RKI Exploration & Production LLC

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

MAY 2015
RECEIVED
AIR QUALITY
DIVISION

May 7, 2015

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

Re: Air Permit Application
RKI Exploration & Production LLC
Skeleton Spring Unit 36-68-10 2TH (API#: 49-009-29792)

Dear Mr. Anderson:

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

Skeleton Spring Unit 36-68-10 2TH is an oil well situated in Converse County. First day of production (FDOP) was January 27, 2015. This well is the second well on the Pad.

New equipment consists of a wellhead, oil and produced water storage tanks, 2-phase separator (unfired), heater-treater, a dual pressure flare unit used to combust gas flashed from the storage tanks, load out facilities, and production vessels. Gas is sold via pipeline connection. Produced liquids are loaded out by truck.

A 200 kW diesel fired electric generator set is also present at the location.

Average daily production for the last 30 days was 180-bbl water, 56-bbl oil, and 5-mcf gas.

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

Sincerely,

Jeffrey L. Ingerson
Senior Air Permitting Engineer

Reviewer HMB
cc:
Modeler
D.E.
File A0000987
IMP FID 26865

WYOMING

Department of Environmental Quality Air Quality Division

Permit Application Form

RECEIVED AIR QUALITY DIVISION

Is this a revision to an existing application?

Yes _____ No X

Previous Application #:

Date of Application: 5/7/2015

COMPANY INFORMATION:

Company Name: RKI Exploration & Production, LLC

Address: 210 Park Aveneue, Suite 900

City: Oklahoma City State: Oklahoma Zip Code: 73102

Country: USA Phone Number: (405) 949-2221

FACILITY INFORMATION:

Facility Name: Skeleton Spring Unit 36-68-10 2TH

New Facility or Existing Facility: New

Facility Description: Oil Production Wellsite/Pad

Facility Class: Minor Operating Status: Operating

Facility Type: Production Site

For Oil & Gas Production Sites ONLY:

First Date of Production (FDOP)/Date of Modification: 1/27/2015

Does production at this facility contain H2S?* No

**If yes, contact the Division.*

API Number(s): Skeleton Spriing Unit 36-68-10 2TH (API# 49-009-29792)

NAICS Code: 211111 Crude Petroleum and Natural Gas Extraction

FACILITY LOCATION:

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

Physical Address:

City: Zip Code:

State: WY County: Converse

OR

Latitude: 43.10398 Longitude: -105.01752

Quarter Quarter: sw sw Quarter:

Section: 10 Township: 36N Range: 68W

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

CONTACT INFORMATION:

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

Title: Mr. First Name: Jeffrey

Last Name: Ingerson

Company Name: RKI Exploration & Production, LLC

Job Title: Senior Air Permitting Engineer

Address: 210 Park Aveneue, Suite 900

City: Oklahoma City State: Oklahoma

Zip Code: 73102

Primary Phone No.: (405) 987-2181 E-mail: jingerson@rkixp.com

Mobile Phone No.: (405) 820-1779 Fax No.: (405) 949-2223

Contact Type: NSR Permitting Contact Start Date: March, 2014

Additional Contact Type (if needed):

Title: Mr. First Name: Charles

Last Name: Ahn

Company Name: RKI Exploration & Production, LLC

Job Title: Manager, EHS/Regulatory

Address: 210 Park Aveneue, Suite 900

City: Oklahoma City State: Oklahoma

Zip Code: 73102

Primary Phone No.: (405) 996-5771 E-mail: cahn@rkixp.com

Mobile Phone No.: Fax No.: (405) 949-2223

Contact Type: Compliance contact Start Date: March, 2014

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
Is the facility located in a sage grouse core area?*	No
If the facility is in a sage grouse core area, what is the WER number?	

** 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:

- [x] Facility Map
- [x] Process Flow Diagram
- [ ] Modeling Analysis (if applicable)
- [ ] Land Use Planning Document
- [ ] Detailed Project Description
- [x] Emissions Calculations

I, Jeffrey L. Ingerson Senior Air Permitting Engineer

Responsible Official (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: (ink) Date: 5/6/15

Specific Emission Unit Attributes:

Separator/Treater

Company Equipment ID: **HTR01**

Company Equipment Description: **Horizontal Heater Treater w/ 0.500 mmbtu burner**

Operating Status: **Operating**

Initial Construction Commencement Date:

Initial Operation Commencement Date: **1/27/2015**

Most Recent Construction/ Modification Commencement Date:

Most Recent Operation Commencement Date:

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

Reason: **Construction (Greenfield/New Facility)**

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

Type of Vessel: **Heater-Treater** Is Vessel Heated? **Yes**

Operating Temperature (F): **100**

Operating Pressure (psig): **100**

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

1-00-111-00

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

Hours/day: **24**

Hours/year: **8760**

Control Equipment: **Yes**

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

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

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

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

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): **Not Effected**

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

NSPS Subpart: _____

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

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

Part 61 NESHAP Subpart: _____

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

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

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): **Not Affected**

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

Non-Attainment New Source Review: **Not Affected**

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

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements. **HTR01**

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)	**0.02**			**0.004**	**0.02**	**AP-42**
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)	**0**			**0**	**0**	**AP-42**
5.)	Nitrogen Oxides (NOx)	**0.21**			**0.049**	**0.21**	**AP-42**
6.)	Carbon monoxide (CO)	**0.18**			**0.041**	**0.18**	**AP-42**
7.)	Volatile organic compounds (VOC)	**0.01**			**0.001**	**0.01**	**AP-42**
8.)	Lead (Pb)						
9.)	Total Hazrdous Air Pollutants (HAPs)	**0**			**0**	**0**	**AP-42**
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)	**0**			**0**	**0**	**AP-42**
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Specific Emission Unit Attributes:

Storage Tank/Silo

Company Equipment ID: **OILTNK 01-04**

Company Equipment Description: **4 x 400 bbl Oil Storage Tanks**

Operating Status: **Operating**

Initial Construction Commencement Date:

Initial Operation Commencement Date: **1/27/2015**

Most Recent Construction/ Modification Commencement Date:

Most Recent Operation Commencement Date:

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

Reason: **Construction (Greenfield/New Facility)**

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

Material Type: **Liquid**

Description of Material Stored: **Crude Oil**

Capacity: **400** Units: **barrels**

Maximum Throughput: **20294** Units: **barrels/yr**

Maximum Hourly Throughput: **5** Units: **barrels/hr**

Is Tank Heated?: **No**

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

1-00-110-20

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

Hours/day: **24**

Hours/year: **8760**

Control Equipment: **Yes**

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

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

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

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

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): **Subject, but exempt**

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

NSPS Subpart: **OOOO**

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

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

Part 61 NESHAP Subpart: _____

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

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

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): **Not Affected**

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

Non-Attainment New Source Review: **Not Affected**

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

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements. **OILTNK 01-04**

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)						
6.)	Carbon monoxide (CO)						
7.)	Volatile organic compounds (VOC)	**1.075**			**0.005**	**0.022**	**Tanks Program**
8.)	Lead (Pb)						
9.)	Total Hazrdous Air Pollutants (HAPs)	**0.02**			**0**	**0**	**Tanks Program**
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Specific Emission Unit Attributes:

Storage Tank/Silo

Company Equipment ID: **WTRNK 01-02**

Company Equipment Description: **2 x 400 bbl Water Storage Tank**

Operating Status: **Operating**

Initial Construction Commencement Date:

Initial Operation Commencement Date: **1/27/2015**

Most Recent Construction/ Modification Commencement Date:

Most Recent Operation Commencement Date:

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

Reason: **Construction (Greenfield/New Facility)**

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

Material Type: **Liquid**

Description of Material Stored: **Produced Water (1% Oil Carryover)**

Capacity: **400** Units: **barrels**

Maximum Throughput: **730** Units: **barrels/yr**

Maximum Hourly Throughput: **1** Units: **barrels/hr**

Is Tank Heated?: **No**

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

1-00-110-20

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

Hours/day: **24**

Hours/year: **8760**

Control Equipment: **Yes**

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

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

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

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

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): **Subject, but exempt**

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

NSPS Subpart: **OOOO**

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

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

Part 61 NESHAP Subpart: _____

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

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

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): **Not Affected**

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

Non-Attainment New Source Review: **Not Affected**

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

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements. **WTRTNK 01-02**

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)						
6.)	Carbon monoxide (CO)						
7.)	Volatile organic compounds (VOC)	**0.039**			**0.001**	**0.001**	**Tanks Program**
8.)	Lead (Pb)						
9.)	Total Hazrdous Air Pollutants (HAPs)	**0**			**0**	**0**	**Tanks Program**
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Specific Emission Unit Attributes:

Loading/Unloading/Dump

Company Equipment ID: **OIL LOAD**

Company Equipment Description: **Oil Loadout Facility**

Operating Status: **Operating**

Initial Construction Commencement Date:

Initial Operation Commencement Date: **1/27/2015**

Most Recent Construction/ Modification Commencement Date:

Most Recent Operation Commencement Date:

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

Reason: **Construction (Greenfield/New Facility)**

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

Type of Material: **Liquid**

Material Description: **Crude Oil**

Maximum Annual Throughput:	**20294**	Units:	barrels/yr
Maximum Hourly Throughput:	**240**	Units:	barrels/hr

Detailed Description of Loading/Unloading/Dump Source: **Crude oil is loaded from storage tanks into tanker trucks for transport to market. Tanker truck vapors are returned to storage tanks for destruction in the vapor combustor (FLR1).**

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

1-00-112-01

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

Hours/day: **24**

Hours/year: **8760**

Control Equipment: **Yes**

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

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

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

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

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): **Not Effected**

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

NSPS Subpart: _____

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

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

Part 61 NESHAP Subpart: _____

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

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

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): **Not Affected**

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

Non-Attainment New Source Review: **Not Affected**

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

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

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)						
6.)	Carbon monoxide (CO)						
7.)	Volatile organic compounds (VOC)	**1.14**			**0.0052**	**0.02**	**AP-42**
8.)	Lead (Pb)						
9.)	Total Hazrdous Air Pollutants (HAPs)						
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Specific Emission Unit Attributes:

Loading/Unloading/Dump

Company Equipment ID: **WTR LOAD**

Company Equipment Description: **Produced Water Loadout Facility**

Operating Status: **Operating**

Initial Construction Commencement Date:

Initial Operation Commencement Date: **1/27/2015**

Most Recent Construction/ Modification Commencement Date:

Most Recent Operation Commencement Date:

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

Reason: **Construction (Greenfield/New Facility)**

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

Type of Material: **Liquid**

Material Description: **Produced Water w/ 1% Crude Oil**

Maximum Annual Throughput:	**730**	Units:	barrels/yr
Maximum Hourly Throughput:	**240**	Units:	barrels/hr

Detailed Description of Loading/Unloading/Dump Source: **Crude oil is loaded from storage tanks into tanker trucks for transport to market. Tanker truck vapors are returned to storage tanks for destruction in the vapor combustor (FLR1).**

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

1-00-112-01

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

Hours/day: **24**

Hours/year: **8760**

Control Equipment: Yes

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

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

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

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

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): **Not Effected**

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

NSPS Subpart: _____

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

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

Part 61 NESHAP Subpart: _____

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

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

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): **Not Affected**

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

Non-Attainment New Source Review: **Not Affected**

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

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

Water Loadout

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)						
6.)	Carbon monoxide (CO)						
7.)	Volatile organic compounds (VOC)	**0.04**			**0.0002**	**0**	**AP-42**
8.)	Lead (Pb)						
9.)	Total Hazrdous Air Pollutants (HAPs)						
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Control Equipment:

Flare/Combustor

Manufacturer:	**Steffes**	Date Installed:	**1/27/2015**
Model Name and Number:	**LP Flare** **SVG-3**	Company Control Equipment ID:	**FLR01**
Company Control Equipment Description:	**3" diameter x 24' high LP Flare Stack**		

Pollutant(s) Controlled:	☐ CO	☐ NOx	☐ Pb	☐ SO2	☑ **VOC**	☐ PM	
☐ PM (FIL)	☐ PM Condensible	☐ PM 10 (FIL)		☐ PM 2.5 (FIL)		☐ PM 10	☐ PM 2.5
☑ Other: **HAPs**							

Design Control Efficiency (%):	**98**	Capture Efficiency (%):	**100**
Operating Control Efficiency (%):	**98**		
Flare Type:	**Elevated- Open**	Elevated Flare Type:	**Non-Assisted**
Ignition Device:	**Yes**	Flame Presence Sensor:	**Yes**
Inlet Gas Temp (F):	**100**	Flame Presence Type:	**Thermocouple**
Gas Flow Rate (acfm):	**0.2**	Outlet Gas Temp (F):	**1850**

☑ This is the only control equipment on this air contaminant source

If not, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List all other emission units that are also vented to this control equipment: **Oil & Water Tanks, Loadout Facilities for 1TH**

List all release point IDs associated with this control equipment: **Flare Stack 01**

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements. **FLR02**

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)				**0**	**0.01**	**Other**
6.)	Carbon monoxide (CO)				**0**	**0**	**Other**
7.)	Volatile organic compounds (VOC)				**0**	**0.01**	**Other**
8.)	Lead (Pb)						
9.)	Total Hazrdous Air Pollutants (HAPs)				**0**	**0**	**Other**
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Control Equipment:

Flare/Combustor

Manufacturer:	**Steffes**	Date Installed:	**1/27/2015**
Model Name and Number:	**HP Flare** **SHP-6**	Company Control Equipment ID:	**FLR02**
Company Control Equipment Description:	**6" diameter x 24' high HP Flare Stack (Emergency Use)**		

Pollutant(s) Controlled: ☐ CO ☐ NOx ☐ Pb ☐ SO2 ☑ **VOC** ☐ PM

☐ PM (FIL) ☐ PM Condensible ☐ PM 10 (FIL) ☐ PM 2.5 (FIL) ☐ PM 10 ☐ PM 2.5

☑ Other: **HAPs**

Design Control Efficiency (%):	**98**	Capture Efficiency (%):	**100**
Operating Control Efficiency (%):	**98**		
Flare Type:	**Elevated- Open**	Elevated Flare Type:	**Non-Assisted**
Ignition Device:	**Yes**	Flame Presence Sensor:	**Yes**
Inlet Gas Temp (F):	**100**	Flame Presence Type:	**Thermocouple**
Gas Flow Rate (acfm):	**3.5**	Outlet Gas Temp (F):	**1850**

☑ This is the only control equipment on this air contaminant source

If not, this control equipment is: ☐ Primary ☐ Secondary ☐ Parallel

List all other emission units that are also vented to this control equipment: **Heater Treater for 2TH during emergengy**

List all release point IDs associated with this control equipment: **Flare Stack 02**

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

FLR01
Used 876 hr/yr

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)				**0.04**	**0.02**	**Other**
6.)	Carbon monoxide (CO)				**0.01**	**0**	**Other**
7.)	Volatile organic compounds (VOC)				**0.08**	**0.04**	**Other**
8.)	Lead (Pb)						
9.)	Total Hazrdous Air Pollutants (HAPs)				**0.01**	**0.01**	**Other**
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Specific Emission Unit Attributes:

Fugitives

Company Equipment ID: **FUG01**

Company Equipment Description: **Fugitive Emissions**

Operating Status: **Operating**

Initial Construction Commencement Date:

Initial Operation Commencement Date: **1/27/2015**

Most Recent Construction/ Modification Commencement Date:

Most Recent Operation Commencement Date:

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

Reason: **Construction (Greenfield/New Facility)**

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

Type of Fugitive Emission: **Fugitive Leaks at O&G**

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

1-00-115-00

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

Hours/day: **24**

Hours/year: **8760**

Control Equipment: **No**

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

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

☐ Yes ☑ No

Pollutant: _____

Proposed BACT: _____

*If yes, attach BACT Analysis with this application.

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

☐ Yes ☑ No

Pollutant: _____

Proposed LAER: _____

*If yes, attach LAER Analysis with this application.

Federal and State Rule Applicability:

New Source Performance Standards (NSPS): **Not Effected**

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

NSPS Subpart: _____

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

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

Part 61 NESHAP Subpart: _____

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

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

Part 63 NESHAP Subpart: _____

Prevention of Significant Deterioration (PSD): **Not Affected**

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

Non-Attainment New Source Review: **Not Affected**

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

Emissions Information- The following tables request information needed to determine the applicable requirements and the compliance status of this emission unit with those requirements. **FUG01**

		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
Criteria Pollutants:							
1.)	Particulate emissions (PE/PM) (formerly particulate matter, PM)						
2.)	PM #10 microns in diameter (PE/PM10)						
3.)	PM #2.5 microns in diameter (PE/PM2.5)						
4.)	Sulfur dioxide (SO2)						
5.)	Nitrogen Oxides (NOx)						
6.)	Carbon monoxide (CO)						
7.)	Volatile organic compounds (VOC)	**1.302**			**0.297**	**1.302**	**AP-42**
8.)	Lead (Pb)						
9.)	Total Hazrdous Air Pollutants (HAPs)	**0.002**			**0.0005**	**0.002**	**AP-42**
10.)	Fluoride (F)						
11.)	Hydrogen Sulfide (H2S)						
12.)	Mercury (Hg)						
13.)	Total Reduced Sulfur (TRS)						
14.)	Sulfuric Acid Mist (SAM)						

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

Hazardous Air Pollutants (HAPs) and Toxic Air Contaminents

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Greenhouse Gases (GHGs)

Pollutants:		Pre-Controlled Potential Emissions (tons/yr)	Efficiency Standards: Potential to Emit (PTE)	Efficiency Standards: Units	Potential to Emit (lbs/hr)	Potential to Emit (tons/yr)	Basis for Determination
1.)							
2.)							
3.)							
4.)							
5.)							
6.)							
7.)							
8.)							

Release Point Information:

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

Stack Release Point Information		
Company Release Point ID:	Release Point Type:	**Vertical**
FLR02	Release Point Latitude:	**43.10398**
	Release Point Longitude:	**-105.01752**
Company Release Point Description:	Base Elevation (ft):	**4575**
	Stack Height (ft):	**24**
HP Heater Treater Emergemcy Flare	Stack Diameter (ft):	**0.5**
(used 10% ... 876 hrs/yr)	Exit Gas Velocity (ft/s):	
	Exit Gas Temp (F):	**1850**
	Exit Gas Flow Rate (acfm):	
Company Release Point ID:	Release Point Type:	**Vertical**
FLR01	Release Point Latitude:	**43.10398**
	Release Point Longitude:	**-105.01752**
Company Release Point Description:	Base Elevation (ft):	**4575**
	Stack Height (ft):	**24**
LP Oil & Water Tank Flare	Stack Diameter (ft):	**0.25**
1TH 1-4 Oil Tank Vents	Exit Gas Velocity (ft/s):	
1TH 1-2 Water Tank Vents	Exit Gas Temp (F):	**1850**
	Exit Gas Flow Rate (acfm):	
Company Release Point ID:	Release Point Type:	
	Release Point Latitude:	
	Release Point Longitude:	
Company Release Point Description:	Base Elevation (ft):	
	Stack Height (ft):	
	Stack Diameter (ft):	
	Exit Gas Velocity (ft/s):	
	Exit Gas Temp (F):	
	Exit Gas Flow Rate (acfm):	
Company Release Point ID:	Release Point Type:	
	Release Point Latitude:	
	Release Point Longitude:	
Company Release Point Description:	Base Elevation (ft):	
	Stack Height (ft):	
	Stack Diameter (ft):	
	Exit Gas Velocity (ft/s):	
	Exit Gas Temp (F):	
	Exit Gas Flow Rate (acfm):	

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

Fugitive Release Point Information		
Company Release Point ID:	Release Point Latitude:	43.10398
	Release Point Longitude:	-105.01752
	Release Height (ft):	4575
Company Release Point Description:		
Company Release Point ID:	Release Point Latitude:	
	Release Point Longitude:	
	Release Height (ft):	
Company Release Point Description:		
Company Release Point ID:	Release Point Latitude:	
	Release Point Longitude:	
	Release Height (ft):	
Company Release Point Description:		
Company Release Point ID:	Release Point Latitude:	
	Release Point Longitude:	
	Release Height (ft):	
Company Release Point Description:		

Permit Information and Calculations

FORM 3
Nov. 2012

STATE OF WYOMING
OIL AND GAS CONSERVATION COMMISSION
P. O. Box 2640
Casper Wyoming 82602

WELL COMPLETION OR RECOMPLETION REPORT AND LOG (SUBMIT SINGLE, DUPLICATE ON STATE LAND)

9. API WELL NO. **49-009-29792**

12. COUNTY: CONVERSE

13. STATE: Wyoming

5. STATE LEASE SERIAL NO.: WYW176117, WYW156536

7. UNIT OR COMMUNITIZATION AGREEMENT: WYW182168X

1a. Type of Well: [X] Oil Well [ ] Gas Well [ ] Dry [ ] CBM Other:

b. Type of Completion: [X] New Well [ ] Workover [ ] Deepen [ ] Plug Back [ ] Diff. Resvr. [ ] Initial [X] Final Other

2. Name of Operator: RKI EXPLORATION & PRODUCTION

8. FARM OR LEASE NAME: SKELETON SPRING UNIT 36-68-10

3. Address: 210 PARK AVE, STE. 900, OKLAHOMA CITY, OK 73102

3a. Phone No. *(include area code)*: 405-949-2221 405-996-5769
Email: hbrehm@rkixp.com

8a. WELL No.: 2TH

4. Location of Well *(Report location clearly and in accordance with WOGCC requirements with footages and qtr qtrs.)*

10. FIELD NAME: EXPLORATORY

At surface	SWSW	133'	FSL	246'	FWL	NAD 83	Lat.	43.103983	Long.	105.017522
Top prod. Int. TVD / MD	NESW	899'	FSL	1685'	FWL	NAD 83	Lat.	43.106092	Long.	105.012272
At total depth TVD / MD	SESW	337'	FNL	1626'	FWL	NAD 83	Lat.	43.117089	Long.	105.01325

11. SEC. T, R, M., OR BLOCK AND SURVEY OR AREA: 10 T 36N R 68W

36. MULTIPLE COMPL.? NO
DOCKET OR AA. DATE:

14. Date Spudded: 12/9/2014

15. Date T.D. Reached: 12/15/2014

16. Date Completed: [ ] D & A 1/26/2015 [X] Ready to Prod.

17. ELEVATIONS (DF, RKB, RT, GR, etc.)*: 2575' GR

18. Total Depth: MD 11078' TVD 6186'

19. Plug back T.D.: MD 10977' TVD 6186'

20. Depth Bridge Plug Set: MD (Requires Prior Approval) TVD

21. Type Electric & other Logs Run (Submit 1 copy and 1 LAS of each), Cased and Open Hole, Btm Hole Press Survey
CEMENT, TVD, MD

22. Was well cored? [X] No [ ] Yes (Submit analysis)
Was DST run? [X] No [ ] Yes (Submit report)
Directional Survey? [ ] No [X] Yes (Submit copy, w/ cert.)

23. Casing and Liner Record *(Report all strings set in well)*

Hole Size	Size/ Grade	Wt. (#/ft.)	Top (MD)	Bottom(MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (Bbl)	Cement Top*	Amount Pulled
13.5"	J-55	40.5#	0	1765'		610	445	0	
8.75"	P-110	20#	0	11078'		1560	1202	3630'	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2 7/8"	5634'							

25. Producing Intervals

	Formation	Top	Bottom
A)	TEAPOT SAND	7055'-	10927'
B)			
C)			
D)			
D)			
D)			
D)			
D)			
D)			
D)			
D)			
D)			
D)			
D)			
D)			

26. Perforation Record

Perforated Inteval	Size	No. of Holes	Perf. Status
7055'- 7207'	3 1/8"	32	ACTIVE
7303'- 7455'	3 1/8"	32	ACTIVE
7551'- 7703'	3 1/8"	32	ACTIVE
7799'- 7951'	3 1/8"	32	ACTIVE
8047'- 8199'	3 1/8"	32	ACTIVE
8295'- 8447'	3 1/8"	32	ACTIVE
8543'- 8695'	3 1/8"	32	ACTIVE
8791'- 8943'	3 1/8"	32	ACTIVE
9039'- 9191	3 1/8"	32	ACTIVE
9287'- 9439'	3 1/8"	32	ACTIVE
9535'- 9687'	3 1/8"	32	ACTIVE
9783'- 9935'	3 1/8"	32	ACTIVE
10031'- 10183'	3 1/8"	32	ACTIVE
10279'- 10431'	3 1/8"	32	ACTIVE
10527'- 10679'	3 1/8"	32	ACTIVE
10775'- 10927'	3 1/8"	32	ACTIVE

Summary: Total Frac Stages: 16 Total Slurry (bbls): 33,679 Total Proppant (lbs) 1,457,500

28. Production- Interval A 25. Formation: TEAPOT SAND Productive Interval: 7055'- - 10927'

Date First Produced	Test Date	Hours Tested	Test Production	Oil Bbl	Gas MCF	Water Bbl	Oil Gravity Corr. API	Gas Gravity	Flowback Disposal
1/26/2015	2/2/2015	24	→	276	36	1080	37.4	0.7769	1,347

Choke Size	Tbg.Press Flwg.	Csg Press.	24 Hr. Rate	Oil Bbl	Gas MCF	Water Bbl	Gas: Oil Ratio	Res. Press.	Well Status ESP
64/64	PSI 240	120	→	276	36	1080	132	2783	PRODUCING

** See instructions and spaces for additional data on page 2*

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*	Test Witness:
SOLD	

30. Summary of Porous Zones (include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

Formation	Top	Bottom	Descriptions Contents, Etc.
TEAPOT	6907'	10927'	OIL-GAS-WATER

31. Formation (Log) Markers:

TEAPOT SAND

Name	Depth (Measured)
FOX HILLS	4666'
LEWIS	4765'
TECKLA	5755'
POISON DRAW	5951'
TEAPOT	6907'

32. Additional remarks; include plugging procedure (Req. prior approval):

FLOWBACK DISPOSAL TOTALS=17,220 BBLS WITH 4515 BBLS INTO RIEHLE 37-70-3-1SWD/5825 BBLS INTO RIEHLE 37-70-3-2SWD/6880 BBLS INTO RIEHLE 37-70-3-3SWD

33. Indicate which items have been attached by placing a check in the appropriate boxes:

- [X] Electrical/ Mechanical Logs (1 full set) Cased & Open hole.
- [ ] Geologic Report
- [ ] DST Report
- [X] Directional Survey w/ Certification
- [ ] Sundry Notice for plugging and cementing
- [ ] Core Analysis
- [ ] Press. Survey
- [X] Other: PLAT, FORM 10, BLH CERT, CEMENT, CAS

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (please print) HEATHER BREHM Title REGULATORY ANALYST

Signature _____ Date _____

INSTRUCTIONS

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys should be attached hereto, to the extent required by applicable Federal and or State laws and regulations. All attachments should be listed on this form, see space 33.

Space 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Please note all Lat./ Longs. In NAD 83. Calculate all "Top of Producing Intervals" and "BHL" first as distance from the section corner, second as the Lat. /Long. Spacing orders are based on a well location in a section. Well locations must match the surveyed footages.

Space 17: Indicate elevation used for depth measurements given in other spaces on this form and in any attachments.

Space 23: " Sacks Cement " : Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool. Show how reported top(s) of cement were determined, i.e. circulated (CIR), or calculated (CAL), or cement bond log (CBL), or temperature survey (TS).

Spaces 25 and 28: If this well is completed for commingled production from more than one pool (multiple zone completion), state in space 25 and 26, and in space 25 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for the pools reported in space 28 through 28c. Submit a separate completion report on this form for each pool separately produced, (not commingled).

Space 27: If a well was fracture treated or stimulated, all data required in Chapter 3, Section 45 must be filed with this Completion Report.

Space 27: If a well was fracture treated or stimulated, provide Summary Data for # of Stages, Total Slurry, Total Proppant

Space 28: Provide well test data for each interval tested or stimulated and flowed.

Space 32: Provide frac **flowback disposal volumes and handling and disposal site**.

Space 32: Provide final annulus casing pressure.

Space 32 or Attachment: Provide all Stimulation Chemicals by Name, Type, Volumes and CAS #s.

Attach a wellbore diagram whenever possible.

Form 10
DECEMBER, 2000

STATE OF WYOMING
OIL AND GAS CONSERVATION COMMISSION
Office of State Oil and Gas Supervisor
P.O. Box 2640
Casper, Wyoming 82602

PRODUCTION TEST AND GAS-OIL RATIO REPORT

OPERATOR	API NUMBER
RKI EXPLORATION AND PRODUCTION	49-009-29792
ADDRESS 210 PARK AVE., SUITE 900 OKLAHOMA CITY, OK 73012	WELL NAME & NUMBER SKELETON SPRING UNIT 36-68 10-2TH

LEASE NAME	RESERVOIR	FIELD
SKELETON SPRING UNIT	TEAPOT	WILDCAT

LOCATION,(quarter-quarter and footages):	COUNTY
SW/SW 133' FSL 245' FWL Sec. 10 , Twp. 36 N , Rge. 68 W LATITUDE: 43.103983° LONGITUDE: -105.017525°	CONVERSE

TEST DATA

START OF TEST-DATE	TIME	END OF TEST-DATE	TIME	DURATION OF TEST
2/2/2015	7:00 PM	2/3/2015	7:00 PM	24 HRS.

TUBING PRESSURE	CASING PRESSURE	SEPARATOR PRESSURE	SEPARATOR TEMP.	CHOKE SIZE
240	120	100	100°F	64/64

OIL PRODUCTION DURING TEST	GAS PRODUCTION DURING TEST	WATER PRODUCTION DURING TEST
276 bbls.	36.7 MCF	1,080 bbls.

OIL GRAVITY	PRODUCING METHOD (Flowing, pumping, gas lift, etc.)
37.4 *API	ESP

GAS PRODUCTION

METER MANUFACTURER		ORIFICE WELL TESTER [X]
Total Flow	Flange Tap [X] PIPE TAP [ ] L-10 [ ]	CRITICAL FLOW PROVER [ ]
ORIFICE DIAMETER 1	PIPE DIAMETER (Inside dia.) 2.067	ORIFICE DIAMETER 1
DIFFERENTIAL PRESSURE RANGE 0-400	MAX. STATIC PRESSURE RANGE 0-1500	PIPE DIAMETER 2
GAS GRAVITY (Air-1.0) 0.7769 Meas. [ ] Est [X]	FLOWING,TEMPERATURE 70°F	GAS GRAVITY (Air-1.0) 0.7769 Meas. [ ] Est [X]
DIFFERENTIAL NO FLOW READING 0.042	STATIC NO FLOW READING 12.52	24 HOUR COEFFICIENT N/A
DIFFERENTIAL 1.8	STATIC 19	PRESSURE: (Indicate Units) PSIG

TEST RESULTS

DAILY OIL	DAILY WATER	DAILY GAS	GAS- OIL RATIO
276 bbls.	1080 bbls.	36.7 MCF	132.97 SCF/STB

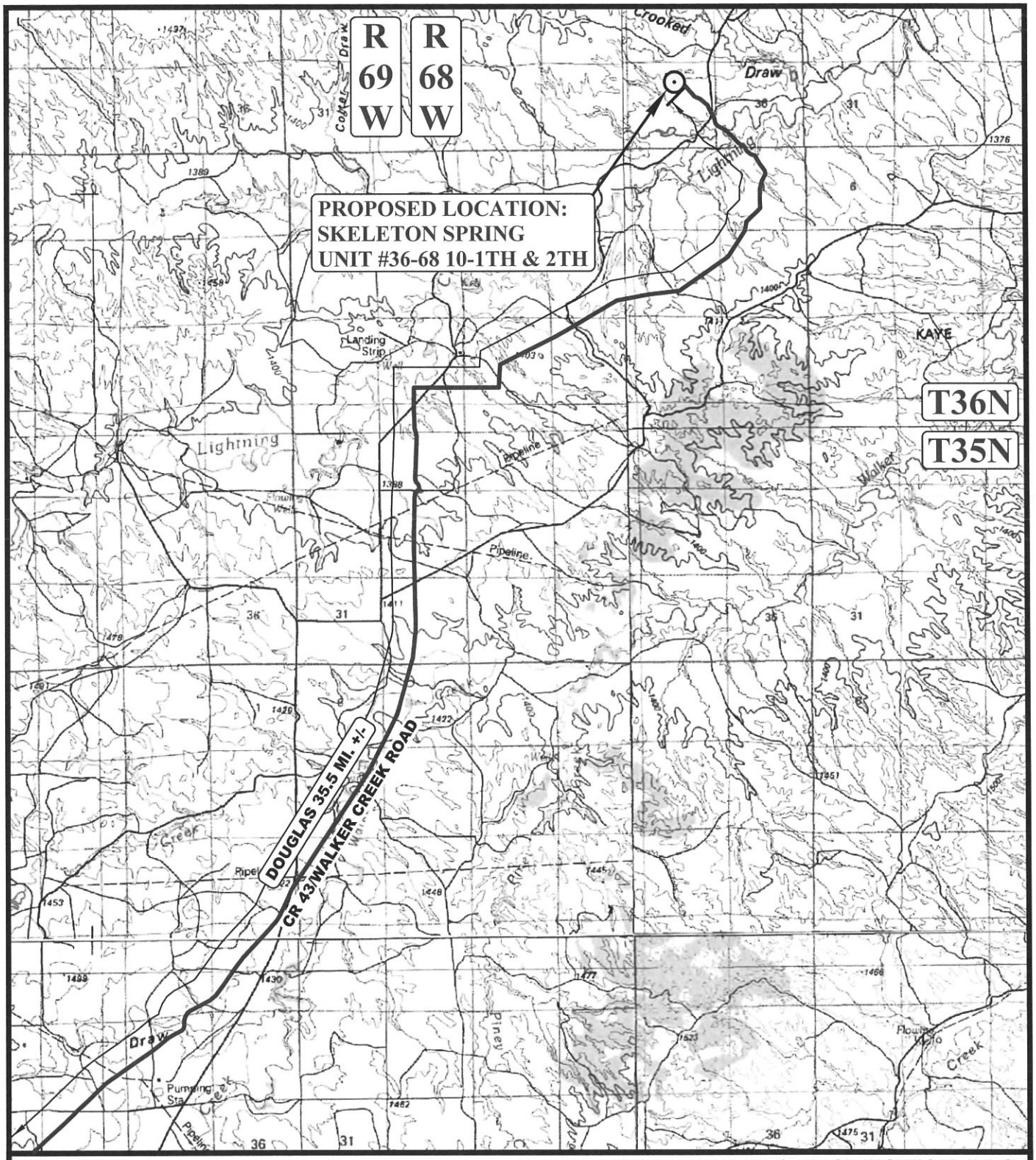
I hereby, swear or affirm that the statements herein made are complete and correct, ancl that the test described was made in accordance with the rules, regulations and Instructions of the Wyoming Oil and Gas Conservation Commission.

SIGNATURE

TITLE SR. PRODUCTION ENGINEER

DATE 2/19/2015

SUBMIT I COPY ONLY



LEGEND:

⊙ PROPOSED LOCATION

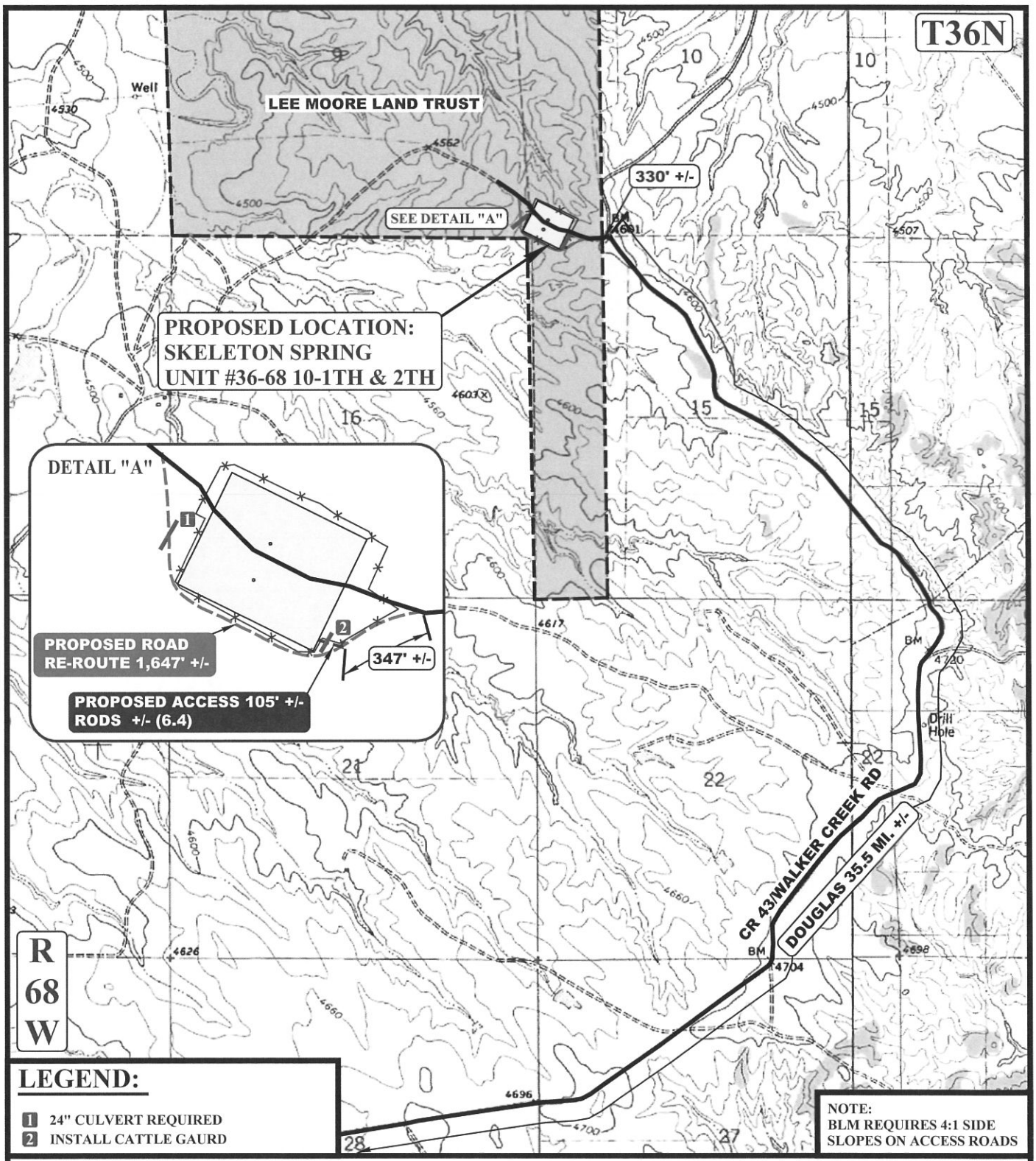
N

RKI EXPLORATION & PRODUCTION, LLC

SKELETON SPRING UNIT #36-68 10-1TH & 2TH
SECTION 10, T36N, R68W, 6th P.M.
SW 1/4 SW 1/4

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

ACCESS ROAD MAP	01 MONTH	21 DAY	14 YEAR	A TOPO
SCALE: 1:100,000	DRAWN BY: M.M.	REVISED: 02-11-14		



LEGEND:

1. 24" CULVERT REQUIRED
2. INSTALL CATTLE GAURD

NOTE:
BLM REQUIRES 4:1 SIDE SLOPES ON ACCESS ROADS

EXISTING ROAD
PROPOSED ROAD
PROPOSED ROAD RE-ROUTE
PROPOSED FENCE

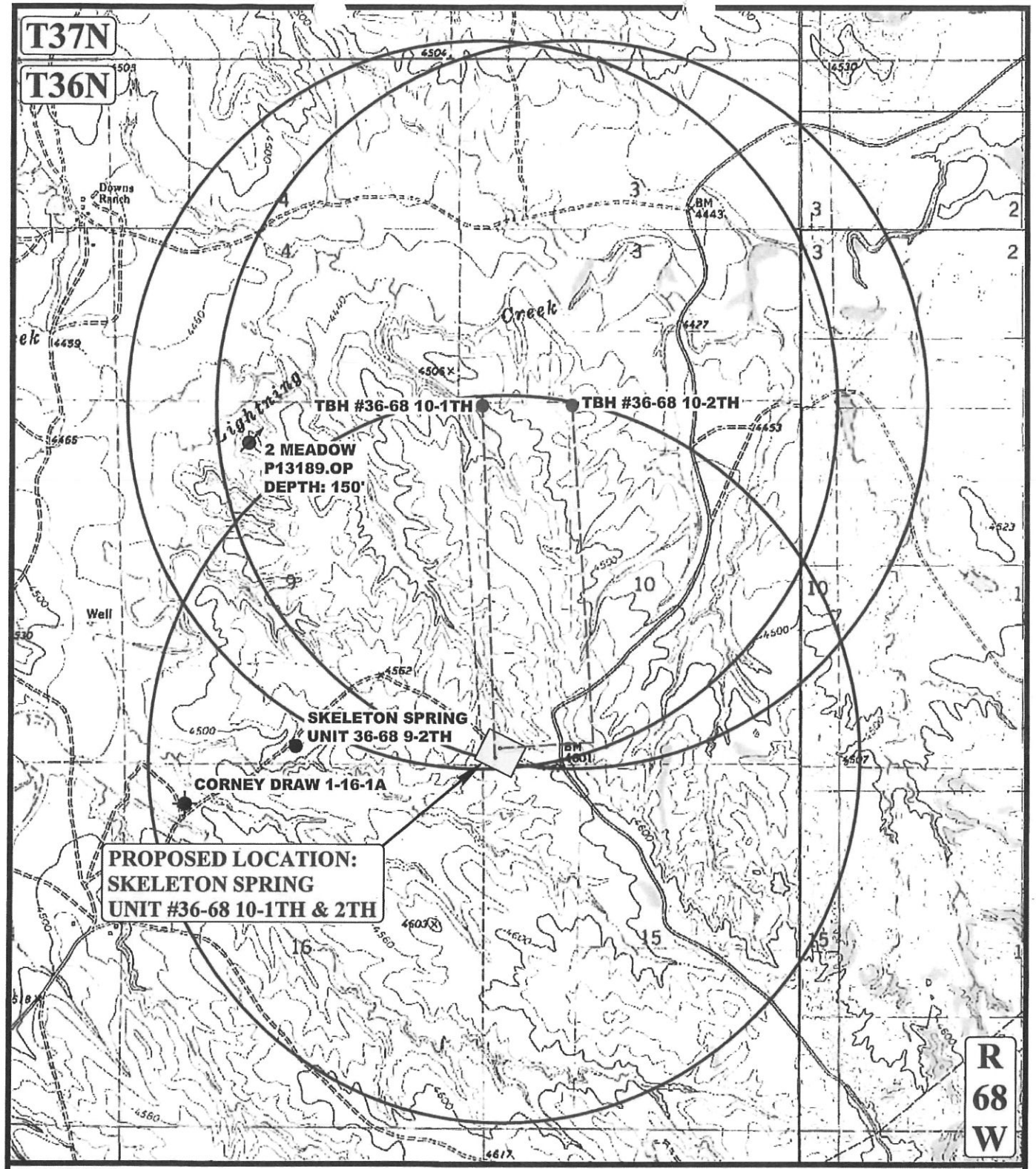
N

RKI EXPLORATION & PRODUCTION, LLC

SKELETON SPRING UNIT #36-68 10-1TH & 2TH
SECTION 10, T36N, R68W, 6th P.M.
SW 1/4 SW 1/4

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

ACCESS ROAD MAP	01 MONTH	21 DAY	14 YEAR	B TOPO
SCALE: 1" = 2000'	DRAWN BY: M.M.	REVISED: 02-11-14		



LEGEND:

- DISPOSAL WELLS
- PRODUCING WELLS
- SHUT IN WELLS
- WATER WELLS
- ABANDONED WELLS
- TEMPORARILY ABANDONED

N

RKI EXPLORATION & PRODUCTION, LLC

SKELETON SPRING UNIT #36-68 10-1TH & 2TH
SECTION 10, T36N, R68W, 6th P.M.
SW 1/4 SW 1/4

Uintah Engineering & Land Surveying
85 South 200 East Vernal, Utah 84078
(435) 789-1017 * FAX (435) 789-1813

TOPOGRAPHIC MAP	01 MONTH	21 DAY	14 YEAR	C TOPO
SCALE: 1" = 2000'	DRAWN BY: M.M.	REVISED: 03-06-14		

RECEIVED 04/02/14 01:13 PM BLM WYPO/CASPER FIELD OFFICE

RKI EXPLORATION & PRODUCTION, LLC

PRODUCTION FACILITY LAYOUT FOR

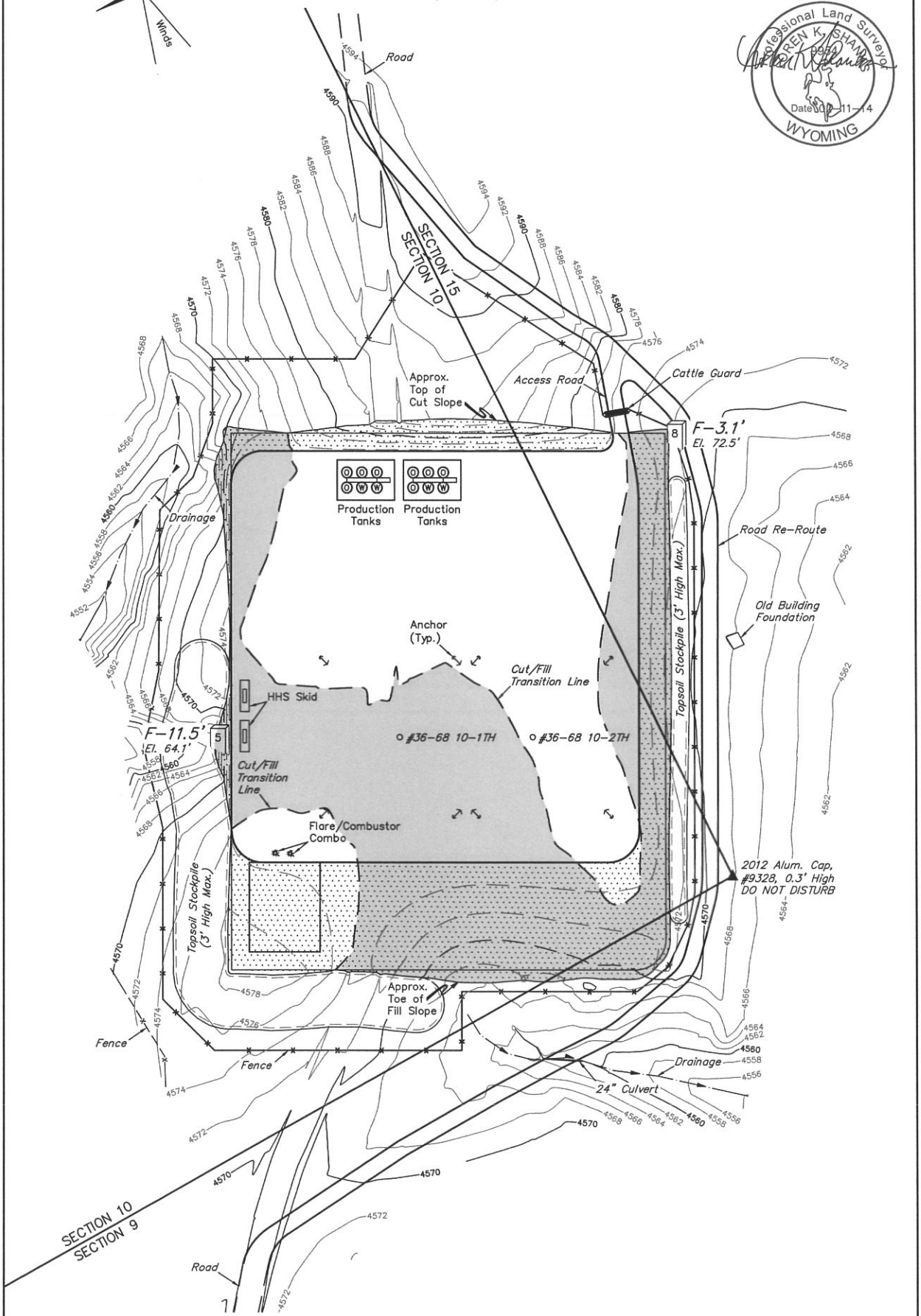
SKELETON SPRING UNIT #36-68 10-1TH & 2TH

Section 10, T36N, R68W, 6th P.M.

SW 1/4 SW 1/4

FIGURE #4

SCALE: 1" = 100'
DATE: 01-23-14
DRAWN BY: J.S.
REV: 02-04-14



RECLAIMED AREA

APPROXIMATE ACREAGE
UN-RECLAIMED = ± 4.846 ACRES

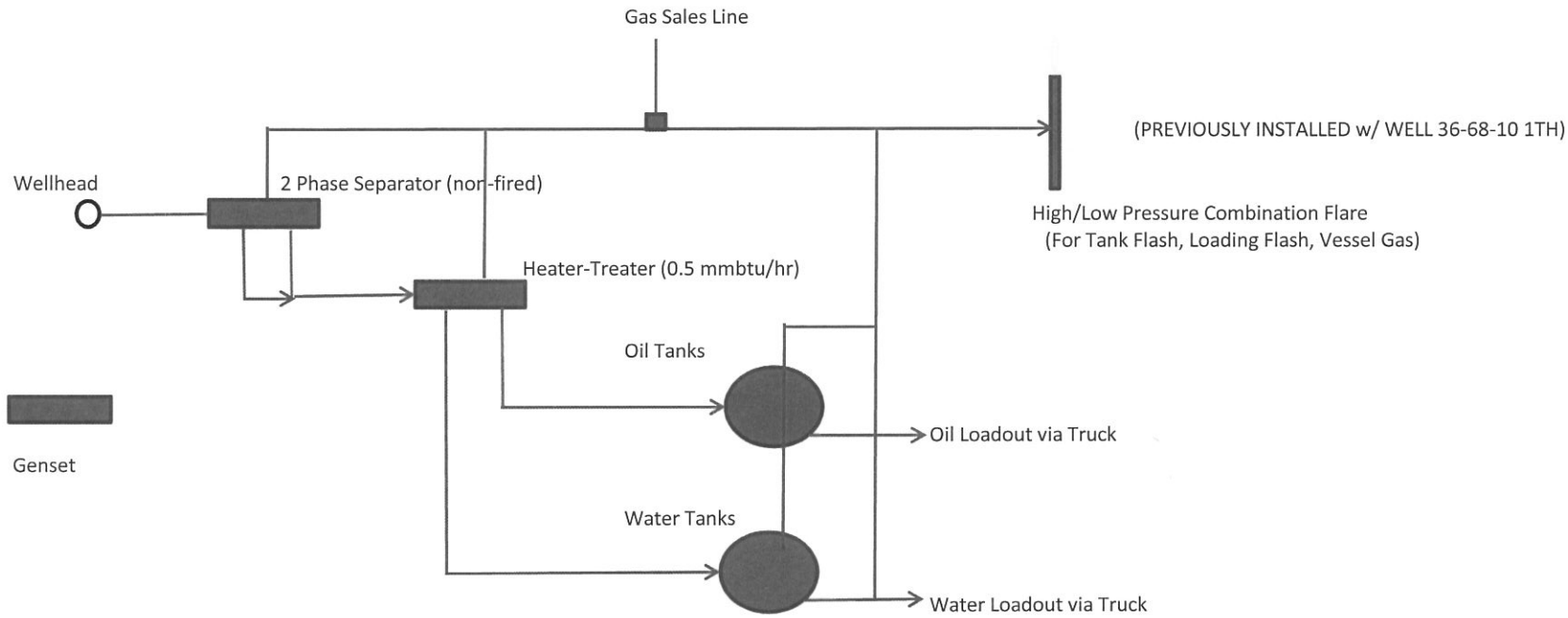
UINTAH ENGINEERING & LAND SURVEYING
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

RKI Exploration & Production, LLC

Skeleton Spring Unit 36-68-10 2TH

sw sw 10, T36N, R68W

Converse County, Wyoming



Air Emissions Sources:

Heater-Treater Burner
Flare
Oil Tanks
Water Tanks
Loadout Lines
Fugutives

Process Flow Description:

* Fluids from the Wellhead flow to the 2 Phase Separator where free gas is separated and sent to theGas Sales Line. Liquids are sent to the Heater-Treater.

* At the Heater-Treater, water and oil are separated and sent to respective storage tanks. Additional free solution gas is sent to the Gas Sales Line.

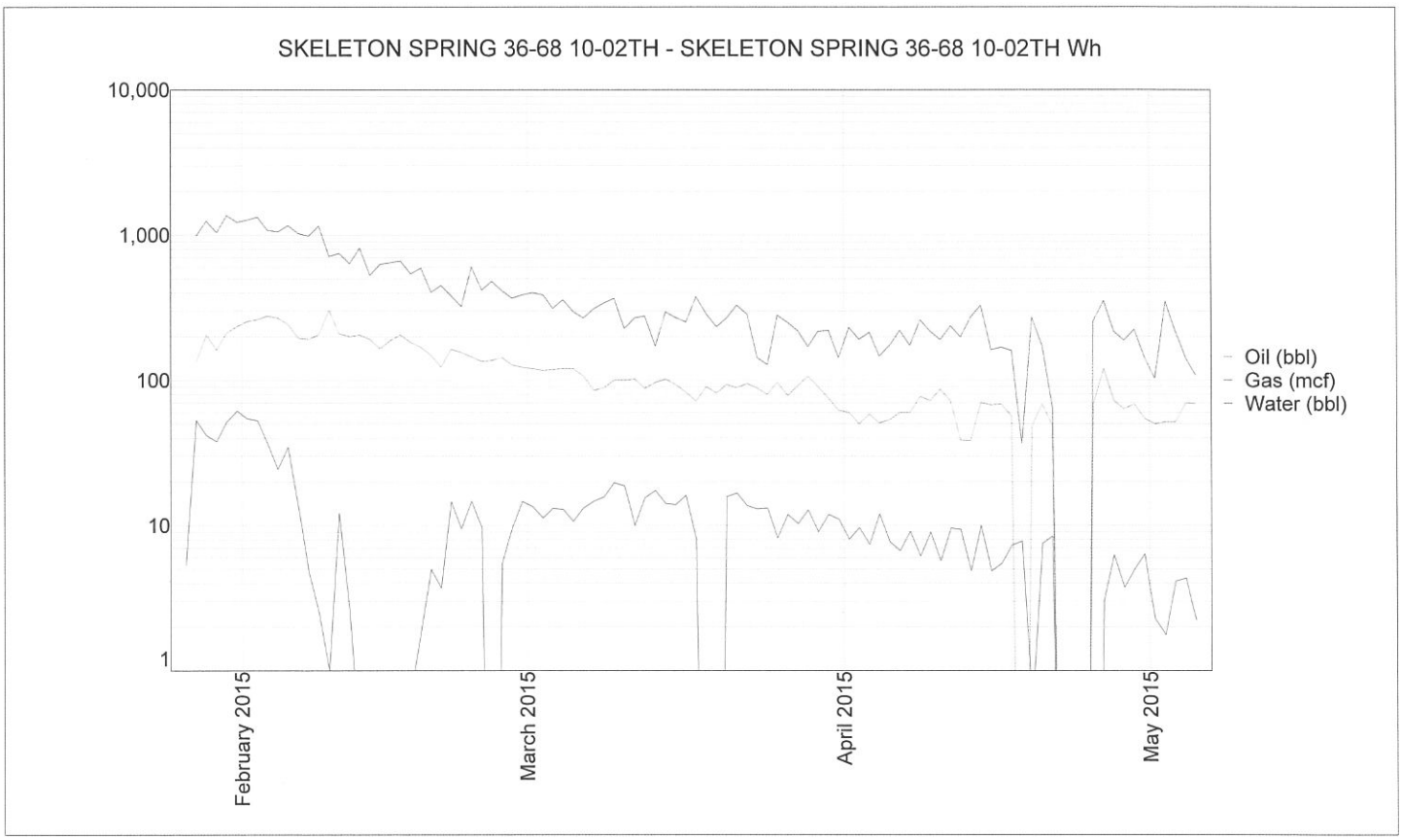
* Oil and water are stored in Tanks until removed from site via tanker trucks. Flash Gas, Working, and Breathing Losses from the Tanks is routed to the Flare (Low Pressure). Gas emissions from the loading process are also sent to the Flare (Low Pressure).

Date: 5/6/2015
Time: 8:12 AM

Daily Production Report

SKELETON SPRING 36-68 10-02TH - SKELETON SPRING 36-68 '

Selected Time Frame: Last 30 Days



Notes
<DT> = Down Time
<GM> = Gas Meter

Daily Production

Date	Oil	Gas	Water
05/06/2015			
05/05/2015	68.76	2	108.33
05/04/2015	70.01	4	141.67
05/03/2015	51.68	4	216.66
05/02/2015	51.68	2	350.02
05/01/2015	50.01	2	103.30
04/30/2015	54.59	6	143.33
04/29/2015	68.35	5	223.33
04/28/2015	63.35	4	188.35
04/27/2015	72.51	6	216.66
04/26/2015	120.02	3	351.66
04/25/2015	68.35	0	256.69
04/24/2015	0.00	0	0.00
04/23/2015	0.00	0	0.00
04/22/2015	0.00	0	0.00
04/21/2015	48.76	8	64.99
04/20/2015	68.35	8	171.68
04/19/2015	48.34	1	270.00
04/18/2015	0.00	8	36.66
04/17/2015	56.68	7	159.98
04/16/2015	68.35	5	168.34

Date: 5/6/2015
Time: 8:12 AM

Daily Production Report

SKELETON SPRING 36-68 10-02TH - SKELETON SPRING 36-68

Selected Time Frame: Last 30 Days

Notes
<DT> = Down Time
<GM> = Gas Meter

Daily Production

Date	Oil	Gas	Water
04/15/2015	67.51	5	161.67
04/14/2015	70.01	10	328.32
04/13/2015	38.34	5	271.70
04/12/2015	38.76	9	198.35
04/11/2015	71.68	10	236.63
04/10/2015	86.68	6	189.99
04/09/2015	72.51	9	216.71
04/08/2015	77.10	6	260.00
04/07/2015	60.01	9	173.30
Total:	1,612.41	145	5,208.31
Average:	55.60	5	179.60

RKI Exploration & Production, LLC
Skeleton Spring Unit 36-68-10 2TH
sw sw 10, T36N, R68W
Converse County, Wyoming

Heater Treater (HTR01)

Run time (hrs):	8,760	
Burner Size:	0.500	MMBtu/hr
Fuel Heat Value:	1,020	btu/scf

	Potential Emissions (tpy)									
	NOx	CO	VOC	SO2	PM10	H2S	HAPs	CO2	Methane	N20
HTR-1	0.21	0.18	0.01	0.00	0.02	0.00	0.00	257.65	0.00	0.00

	Potential Emissions (lb/hr)									
	NOx	CO	VOC	SO2	PM10	H2S	HAPs	CO2	Methane	N20
HTR-1	0.049	0.041	0.001	0.00	0.004	0.000	0.000	58.8235294	0.00112745	0.00107843

Emission Factors (AP42 1.4 - Natural Gas Combustion)

	lb/MMscf	lb/MMBtu	
NOx	100	0.09803922	AP-42 Table 1.4-1
CO	84	0.08235294	AP-42 Table 1.4-1
VOC	5.5	0.00539216	AP-42 Table 1.4-2
PM	7.6	0.00745098	AP-42 Table 1.4-2
SO2	0.60	0.00058824	AP-42 Table 1.4-2
CO2	120000	117.647059	AP-42 Table 1.4-2
Methane	2.3	0.0022549	AP-42 Table 1.4-2
N2O	2.2	0.00215686	AP-42 Table 1.4-2

```
*******************************************************************************
*     Project Setup Information                                               *
*******************************************************************************
Project File              : M:\Users\JIngerson\Wyoming Air Applications\Skeleton Spring Unit 36-68-10 2TH\V
Flowsheet Selection       : Oil Tank with Separator
Calculation Method        : RVP Distillation
Control Efficiency        : 98.0%
Known Separator Stream    : Low Pressure Oil
Entering Air Composition  : No

Filed Name                : Skeleton Spring Unit
Well Name                 : Skeleton Spring Unit 36-68-10 2TH Water w/ 1% Oil
Well ID                   : 49-009-29792
Permit Number             : WDEQ Air Permit Application
Date                      : 2015.05.06


*******************************************************************************
*     Data Input                                                              *
*******************************************************************************

Separator Pressure        : 100.00[psig]
Separator Temperature     : 100.00[F]
Ambient Pressure          : 12.14[psia]
Ambient Temperature       : 55.00[F]
C10+ SG                   : 0.80927
C10+ MW                   : 227.567

-- Low Pressure Oil ----------------------------------------------------------
   No.    Component            mol %
   1      H2S                  0.0000
   2      O2                   0.0000
   3      CO2                  0.0640
   4      N2                   0.0130
   5      C1                   0.6320
   6      C2                   0.1430
   7      C3                   0.8760
   8      i-C4                 0.9670
   9      n-C4                 2.5800
   10     i-C5                 1.4320
   11     n-C5                 1.8450
   12     C6                   1.6680
   13     C7                   6.4210
   14     C8                  16.5700
   15     C9                  11.7380
   16     C10+                51.0870
   17     Benzene              0.1240
   18     Toluene              0.4620
   19     E-Benzene            0.1390
   20     Xylenes              1.6590
   21     n-C6                 1.2780
   22     224Trimethylp        0.3020

-- Sales Oil -----------------------------------------------------------------
Production Rate           : 2[bbl/day]
Days of Annual Operation  : 365 [days/year]
API Gravity               : 37.4
Reid Vapor Pressure       : 6.80[psia]


*******************************************************************************
*     Calculation Results                                                     *
*******************************************************************************

-- Emission Summary ----------------------------------------------------------
Item                Uncontrolled   Uncontrolled   Controlled     Controlled
```

	[ton/yr]	[lb/hr]	[ton/yr]	[lb/hr]
Total HAPs	0.000	0.000	0.000	0.000
Total HC	0.075	0.017	0.002	0.000
VOCs, C2+	0.043	0.010	0.001	0.000
VOCs, C3+	0.039	0.009	0.001	0.000

Uncontrolled Recovery Info.

Vapor	6.2600 x1E-3	[MSCFD]
HC Vapor	5.9100 x1E-3	[MSCFD]
GOR	3.13	[SCF/bbl]

-- Emission Composition ----------

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.000	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.004	0.001	0.004	0.001
4	N2	0.002	0.000	0.002	0.000
5	C1	0.033	0.008	0.001	0.000
6	C2	0.004	0.001	0.000	0.000
7	C3	0.011	0.003	0.000	0.000
8	i-C4	0.006	0.001	0.000	0.000
9	n-C4	0.012	0.003	0.000	0.000
10	i-C5	0.003	0.001	0.000	0.000
11	n-C5	0.003	0.001	0.000	0.000
12	C6	0.001	0.000	0.000	0.000
13	C7	0.001	0.000	0.000	0.000
14	C8	0.001	0.000	0.000	0.000
15	C9	0.000	0.000	0.000	0.000
16	C10+	0.000	0.000	0.000	0.000
17	Benzene	0.000	0.000	0.000	0.000
18	Toluene	0.000	0.000	0.000	0.000
19	E-Benzene	0.000	0.000	0.000	0.000
20	Xylenes	0.000	0.000	0.000	0.000
21	n-C6	0.000	0.000	0.000	0.000
22	224Trimethylp	0.000	0.000	0.000	0.000
	Total	0.081	0.018	0.002	0.000

-- Stream Data ----------

No.	Component	MW	LP Oil mol %	Flash Oil mol %	Sale Oil mol %	Flash Gas mol %	W&S Gas mol %	Total Emissions mol %
1	H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	CO2	44.01	0.0640	0.0483	0.0483	3.3499	0.0000	3.3499
4	N2	28.01	0.0130	0.0029	0.0029	2.1272	0.0000	2.1272
5	C1	16.04	0.6320	0.3129	0.3129	67.3809	0.0000	67.3809
6	C2	30.07	0.1430	0.1222	0.1222	4.4922	0.0000	4.4922
7	C3	44.10	0.8760	0.8395	0.8395	8.5136	0.0000	8.5136
8	i-C4	58.12	0.9670	0.9545	0.9545	3.5862	0.0000	3.5862
9	n-C4	58.12	2.5800	2.5605	2.5605	6.6562	0.0000	6.6562
10	i-C5	72.15	1.4320	1.4325	1.4325	1.3358	0.0000	1.3358
11	n-C5	72.15	1.8450	1.8478	1.8478	1.2560	0.0000	1.2560
12	C6	86.16	1.6680	1.6745	1.6745	0.3145	0.0000	0.3145
13	C7	100.20	6.4210	6.4499	6.4499	0.3795	0.0000	0.3795
14	C8	114.23	16.5700	16.6478	16.6478	0.2902	0.0000	0.2902
15	C9	128.28	11.7380	11.7938	11.7938	0.0669	0.0000	0.0669
16	C10+	227.57	51.0870	51.3312	51.3312	0.0001	0.0000	0.0001
17	Benzene	78.11	0.1240	0.1245	0.1245	0.0172	0.0000	0.0172
18	Toluene	92.13	0.4620	0.4641	0.4641	0.0168	0.0000	0.0168
19	E-Benzene	106.17	0.1390	0.1397	0.1397	0.0016	0.0000	0.0016
20	Xylenes	106.17	1.6590	1.6669	1.6669	0.0161	0.0000	0.0161
21	n-C6	86.18	1.2780	1.2832	1.2832	0.1850	0.0000	0.1850
22	224Trimethylp	114.24	0.3020	0.3034	0.3034	0.0140	0.0000	0.0140
	MW		165.80	166.47	166.47	27.07	0.00	27.07
	Stream Mole Ratio		1.0000	0.9952	0.9952	0.0048	0.0000	0.0048
	Heating Value	[BTU/SCF]				1481.28	0.00	1481.28
	Gas Gravity	[Gas/Air]				0.93	0.00	0.93

Bubble Pt. @ 100F	[psia]	27.79	16.60	16.60
RVP @ 100F	[psia]	7.63	6.12	6.12
Spec. Gravity @ 100F		0.705	0.705	0.705

```
*****************************************************************************************
*     Project Setup Information                                                         *
*****************************************************************************************
Project File               : M:\Users\JIngerson\Wyoming Air Applications\Skeleton Spring Unit 36-68-10 2TH\(
Flowsheet Selection        : Oil Tank with Separator
Calculation Method         : RVP Distillation
Control Efficiency         : 98.0%
Known Separator Stream     : Low Pressure Oil
Entering Air Composition   : No

Filed Name                 : Skeleton Spring Unit
Well Name                  : Skeleton Spring Unit 36-68-10 2TH Oil
Well ID                    : 49-009-29792
Permit Number              : WDEQ Air Permit Application
Date                       : 2015.05.06


*****************************************************************************************
*     Data Input                                                                        *
*****************************************************************************************

Separator Pressure         : 100.00[psig]
Separator Temperature      : 100.00[F]
Ambient Pressure           : 12.14[psia]
Ambient Temperature        : 55.00[F]
C10+ SG                    : 0.80927
C10+ MW                    : 227.567

-- Low Pressure Oil ----------------------------------------------------------------------
   No.    Component              mol %
   1      H2S                    0.0000
   2      O2                     0.0000
   3      CO2                    0.0640
   4      N2                     0.0130
   5      C1                     0.6320
   6      C2                     0.1430
   7      C3                     0.8760
   8      i-C4                   0.9670
   9      n-C4                   2.5800
   10     i-C5                   1.4320
   11     n-C5                   1.8450
   12     C6                     1.6680
   13     C7                     6.4210
   14     C8                    16.5700
   15     C9                    11.7380
   16     C10+                  51.0870
   17     Benzene                0.1240
   18     Toluene                0.4620
   19     E-Benzene              0.1390
   20     Xylenes                1.6590
   21     n-C6                   1.2780
   22     224Trimethylp          0.3020

-- Sales Oil -----------------------------------------------------------------------------
Production Rate            : 55.6[bbl/day]
Days of Annual Operation   : 365 [days/year]
API Gravity                : 37.4
Reid Vapor Pressure        : 6.80[psia]


*****************************************************************************************
*     Calculation Results                                                               *
*****************************************************************************************

-- Emission Summary ----------------------------------------------------------------------
Item                 Uncontrolled   Uncontrolled   Controlled     Controlled
```

	[ton/yr]	[lb/hr]	[ton/yr]	[lb/hr]
Total HAPs	0.020	0.005	0.000	0.000
Total HC	2.094	0.478	0.042	0.010
VOCs, C2+	1.188	0.271	0.024	0.005
VOCs, C3+	1.075	0.245	0.022	0.005

Uncontrolled Recovery Info.

Vapor	173.9300 x1E-3	[MSCFD]
HC Vapor	164.4100 x1E-3	[MSCFD]
GOR	3.13	[SCF/bbl]

-- Emission Composition ----------

No	Component	Uncontrolled [ton/yr]	Uncontrolled [lb/hr]	Controlled [ton/yr]	Controlled [lb/hr]
1	H2S	0.000	0.000	0.000	0.000
2	O2	0.000	0.000	0.000	0.000
3	CO2	0.123	0.028	0.123	0.028
4	N2	0.050	0.011	0.050	0.011
5	C1	0.905	0.207	0.018	0.004
6	C2	0.113	0.026	0.002	0.001
7	C3	0.314	0.072	0.006	0.001
8	i-C4	0.175	0.040	0.004	0.001
9	n-C4	0.324	0.074	0.006	0.001
10	i-C5	0.081	0.018	0.002	0.000
11	n-C5	0.076	0.017	0.002	0.000
12	C6	0.022	0.005	0.000	0.000
13	C7	0.031	0.007	0.001	0.000
14	C8	0.027	0.006	0.001	0.000
15	C9	0.007	0.002	0.000	0.000
16	C10+	0.000	0.000	0.000	0.000
17	Benzene	0.001	0.000	0.000	0.000
18	Toluene	0.001	0.000	0.000	0.000
19	E-Benzene	0.000	0.000	0.000	0.000
20	Xylenes	0.001	0.000	0.000	0.000
21	n-C6	0.013	0.003	0.000	0.000
22	224Trimethylp	0.001	0.000	0.000	0.000
	Total	2.265	0.517	0.045	0.010

-- Stream Data ----------

No.	Component	MW	LP Oil mol %	Flash Oil mol %	Sale Oil mol %	Flash Gas mol %	W&S Gas mol %	Total Emissions mol %
1	H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	CO2	44.01	0.0640	0.0483	0.0483	3.3499	0.0000	3.3499
4	N2	28.01	0.0130	0.0029	0.0029	2.1272	0.0000	2.1272
5	C1	16.04	0.6320	0.3129	0.3129	67.3809	0.0000	67.3809
6	C2	30.07	0.1430	0.1222	0.1222	4.4922	0.0000	4.4922
7	C3	44.10	0.8760	0.8395	0.8395	8.5136	0.0000	8.5136
8	i-C4	58.12	0.9670	0.9545	0.9545	3.5862	0.0000	3.5862
9	n-C4	58.12	2.5800	2.5605	2.5605	6.6562	0.0000	6.6562
10	i-C5	72.15	1.4320	1.4325	1.4325	1.3358	0.0000	1.3358
11	n-C5	72.15	1.8450	1.8478	1.8478	1.2560	0.0000	1.2560
12	C6	86.16	1.6680	1.6745	1.6745	0.3145	0.0000	0.3145
13	C7	100.20	6.4210	6.4499	6.4499	0.3795	0.0000	0.3795
14	C8	114.23	16.5700	16.6478	16.6478	0.2902	0.0000	0.2902
15	C9	128.28	11.7380	11.7938	11.7938	0.0669	0.0000	0.0669
16	C10+	227.57	51.0870	51.3312	51.3312	0.0001	0.0000	0.0001
17	Benzene	78.11	0.1240	0.1245	0.1245	0.0172	0.0000	0.0172
18	Toluene	92.13	0.4620	0.4641	0.4641	0.0168	0.0000	0.0168
19	E-Benzene	106.17	0.1390	0.1397	0.1397	0.0016	0.0000	0.0016
20	Xylenes	106.17	1.6590	1.6669	1.6669	0.0161	0.0000	0.0161
21	n-C6	86.18	1.2780	1.2832	1.2832	0.1850	0.0000	0.1850
22	224Trimethylp	114.24	0.3020	0.3034	0.3034	0.0140	0.0000	0.0140
	MW		165.80	166.47	166.47	27.07	0.00	27.07
	Stream Mole Ratio		1.0000	0.9952	0.9952	0.0048	0.0000	0.0048
	Heating Value	[BTU/SCF]				1481.28	0.00	1481.28
	Gas Gravity	[Gas/Air]				0.93	0.00	0.93

Bubble Pt. @ 100F	[psia]	27.79	16.60	16.60
RVP @ 100F	[psia]	7.63	6.12	6.12
Spec. Gravity @ 100F		0.705	0.705	0.705

RKI Exploration & Production, LLC
Skeleton Spring Unit 36-68-10 2TH
sw sw 10, T36N, R68W
Converse County, Wyoming

Oil Loadout

Source ID Number:	OIL LOAD-1	Model:	Liquid Loading
Name	Oil Truck Loadout		
		Throughput Value (gal/yr):	852348
Liquid Temperature (^{o}F):	55	Molecular Weight (lb/lb-mole):	27.10
Vapor Pressure (psia)	6.80	Saturation Factor:	0.6
Hours Per Day:	24	Days Per Year:	365
Load Frequency (trucks/yr):	122	Load Duration (min/truck):	60.00

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

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

Loading Loss (lb VOC/1000 gal) = 2.68 lb/1000 gal

Uncontrolled Emissions

Pollutant	Loading Loss (lb/1000 gal)	Throughput (gal/yr)	Estimated Emissions (lb/yr)	(tpy)	Source of Emission Factor
VOC	2.68	852348	2280.06	1.14	AP42
			0.2603 lb/hr		

Controlled Emissions

Pollutant	Loading Loss (lb/1000 gal)	Throughput (gal/yr)	Estimated Emissions (lb/yr)	(tpy)	Source of Emission Factor
VOC	0.05	852348	45.60	0.02	LP Flare specs
			0.0052 lb/hr		

RKI Exploration & Production, LLC
Skeleton Spring Unit 36-68-10 1TH
sw sw 10, T36N, R68W
Converse County, Wyoming

Water Loadout

Source ID Number:	WATER LOAD-1	Model:	Liquid Loading
Name	Water Truck Loadout (assumes 1% oil in water production)		
		Throughput Value (gal/yr):	30660
Liquid Temperature (°F):	55	Molecular Weight (lb/lb-mole):	27.10
Vapor Pressure (psia)	6.80	Saturation Factor:	0.6
Hours Per Day:	24	Days Per Year:	365
Load Frequency (trucks/yr):	5	Load Duration (min/truck):	60.00

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

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

Loading Loss (lb VOC/1000 gal) = 2.68 lb/1000 gal

Uncontrolled Emissions

Pollutant	Loading Loss (lb/1000 gal)	Throughput (gal/yr)	Estimated Emissions (lb/yr)	Estimated Emissions (tpy)	Source of Emission Factor
VOC	2.68	30660	82.02	0.04	AP42
			0.0094 lb/hr		

Controlled Emissions

Pollutant	Loading Loss (lb/1000 gal)	Throughput (gal/yr)	Estimated Emissions (lb/yr)	Estimated Emissions (tpy)	Source of Emission Factor
VOC	0.05	30660	1.64	0.00	LP Flare specs
			0.0002 lb/hr		

RKI Exploration & Production, LLC
HP Flare
Skeleton Spring Unit 36-68-10 2TH

Equipment ID	FLR-1
Source Description	High Pressure Flare for Separator/HT/Emergency Emissions
Make/Model	Steffes SHP-6 High Pressure Flare

Pilot	Spark	
Separator Gas HV	**1,361**	Btu/scf (inlet gas stream)
Gas Fuel	**208**	scf/hr from Separator & H/T vents (Assume 10% use per year)
NMNE VOC Gas wt	7.53	lb/lb-mol
Gas HAP Gas wt	1.35	lb/lb-mol

VOC Destruction Efficiency **98%**

Potential Emissions from Facility Flare Emissions

Pollutant	Emission Factor (lb/MMBtu)	Emission Factor (g/hp-hr)	Nominal Rating (hp)	Hrs of Operation (hrs/yr)	Estimated Emissions Maximum (lb/hr)	Estimated Emissions Total (tpy)	Source of Emission Factor
NOx	0.140	--	NA	876	0.04	0.02	C6 S2 Guidance
CO	0.035	--	NA	876	0.01	0.00	C6 S2 Guidance
Total NMNE VOC	--	--	NA	876	0.08	0.04	Gas Analysis
HAPs	--	--	NA	876	0.01	0.01	Gas Analysis
H2S	0.32	--	NA	876	0.000	0.00	Gas Analysis
SO2	0.00	--	NA	876	0.00	0.00	Gas Analysis
Carbon Dioxide	116.6	-	NA	876	33.02	14.5	Subpart C Default
Methane	0.0022	-	NA	876	0.00	0.00	Subpart C Default

106.492(1)(D) Checklist Calculation

Heat Release (Btu/hr)	283,088.00
Allowable Minimum	0.00
Does Heat Release Meet 492 Re	**Yes**

60.18 Maximum Velocity Calculation

Flare gas Heat Value	1.44 Megajoules/scf
Net Heating Value (H_T)	50.7 MJ/scm

40 CFR §60.18(f)(6): The maximum permitted velocity, Vmax (m/sec), for air-assisted flares shall be determined by the following equation: Vmax=8.706+0.7084 (HT)

Vmax (per 60.18) **146.4 ft/sec**

RKI Exploration & Production, LLC
LP Flare
Skeleton Spring Unit 36-68-10 2TH

Equipment ID	FLR-2
Source Description	Low Pressure Flare for Tank Emissions
Make/Model	Steffes SVG-3 Low Pressure Flare

Pilot	Spark	
Tank Flash Gas HV	**1,481**	Btu/scf (inlet gas stream)
Gas Fuel	**8**	scf/hr from tank vent
NMNE VOC Gas wt	7.53	lb/lb-mol
Gas HAP Gas wt	1.35	lb/lb-mol

VOC Destruction Efficiency **98%**

Potential Emissions from Facility Flare Emissions

Pollutant	Emission Factor (lb/MMBtu)	Emission Factor (g/hp-hr)	Nominal Rating (hp)	Hrs of Operation (hrs/yr)	Estimated Emissions Maximum (lb/hr)	Estimated Emissions Total (tpy)	Source of Emission Factor
NOx	0.140	--	NA	8760	0.00	0.01	C6 S2 Guidance
CO	0.035	--	NA	8760	0.00	0.00	C6 S2 Guidance
Total NMNE VOC	--	--	NA	8760	0.00	0.01	Gas Analysis
HAPs	--	--	NA	8760	0.00	0.00	Gas Analysis
H2S	0.32	--	NA	8760	0.000	0.00	Gas Analysis
SO2	0.00	--	NA	8760	0.00	0.00	Gas Analysis
Carbon Dioxide	116.6	-	NA	8760	1.38	6.1	Subpart C Default
Methane	0.0022	-	NA	8760	0.00	0.00	Subpart C Default

106.492(1)(D) Checklist Calculation

Heat Release (Btu/hr)	11,848.00
Allowable Minimum	0.00
Does Heat Release Meet 492 Re	**Yes**

60.18 Maximum Velocity Calculation

Flare gas Heat Value	1.56 Megajoules/scf
Net Heating Value (H_T)	55.2 MJ/scm

40 CFR §60.18(f)(6): The maximum permitted velocity, Vmax (m/sec), for air-assisted flares shall be determined by the following equation: Vmax=8.706+0.7084 (HT)

Vmax (per 60.18) **156.8 ft/sec**

RKI Exploration & Production, LLC
Skeleton Spring Unit 36-68-10 2TH
sw sw 10, T36N, R68W
Converse County, Wyoming

Fugitive Emissions (FUG-1)

Uncontrolled Emissions

Wt Perecent Gas:	**100.00**	Per AMR Gas Analysis of 6/9/2014
Wt Percent HC:	**94.79**	Per AMR Gas Analysis of 6/9/2014
Wt Percent VOC:	**40.45**	Per AMR Gas Analysis of 6/9/2014
Wt Percent HAPs:	**1.29**	Per AMR Gas Analysis of 6/9/2014

								Leak Rate in Tons Per Year			
Equipment Type	**Gas Leak EF lb/hr/source**	**Source Count**	**Percent HC**	**Percent VOC**	**Percent HAPs**	**Operated Hours**	**Gas Rate lb/hr**	**Gas Rate tpy**	**HC Rate tpy**	**VOC Rate tpy**	**HAPs Rate tpy**
Valves	0.005420	75	94.79	40.45	1.29	8,760	0.3853	1.688	1.600	0.683	0.001
Flanges	0.000241	118	94.79	40.45	1.29	8,760	0.0270	0.118	0.112	0.048	0.000
Connectors	0.000458	124	94.79	40.45	1.29	8,760	0.0538	0.236	0.224	0.095	0.000
Other	0.016666	17	94.79	40.45	1.29	8,760	0.2686	1.176	1.115	0.476	0.001
Open Ended Lines	0.003080	-	94.79	40.45	1.29	8,760	-	-	-	-	-
Pumps	0.028750	-	94.79	40.45	1.29	8,760	-	-	-	-	-
Totals							0.735	3.218	3.050	1.302	0.002

Notes: See attached Flash Gas Composition from AMR Analysis for VOC and HAPs weight percent calculations.

Oil and Gas Production Operations leak emissions factors from EPA 453/R-95-017.

RKI Exploration & Production, LLC
Skeleton Spring Unit 36-68-10 1TH
sw sw 10, T36N, R68W
Converse County, Wyoming

Flare Gas Analyis from AMR Analysis (6/9/2014)

Component	(1) mol %	(2) mol fraction	(3) Comp MW	(4) Gas MW	(5) HC MW	(6) VOC MW	(7) HAP MW
H2S	-	-	34.08	-			-
O2	-	-	32.00	-			
CO2	1.1430	0.0114	44.01	0.5030			
N2	2.7070	0.0271	28.01	0.7583			
C1	74.8060	0.7481	16.04	12.0004	12.0004		
C2	3.8140	0.0381	30.07	1.1468	1.1468		
C3	8.2150	0.0822	44.10	3.6225	3.6225	3.6225	
i-C4	2.0910	0.0209	58.12	1.2153	1.2153	1.2153	
n-C4	3.7230	0.0372	58.12	2.1639	2.1639	2.1639	
i-C5	1.1490	0.0115	72.15	0.8290	0.8290	0.8290	
n-C5	1.0980	0.0110	72.15	0.7922	0.7922	0.7922	
C6	0.5030	0.0050	86.18	0.4335	0.4335	0.4335	
C7	0.3230	0.0032	100.20	0.3237	0.3237	0.3237	
C8	0.0820	0.0008	114.23	0.0937	0.0937	0.0937	
C9	-	-	128.26	-	-	-	
C10+	-	-	142.28	-	-	-	
Benzene	0.0060	0.0001	78.11	0.0047	0.0047	0.0047	0.0047
Toluene	0.0140	0.0001	92.14	0.0129	0.0129	0.0129	0.0129
E-Benzene	0.0060	0.0001	106.17	0.0064	0.0064	0.0064	0.0064
Xylenes	0.0150	0.0002	106.17	0.0159	0.0159	0.0159	0.0159
n-C6	0.2690	0.0027	86.18	0.2318	0.2318	0.2318	0.2318
224 Trimethylpentane	0.0360	0.0004	114.24	0.0411	0.0411	0.0411	0.0411
Totals	100.0000	1.0000		24.1951	22.9337	9.7865	0.3128

Wt % HC:	**94.79**
Wt % VOCs:	**40.45**
Wt % HAPs:	**1.29**

RKI Exploration & Production, LLC
Skeleton Spring Unit 36-68-9 2TH
se sw 9, T36N, R68W
Flash Gas Component Analysis

Oil Tank Flash Gas Analyis from E&P TANKS 2.0 Run (1/28/2015)

Component	(1) mol %	(2) mol fraction	(3) Comp MW	(4) Gas MW	(5) HC MW	(6) VOC MW	(7) HAP MW
H2S	-	-	34.08	-			-
O2	-	-	32.00	-			
CO2	3.3499	0.0335	44.01	1.4743			
N2	2.1272	0.0213	28.01	0.5959			
C1	67.3810	0.6738	16.04	10.8093	10.8093		
C2	4.4922	0.0449	30.07	1.3508	1.3508		
C3	8.5136	0.0851	44.10	3.7542	3.7542	3.7542	
i-C4	3.5862	0.0359	58.12	2.0844	2.0844	2.0844	
n-C4	6.6562	0.0666	58.12	3.8687	3.8687	3.8687	
i-C5	1.3358	0.0134	72.15	0.9638	0.9638	0.9638	
n-C5	1.2560	0.0126	72.15	0.9062	0.9062	0.9062	
C6	0.3145	0.0031	86.18	0.2710	0.2710	0.2710	
C7	0.3795	0.0038	100.20	0.3803	0.3803	0.3803	
C8	0.2902	0.0029	114.23	0.3315	0.3315	0.3315	
C9	0.0669	0.0007	128.26	0.0858	0.0858	0.0858	
C10+	0.0001	0.0000	142.28	0.0001	0.0001	0.0001	
Benzene	0.0172	0.0002	78.11	0.0134	0.0134	0.0134	0.0134
Toluene	0.0168	0.0002	92.14	0.0155	0.0155	0.0155	0.0155
E-Benzene	0.0016	0.0000	106.17	0.0017	0.0017	0.0017	0.0017
Xylenes	0.0161	0.0002	106.17	0.0171	0.0171	0.0171	0.0171
n-C6	0.1850	0.0019	86.18	0.1594	0.1594	0.1594	0.1594
224 Trimethylpentane	0.0140	0.0001	114.24	0.0160	0.0160	0.0160	0.0160
Totals	100.0000	1.0000		27.0993	25.0291	12.8690	0.2231

Wt % HC:	**92.36**
Wt % VOCs:	**47.49**
Wt % HAPs:	**0.82**

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EXTENDED HYDROCARBON (GLYCALC) LIQUID STUDY

CERTIFICATE OF ANALYSIS

Company ..... **RKI EXPLORATION AND PRODUCTION**
Lab Number CR-14390
Date Sampled 6-6-2014
Study Number CR-2
Date Tested 6-10-2014

Sample Identification ..... **CROW UNIT 37-69-30-1TH PRESSURIZED CRUDE OIL TEAPOT FORMATION**

Sample Location ..... DOUGLAS, WYOMING.
Sample Pressure ..... 85 PSIG
Type Sample ..... SPOT
Test Method ..... GPA 2186
Sample Temperature ..... 130 F
County ..... CONVERSE
Sampling Method GPA-2174

Components	Mole %	Weight %	Liq. Vol. %
Hydrogen Sulfide	0.000	0.000	0.000
Oxygen	0.000	0.000	0.000
Carbon Dioxide	0.064	0.017	0.016
Nitrogen	0.013	0.002	0.002
Methane	0.632	0.061	0.156
Ethane	0.143	0.026	0.056
Propane	0.876	0.231	0.352
iso-Butane	0.967	0.337	0.462
n-Butane	2.580	0.898	1.186
iso-Pentane	1.432	0.619	0.764
n-Pentane	1.845	0.797	0.976
Hexanes	1.668	0.861	1.001
Heptanes	6.421	3.853	4.321
Octanes	16.570	11.335	12.382
Nonanes	11.738	9.016	9.635
Decanes+	51.087	69.625	66.402
Benzene.....	0.124	0.058	0.051
Toluene.....	0.462	0.255	0.226
Ethylbenzene.....	0.139	0.088	0.078
Xylenes.....	1.659	1.055	0.940
n-Hexane	1.278	0.660	0.767
2,2,4-Trimethylpentane..	0.302	0.207	0.229
Totals.....	100.000	100.000	100.000

ADDITIONAL BETX DATA

Components	Mole %	Weight %	Liq. Vol. %
2-Methylpentane	1.193	0.616	0.715
3-Methylpentane	0.475	0.245	0.285
n-Hexane	1.278	0.660	0.767
2,2,4-Trimethylpentane	0.302	0.207	0.229
Benzene	0.124	0.058	0.051
Toluene	0.462	0.255	0.226
Ethylbenzene	0.139	0.088	0.078
m-Xylene	0.249	0.158	0.141
p-Xylene	0.995	0.633	0.564
o-Xylene	0.415	0.264	0.235

API GRAVITY AT 60/60 F, calculated	51.8
SPECIFIC GRAVITY AT 60/60 F, calculated	0.77181
RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	0.80927
AVERAGE MOLECULAR WEIGHT	166.977
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	227.567
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	37.421
AVERAGE BOILING POINT, F, calculated	381.638
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	17.999
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	124,616.36
LBS / GALLON OF LIQUID, calculated	6.435

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.

James A. Kane, President
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EXTENDED HYDROCARBON GAS (GLYCALC) STUDY

CERTIFICATE OF ANALYSIS

Company ..... **RKI EXPLORATION AND PRODUCTION**
Lab Number CR-14390
Date Sampled 6-6-2014

Study Number CR-1
Date Tested 6-9-2014

Sample Identification ..... **CROW UNIT 37-69-30-1TH**
TEAPOT FORMATION
Sample Location ..... DOUGLAS, WYOMING.
Sample Pressure ..... 24 PSIG
Type Sample ..... SPOT
Test Method GPA-2286

Sample Temperature ... 77 F
County ..... CONVERSE
Moisture Content..... N/A

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide.....	1.143	2.078	0.992
Hydrogen Sulfide.....	0.000	0.000	0.000
Nitrogen.....	2.707	3.133	1.514
Methane.....	74.806	49.583	64.487
Ethane.....	3.814	4.738	5.187
Propane.....	8.215	14.967	11.509
iso-Butane.....	2.091	5.021	3.479
n-Butane.....	3.723	8.940	5.968
iso-Pentane.....	1.092	3.255	2.031
n-Pentane.....	1.098	3.273	2.024
Cyclopentane.....	0.057	0.165	0.086
n-Hexane.....	0.269	0.958	0.562
Cyclohexane.....	0.076	0.264	0.131
Other Hexanes	0.338	1.203	0.707
Heptanes.....	0.323	1.337	0.758
Methylcyclohexane.....	0.089	0.361	0.182
2,2,4-Trimethylpentane..	0.036	0.170	0.095
Benzene.....	0.006	0.019	0.009
Toluene.....	0.014	0.053	0.024
Ethylbenzene.....	0.006	0.026	0.012
Xylenes.....	0.015	0.066	0.030
C8+ Heavies.....	0.082	0.387	0.214
Totals	**100.000**	**100.000**	**100.000**

ADDITIONAL BETX DATA

Components	Mole %	Weight %	Liq. Vol. %
Cyclopentane	0.057	0.165	0.086
Cyclohexane	0.076	0.264	0.131
2-Methylpentane	0.242	0.860	0.505
3-Methylpentane	0.096	0.343	0.201
n-Hexane	0.269	0.958	0.562
Methylcyclohexane	0.089	0.361	0.182
2,2,4-Trimethylpentane	0.036	0.170	0.095
Benzene	0.006	0.019	0.009
Toluene	0.014	0.053	0.024
Ethylbenzene	0.006	0.026	0.012
m-Xylene	0.002	0.010	0.004
p-Xylene	0.009	0.039	0.018
o-Xylene	0.004	0.016	0.007

SPECIFIC GRAVITY AT 60/60 F, calculated	0.8357
TOTAL GPM (ETHANE INCLUSIVE)	6.473
CALCULATED BTU / REAL CF AT 14.73 PSIA, dry basis	1385.236
CALCULATED BTU / REAL CF AT 14.73 PSIA, wet basis	1361.389
AVERAGE MOLECULAR WEIGHT	24.203
MOLAR MASS RATIO	0.8357
RELATIVE DENSITY (G x Z (Air) / Z), calculated	0.8396
IDEAL GROSS HEATING VALUE, BTU / IDEAL CF AT 14.696 PSIA, calculated	1375.536
COMPRESSIBILITY FACTOR (Z)	0.99528

PROPANE GPM	2.2574
BUTANE GPM	1.8532
GASOLINE GPM (PENTANE AND HEAVIER)	1.3451

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 STUDIES

CERTIFICATE OF ANALYSIS

Company..... **RKI EXPLORATION AND PRODUCTION**

Lab Number..... CR-14390
Date Sampled..... 6-6-2014

Study Number..... CR-3
Date Tested..... 6-11-2014

Sample Identification..... **CROW UNIT 37-69-30-1TH FLASHED CRUDE OIL TEAPOT FORMATION**

Sample Location..... WYOMING.
Sample Pressure.....N/A
Flowrate.....N/A
Test Method.....VARIOUS

Sample Temperature... N/A
County.....CONVERSE
Sample Container..... 1-QUART BOTTLE

TEST PERFORMED	RESULTS
API GRAVITY AT 60/60 F (ASTM D-287), observed	40.6
SPECIFIC GRAVITY AT 60/60 F (ASTM D-1657), calculated	0.8222
REID VAPOR PRESSURE (ASTM D-323), PSIG AT 100 F, observed	6.8
TOTAL SULFUR CONTENT (ASTM D-5453), PPMW	N/A
TRUE VAPOR PRESSURE (ASTM 2889), PSIA AT 100 F, observed	N/A
BASIC SEDIMENT AND WATER CONTENT (BSW), % BY VOLUME	N/A
COPPER STRIP CORROSION (ASTM D-130), 1 HOUR AT 100 F, observed	N/A
FREE WATER, observed	N/A

NOTATION : ALL TESTING PROVIDED ABOVE WAS PERFORMED IN ACCORDANCE TO METHODOLOGY OUTLINED BY THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).

James A. Kane, President

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