**OCD-ARTESIA**

**R-111-POTASH**

Form 3160-3
(April 2004)

WIPP

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

# APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No. SH NM 89852
~~NM02952, See box six~~ BHL NMO2952A

6 If Indian, Allotee or Tribe Name
**Lease info on first pg of 8pt DP.**

1a. Type of work: ☑ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No
**James Ranch NMNM 70965X**

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

8 Lease Name and Well No.
**James Ranch Unit #140H** [38607]

2 Name of Operator
**BOPCO, L. P.** 260737

9 API Well No
30-015- 39809

3a. Address **P. O. Box 2760**
**Midland, TX 79702**

3b. Phone No. *(include area code)*
**432-683-2277**

10. Field and Pool, or E. ratory
**Quahada Ridge (Delaware)** SEC [50420] 450443

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface **NWSE, UL F, 2619' FNL, 1980' FWL, Lat:N32.363058,Long:W103.836019**
At proposed prod. zone **1980' FNL, 330' FWL, Sec 27,T22S,R30E,Lat:N32.364894,Lg:W103.876031**

11. Sec., T. R. M. or Blk. and Survey or Area
**Sec 25, T22S, R30E Mer NMP**

14 Distance in miles and direction from nearest town or post office*
**20 miles southeast of Malaga**

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) | 16. No. of acres in lease | 17 Spacing Unit dedicated to this well |
|---|---|---|
| **1980'** | **7683.46** | **400** |
| 18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft | 19. Proposed Depth | 20 BLM/BIA Bond No. on file |
| **254'** | **19,611' MD, 7,324' TVD** | **COB 000050** |
| 21 Elevations (Show whether DF, KDB, RT, GL, etc.) | 22. Approximate date work will start* | 23 Estimated duration |
| **3,345' GL** | **03/03/2012** | **30 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 |
|---|---|---|
| Jeremy Braden | **Jeremy Braden** | 10-11-11 |
| Title **Engineering Assistant** | | |

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| /S/ Timothy M. Murphy | /S/ Timothy M. Murphy | DEC 13 2011 |
| Title ACTING **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 C Section 1001 and Title 43 U S C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

**(Instructions on page 2)*

**CARLSBAD CONTROLLED WATER BASIN**

RECEIVED
DEC 21 2011
NMOCD ARTESIA

**APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED**

**SEE ATTACHED FOR CONDITIONS OF APPROVAL**

**BOPCO, L.P.**

P. O. Box 2760
Midland, Texas 79702

432-683-2277 FAX-432-687-0329

September 27, 2011

Bureau of Land Management
Carlsbad Field Office
620 East Green Street
Carlsbad, New Mexico 88220-6292

Attn: Mr. Don Peterson – Assistant Field Manager, Minerals

RE: APPLICATION FOR PERMIT TO DRILL
JAMES RANCH UNIT 140H
2619' FNL, 1980' FWL, SEC. 25, T22S, R30E, EDDY COUNTY, NM

Dear Mr. Peterson,

In reference to the above captioned well, I hereby certify that I, or persons under my direct supervision have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in the attached eight point drilling plan and multi-use surface plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by BOPCO, L.P. and it's contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

If you have any questions regarding the accuracy of the plan provided herein, please do not hesitate to contact me at (432) 683-2277.

Sincerely,

Stephen M. Martinez
Division Drilling Superintendent

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

# OIL CONSERVATION DIVISION

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

Form C-102
Revised July 16, 2010

Submit one copy to appropriate District Office

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | Pool Code | Pool Name |
|---|---|---|
| 30-015-39809 | 50470 50445 | Quahada Ridge E (Delaware) SE |

| Property Code | Property Name | Well Number |
|---|---|---|
| 306407 | JAMES RANCH UNIT | 140H |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 260737 | BOPCO, L.P. | 3345' |

### Surface Location

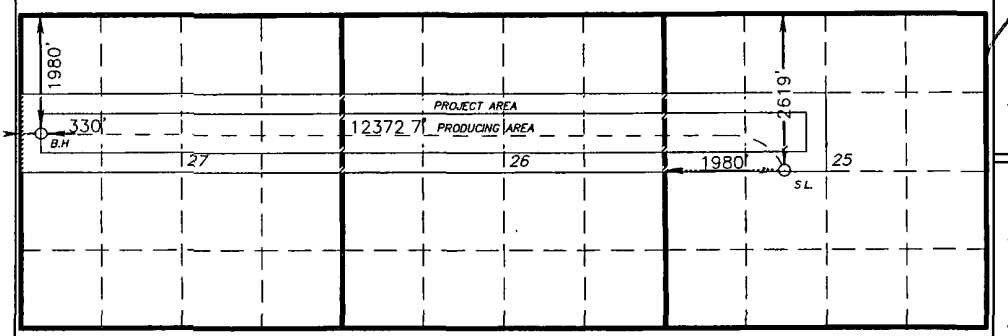
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| F | 25 | 22 S | 30 E | | 2619 | NORTH | 1980 | WEST | EDDY |

### 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 |
|---|---|---|---|---|---|---|---|---|---|
| E | 27 | 22 S | 30 E | | 1980 | NORTH | 330 | WEST | EDDY |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 400 | | | |

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°21'53.62"
Long – W 103°52'33.71"
NMSPCE– N 496765.378
E 641197.420
(NAD-27)

SURFACE LOCATION
DELAWARE PP
Lat – N 32°21'47.01"
Long – W 103°50'09.67"
NMSPCE– N 496152.802
E 653554.999
(NAD-27)

SCALE 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.*

Jeremy Braden 10-11-11
Signature Date

Jeremy Braden
Printed Name

jdbraden@forl.net
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 8, 2011
Date Surveyed

Signature & Seal of Professional Surveyor

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate No. Gary L. Jones 7977

BASIN SURVEYS 25273

# EIGHT POINT DRILLING PROGRAM
# BOPCO, L.P.

**NAME OF WELL: James Ranch Unit 140H**
LEGAL DESCRIPTION - SURFACE: 2619' FNL, 1980' FWL, Section 25, T22S, R30E, Eddy County, NM.
BHL: 1980' FNL, 330' FWL, Section 27, T22S, R30E, Eddy County, New Mexico.

**POINT 1: ESTIMATED FORMATION TOPS**(See No. 2 Below)

**POINT 2: WATER, OIL, GAS AND/OR MINERAL BEARING FORMATIONS**

Anticipated Formation Tops: KB 3367' (estimated)
GL 3345'

| FORMATION | ESTIMATED TOP FROM KB TVD | MD | ESTIMATED SUB-SEA TOP | BEARING |
|---|---|---|---|---|
| T/Fresh Water | 155' | 155' | + 3,210' | Fresh Water |
| T/Rustler | 370' | 370' | + 2,997' | Barren |
| T/Salt | 763' | 763' | + 2,604' | Barren |
| B/Salt | 3,570' | 3,570' | - 203' | Barren |
| T/Lamar | 3,814' | 3,814' | - 447' | Barren |
| T/Ramsey | 3,850' | 3,850' | - 483' | Oil/Gas |
| T/Lower Cherry Canyon | 6,004' | 6,004' | - 2,637' | Oil/Gas |
| KOP | 6,887' | 6,887' | - 3,520' | Oil/Gas |
| LBC Lo "U" | 7,300' | 7,386' | - 3.933' | Oil/Gas |
| EOC | 7,364' | 7,637' | - 3,997' | Oil/Gas |
| Target #1 | 7,364' | 9,578' | - 3,997' | Oil/Gas |
| TD Horizontal Hole | 7,324' | 19,611' | - 3,957' | Oil/Gas |

**POINT 3: CASING PROGRAM**

| TYPE | INTERVALS (MD) | Hole Size | PURPOSE | CONDITION |
|---|---|---|---|---|
| 20" | 0'- 60' | 24" | Conductor | Contractor Discretion |
| 13-3/8", 48#, H-40, or 54.5#, J-55 8rd, ST&C* | 0' - 753' | 17-1/2" | Surface | New |
| 9-5/8", 40#, N-80, 8rd, LT&C | 0' - 3834' | 12-1/4" | Intermediate | New |
| 7", 26#, N-80, Buttress or 8rd LTC* | 0' - 9,528' | 8-3/4" | Production | New |
| **Completion System** | | | | |
| 4-1/2", 11.6#, HCP-110 8rd. LT&C* | 9,478' – 19,611' | 6-1/8" | Completion System | New |
| 4-1/2", 11.6#, N-80, 8rd, LT&C* | 9,478' – 19,611' | 6-1/8" | Completion System | New |

**CASING DESIGN SAFETY FACTORS:**

| TYPE | TENSION | COLLAPSE | BURST |
|---|---|---|---|
| 13-3/8", 48#, H-40, 8rd, ST&C* | 10.30 | 1.98 | 4.12 |
| 13-3/8", 54 5#, J-55, 8rd, STC* | 24.18 | 3.09 | 6.50 |
| 9-5/8", 40#, N-80, 8rd, LT&C | 5.69 | 1.41 | 2.69 |
| 7", 26#, N-80, Buttress* | 3.66 | 1.36 | 1.76 |
| 7", 26#, N-80, 8rd, LTC* | 3.14 | 1.32 | 1.76 |
| **Completion System** | | | |
| 4-1/2", 11.6#, HCP-110 8rd. LT&C* | 3.81 | 2.50 | 2.62 |
| 4-1/2", 11.6#, N-80, 8rd, LT&C* | 3.04 | 1.54 | 1.90 |

*** Depending on availability.**

**DESIGN CRITERIA AND CASING LOADING ASSUMPTIONS:**

SURFACE CASING - (13-3/8")

Tension — A 1.6 design factor utilizing the effects of buoyancy (9.2 ppg).

Collapse — A 1.0 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.48 psi/ft). The effects of axial load on collapse will be considered.

Burst — A 1.3 design factor with a surface pressure equal to the fracture gradient at setting depth less a gas gradient to the surface. Internal burst force at the shoe will be fracture pressure a that depth. Backup pressure will be formation pore pressure. In all cases a conservative fracture pressure will be used such that it represents the upper limit of potential fracture resistance up to a 1.0 psi/ft gradient. The effects of tension on burst will not be utilized.

PROTECTIVE CASING - (9-5/8")

Tension — A 1.6 design factor utilizing the effects of buoyancy (10 ppg).

Collapse — A 1.0 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.52 psi/ft). The effects of axial load on collapse will be considered.

In the case of development drilling, collapse design should be analyzed using internal evacuation equal to 1/3 the proposed total depth of the well. This criterion will be used when there is absolutely no potential of the protective string being used as a production casing string.

Burst — A 1.0 surface design factor and a 1.3 downhole design factor with a surface pressure equivalent to the fracture gradient at setting depth less a gas gradient to the surface. Internal burst force at the shoe will be fracture pressure at that depth. Back pressure will be formation pore pressure. In all cases a conservative fracture pressure will be used such that it represents the upper limit of potential fracture resistance up to a 1.0 psi/ft gradient.

Production - (7")

Tension — A 1.6 design factor utilizing the effects of buoyancy (9.0 ppg).

Collapse — A 1.0 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.48 psi/ft). The effects of axial load on collapse will be considered.

Burst — A 1.25 design factor with anticipated maximum tubing pressure (5000 psig) on top of the maximum anticipated packer fluid gradient. (0.433 psi/ft) Backup on production strings will be formation pore pressure. (0.433 psi/ft) The effects of tension on burst will not be utilized.

Completion System - (4-1/2")

Tension — A 1.6 design factor utilizing the effects of buoyancy (9.0 ppg).

Collapse — A 1.0 design factor with full internal evacuation and a collapse force equal to the mud gradient in which the casing will be run (0.48 psi/ft). The effects of axial load on collapse will be considered.

Burst — A 1.25 design factor with anticipated maximum tubing pressure (5000 psig) on top of the maximum anticipated packer fluid gradient. (0.433 psi/ft) Backup on production strings will be formation pore pressure. (0.433 psi/ft) The effects of tension on burst will not be utilized.

**POINT 4: PRESSURE CONTROL EQUIPMENT (SEE ATTACHED DIAGRAM 1 & 2)**

The BOPE when rigged up on the 13-3/8" surface casing head (12-1/4" open hole) will consist of 13-5/8" X 5,000 psi dual ram BOP's with mud cross, choke manifold, chokes, and hydril per Diagram 1 (5,000 psi WP). The pipe and blind rams, choke, kill lines, kelly cocks, inside BOP, etc. when installed on the surface casing head will be hydro-tested to 250-300 psig and 2000 psig by independent tester. The hydril when installed on surface casing head will be tested to 1000 psi.

The BOPE when rigged up on the 9-5/8" intermediate casing spool (8-3/4" open hole) will consist of 13-5/8" x 5,000 psi annular, 13-5/8" x 5,000 psi pipe & blind rams with mud cross, choke manifold and chokes as in Diagram 1. The pipe and blind rams, choke, kill lines, kelly cocks inside BOP, etc. will be tested to 3000 psig by independent tester. In addition to the high pressure test, a low pressure (250-300 psig) test will be required. Hydril will be tested to 1500 psig.

The BOPE when rigged up on the 7" intermediate casing spool (6-1/8" open hole) will consist of 13-5/8" x 5,000 psi annular, 13-5/8" x 5,000 psi pipe & blind rams with mud cross choke manifold and chokes as in Diagram 1. The pipe and blind rams, choke, kelly lines, kelly cocks inside BOP, etc. will be tested to 3000 psig by independent tester. In addition to the high pressure test, a low pressure (250-300 psig) test will be required. Hydril will be tested to 1500 psig.

These tests will be performed:

a) Upon installation
b) After any component changes
c) Thirty days after a previous test
d) As required by well conditions

A function test to insure that the preventers are operating correctly will be performed on each trip.

**Please refer to diagram 2 for choke manifold and closed loop system layout.**

**POINT 5: MUD PROGRAM**

| DEPTH | MUD TYPE | WEIGHT | FV | PV | YP | FL | Ph |
|---|---|---|---|---|---|---|---|
| 0' - 753' | FW Spud Mud | 8.5 – 9.2 | 38-70 | NC | NC | NC | 10.0 |
| 753' - 3,834' | Brine Water | 9.8 – 10.2 | 28-30 | NC | NC | NC | 9.5 – 10.5 |
| 3,834' - 9,528' | FW/Gel | 8.7 – 9.0 | 28-36 | NC | NC | NC | 9.5 – 10.0 |
| 9,528' – 19,611' | FW/Gel/Starch | 8.7 – 9.0 | 28-36 | NC | NC | <100 | 9.5 – 10.0 |

***NOTE: May increase vis for logging purposes only.***

**POINT 6: TECHNICAL STAGES OF OPERATION**

A) TESTING

None anticipated.

B) LOGGING See COA

Run #1: GR with MWD during drilling of build and horizontal portions of 8-3/4" and 6-1/8" hole.

Run #2: Shuttle log w/GR, PE, Density, Neutron, Resistivity in lateral leg open hole.

Mud Logger: Rigged up at 100'.

C) CONVENTIONAL CORING

None anticipated

D) CEMENT

| INTERVAL | AMOUNT SXS | FT OF FILL | TYPE | GALS/SX | PPG | $FT^3/SX$ |
|---|---|---|---|---|---|---|
| **SURFACE:** | | | | | | |
| Lead: 0' – 653' | 540 | 653 | ExtendaCem CZ | 8.72 | 13.70 | 1.68 |
| Tail: 653' – 753' | 115 | 100 | ExtendaCem CZ | 8.72 | 13.70 | 1.68 |
| **INTERMEDIATE:** | | | | | | |
| Lead: 0' – 3334' | 1030 | 3334 | EconoCem HLC 5% CaCl + 5 #/sk Gilsonite | 9.32 | 12.90 | 1.85 |
| Tail: 3334' – 3834' | 261 | 500 | HalCem C | 6.34 | 14.80 | 1.33 |
| **Production:** | | | | | | |
| Stage 1: | | | | | | |
| Lead: 5000' – 6787' | 160 | 1787 | Tuned Light + 0.75% CFR-3 + 1.5#/sk CaCl | 12.41 | 10.20 | 2.76 |
| Tail: 6,787' – 9,528' | 400 | 2741 | VersaCem-PBSH2 + 0.4% Halad-9 | 8.76 | 13.0 | 1.65 |
| DV Tool @ 5000' | | | | | | |
| Stage 2: | | | | | | |
| Lead: 0' – 4500' | 371 | 4500 | EconoCem HLC + 1% Econolite + 5% CaCl + 5#/sk Gilsonite | 10.71 | 12.60 | 2.04 |
| Tail: 4500' - 5000' | 100 | 500 | HalCem C | 6.34 | 14.80 | 1.33 |

Cement excesses will be as follows:

Surface – 100% excess with cement circulated to surface.

1st Intermediate – 50% excess above fluid caliper with cement circulated to surface.

Production – 50% above gauge hole or 35% above electric log caliper with ~~cement circulated 500' up into the 9-5/8" 1st intermediate casing in areas outside the SOPA.~~ Cement will be circulated to surface on areas inside the SOPA.

Cement volumes will be adjusted proportionately for depth changes of the multi stage tool.

E) Completion System

A 4-1/2" completion system with open hole packers will be run in the producing lateral to a depth of 19,611'. The top of the liner will be set at approximately 9,478'. Cement will not be required for this system.

F) DIRECTIONAL DRILLING

BOPCO, L.P. plans to drill out the 9-5/8" intermediate casing with a 8-3/4" bit to a TVD of approximately 6,887' at which point a directional hole will be kicked off and drilled at an azimuth of 285.143 degrees, building angle at 12.00 deg/100' to 90 degrees at a TVD of 7,364' (MD 7,637'). This angle and azimuth will be maintained for 1,941' to a measured depth of 9,578' (7,364' TVD). At this depth 7", 26#, N80, Buttress, or 8rd LTC casing will be installed and cemented in two stages (DV Tool @ approximately 5000') with cement circulated to surface. A 6-1/8" open hole lateral will then be drilled out from 7" casing at an azimuth of 269.265 degrees, inclination of 90.237 degrees to a measured depth of 19,611', TVD 7,324'. At this depth a 4-1/2" Completion System with packers installed for zone isolation will be run into the producing lateral.

G) $H_2S$ Safety Equipment

As stated in the BLM Onshore Order 6, for wells located in the SOPA, $H_2S$ equipment will be rigged up after setting surface casing. For the wells located inside the SOPA the flare pit or ½ steel pits will be located 150' from the location. For wells located outside the SOPA the flare pit or ½ steel pit will be located 100' away from the location. **(See page 6 of Survey plat package)** There is not any $H_2S$ anticipated in the area, although in the event that $H_2S$ is encountered, the $H_2S$ contingency plan attached will be implemented. **(Please refer to diagram 2 for choke manifold and closed loop system layout.)**

## POINT 7: ANTICIPATED RESERVOIR CONDITIONS

Normal pressures are anticipated throughout Delaware section. A BHP of 3427 psi (max) or MWE of 9.0 ppg is expected. Lost circulation may exist in the Delaware Section from 3,834'-7,324' TVD.

**POINT 8: OTHER PERTINENT INFORMATION**

A) Auxiliary Equipment

Upper and lower kelly cocks. Full opening stab in valve on the rig floor.

B) Anticipated Starting Date

Upon approval

30 days drilling operations

14 days completion operations

JDB

# BOPCO, L.P.

Location: Eddy County, NM
Field: JRU NAD27
Facility: JRU No 140H

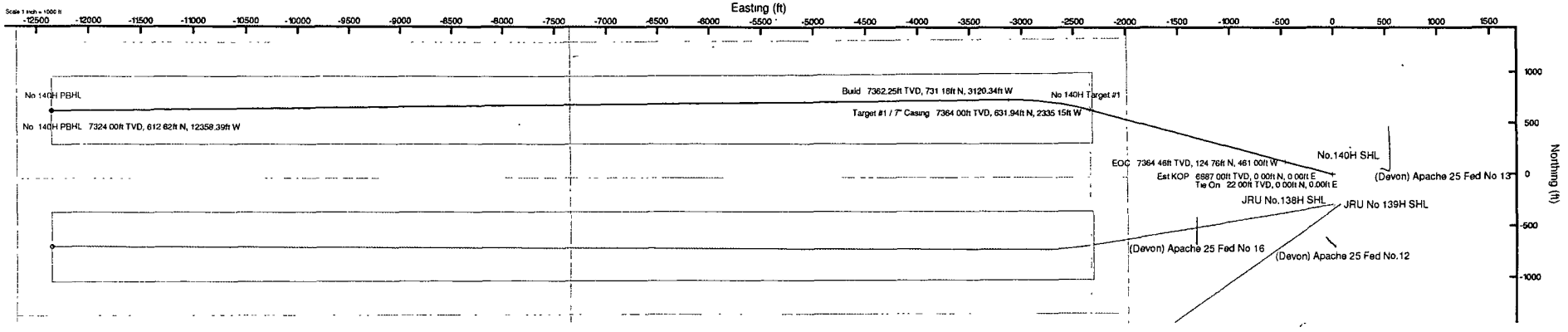
Slot: No 140H SHL
Well: No 140H
Wellbore: No 140H PWB

BAKER HUGHES

## Well Profile Data

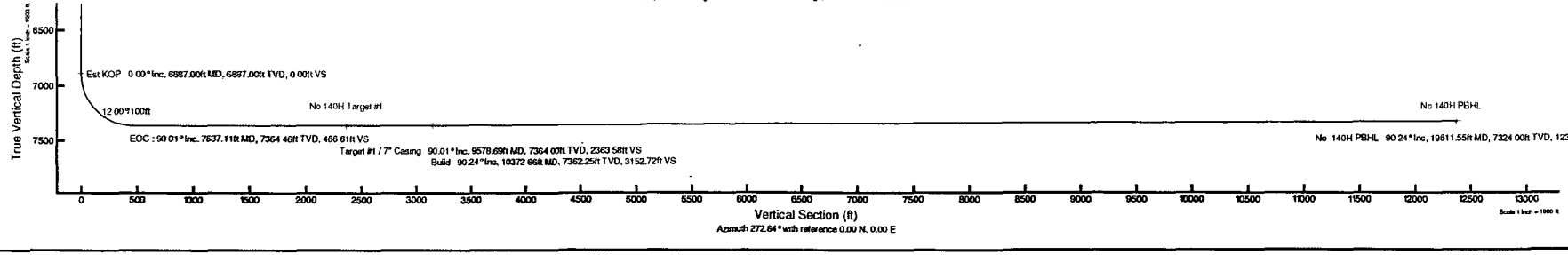
| Design Comment | MD (ft) | Inc (°) | Az (°) | TVD (ft) | Local N (ft) | Local E (ft) | DLS (°/100ft) | VS (ft) |
|---|---|---|---|---|---|---|---|---|
| Tie On | 22.00 | 0.000 | 285.143 | 22.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Est KOP | 6887.00 | 0.000 | 285.143 | 6887.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| EOC | 7637.11 | 90.014 | 285.143 | 7364.46 | 124.76 | -461.00 | 12.00 | 466.61 |
| Target #1 / 7" Casing | 9578.69 | 90.014 | 285.143 | 7364.00 | 631.94 | -2335.15 | 0.00 | 2363.58 |
| Build | 10372.66 | 90.237 | 269.265 | 7362.25 | 731.18 | -3120.34 | 2.00 | 3152.72 |
| No 140H PBHL | 19611.55 | 90.237 | 269.265 | 7324.00 | 612.62 | -12358.39 | 0.00 | 12373.57 |

| | |
|---|---|
| Plot reference wellpath is Prelim_1 | |
| True vertical depths are referenced to Rig on No 140H SHL (KB) | Grid System: NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet |
| Measured depths are referenced to Rig on No 140H SHL (KB) | North Reference: Grid north |
| Rig on No 140H SHL (KB) to Mean Sea Level: 3367 feet | Scale: True distance |
| Mean Sea Level to Mud line (At Slot: No 140H SHL): -3345 feet | Depths are in feet |
| Coordinates are in feet referenced to Slot | Created by: gentbry on 9/14/2011 |





BGGM (1945.0 to 2012.0) Dec: 60.27° Field: 48674.6 nT
Magnetic North is 7.73 degrees East of True North (at 9/13/2011)
Grid North is 0.27 degrees East of True North
To correct azimuth from True to Grid subtract 0.27 degrees
To correct azimuth from Magnetic to Grid add 7.47 degrees
For example: if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.47 = 97.47



# Planned Wellpath Report

**Prelim_1**



BAKER HUGHES

| REFERENCE WELLPATH IDENTIFICATION | | | |
|---|---|---|---|
| Operator | **BOPCO, L.P.** | Slot | **No.140H SHL** |
| Area | **Eddy County, NM** | Well | **No.140H** |
| Field | **JRU NAD27** | Wellbore | **No.140H PWB** |
| Facility | **JRU No.140H** | | |

| REPORT SETUP INFORMATION | | | |
|---|---|---|---|
| Projection System | **NAD27 / TM New Mexico SP, Eastern Zone (3001), US feet** | Software System | **WellArchitect® 3.0.0** |
| North Reference | **Grid** | User | **Gentbry** |
| Scale | **0.999936** | Report Generated | **9/14/2011 at 11:58:51 AM** |
| Convergence at slot | **0.27° East** | Database/Source file | **WA Midland/No.140H_PWB.xml** |

| WELLPATH LOCATION | Local coordinates | | Grid coordinates | | Geographic coordinates | |
|---|---|---|---|---|---|---|
| | **North[ft]** | **East[ft]** | **Easting[US ft]** | **Northing[US ft]** | **Latitude** | **Longitude** |
| Slot Location | **0.00** | **0.00** | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W |
| Facility Reference Pt | | | **653555.00** | **496152.80** | 32°21'47.011"N | 103°50'09.669"W |
| Field Reference Pt | | | **652495.44** | **494904.92** | 32°21'34.711"N | 103°50'22.090"W |

| WELLPATH DATUM | | | |
|---|---|---|---|
| Calculation method | **Minimum curvature** | Rig on No.140H SHL (KB) to Facility Vertical Datum | **22.00ft** |
| Horizontal Reference Pt | **Slot** | Rig on No.140H SHL (KB) to Mean Sea Level | **3367.00ft** |
| Vertical Reference Pt | **Rig on No.140H SHL (KB)** | Rig on No.140H SHL (KB) to Mud Line at Slot (No.140H SHL) | **22.00ft** |
| MD Reference Pt | **Rig on No.140H SHL (KB)** | Section Origin | **N 0.00, E 0.00 ft** |
| Field Vertical Reference | **Mean Sea Level** | Section Azimuth | **272.84°** |

# Planned Wellpath Report

**Prelim_1**



BAKER HUGHES

| REFERENCE WELLPATH IDENTIFICATION | | | |
|---|---|---|---|
| Operator | BOPCO, L.P. | Slot | No.140H SHL |
| Area | Eddy County, NM | Well | No.140H |
| Field | JRU NAD27 | Wellbore | No.140H PWB |
| Facility | JRU No.140H | | |

**WELLPATH DATA (209 stations) † = interpolated/extrapolated station**

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00† | 0.000 | 285.143 | 0.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 22.00 | 0.000 | 285.143 | 22.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | Tie On |
| 122.00† | 0.000 | 285.143 | 122.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 222.00† | 0.000 | 285.143 | 222.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 322.00† | 0.000 | 285.143 | 322.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 370.00† | 0.000 | 285.143 | 370.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | Rustler |
| 422.00† | 0.000 | 285.143 | 422.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 522.00† | 0.000 | 285.143 | 522.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 622.00† | 0.000 | 285.143 | 622.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 722.00† | 0.000 | 285.143 | 722.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 763.00† | 0.000 | 285.143 | 763.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | Salt |
| 822.00† | 0.000 | 285.143 | 822.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 922.00† | 0.000 | 285.143 | 922.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1022.00† | 0.000 | 285.143 | 1022.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1122.00† | 0.000 | 285.143 | 1122.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1222.00† | 0.000 | 285.143 | 1222.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1322.00† | 0.000 | 285.143 | 1322.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1422.00† | 0.000 | 285.143 | 1422.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1522.00† | 0.000 | 285.143 | 1522.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1622.00† | 0.000 | 285.143 | 1622.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1722.00† | 0.000 | 285.143 | 1722.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1822.00† | 0.000 | 285.143 | 1822.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 1922.00† | 0.000 | 285.143 | 1922.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2022.00† | 0.000 | 285.143 | 2022.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2122.00† | 0.000 | 285.143 | 2122.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2222.00† | 0.000 | 285.143 | 2222.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2322.00† | 0.000 | 285.143 | 2322.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2422.00† | 0.000 | 285.143 | 2422.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2522.00† | 0.000 | 285.143 | 2522.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2622.00† | 0.000 | 285.143 | 2622.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2722.00† | 0.000 | 285.143 | 2722.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2822.00† | 0.000 | 285.143 | 2822.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 2922.00† | 0.000 | 285.143 | 2922.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3022.00† | 0.000 | 285.143 | 3022.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3122.00† | 0.000 | 285.143 | 3122.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3222.00† | 0.000 | 285.143 | 3222.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3322.00† | 0.000 | 285.143 | 3322.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3422.00† | 0.000 | 285.143 | 3422.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3522.00† | 0.000 | 285.143 | 3522.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3570.00† | 0.000 | 285.143 | 3570.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | Base/Salt |
| 3622.00† | 0.000 | 285.143 | 3622.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3722.00† | 0.000 | 285.143 | 3722.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3814.00† | 0.000 | 285.143 | 3814.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | Lamar |
| 3822.00† | 0.000 | 285.143 | 3822.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 3850.00† | 0.000 | 285.143 | 3850.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | Ramsey |

# Planned Wellpath Report

**Prelim_1**



BAKER HUGHES

| REFERENCE WELLPATH IDENTIFICATION | | | |
|---|---|---|---|
| Operator | **BOPCO, L.P.** | Slot | **No.140H SHL** |
| Area | **Eddy County, NM** | Well | **No.140H** |
| Field | **JRU NAD27** | Wellbore | **No.140H PWB** |
| Facility | **JRU No.140H** | | |

**WELLPATH DATA (209 stations) † = interpolated/extrapolated station**

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3922.00† | 0.000 | 285.143 | 3922.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4022.00† | 0.000 | 285.143 | 4022.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4122.00† | 0.000 | 285.143 | 4122.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4222.00† | 0.000 | 285.143 | 4222.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4322.00† | 0.000 | 285.143 | 4322.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4422.00† | 0.000 | 285.143 | 4422.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4522.00† | 0.000 | 285.143 | 4522.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4622.00† | 0.000 | 285.143 | 4622.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4722.00† | 0.000 | 285.143 | 4722.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4822.00† | 0.000 | 285.143 | 4822.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 4922.00† | 0.000 | 285.143 | 4922.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5022.00† | 0.000 | 285.143 | 5022.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5122.00† | 0.000 | 285.143 | 5122.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5222.00† | 0.000 | 285.143 | 5222.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5322.00† | 0.000 | 285.143 | 5322.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5422.00† | 0.000 | 285.143 | 5422.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5522.00† | 0.000 | 285.143 | 5522.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5622.00† | 0.000 | 285.143 | 5622.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5722.00† | 0.000 | 285.143 | 5722.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5822.00† | 0.000 | 285.143 | 5822.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 5922.00† | 0.000 | 285.143 | 5922.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6004.00† | 0.000 | 285.143 | 6004.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | Lower Cherry Canyon |
| 6022.00† | 0.000 | 285.143 | 6022.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6122.00† | 0.000 | 285.143 | 6122.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6222.00† | 0.000 | 285.143 | 6222.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6322.00† | 0.000 | 285.143 | 6322.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6422.00† | 0.000 | 285.143 | 6422.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6522.00† | 0.000 | 285.143 | 6522.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6622.00† | 0.000 | 285.143 | 6622.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6722.00† | 0.000 | 285.143 | 6722.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6822.00† | 0.000 | 285.143 | 6822.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | |
| 6887.00 | 0.000 | 285.143 | 6887.00 | 0.00 | 0.00 | 0.00 | 653555.00 | 496152.80 | 32°21'47.011"N | 103°50'09.669"W | 0.00 | Est KOP |
| 6922.00† | 4.200 | 285.143 | 6921.97 | 1.25 | 0.33 | -1.24 | 653553.76 | 496153.14 | 32°21'47.015"N | 103°50'09.684"W | 12.00 | |
| 7022.00† | 16.200 | 285.143 | 7020.21 | 18.52 | 4.95 | -18.30 | 653536.70 | 496157.75 | 32°21'47.061"N | 103°50'09.883"W | 12.00 | |
| 7122.00† | 28.200 | 285.143 | 7112.63 | 55.37 | 14.80 | -54.71 | 653500.30 | 496167.61 | 32°21'47.160"N | 103°50'10.306"W | 12.00 | |
| 7222.00† | 40.200 | 285.143 | 7195.18 | 110.19 | 29.46 | -108.86 | 653446.14 | 496182.26 | 32°21'47.308"N | 103°50'10.937"W | 12.00 | |
| 7322.00† | 52.200 | 285.143 | 7264.27 | 180.58 | 48.28 | -178.41 | 653376.60 | 496201.08 | 32°21'47.497"N | 103°50'11.747"W | 12.00 | |
| 7386.01† | 59.881 | 285.143 | 7300.00 | 232.41 | 62.14 | -229.61 | 653325.40 | 496214.94 | 32°21'47.637"N | 103°50'12.343"W | 12.00 | LBC Lo U |
| 7422.00† | 64.200 | 285.143 | 7316.87 | 263.46 | 70.44 | -260.29 | 653294.72 | 496223.24 | 32°21'47.720"N | 103°50'12.700"W | 12.00 | |
| 7522.00† | 76.200 | 285.143 | 7350.68 | 355.22 | 94.97 | -350.95 | 653204.07 | 496247.77 | 32°21'47.967"N | 103°50'13.756"W | 12.00 | |
| 7622.00† | 88.200 | 285.143 | 7364.23 | 451.84 | 120.81 | -446.41 | 653108.62 | 496273.60 | 32°21'48.227"N | 103°50'14.867"W | 12.00 | |
| 7637.11 | 90.014 | 285.143 | 7364.46 | 466.61 | 124.76 | -461.00 | 653094.03 | 496277.55 | 32°21'48.267"N | 103°50'15.037"W | 12.00 | EOC |
| 7722.00† | 90.014 | 285.143 | 7364.44 | 549.54 | 146.93 | -542.94 | 653012.10 | 496299.72 | 32°21'48.490"N | 103°50'15.991"W | 0.00 | |
| 7822.00† | 90.014 | 285.143 | 7364.42 | 647.25 | 173.05 | -639.46 | 652915.58 | 496325.84 | 32°21'48.753"N | 103°50'17.115"W | 0.00 | |
| 7922.00† | 90.014 | 285.143 | 7364.40 | 744.95 | 199.17 | -735.99 | 652819.06 | 496351.96 | 32°21'49.016"N | 103°50'18.239"W | 0.00 | |

# Planned Wellpath Report

**Prelim_1**



BAKER HUGHES

| REFERENCE WELLPATH IDENTIFICATION | | | |
|---|---|---|---|
| Operator | **BOPCO, L.P.** | Slot | **No.140H SHL** |
| Area | **Eddy County, NM** | Well | **No.140H** |
| Field | **JRU NAD27** | Wellbore | **No.140H PWB** |
| Facility | **JRU No.140H** | | |

**WELLPATH DATA (209 stations) † = interpolated/extrapolated station**

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8022.00† | 90.014 | 285.143 | 7364.37 | 842.65 | 225.30 | -832.52 | 652722.54 | 496378.08 | 32°21'49.279"N | 103°50'19.363"W | 0.00 | |
| 8122.00† | 90.014 | 285.143 | 7364.35 | 940.35 | 251.42 | -929.05 | 652626.01 | 496404.20 | 32°21'49.542"N | 103°50'20.487"W | 0.00 | |
| 8222.00† | 90.014 | 285.143 | 7364.32 | 1038.06 | 277.54 | -1025.57 | 652529.49 | 496430.32 | 32°21'49.805"N | 103°50'21.611"W | 0.00 | |
| 8322.00† | 90.014 | 285.143 | 7364.30 | 1135.76 | 303.66 | -1122.10 | 652432.97 | 496456.45 | 32°21'50.068"N | 103°50'22.735"W | 0.00 | |
| 8422.00† | 90.014 | 285.143 | 7364.28 | 1233.46 | 329.79 | -1218.63 | 652336.45 | 496482.57 | 32°21'50.330"N | 103°50'23.859"W | 0.00 | |
| 8522.00† | 90.014 | 285.143 | 7364.25 | 1331.17 | 355.91 | -1315.16 | 652239.93 | 496508.69 | 32°21'50.593"N | 103°50'24.983"W | 0.00 | |
| 8622.00† | 90.014 | 285.143 | 7364.23 | 1428.87 | 382.03 | -1411.69 | 652143.41 | 496534.81 | 32°21'50.856"N | 103°50'26.106"W | 0.00 | |
| 8722.00† | 90.014 | 285.143 | 7364.21 | 1526.57 | 408.15 | -1508.21 | 652046.89 | 496560.93 | 32°21'51.119"N | 103°50'27.230"W | 0.00 | |
| 8822.00† | 90.014 | 285.143 | 7364.18 | 1624.27 | 434.28 | -1604.74 | 651950.36 | 496587.05 | 32°21'51.382"N | 103°50'28.354"W | 0.00 | |
| 8922.00† | 90.014 | 285.143 | 7364.16 | 1721.98 | 460.40 | -1701.27 | 651853.84 | 496613.17 | 32°21'51.645"N | 103°50'29.478"W | 0.00 | |
| 9022.00† | 90.014 | 285.143 | 7364.13 | 1819.68 | 486.52 | -1797.80 | 651757.32 | 496639.29 | 32°21'51.908"N | 103°50'30.602"W | 0.00 | |
| 9122.00† | 90.014 | 285.143 | 7364.11 | 1917.38 | 512.64 | -1894.32 | 651660.80 | 496665.41 | 32°21'52.171"N | 103°50'31.726"W | 0.00 | |
| 9222.00† | 90.014 | 285.143 | 7364.09 | 2015.09 | 538.76 | -1990.85 | 651564.28 | 496691.53 | 32°21'52.434"N | 103°50'32.850"W | 0.00 | |
| 9322.00† | 90.014 | 285.143 | 7364.06 | 2112.79 | 564.89 | -2087.38 | 651467.76 | 496717.65 | 32°21'52.696"N | 103°50'33.974"W | 0.00 | |
| 9422.00† | 90.014 | 285.143 | 7364.04 | 2210.49 | 591.01 | -2183.91 | 651371.23 | 496743.77 | 32°21'52.959"N | 103°50'35.098"W | 0.00 | |
| 9522.00† | 90.014 | 285.143 | 7364.01 | 2308.19 | 617.13 | -2280.44 | 651274.71 | 496769.89 | 32°21'53.222"N | 103°50'36.222"W | 0.00 | |
| 9578.69 | 90.014 | 285.143 | 7364.00[1] | 2363.58 | 631.94 | -2335.15 | 651220.00 | 496784.70 | 32°21'53.371"N | 103°50'36.859"W | 0.00 | Target #1 / 7" Casing |
| 9622.00† | 90.026 | 284.276 | 7363.98 | 2405.96 | 642.94 | -2377.05 | 651178.11 | 496795.70 | 32°21'53.482"N | 103°50'37.347"W | 2.00 | |
| 9722.00† | 90.055 | 282.277 | 7363.91 | 2504.30 | 665.90 | -2474.37 | 651080.79 | 496818.66 | 32°21'53.713"N | 103°50'38.480"W | 2.00 | |
| 9822.00† | 90.083 | 280.277 | 7363.79 | 2603.22 | 685.46 | -2572.43 | 650982.73 | 496838.21 | 32°21'53.911"N | 103°50'39.623"W | 2.00 | |
| 9922.00† | 90.112 | 278.277 | 7363.62 | 2702.58 | 701.58 | -2671.12 | 650884.05 | 496854.33 | 32°21'54.075"N | 103°50'40.772"W | 2.00 | |
| 10022.00† | 90.140 | 276.277 | 7363.41 | 2802.28 | 714.24 | -2770.31 | 650784.87 | 496867.00 | 32°21'54.205"N | 103°50'41.928"W | 2.00 | |
| 10122.00† | 90.168 | 274.277 | 7363.14 | 2902.18 | 723.44 | -2869.88 | 650685.31 | 496876.19 | 32°21'54.301"N | 103°50'43.088"W | 2.00 | |
| 10222.00† | 90.196 | 272.278 | 7362.82 | 3002.17 | 729.16 | -2969.71 | 650585.48 | 496881.91 | 32°21'54.362"N | 103°50'44.252"W | 2.00 | |
| 10322.00† | 90.223 | 270.278 | 7362.45 | 3102.13 | 731.39 | -3069.68 | 650485.52 | 496884.14 | 32°21'54.388"N | 103°50'45.417"W | 2.00 | |
| 10372.66 | 90.237 | 269.265 | 7362.25 | 3152.72 | 731.18 | -3120.34 | 650434.86 | 496883.94 | 32°21'54.389"N | 103°50'46.008"W | 2.00 | Build |
| 10422.00† | 90.237 | 269.265 | 7362.05 | 3201.96 | 730.55 | -3169.68 | 650385.53 | 496883.30 | 32°21'54.385"N | 103°50'46.583"W | 0.00 | |
| 10522.00† | 90.237 | 269.265 | 7361.63 | 3301.76 | 729.27 | -3269.67 | 650285.55 | 496882.02 | 32°21'54.376"N | 103°50'47.749"W | 0.00 | |
| 10622.00† | 90.237 | 269.265 | 7361.22 | 3401.57 | 727.98 | -3369.66 | 650185.56 | 496880.74 | 32°21'54.368"N | 103°50'48.915"W | 0.00 | |
| 10722.00† | 90.237 | 269.265 | 7360.80 | 3501.37 | 726.70 | -3469.65 | 650085.58 | 496879.45 | 32°21'54.360"N | 103°50'50.080"W | 0.00 | |
| 10822.00† | 90.237 | 269.265 | 7360.39 | 3601.18 | 725.42 | -3569.64 | 649985.60 | 496878.17 | 32°21'54.352"N | 103°50'51.246"W | 0.00 | |
| 10922.00† | 90.237 | 269.265 | 7359.98 | 3700.98 | 724.13 | -3669.63 | 649885.61 | 496876.89 | 32°21'54.344"N | 103°50'52.412"W | 0.00 | |
| 11022.00† | 90.237 | 269.265 | 7359.56 | 3800.79 | 722.85 | -3769.62 | 649785.63 | 496875.60 | 32°21'54.335"N | 103°50'53.578"W | 0.00 | |
| 11122.00† | 90.237 | 269.265 | 7359.15 | 3900.59 | 721.57 | -3869.61 | 649685.64 | 496874.32 | 32°21'54.327"N | 103°50'54.744"W | 0.00 | |
| 11222.00† | 90.237 | 269.265 | 7358.73 | 4000.40 | 720.28 | -3969.60 | 649585.66 | 496873.04 | 32°21'54.319"N | 103°50'55.909"W | 0.00 | |
| 11322.00† | 90.237 | 269.265 | 7358.32 | 4100.20 | 719.00 | -4069.59 | 649485.67 | 496871.76 | 32°21'54.311"N | 103°50'57.075"W | 0.00 | |
| 11422.00† | 90.237 | 269.265 | 7357.91 | 4200.01 | 717.72 | -4169.58 | 649385.69 | 496870.47 | 32°21'54.302"N | 103°50'58.241"W | 0.00 | |
| 11522.00† | 90.237 | 269.265 | 7357.49 | 4299.81 | 716.43 | -4269.58 | 649285.70 | 496869.19 | 32°21'54.294"N | 103°50'59.407"W | 0.00 | |
| 11622.00† | 90.237 | 269.265 | 7357.08 | 4399.61 | 715.15 | -4369.57 | 649185.72 | 496867.91 | 32°21'54.286"N | 103°51'00.573"W | 0.00 | |
| 11722.00† | 90.237 | 269.265 | 7356.66 | 4499.42 | 713.87 | -4469.56 | 649085.74 | 496866.62 | 32°21'54.278"N | 103°51'01.738"W | 0.00 | |
| 11822.00† | 90.237 | 269.265 | 7356.25 | 4599.22 | 712.58 | -4569.55 | 648985.75 | 496865.34 | 32°21'54.270"N | 103°51'02.904"W | 0.00 | |
| 11922.00† | 90.237 | 269.265 | 7355.84 | 4699.03 | 711.30 | -4669.54 | 648885.77 | 496864.06 | 32°21'54.261"N | 103°51'04.070"W | 0.00 | |
| 12022.00† | 90.237 | 269.265 | 7355.42 | 4798.83 | 710.02 | -4769.53 | 648785.78 | 496862.77 | 32°21'54.253"N | 103°51'05.236"W | 0.00 | |
| 12122.00† | 90.237 | 269.265 | 7355.01 | 4898.64 | 708.73 | -4869.52 | 648685.80 | 496861.49 | 32°21'54.245"N | 103°51'06.402"W | 0.00 | |
| 12222.00† | 90.237 | 269.265 | 7354.59 | 4998.44 | 707.45 | -4969.51 | 648585.81 | 496860.21 | 32°21'54.237"N | 103°51'07.567"W | 0.00 | |

# Planned Wellpath Report

**Prelim_1**



BAKER HUGHES

| REFERENCE WELLPATH IDENTIFICATION | | | |
|---|---|---|---|
| Operator | BOPCO, L.P. | Slot | No.140H SHL |
| Area | Eddy County, NM | Well | No.140H |
| Field | JRU NAD27 | Wellbore | No.140H PWB |
| Facility | JRU No.140H | | |

**WELLPATH DATA (209 stations) † = interpolated/extrapolated station**

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12322.00† | 90.237 | 269.265 | 7354.18 | 5098.25 | 706.17 | -5069.50 | 648485.83 | 496858.92 | 32°21'54.228"N | 103°51'08.733"W | 0.00 | |
| 12422.00† | 90.237 | 269.265 | 7353.77 | 5198.05 | 704.88 | -5169.49 | 648385.85 | 496857.64 | 32°21'54.220"N | 103°51'09.899"W | 0.00 | |
| 12522.00† | 90.237 | 269.265 | 7353.35 | 5297.86 | 703.60 | -5269.48 | 648285.86 | 496856.36 | 32°21'54.212"N | 103°51'11.065"W | 0.00 | |
| 12622.00† | 90.237 | 269.265 | 7352.94 | 5397.66 | 702.32 | -5369.48 | 648185.88 | 496855.07 | 32°21'54.203"N | 103°51'12.231"W | 0.00 | |
| 12722.00† | 90.237 | 269.265 | 7352.52 | 5497.47 | 701.03 | -5469.47 | 648085.89 | 496853.79 | 32°21'54.195"N | 103°51'13.396"W | 0.00 | |
| 12822.00† | 90.237 | 269.265 | 7352.11 | 5597.27 | 699.75 | -5569.46 | 647985.91 | 496852.51 | 32°21'54.187"N | 103°51'14.562"W | 0.00 | |
| 12922.00† | 90.237 | 269.265 | 7351.70 | 5697.08 | 698.47 | -5669.45 | 647885.92 | 496851.22 | 32°21'54.179"N | 103°51'15.728"W | 0.00 | |
| 13022.00† | 90.237 | 269.265 | 7351.28 | 5796.88 | 697.18 | -5769.44 | 647785.94 | 496849.94 | 32°21'54.170"N | 103°51'16.894"W | 0.00 | |
| 13122.00† | 90.237 | 269.265 | 7350.87 | 5896.69 | 695.90 | -5869.43 | 647685.96 | 496848.66 | 32°21'54.162"N | 103°51'18.060"W | 0.00 | |
| 13222.00† | 90.237 | 269.265 | 7350.45 | 5996.49 | 694.62 | -5969.42 | 647585.97 | 496847.37 | 32°21'54.154"N | 103°51'19.225"W | 0.00 | |
| 13322.00† | 90.237 | 269.265 | 7350.04 | 6096.30 | 693.33 | -6069.41 | 647485.99 | 496846.09 | 32°21'54.146"N | 103°51'20.391"W | 0.00 | |
| 13422.00† | 90.237 | 269.265 | 7349.63 | 6196.10 | 692.05 | -6169.40 | 647386.00 | 496844.81 | 32°21'54.137"N | 103°51'21.557"W | 0.00 | |
| 13522.00† | 90.237 | 269.265 | 7349.21 | 6295.90 | 690.77 | -6269.39 | 647286.02 | 496843.52 | 32°21'54.129"N | 103°51'22.723"W | 0.00 | |
| 13622.00† | 90.237 | 269.265 | 7348.80 | 6395.71 | 689.48 | -6369.38 | 647186.03 | 496842.24 | 32°21'54.121"N | 103°51'23.889"W | 0.00 | |
| 13722.00† | 90.237 | 269.265 | 7348.38 | 6495.51 | 688.20 | -6469.38 | 647086.05 | 496840.96 | 32°21'54.112"N | 103°51'25.054"W | 0.00 | |
| 13822.00† | 90.237 | 269.265 | 7347.97 | 6595.32 | 686.92 | -6569.37 | 646986.07 | 496839.67 | 32°21'54.104"N | 103°51'26.220"W | 0.00 | |
| 13922.00† | 90.237 | 269.265 | 7347.56 | 6695.12 | 685.63 | -6669.36 | 646886.08 | 496838.39 | 32°21'54.096"N | 103°51'27.386"W | 0.00 | |
| 14022.00† | 90.237 | 269.265 | 7347.14 | 6794.93 | 684.35 | -6769.35 | 646786.10 | 496837.11 | 32°21'54.088"N | 103°51'28.552"W | 0.00 | |
| 14122.00† | 90.237 | 269.265 | 7346.73 | 6894.73 | 683.07 | -6869.34 | 646686.11 | 496835.82 | 32°21'54.079"N | 103°51'29.718"W | 0.00 | |
| 14222.00† | 90.237 | 269.265 | 7346.31 | 6994.54 | 681.78 | -6969.33 | 646586.13 | 496834.54 | 32°21'54.071"N | 103°51'30.883"W | 0.00 | |
| 14322.00† | 90.237 | 269.265 | 7345.90 | 7094.34 | 680.50 | -7069.32 | 646486.14 | 496833.26 | 32°21'54.063"N | 103°51'32.049"W | 0.00 | |
| 14422.00† | 90.237 | 269.265 | 7345.49 | 7194.15 | 679.22 | -7169.31 | 646386.16 | 496831.97 | 32°21'54.054"N | 103°51'33.215"W | 0.00 | |
| 14522.00† | 90.237 | 269.265 | 7345.07 | 7293.95 | 677.93 | -7269.30 | 646286.18 | 496830.69 | 32°21'54.046"N | 103°51'34.381"W | 0.00 | |
| 14622.00† | 90.237 | 269.265 | 7344.66 | 7393.76 | 676.65 | -7369.29 | 646186.19 | 496829.41 | 32°21'54.038"N | 103°51'35.546"W | 0.00 | |
| 14722.00† | 90.237 | 269.265 | 7344.24 | 7493.56 | 675.37 | -7469.28 | 646086.21 | 496828.12 | 32°21'54.029"N | 103°51'36.712"W | 0.00 | |
| 14822.00† | 90.237 | 269.265 | 7343.83 | 7593.37 | 674.08 | -7569.28 | 645986.22 | 496826.84 | 32°21'54.021"N | 103°51'37.878"W | 0.00 | |
| 14922.00† | 90.237 | 269.265 | 7343.42 | 7693.17 | 672.80 | -7669.27 | 645886.24 | 496825.56 | 32°21'54.013"N | 103°51'39.044"W | 0.00 | |
| 15022.00† | 90.237 | 269.265 | 7343.00 | 7792.98 | 671.52 | -7769.26 | 645786.25 | 496824.27 | 32°21'54.004"N | 103°51'40.210"W | 0.00 | |
| 15122.00† | 90.237 | 269.265 | 7342.59 | 7892.78 | 670.23 | -7869.25 | 645686.27 | 496822.99 | 32°21'53.996"N | 103°51'41.375"W | 0.00 | |
| 15222.00† | 90.237 | 269.265 | 7342.17 | 7992.59 | 668.95 | -7969.24 | 645586.29 | 496821.71 | 32°21'53.988"N | 103°51'42.541"W | 0.00 | |
| 15322.00† | 90.237 | 269.265 | 7341.76 | 8092.39 | 667.67 | -8069.23 | 645486.30 | 496820.42 | 32°21'53.979"N | 103°51'43.707"W | 0.00 | |
| 15422.00† | 90.237 | 269.265 | 7341.35 | 8192.19 | 666.38 | -8169.22 | 645386.32 | 496819.14 | 32°21'53.971"N | 103°51'44.873"W | 0.00 | |
| 15522.00† | 90.237 | 269.265 | 7340.93 | 8292.00 | 665.10 | -8269.21 | 645286.33 | 496817.86 | 32°21'53.963"N | 103°51'46.039"W | 0.00 | |
| 15622.00† | 90.237 | 269.265 | 7340.52 | 8391.80 | 663.82 | -8369.20 | 645186.35 | 496816.57 | 32°21'53.954"N | 103°51'47.204"W | 0.00 | |
| 15722.00† | 90.237 | 269.265 | 7340.10 | 8491.61 | 662.53 | -8469.19 | 645086.36 | 496815.29 | 32°21'53.946"N | 103°51'48.370"W | 0.00 | |
| 15822.00† | 90.237 | 269.265 | 7339.69 | 8591.41 | 661.25 | -8569.18 | 644986.38 | 496814.01 | 32°21'53.938"N | 103°51'49.536"W | 0.00 | |
| 15922.00† | 90.237 | 269.265 | 7339.28 | 8691.22 | 659.97 | -8669.18 | 644886.39 | 496812.72 | 32°21'53.929"N | 103°51'50.702"W | 0.00 | |
| 16022.00† | 90.237 | 269.265 | 7338.86 | 8791.02 | 658.68 | -8769.17 | 644786.41 | 496811.44 | 32°21'53.921"N | 103°51'51.868"W | 0.00 | |
| 16122.00† | 90.237 | 269.265 | 7338.45 | 8890.83 | 657.40 | -8869.16 | 644686.43 | 496810.16 | 32°21'53.912"N | 103°51'53.033"W | 0.00 | |
| 16222.00† | 90.237 | 269.265 | 7338.03 | 8990.63 | 656.12 | -8969.15 | 644586.44 | 496808.88 | 32°21'53.904"N | 103°51'54.199"W | 0.00 | |
| 16322.00† | 90.237 | 269.265 | 7337.62 | 9090.44 | 654.83 | -9069.14 | 644486.46 | 496807.59 | 32°21'53.896"N | 103°51'55.365"W | 0.00 | |
| 16422.00† | 90.237 | 269.265 | 7337.21 | 9190.24 | 653.55 | -9169.13 | 644386.47 | 496806.31 | 32°21'53.887"N | 103°51'56.531"W | 0.00 | |
| 16522.00† | 90.237 | 269.265 | 7336.79 | 9290.05 | 652.27 | -9269.12 | 644286.49 | 496805.03 | 32°21'53.879"N | 103°51'57.697"W | 0.00 | |
| 16622.00† | 90.237 | 269.265 | 7336.38 | 9389.85 | 650.98 | -9369.11 | 644186.50 | 496803.74 | 32°21'53.871"N | 103°51'58.862"W | 0.00 | |
| 16722.00† | 90.237 | 269.265 | 7335.96 | 9489.66 | 649.70 | -9469.10 | 644086.52 | 496802.46 | 32°21'53.862"N | 103°52'00.028"W | 0.00 | |

# Planned Wellpath Report

**Prelim_1**



BAKER HUGHES

| REFERENCE WELLPATH IDENTIFICATION | | | |
|---|---|---|---|
| Operator | BOPCO, L.P. | Slot | No.140H SHL |
| Area | Eddy County, NM | Well | No.140H |
| Field | JRU NAD27 | Wellbore | No.140H PWB |
| Facility | JRU No.140H | | |

**WELLPATH DATA (209 stations) † = interpolated/extrapolated station**

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16822.00† | 90.237 | 269.265 | 7335.55 | 9589.46 | 648.42 | -9569.09 | 643986.54 | 496801.18 | 32°21'53.854"N | 103°52'01.194"W | 0.00 | |
| 16922.00† | 90.237 | 269.265 | 7335.14 | 9689.27 | 647.13 | -9669.08 | 643886.55 | 496799.89 | 32°21'53.845"N | 103°52'02.360"W | 0.00 | |
| 17022.00† | 90.237 | 269.265 | 7334.72 | 9789.07 | 645.85 | -9769.08 | 643786.57 | 496798.61 | 32°21'53.837"N | 103°52'03.526"W | 0.00 | |
| 17122.00† | 90.237 | 269.265 | 7334.31 | 9888.88 | 644.57 | -9869.07 | 643686.58 | 496797.33 | 32°21'53.829"N | 103°52'04.691"W | 0.00 | |
| 17222.00† | 90.237 | 269.265 | 7333.89 | 9988.68 | 643.28 | -9969.06 | 643586.60 | 496796.04 | 32°21'53.820"N | 103°52'05.857"W | 0.00 | |
| 17322.00† | 90.237 | 269.265 | 7333.48 | 10088.49 | 642.00 | -10069.05 | 643486.61 | 496794.76 | 32°21'53.812"N | 103°52'07.023"W | 0.00 | |
| 17422.00† | 90.237 | 269.265 | 7333.07 | 10188.29 | 640.72 | -10169.04 | 643386.63 | 496793.48 | 32°21'53.803"N | 103°52'08.189"W | 0.00 | |
| 17522.00† | 90.237 | 269.265 | 7332.65 | 10288.09 | 639.43 | -10269.03 | 643286.65 | 496792.19 | 32°21'53.795"N | 103°52'09.355"W | 0.00 | |
| 17622.00† | 90.237 | 269.265 | 7332.24 | 10387.90 | 638.15 | -10369.02 | 643186.66 | 496790.91 | 32°21'53.787"N | 103°52'10.520"W | 0.00 | |
| 17722.00† | 90.237 | 269.265 | 7331.82 | 10487.70 | 636.87 | -10469.01 | 643086.68 | 496789.63 | 32°21'53.778"N | 103°52'11.686"W | 0.00 | |
| 17822.00† | 90.237 | 269.265 | 7331.41 | 10587.51 | 635.58 | -10569.00 | 642986.69 | 496788.34 | 32°21'53.770"N | 103°52'12.852"W | 0.00 | |
| 17922.00† | 90.237 | 269.265 | 7330.99 | 10687.31 | 634.30 | -10668.99 | 642886.71 | 496787.06 | 32°21'53.761"N | 103°52'14.018"W | 0.00 | |
| 18022.00† | 90.237 | 269.265 | 7330.58 | 10787.12 | 633.02 | -10768.98 | 642786.72 | 496785.78 | 32°21'53.753"N | 103°52'15.184"W | 0.00 | |
| 18122.00† | 90.237 | 269.265 | 7330.17 | 10886.92 | 631.73 | -10868.98 | 642686.74 | 496784.49 | 32°21'53.745"N | 103°52'16.349"W | 0.00 | |
| 18222.00† | 90.237 | 269.265 | 7329.75 | 10986.73 | 630.45 | -10968.97 | 642586.76 | 496783.21 | 32°21'53.736"N | 103°52'17.515"W | 0.00 | |
| 18322.00† | 90.237 | 269.265 | 7329.34 | 11086.53 | 629.17 | -11068.96 | 642486.77 | 496781.93 | 32°21'53.728"N | 103°52'18.681"W | 0.00 | |
| 18422.00† | 90.237 | 269.265 | 7328.92 | 11186.34 | 627.88 | -11168.95 | 642386.79 | 496780.64 | 32°21'53.719"N | 103°52'19.847"W | 0.00 | |
| 18522.00† | 90.237 | 269.265 | 7328.51 | 11286.14 | 626.60 | -11268.94 | 642286.80 | 496779.36 | 32°21'53.711"N | 103°52'21.013"W | 0.00 | |
| 18622.00† | 90.237 | 269.265 | 7328.10 | 11385.95 | 625.32 | -11368.93 | 642186.82 | 496778.08 | 32°21'53.702"N | 103°52'22.178"W | 0.00 | |
| 18722.00† | 90.237 | 269.265 | 7327.68 | 11485.75 | 624.03 | -11468.92 | 642086.83 | 496776.79 | 32°21'53.694"N | 103°52'23.344"W | 0.00 | |
| 18822.00† | 90.237 | 269.265 | 7327.27 | 11585.56 | 622.75 | -11568.91 | 641986.85 | 496775.51 | 32°21'53.685"N | 103°52'24.510"W | 0.00 | |
| 18922.00† | 90.237 | 269.265 | 7326.85 | 11685.36 | 621.47 | -11668.90 | 641886.87 | 496774.23 | 32°21'53.677"N | 103°52'25.676"W | 0.00 | |
| 19022.00† | 90.237 | 269.265 | 7326.44 | 11785.17 | 620.18 | -11768.89 | 641786.88 | 496772.94 | 32°21'53.669"N | 103°52'26.841"W | 0.00 | |
| 19122.00† | 90.237 | 269.265 | 7326.03 | 11884.97 | 618.90 | -11868.88 | 641686.90 | 496771.66 | 32°21'53.660"N | 103°52'28.007"W | 0.00 | |
| 19222.00† | 90.237 | 269.265 | 7325.61 | 11984.78 | 617.62 | -11968.88 | 641586.91 | 496770.38 | 32°21'53.652"N | 103°52'29.173"W | 0.00 | |
| 19322.00† | 90.237 | 269.265 | 7325.20 | 12084.58 | 616.33 | -12068.87 | 641486.93 | 496769.09 | 32°21'53.643"N | 103°52'30.339"W | 0.00 | |
| 19422.00† | 90.237 | 269.265 | 7324.78 | 12184.38 | 615.05 | -12168.86 | 641386.94 | 496767.81 | 32°21'53.635"N | 103°52'31.505"W | 0.00 | |
| 19522.00† | 90.237 | 269.265 | 7324.37 | 12284.19 | 613.77 | -12268.85 | 641286.96 | 496766.53 | 32°21'53.626"N | 103°52'32.670"W | 0.00 | |
| 19611.55 | 90.237 | 269.265 | 7324.00[2] | 12373.57 | 612.62 | -12358.39 | 641197.42 | 496765.38 | 32°21'53.619"N | 103°52'33.714"W | 0.00 | No. 140H PBHL |

**HOLE & CASING SECTIONS - Ref Wellbore: No.140H PWB Ref Wellpath: Prelim_1**

| String/Diameter | Start MD [ft] | End MD [ft] | Interval [ft] | Start TVD [ft] | End TVD [ft] | Start N/S [ft] | Start E/W [ft] | End N/S [ft] | End E/W [ft] |
|---|---|---|---|---|---|---|---|---|---|
| 8.75in Open Hole | 22.00 | 9579.00 | 9557.00 | 22.00 | 7364.00 | 0.00 | 0.00 | 632.02 | -2335.46 |
| 7in Casing | 22.00 | 9579.00 | 9557.00 | 22.00 | 7364.00 | 0.00 | 0.00 | 632.02 | -2335.46 |

# Planned Wellpath Report

**Prelim_1**



BAKER HUGHES

| REFERENCE WELLPATH IDENTIFICATION | | | |
|---|---|---|---|
| Operator | **BOPCO, L.P.** | Slot | **No.140H SHL** |
| Area | **Eddy County, NM** | Well | **No.140H** |
| Field | **JRU NAD27** | Wellbore | **No.140H PWB** |
| Facility | **JRU No.140H** | | |

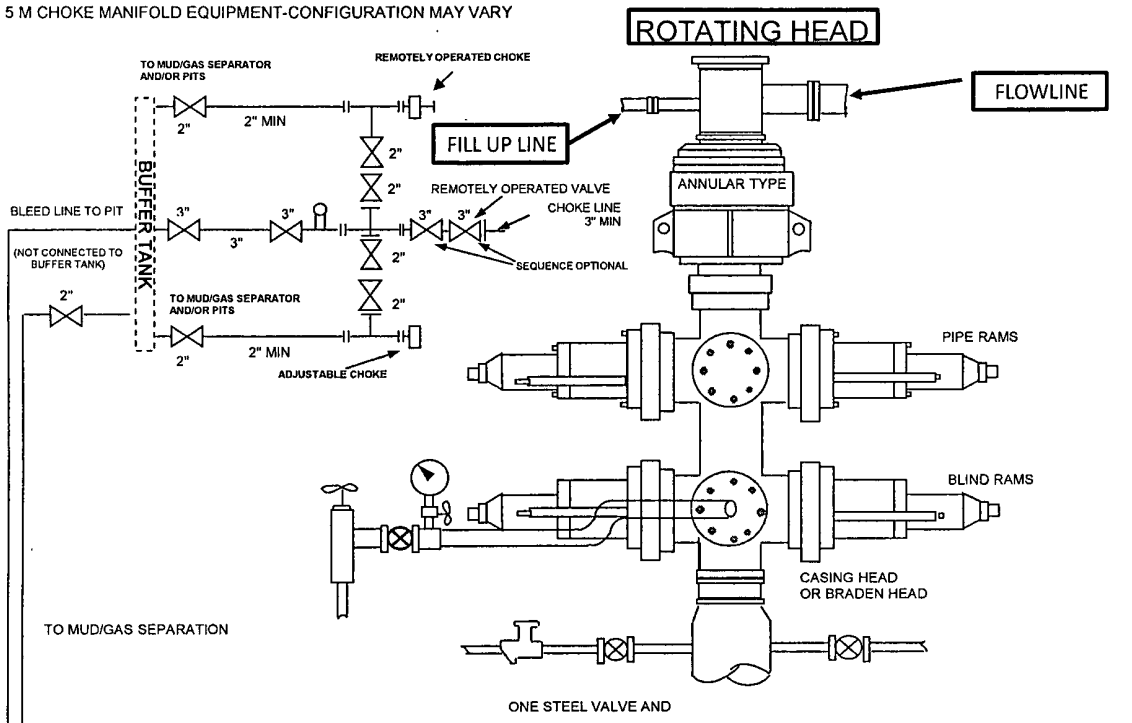
**TARGETS**

| Name | MD [ft] | TVD [ft] | North [ft] | East [ft] | Grid East [US ft] | Grid North [US ft] | Latitude | Longitude | Shape |
|---|---|---|---|---|---|---|---|---|---|
| **2) No.140H PBHL** | 19611.55 | 7324.00 | 612.62 | -12358.39 | **641197.42** | **496765.38** | 32°21'53.619"N | 103°52'33.714"W | point |
| **1) No.140H Target #1** | 9578.69 | 7364.00 | 631.94 | -2335.15 | **651220.00** | **496784.70** | 32°21'53.371"N | 103°50'36.859"W | point |

**SURVEY PROGRAM - Ref Wellbore: No.140H PWB Ref Wellpath: Prelim_1**

| Start MD [ft] | End MD [ft] | Positional Uncertainty Model | Log Name/Comment | Wellbore |
|---|---|---|---|---|
| 22.00 | 19611.55 | NaviTrak (Standard) | | No.140H PWB |

# BOPCO, L. P.
## 13 5/8" X 5-M WP BOPE WITH 5-M WP ANNULAR



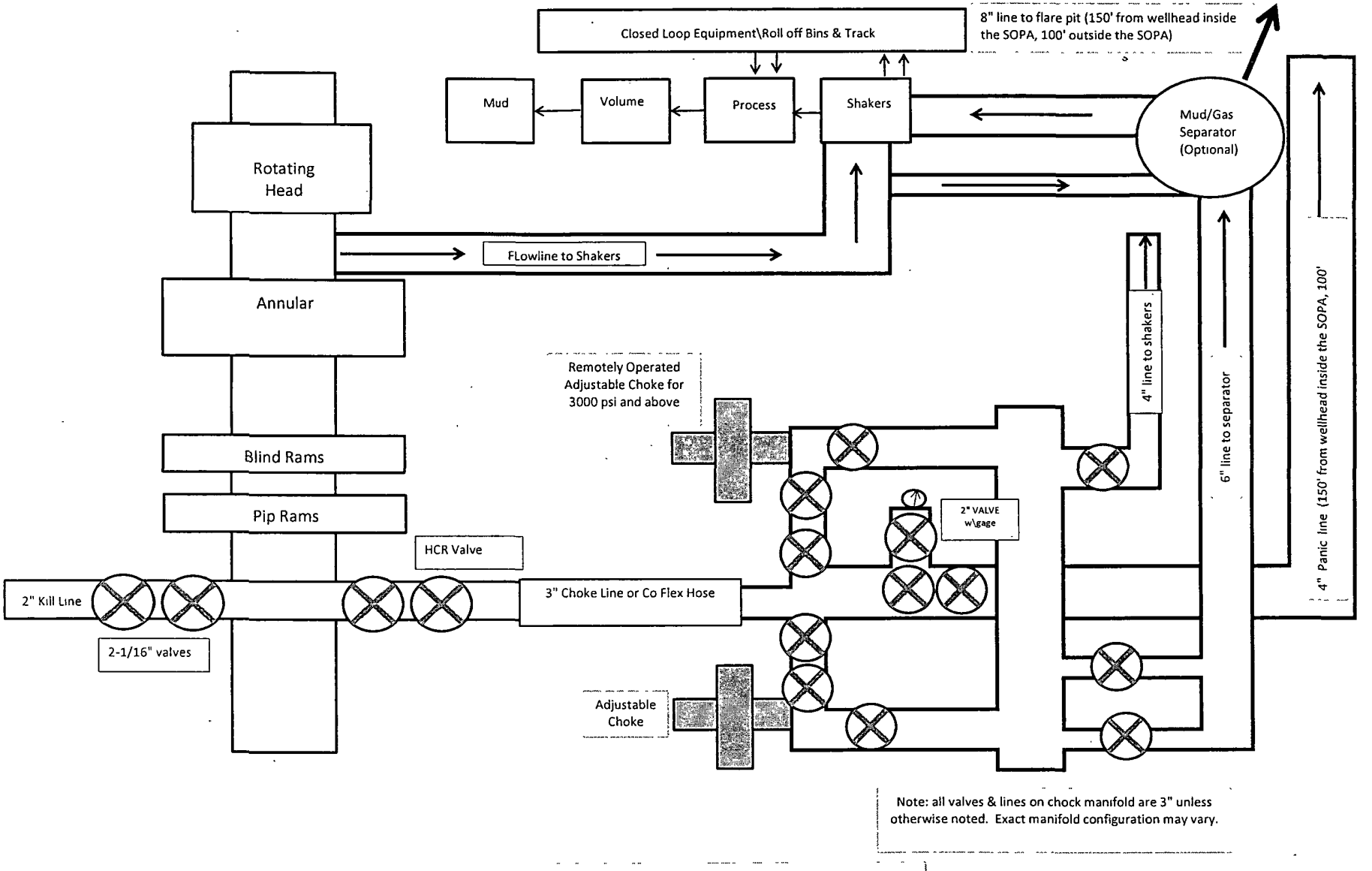

THE FOLLOWING CONSTITUTE MINIMUM BLOWOUT PREVENTER REQUIREMENTS

A. One double gate Blowout preventer with lower pipe rams and upper blind rams, all hydraulically controlled.
B. Opening on preventers between rams to be flanged, studded or clamped and at least two inches in diameter.
C. All connections from operating manifold to preventers to be all steel hose or tube a mininum of one inch in diameter.
D. The available closing pressure shall be at least 15% in excess of that required with suffficient volume to operate (close, open, and re-close) the preventers.
E. All connections to and from preventers to have a pressure rating equivalent to that of the BOPs.
F. Manual controls to be installed before drilling cement plug.
G. Valve to control flow through drill pipe to be located on rig floor.
H. Chokes must be adjustable. Choke spool may be used between rams

## DIAGRAM 1

TO STEEL MUD TANKS

BLEED LINE TO STEEL 1/2 PIT LOCATED 100' FROM WELL




**13-5/8" X 5-M BOPE (2 Rams and Rotating Head) & Closed Loop System Equipment Schematic**
**Diagram 2**

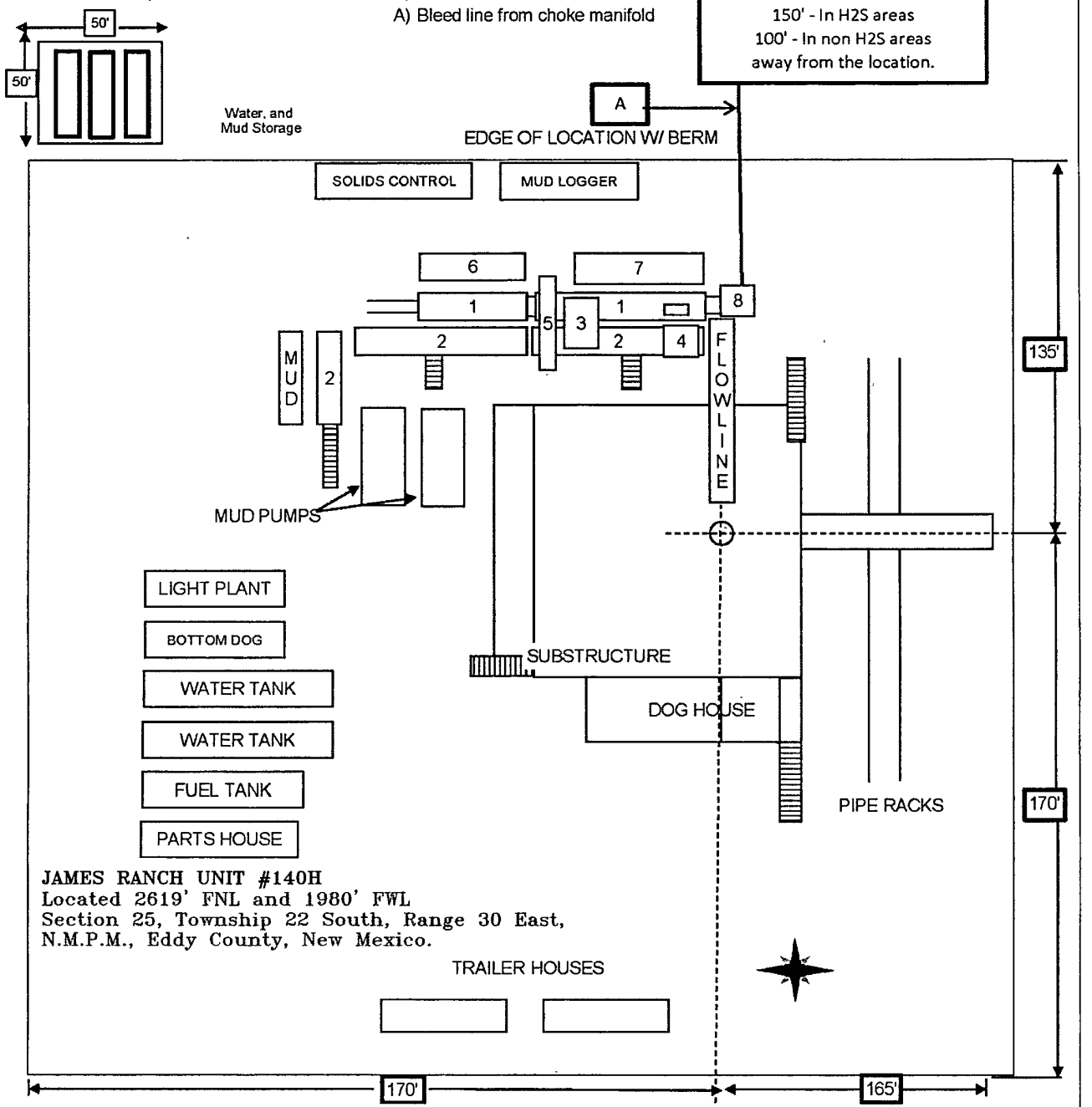
RIG LAYOUT

# RIG LAYOUT SCHEMATIC
## INCLUSIVE OF CLOSED-LOOP DESIGN PLAN

### Solids Control Equipment Legend

1) Roll Off Bin
2) Steel Tank
3) Mud Cleaner
4) Shaker
5) Centrifuge
6) Dewatering Unit
7) Catch Tank
8) Choke Manifold
A) Bleed line from choke manifold

Flare Pit or 1/2 Steel Pit will be located at
150' - In H2S areas
100' - In non H2S areas
away from the location.




**JAMES RANCH UNIT #140H**
**Located 2619' FNL and 1980' FWL**
**Section 25, Township 22 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: JMS 25273
Survey Date: 03-17-2011
Scale: 1" = 2000'
Date: 03-24-2011

N

BOPCO, L.P.

# HYDROGEN SULFIDE ($H_2S$) CONTINGENCY PLAN

## Assumed 100 ppm ROE = 3000'

## 100 ppm $H_2S$ concentration shall trigger activation of this plan.

**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 this 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**

BOPCO L.P. personnel must liaison 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. (Operator Name)'s response must be in coordination with the State of New México's "Hazardous Materials Emergency Response Plan" (HMER).

# $H_2S$ CONTINGENCY PLAN EMERGENCY CONTACTS

BOPCO L.P. Midland Office 432-683-2277

Key Personnel

| Name | Title | Cell Phone Number |
|---|---|---|
| Stephen Martinez | Drilling Supt. | 432-556-0262 |
| Buddy Jenkins | Assistant Supt. | 432-238-3295 |
| Bill Dannels | Engineer | 432-638-9463 |
| Pete Lensing | Engineer | 432-557-7157 |
| Charles Warne | Engineer | 432-894-1392 |

| | |
|---|---|
| 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 |

| | |
|---|---|
| New Mexico Emergency Response Commission (Santa Fe) | 505-476-9600 |
| 24 Hour | 505-827-9126 |
| New Mexico State Emergency Operations Center | 505-476-9635 |
| National Emergency Response Center (Washington, DC) | 800-424-8802 |

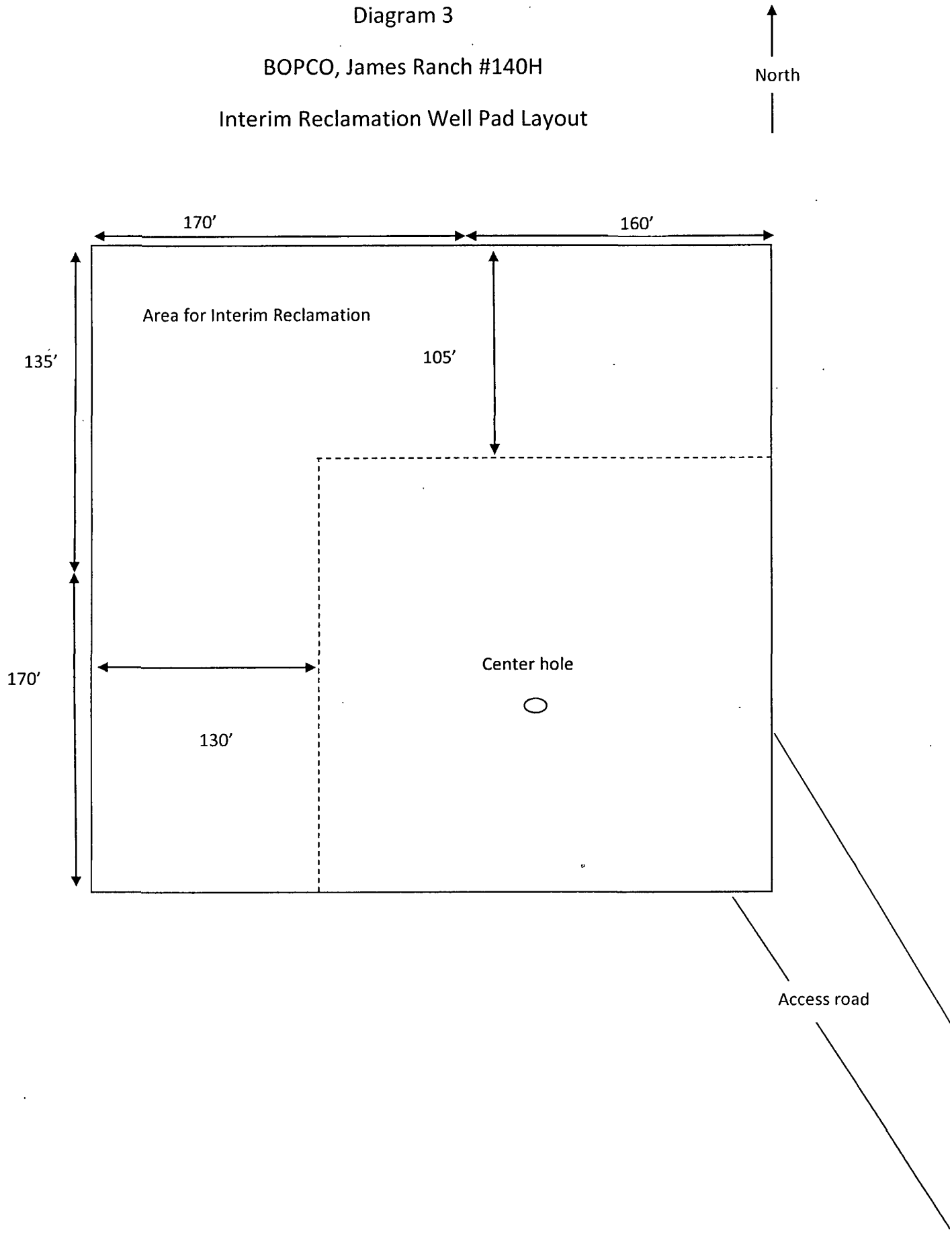
Other

| | |
|---|---|
| Boots & Coots IWC | 800-256-9688 or 281-931-8884 |
| Cudd PressureControl | 432-580-3544 or 432-570-5300 |
| Halliburton | 575-746-2757 |
| B. J. Services | 575-746-3569 |
| Flight For Life – 4000 24th St. Lubbock, Texas | 806-743-9911 |
| Aerocare – R3, Box 49F, Lubbock, Texas | 806-747-8923 |
| Med Flight Air Amb – 2301 Yale Blvd SE #D3, Albuq., NM | 505-842-4433 |
| S B Air Med Service – 2505 Clark Carr Loop SE, Albuq., NM | 505-842-4949 |

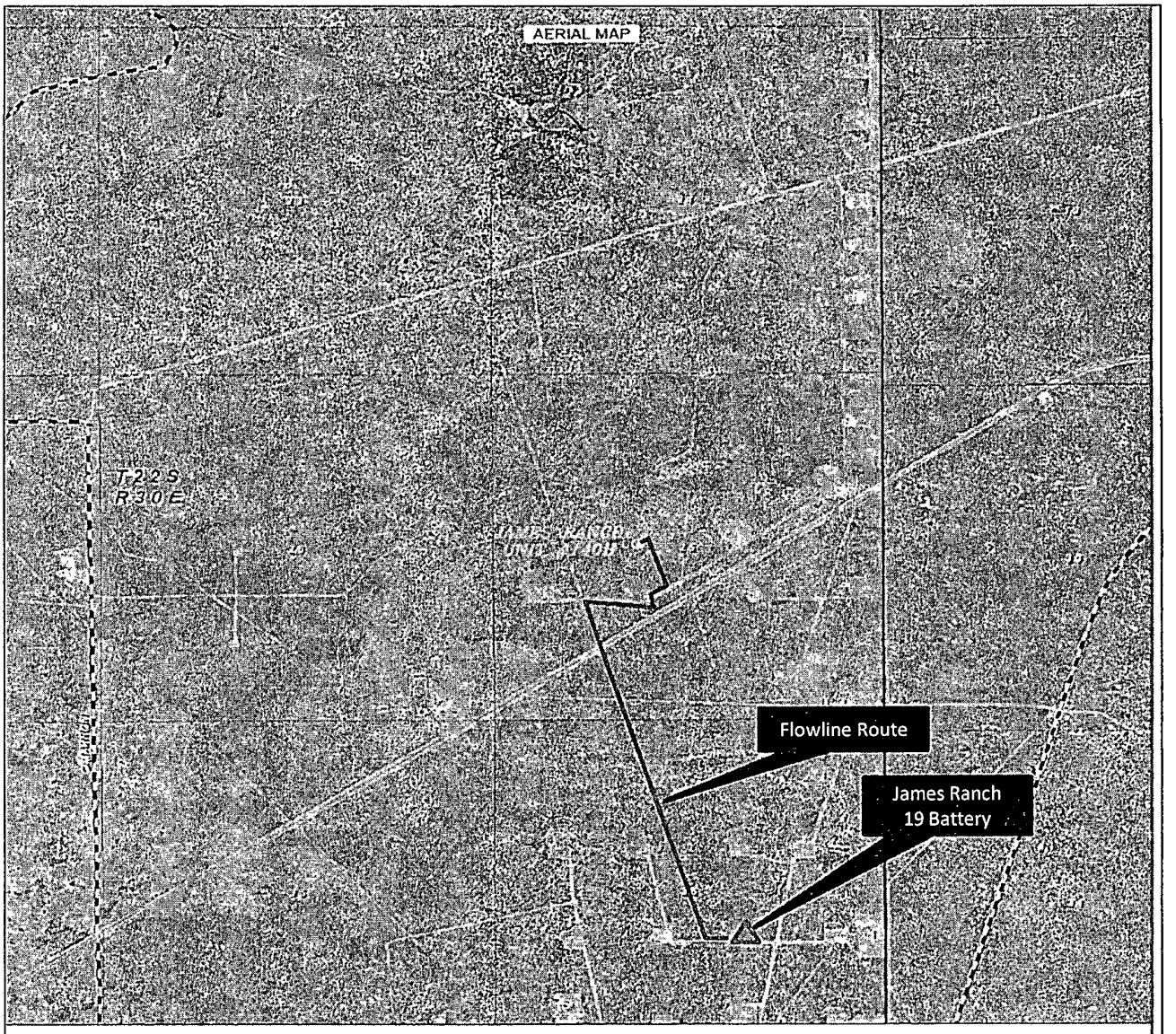
Diagram 3

BOPCO, James Ranch #140H

Interim Reclamation Well Pad Layout



# Flowline Route Diagram 4

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W.O. Number: JMS 25273

Scale: 1" = 2000'

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

BOPCO, L.P.

Sheet 4 of 6 Sheets

# BLM On-Site Notes

The Location onsite was conducted on 09/06/2011 by Cecil. Watkins – BOPCO L.P, Randy-Rust-BLM, and Robert Gomez with Basin Survey. The James Ranch Unit 140H was approved with a surface location at 2,619' FNL & 1980' FWL, Sec 25, T22S-R30E.

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | BOPCO, L.P. |
| LEASE NO.: | NM-02952A |
| WELL NAME & NO.: | James Ranch Unit 140H |
| SURFACE HOLE FOOTAGE: | 2619' FNL & 1980' FWL |
| BOTTOM HOLE FOOTAGE | 1980' FNL & 330'FWl (Sec. 27) |
| LOCATION: | Section 25, T. 22S., R. 30 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

## TABLE OF CONTENTS

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)

**Commercial Well Determination**
Well is not in a participating area. A commercial well determination will need to be submitted.

## Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

### Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

**Construction:**
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

**No Blasting:**
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

**Tank Battery Liners and Berms:**
Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

**Leak Detection System:**
A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

**Automatic Shut-off Systems**:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

### Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

**Rotary Drilling with Fresh Water:**
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

**Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

# 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) 234-5972 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 4 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 theCarlsbad 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. 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 (20) feet.

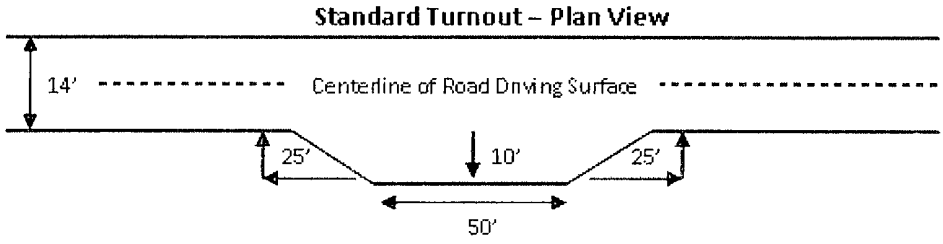
**Surfacing**
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

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.

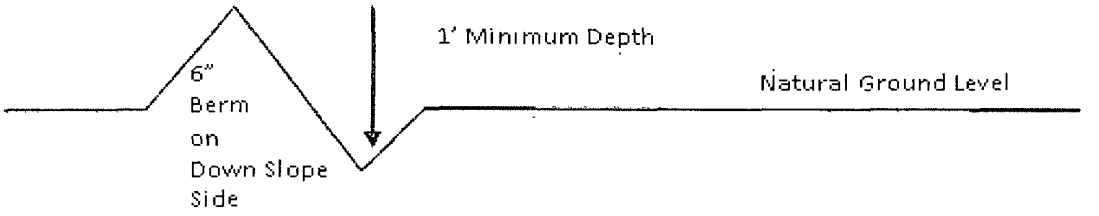
**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:




**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.

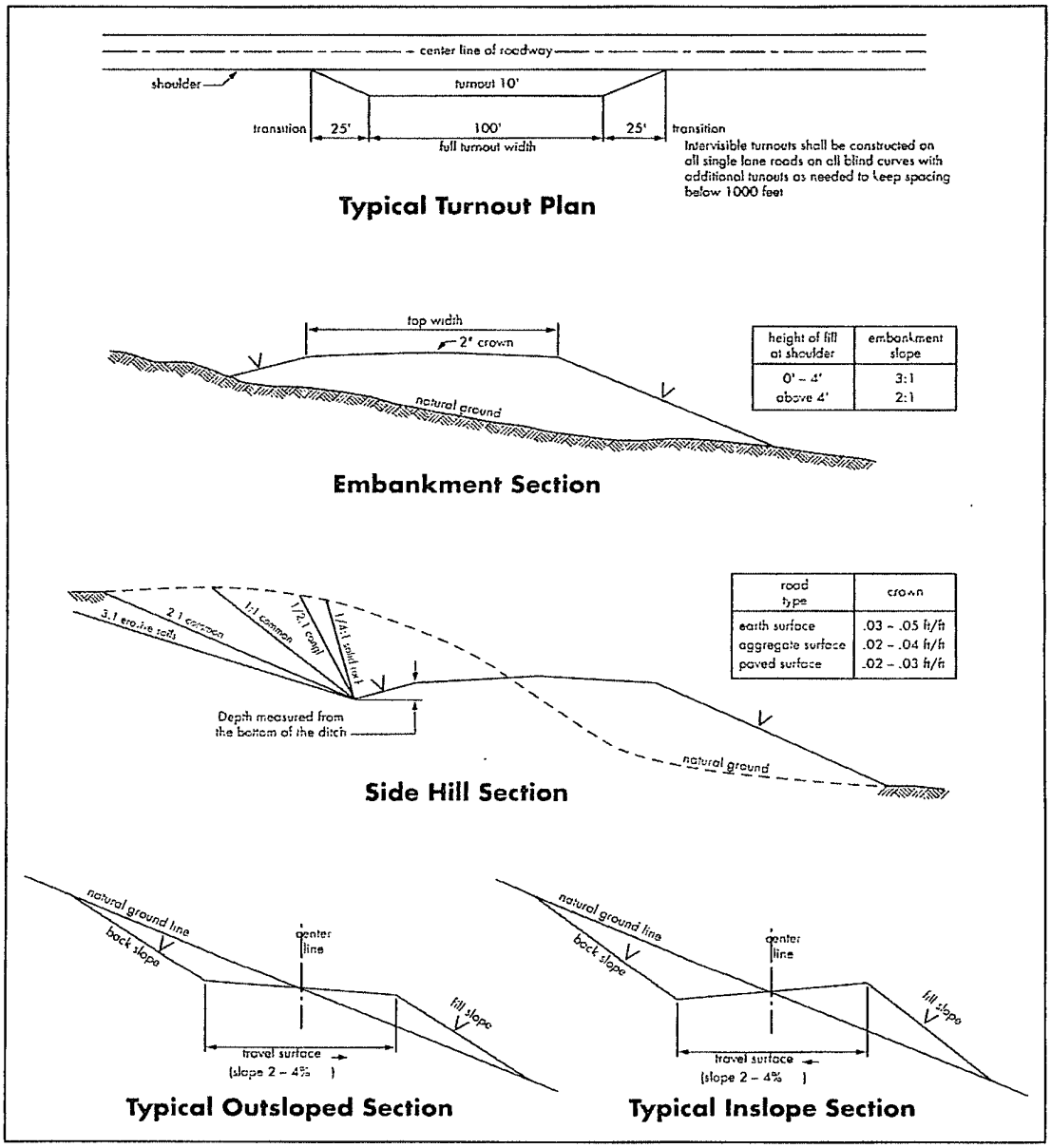
**Fence Requirement**

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 a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

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

1. **Due to recent H2S encounters in the salt formation, it is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide prior to drilling out the surface shoe. If Hydrogen Sulfide is encountered, please report measurements 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.**

5. **Due to the proximity of the proposed well to existing wellbores, an anti-collision review must be performed prior to drilling and an anti-collision analysis generated during drilling. Submit the results to the BLM Carlsbad Field Office.**

## B. CASING

**Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.**

**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. 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.**

**R-111-P Potash/WIPP**
**HIGH CAVE/KARST**
**Possible water and brine flows in the Rustler, Salado and Castile formations.**
**Possible lost circulation within the Rustler, Delaware and Bone Spring.**

1. The **13-3/8** inch surface casing shall be set at approximately **753** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    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.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing 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 cave/karst and potash.**

3. The minimum required fill of cement behind the **7** inch production casing is:

   a. First stage to DV tool, cement shall:

   ☒ 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 shall:

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Additional cement may be required – excess calculates to 14%.**

4. Cement not required on the **4-1/2"** completion assembly. **Packer system being used.**

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. 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. **Operator installing a 5M but testing as a 2M system.**

   a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi. **Operator installing a 5M but testing as a 3M system.**

4. 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**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

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

    d. 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.**

    e. 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.

## 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.

## F. WIPP Requirements

**The proposed well is located over 330' of the WIPP Land Withdrawal Area boundary. As a result, BOPCO, L.P. is requested, but not required to submit daily logs and deviation survey information to the Department of Energy per requirements of the Joint Powers Agreement. Information from this well will be included in the Quarterly Drilling Report. Information will also be provided to the New Mexico Oil Conservation Division after drilling activities have been completed. Any future entry into the well for purposes of completing additional drilling will require supplemental information.**

**BOPCO, L.P. can email the required information to Mr. Melvin Balderrama at Melvin.Balderama@wipp.ws or Mr. J. Neatherlin at Jimmy.Neatherlin@wipp.ws fax to his attention at 575-234-6062.**

**CRW 112811**

# 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.

**Containment Structures**
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

**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, Munsell Soil Color Chart # 5Y 4/2

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

**A copy of the grant and attachments, including stipulations, 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 activity of 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. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and
termination of the facility.

b. Activities of other parties including, but not limited to:

(1) Land clearing.
(2) Earth-disturbing and earth-moving work.
(3) Blasting.
(4) Vandalism and sabotage.

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, 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, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the 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 the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **25** feet.

6. (a) Where a polyline is laid along a County Road, the operator will lay that polyline ten (10)
feet out from the center of the ditch to prevent obstructing County Maintenance activities.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with 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. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. 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.

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. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. 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. Signs will be maintained in a legible condition for the life of the pipeline.

14. 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. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (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 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.

16. 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, powerline 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.

## 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 2, for Sandy 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 of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/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 |
|---|---|
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |

| | |
|---|---|
| Sand love grass (Eragrostis trichodes) | 1.0 |
| Plains bristlegrass (Setaria macrostachya) | 2.0 |

*Pounds of pure live seed:

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