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Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

5. Lease Serial No.
NM0006765; NM004350; NM0006764; NM0554773 (BHL)

6. If Indian, Allotee or Tribe Name

## APPLICATION FOR PERMIT TO DRILL OR REENTER

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.
Hackberry 23 Federal Com 2H <40394>

2. Name of Operator
Cimarex Energy Co. <215099>

9. API Well No.
30-015- 42093

3a. Address
600 N. Marienfeld St. Ste. 600 Midland Tx 79701

3b. Phone No. *(include area code)*
432-571-7800

10. Field and Pool, or Exploratory
Hackberry; B.S., NW <97020>
~~Bone Spring Wildcat~~

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At Surface 2230 ~~2130~~ FSL & 180 FWL; 24-19S-30E
At proposed prod. Zone 1980 ~~660~~ FSL & 330 FWL; 22-19S-30E *Horizontal Bone Spring test*

11. Sec., T. R. M. or Blk. and Survey or Area
Sec 24-19S-30E

14. Distance in miles and direction from nearest town or post office*
Approximately 23 miles NE of Carlsbad, NM

12. County or Parish
Eddy

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any)
180'

16. No of acres in lease
NM0554773 - 40 acres;
NM0006764 - 280 acres
NM004350 - 240 acres
NM0006765 - 240 acres

17. Spacing Unit dedicated to this well
320

18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
150' to #3H

19. Proposed Depth
18,844' MD / 8,580' TVD

20. BLM/BIA Bond No. on File
NM2575; NMB000835

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3252' GR

22. Approximate date work will start*
12.01.13

23. Estimated duration
35-40 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall 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 shall 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 authorized officer.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| Paula Brunson | Paula Brunson | 06.12.13 |

Title
Regulatory Analyst

| Approved By *(Signature)* | Name (Printed/Typed) | Date |
|---|---|---|
| FOR STATE DIRECTOR | | FEB - 5 2014 |
| Title: STATE DIRECTOR | Office: NM STATE OFFICE | |

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.

APPROVAL FOR TWO YEARS

Title 18 U.S.S. 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)*

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Capitan Controlled Water Basin

Operator Certification Statement
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
UL: L - Sec 24-19S-30E
Eddy County, NM

Operator's Representative
Cimarex Energy Co. of Colorado
600 N. Marienfeld St., Ste. 600
Midland, TX 79701
Office Phone: (432) 571-7800

**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.

Executed this 12th day of June, 2013

NAME: Paula Brunson
Paula Brunson

TITLE: Regulatory Analyst

ADDRESS: 600 N. Marienfeld St., Ste. 600
Midland, TX 79701

TELEPHONE: 432-571-7848

EMAIL: pbrunson@cimarex.com

Field Representative: Same as above

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

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NMOCD ARTESIA

Form C-102
Revised July 16, 2010

Submit one copy to appropriate District Office

# OIL CONSERVATION DIVISION

*1220 South St. Francis Dr.*
*Santa Fe, New Mexico 87505*

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | Pool Code | Pool Name |
|---|---|---|
| 30-015- 42093 | 97020 | Hackberry; B.S., NW ~~Wildcat Bone Spring~~ |

| Property Code | Property Name | Well Number |
|---|---|---|
| 40394 | HACKBERRY 23 FEDERAL COM | 2H |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 215099 | CIMAREX ENERGY CO. OF COLORADO | 3252' |

### Surface Location

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| L | 24 | 19 S | 30 E | | 2280 | SOUTH | 180 | WEST | EDDY |

### Bottom Hole Location If Different From Surface

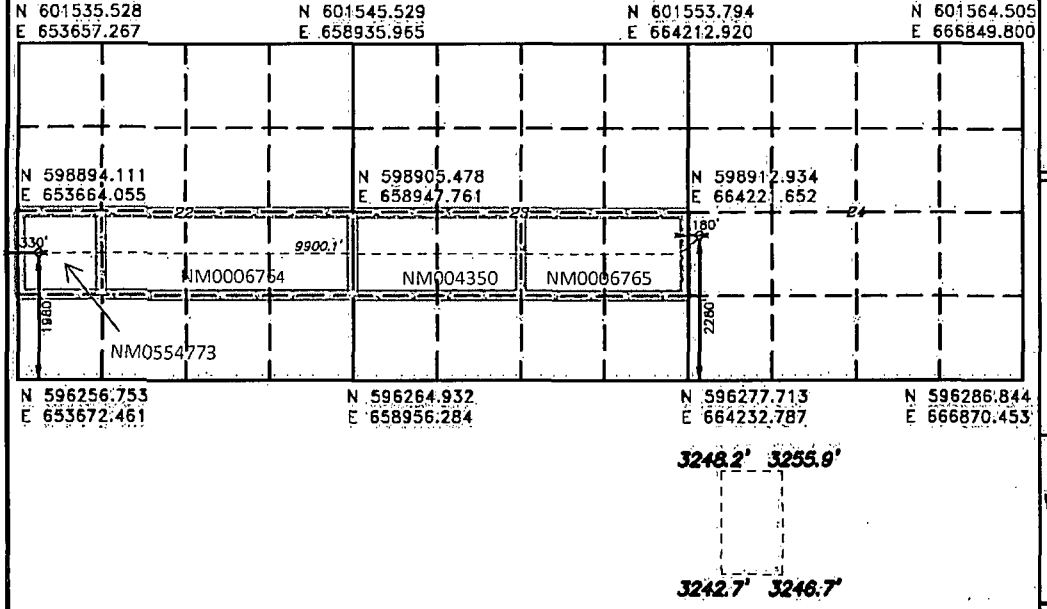
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| L | 22 | 19 S | 30 E | | 1980 | SOUTH | 330 | WEST | EDDY |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 320 | | | 18844 2-5 |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

PROPOSED BOTTOM HOLE LOCATION
Lat – N 32°38'38.64"
Long – W 103°58'02.37"
NMSPCE– N 598236.8
E 653996.1
(NAD-83)

SURFACE LOCATION
Lat – N 32°38'41.45"
Long – W 103°56'00.64"
NMSPCE– N 598557.8
E 664402.8
(NAD-83)




1" = 3000'

### OPERATOR CERTIFICATION

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Paula Brunson 6/12/13
Signature Date

Paula Brunson
Printed Name

pbrunson@cimarex.com
Email Address

### SURVEYOR CERTIFICATION

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my belief.*

SEPTEMBER 4, 2012
Date Surveyed

Signature & Seal of Professional Surveyor

Certificate No. Gary L. Jones 7977

BASIN SURVEYS 27261

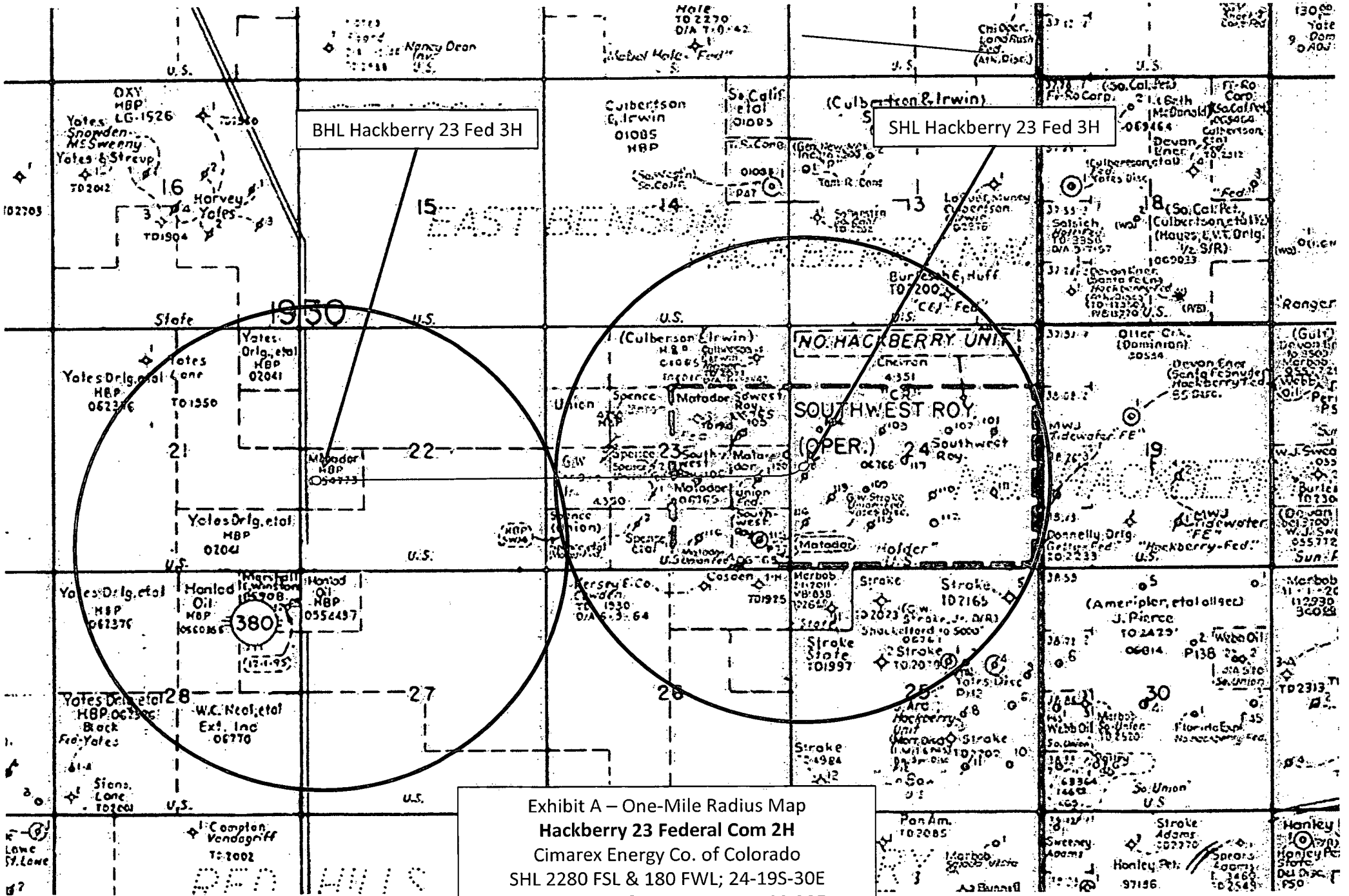
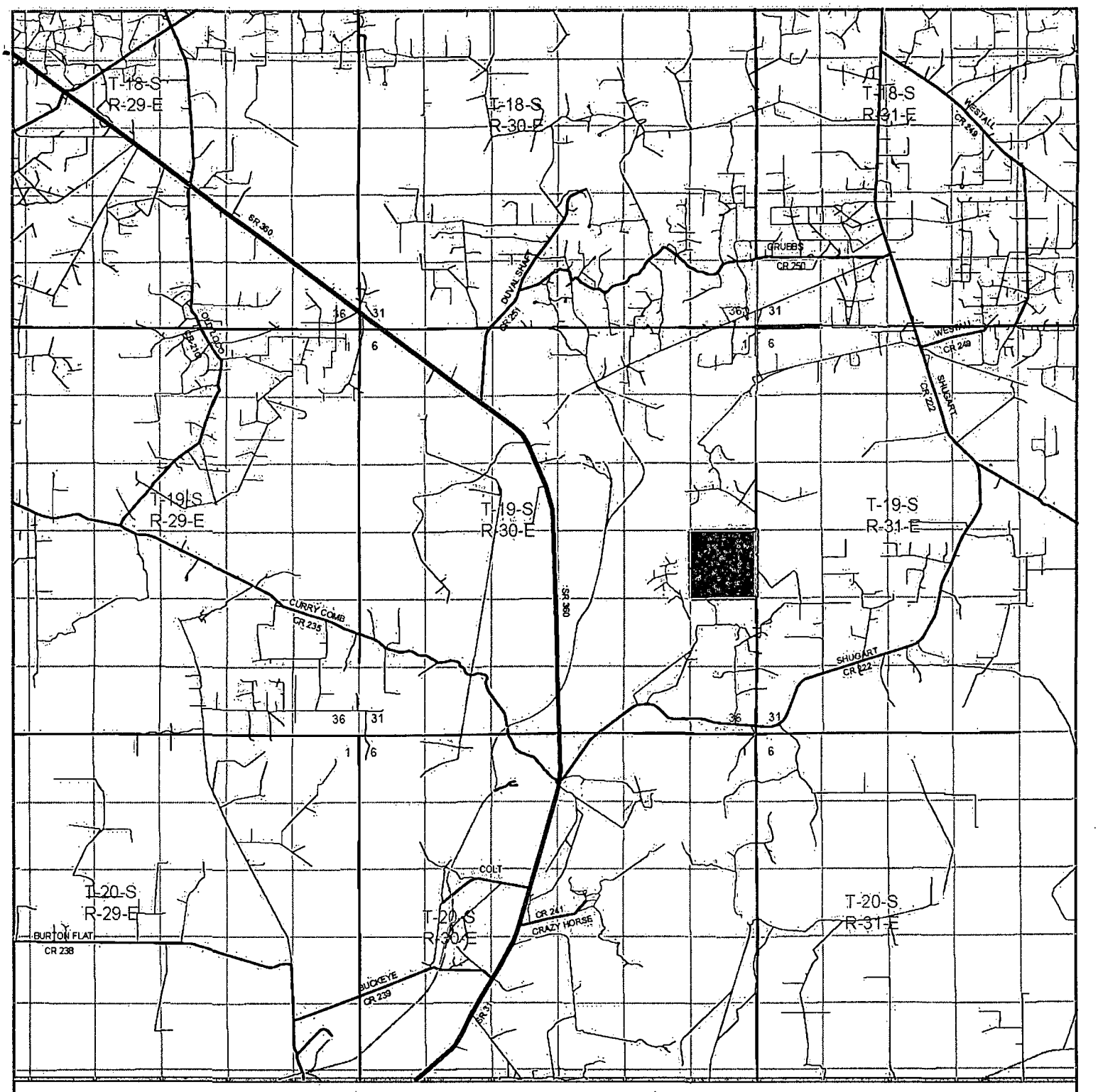



Exhibit A – One-Mile Radius Map
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM




**HACKBERRY 23 FEDERAL COM #2H**
**Located 2280' FSL and 180' FWL**
**Section 24, Township 19 South, Range 30 East,**
**N.M.P.M., Eddy County, New Mexico.**

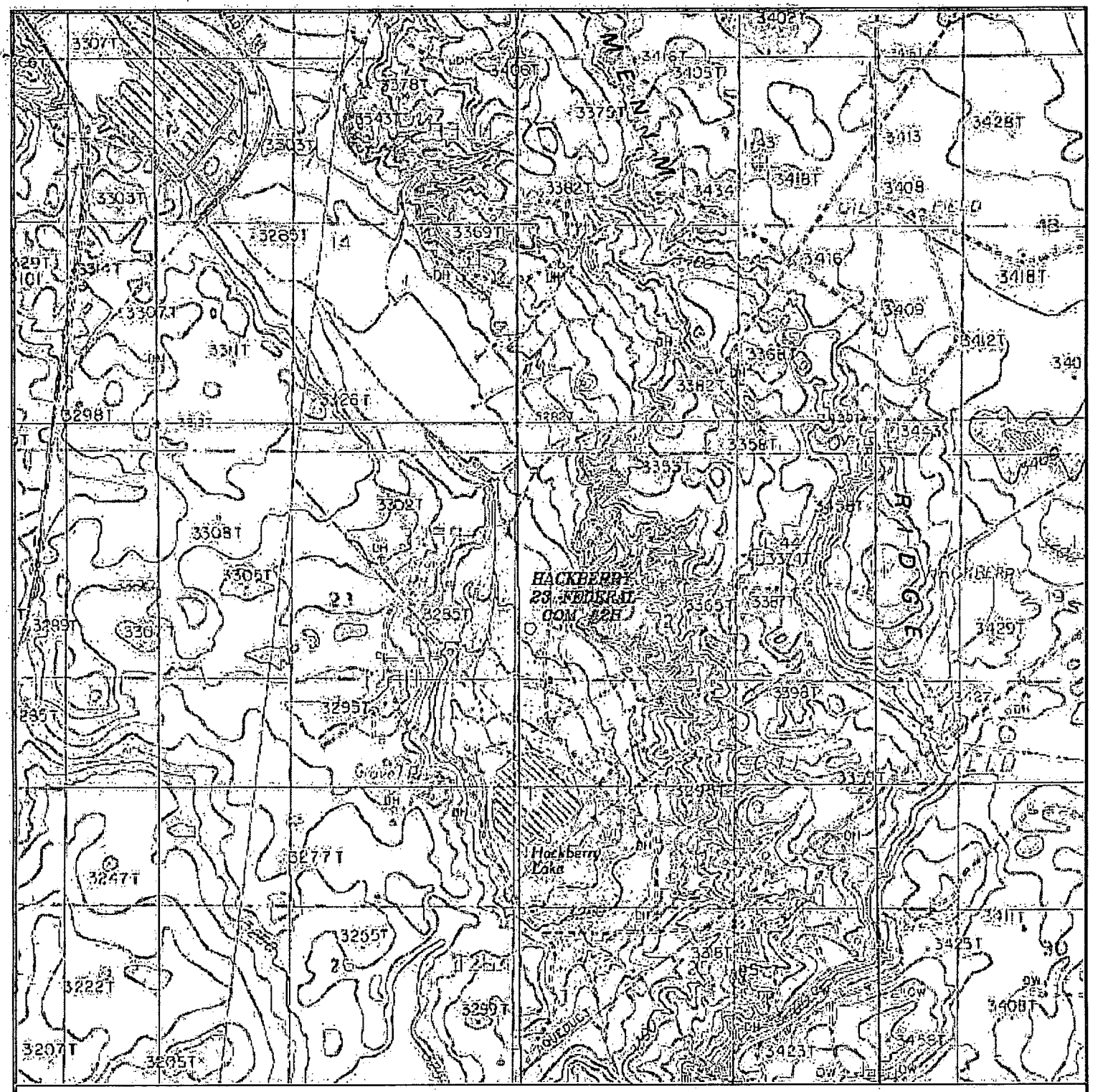
basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

| | |
|---|---|
| W.O. Number: | JG 27261 |
| Survey Date: | 9-7-2012 |
| Scale: | 1" = 2 Miles |
| Date: | 9-19-2012 |

N

CIMAREX ENERGY CO. OF COLORADO

Exhibit B




HACKBERRY 23 FEDERAL COM #2H
Located 2280' FSL and 180' FWL
Section 24, Township 19 South, Range 30 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: JG 27261
Survey Date: 9-7-2012
Scale: 1" = 2000'
Date: 9-19-2012

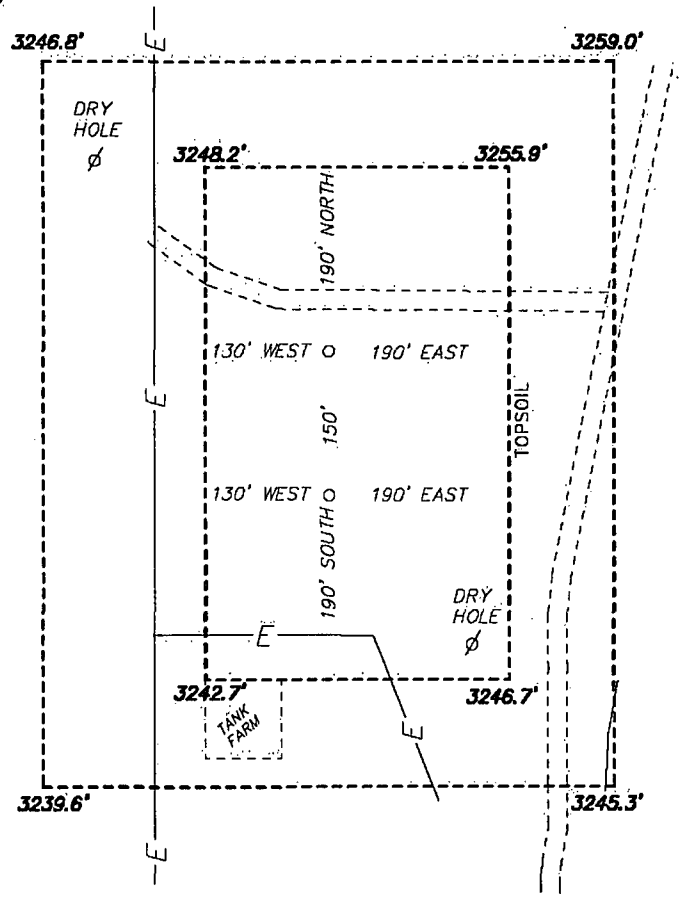
N

CIMAREX ENERGY CO. OF COLORADO

Exhibit C

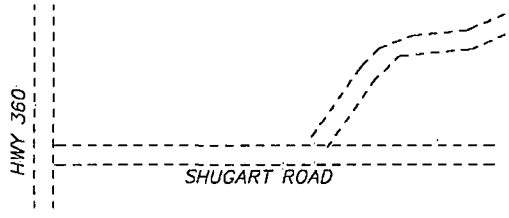
# SECTION 24, TOWNSHIP 19 SOUTH, RANGE 30 EAST, N.M.P.M.,

**EDDY COUNTY,** **NEW MEXICO.**




*CIMAREX ENERGY CO. OF COLORADO*
*HACKBERRY 23 FEDERAL COM #2H*
*ELEV. - 3252'*

Lat - N 32°38'41.45"
Long - W 103°56'00.64"
NMSPCE- N 598557.8
E 664402.8
(NAD-83)




LOCO HILLS NM IS ±12 MILES NORTH OF LOCATION.

200 0 200 400 FEET

SCALE: 1" = 200'

Directions to Location:

FROM THE JUNCTION OF HIGHWAY 360 AND SHUGART ROAD, GO GO EAST ON SHUGART ROAD FOR 1.7 MILES TO TO LEASE ROAD, ON ON LEASE ROAD GO NORTH AND EAST 2.6 MILES TO PROPOSED LEASE ROAD.

**CIMAREX ENERGY CO. OF COLORADO**

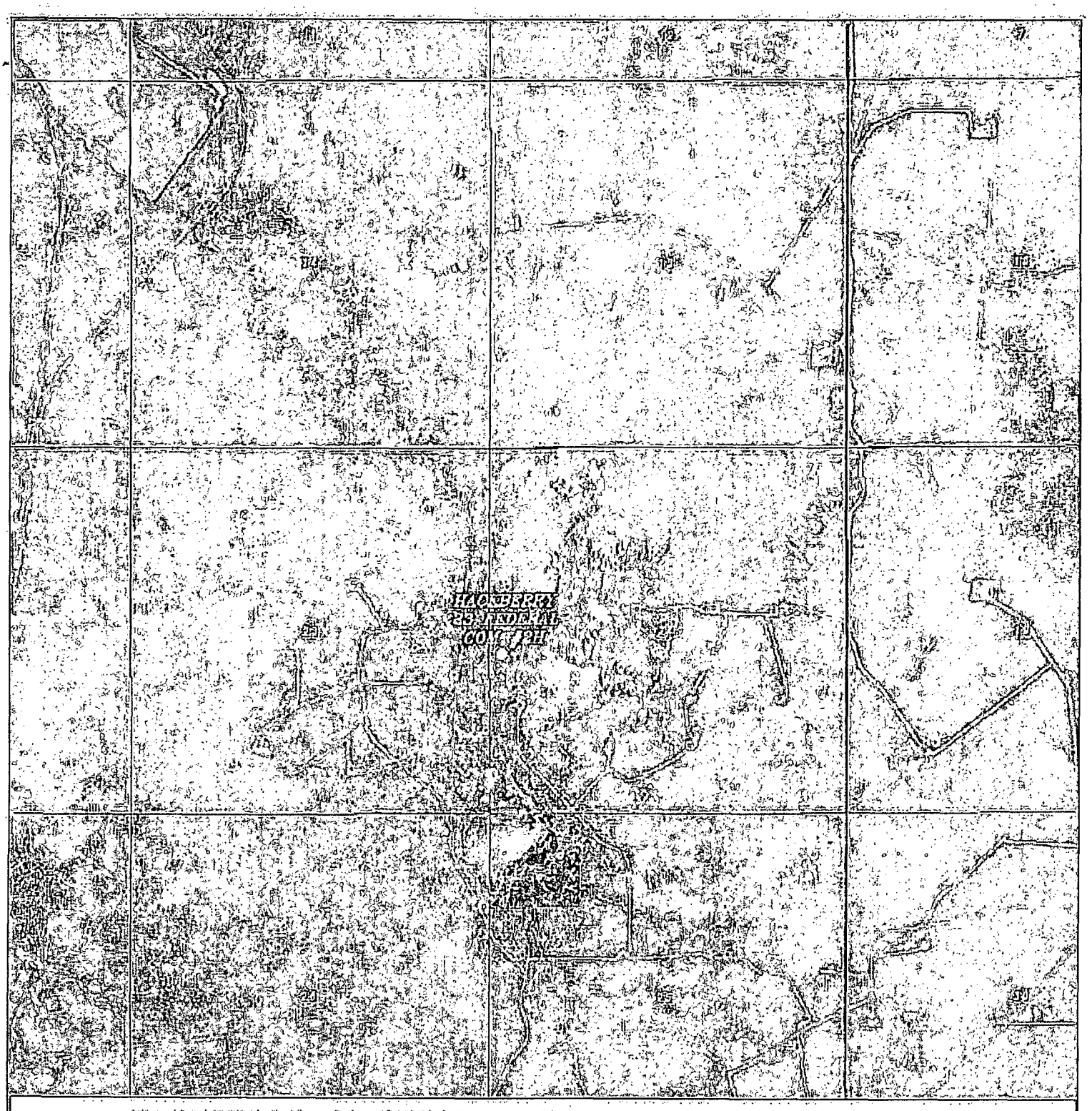
REF: HACKBERRY 23 FEDERAL COM #2H

THE HACKBERRY 23 FEDERAL COM #2H LOCATED 2280' FROM THE SOUTH LINE AND 180' FROM THE WEST LINE OF SECTION 24, TOWNSHIP 19 SOUTH, RANGE 30 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786 - HOBBS, NEW MEXICO

| W.O. Number: 27261 | Drawn By: J. GOAD | | |
|---|---|---|---|
| Date: 9-19-2012 | Disk: JG - 27261WELL | Survey Date: 9-7-2012 | Sheet 1 of 1 Sheets |

Exhibit C-1




# HACKBERRY 23 FEDERAL COM #2H
# Located 2280' FSL and 180' FWL
# Section 24, Township 19 South, Range 30 East, N.M.P.M., Eddy County, New Mexico.

Basin Surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

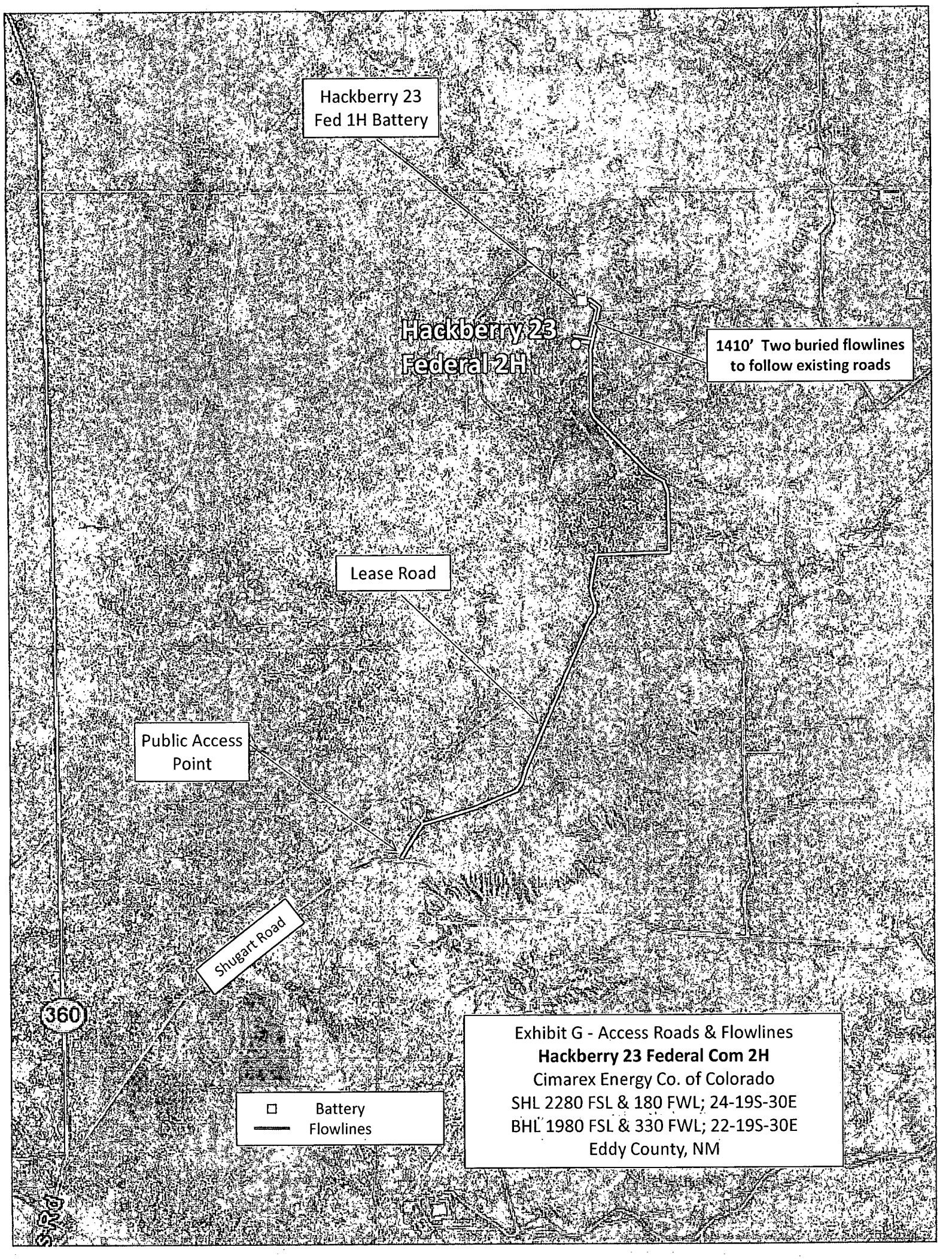
W.O. Number: JG 27261

Scale: 1" = 2000'

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND

N

CIMAREX ENERGY CO. OF COLORADO


Hackberry 23
Fed 1H Battery
Hackberry 23
Federal 2H
1410' Two buried flowlines
to follow existing roads
Lease Road
Public Access
Point
Shugart Road
360
Battery
Flowlines
Exhibit G - Access Roads & Flowlines
Hackberry 23 Federal Com 2H
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

Application to Drill
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
UL: L - Sec 24-19S-30E
Eddy County, NM

In response to questions asked under Section II B of Bulletin NTL-6, the following information is provided for your consideration:

1 Location: SHL 2130 FSL & 180 FWL; 24-19S-30E
BHL 660 FSL & 330 FWL; 22-19S-30E

2 Elevation above sea level: 3252' GR

3 Geologic name of surface formation: Quaternary Alluvium Deposits

4 Drilling tools and associated equipment: Conventional rotary drilling rig using fluid as a circulating medium for solids removal.

5 Proposed drilling depth: 18,844' MD 8,580' TVD

6 Estimated tops of geological markers:

| Formation | Est. Top | Bearing |
|---|---|---|
| Rustler | 270 | NA |
| Top of Salt | 580 | NA |
| Base of Salt | 1650 | NA |
| Yates | 1700 | NA |
| Seven Rivers | 1910 | NA |
| Capitan Reef | 2000 | NA |
| Bell Canyon | 3500 | NA |
| Cherry Canyon | 3870 | NA |
| Brushy Canyon | 4795 | NA |
| Bone Spring | 6240 | NA |
| 1st Bone Spring Ss | 7600 | NA |
| 2nd Bone Spring Ss | 8400 | Hydrocarbons |
| 3rd Bone Spring Carg | 8800 | NA |
| Wolfcamp | 9850 | NA |

7 Possible mineral bearing formation:
Shown above

7A OSE Ground Water estimated depth: 50'

8 Casing Program: See COA

| Casing Depth From (ft) | Casing Setting Depth(ft) MD | Casing Setting Depth(ft) TVD | Open Hole Size (inches) | Casing Size (inches) | Casing Weight (lb/ft) | Casing Grade | Thread | Conditon | SI Surface Pressure & BHP (psig) | Mud Weight (ppg) | Collapse SF (1.125) | Burst SF (1.125) | Cumulative Air Weight (lbs) | Tension SF (1.6) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Surface | | | | | | | | | | | | | | |
| 0' | 325' | 325' | 20 | 16 | 84 | J-55 | BT&C | New | 146 | 8.4 | 9.93 | 20.4 | 27300 | 48.6 |
| Intermediate 1 (1930') | | | | | | | | | | | | | | |
| 0' | ~~1750'~~ | ~~1750'~~ | 14 3/4 | 11 3/4 | 42 | H-40 | ST&C | New | 788 | 10 | 1.14 | 2.5 | 73500 | 4.2 |
| Intermediate 2 * (3600') | | | | | | | | | | | | | | |
| 0' | ~~3480'~~ | ~~3480'~~ | 11 | 8 5/8 | 32 | J-55 | ST&C | New | 1566 | 8.6 | 1.63 | 2.5 | 111360 | 3.3 |
| Production | | | | | | | | | | | | | | |
| 0' | 8007' | 8007' | 7 7/8 | 5 1/2 | 17 | P-110 | LT&C | New | 1973.4 | 9 | 2.00 | 5.4 | 145860 | 3.1 |
| 8007' | 18844' | 8580' | 7 7/8 | 5 1/2 | 17 | P-110 | BT&C | New | 3861 | 9 | 1.86 | 2.8 | 9741 | 56.1 |

**Note: Intermediate 2 Casing has a DV Tool/ ACP set @** ~~1700~~ **ft** See COA

Application to Drill

**Hackberry 23 Federal Com 2H**

Cimarex Energy Co. of Colorado

UL: L - Sec 24-19S-30E

Eddy County, NM

**Casing Design Criteria and Casing Loading Assumptions:**

Surface

| | | | | |
|---|---|---|---|---|
| Tension | A 1.8 design factor with effects of buoyancy. | 8.4 | ppg | |
| Collapse | A 1.125 design factor with full internal evacuation and a collapse force equal to a | 8.4 | ppg mud gradient | |
| Burst | A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface. | | | |

Intermediate 1

| | | | | |
|---|---|---|---|---|
| Tension | A 1.8 design factor with effects of buoyancy. | 10.0 | ppg | |
| Collapse | A 1.125 design factor evacuated 1/3 TVD of next casing string with a collapse force equal to a | 10.0 | ppg mud gradient | |
| Burst | A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface. | | | |

Intermediate 2

| | | | | |
|---|---|---|---|---|
| Tension | A 1.8 design factor with effects of buoyancy. | 8.6 | ppg | |
| Collapse | A 1.125 design factor evacuated 1/3 TVD of next casing string with a collapse force equal to a | 8.6 | ppg mud gradient | |
| Burst | A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface. | | | |

Production 1

| | | | | |
|---|---|---|---|---|
| Tension | A 1.8 design factor with effects of buoyancy. | 9.0 | ppg | |
| Collapse | A 1.125 design factor with full internal evacuation and a collapse force equal to a | 9.0 | ppg mud gradient | |
| Burst | A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface. | | | |

Production 2

| | | | | |
|---|---|---|---|---|
| Tension | A 1.8 design factor with effects of buoyancy. | 9.0 | ppg | |
| Collapse | A 1.125 design factor with full internal evacuation and a collapse force equal to a | 9.0 | ppg mud gradient | |
| Burst | A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface. | | | |

**Drilling Plan**
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
UL: L - Sec 24-19S-30E
*Eddy County, NM*

9 **Cementing Program:**

| | Sacks | Yield (cuft/sx) | Weight (ppg) | Cubic Feet | Cement Blend |
|---|---|---|---|---|---|
| *Surface* Tail | 500 | 1.34 | 14.8 | 664 | Class C + LCM |

**TOC: 0' 160% Excess Centralizers per Onshore Order 2.III.B.1f**

| | Sacks | Yield (cuft/sx) | Weight (ppg) | Cubic Feet | Cement Blend |
|---|---|---|---|---|---|
| *Intermediate 1* | | | | | |
| Lead | 580 | 1.88 | 12.9 | 1087 | 35:65 (poz/C) + Salt + Bentonite + LCM + retarder |
| Tail | 200 | 1.34 | 14.8 | 266 | Class C + retarder + LCM |

**TOC: 0' 96% Excess**

| | Sacks | Yield (cuft/sx) | Weight (ppg) | Cubic Feet | Cement Blend |
|---|---|---|---|---|---|
| *Intermediate 2* | Stage #1 | | | | |
| Lead | 370 | 1.88 | 12.9 | 677 | 35:65 (poz/C) + Salt + Bentonite + LCM + retarder |
| Tail | 230 | 1.34 | 14.8 | 297 | Class C + retarder + LCM |

**TOC: 1700' 0% Excess DV Tool / ACP set between 1800' - 1900'**

See COA

| | Sacks | Yield (cuft/sx) | Weight (ppg) | Cubic Feet | Cement Blend |
|---|---|---|---|---|---|
| | Stage #2 | | | | |
| Lead | 240 | 1.88 | 12.9 | 449 | 35:65 (poz/C) + Salt + Bentonite + LCM + retarder |
| Tail | 200 | 1.34 | 14.8 | 264 | Class C + retarder + LCM |

**TOC: 0' 122% Excess**

| | Sacks | Yield (cuft/sx) | Weight (ppg) | Cubic Feet | Cement Blend |
|---|---|---|---|---|---|
| *Production* | | | | | |
| Lead | 450 | 2.4 | 11.9 | 1080 | 35:65 (poz/H) + salt + Sodium Metasilcate + Bentonite + Fluid Loss + Dispersant + LCM + Retarder |
| Tail | 2378 | 1.24 | 14.5 | 2948 | 50:50 (poz/H) + Bentonite + Salt + Fluid Loss + Dispersant + LCM + Retarder |

**Cement volumes will be adjusted depending on hole size.**
**TOC: 3280' 45% Excess No centralizers planned in the lateral section. 1 every jt from EOC to KOP. 1 every 4th joint from KOP to 500' inside previous casing.**
See COA

10 **Pressure Control Equipment:**
Exhibit "E-1".
BOP systems will meet the requirements of BLM Onshore Order #2 (Section III.A) per the pressure rating of the system.
On 16" Surface casing, a 2M BOP system will be installed (Annular Preventer).
On 11-3/4" intermediate #1 casing, a 3M system will be installed (Blind Rams & Pipe Rams & Annular Preventer).
On 8-5/8" intermediate #2 casing, a 5M system will be installed (Blind Rams & Pipe Rams & Annular Preventer).

A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor. Rotating head will be installed as needed.

BOP unit will be hydraulically operated. BOP will be installed and operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling.

BOPS will be tested by an independent service company.
16" Surface Casing: 250 psi low / 1000 psi high.
11-3/4" Intermediate #1: Rams tested to 250 psi low / 3000 psi high. Annular Preventer tested to 250 psi low / 2500 psi high.
8-5/8" Intermediate #2: Rams tested to 250 psi low / 5000 psi high. Annular Preventer tested to 250 psi low / 2500 psi high.

See COA

Cimarex Energy Co. of Colorado requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used.

Application to Drill
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
UL: L - Sec 24-19S-30E
Eddy County, NM

See COA

11 Proposed Mud Circulating System:

| Depth | | | Mud Wt | Visc | Fluid Loss | Type Mud |
|---|---|---|---|---|---|---|
| 0' | to | 325' | 8.4 | 28 | NC | FW Spud Mud |
| 325' | to | ~~1750'~~ 1930' | 10 | 30-32 | NC | Brine water |
| ~~1750'~~ | to | ~~3480'~~ 3600' | 8.3 | 30-32 | NC | FW |
| ~~3480'~~ | to | 18844' | 9 | 30-32 | NC | FW/Cut Brine |

Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.

The Mud Monitoring System is an electronic Pason System satisfying requirements of Onshore Order 1.

12 Proposed Drilling Plan
Pilot Hole TD: No Pilot Hole KOP: 8,007' EOC: 8945'
Set Surface and Intermediate casing strings. Drill production hole to KOP. Continue drillling lateral through the curve to TD. Run prod casing & cement.

13 Testing, Logging and Coring Program:
A. Mud logging program: 2 man unit from 3480' to TD
B. Electric logging program: CNL / LDT / CAL / GR, DLL /GR -- Inter. Csg to TD
CNL /GR -- Surf to Inter. Csg
C. No DSTs or cores are planned at this time.
D. CBL w/ CCL from as far as gravity will let it fall to TOC

14 Potential Hazards:
No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough $H_2S$ from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an "$H_2S$ Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an $H_2S$ Safety package on all wells, attached is an "$H_2S$ Drilling Operations Plan." Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used. **Lost Circulation is possible in the Capitan Reef. Fresh water mud will be used in this section.**

See COA

Estimated BHP **3861 psi** Estimated BHT **150°**

15 Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.
Drilling expected to take : **35-40 days**
If production casing is run an additional 30 days will be required to complete and construct surface facilities.

16 Other Facets of Operations:
After running casing, cased hole gamma ray neutron collar logs will be run from TD over possible pay intervals.
Bone Spring pay will be perforated and stimulated.
The proposed well will be tested and potentialed as **Oil**

**Hackberry 23 Federal Com 2H**
**Cimarex Energy Co. of Colorado**
**SHL 2280 FSL & 180 FWL; 24-19S-30E**
**BHL 1980 FSL & 330 FWL; 22-19S-30E**
**Eddy County, NM**

Cimarex respectfully requests a variance for the use of a 2M diverter system on the 16" surface casing. The 13 5/8" 5M BOP tested to 3M psi will be used on the base of the 11 ¾" surface pipe through the running of production casing.

# Cimarex

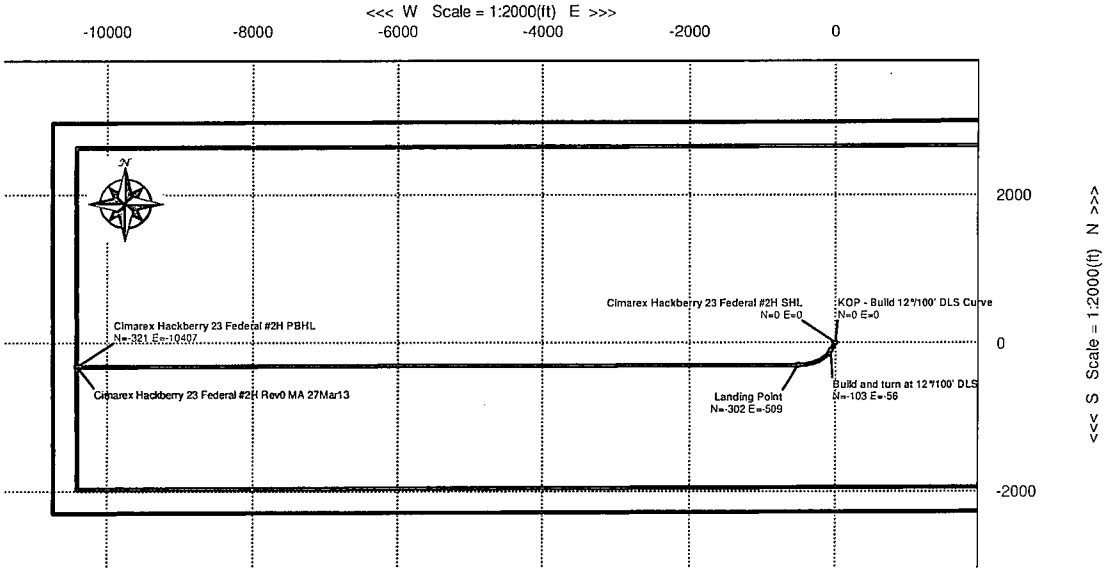
PATHFINDER
A Schlumberger Company

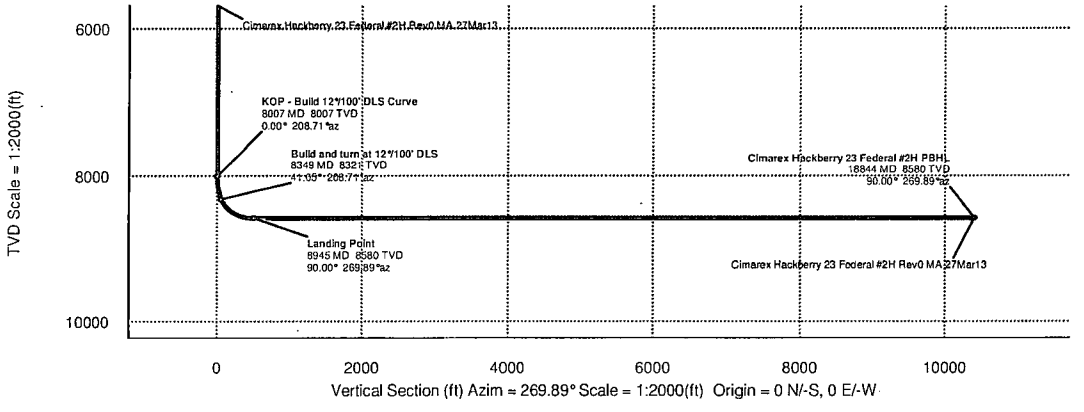
| WELL | FIELD | STRUCTURE |
|---|---|---|
| Hackberry 23 Federal #2H | NM Eddy County | Hackberry 23 Federal #2H |

| Magnetic Parameters | | | | Surface Location | | | | Miscellaneous | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Model: BGGM 2012 | Dip: 60.431° | Date: March 27, 2013 | | Lat: N 32 35 41.448 | Northing: 596557.40 hUS | Grid Conv: 0.216° | | Slot: Hackberry 23 Federal #2H | TVD Ref: Ground Level(3252ft above) | | |
| | Mag Dec: 7.674° | FS: 48627.8nT | | Lon: W 103 56 0.640 | Easting: 684462.80 hUS | Scale Fact: 0.99992643 | | Plan: Rev0 MA 27Mar13 | Srvy Date: March 27, 2013 | | |

NAD83 New Mexico State Plane, Eastern Zone, US Feet


Grid North
Tot Corr (M->G 7.4587°)
Mag Dec (7.674°)
Grid Conv (0.216°)




Critical Points

| Critical Point | MD | INCL | AZIM | TVD | VSEC | N(+) / S(-) | E(+) / W(-) | DLS |
|---|---|---|---|---|---|---|---|---|
| Cimarex Hackberry 23 Federal #2H SHL | 0.00 | 0.00 | 208.71 | 0.00 | 0.00 | 0.00 | 0.00 | |
| KOP - Build 12°/100' DLS Curve | 8007.01 | 0.00 | 208.71 | 8007.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Build and turn at 12°/100' DLS | 8349.09 | 41.05 | 208.71 | 8320.57 | 56.59 | -102.96 | -56.39 | 12.00 |
| Landing Point | 8945.29 | 90.00 | 269.89 | 8580.00 | 509.50 | -301.76 | -508.92 | 12.00 |
| Cimarex Hackberry 23 Federal #2H PBHL | 18843.88 | 90.00 | 269.89 | 8580.00 | 10408.08 | -321.02 | -10407.49 | 0.00 |

# Cimarex Hackberry 23 Federal #2H Rev0 MA 27Mar13 Proposal Report

(Non-Def Plan)

| | | | |
|---|---|---|---|
| **Report Date:** | March 27, 2013 - 11:08 AM | **Survey / DLS Computation:** | Minimum Curvature / Lubinski |
| **Client:** | Cimarex | **Vertical Section Azimuth:** | 269.890 ° (Grid North) |
| **Field:** | NM Eddy County (NAD 83) | **Vertical Section Origin:** | 0.000 ft, 0.000 ft |
| **Structure / Slot:** | Cimarex Hackberry 23 Federal #2H / Cimarex Hackberry 23 Federal #2H | **TVD Reference Datum:** | Ground Level |
| **Well:** | Cimarex Hackberry 23 Federal #2H | **TVD Reference Elevation:** | 3252.000 ft above |
| **Borehole:** | Original Borehole | **Seabed / Ground Elevation:** | 3252.000 ft above |
| **UWI / API#:** | Unknown / Unknown | **Magnetic Declination:** | 7.674 ° |
| **Survey Name:** | Cimarex Hackberry 23 Federal #2H Rev0 MA 27Mar13 | **Total Gravity Field Strength:** | 998.5369mgn (9.80665 Based) |
| **Survey Date:** | March 27, 2013 | **Total Magnetic Field Strength:** | 48627.804 nT |
| **Tort / AHD / DDI / ERD Ratio:** | 112.597 ° / 10531.570 ft / 6.416 / 1.227 | **Magnetic Dip Angle:** | 60.431 ° |
| **Coordinate Reference System:** | NAD83 New Mexico State Plane, Eastern Zone, US Feet | **Declination Date:** | March 27, 2013 |
| **Location Lat / Long:** | N 32° 38' 41.44835", W 103° 56' 0.63964" | **Magnetic Declination Model:** | BGGM 2012 |
| **Location Grid N/E Y/X:** | N 598557.800 ftUS, E 664402.800 ftUS | **North Reference:** | Grid North |
| **CRS Grid Convergence Angle:** | 0.2157 ° | **Grid Convergence Used:** | 0.2157 ° |
| **Grid Scale Factor:** | 0.99992643 | **Total Corr Mag North->Grid North:** | 7.4587 ° |
| | | **Local Coord Referenced To:** | Structure Reference Point |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure (ft) | Closure Azimuth (°) | DLS (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cimarex Hackberry 23 Federal #2H SHL | 0.00 | 0.00 | 208.71 | 0.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | N/A |
| | 100.00 | 0.00 | 208.71 | 100.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 200.00 | 0.00 | 208.71 | 200.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 300.00 | 0.00 | 208.71 | 300.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 400.00 | 0.00 | 208.71 | 400.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 500.00 | 0.00 | 208.71 | 500.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 600.00 | 0.00 | 208.71 | 600.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 700.00 | 0.00 | 208.71 | 700.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 800.00 | 0.00 | 208.71 | 800.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 900.00 | 0.00 | 208.71 | 900.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1000.00 | 0.00 | 208.71 | 1000.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1100.00 | 0.00 | 208.71 | 1100.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1200.00 | 0.00 | 208.71 | 1200.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1300.00 | 0.00 | 208.71 | 1300.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1400.00 | 0.00 | 208.71 | 1400.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1500.00 | 0.00 | 208.71 | 1500.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1600.00 | 0.00 | 208.71 | 1600.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1700.00 | 0.00 | 208.71 | 1700.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1800.00 | 0.00 | 208.71 | 1800.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 1900.00 | 0.00 | 208.71 | 1900.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2000.00 | 0.00 | 208.71 | 2000.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2100.00 | 0.00 | 208.71 | 2100.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2200.00 | 0.00 | 208.71 | 2200.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2300.00 | 0.00 | 208.71 | 2300.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2400.00 | 0.00 | 208.71 | 2400.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2500.00 | 0.00 | 208.71 | 2500.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2600.00 | 0.00 | 208.71 | 2600.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2700.00 | 0.00 | 208.71 | 2700.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure (ft) | Closure Azimuth (°) | DLS (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2800.00 | 0.00 | 208.71 | 2800.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 2900.00 | 0.00 | 208.71 | 2900.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3000.00 | 0.00 | 208.71 | 3000.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3100.00 | 0.00 | 208.71 | 3100.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3200.00 | 0.00 | 208.71 | 3200.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3300.00 | 0.00 | 208.71 | 3300.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3400.00 | 0.00 | 208.71 | 3400.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3500.00 | 0.00 | 208.71 | 3500.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3600.00 | 0.00 | 208.71 | 3600.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3700.00 | 0.00 | 208.71 | 3700.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3800.00 | 0.00 | 208.71 | 3800.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 3900.00 | 0.00 | 208.71 | 3900.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4000.00 | 0.00 | 208.71 | 4000.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4100.00 | 0.00 | 208.71 | 4100.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4200.00 | 0.00 | 208.71 | 4200.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4300.00 | 0.00 | 208.71 | 4300.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4400.00 | 0.00 | 208.71 | 4400.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4500.00 | 0.00 | 208.71 | 4500.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4600.00 | 0.00 | 208.71 | 4600.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4700.00 | 0.00 | 208.71 | 4700.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4800.00 | 0.00 | 208.71 | 4800.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 4900.00 | 0.00 | 208.71 | 4900.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5000.00 | 0.00 | 208.71 | 5000.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5100.00 | 0.00 | 208.71 | 5100.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5200.00 | 0.00 | 208.71 | 5200.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5300.00 | 0.00 | 208.71 | 5300.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5400.00 | 0.00 | 208.71 | 5400.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5500.00 | 0.00 | 208.71 | 5500.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5600.00 | 0.00 | 208.71 | 5600.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5700.00 | 0.00 | 208.71 | 5700.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5800.00 | 0.00 | 208.71 | 5800.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 5900.00 | 0.00 | 208.71 | 5900.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6000.00 | 0.00 | 208.71 | 6000.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6100.00 | 0.00 | 208.71 | 6100.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6200.00 | 0.00 | 208.71 | 6200.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6300.00 | 0.00 | 208.71 | 6300.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6400.00 | 0.00 | 208.71 | 6400.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6500.00 | 0.00 | 208.71 | 6500.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6600.00 | 0.00 | 208.71 | 6600.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6700.00 | 0.00 | 208.71 | 6700.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6800.00 | 0.00 | 208.71 | 6800.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 6900.00 | 0.00 | 208.71 | 6900.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7000.00 | 0.00 | 208.71 | 7000.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7100.00 | 0.00 | 208.71 | 7100.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7200.00 | 0.00 | 208.71 | 7200.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7300.00 | 0.00 | 208.71 | 7300.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7400.00 | 0.00 | 208.71 | 7400.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7500.00 | 0.00 | 208.71 | 7500.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7600.00 | 0.00 | 208.71 | 7600.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7700.00 | 0.00 | 208.71 | 7700.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7800.00 | 0.00 | 208.71 | 7800.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 7900.00 | 0.00 | 208.71 | 7900.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| | 8000.00 | 0.00 | 208.71 | 8000.00 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |
| KOP - Build 12°/100' DLS Curve | 8007.01 | 0.00 | 208.71 | 8007.01 | 0.00 | 0.00 | 0.00 | 598557.80 | 664402.80 | N 32 38 41.45 | W 103 56 0.64 | 0.00 | 0.00 | 0.00 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure (ft) | Closure Azimuth (°) | DLS (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8100.00 | 11.16 | 208.71 | 8099.41 | 4.35 | -7.92 | -4.34 | 598549.88 | 664398.46 | N 32 38 41.37 | W 103 56 0.69 | 9.03 | 208.71 | 12.00 |
| | 8200.00 | 23.16 | 208.71 | 8194.79 | 18.55 | -33.74 | -18.48 | 598524.06 | 664384.32 | N 32 38 41.12 | W 103 56 0.86 | 38.47 | 208.71 | 12.00 |
| | 8300.00 | 35.16 | 208.71 | 8281.96 | 41.99 | -76.40 | -41.85 | 598481.41 | 664360.96 | N 32 38 40.69 | W 103 56 1.13 | 87.11 | 208.71 | 12.00 |
| Build and turn at 12°/100' DLS | 8349.09 | 41.05 | 208.71 | 8320.57 | 56.59 | -102.96 | -56.39 | 598454.85 | 664346.41 | N 32 38 40.43 | W 103 56 1.30 | 117.39 | 208.71 | 12.00 |
| | 8400.00 | 43.69 | 216.89 | 8358.20 | 75.25 | -131.71 | -74.99 | 598426.10 | 664327.81 | N 32 38 40.15 | W 103 56 1.52 | 151.56 | 209.66 | 12.00 |
| | 8500.00 | 50.32 | 230.61 | 8426.54 | 126.01 | -183.94 | -125.65 | 598373.87 | 664277.16 | N 32 38 39.63 | W 103 56 2.12 | 222.76 | 214.34 | 12.00 |
| | 8600.00 | 58.26 | 241.72 | 8484.98 | 193.52 | -228.66 | -193.09 | 598329.15 | 664209.73 | N 32 38 39.19 | W 103 56 2.91 | 299.28 | 220.18 | 12.00 |
| | 8700.00 | 67.00 | 251.00 | 8530.99 | 274.85 | -263.92 | -274.35 | 598293.90 | 664128.47 | N 32 38 38.85 | W 103 56 3.86 | 380.69 | 226.11 | 12.00 |
| | 8800.00 | 76.22 | 259.10 | 8562.56 | 366.44 | -288.18 | -365.88 | 598269.64 | 664036.94 | N 32 38 38.61 | W 103 56 4.93 | 465.74 | 231.78 | 12.00 |
| | 8900.00 | 85.68 | 266.59 | 8578.29 | 464.27 | -300.37 | -463.70 | 598257.45 | 663939.14 | N 32 38 38.49 | W 103 56 6.08 | 552.48 | 237.07 | 12.00 |
| Landing Point | 8945.29 | 90.00 | 269.89 | 8580.00 | 509.50 | -301.76 | -508.92 | 598256.06 | 663893.92 | N 32 38 38.48 | W 103 56 6.60 | 591.66 | 239.33 | 12.00 |
| | 9000.00 | 90.00 | 269.89 | 8580.00 | 564.20 | -301.86 | -563.63 | 598255.96 | 663839.22 | N 32 38 38.48 | W 103 56 7.24 | 639.37 | 241.83 | 0.00 |
| | 9100.00 | 90.00 | 269.89 | 8580.00 | 664.20 | -302.06 | -663.63 | 598255.77 | 663739.23 | N 32 38 38.48 | W 103 56 8.41 | 729.13 | 245.53 | 0.00 |
| | 9200.00 | 90.00 | 269.89 | 8580.00 | 764.20 | -302.25 | -763.62 | 598255.57 | 663639.23 | N 32 38 38.49 | W 103 56 9.58 | 821.27 | 248.41 | 0.00 |
| | 9300.00 | 90.00 | 269.89 | 8580.00 | 864.20 | -302.44 | -863.62 | 598255.38 | 663539.24 | N 32 38 38.49 | W 103 56 10.75 | 915.05 | 250.70 | 0.00 |
| | 9400.00 | 90.00 | 269.89 | 8580.00 | 964.20 | -302.63 | -963.62 | 598255.19 | 663439.25 | N 32 38 38.49 | W 103 56 11.92 | 1010.03 | 252.56 | 0.00 |
| | 9500.00 | 90.00 | 269.89 | 8580.00 | 1064.20 | -302.83 | -1063.62 | 598255.00 | 663339.26 | N 32 38 38.49 | W 103 56 13.09 | 1105.89 | 254.11 | 0.00 |
| | 9600.00 | 90.00 | 269.89 | 8580.00 | 1164.20 | -303.02 | -1163.62 | 598254.81 | 663239.26 | N 32 38 38.49 | W 103 56 14.26 | 1202.43 | 255.40 | 0.00 |
| | 9700.00 | 90.00 | 269.89 | 8580.00 | 1264.20 | -303.21 | -1263.62 | 598254.61 | 663139.27 | N 32 38 38.50 | W 103 56 15.43 | 1299.49 | 256.51 | 0.00 |
| | 9800.00 | 90.00 | 269.89 | 8580.00 | 1364.20 | -303.40 | -1363.62 | 598254.42 | 663039.28 | N 32 38 38.50 | W 103 56 16.60 | 1396.97 | 257.46 | 0.00 |
| | 9900.00 | 90.00 | 269.89 | 8580.00 | 1464.20 | -303.59 | -1463.62 | 598254.23 | 662939.29 | N 32 38 38.50 | W 103 56 17.77 | 1494.78 | 258.28 | 0.00 |
| | 10000.00 | 90.00 | 269.89 | 8580.00 | 1564.20 | -303.79 | -1563.62 | 598254.04 | 662839.29 | N 32 38 38.50 | W 103 56 18.94 | 1592.86 | 259.01 | 0.00 |
| | 10100.00 | 90.00 | 269.89 | 8580.00 | 1664.20 | -303.98 | -1663.62 | 598253.84 | 662739.30 | N 32 38 38.50 | W 103 56 20.11 | 1691.17 | 259.65 | 0.00 |
| | 10200.00 | 90.00 | 269.89 | 8580.00 | 1764.20 | -304.17 | -1763.62 | 598253.65 | 662639.31 | N 32 38 38.50 | W 103 56 21.28 | 1789.66 | 260.21 | 0.00 |
| | 10300.00 | 90.00 | 269.89 | 8580.00 | 1864.20 | -304.37 | -1863.62 | 598253.46 | 662539.32 | N 32 38 38.51 | W 103 56 22.45 | 1888.31 | 260.72 | 0.00 |
| | 10400.00 | 90.00 | 269.89 | 8580.00 | 1964.20 | -304.56 | -1963.62 | 598253.26 | 662439.33 | N 32 38 38.51 | W 103 56 23.62 | 1987.10 | 261.18 | 0.00 |
| | 10500.00 | 90.00 | 269.89 | 8580.00 | 2064.20 | -304.75 | -2063.62 | 598253.07 | 662339.33 | N 32 38 38.51 | W 103 56 24.79 | 2086.00 | 261.60 | 0.00 |
| | 10600.00 | 90.00 | 269.89 | 8580.00 | 2164.20 | -304.94 | -2163.62 | 598252.88 | 662239.34 | N 32 38 38.51 | W 103 56 25.96 | 2185.01 | 261.98 | 0.00 |
| | 10700.00 | 90.00 | 269.89 | 8580.00 | 2264.20 | -305.14 | -2263.62 | 598252.69 | 662139.35 | N 32 38 38.51 | W 103 56 27.13 | 2284.10 | 262.32 | 0.00 |
| | 10800.00 | 90.00 | 269.89 | 8580.00 | 2364.20 | -305.33 | -2363.62 | 598252.49 | 662039.36 | N 32 38 38.51 | W 103 56 28.29 | 2383.26 | 262.64 | 0.00 |
| | 10900.00 | 90.00 | 269.89 | 8580.00 | 2464.20 | -305.52 | -2463.62 | 598252.30 | 661939.36 | N 32 38 38.52 | W 103 56 29.46 | 2482.49 | 262.93 | 0.00 |
| | 11000.00 | 90.00 | 269.89 | 8580.00 | 2564.20 | -305.72 | -2563.62 | 598252.11 | 661839.37 | N 32 38 38.52 | W 103 56 30.63 | 2581.79 | 263.20 | 0.00 |
| | 11100.00 | 90.00 | 269.89 | 8580.00 | 2664.20 | -305.91 | -2663.62 | 598251.91 | 661739.38 | N 32 38 38.52 | W 103 56 31.80 | 2681.13 | 263.45 | 0.00 |
| | 11200.00 | 90.00 | 269.89 | 8580.00 | 2764.20 | -306.10 | -2763.62 | 598251.72 | 661639.39 | N 32 38 38.52 | W 103 56 32.97 | 2780.52 | 263.68 | 0.00 |
| | 11300.00 | 90.00 | 269.89 | 8580.00 | 2864.20 | -306.30 | -2863.62 | 598251.53 | 661539.40 | N 32 38 38.52 | W 103 56 34.14 | 2879.96 | 263.89 | 0.00 |
| | 11400.00 | 90.00 | 269.89 | 8580.00 | 2964.20 | -306.49 | -2963.62 | 598251.33 | 661439.40 | N 32 38 38.52 | W 103 56 35.31 | 2979.43 | 264.10 | 0.00 |
| | 11500.00 | 90.00 | 269.89 | 8580.00 | 3064.20 | -306.68 | -3063.62 | 598251.14 | 661339.41 | N 32 38 38.53 | W 103 56 36.48 | 3078.93 | 264.28 | 0.00 |
| | 11600.00 | 90.00 | 269.89 | 8580.00 | 3164.20 | -306.88 | -3163.62 | 598250.95 | 661239.42 | N 32 38 38.53 | W 103 56 37.65 | 3178.47 | 264.46 | 0.00 |
| | 11700.00 | 90.00 | 269.89 | 8580.00 | 3264.20 | -307.07 | -3263.62 | 598250.75 | 661139.43 | N 32 38 38.53 | W 103 56 38.82 | 3278.03 | 264.62 | 0.00 |
| | 11800.00 | 90.00 | 269.89 | 8580.00 | 3364.20 | -307.26 | -3363.62 | 598250.56 | 661039.43 | N 32 38 38.53 | W 103 56 39.99 | 3377.62 | 264.78 | 0.00 |
| | 11900.00 | 90.00 | 269.89 | 8580.00 | 3464.20 | -307.46 | -3463.62 | 598250.37 | 660939.44 | N 32 38 38.53 | W 103 56 41.16 | 3477.24 | 264.93 | 0.00 |
| | 12000.00 | 90.00 | 269.89 | 8580.00 | 3564.20 | -307.65 | -3563.62 | 598250.17 | 660839.45 | N 32 38 38.54 | W 103 56 42.33 | 3576.87 | 265.07 | 0.00 |
| | 12100.00 | 90.00 | 269.89 | 8580.00 | 3664.20 | -307.84 | -3663.62 | 598249.98 | 660739.46 | N 32 38 38.54 | W 103 56 43.50 | 3676.53 | 265.20 | 0.00 |
| | 12200.00 | 90.00 | 269.89 | 8580.00 | 3764.20 | -308.04 | -3763.62 | 598249.79 | 660639.47 | N 32 38 38.54 | W 103 56 44.67 | 3776.20 | 265.32 | 0.00 |
| | 12300.00 | 90.00 | 269.89 | 8580.00 | 3864.20 | -308.23 | -3863.62 | 598249.59 | 660539.47 | N 32 38 38.54 | W 103 56 45.84 | 3875.89 | 265.44 | 0.00 |
| | 12400.00 | 90.00 | 269.89 | 8580.00 | 3964.20 | -308.42 | -3963.62 | 598249.40 | 660439.48 | N 32 38 38.54 | W 103 56 47.01 | 3975.60 | 265.55 | 0.00 |
| | 12500.00 | 90.00 | 269.89 | 8580.00 | 4064.20 | -308.62 | -4063.62 | 598249.21 | 660339.49 | N 32 38 38.54 | W 103 56 48.18 | 4075.32 | 265.66 | 0.00 |
| | 12600.00 | 90.00 | 269.89 | 8580.00 | 4164.20 | -308.81 | -4163.62 | 598249.01 | 660239.50 | N 32 38 38.55 | W 103 56 49.35 | 4175.05 | 265.76 | 0.00 |
| | 12700.00 | 90.00 | 269.89 | 8580.00 | 4264.20 | -309.01 | -4263.62 | 598248.82 | 660139.50 | N 32 38 38.55 | W 103 56 50.51 | 4274.80 | 265.85 | 0.00 |
| | 12800.00 | 90.00 | 269.89 | 8580.00 | 4364.20 | -309.20 | -4363.62 | 598248.62 | 660039.51 | N 32 38 38.55 | W 103 56 51.68 | 4374.56 | 265.95 | 0.00 |
| | 12900.00 | 90.00 | 269.89 | 8580.00 | 4464.20 | -309.39 | -4463.62 | 598248.43 | 659939.52 | N 32 38 38.55 | W 103 56 52.85 | 4474.33 | 266.03 | 0.00 |
| | 13000.00 | 90.00 | 269.89 | 8580.00 | 4564.20 | -309.59 | -4563.62 | 598248.24 | 659839.53 | N 32 38 38.55 | W 103 56 54.02 | 4574.11 | 266.12 | 0.00 |
| | 13100.00 | 90.00 | 269.89 | 8580.00 | 4664.20 | -309.78 | -4663.62 | 598248.04 | 659739.53 | N 32 38 38.55 | W 103 56 55.19 | 4673.89 | 266.20 | 0.00 |
| | 13200.00 | 90.00 | 269.89 | 8580.00 | 4764.20 | -309.98 | -4763.62 | 598247.85 | 659639.54 | N 32 38 38.56 | W 103 56 56.36 | 4773.69 | 266.28 | 0.00 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure (ft) | Closure Azimuth (°) | DLS (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 13300.00 | 90.00 | 269.89 | 8580.00 | 4864.20 | -310.17 | -4863.62 | 598247.65 | 659539.55 | N 32 38 38.56 | W 103 56 57.53 | 4873.50 | 266.35 | 0.00 |
| | 13400.00 | 90.00 | 269.89 | 8580.00 | 4964.20 | -310.36 | -4963.62 | 598247.46 | 659439.56 | N 32 38 38.56 | W 103 56 58.70 | 4973.31 | 266.42 | 0.00 |
| | 13500.00 | 90.00 | 269.89 | 8580.00 | 5064.20 | -310.56 | -5063.62 | 598247.26 | 659339.57 | N 32 38 38.56 | W 103 56 59.87 | 5073.13 | 266.49 | 0.00 |
| | 13600.00 | 90.00 | 269.89 | 8580.00 | 5164.20 | -310.75 | -5163.62 | 598247.07 | 659239.57 | N 32 38 38.56 | W 103 57 1.04 | 5172.96 | 266.56 | 0.00 |
| | 13700.00 | 90.00 | 269.89 | 8580.00 | 5264.20 | -310.95 | -5263.62 | 598246.88 | 659139.58 | N 32 38 38.56 | W 103 57 2.21 | 5272.79 | 266.62 | 0.00 |
| | 13800.00 | 90.00 | 269.89 | 8580.00 | 5364.20 | -311.14 | -5363.62 | 598246.68 | 659039.59 | N 32 38 38.57 | W 103 57 3.38 | 5372.63 | 266.68 | 0.00 |
| | 13900.00 | 90.00 | 269.89 | 8580.00 | 5464.20 | -311.34 | -5463.62 | 598246.49 | 658939.60 | N 32 38 38.57 | W 103 57 4.55 | 5472.48 | 266.74 | 0.00 |
| | 14000.00 | 90.00 | 269.89 | 8580.00 | 5564.20 | -311.53 | -5563.62 | 598246.29 | 658839.60 | N 32 38 38.57 | W 103 57 5.72 | 5572.33 | 266.80 | 0.00 |
| | 14100.00 | 90.00 | 269.89 | 8580.00 | 5664.20 | -311.73 | -5663.62 | 598246.10 | 658739.61 | N 32 38 38.57 | W 103 57 6.89 | 5672.19 | 266.85 | 0.00 |
| | 14200.00 | 90.00 | 269.89 | 8580.00 | 5764.20 | -311.92 | -5763.62 | 598245.90 | 658639.62 | N 32 38 38.57 | W 103 57 8.06 | 5772.05 | 266.90 | 0.00 |
| | 14300.00 | 90.00 | 269.89 | 8580.00 | 5864.20 | -312.12 | -5863.62 | 598245.71 | 658539.63 | N 32 38 38.57 | W 103 57 9.23 | 5871.92 | 266.95 | 0.00 |
| | 14400.00 | 90.00 | 269.89 | 8580.00 | 5964.20 | -312.31 | -5963.62 | 598245.51 | 658439.64 | N 32 38 38.57 | W 103 57 10.40 | 5971.79 | 267.00 | 0.00 |
| | 14500.00 | 90.00 | 269.89 | 8580.00 | 6064.20 | -312.51 | -6063.61 | 598245.32 | 658339.64 | N 32 38 38.58 | W 103 57 11.57 | 6071.66 | 267.05 | 0.00 |
| | 14600.00 | 90.00 | 269.89 | 8580.00 | 6164.20 | -312.70 | -6163.61 | 598245.12 | 658239.65 | N 32 38 38.58 | W 103 57 12.73 | 6171.54 | 267.10 | 0.00 |
| | 14700.00 | 90.00 | 269.89 | 8580.00 | 6264.20 | -312.90 | -6263.61 | 598244.93 | 658139.66 | N 32 38 38.58 | W 103 57 13.90 | 6271.42 | 267.14 | 0.00 |
| | 14800.00 | 90.00 | 269.89 | 8580.00 | 6364.20 | -313.09 | -6363.61 | 598244.73 | 658039.67 | N 32 38 38.58 | W 103 57 15.07 | 6371.31 | 267.18 | 0.00 |
| | 14900.00 | 90.00 | 269.89 | 8580.00 | 6464.20 | -313.29 | -6463.61 | 598244.54 | 657939.67 | N 32 38 38.58 | W 103 57 16.24 | 6471.20 | 267.23 | 0.00 |
| | 15000.00 | 90.00 | 269.89 | 8580.00 | 6564.20 | -313.48 | -6563.61 | 598244.34 | 657839.68 | N 32 38 38.58 | W 103 57 17.41 | 6571.10 | 267.27 | 0.00 |
| | 15100.00 | 90.00 | 269.89 | 8580.00 | 6664.20 | -313.68 | -6663.61 | 598244.15 | 657739.69 | N 32 38 38.59 | W 103 57 18.58 | 6670.99 | 267.30 | 0.00 |
| | 15200.00 | 90.00 | 269.89 | 8580.00 | 6764.20 | -313.87 | -6763.61 | 598243.95 | 657639.70 | N 32 38 38.59 | W 103 57 19.75 | 6770.89 | 267.34 | 0.00 |
| | 15300.00 | 90.00 | 269.89 | 8580.00 | 6864.20 | -314.07 | -6863.61 | 598243.76 | 657539.71 | N 32 38 38.59 | W 103 57 20.92 | 6870.80 | 267.38 | 0.00 |
| | 15400.00 | 90.00 | 269.89 | 8580.00 | 6964.20 | -314.26 | -6963.61 | 598243.56 | 657439.71 | N 32 38 38.59 | W 103 57 22.09 | 6970.70 | 267.42 | 0.00 |
| | 15500.00 | 90.00 | 269.89 | 8580.00 | 7064.20 | -314.46 | -7063.61 | 598243.37 | 657339.72 | N 32 38 38.59 | W 103 57 23.26 | 7070.61 | 267.45 | 0.00 |
| | 15600.00 | 90.00 | 269.89 | 8580.00 | 7164.20 | -314.65 | -7163.61 | 598243.17 | 657239.73 | N 32 38 38.59 | W 103 57 24.43 | 7170.52 | 267.48 | 0.00 |
| | 15700.00 | 90.00 | 269.89 | 8580.00 | 7264.20 | -314.85 | -7263.61 | 598242.97 | 657139.74 | N 32 38 38.60 | W 103 57 25.60 | 7270.43 | 267.52 | 0.00 |
| | 15800.00 | 90.00 | 269.89 | 8580.00 | 7364.20 | -315.04 | -7363.61 | 598242.78 | 657039.74 | N 32 38 38.60 | W 103 57 26.77 | 7370.35 | 267.55 | 0.00 |
| | 15900.00 | 90.00 | 269.89 | 8580.00 | 7464.20 | -315.24 | -7463.61 | 598242.58 | 656939.75 | N 32 38 38.60 | W 103 57 27.94 | 7470.27 | 267.58 | 0.00 |
| | 16000.00 | 90.00 | 269.89 | 8580.00 | 7564.20 | -315.44 | -7563.61 | 598242.39 | 656839.76 | N 32 38 38.60 | W 103 57 29.11 | 7570.19 | 267.61 | 0.00 |
| | 16100.00 | 90.00 | 269.89 | 8580.00 | 7664.20 | -315.63 | -7663.61 | 598242.19 | 656739.77 | N 32 38 38.60 | W 103 57 30.28 | 7670.11 | 267.64 | 0.00 |
| | 16200.00 | 90.00 | 269.89 | 8580.00 | 7764.20 | -315.83 | -7763.61 | 598242.00 | 656639.77 | N 32 38 38.60 | W 103 57 31.45 | 7770.03 | 267.67 | 0.00 |
| | 16300.00 | 90.00 | 269.89 | 8580.00 | 7864.20 | -316.02 | -7863.61 | 598241.80 | 656539.78 | N 32 38 38.61 | W 103 57 32.62 | 7869.96 | 267.70 | 0.00 |
| | 16400.00 | 90.00 | 269.89 | 8580.00 | 7964.20 | -316.22 | -7963.61 | 598241.60 | 656439.79 | N 32 38 38.61 | W 103 57 33.79 | 7969.89 | 267.73 | 0.00 |
| | 16500.00 | 90.00 | 269.89 | 8580.00 | 8064.20 | -316.42 | -8063.61 | 598241.41 | 656339.80 | N 32 38 38.61 | W 103 57 34.95 | 8069.82 | 267.75 | 0.00 |
| | 16600.00 | 90.00 | 269.89 | 8580.00 | 8164.20 | -316.61 | -8163.61 | 598241.21 | 656239.81 | N 32 38 38.61 | W 103 57 36.12 | 8169.75 | 267.78 | 0.00 |
| | 16700.00 | 90.00 | 269.89 | 8580.00 | 8264.20 | -316.81 | -8263.61 | 598241.02 | 656139.81 | N 32 38 38.61 | W 103 57 37.29 | 8269.68 | 267.80 | 0.00 |
| | 16800.00 | 90.00 | 269.89 | 8580.00 | 8364.20 | -317.00 | -8363.61 | 598240.82 | 656039.82 | N 32 38 38.61 | W 103 57 38.46 | 8369.62 | 267.83 | 0.00 |
| | 16900.00 | 90.00 | 269.89 | 8580.00 | 8464.20 | -317.20 | -8463.61 | 598240.62 | 655939.83 | N 32 38 38.61 | W 103 57 39.63 | 8469.55 | 267.85 | 0.00 |
| | 17000.00 | 90.00 | 269.89 | 8580.00 | 8564.20 | -317.40 | -8563.61 | 598240.43 | 655839.84 | N 32 38 38.62 | W 103 57 40.80 | 8569.49 | 267.88 | 0.00 |
| | 17100.00 | 90.00 | 269.89 | 8580.00 | 8664.20 | -317.59 | -8663.61 | 598240.23 | 655739.84 | N 32 38 38.62 | W 103 57 41.97 | 8669.43 | 267.90 | 0.00 |
| | 17200.00 | 90.00 | 269.89 | 8580.00 | 8764.20 | -317.79 | -8763.61 | 598240.04 | 655639.85 | N 32 38 38.62 | W 103 57 43.14 | 8769.37 | 267.92 | 0.00 |
| | 17300.00 | 90.00 | 269.89 | 8580.00 | 8864.20 | -317.99 | -8863.61 | 598239.84 | 655539.86 | N 32 38 38.62 | W 103 57 44.31 | 8869.31 | 267.95 | 0.00 |
| | 17400.00 | 90.00 | 269.89 | 8580.00 | 8964.20 | -318.18 | -8963.61 | 598239.64 | 655439.87 | N 32 38 38.62 | W 103 57 45.48 | 8969.25 | 267.97 | 0.00 |
| | 17500.00 | 90.00 | 269.89 | 8580.00 | 9064.20 | -318.38 | -9063.61 | 598239.45 | 655339.88 | N 32 38 38.62 | W 103 57 46.65 | 9069.20 | 267.99 | 0.00 |
| | 17600.00 | 90.00 | 269.89 | 8580.00 | 9164.20 | -318.57 | -9163.61 | 598239.25 | 655239.88 | N 32 38 38.62 | W 103 57 47.82 | 9169.14 | 268.01 | 0.00 |
| | 17700.00 | 90.00 | 269.89 | 8580.00 | 9264.20 | -318.77 | -9263.61 | 598239.05 | 655139.89 | N 32 38 38.63 | W 103 57 48.99 | 9269.09 | 268.03 | 0.00 |
| | 17800.00 | 90.00 | 269.89 | 8580.00 | 9364.20 | -318.97 | -9363.61 | 598238.86 | 655039.90 | N 32 38 38.63 | W 103 57 50.16 | 9369.04 | 268.05 | 0.00 |
| | 17900.00 | 90.00 | 269.89 | 8580.00 | 9464.20 | -319.16 | -9463.61 | 598238.66 | 654939.91 | N 32 38 38.63 | W 103 57 51.33 | 9468.99 | 268.07 | 0.00 |
| | 18000.00 | 90.00 | 269.89 | 8580.00 | 9564.20 | -319.36 | -9563.61 | 598238.46 | 654839.91 | N 32 38 38.63 | W 103 57 52.50 | 9568.94 | 268.09 | 0.00 |
| | 18100.00 | 90.00 | 269.89 | 8580.00 | 9664.20 | -319.56 | -9663.61 | 598238.27 | 654739.92 | N 32 38 38.63 | W 103 57 53.67 | 9668.89 | 268.11 | 0.00 |
| | 18200.00 | 90.00 | 269.89 | 8580.00 | 9764.20 | -319.76 | -9763.61 | 598238.07 | 654639.93 | N 32 38 38.63 | W 103 57 54.84 | 9768.84 | 268.12 | 0.00 |
| | 18300.00 | 90.00 | 269.89 | 8580.00 | 9864.20 | -319.95 | -9863.61 | 598237.87 | 654539.94 | N 32 38 38.64 | W 103 57 56.01 | 9868.80 | 268.14 | 0.00 |
| | 18400.00 | 90.00 | 269.89 | 8580.00 | 9964.20 | -320.15 | -9963.61 | 598237.67 | 654439.95 | N 32 38 38.64 | W 103 57 57.18 | 9968.75 | 268.16 | 0.00 |
| | 18500.00 | 90.00 | 269.89 | 8580.00 | 10064.20 | -320.35 | -10063.61 | 598237.48 | 654339.95 | N 32 38 38.64 | W 103 57 58.34 | 10068.70 | 268.18 | 0.00 |
| | 18600.00 | 90.00 | 269.89 | 8580.00 | 10164.20 | -320.54 | -10163.61 | 598237.28 | 654239.96 | N 32 38 38.64 | W 103 57 59.51 | 10168.66 | 268.19 | 0.00 |
| | 18700.00 | 90.00 | 269.89 | 8580.00 | 10264.20 | -320.74 | -10263.61 | 598237.08 | 654139.97 | N 32 38 38.64 | W 103 58 0.68 | 10268.62 | 268.21 | 0.00 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") | Closure (ft) | Closure Azimuth (°) | DLS (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 18800.00 | 90.00 | 269.89 | 8580.00 | 10364.20 | -320.94 | -10363.61 | 598236.89 | 654039.98 | N 32 38 38.64 | W 103 58 1.85 | 10368.57 | 268.23 | 0.00 |
| Cimarex Hackberry 23 Federal #2H PBHL | 18843.88 | 90.00 | 269.89 | 8580.00 | 10408.08 | -321.02 | -10407.49 | 598236.80 | 653996.10 | N 32 38 38.64 | W 103 58 2.37 | 10412.44 | 268.23 | 0.00 |

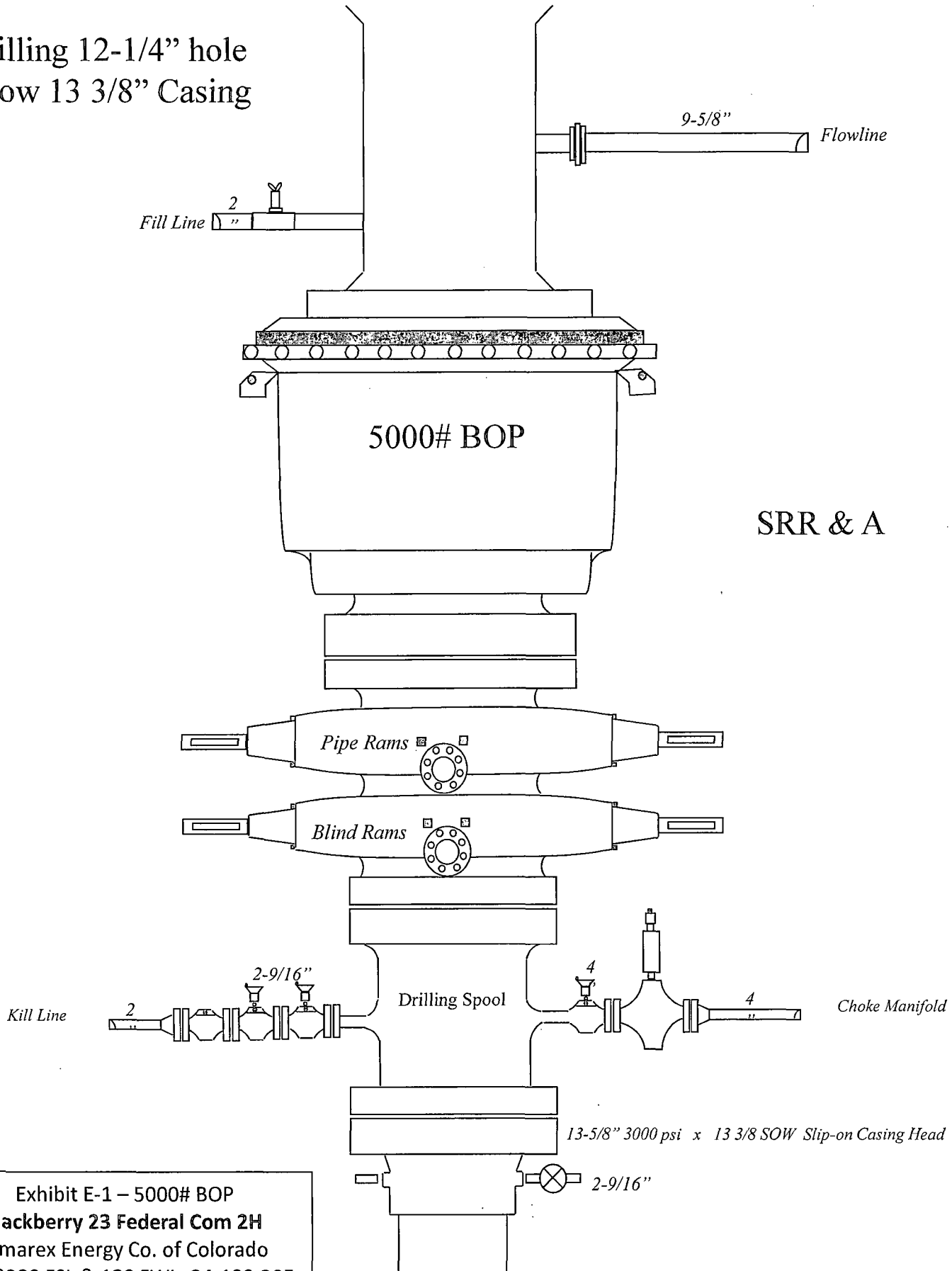
**Survey Type:** Non-Def Plan

**Survey Error Model:** ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

**Survey Program:**

| Description | MD From (ft) | MD To (ft) | EOU Freq (ft) | | Hole Size (in) | Casing Diameter (in) | Survey Tool Type | Borehole / Survey |
|---|---|---|---|---|---|---|---|---|
| | 0.000 | 18843.880 | | 1/100.000 | 30.000 | 30.000 | SLB_MWD-STD | Original Borehole / Cimarex Hackberry 23 Federal #2H Rev0 |

Drilling 12-1/4" hole
below 13 3/8" Casing




SRR & A

Exhibit E-1 – 5000# BOP
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

Drilling 8-3/4" hole
below 9 5/8" Casing

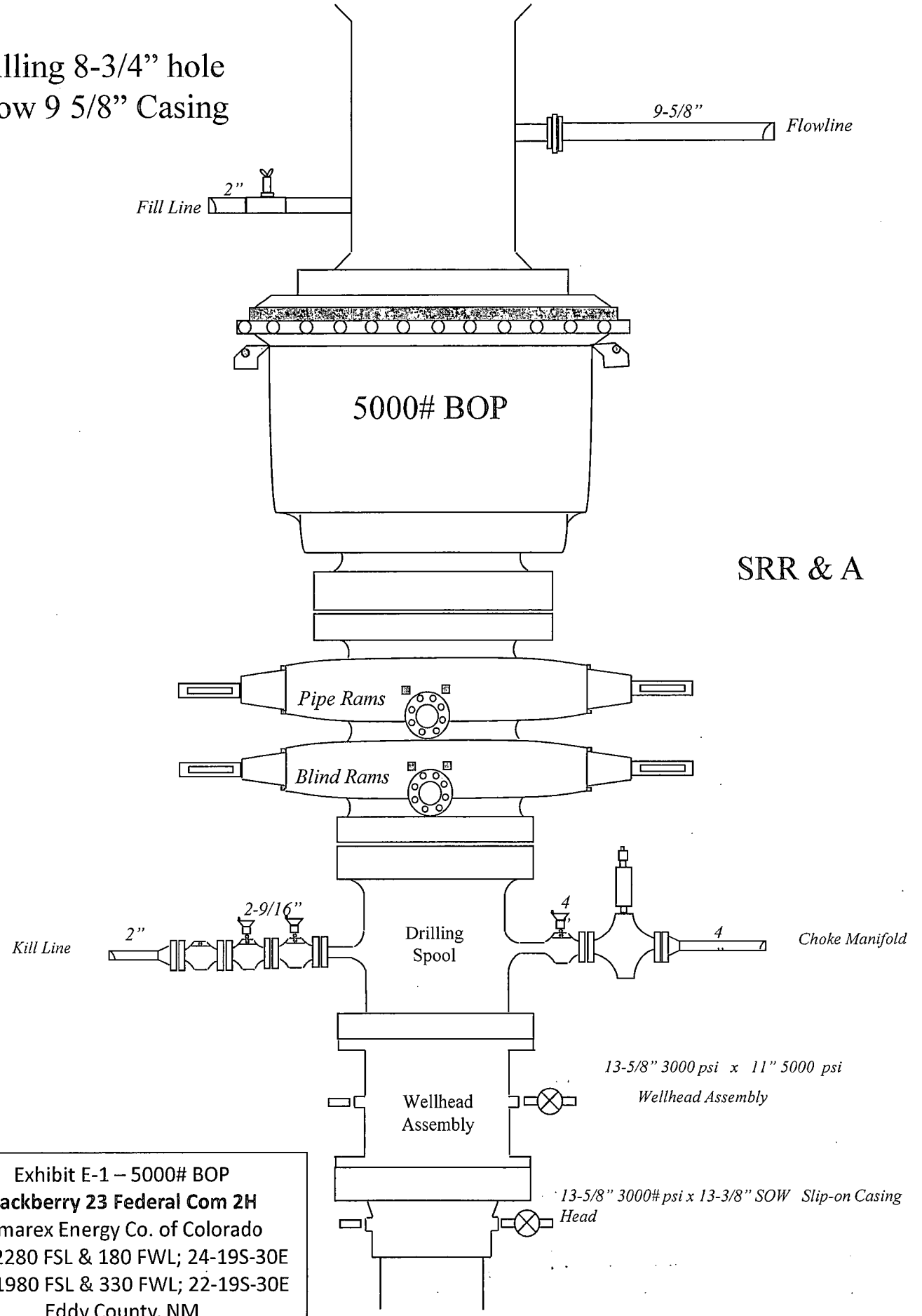



Exhibit E-1 – 5000# BOP
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

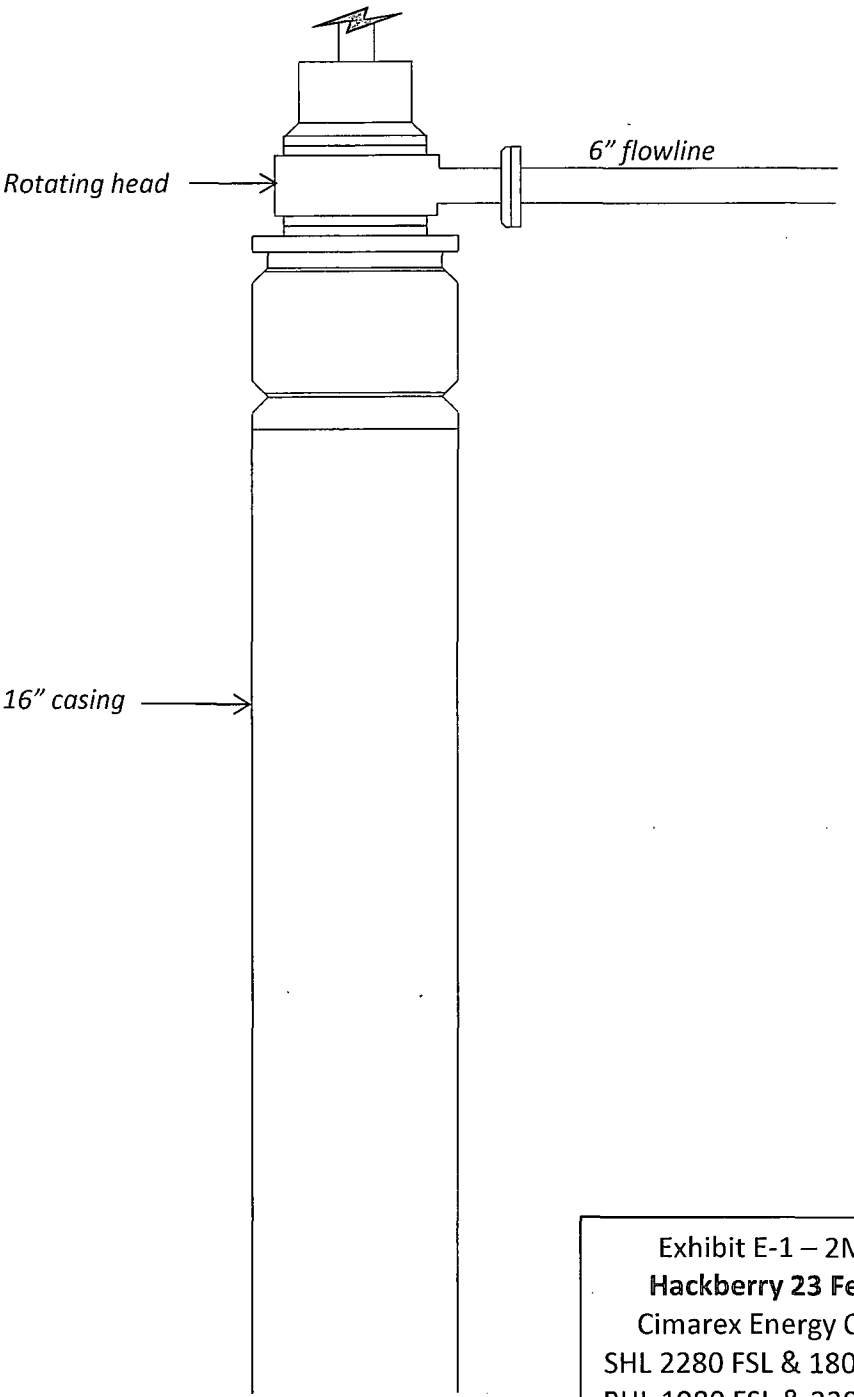



Exhibit E-1 – 2M BOP System
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

# Drilling Operations
# Choke Manifold
# 5M Service

Exhibit E-1 – Choke Manifold Diagram
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

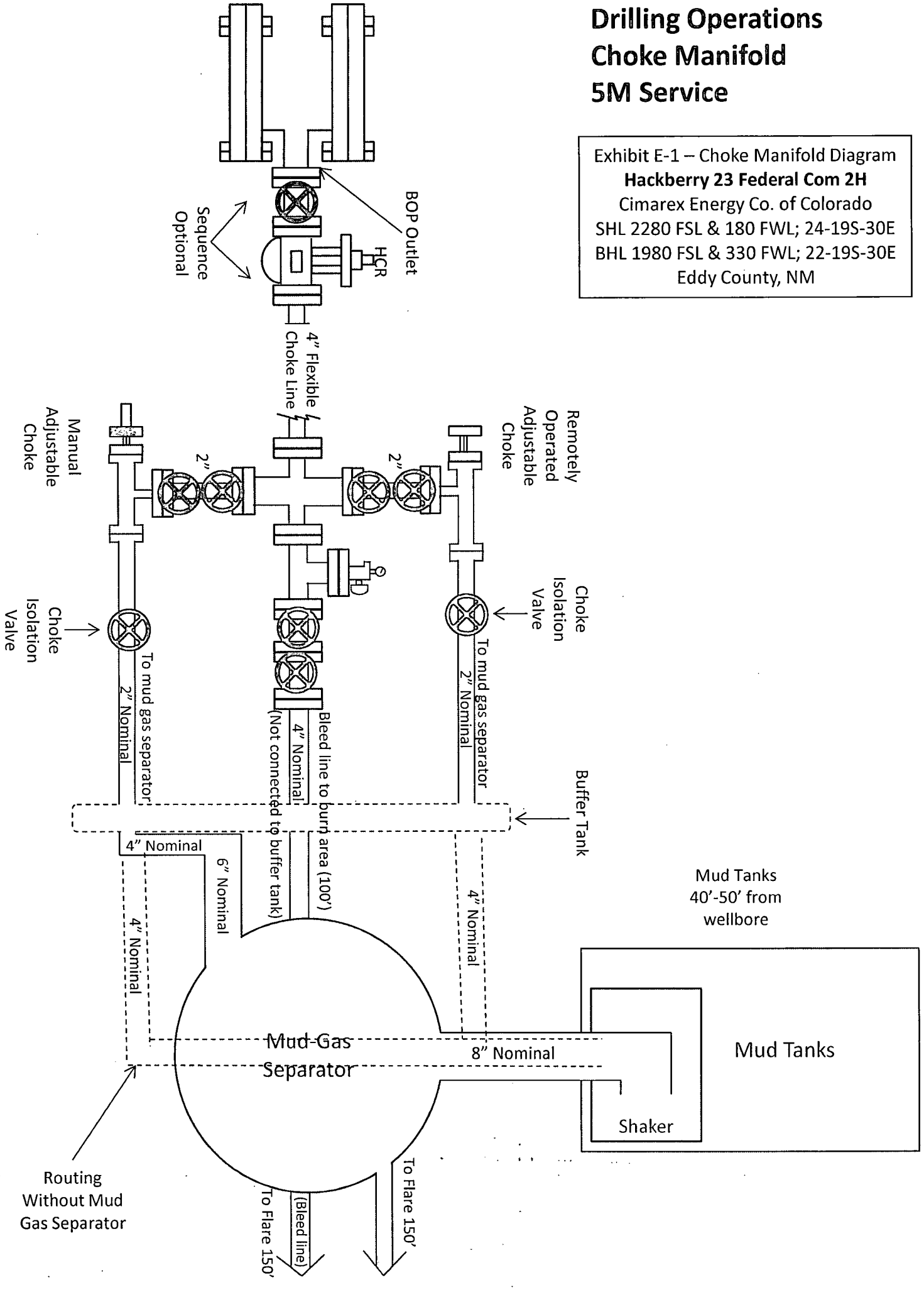


Exhibit F – Co-Flex Hose

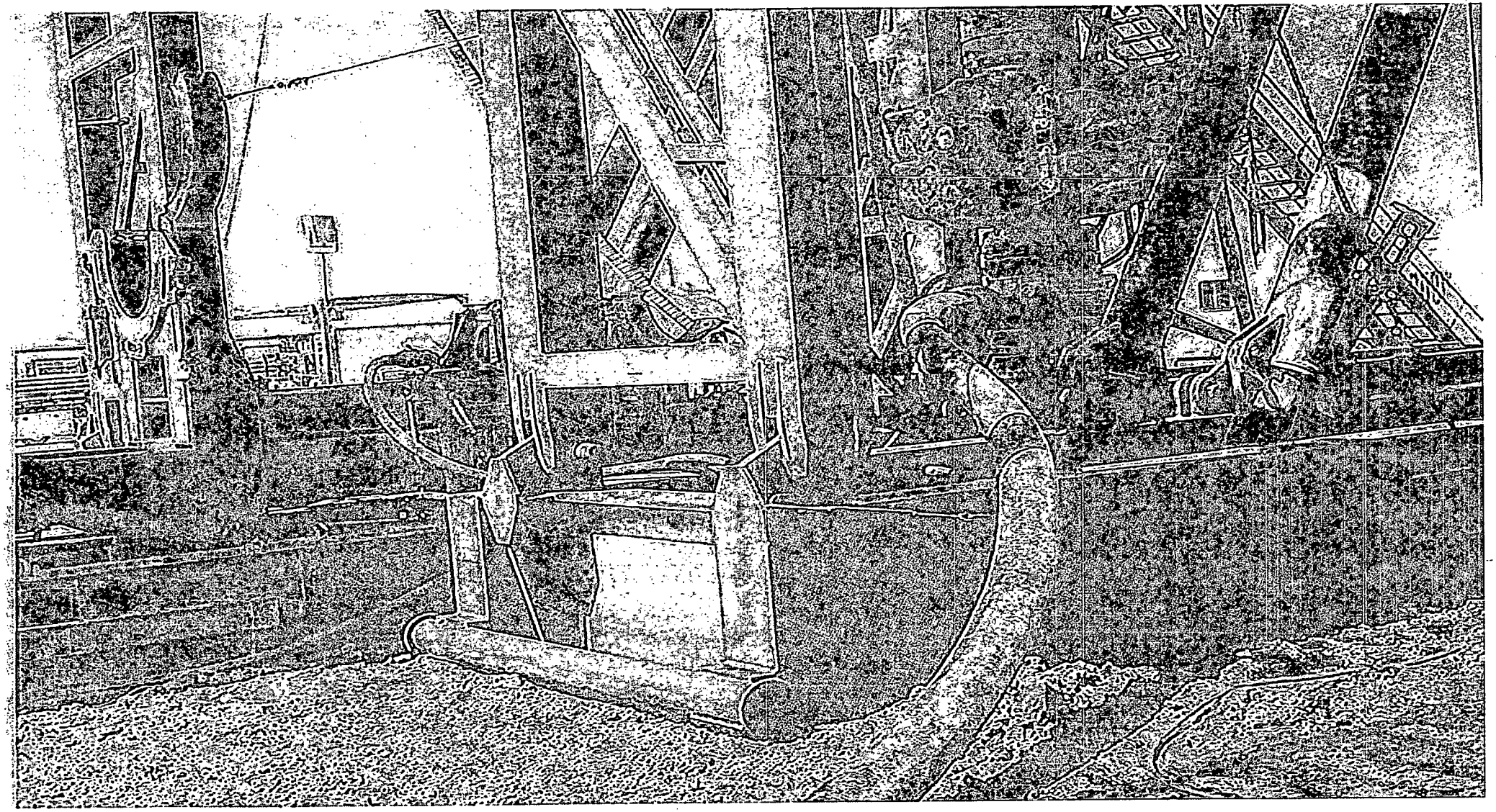
**Hackberry 23 Federal Com 2H**

Cimarex Energy Co. of Colorado

SHL 2280 FSL & 180 FWL; 24-19S-30E

BHL 1980 FSL & 330 FWL; 22-19S-30E

Eddy County, NM



Midwest Hose
& Specialty, Inc.

# INTERNAL HYDROSTATIC TEST REPORT

| Customer: | P.O. Number: |
|---|---|
| Oderco Inc | odyd-271 |

## HOSE SPECIFICATIONS

| Type: | Hose Length: |
|---|---|
| Stainless Steel Armor Choke & Kill Hose | 45'ft. |

| I.D. | O.D. |
|---|---|
| 4 INCHES | 9 INCHES |

| WORKING PRESSURE | TEST PRESSURE | BURST PRESSURE |
|---|---|---|
| 10,000 PSI | 15,000 PSI | 0 PSI |

## COUPLINGS

| Stem Part No. | Ferrule No. |
|---|---|
| OKC<br>OKC | OKC<br>OKC |
| **Type of Coupling:** | |
| Swage-It | |

## PROCEDURE

*Hose assembly pressure tested with water at ambient temperature.*

| TIME HELD AT TEST PRESSURE | ACTUAL BURST PRESSURE: |
|---|---|
| 15 MIN. | 0 PSI |

| Hose Assembly Serial Number: | Hose Serial Number: |
|---|---|
| 79793 | OKC |

**Comments:**

| Date: | Tested: | Approved: |
|---|---|---|
| 3/8/2011 | A. Jaime Sosa | |

Exhibit F-1 – Co-Flex Hose Hydrostatic Test
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

Exhibit F-1 – Co-Flex Hose Hydrostatic Test
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

Midwest Hose & Specialty, Inc.

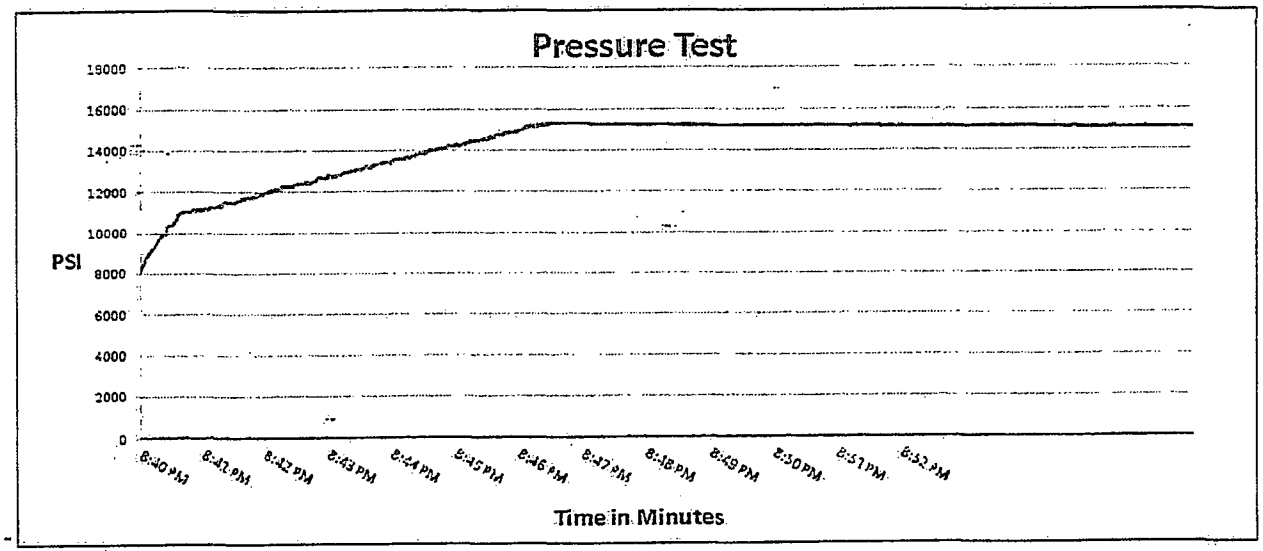
# Internal Hydrostatic Test Graph

March 3, 2011

**Customer:** Houston

**Pick Ticket #:** 94260

| Hose Specifications | | Verification | |
|---|---|---|---|
| Hose Type: C&K | Length: 45' | Type of Fitting: 41/16 10K | Coupling Method: Swage |
| I.D.: 4" | O.D.: 6.09" | Die Size: 6.30" | Final O.D.: 6.25" |
| Working Pressure: 10000 PSI | Burst Pressure: Standard Safety Multiplier Applies | Hose Serial #: 5544 | Hose Assembly Serial #: 79793 |




| Test Pressure | Time Held at Test Pressure | Actual Burst Pressure | Peak Pressure |
|---|---|---|---|
| 15000 PSI | 11 Minutes | | 15483 PSI |

**Comments:** Hose assembly pressure tested with water at ambient temperature.

**Tested By:** *Zac Mcconnell*

**Approved By:** *Kim Thomas*

Exhibit F-2 – Co-Flex Hose
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

Midwest Hose & Specialty, Inc.

## Certificate of Conformity

| Customer: | PO |
|---|---|
| DEM | ODYD-271 |

**SPECIFICATIONS**

| Sales Order | Dated: |
|---|---|
| 79793 | 3/8/2011 |

We hereby cerify that the material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards

Supplier:
Midwest Hose & Specialty, Inc.
10640 Tanner Road
Houston, Texas 77041

**Comments:**

| Approved: | Date: |
|---|---|
| | 3/8/2011 |

Midwest Hose & Specialty, Inc.

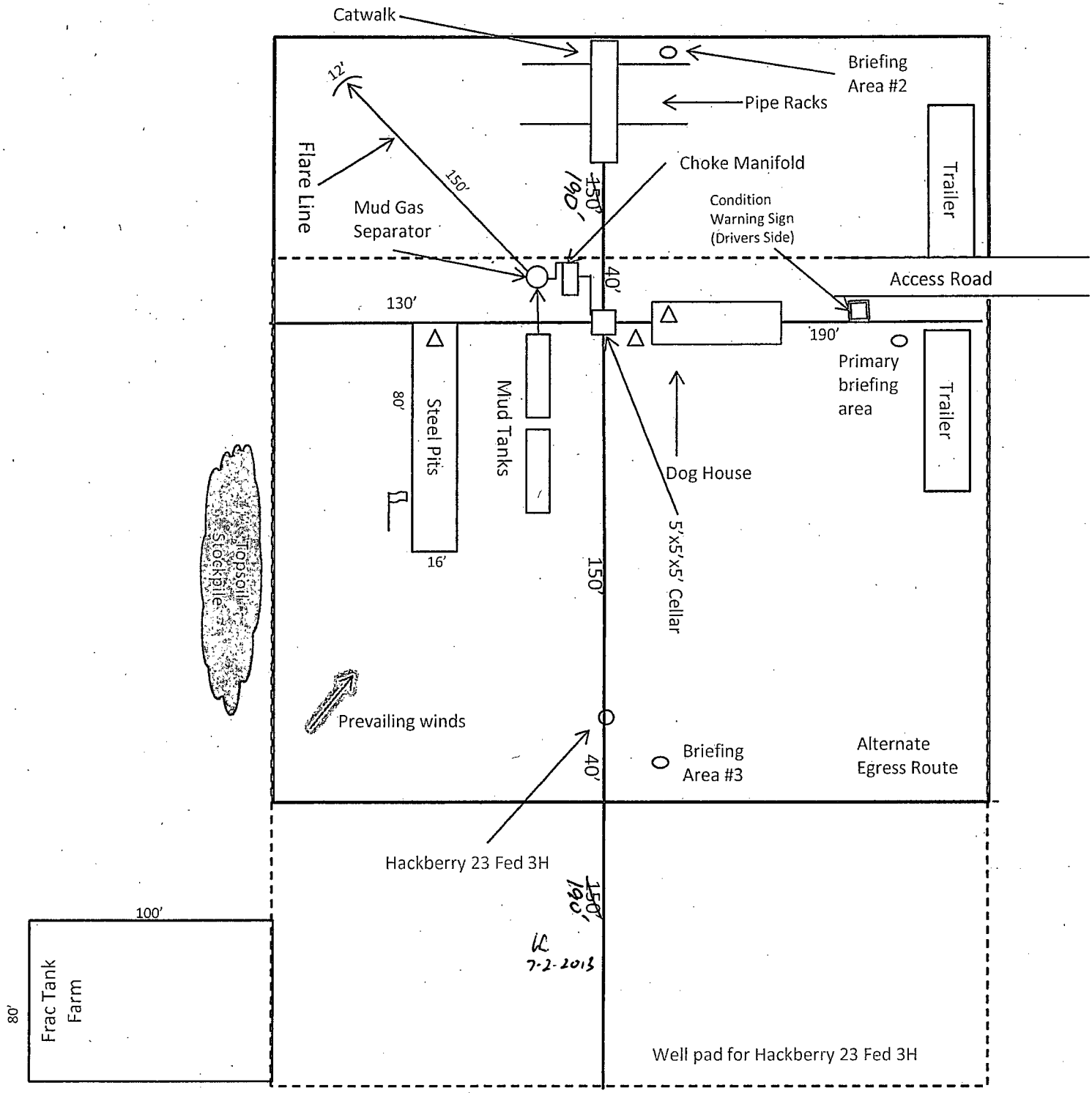
Exhibit F -3– Co-Flex Hose
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

# Specification Sheet
# Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium componets.The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

| | |
|---|---|
| **Working Pressure:** | 5,000 or 10,000 psi working pressure |
| **Test Pressure:** | 10,000 or 15,000 psi test pressure |
| **Reinforcement:** | Multiple steel cables |
| **Cover:** | Stainless Steel Armor |
| **Inner Tube:** | Petroleum resistant, Abrasion resistant |
| **End Fitting:** | API flanges, API male threads, threaded or butt weld hammer unions, unibolt and other special connections |
| **Maximum Length:** | 110 Feet |
| **ID:** | 2-1/2", 3", 3-1/2", 4" |
| **Operating Temperature:** | -22 deg F to +180 deg F (-30 deg C to +82 deg C) |

P.O. Box 96558 – 1421 S.E. 29th St. Oklahoma City, OK 73143 * (405) 670-6718 * Fax: (405) 670-6816




Wind Direction Indicators (wind sock or streamers)

• H2S Monitors (alarms at bell nipple and shale shaker)

Briefing Areas

N

Exhibit D – Rig Diagram
**Hackberry 23 Federal 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

Hydrogen Sulfide Drilling Operations Plan
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
UL: L - Sec 24-19S-30E
Eddy County, NM

1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:
   A. Characteristics of $H_2S$
   B. Physical effects and hazards
   C. Principal and operation of H2S detectors, warning system and briefing areas.
   D. Evacuation procedure, routes and first aid.
   E. Proper use of safety equipment & life support systems
   F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

2 $H_2S$ Detection and Alarm Systems:
   A. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may play placed as deemed necessary.
   B. An audio alarm system will be installed on the derrick floor and in the top doghouse.

3 Windsock and/or wind streamers:
   A. Windsock at mudpit area should be high enough to be visible.
   B. Windsock on the rig floor and / or top doghouse should be high enough to be visible.

4 Condition Flags and Signs
   A. Warning sign on access road to location.
   B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger ($H_2S$ present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

5 Well control equipment:
   A. See exhibit "E-1"

6 Communication:
   A. While working under masks chalkboards will be used for communication.
   B. Hand signals will be used where chalk board is inappropriate.
   C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

7 Drillstem Testing:
No DSTs or cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects $H_2S$ has on tubular goods and other mechanical equipment.

9 If $H_2S$ is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas seperator will be brought into service along with $H_2S$ scavengers if necessary.

$H_2S$ Contingency Plan
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
*UL: L - Sec 24-19S-30E*
Eddy County, NM

**Emergency Procedures**

In the event of a release of gas containing $H_2S$, the first responder(s) must:

« Isolate the area and prevent entry by other persons into the 100 ppm ROE.
« Evacuate any public places encompassed by the 100 ppm ROE.
« Be equipped with $H_2S$ monitors and air packs in order to control the release.
« Use the "buddy system" to ensure no injuries occur during the response.
« Take precautions to avoid personal injury during this operation.
« Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
« Have received training in the:
  - Detection of $H_2S$, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide ($SO_2$). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**Characteristics of $H_2S$ and $SO_2$**

| Common Name | Chemical Formula | Specific Gravity | Threshold Limit | Hazardous Limit | Lethal Concentration |
|---|---|---|---|---|---|
| Hydrogen Sulfide | $H_2S$ | 1.189 Air=1 | 10 ppm | 100 ppm/hr | 600 ppm |
| Sulfur Dioxide | $SO_2$ | 2.21 Air=1 | 2 ppm | N/A | 1000 ppm |

**Contacting Authorities**

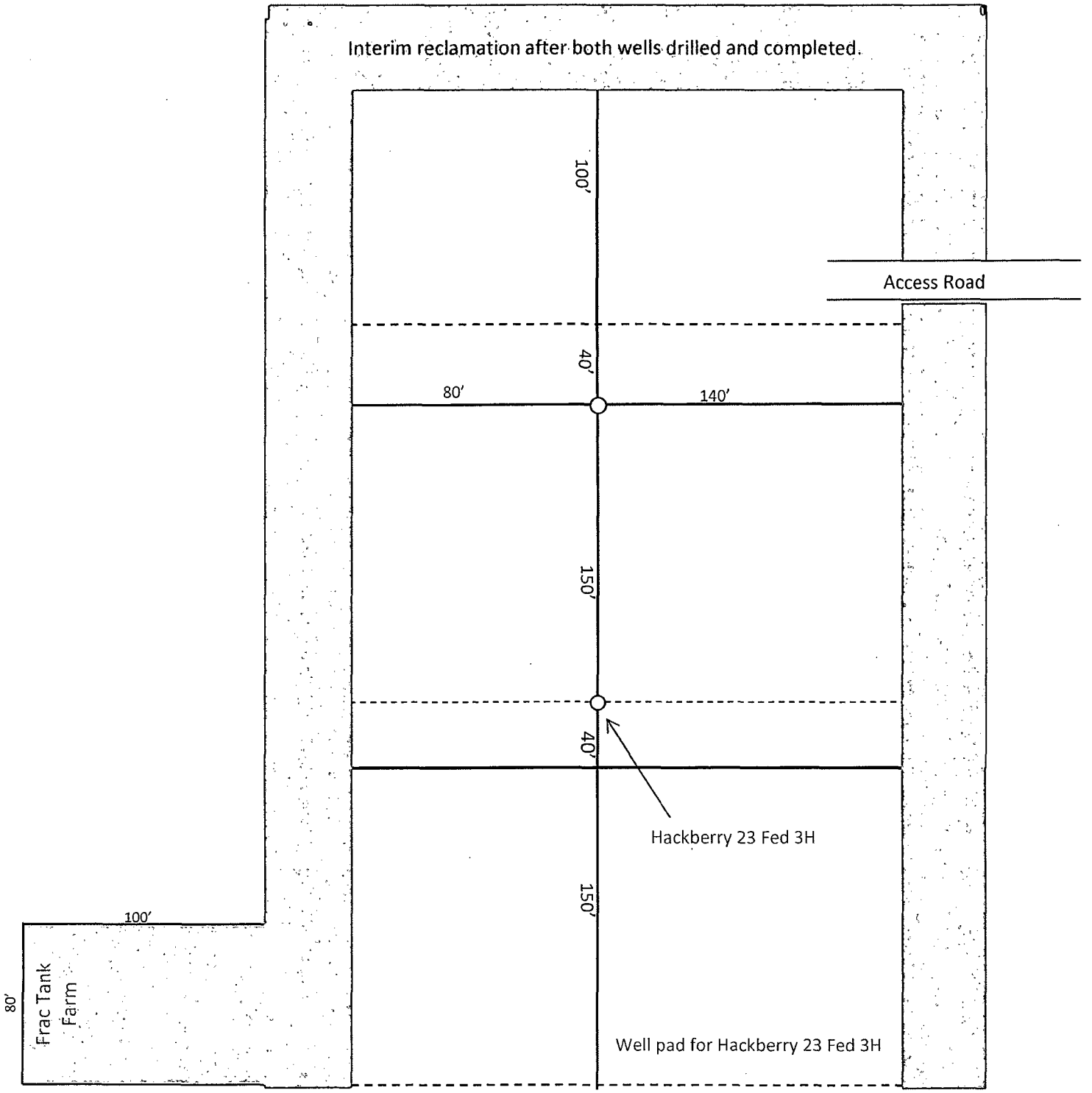
Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

$H_2S$ Contingency Plan Emergency Contacts
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
UL: L - Sec 24-19S-30E
Eddy County, NM

| **Company Office** | | | |
|---|---|---|---|
| Cimarex Energy Co. of Colorado | | 800-969-4789 | |
| Co. Office and After-Hours Menu | | | |

| **Key Personnel** | | | |
|---|---|---|---|
| **Name** | **Title** | **Office** | **Mobile** |
| Larry Seigrist | Drilling Manager | 432-620-1934 | 580-243-8485 |
| Doug McQuitty | Drilling Superintendent | 432-620-1933 | 806-640-2605 |
| Scott Lucas | Drilling Superintendent | 432-620-1989 | 432-894-5572 |
| Conner Cromeens | Construction Foreman | | 432-270-0313 |
| Roy Shirley | Construction Superintendent | | 432-634-2136 |

| **Artesia** | | | |
|---|---|---|---|
| Ambulance | | 911 | |
| State Police | | 575-746-2703 | |
| City Police | | 575-746-2703 | |
| Sheriff's Office | | 575-746-9888 | |
| **Fire Department** | | **575-746-2701** | |
| Local Emergency Planning Committee | | 575-746-2122 | |
| New Mexico Oil Conservation Division | | 575-748-1283 | |
| | | | |
| **Carlsbad** | | | |
| Ambulance | | 911 | |
| State Police | | 575-885-3137 | |
| City Police | | 575-885-2111 | |
| Sheriff's Office | | 575-887-7551 | |
| **Fire Department** | | **575-887-3798** | |
| Local Emergency Planning Committee | | 575-887-6544 | |
| US Bureau of Land Management | | 575-887-6544 | |
| | | | |
| **Santa Fe** | | | |
| New Mexico Emergency Response Commission (Santa Fe) | | 505-476-9600 | |
| New Mexico Emergency Response Commission (Santa Fe) 24 Hrs | | 505-827-9126 | |
| New Mexico State Emergency Operations Center | | 505-476-9635 | |
| | | | |
| **National** | | | |
| National Emergency Response Center (Washington, D.C.) | | 800-424-8802 | |
| | | | |
| **Medical** | | | |
| Flight for Life - 4000 24th St.; Lubbock, TX | | 806-743-9911 | |
| Aerocare - R3, Box 49F; Lubbock, TX | | 806-747-8923 | |
| Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM | | 505-842-4433 | |
| SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM | | 505-842-4949 | |
| | | | |
| **Other** | | | |
| Boots & Coots IWC | | 800-256-9688 | or 281-931-8884 |
| Cudd Pressure Control | | 432-699-0139 | or 432-563-3356 |
| Halliburton | | 575-746-2757 | |
| B.J. Services | | 575-746-3569 | |




Wind Direction Indicators (wind sock or streamers)

• H2S Monitors (alarms at bell nipple and shale shaker)

Briefing Areas

N

Exhibit D-1 - Interim Reclamation Diagram
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
SHL 2280 FSL & 180 FWL; 24-19S-30E
BHL 1980 FSL & 330 FWL; 22-19S-30E
Eddy County, NM

Surface Use Plan
**Hackberry 23 Federal Com 2H**
Cimarex Energy Co. of Colorado
UL: L - Sec 24-19S-30E
Eddy County, NM

1. **Existing Roads:** Area maps: Exhibit "B" is a reproduction of Eddy Co. General Highway Map. Exhibit "C" is a reproduction of a USGS Topographic Map, and Exhibit "C-1" is a well site layout map, showing proposed road to location and existing road. Existing road shown on Exhibits "C," C"-1," will be maintained in a condition equal to or better than current conditions.

   A. The maximum width of the driving surface will be 15.' The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.
   B. From the junction of Hwy 360 and Shugart Road, go east on Shugart Road for 1.7 miles to lease road. On lease road go north and east 2.6 miles to proposed lease road.

2. **Planned Access Roads:** No new access road planned.

3. **Planned Electric Line:** No E-lines planned. Sundry will be submitted once route is determined.

4. Location of Existing Wells in a One-Mile Radius - Exhibit A
   A. Water wells - None known
   B. Disposal wells - None known
   C. Drilling wells - None known
   D. Producing wells - As shown on Exhibits "A"
   E. Abandoned wells - As shown on Exhibits "A"

5. Location of Proposed Production Facilities:
   If on completion this well is a producer, a tank battery will be used and the necessary production equipment will be installed at the Hackberry 23 Federal Com 1H battery. Cimarex Energy proposed to install two 4 inch buried HP polylines down existing lease road to the Hackberry 23 Federal Com 1H battery.
   Specifications of Polyline: 1 HP polyline for oil, gas, and water production. 1 HP polyline for gas lift.
   Length: 1410'
   MAOP: 1500 psi. Anticipated working pressure: 200-300 psi.
   Allocation will be based on well test. Route is within lease boundaries, please see Exhibit G. Any changes to flowline route will be submitted via sundry notice.

5. Location and Type of Water Supply:
   Water will be purchased locally from a commercial source and trucked over the access roads.

6. Source of Construction Material:
   If possible, native caliche will be obtained from the excavation of drill site. Topsoil will be pushed back from the drill site and existing caliche will be ripped and compacted. Then topsoil will be stockpiled on location as depicted on Exhibit "D" (rig layout). If additional material is needed, it will be purchased from a BLM-approved pit as near as possible to the well location.

7. **Ancillary Facilities:**
   A. No camps or airstrips to be constructed.

8. **Well Site Layout:**
   A. Exhibit "D" shows location and rig layout.
   B. Mud pits in the closed circulation system will be steel pits and the cuttings will be stored in steel containment pits.
   C. Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.
   D. If the well is a producer, those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements.

9. **Plans for Restoration of Surface:**
   Rehabilitation of the location will start in a timely manner after all drilling operations cease. The type of reclamation will depend on whether the well is a producer or a dry hole.

   Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the spoil pile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards.

   If the well is a dry hole, the pad and road area will be recountoured to match the existing terrain. Topsoil will be spread to the extent possible. Revegetation will comply with BLM standards.

   Should the well be producer, those areas of the location not essential to porduction facilities and operations will be reclaimed and seeded per BLM requirements. Please see Production Facilities Layout Diagram, exhibit D-1

10 **Other Information**
   A. Topography consists of a sloping plane with loose tan sands. Vegetation is mainly yucca, mesquite and shin oak.
   B. The wellsite is on surface owned by Department of the Interior, Bureau of Land Management. The land is used mainly for farming, cattle ranching, recreational use, and oil and gas production.
   C. In lieu of an archaeological survey report, Cimarex will be submitting an MOA application for this well pad and access road since they are within the MOA boundary.
   D. There are no known dwellings within 1½ miles of this location.

11. **On Site Notes and Information:**
   On August 30, 2013, A BLM onsite meeting was held with Barry Hunt, Cimarex representative, John Fast with the BLM, and Basin Surveys. The permitted location was approved. Sharing pad with the Hackberry 23 Federal 3H (150' apart). Moved location 510 ft. east and 300 ft. north due to drainages and floodplain issues. V-Door North. Top soil west. Interim reclamation: North, west, east. Berm all sides. Access road adjacent to existing lease road to the east.

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **Cimarex Energy Co. of Colorado** |
| **LEASE NO.:** | **NMNM-0554773** |
| **WELL NAME & NO.:** | **Hackberry 23 Federal Com 2H** |
| **SURFACE HOLE FOOTAGE:** | **2280' FSL & 0180' FWL** |
| **BOTTOM HOLE FOOTAGE** | **1980' FSL & 0330' FWL Sec. 22, T. 19 S., R 30 E.** |
| **LOCATION:** | **Section 24, T. 19 S., R 30 E., NMPM** |
| **COUNTY:** | **Eddy County, New Mexico** |

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

## I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

# V. SPECIAL REQUIREMENT(S)

**SPECIAL RECREATION MANAGEMENT AREA – Hackberry Lake OHV Area**
The project is located in the Hackberry Lake Special Recreation Management Area within 135 feet of existing off-highway vehicle trails. Pipelines shall be buried a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. Power poles and associated ground structures (poles, guy wires) will not be placed within 20 feet of recreation trails. Guy wires must be equipped with a sleeve, tape or other industry approved apparatus that is highly visible during the day and reflective at night. Appropriate safety signage will be in place during all phases of the project. Upon completion of construction, the road shall be returned to pre-construction condition with no bumps or dips. All vehicle and equipment operators will observe speed limits and practice responsible defensive driving habits.

**Communitization Agreement**
A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.

# VI. CONSTRUCTION

## A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

## B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

## C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

## D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

## E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## F. EXCLOSURE FENCING (CELLARS & PITS)

**Exclosure Fencing**
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## G. ON LEASE ACCESS ROADS

**Road Width**
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

**Surfacing**
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

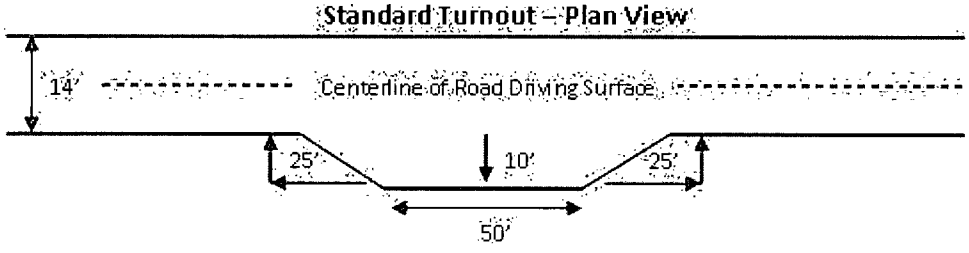
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

**Crowning**
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**

Ditching shall be required on both sides of the road.

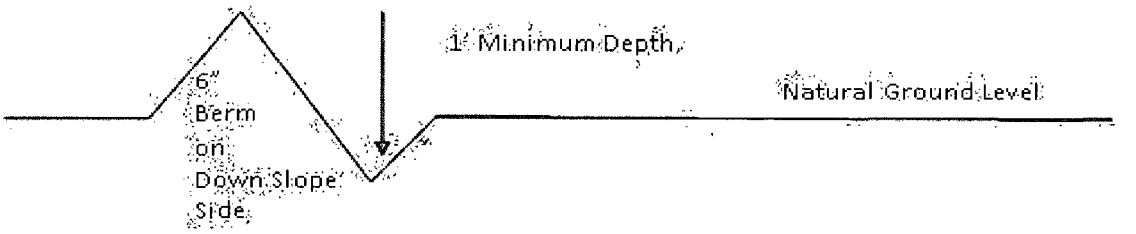
**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:




**Drainage**
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

**Cross Section of a Typical Lead-off Ditch**




All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

**Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

**Culvert Installations**
Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

**Cattleguards**
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

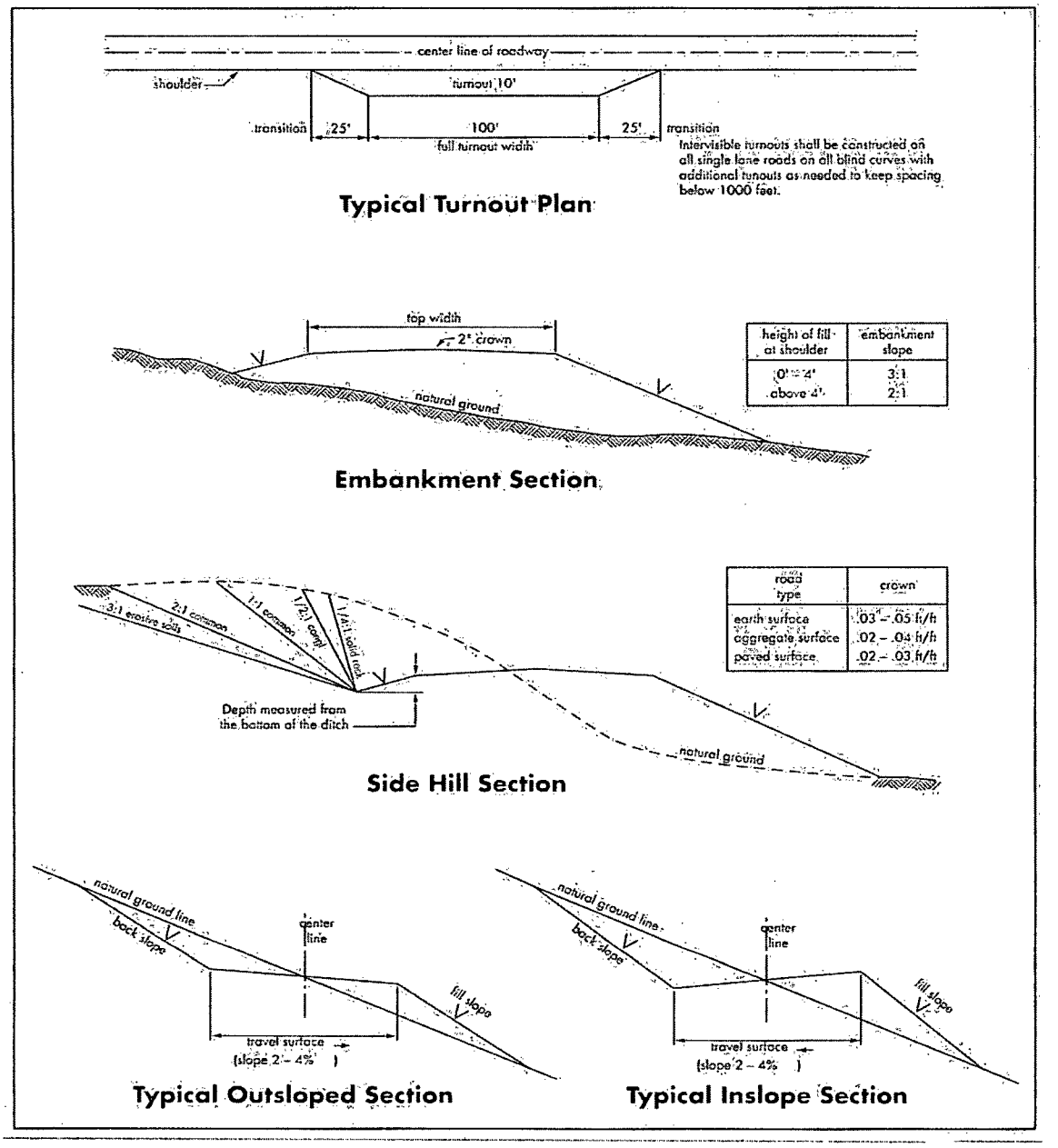
**Fence Requirement**

Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

**Public Access**
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

## Figure 1 – Cross Sections and Plans For Typical Road Sections



# VII. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

## B. CASING

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Capitan Reef**
**R-111-P-Potash**
**Possibility of water in the Artesia Group, Salado, and Delaware.**
**Possibility of lost circulation in the Artesia Group, Rustler, Capitan Reef, and Delaware.**

1. The **16** inch surface casing shall be set at approximately **325** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    **b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**1st Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.**

2. The minimum required fill of cement behind the **11-3/4** inch 1st intermediate casing, which shall be set at approximately **1930** feet, is:

   ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.**

3. The minimum required fill of cement behind the **8-5/8** inch 2nd intermediate casing, which shall be set at approximately **3600** feet, is:

**Operator has proposed DV tool between 1800'-1900', but with the change in casing depth this is no longer acceptable. DV tool shall be at least 50' below previous casing shoe. Operator shall adjust cement proportionately according to the depth change. Operator is to submit sundry if DV tool depth varies by more than 100' from approved depth.**

   a. First stage to DV tool:

   ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

   b. Second stage above DV tool:

   ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Capitan Reef and potash. Excess calculates to 6% - Additional cement may be required.**

**Formation below the 8-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.**

**Centralizers approved as written.**

4. The minimum required fill of cement behind the **5-1/2** inch production casing is:

   ☒ Cement should tie-back at least **50 feet above the Capitan Reef** (Top of Capitan Reef estimated at 2548'). Operator shall provide method of verification.

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

6. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

## C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **A variance is granted for the use of a diverter on the 16" surface casing.**

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

5. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **11-3/4** 1st intermediate casing shoe shall be **3000 (3M)** psi (**Installing 5M testing to 3,000 psi**).

6. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **8-5/8** 2nd intermediate casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

7. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.

b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock with a corresponding chart (i.e. two hour clock-two hour chart, one hour clock-one hour chart).

d. The results of the test shall be reported to the appropriate BLM office.

e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

## D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

## E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**JAM 012414**

# VIII. PRODUCTION (POST DRILLING)

## A. WELL STRUCTURES & FACILITIES

**Placement of Production Facilities**
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

**Exclosure Netting (Open-top Tanks)**
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

**Chemical and Fuel Secondary Containment and Exclosure Screening**
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

**Open-Vent Exhaust Stack Exclosures**
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

**Containment Structures**
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

**Painting Requirement**
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

## B. PIPELINES

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

| | |
|---|---|
| (X) seed mixture 1 | ( ) seed mixture 3 |
| ( ) seed mixture 2 | ( ) seed mixture 4 |
| ( ) seed mixture 2/LPC | ( ) Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

### C. ELECTRIC LINES (not applied for in APD)

## IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Seed Mixture 1, for Loamy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

| Species | lb/acre |
|---|---|
| Plains lovegrass (Eragrostis intermedia) | 0.5 |
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |
| Sideoats grama (Bouteloua curtipendula) | 5.0 |
| Plains bristlegrass (Setaria macrostachya) | 2.0 |

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed