871721	0.871721	0.871721	0.871721
Ethylbenzene	5.13982	5.13982	5.13982	5.13982
m-Xylene	26.8637	26.8637	26.8637	26.8637
2,2,4-Trimethylpentane	3.44070	3.44070	3.44070	3.44070

Process Streams		Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas
Properties	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	VRT	Heater Treater	VLVE-100	Oil Storage
	To Block:	--	--	VRT	--
Property	Units				
Temperature	°F	135.970	143	107.375*	69.4*
Pressure	psia	14.7	80*	1.94000	14.7
Mole Fraction Vapor	%	100	100	19.8699	
Mole Fraction Light Liquid	%	0	0	80.1301	
Mole Fraction Heavy Liquid	%	0	0	0	
Molecular Weight	lb/lbmol	47.9715	27.2629	110.409	
Mass Density	lb/ft^3	0.111831	0.344464	0.177282	
Molar Flow	lbmol/h	0.262327	3.35226	4.15179	0
Mass Flow	lb/h	12.5842	91.3923	458.397	0
Vapor Volumetric Flow	ft^3/h	112.528	265.317	2585.69	
Liquid Volumetric Flow	gpm	14.0295	33.0785	322.372	
Std Vapor Volumetric Flow	MMSCFD	0.00238917	0.0305311	0.0378130	0
Std Liquid Volumetric Flow	sgpm	0.0459608	0.424821	1.28689	0
Compressibility		0.986483	0.978982	0.198546	
Specific Gravity		1.65633	0.941315		
API Gravity					
Enthalpy	Btu/h	-14196.1	-157019	-386571	0
Mass Enthalpy	Btu/lb	-1128.09	-1718.08	-843.310	
Mass Cp	Btu/(lb*°F)	0.432303	0.464261	0.495779	
Ideal Gas CpCv Ratio		1.10655	1.19008	1.04686	
Dynamic Viscosity	cP	0.00933878	0.0117152		
Kinematic Viscosity	cSt	5.21321	2.12318		
Thermal Conductivity	Btu/(h*ft*°F)	0.0129337	0.0182791		
Surface Tension	lbf/ft				
Net Ideal Gas Heating Value	Btu/ft^3	2362.50	1269.45	5560.20	
Net Liquid Heating Value	Btu/lb	18533.2	17555.8	18951.5	
Gross Ideal Gas Heating Value	Btu/ft^3	2564.33	1393.43	5984.16	
Gross Liquid Heating Value	Btu/lb	20129.8	19281.5	20408.6	

Process Streams		Oil to Sales	Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	Oil Storage	VRT Oil LCV	--	--	Heater Treater
	To Block:	--	Oil Storage	MIX-100	MIX-100	VLVE-100
Property	**Units**					
Temperature	°F	69.4	135.970	143*	143*	143
Pressure	psia	14.7	14.7*	68*	68*	80
Mole Fraction Vapor	%	0	0	99.6008	0	0
Mole Fraction Light Liquid	%	100	100	0.399157	100	100
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Molecular Weight	lb/lbmol	114.621	114.621	27.9727	110.415	110.409
Mass Density	lb/ft^3	44.8587	42.8993	0.300502	42.3075	42.4515
Molar Flow	lbmol/h	3.88947	3.88947	3.35665	4.15820	4.15179
Mass Flow	lb/h	445.813	445.813	93.8944	459.127	458.397
Vapor Volumetric Flow	ft^3/h	9.93816	10.3921	312.458	10.8521	10.7981
Liquid Volumetric Flow	gpm	1.23904	1.29564	38.9558	1.35299	1.34626
Std Vapor Volumetric Flow	MMSCFD	0.0354238	0.0354238	0.0305711*	0.0378713	0.0378130
Std Liquid Volumetric Flow	sgpm	1.24093	1.24093	0.432635	1.29251*	1.28689
Compressibility		0.00661540	0.00614444	0.978703	0.0274394	0.0321706
Specific Gravity		0.719247	0.687830		0.678342	0.680650
API Gravity		64.0579	64.0579		65.4980	64.8696
Enthalpy	Btu/h	-387458	-372375	-155971	-387930	-386571
Mass Enthalpy	Btu/lb	-869.105	-835.271	-1661.13	-844.931	-843.310
Mass Cp	Btu/(lb*°F)	0.488160	0.528896	0.450254	0.536742	0.535615
Ideal Gas CpCv Ratio		1.04786	1.04321	1.19136	1.04432	1.04444
Dynamic Viscosity	cP	0.569844	0.375885		0.340412	0.341956
Kinematic Viscosity	cSt	0.793027	0.546996		0.502304	0.502871
Thermal Conductivity	Btu/(h*ft*°F)	0.0743557	0.0683329		0.0670058	0.0671670
Surface Tension	lbf/ft	0.00148243?	0.00123826?		0.00116059?	0.00116666?
Net Ideal Gas Heating Value	Btu/ft^3	5775.87	5775.87	1281.24	5571.03	5560.20
Net Liquid Heating Value	Btu/lb	18963.3	18963.3	17293.7	18988.0	18951.5
Gross Ideal Gas Heating Value	Btu/ft^3	6214.81	6214.81	1402.88	5996.83	5984.16
Gross Liquid Heating Value	Btu/lb	20416.5	20416.5	18943.9	20451.4	20408.6

Process Streams		Separator Water	Separator Water to Storage	Stablized Oil
Properties	Status:	Solved	Solved	Solved
Phase: **Total**	From Block:	--	Heater Treater	VRT
	To Block:	MIX-100	HT Water LCV	VRT Oil LCV
Property	Units			
Temperature	°F	143*	143	135.970
Pressure	psia	68*	80	14.7*
Mole Fraction Vapor	%	0	0	0
Mole Fraction Light Liquid	%	100	100	100
Mole Fraction Heavy Liquid	%	0	0	0
Molecular Weight	lb/lbmol	18.0153	18.0189	114.621
Mass Density	lb/ft^3	61.3007	61.2979	42.8993
Molar Flow	lbmol/h	842.200	842.211	3.88947
Mass Flow	lb/h	15172.5	15175.7	445.813
Vapor Volumetric Flow	ft^3/h	247.509	247.573	10.3921
Liquid Volumetric Flow	gpm	30.8582	30.8662	1.29564
Std Vapor Volumetric Flow	MMSCFD	7.67044	7.67054	0.0354238
Std Liquid Volumetric Flow	sgpm	30.3309*	30.3443	1.24093
Compressibility		0.00308987	0.00363604	0.00614444
Specific Gravity		0.982871	0.982826	0.687830
API Gravity		10.0053	10.0096	64.0579
Enthalpy	Btu/h	-1.02514E+08	-1.02512E+08	-372375
Mass Enthalpy	Btu/lb	-6756.60	-6755.00	-835.271
Mass Cp	Btu/(lb*°F)	0.984186	0.984154	0.528896
Ideal Gas CpCv Ratio		1.32242	1.32239	1.04321
Dynamic Viscosity	cP	0.462417	0.462121	0.375885
Kinematic Viscosity	cSt	0.470921	0.470641	0.546996
Thermal Conductivity	Btu/(h*ft*°F)	0.375148	0.374836	0.0683329
Surface Tension	lbf/ft	0.00449638	0.00449547	0.00123826?
Net Ideal Gas Heating Value	Btu/ft^3	0	0.149362	5775.87
Net Liquid Heating Value	Btu/lb	-1059.76	-1056.24	18963.3
Gross Ideal Gas Heating Value	Btu/ft^3	50.31	50.4623	6214.81
Gross Liquid Heating Value	Btu/lb	0	3.36504	20416.5

Process Streams		Water Flash Gas	Water Storage Inlet	Water to Disposal
Properties	Status:	Solved	Solved	Solved
Phase: **Total**	From Block:	Water Storage	HT Water LCV	Water Storage
	To Block:	--	Water Storage	--
Property	**Units**			
Temperature	°F	69.4*	143.127	69.4
Pressure	psia	13.2	13.2*	13.2
Mole Fraction Vapor	%	100	0.0138288	0
Mole Fraction Light Liquid	%	0	99.9862	100
Mole Fraction Heavy Liquid	%	0	0	0
Molecular Weight	lb/lbmol	26.2519	18.0189	18.0183
Mass Density	lb/ft^3	0.0612842	49.8536	62.2831
Molar Flow	lbmol/h	0.0626576	842.211	842.148
Mass Flow	lb/h	1.64488	15175.7	15174.1
Vapor Volumetric Flow	ft^3/h	26.8402	304.405	243.630
Liquid Volumetric Flow	gpm	3.34631	37.9519	30.3747
Std Vapor Volumetric Flow	MMSCFD	0.000570662	7.67054	7.66997
Std Liquid Volumetric Flow	sgpm	0.00746421	30.3443	30.3368
Compressibility		0.995884	0.000737515	0.000672574
Specific Gravity		0.906406		0.998622
API Gravity				10.0085
Enthalpy	Btu/h	-3681.12	-1.02512E+08	-1.03608E+08
Mass Enthalpy	Btu/lb	-2237.93	-6755.00	-6827.97
Mass Cp	Btu/(lb*°F)	0.392622	0.984170	0.983133
Ideal Gas CpCv Ratio		1.23977	1.32238	1.32586
Dynamic Viscosity	cP	0.0112184		1.00289
Kinematic Viscosity	cSt	11.4277		1.00522
Thermal Conductivity	Btu/(h*ft*°F)	0.0153417		0.346659
Surface Tension	lbf/ft			0.00504607?
Net Ideal Gas Heating Value	Btu/ft^3	1001.20	0.149362	0.0748816
Net Liquid Heating Value	Btu/lb	14381.3	-1056.24	-1057.92
Gross Ideal Gas Heating Value	Btu/ft^3	1102.08	50.4623	50.3841
Gross Liquid Heating Value	Btu/lb	15839.4	3.36504	1.64840

Process Streams		Wellhead Fluid	1	2	2-Phase Inlet
Properties	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	XCHG-100	MIX-100	CMPR-100	FLOWLINE DELTA P
	To Block:	FLOWLINE DELTA P	CMPR-100	XCHG-100	Heater Treater
Property	Units				
Temperature	°F	143*	142.769	142.923	143
Pressure	psia	80	68	80*	80
Mole Fraction Vapor	%	0.394515	0.409906	0.394413	0.394515
Mole Fraction Light Liquid	%	0.488611	0.478932	0.488669	0.488611
Mole Fraction Heavy Liquid	%	99.1169	99.1112	99.1169	99.1169
Molecular Weight	lb/lbmol	18.5068	18.5068	18.5068	18.5068
Mass Density	lb/ft^3	30.0283	26.9688	30.0345	30.0283
Molar Flow	lbmol/h	849.715	849.715	849.715	849.715
Mass Flow	lb/h	15725.5	15725.5	15725.5	15725.5
Vapor Volumetric Flow	ft^3/h	523.688	583.099	523.580	523.688
Liquid Volumetric Flow	gpm	65.2910	72.6980	65.2776	65.2910
Std Vapor Volumetric Flow	MMSCFD	7.73888	7.73888	7.73888	7.73888
Std Liquid Volumetric Flow	sgpm	32.0560	32.0560	32.0560	32.0560
Compressibility		0.00762335	0.00721773	0.00762276	0.00762335
Specific Gravity					
API Gravity					
Enthalpy	Btu/h	-1.03055E+08	-1.03058E+08	-1.03057E+08	-1.03055E+08
Mass Enthalpy	Btu/lb	-6553.40	-6553.57	-6553.48	-6553.40
Mass Cp	Btu/(lb*°F)	0.968058	0.967956	0.968048	0.968058
Ideal Gas CpCv Ratio		1.31200	1.31201	1.31200	1.31200
Dynamic Viscosity	cP				
Kinematic Viscosity	cSt				
Thermal Conductivity	Btu/(h*ft*°F)				
Surface Tension	lbf/ft				
Net Ideal Gas Heating Value	Btu/ft^3	32.3239	32.3239	32.3239	32.3239
Net Liquid Heating Value	Btu/lb	-364.853	-364.853	-364.853	-364.853
Gross Ideal Gas Heating Value	Btu/ft^3	84.7532	84.7532	84.7532	84.7532
Gross Liquid Heating Value	Btu/lb	710.217	710.217	710.217	710.217

Jubilee 529-2227H
ProMax Report

Bryan Research & Engineering, Inc.

ProMax® 3.2

with

TSWEET® & PROSIM®

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Simulation Report

Project: 1 - Vertical Battery with 2-Phase.pmx

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Client Name: EOG Wyoming
Location: Larmie County, WY
Job: Jubilee 529-2227H

ProMax Filename: C:\Users\jvanassche\Desktop\Jubilee Permit\1 - Vertical Battery with 2-Phase.pmx
ProMax Version: 3.2.12198.0
Simulation Initiated: 12/23/2014 11:04:28 AM

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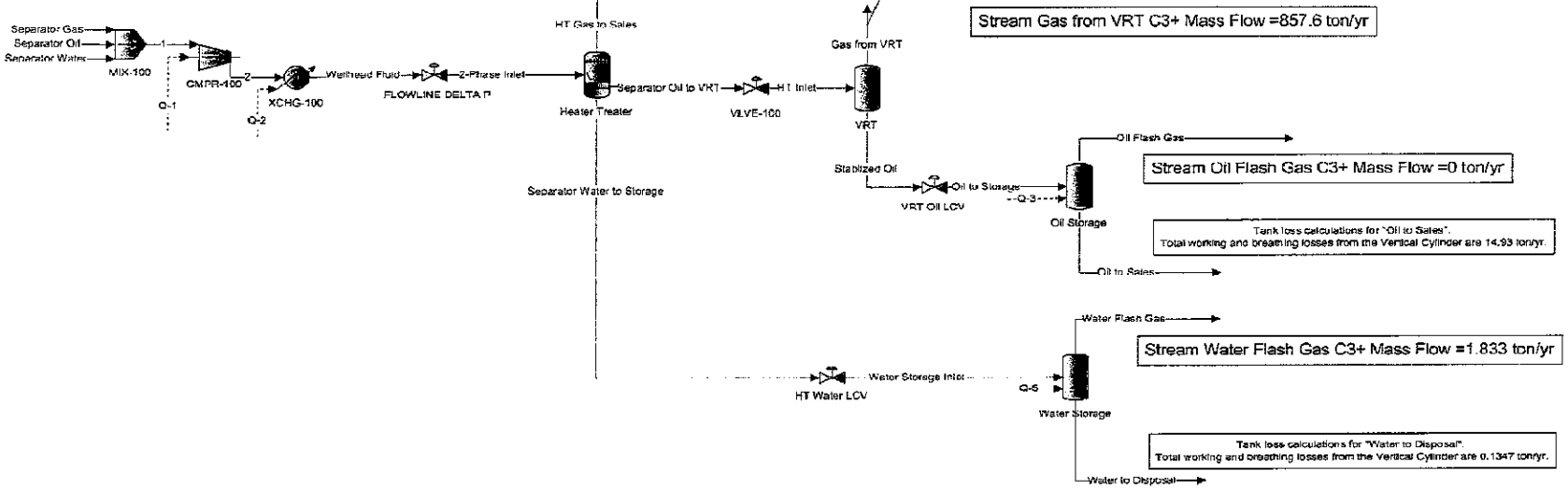
Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

Properties	HT Gas to Sales	
Temperature(Total)	143	°F
Pressure(Total)	80	psia

Properties	Gas from VRT	
Temperature(Total)	131.1	°F
Pressure(Total)	14.7	psia

Names	Units	Oil to Sales	Water to Disposal
Std Liquid Volumetric Flow	bbl/d	460.8	799.76
True Vapor Pressure	psia	10.082	17.458
Reid Vapor Pressure	psi	6.5319	1.0494
API Gravity		64.308	10.012



Process Streams		Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas
Composition	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	VRT	Heater Treater	VLVE-100	Oil Storage
	To Block:	--	--	VRT	--
Mole Fraction		%	%	%	%
Water		2.07499	3.95470	0.216104	
H2S		0	0	0	
Oxygen		0	0	0	
CO2		1.32460	2.63382	0.137403	
Nitrogen		0.0555309	0.704238	0.00530547	
Methane		11.8772	53.0980	1.16483	
Ethane		10.6373	12.0006	1.19997	
Propane		29.2826	14.3923	4.62217	
Isobutane		4.98684	1.76124	1.11912	
n-Butane		18.8739	6.01335	5.11896	
Isopentane		5.08612	1.36727	2.49919	
n-Pentane		7.23130	1.89009	4.32379	
Hexane		3.50143	0.864915	5.26233	
Heptane		1.06284	0.266785	4.01494	
Octane		0.117753	0.0306941	1.17587	
Nonane		2.26049	0.614122	59.8011	
Decane		0.00620947	0.00178536	0.417872	
Benzene		0.896511	0.219874	1.46417	
Toluene		0.0488489	0.0121707	0.229015	
Ethylbenzene		0.132938	0.0344036	1.54774	
m-Xylene		0.377670	0.0985904	5.07819	
2,2,4-Trimethylpentane		0.164891	0.0410224	0.601886	
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.0917757	1.46687	0.101345	0
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.0585865	0.976934	0.0644367	0
Nitrogen		0.00245610	0.261215	0.00248806	0
Methane		0.525323	19.6950	0.546262	0
Ethane		0.470483	4.45125	0.562741	0
Propane		1.29516	5.33838	2.16762	0
Isobutane		0.220566	0.653276	0.524823	0
n-Butane		0.834786	2.23046	2.40060	0
Isopentane		0.224957	0.507147	1.17202	0
n-Pentane		0.319837	0.701069	2.02769	0
Hexane		0.154867	0.320813	2.46783	0
Heptane		0.0470089	0.0989555	1.88285	0
Octane		0.00520815	0.0113850	0.551437	0
Nonane		0.0999804	0.227789	28.0444	0
Decane		0.000274642	0.000662224	0.195966	0
Benzene		0.0396523	0.0815553	0.686641	0
Toluene		0.00216056	0.00451436	0.107399	0
Ethylbenzene		0.00587980	0.0127609	0.725828	0
m-Xylene		0.0167042	0.0365690	2.38148	0
2,2,4-Trimethylpentane		0.00729305	0.0152160	0.282262	0

Process Streams		Oil to Sales	Oil to Storage	Separator Gas	Separator Oil
Composition	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Oil Storage	VRT Oil LCV	--	--
	To Block:	--	Oil Storage	MIX-100	MIX-100
Mole Fraction		%	%	%	%
Water		0.0225291	0.0225291	0*	0*
H2S		0	0	0*	0*
Oxygen		0	0	0*	0*
CO2		0.0137740	0.0137740	2.59350*	0.254100*
Nitrogen		7.52365E-05	7.52365E-05	0.690699*	0.0242000*
Methane		0.0492978	0.0492978	54.2410*	0.916001*
Ethane		0.217215	0.217215	11.9570*	1.40470*
Propane		2.05415	2.05415	14.6861*	4.65580*
Isobutane		0.716350	0.716350	1.91410*	1.04090*
n-Butane		3.68659	3.68659	7.12589*	4.41250*
Isopentane		2.22980	2.22980	1.83210*	2.19790*
n-Pentane		4.02101	4.02101	2.33750*	4.08190*
Hexane		5.44570	5.44570	0.843099*	5.40301*
Heptane		4.32236	4.32236	0.0113000*	4.30840*
Octane		1.28605	1.28605	0.00140000*	1.22500*
Nonane		65.7932	65.7932	0*	61.5915*
Decane		0.460740	0.460740	0.147800*	0.310500*
Benzene		1.52329	1.52329	0.0435000*	1.65450*
Toluene		0.247777	0.247777	0.000400000*	0.244200*
Ethylbenzene		1.69507	1.69507	0.00120000*	1.60940*
m-Xylene		5.56768	5.56768	1.57320*	4.01760*
2,2,4-Trimethylpentane		0.647393	0.647393	0.000200000*	0.647901*
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.00956885	0.00956885	0*	0*
H2S		0	0	0*	0*
Oxygen		0	0	0*	0*
CO2		0.00585026	0.00585026	0.949303*	0.116639*
Nitrogen		3.19553E-05	3.19553E-05	0.252818*	0.0111085*
Methane		0.0209383	0.0209383	19.8540*	0.420471*
Ethane		0.0922583	0.0922583	4.37664*	0.644799*
Propane		0.872465	0.872465	5.37558*	2.13715*
Isobutane		0.304257	0.304257	0.700621*	0.477804*
n-Butane		1.56581	1.56581	2.60830*	2.02547*
Isopentane		0.947066	0.947066	0.670606*	1.00890*
n-Pentane		1.70785	1.70785	0.855599*	1.87371*
Hexane		2.31296	2.31296	0.308601*	2.48014*
Heptane		1.83584	1.83584	0.00413616*	1.97768*
Octane		0.546229	0.546229	0.000512444*	0.562311*
Nonane		27.9445	27.9445	0*	28.2723*
Decane		0.195691	0.195691	0.0540995*	0.142529*
Benzene		0.646988	0.646988	0.0159224*	0.759465*
Toluene		0.105239	0.105239	0.000146413*	0.112095*
Ethylbenzene		0.719949	0.719949	0.000439238*	0.738763*
m-Xylene		2.36477	2.36477	0.575841*	1.84420*
2,2,4-Trimethylpentane		0.274969	0.274969	7.32063E-05*	0.297405*

Process Streams		Separator Oil to VRT	Separator Water	Separator Water to Storage
Composition	Status:	Solved	Solved	Solved
Phase: **Total**	From Block:	Heater Treater	--	Heater Treater
	To Block:	VLVE-100	MIX-100	HT Water LCV
Mole Fraction		%	%	%
Water		0.216104	100*	99.9867
H2S		0	0*	0
Oxygen		0	0*	0
CO2		0.137403	0*	0.00379418
Nitrogen		0.00530547	0*	3.45001E-05
Methane		1.16483	0*	0.00511520
Ethane		1.19997	0*	0.00115049
Propane		4.62217	0*	0.00103799
Isobutane		1.11912	0*	5.04078E-05
n-Butane		5.11896	0*	0.000418504
Isopentane		2.49919	0*	5.21861E-05
n-Pentane		4.32379	0*	8.53245E-05
Hexane		5.26233	0*	1.49783E-05
Heptane		4.01494	0*	1.75864E-06
Octane		1.17587	0*	2.99276E-07
Nonane		59.8011	0*	7.84986E-06
Decane		0.417872	0*	1.20767E-08
Benzene		1.46417	0*	0.00111042
Toluene		0.229015	0*	5.06285E-05
Ethylbenzene		1.54774	0*	9.45496E-05
m-Xylene		5.07819	0*	0.000307570
2,2,4-Trimethylpentane		0.601886	0*	1.46257E-07
Molar Flow		lbmol/h	lbmol/h	lbmol/h
Water		0.101345	649.105*	647.537
H2S		0	0*	0
Oxygen		0	0*	0
CO2		0.0644367	0*	0.0245720
Nitrogen		0.00248806	0*	0.000223431
Methane		0.546262	0*	0.0331272
Ethane		0.562741	0*	0.00745081
Propane		2.16762	0*	0.00672226
Isobutane		0.524823	0*	0.000326453
n-Butane		2.40060	0*	0.00271033
Isopentane		1.17202	0*	0.000337969
n-Pentane		2.02769	0*	0.000552581
Hexane		2.46783	0*	9.70031E-05
Heptane		1.88285	0*	1.13894E-05
Octane		0.551437	0*	1.93818E-06
Nonane		28.0444	0*	5.08375E-05
Decane		0.195966	0*	7.82118E-08
Benzene		0.686641	0*	0.00719136
Toluene		0.107399	0*	0.000327882
Ethylbenzene		0.725828	0*	0.000612325
m-Xylene		2.38148	0*	0.00199189
2,2,4-Trimethylpentane		0.282262	0*	9.47196E-07

Process Streams		Stablized Oil	Water Flash Gas	Water Storage Inlet	Water to Disposal
Composition	Status:	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	VRT	Water Storage	HT Water LCV	Water Storage
	To Block:	VRT Oil LCV	--	Water Storage	--
Mole Fraction		%	%	%	%
Water		0.0225291	2.70468	99.9867	99.9930
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.0137740	7.09384	0.00379418	0.00333350
Nitrogen		7.52365E-05	0.454094	3.45001E-05	4.99724E-06
Methane		0.0492978	58.4051	0.00511520	0.00132061
Ethane		0.217215	12.5377	0.00115049	0.000335915
Propane		2.05415	10.8192	0.00103799	0.000335068
Isobutane		0.716350	0.666926	5.04078E-05	7.07704E-06
n-Butane		3.68659	4.75484	0.000418504	0.000109581
Isopentane		2.22980	0.642775	5.21861E-05	1.04246E-05
n-Pentane		4.02101	1.05751	8.53245E-05	1.66175E-05
Hexane		5.44570	0.211225	1.49783E-05	1.25476E-06
Heptane		4.32236	0.0242471	1.75864E-06	1.83278E-07
Octane		1.28605	0.00430662	2.99276E-07	1.94689E-08
Nonane		65.7932	0.108554	7.84986E-06	7.97000E-07
Decane		0.460740	0.000173935	1.20767E-08	7.75961E-10
Benzene		1.52329	0.339172	0.00111042	0.00108846
Toluene		0.247777	0.0186450	5.06285E-05	4.94204E-05
Ethylbenzene		1.69507	0.0370410	9.45496E-05	9.21490E-05
m-Xylene		5.56768	0.117764	0.000307570	0.000299938
2,2,4-Trimethylpentane		0.647393	0.00222325	1.46257E-07	1.80924E-09
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.00956885	0.00113805	647.537	647.536
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.00585026	0.00298489	0.0245720	0.0215871
Nitrogen		3.19553E-05	0.000191070	0.000223431	3.23612E-05
Methane		0.0209383	0.0245752	0.0331272	0.00855202
Ethane		0.0922583	0.00527549	0.00745081	0.00217532
Propane		0.872465	0.00455242	0.00672226	0.00216984
Isobutane		0.304257	0.000280623	0.000326453	4.58296E-05
n-Butane		1.56581	0.00200070	0.00271033	0.000709628
Isopentane		0.947066	0.000270462	0.000337969	6.75078E-05
n-Pentane		1.70785	0.000444970	0.000552581	0.000107612
Hexane		2.31296	8.88775E-05	9.70031E-05	8.12562E-06
Heptane		1.83584	1.02025E-05	1.13894E-05	1.18687E-06
Octane		0.546229	1.81210E-06	1.93818E-06	1.26077E-07
Nonane		27.9445	4.56763E-05	5.08375E-05	5.16122E-06
Decane		0.195691	7.31868E-08	7.82118E-08	5.02497E-09
Benzene		0.646988	0.000142714	0.00719136	0.00704865
Toluene		0.105239	7.84530E-06	0.000327882	0.000320037
Ethylbenzene		0.719949	1.55858E-05	0.000612325	0.000596740
m-Xylene		2.36477	4.95515E-05	0.00199189	0.00194234
2,2,4-Trimethylpentane		0.274969	9.35479E-07	9.47196E-07	1.17163E-08

Process Streams		Wellhead Fluid	1	2	2-Phase Inlet
Composition	Status:	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	XCHG-100	MIX-100	CMPR-100	FLOWLINE DELTA P
	To Block:	FLOWLINE DELTA P	CMPR-100	XCHG-100	Heater Treater
Mole Fraction		%	%	%	%
Water		88.7227	88.7227	88.7227	88.7227
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.145698	0.145698	0.145698	0.145698
Nitrogen		0.0360747	0.0360747	0.0360747	0.0360747
Methane		2.77120	2.77120	2.77120	2.77120
Ethane		0.686353	0.686353	0.686353	0.686353
Propane		1.02687	1.02687	1.02687	1.02687
Isobutane		0.161073	0.161073	0.161073	0.161073
n-Butane		0.633365	0.633365	0.633365	0.633365
Isopentane		0.229563	0.229563	0.229563	0.229563
n-Pentane		0.373055	0.373055	0.373055	0.373055
Hexane		0.381178	0.381178	0.381178	0.381178
Heptane		0.270884	0.270884	0.270884	0.270884
Octane		0.0769294	0.0769294	0.0769294	0.0769294
Nonane		3.86439	3.86439	3.86439	3.86439
Decane		0.0268761	0.0268761	0.0268761	0.0268761
Benzene		0.105983	0.105983	0.105983	0.105983
Toluene		0.0153417	0.0153417	0.0153417	0.0153417
Ethylbenzene		0.101038	0.101038	0.101038	0.101038
m-Xylene		0.330782	0.330782	0.330782	0.330782
2,2,4-Trimethylpentane		0.0406607	0.0406607	0.0406607	0.0406607
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		649.105	649.105	649.105	649.105
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		1.06594	1.06594	1.06594	1.06594
Nitrogen		0.263927	0.263927	0.263927	0.263927
Methane		20.2744	20.2744	20.2744	20.2744
Ethane		5.02144	5.02144	5.02144	5.02144
Propane		7.51273	7.51273	7.51273	7.51273
Isobutane		1.17843	1.17843	1.17843	1.17843
n-Butane		4.63377	4.63377	4.63377	4.63377
Isopentane		1.67951	1.67951	1.67951	1.67951
n-Pentane		2.72931	2.72931	2.72931	2.72931
Hexane		2.78874	2.78874	2.78874	2.78874
Heptane		1.98182	1.98182	1.98182	1.98182
Octane		0.562824	0.562824	0.562824	0.562824
Nonane		28.2723	28.2723	28.2723	28.2723
Decane		0.196628	0.196628	0.196628	0.196628
Benzene		0.775387	0.775387	0.775387	0.775387
Toluene		0.112241	0.112241	0.112241	0.112241
Ethylbenzene		0.739202	0.739202	0.739202	0.739202
m-Xylene		2.42004	2.42004	2.42004	2.42004
2,2,4-Trimethylpentane		0.297479	0.297479	0.297479	0.297479

Process Streams	Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas
Mass Fraction	%	%	%	%
Water	0.742513	2.40532	0.0362138	
H2S	0	0	0	
Oxygen	0	0	0	
CO2	1.15792	3.91337	0.0562487	
Nitrogen	0.0308993	0.666045	0.00138248	
Methane	3.78471	28.7586	0.173822	
Ethane	6.35330	12.1826	0.335630	
Propane	25.6480	21.4262	1.89588	
Isobutane	5.75726	3.45604	0.605044	
n-Butane	21.7898	11.7999	2.76754	
Isopentane	7.28893	3.33045	1.67725	
n-Pentane	10.3632	4.60394	2.90177	
Hexane	5.99344	2.51637	4.21823	
Heptane	2.11539	0.902518	3.74218	
Octane	0.267174	0.118372	1.24940	
Nonane	5.75871	2.65918	71.3434	
Decane	0.0175490	0.00857617	0.553047	
Benzene	1.39098	0.579840	1.06385	
Toluene	0.0894012	0.0378596	0.196279	
Ethylbenzene	0.280336	0.123311	1.52844	
m-Xylene	0.796419	0.353374	5.01488	
2,2,4-Trimethylpentane	0.374127	0.158203	0.639527	
Mass Flow	lb/h	lb/h	lb/h	lb/h
Water	1.65336	26.4261	1.82575	0
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	2.57836	42.9944	2.83583	0
Nitrogen	0.0688038	7.31752	0.0696990	0
Methane	8.42748	315.957	8.76338	0
Ethane	14.1470	133.845	16.9211	0
Propane	57.1107	235.399	95.5826	0
Isobutane	12.8198	37.9698	30.5038	0
n-Butane	48.5196	129.640	139.528	0
Isopentane	16.2304	36.5900	84.5600	0
n-Pentane	23.0758	50.5813	146.295	0
Hexane	13.3457	27.6462	212.666	0
Heptane	4.71038	9.91554	188.666	0
Octane	0.594919	1.30049	62.9898	0
Nonane	12.8230	29.2152	3596.84	0
Decane	0.0390765	0.0942224	27.8824	0
Benzene	3.09731	6.37043	53.6348	0
Toluene	0.199071	0.415946	9.89560	0
Ethylbenzene	0.624229	1.35476	77.0576	0
m-Xylene	1.77340	3.88235	252.830	0
2,2,4-Trimethylpentane	0.833074	1.73810	32.2423	0

Process Streams	Oil to Sales	Oil to Storage	Separator Gas	Separator Oil
Mass Fraction	%	%	%	%
Water	0.00357726	0.00357726	0*	0*
H2S	0	0	0*	0*
Oxygen	0	0	0*	0*
CO2	0.00534284	0.00534284	3.67879*	0.103085*
Nitrogen	1.85763E-05	1.85763E-05	0.623631*	0.00624924*
Methane	0.00697049	0.00697049	28.0461*	0.135460*
Ethane	0.0575672	0.0575672	11.5882*	0.389358*
Propane	0.798351	0.798351	20.8725*	1.89250*
Isobutane	0.366972	0.366972	3.58574*	0.557695*
n-Butane	1.88857	1.88857	13.3492*	2.36414*
Isopentane	1.41795	1.41795	4.26040*	1.46178*
n-Pentane	2.55699	2.55699	5.43567*	2.71480*
Hexane	4.13620	4.13620	2.34172*	4.29204*
Heptane	3.81735	3.81735	0.0364945*	3.97959*
Octane	1.29479	1.29479	0.00515436*	1.28990*
Nonane	74.3739	74.3739	0*	72.8183*
Decane	0.577791	0.577791	0.677791*	0.407246*
Benzene	1.04873	1.04873	0.109516*	1.19132*
Toluene	0.201218	0.201218	0.00118788*	0.207411*
Ethylbenzene	1.58611	1.58611	0.00410615*	1.57504*
m-Xylene	5.20980	5.20980	5.38317*	3.93182*
2,2,4-Trimethylpentane	0.651790	0.651790	0.000736338*	0.682226*
Mass Flow	lb/h	lb/h	lb/h	lb/h
Water	0.172386	0.172386	0*	0*
H2S	0	0	0*	0*
Oxygen	0	0	0*	0*
CO2	0.257467	0.257467	41.7783*	5.13324*
Nitrogen	0.000895178	0.000895178	7.08229*	0.311187*
Methane	0.335903	0.335903	318.506*	6.74539*
Ethane	2.77412	2.77412	131.601*	19.3885*
Propane	38.4719	38.4719	237.039*	94.2390*
Isobutane	17.6841	17.6841	40.7216*	27.7710*
n-Butane	91.0085	91.0085	151.600*	117.725*
Isopentane	68.3297	68.3297	48.3834*	72.7910*
n-Pentane	123.220	123.220	61.7304*	135.186*
Hexane	199.320	199.320	26.5938*	213.727*
Heptane	183.955	183.955	0.414451*	198.168*
Octane	62.3949	62.3949	0.0585357*	64.2320*
Nonane	3584.02	3584.02	0*	3626.06*
Decane	27.8433	27.8433	7.69736*	20.2792*
Benzene	50.5374	50.5374	1.24373*	59.3232*
Toluene	9.69653	9.69653	0.0134902*	10.3283*
Ethylbenzene	76.4334	76.4334	0.0466317*	78.4307*
m-Xylene	251.056	251.056	61.1341*	195.789*
2,2,4-Trimethylpentane	31.4093	31.4093	0.00836225*	33.9722*

Process Streams	Separator Oil to VRT	Separator Water	Separator Water to Storage
Mass Fraction	%	%	%
Water	0.0362138	100*	99.9720
H2S	0	0*	0
Oxygen	0	0*	0
CO2	0.0562487	0*	0.00926744
Nitrogen	0.00138248	0*	5.36391E-05
Methane	0.173822	0*	0.00455437
Ethane	0.335630	0*	0.00191998
Propane	1.89588	0*	0.00254029
Isobutane	0.605044	0*	0.000162606
n-Butane	2.76754	0*	0.00135001
Isopentane	1.67725	0*	0.000208968
n-Pentane	2.90177	0*	0.000341663
Hexane	4.21823	0*	7.16377E-05
Heptane	3.74218	0*	9.78022E-06
Octane	1.24940	0*	1.89732E-06
Nonane	71.3434	0*	5.58769E-05
Decane	0.553047	0*	9.53661E-08
Benzene	1.06385	0*	0.00481394
Toluene	0.196279	0*	0.000258900
Ethylbenzene	1.52844	0*	0.000557104
m-Xylene	5.01488	0*	0.00181226
2,2,4-Trimethylpentane	0.639527	0*	9.27229E-07
Mass Flow	lb/h	lb/h	lb/h
Water	1.82575	11693.8*	11665.6
H2S	0	0*	0
Oxygen	0	0*	0
CO2	2.83583	0*	1.08140
Nitrogen	0.0696990	0*	0.00625906
Methane	8.76338	0*	0.531442
Ethane	16.9211	0*	0.224039
Propane	95.5826	0*	0.296422
Isobutane	30.5038	0*	0.0189742
n-Butane	139.528	0*	0.157530
Isopentane	84.5600	0*	0.0243841
n-Pentane	146.295	0*	0.0398681
Hexane	212.666	0*	0.00835928
Heptane	188.666	0*	0.00114124
Octane	62.9898	0*	0.000221395
Nonane	3596.84	0*	0.00652017
Decane	27.8824	0*	1.11281E-05
Benzene	53.6348	0*	0.561730
Toluene	9.89560	0*	0.0302105
Ethylbenzene	77.0576	0*	0.0650075
m-Xylene	252.830	0*	0.211469
2,2,4-Trimethylpentane	32.2423	0*	0.000108197

Process Streams	Stablized Oil	Water Flash Gas	Water Storage Inlet	Water to Disposal
Mass Fraction	%	%	%	%
Water	0.00357726	1.81645	99.9720	99.9815
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.00534284	11.6385	0.00926744	0.00814247
Nitrogen	1.85763E-05	0.474220	5.36391E-05	7.76971E-06
Methane	0.00697049	34.9293	0.00455437	0.00117586
Ethane	0.0575672	14.0541	0.00191998	0.000560606
Propane	0.798351	17.7852	0.00254029	0.000820044
Isobutane	0.366972	1.44507	0.000162606	2.28298E-05
n-Butane	1.88857	10.3026	0.00135001	0.000353499
Isopentane	1.41795	1.72885	0.000208968	4.17444E-05
n-Pentane	2.55699	2.84434	0.000341663	6.65431E-05
Hexane	4.13620	0.678574	7.16377E-05	6.00143E-06
Heptane	3.81735	0.0905743	9.78022E-06	1.01928E-06
Octane	1.29479	0.0183392	1.89732E-06	1.23431E-07
Nonane	74.3739	0.519024	5.58769E-05	5.67338E-06
Decane	0.577791	0.000922580	9.53661E-08	6.12770E-09
Benzene	1.04873	0.987654	0.00481394	0.00471886
Toluene	0.201218	0.0640431	0.000258900	0.000252729
Ethylbenzene	1.58611	0.146599	0.000557104	0.000542977
m-Xylene	5.20980	0.466080	0.00181226	0.00176735
2,2,4-Trimethylpentane	0.651790	0.00946740	9.27229E-07	1.14704E-08
Mass Flow	lb/h	lb/h	lb/h	lb/h
Water	0.172386	0.0205023	11665.6	11665.5
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.257467	0.131363	1.08140	0.950038
Nitrogen	0.000895178	0.00535251	0.00625906	0.000906546
Methane	0.335903	0.394247	0.531442	0.137195
Ethane	2.77412	0.158629	0.224039	0.0654098
Propane	38.4719	0.200742	0.296422	0.0956803
Isobutane	17.6841	0.0163104	0.0189742	0.00266371
n-Butane	91.0085	0.116285	0.157530	0.0412451
Isopentane	68.3297	0.0195135	0.0243841	0.00487061
n-Pentane	123.220	0.0321040	0.0398681	0.00776404
Hexane	199.320	0.00765905	0.00835928	0.000700228
Heptane	183.955	0.00102231	0.00114124	0.000118927
Octane	62.3949	0.000206994	0.000221395	1.44016E-05
Nonane	3584.02	0.00585822	0.00652017	0.000661953
Decane	27.8433	1.04131E-05	1.11281E-05	7.14962E-07
Benzene	50.5374	0.0111476	0.561730	0.550583
Toluene	9.69653	0.000722854	0.0302105	0.0294877
Ethylbenzene	76.4334	0.00165466	0.0650075	0.0633529
m-Xylene	251.056	0.00526064	0.211469	0.206209
2,2,4-Trimethylpentane	31.4093	0.000106858	0.000108197	1.33834E-06

Process Streams	Wellhead Fluid	1	2	2-Phase Inlet
Mass Fraction	%	%	%	%
Water	65.6621	65.6621	65.6621	65.6621
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.263414	0.263414	0.263414	0.263414
Nitrogen	0.0415152	0.0415152	0.0415152	0.0415152
Methane	1.82633	1.82633	1.82633	1.82633
Ethane	0.847826	0.847826	0.847826	0.847826
Propane	1.86017	1.86017	1.86017	1.86017
Isobutane	0.384594	0.384594	0.384594	0.384594
n-Butane	1.51229	1.51229	1.51229	1.51229
Isopentane	0.680409	0.680409	0.680409	0.680409
n-Pentane	1.10571	1.10571	1.10571	1.10571
Hexane	1.34943	1.34943	1.34943	1.34943
Heptane	1.11506	1.11506	1.11506	1.11506
Octane	0.360999	0.360999	0.360999	0.360999
Nonane	20.3608	20.3608	20.3608	20.3608
Decane	0.157092	0.157092	0.157092	0.157092
Benzene	0.340090	0.340090	0.340090	0.340090
Toluene	0.0580701	0.0580701	0.0580701	0.0580701
Ethylbenzene	0.440659	0.440659	0.440659	0.440659
m-Xylene	1.44265	1.44265	1.44265	1.44265
2,2,4-Trimethylpentane	0.190805	0.190805	0.190805	0.190805
Mass Flow	lb/h	lb/h	lb/h	lb/h
Water	11693.8	11693.8	11693.8	11693.8
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	46.9116	46.9116	46.9116	46.9116
Nitrogen	7.39348	7.39348	7.39348	7.39348
Methane	325.252	325.252	325.252	325.252
Ethane	150.990	150.990	150.990	150.990
Propane	331.278	331.278	331.278	331.278
Isobutane	68.4927	68.4927	68.4927	68.4927
n-Butane	269.325	269.325	269.325	269.325
Isopentane	121.174	121.174	121.174	121.174
n-Pentane	196.917	196.917	196.917	196.917
Hexane	240.321	240.321	240.321	240.321
Heptane	198.582	198.582	198.582	198.582
Octane	64.2905	64.2905	64.2905	64.2905
Nonane	3626.06	3626.06	3626.06	3626.06
Decane	27.9766	27.9766	27.9766	27.9766
Benzene	60.5669	60.5669	60.5669	60.5669
Toluene	10.3418	10.3418	10.3418	10.3418
Ethylbenzene	78.4774	78.4774	78.4774	78.4774
m-Xylene	256.923	256.923	256.923	256.923
2,2,4-Trimethylpentane	33.9805	33.9805	33.9805	33.9805

Process Streams		Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas
Properties	**Status:**	**Solved**	**Solved**	**Solved**	**Solved**
Phase: **Total**	**From Block:**	**VRT**	**Heater Treater**	**VLVE-100**	**Oil Storage**
	To Block:	--	--	**VRT**	--
Property	**Units**				
Temperature	°F	131.123	143	107.375*	69.4*
Pressure	psia	14.7	80*	3.01955	14.7
Mole Fraction Vapor	%	100	100	21.1344	
Mole Fraction Light Liquid	%	0	0	78.8656	
Mole Fraction Heavy Liquid	%	0	0	0	
Molecular Weight	lb/lbmol	50.3445	29.6198	107.505	
Mass Density	lb/ft^3	0.118600	0.376566	0.252559	
Molar Flow	lbmol/h	4.42295	37.0919	46.8962	0
Mass Flow	lb/h	222.671	1098.65	5041.59	0
Vapor Volumetric Flow	ft^3/h	1877.50	2917.56	19962.0	
Liquid Volumetric Flow	gpm	234.078	363.748	2488.77	
Std Vapor Volumetric Flow	MMSCFD	0.0402826	0.337819	0.427113	0
Std Liquid Volumetric Flow	sgpm	0.813547	5.04634	14.2535	0
Compressibility		0.984203	0.972943	0.211217	
Specific Gravity		1.73826	1.02269		
API Gravity					
Enthalpy	Btu/h	-224001	-1.61049E+06	-4.25439E+06	0
Mass Enthalpy	Btu/lb	-1005.97	-1465.88	-843.858	
Mass Cp	Btu/(lb*°F)	0.433216	0.471637	0.496408	
Ideal Gas CpCv Ratio		1.10085	1.16960	1.04817	
Dynamic Viscosity	cP	0.00889956	0.0111102		
Kinematic Viscosity	cSt	4.68450	1.84188		
Thermal Conductivity	Btu/(h*ft*°F)	0.0122135	0.0174118		
Surface Tension	lbf/ft				
Net Ideal Gas Heating Value	Btu/ft^3	2563.81	1475.75	5420.81	
Net Liquid Heating Value	Btu/lb	19165.7	18776.6	18975.5	
Gross Ideal Gas Heating Value	Btu/ft^3	2780.91	1615.79	5834.84	
Gross Liquid Heating Value	Btu/lb	20802.2	20570.9	20436.9	

Process Streams		Oil to Sales	Oil to Storage	Separator Gas	Separator Oil
Properties	Status:	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	Oil Storage	VRT Oil LCV	--	--
	To Block:	--	Oil Storage	MIX-100	MIX-100
Property	**Units**				
Temperature	°F	69.4	131.123	143*	143*
Pressure	psia	14.7	14.7*	68*	68*
Mole Fraction Vapor	%	0	0	99.4134	0.181533
Mole Fraction Light Liquid	%	100	100	0.586641	99.8185
Mole Fraction Heavy Liquid	%	0	0	0	0
Molecular Weight	lb/lbmol	113.458	113.458	31.0261	108.481
Mass Density	lb/ft^3	44.7997	42.9761	0.336318	39.6098
Molar Flow	lbmol/h	42.4732	42.4732	36.6032	45.9029
Mass Flow	lb/h	4818.92	4818.92	1135.65	4979.60
Vapor Volumetric Flow	ft^3/h	107.566	112.130	3376.73	125.717
Liquid Volumetric Flow	gpm	13.4108	13.9799	420.995	15.6737
Std Vapor Volumetric Flow	MMSCFD	0.386830	0.386830	0.333368*	0.418067
Std Liquid Volumetric Flow	sgpm	13.4400	13.4400	5.17560	14.0793*
Compressibility		0.00655692	0.00612105	0.969936	0.0287950
Specific Gravity		0.718301	0.689062		
API Gravity		64.3079	64.3079		
Enthalpy	Btu/h	-4.18120E+06	-4.03039E+06	-1.47439E+06	-4.22676E+06
Mass Enthalpy	Btu/lb	-867.664	-836.367	-1298.27	-848.815
Mass Cp	Btu/(lb*°F)	0.488409	0.526208	0.466708	0.537728
Ideal Gas CpCv Ratio		1.04840	1.04400	1.16298	1.04515
Dynamic Viscosity	cP	0.559853	0.380286		
Kinematic Viscosity	cSt	0.780149	0.552411		
Thermal Conductivity	Btu/(h*ft*°F)	0.0741926	0.0685581		
Surface Tension	lbf/ft	0.00147555?	0.00124857?		
Net Ideal Gas Heating Value	Btu/ft^3	5718.33	5718.33	1581.27	5472.09
Net Liquid Heating Value	Btu/lb	18966.7	18966.7	19229.9	18983.2
Gross Ideal Gas Heating Value	Btu/ft^3	6152.86	6152.86	1726.57	5890.85
Gross Liquid Heating Value	Btu/lb	20420.1	20420.1	21007.0	20448.1

Process Streams		Separator Oil to VRT	Separator Water	Separator Water to Storage
Properties	**Status:**	**Solved**	**Solved**	**Solved**
Phase: **Total**	**From Block:**	**Heater Treater**	**--**	**Heater Treater**
	To Block:	**VLVE-100**	**MIX-100**	**HT Water LCV**
Property	**Units**			
Temperature	°F	143	143*	143
Pressure	psia	80	68*	80
Mole Fraction Vapor	%	0	0	0
Mole Fraction Light Liquid	%	100	100	100
Mole Fraction Heavy Liquid	%	0	0	0
Molecular Weight	lb/lbmol	107.505	18.0153	18.0179
Mass Density	lb/ft^3	42.1848	61.3007	61.2965
Molar Flow	lbmol/h	46.8962	649.105	647.623
Mass Flow	lb/h	5041.59	11693.8	11668.8
Vapor Volumetric Flow	ft^3/h	119.512	190.761	190.367
Liquid Volumetric Flow	gpm	14.9002	23.7832	23.7340
Std Vapor Volumetric Flow	MMSCFD	0.427113	5.91181	5.89831
Std Liquid Volumetric Flow	sgpm	14.2535	23.3768*	23.3318
Compressibility		0.0315225	0.00308987	0.00363593
Specific Gravity		0.676374	0.982871	0.982804
API Gravity		65.8888	10.0053	10.0135
Enthalpy	Btu/h	-4.25439E+06	-7.90104E+07	-7.88251E+07
Mass Enthalpy	Btu/lb	-843.858	-6756.60	-6755.19
Mass Cp	Btu/(lb*°F)	0.537499	0.984186	0.984189
Ideal Gas CpCv Ratio		1.04567	1.32242	1.32239
Dynamic Viscosity	cP	0.327654	0.462417	0.462205
Kinematic Viscosity	cSt	0.484886	0.470921	0.470737
Thermal Conductivity	Btu/(h*ft*°F)	0.0665209	0.375148	0.374887
Surface Tension	lbf/ft	0.00114354?	0.00449638	0.00449562
Net Ideal Gas Heating Value	Btu/ft^3	5420.81	0	0.171647
Net Liquid Heating Value	Btu/lb	18975.5	-1059.76	-1055.88
Gross Ideal Gas Heating Value	Btu/ft^3	5834.84	50.31	50.4884
Gross Liquid Heating Value	Btu/lb	20436.9	0	3.86726

Process Streams		Stablized Oil	Water Flash Gas	Water Storage Inlet	Water to Disposal
Properties	Status:	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	VRT	Water Storage	HT Water LCV	Water Storage
	To Block:	VRT Oil LCV	--	Water Storage	--
Property	**Units**				
Temperature	°F	131.123	69.4*	143.138	69.4
Pressure	psia	14.7*	13.2	13.2*	13.2
Mole Fraction Vapor	%	0	100	0.0110037	0
Mole Fraction Light Liquid	%	100	0	99.9890	100
Mole Fraction Heavy Liquid	%	0	0	0	0
Molecular Weight	lb/lbmol	113.458	26.8245	18.0179	18.0173
Mass Density	lb/ft^3	42.9761	0.0626822	51.8315	62.2815
Molar Flow	lbmol/h	42.4732	0.0420771	647.623	647.581
Mass Flow	lb/h	4818.92	1.12870	11668.8	11667.7
Vapor Volumetric Flow	ft^3/h	112.130	18.0067	225.130	187.338
Liquid Volumetric Flow	gpm	13.9799	2.24499	28.0682	23.3564
Std Vapor Volumetric Flow	MMSCFD	0.386830	0.000383223	5.89831	5.89793
Std Liquid Volumetric Flow	sgpm	13.4400	0.00539111	23.3318	23.3264
Compressibility		0.00612105	0.994911	0.000709319	0.000672556
Specific Gravity		0.689062	0.926177		0.998597
API Gravity		64.3079			10.0122
Enthalpy	Btu/h	-4.03039E+06	-1987.63	-7.88251E+07	-7.96689E+07
Mass Enthalpy	Btu/lb	-836.367	-1761.00	-6755.19	-6828.16
Mass Cp	Btu/(lb*°F)	0.526208	0.421451	0.984229	0.983157
Ideal Gas CpCv Ratio		1.04400	1.21414	1.32238	1.32585
Dynamic Viscosity	cP	0.380286	0.0103609		1.00309
Kinematic Viscosity	cSt	0.552411	10.3189		1.00545
Thermal Conductivity	Btu/(h*ft*°F)	0.0685581	0.0150126		0.346703
Surface Tension	lbf/ft	0.00124857?			0.00504665?
Net Ideal Gas Heating Value	Btu/ft^3	5718.33	1249.37	0.171647	0.0904789
Net Liquid Heating Value	Btu/lb	18966.7	17565.6	-1055.88	-1057.68
Gross Ideal Gas Heating Value	Btu/ft^3	6152.86	1371.26	50.4884	50.4026
Gross Liquid Heating Value	Btu/lb	20420.1	19289.9	3.86726	2.00159

Process Streams		Wellhead Fluid	1	2	2-Phase Inlet
Properties	Status:	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	XCHG-100	MIX-100	CMPR-100	FLOWLINE DELTA P
	To Block:	FLOWLINE DELTA P	CMPR-100	XCHG-100	Heater Treater
Property	**Units**				
Temperature	°F	143*	140.748	142.284	143
Pressure	psia	80	68	80*	80
Mole Fraction Vapor	%	5.06989	5.23746	5.05624	5.06989
Mole Fraction Light Liquid	%	6.40998	6.27210	6.41925	6.40998
Mole Fraction Heavy Liquid	%	88.5201	88.4904	88.5245	88.5201
Molecular Weight	lb/lbmol	24.3423	24.3423	24.3423	24.3423
Mass Density	lb/ft^3	5.51802	4.62490	5.53736	5.51802
Molar Flow	lbmol/h	731.611	731.611	731.611	731.611
Mass Flow	lb/h	17809.1	17809.1	17809.1	17809.1
Vapor Volumetric Flow	ft^3/h	3227.44	3850.69	3216.17	3227.44
Liquid Volumetric Flow	gpm	402.382	480.086	400.977	402.382
Std Vapor Volumetric Flow	MMSCFD	6.66324	6.66324	6.66324	6.66324
Std Liquid Volumetric Flow	sgpm	42.6316	42.6316	42.6316	42.6316
Compressibility		0.0545662	0.0555456	0.0544404	0.0545662
Specific Gravity					
API Gravity					
Enthalpy	Btu/h	-8.46900E+07	-8.47115E+07	-8.47017E+07	-8.46900E+07
Mass Enthalpy	Btu/lb	-4755.44	-4756.65	-4756.10	-4755.44
Mass Cp	Btu/(lb*°F)	0.826115	0.824783	0.825962	0.826115
Ideal Gas CpCv Ratio		1.22480	1.22512	1.22490	1.22480
Dynamic Viscosity	cP				
Kinematic Viscosity	cSt				
Thermal Conductivity	Btu/(h*ft*°F)				
Surface Tension	lbf/ft				
Net Ideal Gas Heating Value	Btu/ft^3	422.444	422.444	422.444	422.444
Net Liquid Heating Value	Btu/lb	5838.31	5838.31	5838.31	5838.31
Gross Ideal Gas Heating Value	Btu/ft^3	500.623	500.623	500.623	500.623
Gross Liquid Heating Value	Btu/lb	7057.08	7057.08	7057.08	7057.08

Jubilee 531-2210H
ProMax Report

Bryan Research & Engineering, Inc.

ProMax® 3.2

with

TSWEET® & PROSIM®

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Simulation Report

Project: 1 - Vertical Battery with 2-Phase.pmx

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Client Name: EOG Wyoming
Location: Larmie County, WY
Job: Jubilee 531-2210H

ProMax Filename: C:\Users\jvanassche\Desktop\Jubilee Permit\1 - Vertical Battery with 2-Phase.pmx
ProMax Version: 3.2.12198.0
Simulation Initiated: 12/23/2014 11:14:26 AM

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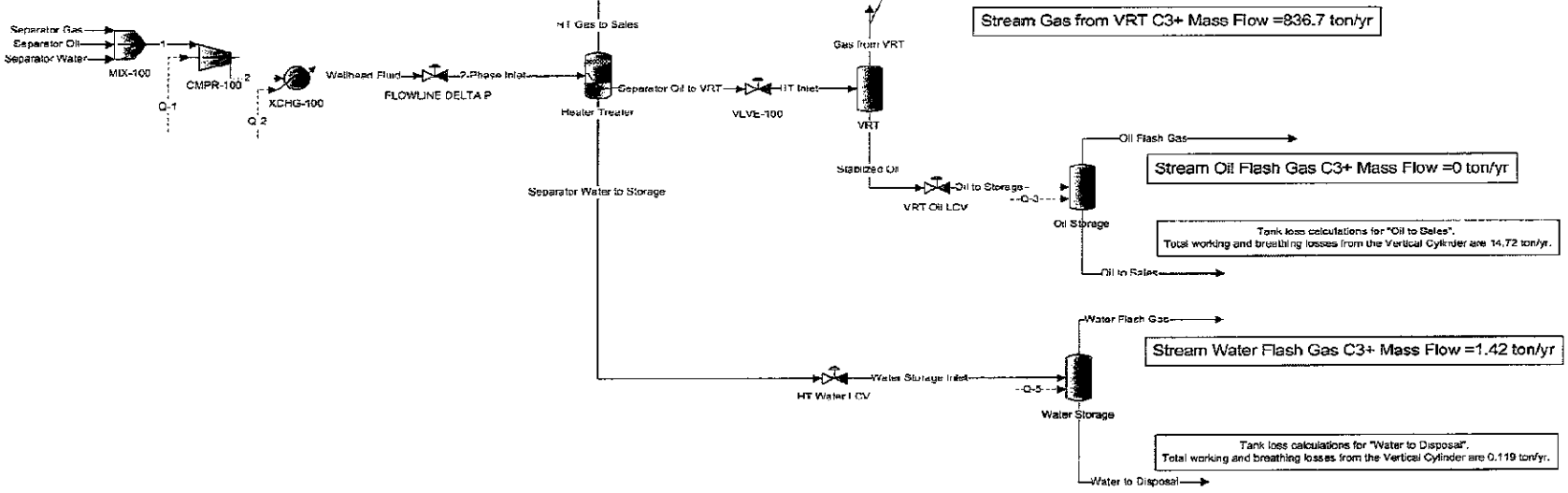
Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

Properties	HT Gas to Sales	
Temperature(Total)	143	°F
Pressure(Total)	80*	psia

Properties	Gas from VRT	
Temperature(Total)	133	°F
Pressure(Total)	14.7	psia

Names	Units	Oil to Sales	Water to Disposal
Std Liquid Volumetric Flow	bbl/d	544.71	694.06
True Vapor Pressure	psia	9.976	17.348
Reid Vapor Pressure	psi	6.1169	1.049
API Gravity		64.323	10.013



Process Streams		Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas	Oil to Sales
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	VRT	Heater Treater	VLVE-100	Oil Storage	Oil Storage
	To Block:	--	--	VRT	--	--
Mole Fraction		%	%	%	%	%
Water		2.31538	3.95778	0.215079		0.0247457
H2S		0	0	0		0
Oxygen		0	0	0		0
CO2		1.32687	2.35338	0.122782		0.0136657
Nitrogen		0.0632877	0.709808	0.00533747		8.59162E-05
Methane		14.1605	56.2275	1.23023		0.0584683
Ethane		12.0139	12.2096	1.22049		0.242377
Propane		28.1708	12.7872	4.12489		1.94580
Isobutane		4.19045	1.39488	0.888618		0.589401
n-Butane		17.2717	5.22471	4.45600		3.29462
Isopentane		4.48498	1.16001	2.12738		1.91373
n-Pentane		6.87745	1.73278	3.97908		3.71643
Hexane		3.83822	0.918083	5.60735		5.76767
Heptane		1.09326	0.265022	4.01416		4.27885
Octane		0.131762	0.0330127	1.27334		1.37679
Nonane		2.42324	0.629950	61.7786		67.1574
Decane		0.00618214	0.00168966	0.399086		0.434692
Benzene		0.877414	0.208260	1.39217		1.43882
Toluene		0.0568253	0.0136680	0.258715		0.277011
Ethylbenzene		0.126986	0.0315824	1.42943		1.54746
m-Xylene		0.365822	0.0916672	4.74946		5.14671
2,2,4-Trimethylpentane		0.204951	0.0493278	0.727838		0.775223
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.104658	1.58497	0.117001	0	0.0123429
H2S		0	0	0	0	0
Oxygen		0	0	0	0	0
CO2		0.0599762	0.942459	0.0667926	0	0.00681633
Nitrogen		0.00286068	0.284257	0.00290354	0	4.28542E-05
Methane		0.640071	22.5174	0.669235	0	0.0291634
Ethane		0.543043	4.88958	0.663938	0	0.120895
Propane		1.27336	5.12090	2.24390	0	0.970548
Isobutane		0.189413	0.558606	0.483401	0	0.293987
n-Butane		0.780704	2.09234	2.42403	0	1.64333
Isopentane		0.202727	0.464551	1.15728	0	0.954552
n-Pentane		0.310869	0.693925	2.16459	0	1.85372
Hexane		0.173492	0.367665	3.05035	0	2.87686
Heptane		0.0494165	0.106133	2.18367	0	2.13425
Octane		0.00595581	0.0132206	0.692687	0	0.686731
Nonane		0.109534	0.252276	33.6070	0	33.4975
Decane		0.000279441	0.000676659	0.217100	0	0.216820
Benzene		0.0396602	0.0834020	0.757331	0	0.717671
Toluene		0.00256857	0.00547361	0.140739	0	0.138170
Ethylbenzene		0.00573993	0.0126478	0.777599	0	0.771860
m-Xylene		0.0165356	0.0367100	2.58367	0	2.56713
2,2,4-Trimethylpentane		0.00926405	0.0197543	0.395938	0	0.386674

Process Streams		Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT	Separator Water
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	VRT Oil LCV	--	--	Heater Treater	--
	To Block:	Oil Storage	MIX-100	MIX-100	VLVE-100	MIX-100
Mole Fraction		%	%	%	%	%
Water		0.0247457	0*	0*	0.215079	100*
H2S		0	0*	0*	0	0*
Oxygen		0	0*	0*	0	0*
CO2		0.0136657	2.49770*	0.118400*	0.122782	0*
Nitrogen		8.59162E-05	0.685599*	0.0419000*	0.00533747	0*
Methane		0.0584683	58.5487*	1.13900*	1.23023	0*
Ethane		0.242377	12.7543*	1.17490*	1.22049	0*
Propane		1.94580	13.8721*	3.71730*	4.12489	0*
Isobutane		0.589401	1.50900*	0.848001*	0.888618	0*
n-Butane		3.29462	5.65409*	4.30850*	4.45600	0*
Isopentane		1.91373	1.22440*	2.12010*	2.12738	0*
n-Pentane		3.71643	1.58050*	4.14790*	3.97908	0*
Hexane		5.76767	0.583099*	5.88931*	5.60735	0*
Heptane		4.27885	0.0223000*	4.20750*	4.01416	0*
Octane		1.37679	0.00279999*	1.30000*	1.27334	0*
Nonane		67.1574	0*	62.4510*	61.7786	0*
Decane		0.434692	0.0972998*	0.332400*	0.399086	0*
Benzene		1.43882	0.0537999*	1.52330*	1.39217	0*
Toluene		0.277011	0.000799998*	0.269700*	0.258715	0*
Ethylbenzene		1.54746	0.00190000*	1.45710*	1.42943	0*
m-Xylene		5.14671	0.911398*	4.18720*	4.74946	0*
2,2,4-Trimethylpentane		0.775223	0.000299999*	0.766501*	0.727838	0*
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		0.0123429	0*	0*	0.117001	563.663*
H2S		0	0*	0*	0	0*
Oxygen		0	0*	0*	0	0*
CO2		0.00681633	0.964101*	0.0641936*	0.0667926	0*
Nitrogen		4.28542E-05	0.264638*	0.0227172*	0.00290354	0*
Methane		0.0291634	22.5996*	0.617538*	0.669235	0*
Ethane		0.120895	4.92310*	0.637002*	0.663938	0*
Propane		0.970548	5.35457*	2.01543*	2.24390	0*
Isobutane		0.293987	0.582467*	0.459765*	0.483401	0*
n-Butane		1.64333	2.18246*	2.33596*	2.42403	0*
Isopentane		0.954552	0.472613*	1.14947*	1.15728	0*
n-Pentane		1.85372	0.610066*	2.24889*	2.16459	0*
Hexane		2.87686	0.225074*	3.19303*	3.05035	0*
Heptane		2.13425	0.00860770*	2.28120*	2.18367	0*
Octane		0.686731	0.00108079*	0.704828*	0.692687	0*
Nonane		33.4975	0*	33.8594*	33.6070	0*
Decane		0.216820	0.0375573*	0.180219*	0.217100	0*
Benzene		0.717671	0.0207665*	0.825896*	0.757331	0*
Toluene		0.138170	0.000308796*	0.146225*	0.140739	0*
Ethylbenzene		0.771860	0.000733391*	0.790004*	0.777599	0*
m-Xylene		2.56713	0.351796*	2.27020*	2.58367	0*
2,2,4-Trimethylpentane		0.386674	0.000115799*	0.415578*	0.395938	0*

Process Streams		Separator Water to Storage	Stablized Oil	Water Flash Gas	Water Storage Inlet
Composition	Status:	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Heater Treater	VRT	Water Storage	HT Water LCV
	To Block:	HT Water LCV	VRT Oil LCV	--	Water Storage
Mole Fraction		%	%	%	%
Water		99.9870	0.0247457	2.70482	99.9870
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.00338806	0.0136657	6.32696	0.00338806
Nitrogen		3.47168E-05	8.59162E-05	0.452873	3.47168E-05
Methane		0.00541126	0.0584683	61.3080	0.00541126
Ethane		0.00117065	0.242377	12.6628	0.00117065
Propane		0.000923204	1.94580	9.55411	0.000923204
Isobutane		3.99951E-05	0.589401	0.524383	3.99951E-05
n-Butane		0.000364351	3.29462	4.10730	0.000364351
Isopentane		4.43904E-05	1.91373	0.542140	4.43904E-05
n-Pentane		7.84478E-05	3.71643	0.964014	7.84478E-05
Hexane		1.59631E-05	5.76767	0.222945	1.59631E-05
Heptane		1.75545E-06	4.27885	0.0239747	1.75545E-06
Octane		3.23776E-07	1.37679	0.00461338	3.23776E-07
Nonane		8.10929E-06	67.1574	0.111076	8.10929E-06
Decane		1.15181E-08	0.434692	0.000164254	1.15181E-08
Benzene		0.00105504	1.43882	0.322051	0.00105504
Toluene		5.70977E-05	0.277011	0.0210100	5.70977E-05
Ethylbenzene		8.72278E-05	1.54746	0.0341405	8.72278E-05
m-Xylene		0.000287428	5.14671	0.109947	0.000287428
2,2,4-Trimethylpentane		1.76785E-07	0.775223	0.00265953	1.76785E-07
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		561.961	0.0123429	0.000998131	561.961
H2S		0	0	0	0
Oxygen		0	0	0	0
CO2		0.0190421	0.00681633	0.00233477	0.0190421
Nitrogen		0.000195120	4.28542E-05	0.000167119	0.000195120
Methane		0.0304131	0.0291634	0.0226239	0.0304131
Ethane		0.00657947	0.120895	0.00467284	0.00657947
Propane		0.00518872	0.970548	0.00352566	0.00518872
Isobutane		0.000224786	0.293987	0.000193508	0.000224786
n-Butane		0.00204777	1.64333	0.00151567	0.00204777
Isopentane		0.000249489	0.954552	0.000200060	0.000249489
n-Pentane		0.000440904	1.85372	0.000355740	0.000440904
Hexane		8.97180E-05	2.87686	8.22711E-05	8.97180E-05
Heptane		9.86621E-06	2.13425	8.84713E-06	9.86621E-06
Octane		1.81973E-06	0.686731	1.70243E-06	1.81973E-06
Nonane		4.55770E-05	33.4975	4.09894E-05	4.55770E-05
Decane		6.47355E-08	0.216820	6.06131E-08	6.47355E-08
Benzene		0.00592966	0.717671	0.000118843	0.00592966
Toluene		0.000320909	0.138170	7.75311E-06	0.000320909
Ethylbenzene		0.000490250	0.771860	1.25985E-05	0.000490250
m-Xylene		0.00161544	2.56713	4.05727E-05	0.00161544
2,2,4-Trimethylpentane		9.93592E-07	0.386674	9.81420E-07	9.93592E-07

Process Streams		Water to Disposal	Wellhead Fluid	1	2	2-Phase Inlet
Composition	Status:	Solved	Solved	Solved	Solved	Solved
Phase: Total	From Block:	Water Storage	XCHG-100	MIX-100	CMPR-100	FLOWLINE DELTA P
	To Block:	--	FLOWLINE DELTA P	CMPR-100	XCHG-100	Heater Treater
Mole Fraction		%	%	%	%	%
Water		99.9934	85.8614	85.8614	85.8614	85.8614
H2S		0	0	0	0	0
Oxygen		0	0	0	0	0
CO2		0.00297284	0.156637	0.156637	0.156637	0.156637
Nitrogen		4.98247E-06	0.0437722	0.0437722	0.0437722	0.0437722
Methane		0.00138599	3.53660	3.53660	3.53660	3.53660
Ethane		0.000339259	0.846956	0.846956	0.846956	0.846956
Propane		0.000295920	1.12265	1.12265	1.12265	1.12265
Isobutane		5.56559E-06	0.158761	0.158761	0.158761	0.158761
n-Butane		9.46802E-05	0.688280	0.688280	0.688280	0.688280
Isopentane		8.79518E-06	0.247087	0.247087	0.247087	0.247087
n-Pentane		1.51537E-05	0.435498	0.435498	0.435498	0.435498
Hexane		1.32507E-06	0.520672	0.520672	0.520672	0.520672
Heptane		1.81332E-07	0.348801	0.348801	0.348801	0.348801
Octane		2.08718E-08	0.107529	0.107529	0.107529	0.107529
Nonane		8.16301E-07	5.15771	5.15771	5.15771	5.15771
Decane		7.33526E-10	0.0331734	0.0331734	0.0331734	0.0331734
Benzene		0.00103396	0.128970	0.128970	0.128970	0.128970
Toluene		5.57219E-05	0.0223211	0.0223211	0.0223211	0.0223211
Ethylbenzene		8.49918E-05	0.120451	0.120451	0.120451	0.120451
m-Xylene		0.000280228	0.399402	0.399402	0.399402	0.399402
2,2,4-Trimethylpentane		2.16572E-09	0.0633215	0.0633215	0.0633215	0.0633215
Molar Flow		lbmol/h	lbmol/h	lbmol/h	lbmol/h	lbmol/h
Water		561.960	563.663	563.663	563.663	563.663
H2S		0	0	0	0	0
Oxygen		0	0	0	0	0
CO2		0.0167073	1.02829	1.02829	1.02829	1.02829
Nitrogen		2.80014E-05	0.287356	0.287356	0.287356	0.287356
Methane		0.00778925	23.2171	23.2171	23.2171	23.2171
Ethane		0.00190663	5.56010	5.56010	5.56010	5.56010
Propane		0.00166306	7.37000	7.37000	7.37000	7.37000
Isobutane		3.12785E-05	1.04223	1.04223	1.04223	1.04223
n-Butane		0.000532100	4.51842	4.51842	4.51842	4.51842
Isopentane		4.94287E-05	1.62208	1.62208	1.62208	1.62208
n-Pentane		8.51632E-05	2.85896	2.85896	2.85896	2.85896
Hexane		7.44686E-06	3.41811	3.41811	3.41811	3.41811
Heptane		1.01908E-06	2.28981	2.28981	2.28981	2.28981
Octane		1.17299E-07	0.705909	0.705909	0.705909	0.705909
Nonane		4.58759E-06	33.8594	33.8594	33.8594	33.8594
Decane		4.12240E-09	0.217777	0.217777	0.217777	0.217777
Benzene		0.00581082	0.846663	0.846663	0.846663	0.846663
Toluene		0.000313156	0.146534	0.146534	0.146534	0.146534
Ethylbenzene		0.000477651	0.790737	0.790737	0.790737	0.790737
m-Xylene		0.00157487	2.62199	2.62199	2.62199	2.62199
2,2,4-Trimethylpentane		1.21713E-08	0.415693	0.415693	0.415693	0.415693

Process Streams	Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas	Oil to Sales
Mass Fraction	%	%	%	%	%
Water	0.848457	2.50357	0.0356073		0.00390287
H2S	0	0	0		0
Oxygen	0	0	0		0
CO2	1.18779	3.63668	0.0496573		0.00526529
Nitrogen	0.0360621	0.698190	0.00137405		2.10710E-05
Methane	4.62077	31.6728	0.181367		0.00821174
Ethane	7.34800	12.8910	0.337253		0.0638049
Propane	25.2674	19.7988	1.67151		0.751170
Isobutane	4.95414	2.84672	0.474633		0.299914
n-Butane	20.4194	10.6628	2.38006		1.67645
Isopentane	6.58196	2.93873	1.41051		1.20880
n-Pentane	10.0930	4.38973	2.63823		2.34746
Hexane	6.72789	2.77800	4.44060		4.35139
Heptane	2.22825	0.932449	3.69633		3.75359
Octane	0.306148	0.132410	1.33666		1.37685
Nonane	6.32175	2.83692	72.8137		75.4072
Decane	0.0178918	0.00844142	0.521815		0.541470
Benzene	1.39408	0.571202	0.999335		0.983938
Toluene	0.106500	0.0442192	0.219060		0.223451
Ethylbenzene	0.274223	0.117731	1.39459		1.43829
m-Xylene	0.789983	0.341713	4.63368		4.78360
2,2,4-Trimethylpentane	0.476201	0.197849	0.764029		0.775256
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h
Water	1.88545	28.5537	2.10781	0	0.222361
H2S	0	0	0	0	0
Oxygen	0	0	0	0	0
CO2	2.63952	41.4772	2.93951	0	0.299983
Nitrogen	0.0801375	7.96300	0.0813380	0	0.00120049
Methane	10.2683	361.235	10.7362	0	0.467853
Ethane	16.3288	147.025	19.9640	0	3.63520
Propane	56.1494	225.809	98.9464	0	42.7969
Isobutane	11.0091	32.4674	28.0963	0	17.0872
n-Butane	45.3762	121.611	140.890	0	95.5138
Isopentane	14.6265	33.5168	83.4962	0	68.8698
n-Pentane	22.4288	50.0659	156.173	0	133.744
Hexane	14.9508	31.6837	262.865	0	247.915
Heptane	4.95163	10.6348	218.808	0	213.856
Octane	0.680323	1.51017	79.1246	0	78.4443
Nonane	14.0482	32.3557	4310.27	0	4296.23
Decane	0.0397593	0.0962762	30.8893	0	30.8496
Benzene	3.09793	6.51468	59.1565	0	56.0586
Toluene	0.236664	0.504330	12.9675	0	12.7308
Ethylbenzene	0.609380	1.34275	82.5538	0	81.9445
m-Xylene	1.75551	3.89731	274.295	0	272.540
2,2,4-Trimethylpentane	1.05822	2.25651	45.2274	0	44.1692

Process Streams	Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT	Separator Water
Mass Fraction	%	%	%	%	%
Water	0.00390287	0*	0*	0.0356073	100*
H2S	0	0*	0*	0	0*
Oxygen	0	0*	0*	0	0*
CO2	0.00526529	3.85662*	0.0476256*	0.0496573	0*
Nitrogen	2.10710E-05	0.673841*	0.0107281*	0.00137405	0*
Methane	0.00821174	32.9541*	0.167008*	0.181367	0*
Ethane	0.0638049	13.4554*	0.322896*	0.337253	0*
Propane	0.751170	21.4614*	1.49819*	1.67151	0*
Isobutane	0.299914	3.07717*	0.450485*	0.474633	0*
n-Butane	1.67645	11.5299*	2.28882*	2.38006	0*
Isopentane	1.20880	3.09937*	1.39807*	1.41051	0*
n-Pentane	2.34746	4.00077*	2.73527*	2.63823	0*
Hexane	4.35139	1.76298*	4.63863*	4.44060	0*
Heptane	3.75359	0.0783974*	3.85339*	3.69633	0*
Octane	1.37685	0.0112216*	1.35725*	1.33666	0*
Nonane	75.4072	0*	73.2076*	72.8137	0*
Decane	0.541470	0.485716*	0.432268*	0.521815	0*
Benzene	0.983938	0.147441*	1.08754*	0.999335	0*
Toluene	0.223451	0.00258614*	0.227125*	0.219060	0*
Ethylbenzene	1.43829	0.00707710*	1.41388*	1.39459	0*
m-Xylene	4.78360	3.39477*	4.06301*	4.63368	0*
2,2,4-Trimethylpentane	0.775256	0.00120231*	0.800257*	0.764029	0*
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h
Water	0.222361	0*	0*	2.10781	10154.6*
H2S	0	0*	0*	0	0*
Oxygen	0	0*	0*	0	0*
CO2	0.299983	42.4296*	2.82513*	2.93951	0*
Nitrogen	0.00120049	7.41342*	0.636385*	0.0813380	0*
Methane	0.467853	362.553*	9.90683*	10.7362	0*
Ethane	3.63520	148.033*	19.1540*	19.9640	0*
Propane	42.7969	236.113*	88.8716*	98.9464	0*
Isobutane	17.0872	33.8543*	26.7225*	28.0963	0*
n-Butane	95.5138	126.849*	135.771*	140.890	0*
Isopentane	68.8698	34.0984*	82.9326*	83.4962	0*
n-Pentane	133.744	44.0155*	162.255*	156.173	0*
Hexane	247.915	19.3958*	275.161*	262.865	0*
Heptane	213.856	0.862508*	228.581*	218.808	0*
Octane	78.4443	0.123457*	80.5115*	79.1246	0*
Nonane	4296.23	0*	4342.64*	4310.27	0*
Decane	30.8496	5.34372*	25.6419*	30.8893	0*
Benzene	56.0586	1.62211*	64.5123*	59.1565	0*
Toluene	12.7308	0.0284520*	13.4729*	12.9675	0*
Ethylbenzene	81.9445	0.0778605*	83.8708*	82.5538	0*
m-Xylene	272.540	37.3484*	241.016*	274.295	0*
2,2,4-Trimethylpentane	44.1692	0.0132275*	47.4708*	45.2274	0*

Process Streams	Separator Water to Storage	Stablized Oil	Water Flash Gas	Water Storage Inlet
Mass Fraction	%	%	%	%
Water	99.9736	0.00390287	1.88691	99.9736
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.00827558	0.00526529	10.7824	0.00827558
Nitrogen	5.39767E-05	2.10710E-05	0.491264	5.39767E-05
Methane	0.00481803	0.00821174	38.0856	0.00481803
Ethane	0.00195366	0.0638049	14.7443	0.00195366
Propane	0.00225940	0.751170	16.3139	0.00225940
Isobutane	0.000129018	0.299914	1.18022	0.000129018
n-Butane	0.00117534	1.67645	9.24424	0.00117534
Isopentane	0.000177754	1.20880	1.51465	0.000177754
n-Pentane	0.000314131	2.34746	2.69330	0.000314131
Hexane	7.63485E-05	4.35139	0.743967	7.63485E-05
Heptane	9.76258E-06	3.75359	0.0930254	9.76258E-06
Octane	2.05267E-06	1.37685	0.0204064	2.05267E-06
Nonane	5.77243E-05	75.4072	0.551658	5.77243E-05
Decane	9.09556E-08	0.541470	0.000904980	9.09556E-08
Benzene	0.00457388	0.983938	0.974123	0.00457388
Toluene	0.000291985	0.223451	0.0749618	0.000291985
Ethylbenzene	0.000513969	1.43829	0.140354	0.000513969
m-Xylene	0.00169360	4.78360	0.452000	0.00169360
2,2,4-Trimethylpentane	1.12078E-06	0.775256	0.0117639	1.12078E-06
Mass Flow	lb/h	lb/h	lb/h	lb/h
Water	10123.9	0.222361	0.0179816	10123.9
H2S	0	0	0	0
Oxygen	0	0	0	0
CO2	0.838032	0.299983	0.102752	0.838032
Nitrogen	0.00546598	0.00120049	0.00468157	0.00546598
Methane	0.487901	0.467853	0.362942	0.487901
Ethane	0.197838	3.63520	0.140508	0.197838
Propane	0.228800	42.7969	0.155466	0.228800
Isobutane	0.0130651	17.0872	0.0112471	0.0130651
n-Butane	0.119021	95.5138	0.0880943	0.119021
Isopentane	0.0180003	68.8698	0.0144341	0.0180003
n-Pentane	0.0318107	133.744	0.0256662	0.0318107
Hexane	0.00773148	247.915	0.00708974	0.00773148
Heptane	0.000988613	213.856	0.000886499	0.000988613
Octane	0.000207865	78.4443	0.000194466	0.000207865
Nonane	0.00584548	4296.23	0.00525710	0.00584548
Decane	9.21067E-06	30.8496	8.62413E-06	9.21067E-06
Benzene	0.463177	56.0586	0.00928305	0.463177
Toluene	0.0295680	12.7308	0.000714359	0.0295680
Ethylbenzene	0.0520474	81.9445	0.00133752	0.0520474
m-Xylene	0.171504	272.540	0.00430740	0.171504
2,2,4-Trimethylpentane	0.000113496	44.1692	0.000112106	0.000113496

Process Streams	Water to Disposal	Wellhead Fluid	1	2	2-Phase Inlet
Mass Fraction	%	%	%	%	%
Water	99.9829	59.0839	59.0839	59.0839	59.0839
H2S	0	0	0	0	0
Oxygen	0	0	0	0	0
CO2	0.00726159	0.263313	0.263313	0.263313	0.263313
Nitrogen	7.74683E-06	0.0468375	0.0468375	0.0468375	0.0468375
Methane	0.00123409	2.16714	2.16714	2.16714	2.16714
Ethane	0.000566193	0.972771	0.972771	0.972771	0.972771
Propane	0.000724240	1.89091	1.89091	1.89091	1.89091
Isobutane	1.79542E-05	0.352464	0.352464	0.352464	0.352464
n-Butane	0.000305432	1.52805	1.52805	1.52805	1.52805
Isopentane	3.52198E-05	0.680941	0.680941	0.680941	0.680941
n-Pentane	6.06820E-05	1.20018	1.20018	1.20018	1.20018
Hexane	6.33775E-06	1.71387	1.71387	1.71387	1.71387
Heptane	1.00847E-06	1.33501	1.33501	1.33501	1.33501
Octane	1.32327E-07	0.469171	0.469171	0.469171	0.469171
Nonane	5.81083E-06	25.2675	25.2675	25.2675	25.2675
Decane	5.79266E-09	0.180289	0.180289	0.180289	0.180289
Benzene	0.00448263	0.384800	0.384800	0.384800	0.384800
Toluene	0.000284957	0.0785572	0.0785572	0.0785572	0.0785572
Ethylbenzene	0.000500808	0.488452	0.488452	0.488452	0.488452
m-Xylene	0.00165122	1.61965	1.61965	1.61965	1.61965
2,2,4-Trimethylpentane	1.37306E-08	0.276284	0.276284	0.276284	0.276284
Mass Flow	lb/h	lb/h	lb/h	lb/h	lb/h
Water	10123.9	10154.6	10154.6	10154.6	10154.6
H2S	0	0	0	0	0
Oxygen	0	0	0	0	0
CO2	0.735280	45.2547	45.2547	45.2547	45.2547
Nitrogen	0.000784413	8.04981	8.04981	8.04981	8.04981
Methane	0.124959	372.459	372.459	372.459	372.459
Ethane	0.0573304	167.187	167.187	167.187	167.187
Propane	0.0733337	324.985	324.985	324.985	324.985
Isobutane	0.00181797	60.5768	60.5768	60.5768	60.5768
n-Butane	0.0309268	262.621	262.621	262.621	262.621
Isopentane	0.00356622	117.031	117.031	117.031	117.031
n-Pentane	0.00614442	206.270	206.270	206.270	206.270
Hexane	0.000641736	294.557	294.557	294.557	294.557
Heptane	0.000102114	229.444	229.444	229.444	229.444
Octane	1.33989E-05	80.6350	80.6350	80.6350	80.6350
Nonane	0.000588382	4342.64	4342.64	4342.64	4342.64
Decane	5.86542E-07	30.9856	30.9856	30.9856	30.9856
Benzene	0.453894	66.1344	66.1344	66.1344	66.1344
Toluene	0.0288537	13.5014	13.5014	13.5014	13.5014
Ethylbenzene	0.0507098	83.9486	83.9486	83.9486	83.9486
m-Xylene	0.167196	278.364	278.364	278.364	278.364
2,2,4-Trimethylpentane	1.39031E-06	47.4840	47.4840	47.4840	47.4840

Process Streams		Gas from VRT	HT Gas to Sales	HT Inlet	Oil Flash Gas	Oil to Sales
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	VRT	Heater Treater	VLVE-100	Oil Storage	Oil Storage
	To Block:	--	--	VRT	--	--
Property	**Units**					
Temperature	°F	133.012	143	107.375*	69.4*	69.4
Pressure	psia	14.7	80*	2.48362	14.7	14.7
Mole Fraction Vapor	%	100	100	20.7792		0
Mole Fraction Light Liquid	%	0	0	79.2208		100
Mole Fraction Heavy Liquid	%	0	0	0		0
Molecular Weight	lb/lbmol	49.1625	28.4796	108.818		114.224
Mass Density	lb/ft^3	0.115345	0.361304	0.213873		44.7971
Molar Flow	lbmol/h	4.52012	40.0470	54.3992	0	49.8791
Mass Flow	lb/h	222.221	1140.52	5919.59	0	5697.37
Vapor Volumetric Flow	ft^3/h	1926.57	3156.68	27678.0		127.182
Liquid Volumetric Flow	gpm	240.196	393.561	3450.76		15.8564
Std Vapor Volumetric Flow	MMSCFD	0.0411676	0.364733	0.495448	0	0.454280
Std Liquid Volumetric Flow	sgpm	0.820374	5.35357	16.7079	0	15.8875
Compressibility		0.985067	0.975006	0.207657		0.00660156
Specific Gravity		1.69745	0.983322			0.718259
API Gravity						64.3230
Enthalpy	Btu/h	-226671	-1.70265E+06	-5.01124E+06	0	-4.96870E+06
Mass Enthalpy	Btu/lb	-1020.02	-1492.87	-846.552		-872.103
Mass Cp	Btu/(lb*°F)	0.435191	0.475415	0.496727		0.488828
Ideal Gas CpCv Ratio		1.10298	1.17578	1.04749		1.04797
Dynamic Viscosity	cP	0.00901412	0.0112146			0.566470
Kinematic Viscosity	cSt	4.87868	1.93772			0.789417
Thermal Conductivity	Btu/(h*ft*°F)	0.0124997	0.0177708			0.0742693
Surface Tension	lbf/ft					0.00147740?
Net Ideal Gas Heating Value	Btu/ft^3	2502.48	1425.25	5488.46		5759.05
Net Liquid Heating Value	Btu/lb	19157.5	18864.4	18980.8		18973.9
Gross Ideal Gas Heating Value	Btu/ft^3	2715.24	1561.80	5908.07		6197.40
Gross Liquid Heating Value	Btu/lb	20799.7	20683.8	20444.1		20430.2

Process Streams		Oil to Storage	Separator Gas	Separator Oil	Separator Oil to VRT	Separator Water
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	VRT Oil LCV	--	--	Heater Treater	--
	To Block:	Oil Storage	MIX-100	MIX-100	VLVE-100	MIX-100
Property	**Units**					
Temperature	°F	133.012	143*	143*	143	143*
Pressure	psia	14.7*	68*	68*	80	68*
Mole Fraction Vapor	%	0	100	0.296164	0	0
Mole Fraction Light Liquid	%	100	0	99.7038	100	100
Mole Fraction Heavy Liquid	%	0	0	0	0	0
Molecular Weight	lb/lbmol	114.224	28.5022	109.410	108.818	18.0153
Mass Density	lb/ft^3	42.9226	0.306141	38.2040	42.2520	61.3007
Molar Flow	lbmol/h	49.8791	38.5996	54.2175	54.3992	563.663
Mass Flow	lb/h	5697.37	1100.17	5931.95	5919.59	10154.6
Vapor Volumetric Flow	ft^3/h	132.736	3593.69	155.270	140.102	165.651
Liquid Volumetric Flow	gpm	16.5489	448.044	19.3584	17.4673	20.6526
Std Vapor Volumetric Flow	MMSCFD	0.454280	0.351551*	0.493793	0.495448	5.13363
Std Liquid Volumetric Flow	sgpm	15.8875	5.26894	16.7408*	16.7079	20.2997*
Compressibility		0.00615037	0.978864	0.0301102	0.0318565	0.00308987
Specific Gravity		0.688204	0.984104		0.677451	0.982871
API Gravity		64.3230			65.6623	10.0053
Enthalpy	Btu/h	-4.78457E+06	-1.51624E+06	-5.02627E+06	-5.01124E+06	-6.86102E+07
Mass Enthalpy	Btu/lb	-839.786	-1378.18	-847.323	-846.552	-6756.60
Mass Cp	Btu/(lb*°F)	0.527786	0.472189	0.537358	0.537386	0.984186
Ideal Gas CpCv Ratio		1.04350	1.17642	1.04472	1.04502	1.32242
Dynamic Viscosity	cP	0.380069	0.0111138		0.333739	0.462417
Kinematic Viscosity	cSt	0.552784	2.26632		0.493105	0.470921
Thermal Conductivity	Btu/(h*ft*°F)	0.0684866	0.0178679		0.0667737	0.375148
Surface Tension	lbf/ft	0.00124402?			0.00115119?	0.00449638
Net Ideal Gas Heating Value	Btu/ft^3	5759.05	1460.69	5521.39	5488.46	0
Net Liquid Heating Value	Btu/lb	18973.9	19345.5	18991.8	18980.8	-1059.76
Gross Ideal Gas Heating Value	Btu/ft^3	6197.40	1598.26	5943.88	5908.07	50.31
Gross Liquid Heating Value	Btu/lb	20430.2	21177.1	20457.1	20444.1	0

Process Streams		Separator Water to Storage	Stablized Oil	Water Flash Gas	Water Storage Inlet
Properties	Status:	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	Heater Treater	VRT	Water Storage	HT Water LCV
	To Block:	HT Water LCV	VRT Oil LCV	--	Water Storage
Property	**Units**				
Temperature	°F	143	133.012	69.4*	143.139
Pressure	psia	80	14.7*	13.2	13.2*
Mole Fraction Vapor	%	0	0	100	0.0109468
Mole Fraction Light Liquid	%	100	100	0	99.9891
Mole Fraction Heavy Liquid	%	0	0	0	0
Molecular Weight	lb/lbmol	18.0177	114.224	25.8242	18.0177
Mass Density	lb/ft^3	61.2962	42.9226	0.0603251	51.8710
Molar Flow	lbmol/h	562.034	49.8791	0.0369020	562.034
Mass Flow	lb/h	10126.6	5697.37	0.952964	10126.6
Vapor Volumetric Flow	ft^3/h	165.207	132.736	15.7971	195.226
Liquid Volumetric Flow	gpm	20.5972	16.5489	1.96951	24.3398
Std Vapor Volumetric Flow	MMSCFD	5.11880	0.454280	0.000336090	5.11880
Std Liquid Volumetric Flow	sgpm	20.2480	15.8875	0.00466354	20.2480
Compressibility		0.00363590	0.00615037	0.995234	0.000708769
Specific Gravity		0.982800	0.688204	0.891640	
API Gravity		10.0141	64.3230		
Enthalpy	Btu/h	-6.84076E+07	-4.78457E+06	-1690.28	-6.84076E+07
Mass Enthalpy	Btu/lb	-6755.26	-839.786	-1773.70	-6755.26
Mass Cp	Btu/(lb*°F)	0.984194	0.527786	0.427435	0.984237
Ideal Gas CpCv Ratio		1.32239	1.04350	1.22043	1.32238
Dynamic Viscosity	cP	0.462206	0.380069	0.0104220	
Kinematic Viscosity	cSt	0.470740	0.552784	10.7852	
Thermal Conductivity	Btu/(h*ft*°F)	0.374896	0.0684866	0.0153264	
Surface Tension	lbf/ft	0.00449566	0.00124402?		
Net Ideal Gas Heating Value	Btu/ft^3	0.166511	5759.05	1217.21	0.166511
Net Liquid Heating Value	Btu/lb	-1056.00	18973.9	17781.4	-1056.00
Gross Ideal Gas Heating Value	Btu/ft^3	50.4832	6197.40	1337.10	50.4832
Gross Liquid Heating Value	Btu/lb	3.75624	20430.2	19543.2	3.75624

Process Streams		Water to Disposal	Wellhead Fluid	1	2	2-Phase Inlet
Properties	Status:	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	From Block:	Water Storage	XCHG-100	MIX-100	CMPR-100	FLOWLINE DELTA P
	To Block:	--	FLOWLINE DELTA P	CMPR-100	XCHG-100	Heater Treater
Property	**Units**					
Temperature	°F	69.4	143*	139.955	141.649	143
Pressure	psia	13.2	80	68	80*	80
Mole Fraction Vapor	%	0	6.10026	6.27360	6.07102	6.10026
Mole Fraction Light Liquid	%	100	8.28649	8.14137	8.30592	8.28649
Mole Fraction Heavy Liquid	%	0	85.6132	85.5850	85.6231	85.6132
Molecular Weight	lb/lbmol	18.0172	26.1800	26.1800	26.1800	26.1800
Mass Density	lb/ft^3	62.2813	4.96439	4.17825	4.99628	4.96439
Molar Flow	lbmol/h	561.997	656.480	656.480	656.480	656.480
Mass Flow	lb/h	10125.6	17186.7	17186.7	17186.7	17186.7
Vapor Volumetric Flow	ft^3/h	162.579	3461.99	4113.36	3439.89	3461.99
Liquid Volumetric Flow	gpm	20.2695	431.625	512.835	428.870	431.625
Std Vapor Volumetric Flow	MMSCFD	5.11846	5.97898	5.97898	5.97898	5.97898
Std Liquid Volumetric Flow	sgpm	20.2433	42.3094	42.3094	42.3094	42.3094
Compressibility		0.000672552	0.0652305	0.0662125	0.0649597	0.0652305
Specific Gravity		0.998594				
API Gravity		10.0125				
Enthalpy	Btu/h	-6.91398E+07	-7.51215E+07	-7.51527E+07	-7.51423E+07	-7.51215E+07
Mass Enthalpy	Btu/lb	-6828.22	-4370.91	-4372.73	-4372.12	-4370.91
Mass Cp	Btu/(lb*°F)	0.983161	0.796537	0.794907	0.796210	0.796537
Ideal Gas CpCv Ratio		1.32586	1.20648	1.20694	1.20668	1.20648
Dynamic Viscosity	cP	1.00311				
Kinematic Viscosity	cSt	1.00547				
Thermal Conductivity	Btu/(h*ft*°F)	0.346710				
Surface Tension	lbf/ft	0.005046712				
Net Ideal Gas Heating Value	Btu/ft^3	0.0865968	541.887	541.887	541.887	541.887
Net Liquid Heating Value	Btu/lb	-1057.77	7167.19	7167.19	7167.19	7167.19
Gross Ideal Gas Heating Value	Btu/ft^3	50.3987	628.065	628.065	628.065	628.065
Gross Liquid Heating Value	Btu/lb	1.91730	8416.35	8416.35	8416.35	8416.35

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL1

Emission Unit Type: Flare
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: FL1
Emission Unit Description Used by Company: Flare for Jubilee 155-2210H and 531-2210H

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)*** *, enter date contruction began:* Date: 9/26/2014
If Reason = ***Synthetic Minor*** *, enter date emissions unit became new synthetic minor:* Date:
If Reason = ***Modification*** *, enter modification date or date modification began:* Date:
If Reason = ***Temporary Permit*** *, enter beginning date for temporary permit:* Date:
If Reason = ***Reconstruction*** *, enter beginning date for reconstruction:* Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued? NO

if previous question's answer is No" (production not waiting until after permit), then provide first date of production: Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	31000160	Crude Oil Production /Flares	Flares
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL1

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination ***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	16.27			3.71	16.27	AP-42
Carbon monoxide (CO)	4.07			0.93	4.07	AP-42
Volatile organic compounds (VOC)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: The VOC and HAP emissions from the flare are accounted for in the VRT and heater treater operations.

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination ***
Benzene				0.12	0.55	Mass Balance
Toluene				0.03	0.14	Mass Balance
Ethylbenzene				0.07	0.32	Mass Balance
Xylenes				0.00	0.00	Mass Balance
n-Hexane				0.05	0.22	Mass Balance
2,2,4-Trimethylpentane				0.07	0.32	Mass Balance

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination ***
Carbon Dioxide	20,996.40			4793.70	20,996.40	40 CFR 98.233(v) Eqn W-36
Methane	1.38			0.32	1.38	40 CFR 98.233(v) Eqn W-36

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

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Maximum Design Capacity (MMscf/hr): 0.0458

Minimum Design Capacity (MMscf/hr): 0.01

Pilot Gas Volume (scf/min): 0.14

Emergency Flare Only: No

Ignition Device Type: Pilot

Smokeless Design: Yes

Btu Content (Btu/scf): 1562.00

Assist Gas Utilized? No

Waste Gas Volume: 16990 Units: scf/hr

Installation Date: 9/26/2014

Continuously Monitored? Yes

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL1

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL1
Company Release Point Description:	Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003.00000
Stack Height (ft):	40.00000
Stack Diameter (ft):	0.25000
Exit Gas Velocity (ft/s):	96.30000
Exit Gas Temp (F):	1400.00000
Exit Gas Flow Rate (acfm):	283.20000

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Emission Unit Type: Flare
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: FL2
Emission Unit Description Used by Company: Flare for Jubilee 156-2210H and 529-2210H

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)*** *, enter date contruction began:* Date: 9/26/2014
If Reason = ***Synthetic Minor*** *, enter date emissions unit became new synthetic minor:* Date:
If Reason = ***Modification*** *, enter modification date or date modification began:* Date:
If Reason = ***Temporary Permit*** *, enter beginning date for temporary permit:* Date:
If Reason = ***Reconstruction*** *, enter beginning date for reconstruction:* Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued? NO

if previous question's answer is No" (production not waiting until after permit), then provide first date of production: Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

	Enter SCC Code	***SCC Short Name***	**Scc Level 4 Name**
SCC Code 1 (Required Field):	31000160	Crude Oil Production /Flares	Flares
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	13.93			3.18	13.93	AP-42
Carbon monoxide (CO)	3.48			0.79	3.48	AP-42
Volatile organic compounds (VOC)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: The VOC and HAP emissions from the flare are accounted for in the VRT and heater treater operations.

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Benzene				0.11	0.48	Mass Balance
Toluene				0.07	0.32	Mass Balance
Ethylbenzene				0.03	0.12	Mass Balance
Xylenes				0.08	0.36	Mass Balance
n-Hexane				0.04	0.17	Mass Balance
2,2,4-Trimethylpentane				0.05	0.21	Mass Balance

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Carbon Dioxide	18,121.84			4137.41	18,121.84	40 CFR 98.233(v) Eqn W-36
Methane	1.25			0.29	1.25	40 CFR 98.233(v) Eqn W-36

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Maximum Design Capacity (MMscf/hr): 0.0458

Minimum Design Capacity (MMscf/hr): 0.01

Pilot Gas Volume (scf/min): 0.14

Emergency Flare Only: No

Ignition Device Type: Pilot

Smokeless Design: Yes

Btu Content (Btu/scf): 1616.00

Assist Gas Utilized? No

Waste Gas Volume: 14056 Units: scf/hr

Installation Date: 9/26/2014

Continuously Monitored? Yes

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: FL2

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	Flare FL2
Company Release Point Description:	Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003.00000
Stack Height (ft):	40.00000
Stack Diameter (ft):	0.25000
Exit Gas Velocity (ft/s):	79.70000
Exit Gas Temp (F):	1400.00000
Exit Gas Flow Rate (acfm):	234.30000

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Combustor EUID: COM1

Emission Unit Type: Combustor
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: COM1
Emission Unit Description Used by Company: COM1

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)*** *, enter date contruction began:* Date: 9/26/2014
If Reason = ***Synthetic Minor*** *, enter date emissions unit became new synthetic minor:* Date:
If Reason = ***Modification*** *, enter modification date or date modification began:* Date:
If Reason = ***Temporary Permit*** *, enter beginning date for temporary permit:* Date:
If Reason = ***Reconstruction*** *, enter beginning date for reconstruction:* Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued? NO

if previous question's answer is No" (production not waiting until after permit), then provide first date of production: Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	31000160	Crude Oil Production /Flares	Flares
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Combustor EUID: COM1

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.59			0.14	0.59	AP-42
Carbon monoxide (CO)	0.15			0.03	0.15	AP-42
Volatile organic compounds (VOC)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: The VOC and HAP emissions from the combustor are accounted for in the crude oil and produced water tanks, and Truck Loading Operations

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Benzene				0.00	0.00	Mass Balance
Toluene				0.00	0.00	Mass Balance
Ethylbenzene				0.00	0.00	Mass Balance
Xylenes				0.00	0.00	Mass Balance
n-Hexane				0.00	0.00	Mass Balance
2,2,4-Trimethylpentane				0.00	0.00	Mass Balance

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Carbon Dioxide	674.17			153.92	674.17	40 CFR 98.233(v) Eqn W-36
Methane	0.10			0.02	0.10	40 CFR 98.233(v) Eqn W-36

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Combustor EUID: COM1

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Maximum Design Capacity (MMscf/hr): 0.00521

Minimum Design Capacity (MMscf/hr): 0.0010

Pilot Gas Volume (scf/min): 0.14

Emergency Flare Only: No

Ignition Device Type: Pilot

Smokeless Design: Yes

Btu Content (Btu/scf): 2502.27

Assist Gas Utilized? No

Waste Gas Volume: 386 Units: scf/hr

Installation Date: 9/26/2014

Continuously Monitored? Yes

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Combustor EUID: COM1

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM1
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08649
Release Point Longitude (5 digits to right of decimal pt.):	-104.65290
Base Elevation (ft):	6003.00000
Stack Height (ft):	20.00000
Stack Diameter (ft):	4.00000
Exit Gas Velocity (ft/s):	65.00000
Exit Gas Temp (F):	1400.00000
Exit Gas Flow Rate (acfm):	6.42000

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: COM2

Emission Unit Type: Flare
Date of Application: 12/24/2014
AQD Emission Unit ID:
EU ID used by Company: COM2
Emission Unit Description Used by Company: COM2

Emission Unit Installation or Modification Schedule- *Select reason(s) for this emissions unit being included in this application (must be completed regardless of date of installation or modification) and the date associated with the EU Installation of Modification Schedule:*

Reason: Construction (greenfield/new facility)

If Reason = ***Construction (greenfield/new facility)*** *, enter date contruction began:* Date: 9/26/2014
If Reason = ***Synthetic Minor*** *, enter date emissions unit became new synthetic minor:* Date:
If Reason = ***Modification*** *, enter modification date or date modification began:* Date:
If Reason = ***Temporary Permit*** *, enter beginning date for temporary permit:* Date:
If Reason = ***Reconstruction*** *, enter beginning date for reconstruction:* Date:

If the Reason is: **Reconstruction** *or* ***Temporary Permit*** *or* **Other** *please explain below:*

Oil and Gas Production Site ***ONLY***

if Reason = **Construction (greenfield/new facility)** will production commence after permit is issued? NO

if previous question's answer is No" (production not waiting until after permit), then provide first date of production: Date: 9/27/2014

List in the area below any previous NSR permit numbers for air contaminant sources included in this application, if applicable, and describe the requested modification. Attach an additional sheet if necessary:

N/A

SCC Codes

Enter SCC for each process. Enter at least one SCC Code. Click to see SCC Code List

Enter SCC Code		*SCC Short Name*	Scc Level 4 Name
SCC Code 1 (Required Field):	31000160	Crude Oil Production /Flares	Flares
SCC Code 2 (as needed):			
SCC Code 3 (as needed):			

General Emission Unit Dates

Initial Construction Commencement Date: 9/26/2014
Initial Operation Commencement Date: 9/27/2014
Most Recent Construction/ Modification Commencement Date:
Most Recent Operation Commencement Date:

Potential Operating Schedule:

Provide the operating schedule for this emission unit.

Hours/day: 24
Hours/year: 8760

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: COM2

Criteria Pollutants

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

Criteria Pollutants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Particulate emissions (PE/PM) (formerly particulate matter)						
PM #10 microns in diameter (PE/PM10)						
PM #2.5 microns in diameter (PE/PM2.5)						
Sulfur dioxide (SO2)						
Nitrogen Oxides (Nox)	0.43			0.10	0.43	AP-42
Carbon monoxide (CO)	0.11			0.02	0.11	AP-42
Volatile organic compounds (VOC)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Lead (Pb)						
Tota Hazardous Air Pollutants (HAPs)	Note 1 (see below)			Note 1 (see below)	Note 1 (see below)	
Fluoride (F)						
Hydrogen Sulfide (H2S)						
Mercury (Hg)						
Total Reduced Sulfur (TRS)						
Sulfuric Acid Mist (SAM)						

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

Note 1: The VOC and HAP emissions from the combustor are accounted for in the crude oil and produced water tanks, and Truck Loading Operations

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminants						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Benzene				0.00	0.00	Mass Balance
Toluene				0.00	0.00	Mass Balance
Ethylbenzene				0.00	0.00	Mass Balance
Xylenes				0.00	0.00	Mass Balance
n-Hexane				0.00	0.00	Mass Balance
2,2,4-Trimethylpentane				0.00	0.00	Mass Balance

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

Greenhouse Gases (GHGs)

Greenhouse Gases (GHGs)						
		Efficiency Stds.				
Pollutant	**Pre-Controlled Potential Emissions (tons/yr)**	**Potential to Emit (PTE)***	**Units***	**Potential to Emit (lbs/hr)***	**Potential to Emit (tons/yr)***	**Basis for Determination***
Carbon Dioxide	488.29			111.48	488.29	40 CFR 98.233(v) Eqn W-36
Methane	0.07			0.02	0.07	40 CFR 98.233(v) Eqn W-36

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

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: COM2

Process Flow Diagram:

Attach a Process Flow Diagram to this application for this emission unit.

Have you attached a process diagram? Yes

Best Available Control Technology (BACT):

Is this Emissions Unit subject to BACT? No

Was a BACT Analysis completed for this emission unit? No

Have you attached a BACT analysis? No

Pollutant(s):

Proposed BACT:

Lowest Achievable Emission Rate (LAER):

Is Emissions Unit subject to LAER? No

Was LAER Analysis completed for emission unit? No

Pollutant(s):

Proposed LAER:

Federal and State Rule Applicability:

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

New Source Performance Standards (NSPS): Not Affected

If applicable, list NSPS Subpart(s):

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).

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 61): Not Affected

If applicable, list Part 61 NESHAP Subpart(s):

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

National Emission Standards for Hazardous Air Pollutants (NESHAP Part 63): Not Affected

If applicable, list Part 63 NESHAP Subpart(s):

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

Prevention of Significant Deterioration (PSD): Not Affected

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

Non-Attainment New Source Review: Not Affected

Emissions Unit Specific Information

Maximum Design Capacity (MMscf/hr): 0.00521

Minimum Design Capacity (MMscf/hr): 0.0010

Pilot Gas Volume (scf/min): 0.14

Emergency Flare Only: No

Ignition Device Type: Pilot

Smokeless Design: Yes

Btu Content (Btu/scf): 2502.27

Assist Gas Utilized? No

Waste Gas Volume: 279 Units: scf/hr

Installation Date: 9/26/2014

Continuously Monitored? No

Company: EOG Resources, Inc. Facility: Jubilee 155-2210H, Jubilee 156-2227H, Jubilee 529-2227H, Jubilee 531-2210H
EU Type: Flare EUID: COM2

Control Equipment:

Does this emission unit employ emissions control equipment? No

Yes- fill out the applicable information below.

No- Go to Release Point Section.

Horizontal or Vertical Release Point Information:

Vertical Or Horizontal Release Point 1	
Company Release Point ID:	COM2
Company Release Point Description:	Combustor Stack
Release Point Type:	Vertical
For longitude and latitude, use NAD 83/WGS84 datum	
Release Point Latitude (5 digits to right of decimal pt.):	41.08607
Release Point Longitude (5 digits to right of decimal pt.):	-104.65280
Base Elevation (ft):	6003.00000
Stack Height (ft):	20.00000
Stack Diameter (ft):	4.00000
Exit Gas Velocity (ft/s):	65.00000
Exit Gas Temp (F):	1400.00000
Exit Gas Flow Rate (acfm):	4.66000

TABLE 6
ENGINEERED FLARE 1 EMISSIONS

Volume of Gas sent to Flare	407,747.2	scf/day
Lower Heating Value	1,562	Btu/scf
Average Molecular Weight	27.66	lb/lb-mole
Standard Molar Volume		
VOC Weight %	48.59%	
HAP Weight %	4.05%	
H_2S Weight %	0.00%	
H_2S Mole %	0.00%	
Flare Destruction Efficiency	98.00%	
Pipeline Downtime[2]	80%	

EMISSION RATE CALCULATION

Pollutant	Volume of Gas		Std Mol Vol	MW	Wt%	Usage	Flare Inlet (Uncontrolled) Emissions Hourly	Flare Inlet (Uncontrolled) Emissions Annual	Flare Outlet (Controlled) Emissions Hourly	Flare Outlet (Controlled) Emissions Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*wt%*	*hrs/yr*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC	407,747	16,989	379	27.66	48.59%	8760	1693.90	1693.90	33.88	33.88
HAP	407,747	16,989	379	27.66	4.05%	8760	64.90	284.26	1.30	5.69
H_2S	407,747	16,989	379	27.66	0.00%	8760	0.00	0.00	0.00	0.00
	Volume of Gas		Std Mol Vol	MW	E.F.[1]	Usage	Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*lb/ MMBtu*	*hr/yr*	*lbs/hr*	*tpy*	*lb/hr*	*tpy*
NO_X	407,747	16,989			0.14	8760	0.00	0.00	3.71	16.27
CO	407,747	16,989			0.035	8760	0.00	0.00	0.93	4.07
SO_2	407,747	16,989	379	64		8760	0.00	0.00	0.00	0.00

HAP SPECIATED EMISSIONS

		Emissions	
		Uncontrolled	Controlled
HAP	Weight	Total	Total
	%	*tpy*	
Benzene	0.00	27.2548	0.5451
Toluene	0.49	20.8515	0.4170
Ethylbenzene	0.03	6.8527	0.1371
Xylenes	0.06	20.0780	0.4016
2,2,4-Trimethylpentane	0.19	15.9055	0.3181
n-hexane	0.16	11.0901	0.2218

Sample Calculations

Uncontrolled Emissions (VOC, HAP. and H_2S) = (volume of gas, scf/hr) * (weight, %) * (MW, lb/lbmol) * (conversion factor, scf/lbmol)

Controlled Emissions (VOC, HAP, and H_2S) = (emission rate, lbs/hr) * (1-destruction efficiency, %)

Emissions from NO_X and CO = (volume of gas, scf/hr) * (Lower heating value, Btu/scf) * (Emission factor, lb/MMBtu) * (Btu/MMBtu)

[1]NOx & CO emission factors are from AP-42 Table 13.5-1 ((Emission Factors for Flare Operations).)
HAP Speciation based on Extended Gas Analysis for Tank Vapor
[2]In the event of pipeline shut-in, the gas from the heater treater is flared.

TABLE 6
ENGINEERED FLARE 2 EMISSIONS

Volume of Gas sent to Flare	337,351.8	scf/day
Lower Heating Value	1,616	Btu/scf
Average Molecular Weight	27.66	lb/lb-mole
Standard Molar Volume		
VOC Weight %	48.59%	
HAP Weight %	4.05%	
H_2S Weight %	0.00%	
H_2S Mole %	0.00%	
Flare Destruction Efficiency	98.00%	
Pipeline Downtime[2]	80%	

EMISSION RATE CALCULATION

Pollutant	Volume of Gas		Std Mol Vol	MW	Wt%	Usage	Flare Inlet (Uncontrolled) Emissions Hourly	Flare Inlet (Uncontrolled) Emissions Annual	Flare Outlet (Controlled) Emissions Hourly	Flare Outlet (Controlled) Emissions Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*wt%*	*hrs/yr*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC	337,352	14,056	379	27.66	48.59%	8760	1391.03	1391.03	27.82	27.82
HAP	337,352	14,056	379	27.66	4.05%	8760	52.22	228.74	1.04	4.57
H_2S	337,352	14,056	379	27.66	0.00%	8760	0.00	0.00	0.00	0.00
	Volume of Gas		Std Mol Vol	MW	E.F.[1]	Usage	Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*lb/ MMBtu*	*hr/yr*	*lbs/hr*	*tpy*	*lb/hr*	*tpy*
NO_X	337,352	14,056			0.14	8760	0.00	0.00	3.18	13.93
CO	337,352	14,056			0.035	8760	0.00	0.00	0.79	3.48
SO_2	337,352	14,056	379	64		8760	0.00	0.00	0.00	0.00

HAP SPECIATED EMISSIONS

		Emissions	
		Uncontrolled	Controlled
HAP	Weight	Total	Total
	%	*tpy*	
Benzene	0.00	24.0062	0.4801
Toluene	0.49	15.7940	0.3159
Ethylbenzene	0.03	5.9765	0.1195
Xylenes	0.06	17.8670	0.3573
2,2,4-Trimethylpentane	0.19	10.6221	0.2124
n-hexane	0.16	8.3510	0.1670

Sample Calculations

Uncontrolled Emissions (VOC, HAP. and H_2S) = (volume of gas, scf/hr) * (weight, %) * (MW, lb/lbmol) * (conversion factor, scf/lbmol)
Controlled Emissions (VOC, HAP, and H_2S) = (emission rate, lbs/hr) * (1-destruction efficiency, %)
Emissions from NO_X and CO = (volume of gas, scf/hr) * (Lower heating value, Btu/scf) * (Emission factor, lb/MMBtu) * (Btu/MMBtu)

[1]NOx & CO emission factors are from AP-42 Table 13.5-1 ((Emission Factors for Flare Operations).)
HAP Speciation based on Extended Gas Analysis for Tank Vapor
[2]In the event of pipeline shut-in, the gas from the heater treater is flared.

TABLE 6
COMBUSTOR 1 EMISSIONS

Volume of Gas sent to Flare	9,259.5	scf/day
Lower Heating Value	2,502	Btu/scf
Average Molecular Weight	44.73	lb/lb-mole
Standard Molar Volume		
VOC Weight %	79.80%	
HAP Weight %	0.94%	
H_2S Weight %	0.00%	
H_2S Mole %	0.00%	
Flare Destruction Efficiency	98.00%	

EMISSION RATE CALCULATION

Pollutant	Volume of Gas		Std Mol Vol	MW	Wt%	Usage	Flare Inlet (Uncontrolled) Emissions		Flare Outlet (Controlled) Emissions	
							Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*wt%*	*hrs/yr*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC	9,259	386	379	44.73	79.80%	8760	40.33	56.04	0.81	1.12
HAP	9,259	386	379	44.73	0.94%	8760	0.34	0.67	0.01	0.01
H_2S	9,259	386	379	44.73	0.00%	8760	0.00	0.00	0.00	0.00
	Volume of Gas		Std Mol Vol	MW	E.F.[1]	Usage	Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*lb/ MMBtu*	*hr/yr*	*lbs/hr*	*tpy*	*lb/hr*	*tpy*
NO_X	9,259	386			0.14	8760	0.00	0.00	0.14	0.59
CO	9,259	386			0.035	8760	0.00	0.00	0.03	0.15
SO_2	9,259	386	379	64		8760	0.00	0.00	0.00	0.00

HAP SPECIATED EMISSIONS

		Emissions	
		Uncontrolled	Controlled
HAP	Weight	Total	Total
	%		*tpy*
Benzene	0.00	0.0009	0.0000
Toluene	0.49	0.1779	0.0036
Ethylbenzene	0.03	0.0109	0.0002
Xylenes	0.06	0.0222	0.0004
2,2,4-Trimethylpentane	0.19	0.0692	0.0014
n-hexane	0.16	0.0545	0.0011

Sample Calculations

Uncontrolled Emissions (VOC, HAP. and H_2S) = (volume of gas, scf/hr) * (weight, %) * (MW, lb/lbmol) * (conversion factor, scf/lbmol)

Controlled Emissions (VOC, HAP, and H_2S) = (emission rate, lbs/hr) * (1-destruction efficiency, %)

Emissions from NO_X and CO = (volume of gas, scf/hr) * (Lower heating value, Btu/scf) * (Emission factor, lb/MMBtu) * (Btu/MMBtu)

[1]NOx & CO emission factors are from AP-42 Table 13.5-1 ((Emission Factors for Flare Operations).)
HAP Speciation based on Extended Gas Analysis for Tank Vapor
[2]In the event of pipeline shut-in, the gas from the heater treater is flared.

TABLE 6
COMBUSTOR 2 EMISSIONS

Volume of Gas sent to Flare	6,706.4	scf/day
Lower Heating Value	2,502	Btu/scf
Average Molecular Weight	44.73	lb/lb-mole
Standard Molar Volume		
VOC Weight %	79.80%	
HAP Weight %	0.94%	
H_2S Weight %	0.00%	
H_2S Mole %	0.00%	
Flare Destruction Efficiency	98.00%	

EMISSION RATE CALCULATION

Pollutant	Volume of Gas		Std Mol Vol	MW	Wt%	Usage	Flare Inlet (Uncontrolled) Emissions		Flare Outlet (Controlled) Emissions	
							Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*wt%*	*hrs/yr*	*lbs/hr*	*tpy*	*lbs/hr*	*tpy*
VOC	6,706	279	379	44.73	79.80%	8760	26.62	39.91	0.53	0.80
HAP	6,706	279	379	44.73	0.94%	8760	0.25	0.55	0.00	0.01
H_2S	6,706	279	379	44.73	0.00%	8760	0.00	0.00	0.00	0.00
	Volume of Gas		Std Mol Vol	MW	E.F.[1]	Usage	Hourly	Annual	Hourly	Annual
	scf/day	*scf/hr*	*scf/lb-mol*	*lb/lb-mole*	*lb/ MMBtu*	*hr/yr*	*lbs/hr*	*tpy*	*lb/hr*	*tpy*
NO_X	6,706	279			0.14	8760	0.00	0.00	0.10	0.43
CO	6,706	279			0.035	8760	0.00	0.00	0.02	0.11
SO_2	6,706	279	379	64		8760	0.00	0.00	0.00	0.00

HAP SPECIATED EMISSIONS

		Emissions	
		Uncontrolled	Controlled
HAP	Weight	Total	Total
	%	*tpy*	
Benzene	0.00	0.0011	0.0000
Toluene	0.49	0.2189	0.0044
Ethylbenzene	0.03	0.0126	0.0003
Xylenes	0.06	0.0280	0.0006
2,2,4-Trimethylpentane	0.19	0.0849	0.0017
n-hexane	0.16	0.0624	0.0012

Sample Calculations

Uncontrolled Emissions (VOC, HAP. and H_2S) = (volume of gas, scf/hr) * (weight, %) * (MW, lb/lbmol) * (conversion factor, scf/lbmol)

Controlled Emissions (VOC, HAP, and H_2S) = (emission rate, lbs/hr) * (1-destruction efficiency, %)

Emissions from NO_X and CO = (volume of gas, scf/hr) * (Lower heating value, Btu/scf) * (Emission factor, lb/MMBtu) * (Btu/MMBtu)

[1]NOx & CO emission factors are from AP-42 Table 13.5-1 ((Emission Factors for Flare Operations).)
HAP Speciation based on Extended Gas Analysis for Tank Vapor
[2]In the event of pipeline shut-in, the gas from the heater treater is flared.

EOG Resources, Inc.
600 Seventeenth Street
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Denver, CO 80202
Main: 303-572-9000
Fax: 303-824-5400

August 14, 2015

Attn: Brandi O'Brien
Wyoming Department of Environmental Quality
Air Quality Division
Herschler Building, 2-E
122 West 25th Street
Cheyenne, Wyoming 82002

RE: Air Permit Application (A0000375) – Jubilee Section 22 PAD
Laramie County, Wyoming

Ms. O'Brien:

Based upon our discussion, EOG Resources, Inc. (EOG) is requesting to include the attached leak detection and repair protocol for the Jubilee Section 22 PAD. As fugitive VOC emissions from the facility are greater than the BACT threshold of 8 tons per year, EOG will implement a leak detection and repair (LDAR) program at this facility.

Should you need additional information or clarification please do not hesitate to contact me using the information below.

Thank you,

Mark D. Smith
Senior Environmental Representative
307-823-6208
307-399-2365
mark_smith@eogresources.com

cc: File – Well

Attachments: Fugitive Leak O&M Plan (LDAR)

Fugitive Equipment Leak Inspection and Maintenance Plan

Statement of Dedication and Basis

In order to demonstrate and formally document the effectiveness of the efforts made to minimize emissions from fugitive component leaks, EOG Resources, Inc. (EOG) has committed to monitoring and fixing leaks at exploration and production facilities in the Green River Basin (UGRB), DJ, and Powder River Basin (PRB) which are located in the State of Wyoming. The effort is executed as demonstrated by the select implementation of a formal Leak Detection and Repair (LDAR) program. EOG is dedicated to complying with all applicable air quality standards, rules and regulations promulgated by the Wyoming Department of Environmental Quality (WDEQ); including, but not limited, to Chapter 6, Section 2 of the WDEQ air quality standards and regulations (WAQSR). The components and schedule of this program are described in the plan that follows.

EOG applies good operating practices audio, visual and olfactory detection (AVO) and the use of leak detection solutions to identify and repair fugitive emissions from equipment leaks on an on-going basis at all of its facilities in the UGRB, DJ, and PRB operational area. EOG has implemented a formal LDAR program above and beyond current operating practices. This LDAR program uses an additional monitoring methodology- infrared (IR) camera technology -to identify fugitive volatile organic compound (VOC) emissions from equipment leaks. While the magnitude of the leak cannot be measured using the infrared camera methodology (see 'Technology' section of this Plan), the protocol being followed will allow greater opportunity to reduce overall fugitive emissions even though the value may not be quantified. The IR protocol serves to identify leaks which may only be visible in the infrared spectrum and will ensure proper documentation of the repair of any leak detected using the infrared technology. Use of this monitoring approach allows EOG to demonstrate that its operating practices effectively control fugitive emissions from equipment leaks to insignificant levels.

Technology and Limitations

LDAR inspections will be conducted using IR cameras. IR cameras detect the band of light in the electromagnetic spectrum that extends beyond visible light. Using an IR camera one can identify hydrocarbon vapors which indicate possible sources of fugitive leaks. It should be noted that the intent of this device is solely qualitative; specifically, the IR camera is unable to quantify the magnitude of a leak or the leak rate). However, the objective of this program is to identify and repair any observed leak regardless of its magnitude. As such, the IR camera is the ideal tool to identify these leaks. It should also be noted that all images seen through the infrared camera are not necessarily VOC emissions. It can be difficult to determine whether recordings indicate hydrocarbon vapors or whether the vapors are heat or water vapors. Though, hydrocarbon vapors should typically dissipate slower and "trail-off" longer than heat or water vapors. The design of the camera only allows for detection of vapors and heat emissions and as such the nature of the emissions is not definitive.

Facility Identification

EOG is dedicated to good operating and industry practices at all of its facilities in the UGRB, DJ, and PRB operational areas; however, the application of the EOG LDAR program will be at facilities which have been identified as being subject per condition of the associated air quality permit. A subject facility is defined as exceeding the Air Quality Division (AQD) Best Available Control Technology (BACT) threshold for potential fugitive emissions. The BACT threshold definitions are respective to the effective regulation as follows:

- 15 TPY per AQD Oil and Gas Production Facilities Chapter 6, Section 2 Permitting Guidance, dated OB/W07; or,

- 8 TPY for new and modified facilities after August 1, 2010 per AQD Guidance dated 03/2010.

On a quarterly basis, production equipment at subject facilities will be monitored following the procedure identified in the 'Inspection Protocol' section of this Plan. Wellhead monitoring will be conducted annually during the 3rd quarter inspection.

Inspection Protocol

Modified and newly constructed facilities that are identified in a permit condition as requiring participation in the LDAR program will be inspected; any leaks will be documented; and applicable repair procedures will be followed. These facilities will be incorporated into the LDAR program no later than the next quarterly inspection period. The following scenarios are provided as examples to clarify,

> <u>Scenario 1:</u>
> Should the quarterly LDAR monitoring occur in May (2nd quarter of the year) and a new facility begins producing the following June (3rd quarter of the year), the fugitive emissions for all sources at this facility will be reviewed as per the AQD's Chapter 6 Section 2 Permitting Guidance. As appropriate and applicable, an application will be submitted prior to the 60 day deadline and the facility monitored under the EOG LDAR program during the next scheduled quarterly inspection.
>
> <u>Scenario 2:</u>
> For an existing facililty that began operating in June the fugitive emissions would be reviewed in August. If at that time the fugitive emissions are projected to exceed the 8 TPY VOC threshold this facility will be added to the list of facilities to monitor during the next scheduled quarterly inspection.

Facilities subject to compliance with this Plan and respective permit condition will do so by following the below inspection and maintenance proceedure. The AVO inspection and maintenance procedure follows that which has been approved by Region 8 of the Environmental Protection Agency respective to the Tribal New Source Review program.

1. Conduct AVOs, including IR camera inspection, on a quarterly basis of all pumps, valves, connectors, and pressure relief devices at the facility.

2. For each leak found in the AVO inspection, the leak shall be managed in accordance with the ‘Repair Schedule’ section of this Plan.

3. Re-screen repaired components to determine if the leak is repaired. If the rescreening shows that the leak was not repaired then another attempt to repair the leak will be made as soon as possible, but no later than 15 days after the rescreening.

4. Steps 2 and 3 will be repeated until the rescreening shows no leak.

5. Leaking components will be documented along with the date the leak is detected, date the leak is repaired, and date that the leak is rescreened; see 'Repair Schedule' section of this Plan.

Monitoring and Recordkeeping

Quarterly records and documentation associated with the infrared monitoring inspections performed as part of this LDAR program will be maintained in accordance with the following procedure and consist of the specified informaion. Each quarterly inspection will include a brief discussion of the inspections that were performed, any anomalies in the procedure, and incorporate the following lists:

- List of components screened and associated dates;
- List of currently leaking components;
- List of repaired components along with the repair method and associated repair dates (see 'Repair Schedule' section of this Plan); and
- List of successful repairs, repair delays, and post-repair screenings and associated dates.

The above information will be recorded, maintained and kept for five years electronically and in hardcopy at the nearest EOG field office.

Repair Schedule

Leaks identified through the quarterly inspections will be tagged using a numbered weather resistant tag, documented on a 'IR Camera Inspection' form. Additionally, still photographs of the location of the leak may be taken to assist field personnel in identifying leaking components. All findings (leaks) identified during an inspection with the Infrared camera will be communicated to field personnel so that they may be repaired.

The most common leak types identified during IR inspections are associated with loose fittings, connections and bad seals. These are relatively simple to repair and typically do not require the facility to be shut down. While EOG will be diligent about trying to repair every leak in a timely fashion, a delayed repair schedule will be required in instances where the facility must be shut down or additional time is required to procure parts or equipment in order to repair a leak. For every leak the following schedule should be followed to repair leaks identified with the infrared camera.

Repair Attempt	Timing
1st Attempt	A 1st attempt to repair a leak will be made within 7 days. This will consist of typical basic repairs (i.e., tightening packing, tightening tubing ferrules). After a repair attempt has been made, verification that the leak has been repaired shall consist of observing the component using an IR camera or similar leak detection solutions. Otherwise, visual and/or olfactory inspections shall be conducted to ensure the leak has been repaired. The leak tag may only be removed once repair of the leak has been verified using an Infrared Camera and documented on the respective facility IR Camera Inspection form.
2nd Attempt	If a 1st attempt is not successful, a 2nd attempt will be made within 7 days of the 1st attempt. If the facility must be shut down to repair a leak or if additional time is needed to procure parts or equipment, the leak will be tracked on a delayed repair list. After a repair attempt has been made, verification that the leak has been repaired shall consist of observing the component using an IR camera or similar leak detection solutions. Otherwise, visual and/or olfactory inspections shall be conducted to ensure the leak has been repaired. The leak tag may only be removed once repair of the leak has been verified using an Infrared Camera and documented on the respective facility IR Camera Inspection form. EOG will make a "Best Attempt" at repairing every leak. However, if repairs made during the 2nd attempt are not successful, the leak will be added to the delayed repair list.
Delay Repair	If the facility must be shutdown to attempt the repair of a leak, additional time is needed to procure parts or equipment, or the 2nd repair attempt is not successful, it may be put on a delayed repair list. Repairs will be conducted during the next scheduled shutdown or prior to the next LDAR inspection.

Reporting

EOG will follow reporting protocol specified in the respective air permit for subject facilities. The following will be reported to the WDEQ Stationary Source Permitting Manager and District Engineer for the respective district office upon request to include the following information:

- List of facilities included during the inspection period;
- List of findings and leaks for each inspection; and
- MS Excel Spreadsheet that details leaks, repairs, delay repairs, and LDAR applicable facilities