30-025-43887

AFMSS

U.S. Department of the Interior
Bureau of Land Management

Application for Permit to Drill

APD Package Report

Date Printed: 06/22/2017 04:17 PM

APD ID: 10400009753	Well Status: AAPD
APD Received Date: 02/03/2017 11:03 AM	Well Name: EK 31 BS2 FEDERAL COM
Operator: MCELVAIN ENERGY INC	Well Number: 1H

APD Package Report Contents

OCD – HOBBS
06/26/2017
RECEIVED

- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Operator Letter of Designation: 1 file(s)
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 1 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 1 file(s)
  -- Casing Design Assumptions and Worksheet(s): 3 file(s)
  -- Hydrogen sulfide drilling operations plan: 1 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 2 file(s)
  -- New Road Map: 3 file(s)
  -- Attach Well map: 1 file(s)
  -- Production Facilities map: 1 file(s)
  -- Water source and transportation map: 1 file(s)
  -- Well Site Layout Diagram: 1 file(s)
  -- Recontouring attachment: 1 file(s)
  -- Other SUPO Attachment: 3 file(s)

- PWD Report
- PWD Attachments
  -- None

- Bond Report

- Bond Attachments
  -- None

Form 3160-3
(March 2012)

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06/26/2017
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FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM0245247

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. [316077]
EK 31 BS2 FEDERAL COM 1H

2. Name of Operator
MCELVAIN ENERGY INC [22044]

9. API Well No.
30-025-43887

3a. Address
1050 17th St #2500 Denver CO 80265

3b. Phone No. (include area code)
(303)893-0933

10. Field and Pool, or Exploratory
BONESPRING [21650]

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface SESE / 124 FSL / 892 FEL / LAT 32.7118028 / LONG -103.5939472
At proposed prod. zone SESE / 230 FSL / 660 FEL / LAT 32.697575 / LONG -103.5931472

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 30 / T18S / R34E / NMP

14. Distance in miles and direction from nearest town or post office*
28 miles

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any)
124 feet

16. No. of acres in lease
1111.44

17. Spacing Unit dedicated to this well
160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
30 feet

19. Proposed Depth
10119 feet / 14832 feet

20. BLM/BIA Bond No. on file
FED: COB000010

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3894 feet

22. Approximate date work will start*
09/03/2017

23. Estimated duration
35 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name (Printed/Typed)	Date
(Electronic Submission)	Natalie Stallsworth / Ph: (303)857-9999	02/03/2017

Title
Regulatory Technician/Permitting Agent

Approved by (Signature)	Name (Printed/Typed)	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	06/21/2017
Title: Supervisor Multiple Resources	Office: CARLSBAD	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

APPROVED WITH CONDITIONS

Kz
06/27/2017

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: SESE / 124 FSL / 892 FEL / TWSP: 18S / RANGE: 34E / SECTION: 30 / LAT: 32.7118028 / LONG: -103.5939472 (TVD: 0 feet, MD: 0 feet)

PPP: SESE / 1320 FSL / 926 FEL / TWSP: 18S / RANGE: 34E / SECTION: 31 / LAT: 32.7005722 / LONG: -103.5940222 (TVD: 10085 feet, MD: 13700 feet)

PPP: NESE / 2641 FSL / 926 FEL / TWSP: 18S / RANGE: 34E / SECTION: 31 / LAT: 32.7042 / LONG: -103.5940361 (TVD: 10050 feet, MD: 12500 feet)

PPP: NENE / 420 FNL / 649 FEL / TWSP: 18S / RANGE: 34E / SECTION: 31 / LAT: 32.7105528 / LONG: -103.5931611 (TVD: 9981 feet, MD: 10200 feet)

BHL: SESE / 230 FSL / 660 FEL / TWSP: 18S / RANGE: 34E / SECTION: 31 / LAT: 32.697575 / LONG: -103.593[illegible]172 (TVD: 10119 feet, MD: 14832 feet)

BLM Point of Contact

Name: Melissa Agee

Title: Legal Instruments Examiner

Phone: 5752345937

Email: magee@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

06/22/2017

30-025-43887

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

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NAME: Natalie Stallsworth **Signed on:** 02/03/2017

Title: Regulatory Technician/Permitting Agent

Street Address: PO Box 99

City: Eastlake **State:** CO **Zip:** 80614

Phone: (303)857-9999

Email address: natalie@permitco-usa.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report

06/22/2017

APD ID: 10400009753 **Submission Date:** 02/03/2017

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - General

APD ID: 10400009753 **Tie to previous NOS?** **Submission Date:** 02/03/2017

BLM Office: CARLSBAD **User:** Natalie Stallsworth **Title:** Regulatory Technician/Permitting Agent

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM0245247 **Lease Acres:** 1111.44

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? YES **APD Operator:** MCELVAIN ENERGY INC

Operator letter of designation: Agent Letter signed_01-06-2017.PDF

Keep application confidential? YES

Operator Info

Operator Organization Name: MCELVAIN ENERGY INC

Operator Address: 1050 17th St #2500 **Zip:** 80265

Operator PO Box:

Operator City: Denver **State:** CO

Operator Phone: (303)893-0933

Operator Internet Address: chris.caplis@mcelvain.com

Section 2 - Well Information

Well in Master Development Plan? NO **Mater Development Plan name:**

Well in Master SUPO? EXISTING **Master SUPO name:** EK 30 and 31 Multi-pad

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** BONESPRING **Pool Name:**

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** NO **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** EK 31 BS2 FEDERAL COM **Number:** 1H

Well Class: HORIZONTAL **Number of Legs:**

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 28 Miles **Distance to nearest well:** 30 FT **Distance to lease line:** 124 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: EK 31 BS2 Federal COM 1H plat_02-01-2017.pdf

Well work start Date: 09/03/2017 **Duration:** 35 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number:

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.7118028	**Longitude:** -103.5939472	
SHL	**Elevation:** 3894	**MD:** 0	**TVD:** 0
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM0245247	
	NS-Foot: 124	**NS Indicator:** FSL	
	EW-Foot: 892	**EW Indicator:** FEL	
	Twsp: 18S	**Range:** 34E	**Section:** 30
	Aliquot: SESE	**Lot:**	**Tract:**

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.7115167	**Longitude:** -103.5940333	
KOP	**Elevation:** -5608	**MD:** 9525	**TVD:** 9502
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM0245247	
	NS-Foot: 10	**NS Indicator:** FSL	
	EW-Foot: 900	**EW Indicator:** FEL	
	Twsp: 18S	**Range:** 34E	**Section:** 30
	Aliquot: SESE	**Lot:**	**Tract:**

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.7005722	**Longitude:** -103.5940222	
PPP	**Elevation:** -6191	**MD:** 13700	**TVD:** 10085
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM107396	
	NS-Foot: 1320	**NS Indicator:** FSL	
	EW-Foot: 926	**EW Indicator:** FEL	
	Twsp: 18S	**Range:** 34E	**Section:** 31
	Aliquot: SESE	**Lot:**	**Tract:**

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.7042	**Longitude:** -103.5940361	
PPP	**Elevation:** -6156	**MD:** 12500	**TVD:** 10050
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM92780	
	NS-Foot: 2641	**NS Indicator:** FSL	
	EW-Foot: 926	**EW Indicator:** FEL	
	Twsp: 18S	**Range:** 34E	**Section:** 31
	Aliquot: NESE	**Lot:**	**Tract:**

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.7105528	**Longitude:** -103.5931611	
PPP	**Elevation:** -6087	**MD:** 10200	**TVD:** 9981
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM0245247	
	NS-Foot: 420	**NS Indicator:** FNL	
	EW-Foot: 649	**EW Indicator:** FEL	

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

	Twsp: 18S	**Range:** 34E	**Section:** 31
	Aliquot: NENE	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.69785	**Longitude:** -103.5926611	
EXIT	**Elevation:** -6223	**MD:** 14732	**TVD:** 10117
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM107396	
	NS-Foot: 330	**NS Indicator:** FSL	
	EW-Foot: 660	**EW Indicator:** FEL	
	Twsp: 18S	**Range:** 34E	**Section:** 31
	Aliquot: SESE	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.697575	**Longitude:** -103.5931472	
BHL	**Elevation:** -6225	**MD:** 14832	**TVD:** 10119
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM107396	
	NS-Foot: 230	**NS Indicator:** FSL	
	EW-Foot: 660	**EW Indicator:** FEL	
	Twsp: 18S	**Range:** 34E	**Section:** 31
	Aliquot: SESE	**Lot:**	**Tract:**

MCELVAIN ENERGY, INC.
1050 17TH STREET, SUITE 2500
DENVER, COLORADO 80265

CHRIS CAPLIS
VICE PRESIDENT OF DRILLING AND COMPLETION

OFFICE: 303-962-6475 FAX: 303-893-0914
E-MAIL: CHRIS.CAPLIS@MCELVAIN.COM

Bureau of Land Management
Carlsbad Field Office
620 E. Greene St.
Carlsbad, NM 88220

Attn: Minerals Divison

Re: All McElvain Energy Inc. wells in New Mexico

Gentlemen:

This letter is to inform you that Permitco Inc. is authorized to act as Agent and to sign documents on behalf of McElvain Energy Inc. when necessary for filing county, state and federal permits including Onshore Order No. 1, Right of Way applications, etc., for the above mentioned well.

It should be understood that Permitco is acting as Agent only in those matters stated above and is not responsible for drilling, completion, production or compliance with regulations.

McElvain Energy Inc. agrees to accept full responsibility for operations conducted in order to drill, complete and produce the above-mentioned well.

Sincerely,

Chris Caplis
MCELVAIN ENERGY, INC.
1050 17TH STREET, SUITE 2500
DENVER, COLORADO 80265

30-025-43887

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

06/22/2017

APD ID: 10400009753 **Submission Date:** 02/03/2017

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

Well Type: OIL WELL **Well Work Type:** Drill

Section 1 - Geologic Formations

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ID: Surface formation **Name:** RUSTLER

Lithology(ies):

Elevation: 3894 **True Vertical Depth:** 1669 **Measured Depth:** 1669

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 1 **Name:** TOP SALT

Lithology(ies):

Elevation: 2165 **True Vertical Depth:** 1729 **Measured Depth:** 1729

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 2 **Name:** YATES

Lithology(ies):

Elevation: 600 **True Vertical Depth:** 3294 **Measured Depth:** 3294

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

ID: Formation 3 **Name:** SEVEN RIVERS

Lithology(ies):

Elevation: 175 **True Vertical Depth:** 3719 **Measured Depth:** 3719

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 4 **Name:** QUEEN

Lithology(ies):

Elevation: -525 **True Vertical Depth:** 4419 **Measured Depth:** 4419

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 5 **Name:** PENROSE

Lithology(ies):

Elevation: -785 **True Vertical Depth:** 4679 **Measured Depth:** 4679

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 6 **Name:** SAN ANDRES

Lithology(ies):

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

Elevation: -1350 **True Vertical Depth:** 5244 **Measured Depth:** 5244

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 7 **Name:** DELAWARE

Lithology(ies):

Elevation: -1575 **True Vertical Depth:** 5469 **Measured Depth:** 5469

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 8 **Name:** DELAWARE SAND

Lithology(ies):

Elevation: -1585 **True Vertical Depth:** 5479 **Measured Depth:** 5479

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 9 **Name:** DELAWARE SAND

Lithology(ies):

Elevation: -1975 **True Vertical Depth:** 5869 **Measured Depth:** 5869

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 10 **Name:** BONE SPRING

Lithology(ies):

Elevation: -3776 **True Vertical Depth:** 7670 **Measured Depth:** 7675

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 11 **Name:** BONE SPRING 1ST

Lithology(ies):

Elevation: -5064 **True Vertical Depth:** 8958 **Measured Depth:** 8971

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 12 **Name:** BONE SPRING 2ND

Lithology(ies):

Elevation: -5614 **True Vertical Depth:** 9508 **Measured Depth:** 9523

Mineral Resource(s):

USEABLE WATER

NATURAL GAS

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

OIL

Is this a producing formation? Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 6000

Equipment: 5000 PSI BOP (see attached)

Requesting Variance? NO

Variance request:

Testing Procedure: As outlined in Onshore Order #2

Choke Diagram Attachment:

Choke_Manifold_revised_5_22_17_05-22-2017.PDF

BOP Diagram Attachment:

EK 31 BS2 Federal COM 1H BOP_01-09-2017.pdf

Section 3 - Casing

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

String Type: SURFACE **Other String Type:**

Hole Size: 17.5

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -6156

Bottom setting depth MD: 1700 **Bottom setting depth TVD:** 1700

Bottom setting depth MSL: -7856

Calculated casing length MD: 1700

Casing Size: 13.375 **Other Size**

Grade: J-55 **Other Grade:**

Weight: 54.5

Joint Type: STC **Other Joint Type:**

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 1.42 **Burst Design Safety Factor:** 2.67

Joint Tensile Design Safety Factor type: DRY **Joint Tensile Design Safety Factor:** 5.55

Body Tensile Design Safety Factor type: DRY **Body Tensile Design Safety Factor:** 5.55

Casing Design Assumptions and Worksheet(s):

EK 31 BS2 Federal COM 1H casing design_01-09-2017.pdf

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

String Type: CONDUCTOR **Other String Type:**

Hole Size: 26

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -6156

Bottom setting depth MD: 80 **Bottom setting depth TVD:** 80

Bottom setting depth MSL: -6236

Calculated casing length MD: 80

Casing Size: 20.0 **Other Size**

Grade: OTHER **Other Grade:** n/a

Weight: 0

Joint Type: N/A **Other Joint Type:**

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: **Burst Design Safety Factor:**

Joint Tensile Design Safety Factor type: **Joint Tensile Design Safety Factor:**

Body Tensile Design Safety Factor type: **Body Tensile Design Safety Factor:**

Casing Design Assumptions and Worksheet(s):

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

String Type: INTERMEDIATE **Other String Type:**

Hole Size: 12.25

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -6156

Bottom setting depth MD: 4900 **Bottom setting depth TVD:** 4900

Bottom setting depth MSL: -11056

Calculated casing length MD: 4900

Casing Size: 9.625 **Other Size**

Grade: L-80 **Other Grade:**

Weight: 40

Joint Type: LTC **Other Joint Type:**

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 1.21 **Burst Design Safety Factor:** 1.84

Joint Tensile Design Safety Factor type: DRY **Joint Tensile Design Safety Factor:** 4.67

Body Tensile Design Safety Factor type: DRY **Body Tensile Design Safety Factor:** 4.67

Casing Design Assumptions and Worksheet(s):

EK 31 BS2 Federal COM 1H casing design_01-09-2017.pdf

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

String Type: PRODUCTION **Other String Type:**

Hole Size: 8.5

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -6156

Bottom setting depth MD: 14832 **Bottom setting depth TVD:** 10119

Bottom setting depth MSL: -16275

Calculated casing length MD: 14832

Casing Size: 5.5 **Other Size**

Grade: P-110 **Other Grade:** BPN

Weight: 17

Joint Type: OTHER **Other Joint Type:** BPN

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 1.52 **Burst Design Safety Factor:** 1.12

Joint Tensile Design Safety Factor type: DRY **Joint Tensile Design Safety Factor:** 3.17

Body Tensile Design Safety Factor type: DRY **Body Tensile Design Safety Factor:** 3.17

Casing Design Assumptions and Worksheet(s):

EK 31 BS2 Federal COM 1H casing design_01-09-2017.pdf

Section 4 - Cement

Casing String Type: CONDUCTOR

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

Stage Tool Depth:

Lead

Top MD of Segment: 0	**Bottom MD Segment:** 80	**Cement Type:** Redi-mix
Additives: n/a	**Quantity (sks):** 200	**Yield (cu.ff./sk):** 0
Density: 0	**Volume (cu.ft.):** 0	**Percent Excess:**

Casing String Type: SURFACE

Stage Tool Depth:

Lead

Top MD of Segment: 0	**Bottom MD Segment:** 1200	**Cement Type:** Extendacem
Additives: n/a	**Quantity (sks):** 1007	**Yield (cu.ff./sk):** 1.66
Density: 13.7	**Volume (cu.ft.):** 1668	**Percent Excess:** 100

Tail

Top MD of Segment: 1200	**Bottom MD Segment:** 1700	**Cement Type:** Halcem
Additives: n/a	**Quantity (sks):** 518	**Yield (cu.ff./sk):** 1.34
Density: 14.8	**Volume (cu.ft.):** 694	**Percent Excess:**

Casing String Type: INTERMEDIATE

Stage Tool Depth:

Lead

Top MD of Segment: 0	**Bottom MD Segment:** 4400	**Cement Type:** Econocem
Additives: n/a	**Quantity (sks):** 919	**Yield (cu.ff./sk):** 1.88
Density: 12.9	**Volume (cu.ft.):** 1723	**Percent Excess:** 25

Tail

Top MD of Segment: 4400	**Bottom MD Segment:** 4900	**Cement Type:** Halcem
Additives: n/a	**Quantity (sks):** 147	**Yield (cu.ff./sk):** 1.33
Density: 14.8	**Volume (cu.ft.):** 196	**Percent Excess:**

Casing String Type: PRODUCTION

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

Stage Tool Depth:

Lead

Top MD of Segment: 4400	**Bottom MD Segment:** 9523	**Cement Type:** Neocem
Additives: n/a	**Quantity (sks):** 463	**Yield (cu.ff./sk):** 3.17
Density: 11	**Volume (cu.ft.):** 1468	**Percent Excess:** 25

Tail

Top MD of Segment: 9523	**Bottom MD Segment:** 14833	**Cement Type:** Versacem
Additives: n/a	**Quantity (sks):** 1226	**Yield (cu.ff./sk):** 1.24
Density: 14.5	**Volume (cu.ft.):** 1520	**Percent Excess:**

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Pit volume totalizer equipment will be on each pit to monitor pit levels.

Describe the mud monitoring system utilized: A trip tank with a PVT will be used to monitor trip volumes. Sufficient mud materials will be kept on location to weight mud up to 11.0 ppg if required. Additional material will also be available to combat lost circulation and high torque/drag.

Circulating Medium Table

Top Depth: 9523	**Bottom Depth:** 10119
Mud Type: OTHER	cut brine
Min Weight (lbs./gal.): 8.8	**Max Weight (lbs./gal.):** 9.4
Density (lbs/cu.ft.):	**Gel Strength (lbs/100 sq.ft.):**
PH:	**Viscosity (CP):**
Filtration (cc):	**Salinity (ppm):**
Additional Characteristics: viscosity: 40-50, water loss: 10-15cc, solids: 6	

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM Well Number: 1H

Top Depth: 0	**Bottom Depth:** 1700
Mud Type: WATER-BASED MUD	
Min Weight (lbs./gal.): 8.4	**Max Weight (lbs./gal.):** 8.7
Density (lbs/cu.ft.):	**Gel Strength (lbs/100 sq.ft.):**
PH:	**Viscosity (CP):**
Filtration (cc):	**Salinity (ppm):**
Additional Characteristics: viscosity: 32-36, water loss: NS, solids: 6	

Top Depth: 1700	**Bottom Depth:** 4900
Mud Type: OTHER	Brine
Min Weight (lbs./gal.): 9.8	**Max Weight (lbs./gal.):** 10
Density (lbs/cu.ft.):	**Gel Strength (lbs/100 sq.ft.):**
PH:	**Viscosity (CP):**
Filtration (cc):	**Salinity (ppm):**
Additional Characteristics: viscosity: 29-30, water loss: NC, solids: 1	

Top Depth: 4900	**Bottom Depth:** 9523
Mud Type: OTHER	cut brine
Min Weight (lbs./gal.): 8.8	**Max Weight (lbs./gal.):** 9.4
Density (lbs/cu.ft.):	**Gel Strength (lbs/100 sq.ft.):**
PH:	**Viscosity (CP):**
Filtration (cc):	**Salinity (ppm):**
Additional Characteristics: viscosity: 28-36, water loss: NC, solids: 1	

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

None

List of open and cased hole logs run in the well:

CALIPER,GR,MWD,OTH,SP

Other log type(s):

density, laterolog

Coring operation description for the well:

None

Operator Name: MCELVAIN ENERGY INC

Well Name: EK 31 BS2 FEDERAL COM **Well Number:** 1H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4938 **Anticipated Surface Pressure:** 2711.82

Anticipated Bottom Hole Temperature(F): 150

Anticipated abnormal proessures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

H2S_Contingency_Plan_05-22-2017.PDF

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

EK 31 BS2 Federal COM 1H directional_01-09-2017.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Other Variance attachment:

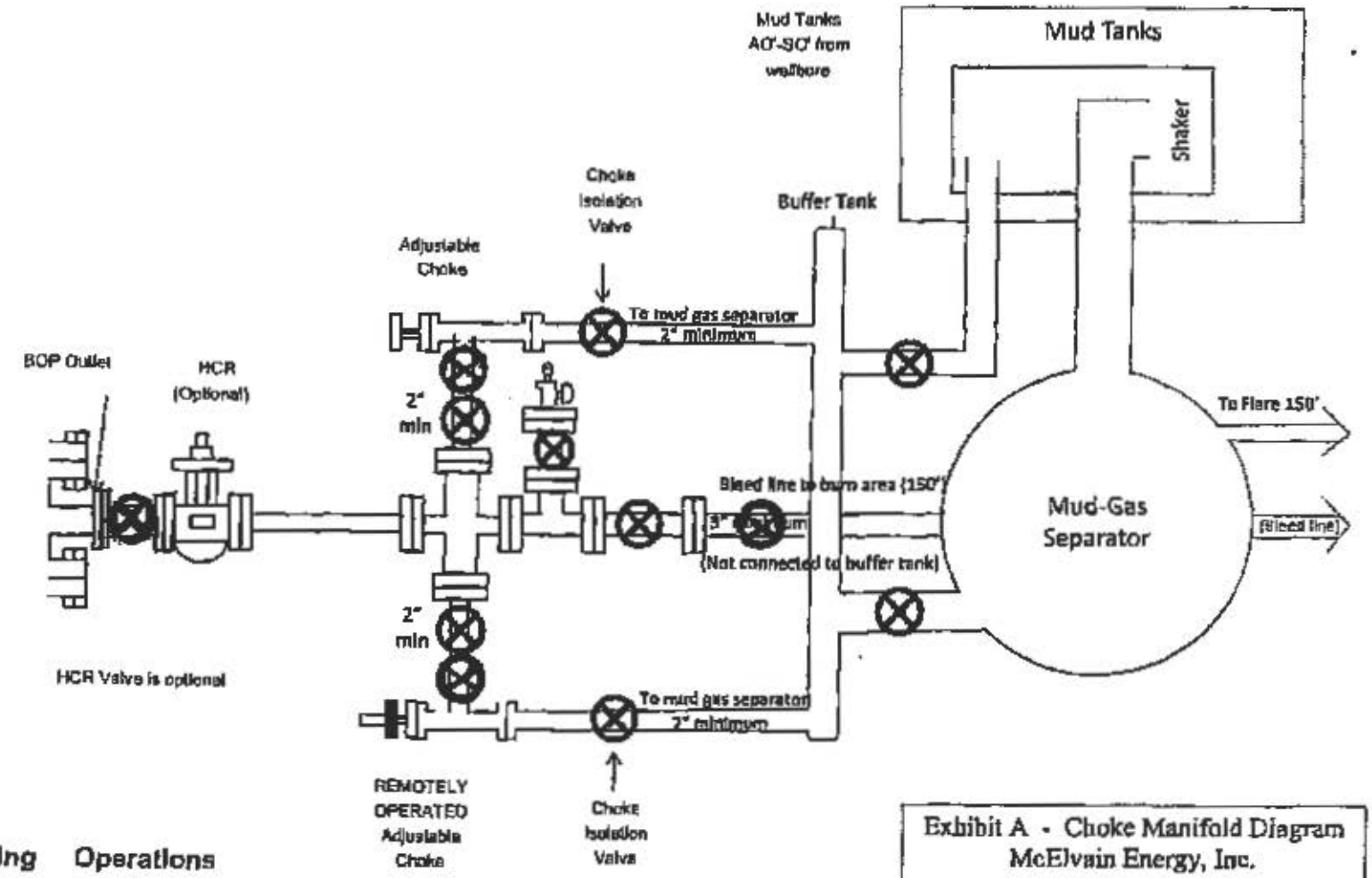

Exhibit A - Choke Manifold Diagram
McElvain Energy, Inc.

Drilling Operations
Choke Manifold

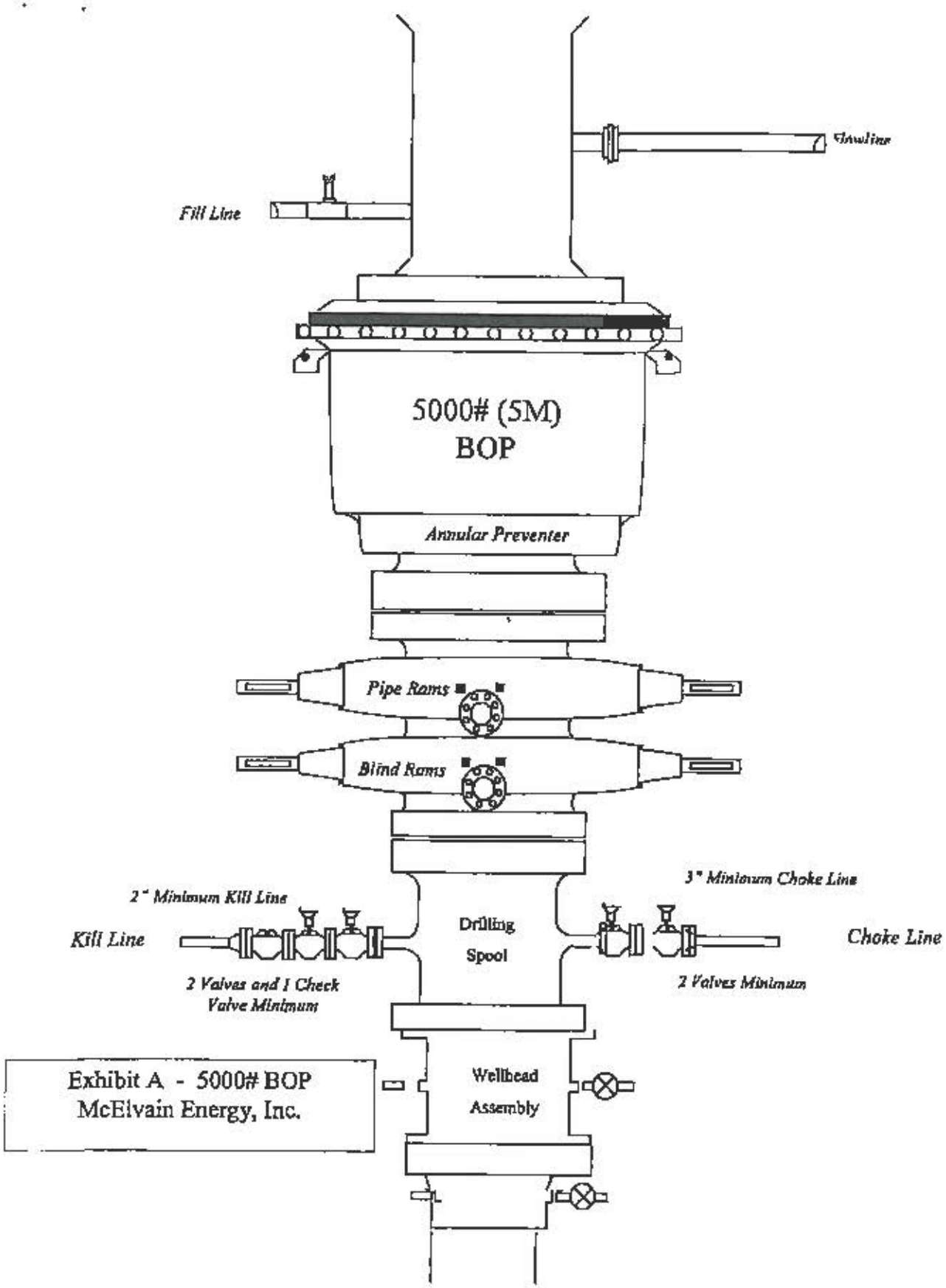

Exhibit A - 5000# BOP
McElvain Energy, Inc.

EK 31 BS2 Federal Com 1H

Casing Safety Factor Calculations

Design assumptions are as follows:

- For the surface casing, the design is based on a setting depth of 1,700' MD/TVD in 8.7 ppg fluid and a FG of 0.7 psi/ft per BLM Onshore Order #2.
- For the intermediate casing, the design is based on a setting depth of 4,900' MD/4,900' TVD in a 10.0 ppg fluid (saturated brine) and a FG of 0.74 psi/ft per Hubbert & Willis' graphical determination of FG's.
- For the production casing, the design is based on a setting depth of 14,832' MD/10,119' TVD in a 9.4 ppg fluid (cut brine) and a MASP of 9,500 psi during completions.

SURFACE CASING

13-3/8" 54.5# J-55 STC	Collapse	Burst	Tension (based on STC joint strength)	Make-Up Torque (ft-lbs)	
100%	1,130 psi	2,730 psi	514,000 lbs	Minimum	
70%	791 psi	1,911 psi	359,800 lbs	Optimum	5,140
				Maximum	

Design Factors:

Burst: (FG*0.052*1,700')-(0.10 psi/ft*1,700')

(13.5*0.052*1,700')-(0.10 psi/ft*1,700') (gas gradient to surface)

1,023 psi, MASP

2,730/1,023 = 2.67

Collapse: (MW*0.052*1,700')-(MW*0.052*1,700'*(1-% evac))

(9.0*0.052*1,700')-(9.0*0.052*1,700'*0) (100% evacuated)

796 psi – 0 psi = 796 psi

1,130/796 = 1.42

Tension: (Wt, lbs/ft*1,700') (wt in air)

(54.5 lbs/ft*1,700')

92,650 lbs

514,000/92,650 = 5.55

INTERMEDIATE CASING

9-5/8" 40# L-80 BTC	Collapse	Burst	Tension (based on yield strength)	Make-Up Torque (ft-lb)	
100%	3,090 psi	5,750 psi	916,000 lbs	Minimum Optimum Maximum	Torque pipe to base of triangle
70%	2,163 psi	4,025 psi	641,200 lbs		

Design Factors:

Burst: (FG*0.052*4,900')-(0.10 psi/ft*4,900')
(14.2*0.052*4,900')-(0.10 psi/ft*4,900') (gas gradient to surface)
3,128 psi, MASP
5,750/3,128 = 1.84

Collapse: (MW*0.052*4,900')-(MW*0.052*4,900'*(1-% evac))
(10.0*0.052*4,900')-(10.0*0.052*4,900'*0) (100% evacuated)
2,548 psi – 0 psi = 2,548 psi
3,090/2,548 = 1.21

Tension: (Wt, lbs/ft*4,900') (wt in air)
(40 lbs/ft*4,900')
196,000 lbs
916,000/196,000 = 4.67

PRODUCTION CASING

5-1/2" 17# P-110 BPN	Collapse	Burst	Tension (based on yield strength)	Make-Up Torque (ft-lb)	
100%	7,500 psi	10,640 psi	546,000 lbs	Optimum Maximum	10,000 11,000
70%	5,250 psi	7,448 psi	382,200 lbs		

Design Factors:

Un-cemented Burst Case:
(FG*0.052*Max. TVD')-(0.10 psi/ft*Max TVD')
(17.3*0.052*10,119')-(0.10 psi/ft*10,119') (gas gradient to surface)
9,103 psi – 1,011.9 psi = 8,091 psi
10,640/8,091 = 1.32

Injection Down Casing Burst Case:

MASP during stimulation = 9,500 psi (10,640 psi * 90% = 9,576 psi)

Therefore, 10,640 psi/9,500 psi = 1.12

Collapse: (MW*0.052*Max TVD')-(MW*0.052*Max TVD'*(1-% evac))

(9.4*0.052*10,119')-(9.4*0.052*10,119'*0) (100% evacuated)

4,946 psi – 0 psi = 4,946 psi

7,500/4,946 = 1.52

Tension: (Wt, lbs/ft*Max TVD') (wt in air)

(17 lbs/ft*10,119')

172,023 lbs

546,000/170,136 = 3.17

EK 31 BS2 Federal Com 1H

Casing Safety Factor Calculations

Design assumptions are as follows:

- For the surface casing, the design is based on a setting depth of 1,700' MD/TVD in 8.7 ppg fluid and a FG of 0.7 psi/ft per BLM Onshore Order #2.
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- For the production casing, the design is based on a setting depth of 14,832' MD/10,119' TVD in a 9.4 ppg fluid (cut brine) and a MASP of 9,500 psi during completions.

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13-3/8" 54.5# J-55 STC	Collapse	Burst	Tension (based on STC joint strength)	Make-Up Torque (ft-lbs)	
100%	1,130 psi	2,730 psi	514,000 lbs	Minimum	5,140
70%	791 psi	1,911 psi	359,800 lbs	Optimum Maximum	

Design Factors:

Burst: (FG*0.052*1,700')-(0.10 psi/ft*1,700')

(13.5*0.052*1,700')-(0.10 psi/ft*1,700') (gas gradient to surface)

1,023 psi, MASP

2,730/1,023 = 2.67

Collapse: (MW*0.052*1,700')-(MW*0.052*1,700'*(1-% evac))

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9-5/8" 40# L-80 BTC	Collapse	Burst	Tension (based on yield strength)	Make-Up Torque (ft-lb)	
100%	3,090 psi	5,750 psi	916,000 lbs	Minimum	Torque pipe to base of triangle
70%	2,163 psi	4,025 psi	641,200 lbs	Optimum Maximum	

Design Factors:

Burst: (FG*0.052*4,900')-(0.10 psi/ft*4,900')
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3,128 psi, MASP
5,750/3,128 = 1.84

Collapse: (MW*0.052*4,900')-(MW*0.052*4,900'*(1-% evac))
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(40 lbs/ft*4,900')
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5-1/2" 17# P-110 BPN	Collapse	Burst	Tension (based on yield strength)	Make-Up Torque (ft-lb)	
100%	7,500 psi	10,640 psi	546,000 lbs	Optimum	10,000
70%	5,250 psi	7,448 psi	382,200 lbs	Maximum	11,000

Design Factors:

Un-cemented Burst Case:
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EK 31 BS2 Federal Com 1H

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Collapse: (MW*0.052*4,900')-(MW*0.052*4,900'*(1-% evac))
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(17 lbs/ft*10,119')

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