**District I**
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
**District II**
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
**District III**
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
**District IV**
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

# State of New Mexico
# Energy, Minerals and Natural Resources
# Oil Conservation Division
# 1220 S. St Francis Dr.
# Santa Fe, NM 87505

Form C-101
August 1, 2011

Permit 330345

## APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

| 1. Operator Name and Address | | 2. OGRID Number |
|---|---|---|
| OXY USA INC<br>P.O. Box 4294<br>Houston, TX 772104294 | | 16696 |
| | | 3. API Number<br>30-015-53278 |
| 4. Property Code<br>326058 | 5. Property Name<br>VANADIUM 32 STATE | 6. Well No.<br>175H |

**7. Surface Location**

| UL - Lot | Section | Township | Range | Lot Idn | Feet From | N/S Line | Feet From | E/W Line | County |
|---|---|---|---|---|---|---|---|---|---|
| O | 29 | 23S | 31E | | 500 | S | 1417 | E | Eddy |

**8. Proposed Bottom Hole Location**

| UL - Lot | Section | Township | Range | Lot Idn | Feet From | N/S Line | Feet From | E/W Line | County |
|---|---|---|---|---|---|---|---|---|---|
| C | 32 | 23S | 31E | C | 10 | N | 1680 | W | Eddy |

**9. Pool Information**

| | |
|---|---|
| WC-015 G-08 S233135D;WOLFCAMP | 98236 |

**Additional Well Information**

| 11. Work Type | 12. Well Type | 13. Cable/Rotary | 14. Lease Type | 15. Ground Level Elevation |
|---|---|---|---|---|
| New Well | OIL | | State | 3359 |
| **16. Multiple** | **17. Proposed Depth** | **18. Formation** | **19. Contractor** | **20. Spud Date** |
| N | 22817 | Wolfcamp | | 3/1/2023 |
| Depth to Ground water | | Distance from nearest fresh water well | | Distance to nearest surface water |

☒ **We will be using a closed-loop system in lieu of lined pits**

**21. Proposed Casing and Cement Program**

| Type | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
|---|---|---|---|---|---|---|
| Surf | 17.5 | 13.375 | 54.5 | 461 | 482 | 0 |
| Int1 | 12.25 | 9.625 | 40 | 4235 | 1127 | 0 |
| Int2 | 8.75 | 7.625 | 26.4 | 10686 | 704 | 0 |
| Prod | 6.75 | 5.5 | 20 | 22817 | 954 | 10186 |

**Casing/Cement Program: Additional Comments**

**22. Proposed Blowout Prevention Program**

| Type | Working Pressure | Test Pressure | Manufacturer |
|---|---|---|---|
| Annular | 5000 | 5000 | |
| Blind | 10000 | 10000 | |
| Pipe | 10000 | 10000 | |
| Double Ram | 10000 | 10000 | |

| 23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒, if applicable.** Signature: | | **OIL CONSERVATION DIVISION** | |
|---|---|---|---|
| Printed Name: | Electronically filed by KELLEY MONTGOMERY | Approved By: | Katherine Pickford |
| Title: | Manager Regulatory | Title: | Geoscientist |
| Email Address: | kelley_montgomery@oxy.com | Approved Date: | 1/13/2023 Expiration Date: 1/13/2025 |
| Date: | 12/9/2022 Phone: 713-366-5716 | Conditions of Approval Attached | |

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1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

# State of New Mexico
# Energy, Minerals & Natural Resources Department
# OIL CONSERVATION DIVISION
# 1220 South St. Francis Dr.
# Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| 30-015- 53278 | 98236 | WC-015 G-08 S233135D; WOLFCAMP |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| 326058 | VANADIUM 32 STATE | 175H |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 16696 | OXY USA INC. | 3359.7' |

### [10] Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| O | 29 | 23S | 31E | | 500 | SOUTH | 1417 | EAST | EDDY |

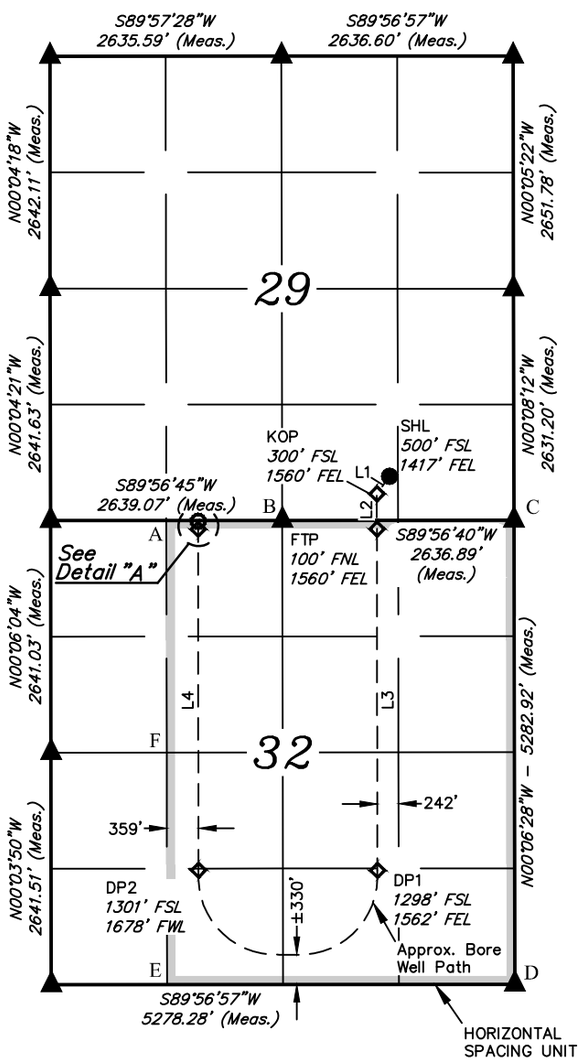
### [11] Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| C | 32 | 23S | 31E | | 10 | NORTH | 1680 | WEST | EDDY |

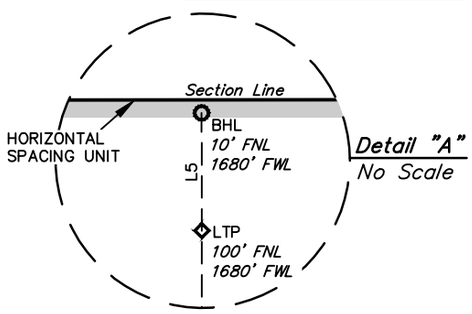
| [12] Dedicated Acres | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|
| 480 | | | |

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.

16




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L1 | S35°32'10"W | 245.78' |
| L2 | S00°07'46"E | 400.00' |
| L3 | S00°04'53"E | 3885.02' |
| L4 | N00°03'52"W | 3881.95' |
| L5 | N00°06'04"W | 90.00' |




| NAD 83 (SURFACE HOLE LOCATION) |
|---|
| LATITUDE = 32°16'10.39" (32.269552°) |
| LONGITUDE = 103°47'45.15" (103.795875°) |
| NAD 27 (SURFACE HOLE LOCATION) |
| LATITUDE = 32°16'09.94" (32.269429°) |
| LONGITUDE = 103°47'43.40" (103.795389°) |
| STATE PLANE NAD 83 (N.M. EAST) |
| N: 462212.05' E: 707454.93' |
| STATE PLANE NAD 27 (N.M. EAST) |
| N: 462152.74' E: 666271.38' |

| NAD 83 (KICK OFF POINT) |
|---|
| LATITUDE = 32°16'08.41" (32.269003°) |
| LONGITUDE = 103°47'46.82" (103.796338°) |
| NAD 27 (KICK OFF POINT) |
| LATITUDE = 32°16'07.97" (32.268880°) |
| LONGITUDE = 103°47'45.07" (103.795852°) |
| STATE PLANE NAD 83 (N.M. EAST) |
| N: 462011.48' E: 707312.94' |
| STATE PLANE NAD 27 (N.M. EAST) |
| N: 461952.18' E: 666129.39' |

| NAD 83 (FIRST TAKE POINT) |
|---|
| LATITUDE = 32°16'04.45" (32.267903°) |
| LONGITUDE = 103°47'46.81" (103.796336°) |
| NAD 27 (FIRST TAKE POINT) |
| LATITUDE = 32°16'04.01" (32.267780°) |
| LONGITUDE = 103°47'45.06" (103.795850°) |
| STATE PLANE NAD 83 (N.M. EAST) |
| N: 461611.57' E: 707315.52' |
| STATE PLANE NAD 27 (N.M. EAST) |
| N: 461552.27' E: 666131.96' |

| NAD 83 (DEFLECTION POINT 1) |
|---|
| LATITUDE = 32°15'26.01" (32.257226°) |
| LONGITUDE = 103°47'46.78" (103.796328°) |
| NAD 27 (DEFLECTION POINT 1) |
| LATITUDE = 32°15'25.57" (32.257103°) |
| LONGITUDE = 103°47'45.03" (103.795843°) |
| STATE PLANE NAD 83 (N.M. EAST) |
| N: 457727.35' E: 707337.33' |
| STATE PLANE NAD 27 (N.M. EAST) |
| N: 457668.16' E: 666153.65' |

| NAD 83 (DEFLECTION POINT 2) |
|---|
| LATITUDE = 32°15'26.04" (32.257234°) |
| LONGITUDE = 103°48'10.50" (103.802917°) |
| NAD 27 (DEFLECTION POINT 2) |
| LATITUDE = 32°15'25.60" (32.257111°) |
| LONGITUDE = 103°48'08.75" (103.802431°) |
| STATE PLANE NAD 83 (N.M. EAST) |
| N: 457719.94' E: 705300.61' |
| STATE PLANE NAD 27 (N.M. EAST) |
| N: 457660.75' E: 664116.94' |

| NAD 83 (LAST TAKE POINT) |
|---|
| LATITUDE = 32°16'04.45" (32.267902°) |
| LONGITUDE = 103°48'10.52" (103.802922°) |
| NAD 27 (LAST TAKE POINT) |
| LATITUDE = 32°16'04.01" (32.267779°) |
| LONGITUDE = 103°48'08.77" (103.802436°) |
| STATE PLANE NAD 83 (N.M. EAST) |
| N: 461601.08' E: 705279.97' |
| STATE PLANE NAD 27 (N.M. EAST) |
| N: 461541.79' E: 664096.41' |

| NAD 83 (TARGET BOTTOM HOLE) |
|---|
| LATITUDE = 32°16'05.34" (32.268150°) |
| LONGITUDE = 103°48'10.52" (103.802922°) |
| NAD 27 (TARGET BOTTOM HOLE) |
| LATITUDE = 32°16'04.90" (32.268027°) |
| LONGITUDE = 103°48'08.77" (103.802436°) |
| STATE PLANE NAD 83 (N.M. EAST) |
| N: 461691.06' E: 705279.43' |
| STATE PLANE NAD 27 (N.M. EAST) |
| N: 461631.77' E: 664095.88' |

### [17] 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.*

Leslie T. Reeves 12/9/22
Signature Date

LESLIE REEVES
Printed Name

LESLIE_REEVES@OXY.COM
E-mail Address

### [18] 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 supervision, and that the same is true and correct to the best of my belief.*

November 09, 2022
Date of Survey

Signature and Seal of Professional Surveyor:


Certificate Number:

● = SURFACE HOLE LOCATION
◇ = KICK OFF/TAKE/ DEFLECTION POINTS
○ = BOTTOM HOLE LOCATION
▲ = SECTION CORNER LOCATED

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00" (NAD 83)

| HSU COORDINATES | | | | |
|---|---|---|---|---|
| | NAD 27 N.M. STATE PLANE, EAST ZONE | | NAD 83 N.M. STATE PLANE, EAST ZONE | |
| POINT | NORTHING | EASTING | NORTHING | EASTING |
| A | 461639.91' | 663735.43' | 461699.21' | 704918.98' |
| B | 461646.69' | 665054.68' | 461705.99' | 706238.24' |
| C | 461660.30' | 667691.03' | 461719.60' | 708874.60' |
| D | 456378.63' | 667722.95' | 456437.79' | 708906.67' |
| E | 456358.54' | 663765.06' | 456417.70' | 704948.77' |
| F | 458999.41' | 663750.67' | 459058.64' | 704934.31' |

2000' 1000' 0' 2000'
SCALE
DRAWN BY: Z.T. 11-10-22

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# State of New Mexico
# Energy, Minerals and Natural Resources
# Oil Conservation Division
# 1220 S. St Francis Dr.
# Santa Fe, NM 87505

Form APD Conditions

Permit 330345

## PERMIT CONDITIONS OF APPROVAL

| Operator Name and Address: | API Number: |
|---|---|
| OXY USA INC [16696]<br>P.O. Box 4294<br>Houston, TX 772104294 | 30-015-53278 |
| | Well:<br>VANADIUM 32 STATE #175H |

| OCD Reviewer | Condition |
|---|---|
| kpickford | Notify OCD 24 hours prior to casing & cement |
| kpickford | Will require a File As Drilled C-102 and a Directional Survey with the C-104 |
| kpickford | The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud |
| kpickford | Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string |
| kpickford | Cement is required to circulate on both surface and intermediate1 strings of casing |
| kpickford | Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system |

# Electronic Delivery Confirmation™

USPS CERTIFIED MAIL™

Leslie Reeves
PO BOX 4294
HOUSTON TX 77210-4294

$5.20 US POSTAGE
FIRST-CLASS
Jan 05 2023
Mailed from ZIP 77210
1 OZ FIRST-CLASS MAIL FLATS RATE
ZONE 4
11923275

stamps endicia

062S0012913542

USPS CERTIFIED MAIL

9407 1118 9876 5839 3135 86

Mosaic Potash Carlsbad Inc
1361 POTASH MINES RD
CARLSBAD NM 88220-8958

| | |
|---|---|
| Reference | |
| USPS # | 9407111898765839313586 |
| USPS Mail Class | Certified with Electronic Delivery Confirmation |
| USPS Status | Your item was picked up at the post office at 4:19 pm on January 11, 2023 in CARLSBAD, NM 88220. |
| USPS History | Available for Pickup, 01/11/2023, 5:58 am, CARLSBAD, NM 88220<br>Arrived at Post Office, 01/11/2023, 5:57 am, CARLSBAD, NM 88220<br>Departed USPS Regional Facility, January 11, 2023, 5:04 am, LUBBOCK TX DISTRIBUTION CENTER<br>Arrived at USPS Regional Destination Facility, 01/10/2023, 5:32 pm, LUBBOCK TX DISTRIBUTION CENTER<br>In Transit to Next Facility, 01/09/2023<br>In Transit to Next Facility, 01/08/2023<br>In Transit to Next Facility, 01/07/2023<br>Arrived at USPS Regional Origin Facility, 01/06/2023, 9:55 pm, NORTH HOUSTON TX DISTRIBUTION CENTER<br>Accepted at USPS Origin Facility, January 6, 2023, 8:40 pm, HOUSTON, TX 77210<br>Shipping Label Created, USPS Awaiting Item, January 5, 2023, 8:37 pm, HOUSTON, TX 77210<br>Pre-Shipment Info Sent to USPS, USPS Awaiting Item, January 5, 2023 |

State of New Mexico
# Energy, Minerals and Natural Resources Department



December 20, 2022

BUREAU OF LAND MANAGEMENT
ATT: James S. Rutley
620 E Greene Street
Carlsbad, NM 88220

STATE LAND OFFICE
ATT: Paige A Czoski
PO BOX 1148
Santa Fe, NM 87505

RE: APPLICATION FOR PERMIT TO DRILL IN POTASH AREA

OPERATOR: OXY USA INC

LEASE NAME: VANADIUM 32 STATE #175H

PROPOSED LOCATION: U/L O Sec 29 T23S R31E 500 FSL 1417 FEL

Lat. 32.369522 Long. -103.795875 NAD83

PROPOSED DEPTH: 22817' MD 11324' TVD

Gentleman:

The application for permit to drill identified above has been filed with this office of the New Mexico Oil Conservation Division. Pursuant to the provisions of Oil Conservation Division Order R – 111 - P, please advise this office whether the location is within an established Life-of-Mine-Reserve that are filed with and approved by your office. If not, please advise whether it is within the buffer zone established by the order.

Thank you for your assistance. Please Return as soon as possible.

Very truly yours,

OIL CONSERVATION DIVISION

Kate Pickford

Petroleum Specialist

505-334-6178 Ext 114

505-372-8856 (cell)

RESONSE:

The above referenced location is in LMR (_____ year) ----------Yes_____ No _____

The above referenced location is within the Buffer Zone----------Yes_____ No _____

Signed _____

Printed Signature _____

Representing _____

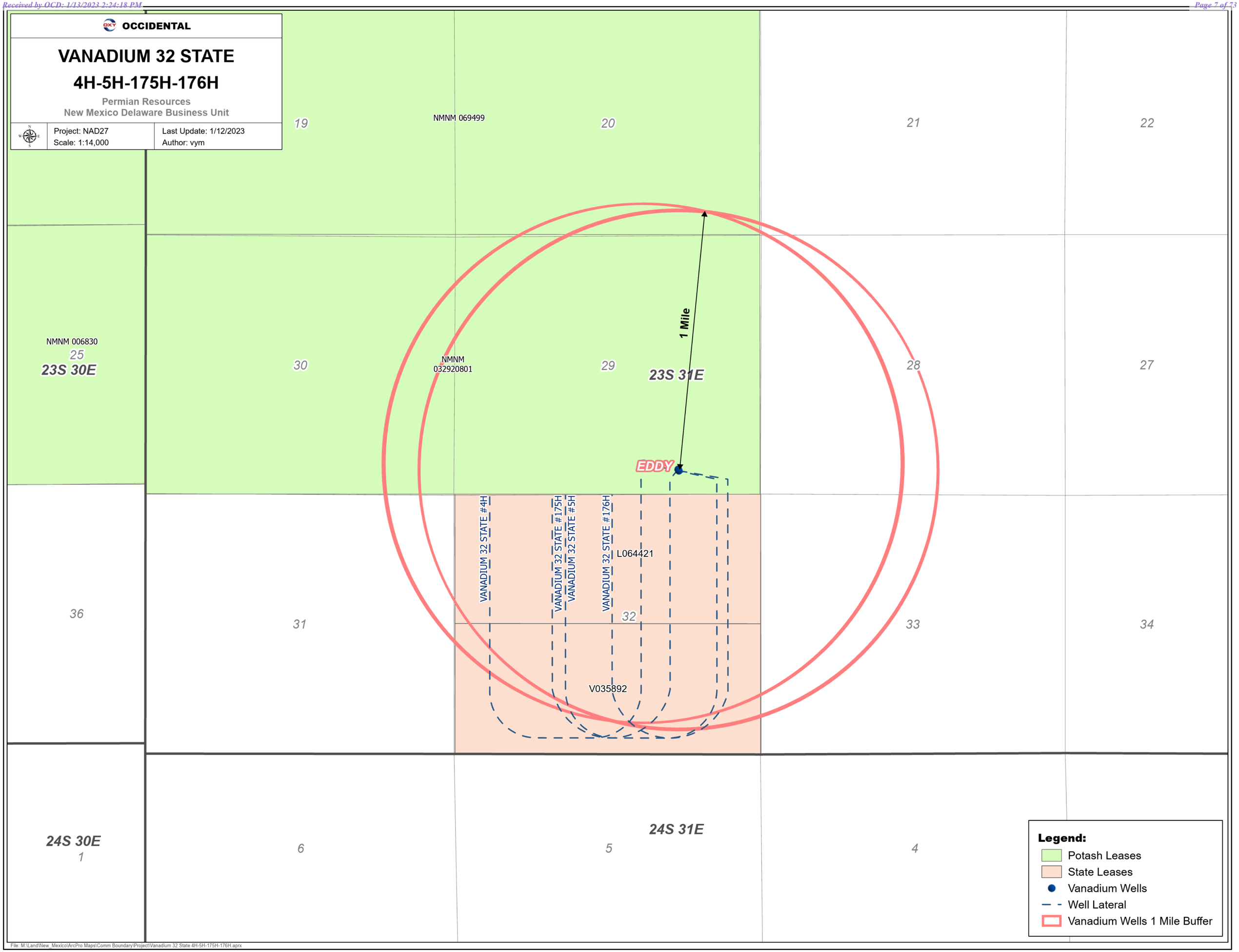
OCCIDENTAL

# VANADIUM 32 STATE 4H-5H-175H-176H

Permian Resources
New Mexico Delaware Business Unit

Project: NAD27
Scale: 1:14,000

Last Update: 1/12/2023
Author: vym



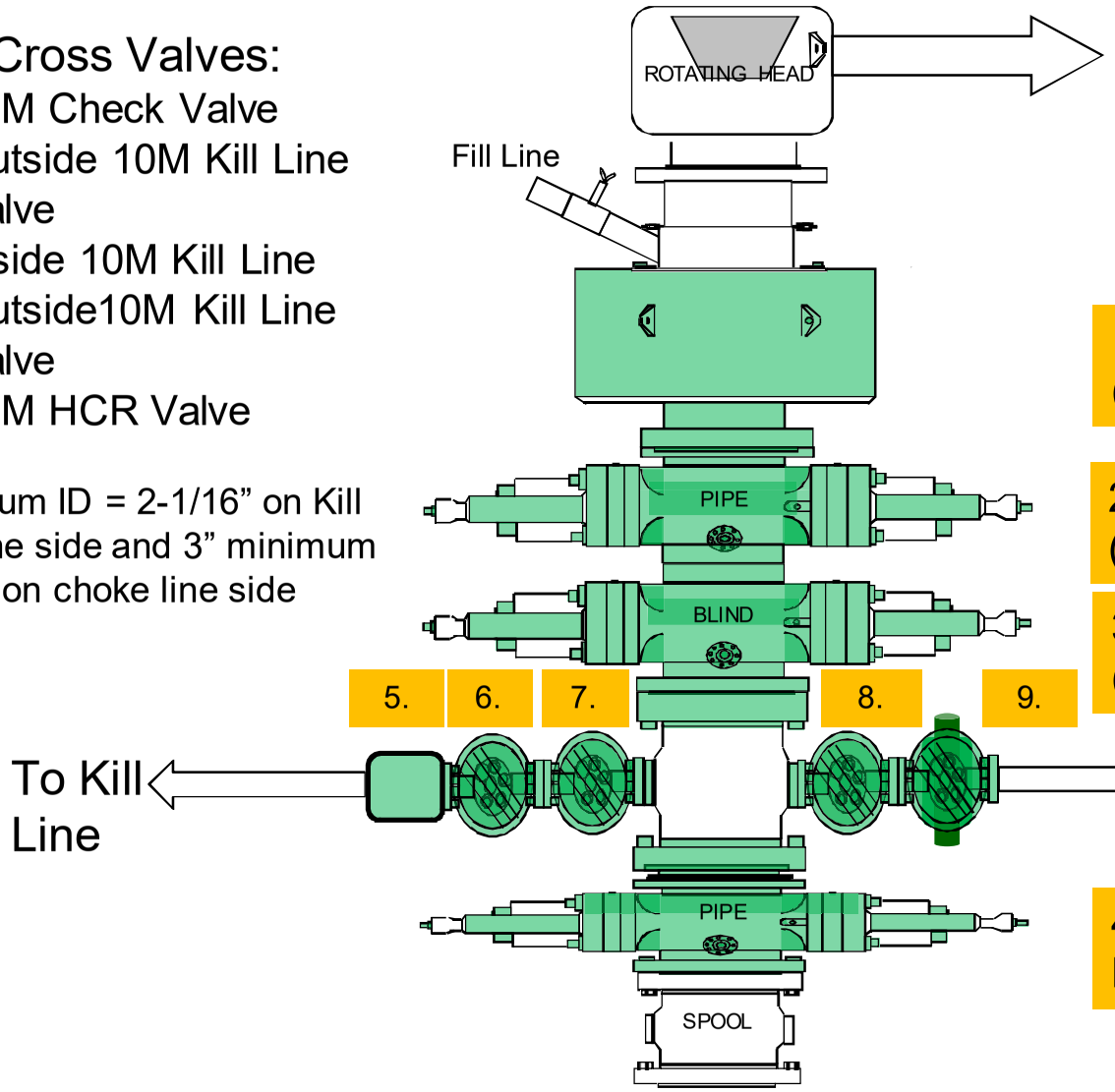

File: M:\Land\New_Mexico\ArcPro Maps\Comm Boundary\Project\Vanadium 32 State 4H-5H-175H-176H.aprx

# 5/10M BOP Stack

Mud Cross Valves:

5. 10M Check Valve
6. Outside 10M Kill Line Valve
7. Inside 10M Kill Line
8. Outside10M Kill Line Valve
9. 10M HCR Valve

*Minimum ID = 2-1/16” on Kill Line side and 3” minimum ID on choke line side

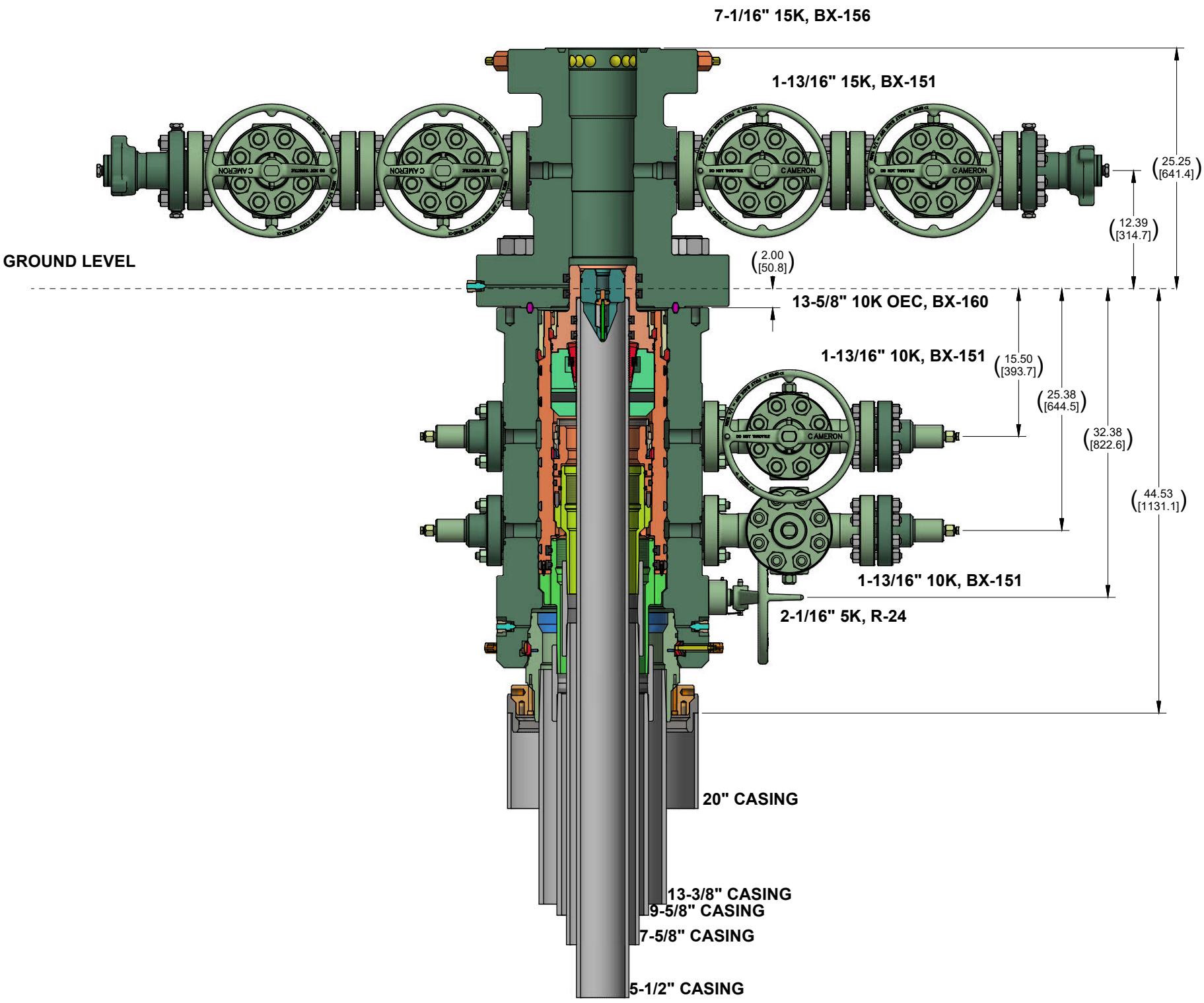



1. 5,000 psi Annular (13-5/8” ID)

2. 10,000 psi Upper Pipe Ram (13-5/8” ID)

3. 10,000 psi Blind Ram (13-5/8” ID)

4. 10,000 psi Lower Pipe Ram (13-5/8” ID)

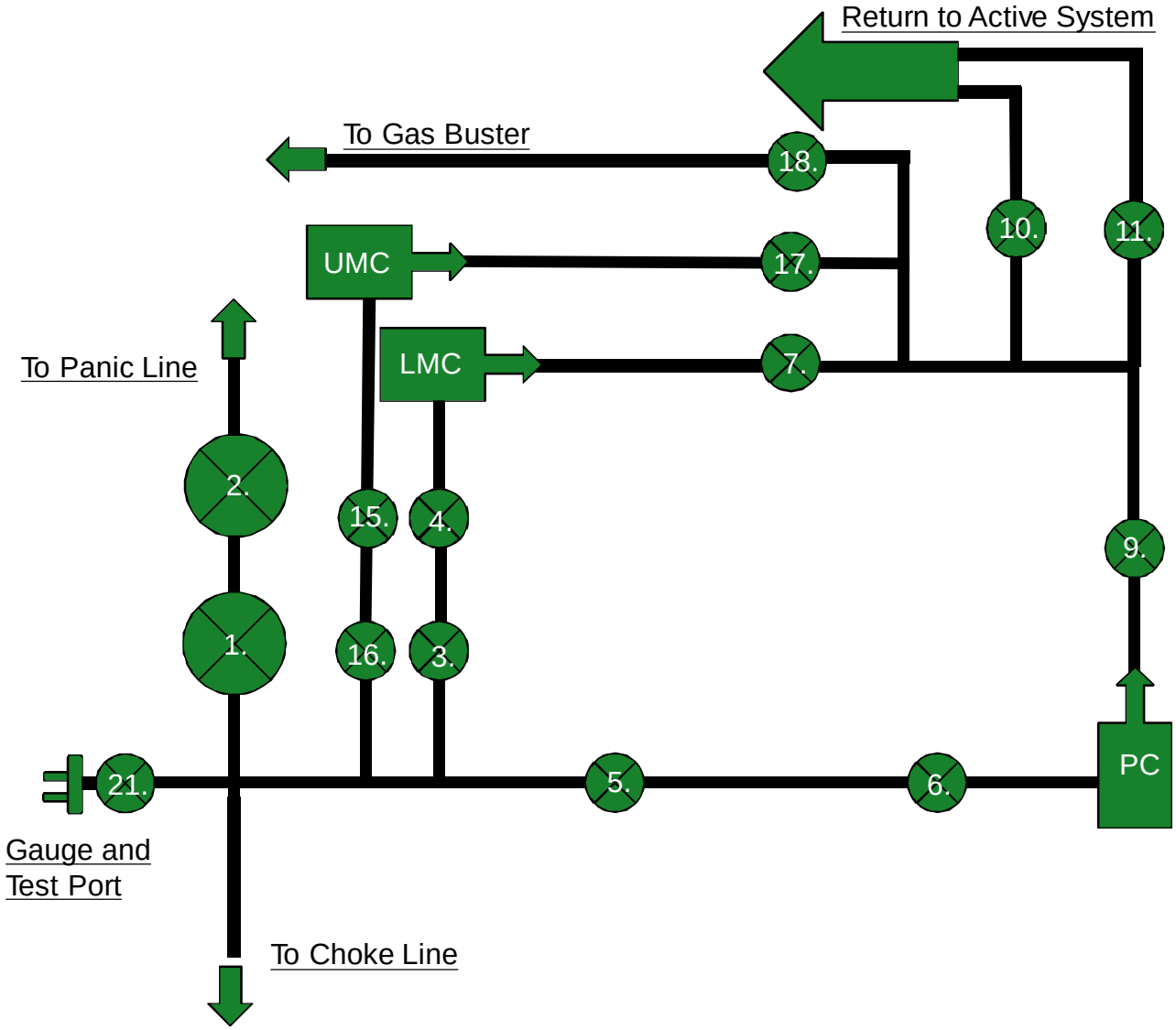



CONFIDENTIAL

| | | | | |
|---|---|---|---|---|
| SURFACE TREATMENT | DO NOT SCALE | | CAMERON A Schlumberger Company | SURFACE SYSTEMS |
| | DRAWN BY: A. SKLENKA | DATE 26 Apr 22 | | |
| MATERIAL & HEAT TREAT | CHECKED BY: A. SKLENKA | DATE 26 Apr 22 | OXY<br>ADAPT NST 10K 3 STAGE WELLHEAD<br>STANDARD / EMERGENCY SYSTEM | |
| | APPROVED BY: A. SKLENKA | DATE 26 Apr 22 | | |
| ESTIMATED WEIGHT: 7968.4 LBS 3614.4 KG | INITIAL USE B/M: IT# 7836394 | | SHEET 1 OF 1 | LO-096232-62 REV: 01 |

INVENTOR - D

# 10M Choke Panel



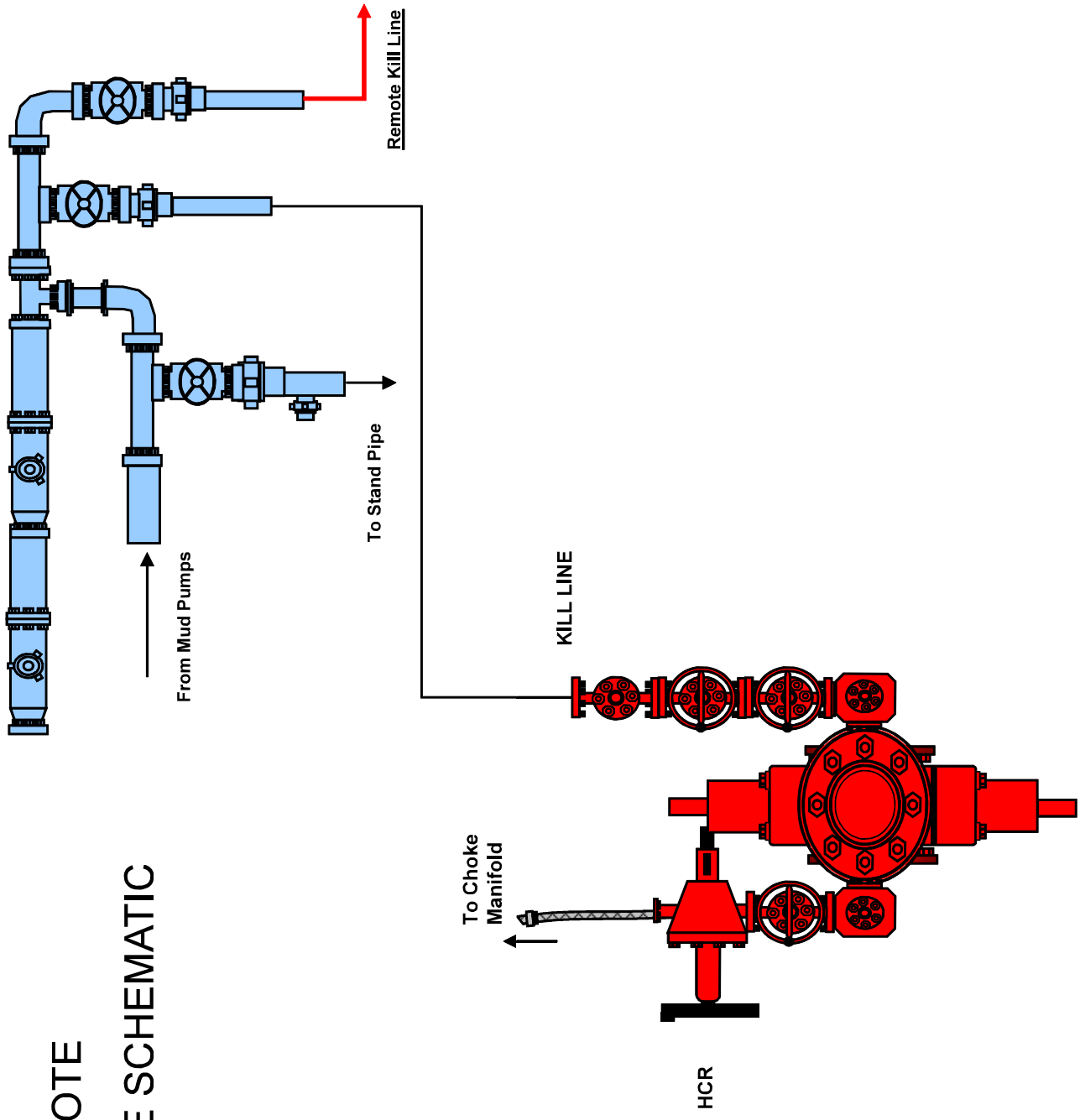

1. Choke Manifold Valve
2. Choke Manifold Valve
3. Choke Manifold Valve
4. Choke Manifold Valve
5. Choke Manifold Valve
6. Choke Manifold Valve
7. Choke Manifold Valve
8. PC – Power Choke
9. Choke Manifold Valve
10. Choke Manifold Valve
11. Choke Manifold Valve
12. LMC – Lower Manual Choke
13. UMC – Upper manual choke

15. Choke Manifold Valve
16. Choke Manifold Valve
17. Choke Manifold Valve
18. Choke Manifold Valve

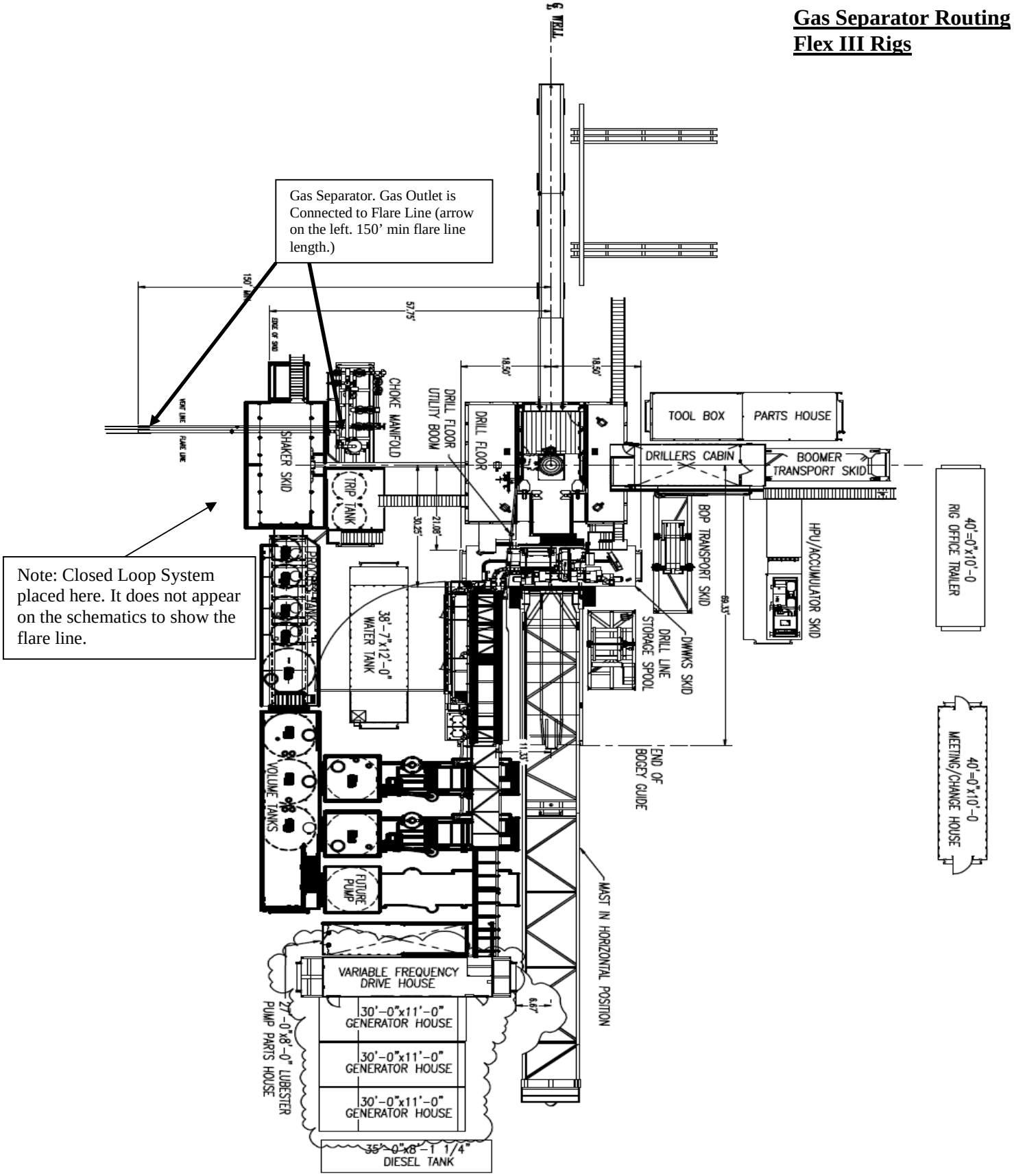
21. Vertical Choke Manifold Valve

***All Valves 3" minimum**

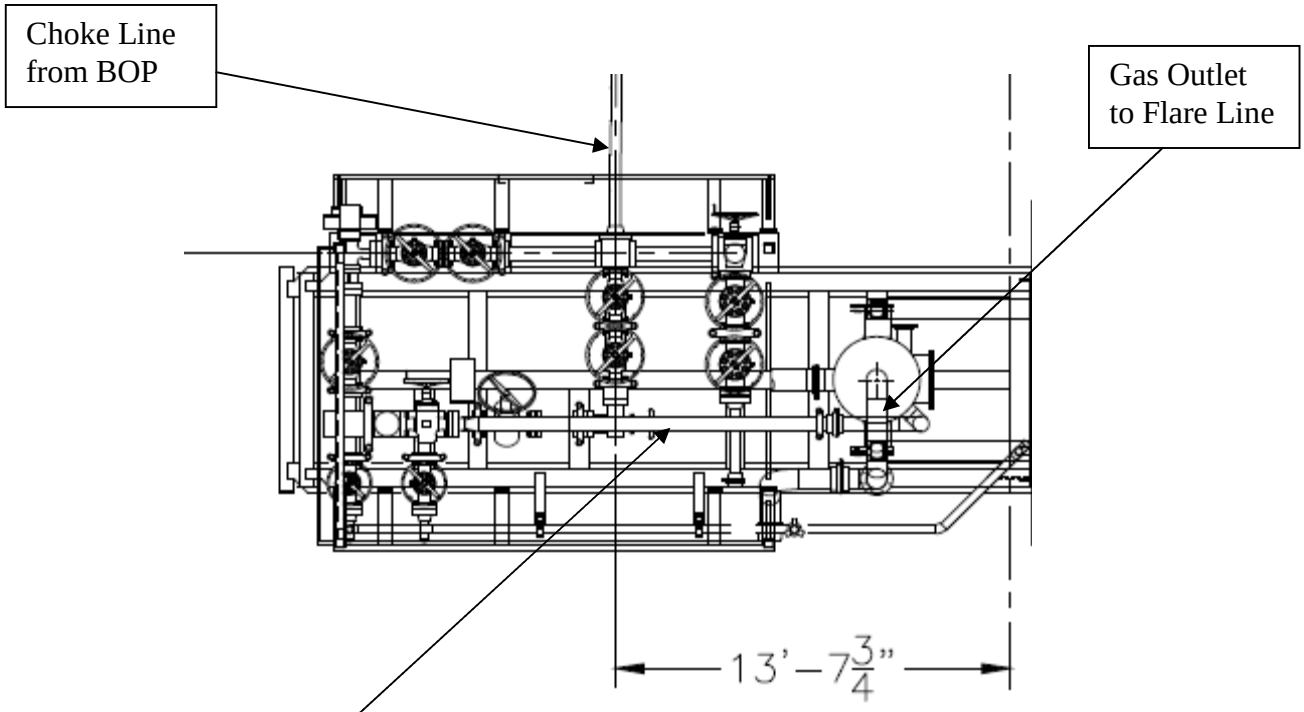
# 10M REMOTE KILL LINE SCHEMATIC



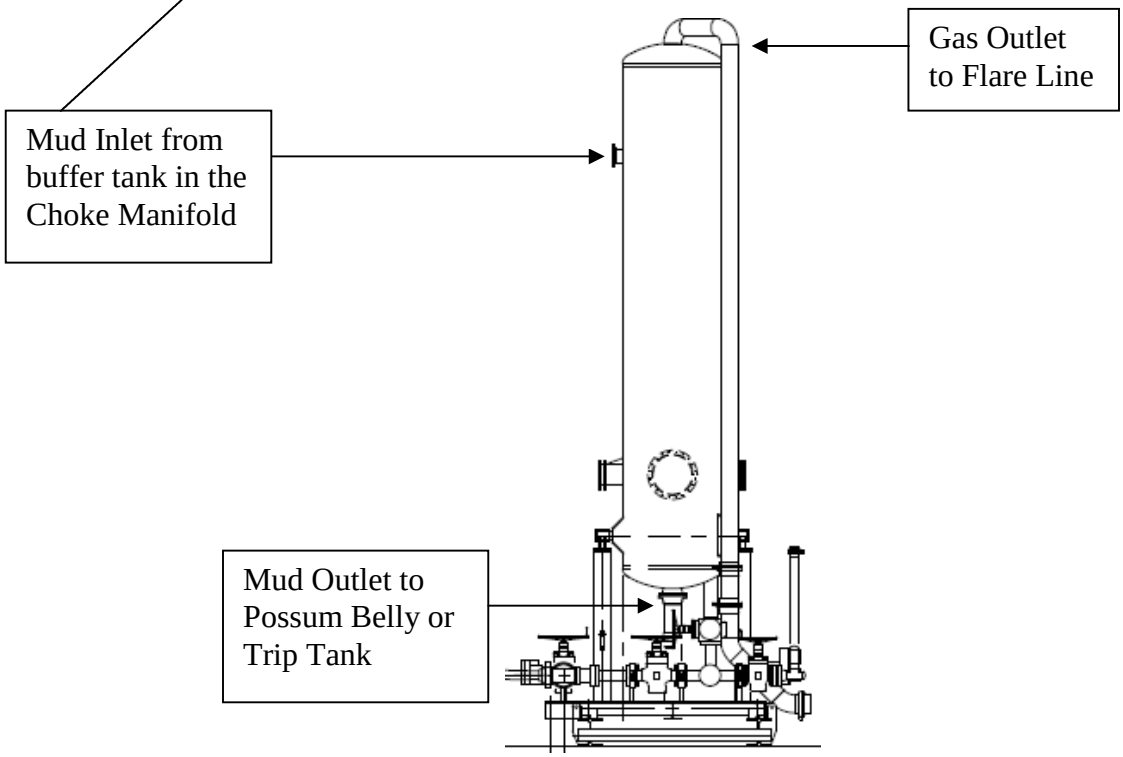
# Gas Separator Routing
# Flex III Rigs



**Choke Manifold – Gas Separator (Top View)**

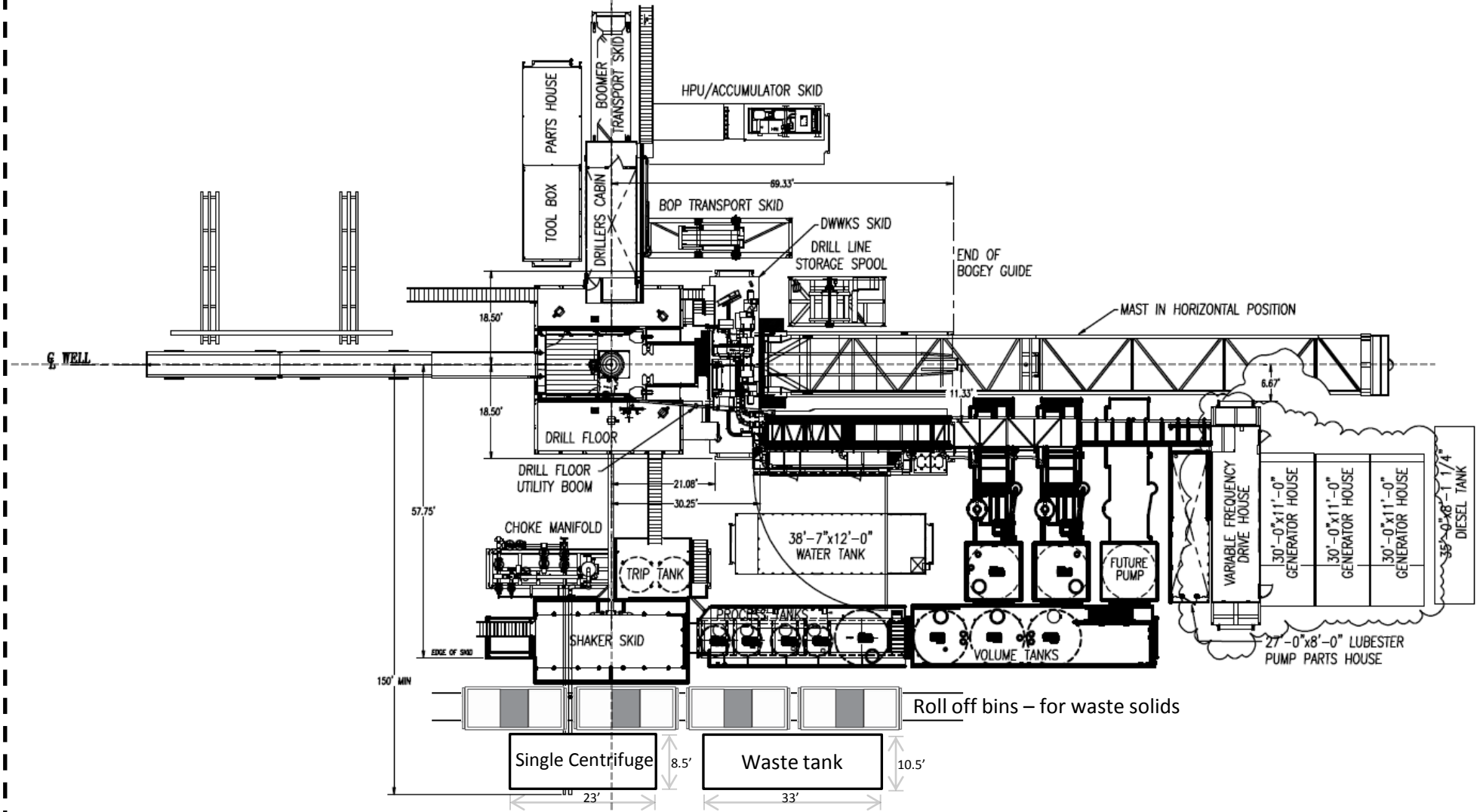



**Choke Manifold – Gas Separator (Side View)**

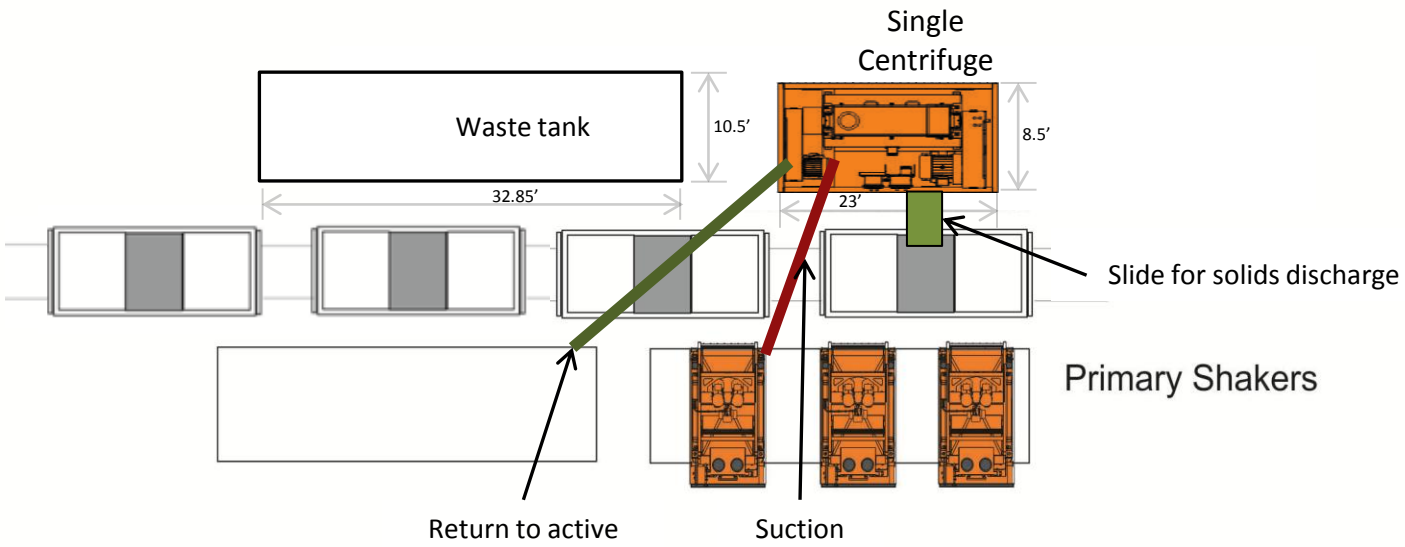


# Oxy Single Centrifuge Closed Loop System – New Mexico Flex III

May 28, 2013



Oxy





Oxy Single Centrifuge Closed Loop System – New Mexico Flex III

May 28, 2013

## OXY's Minimum Design Criteria

Burst, Collapse, and Tensile SF are calculated using Landmark's Stress Check (Casing Design) software. A sundry will be requested if any lesser grade or different size casing is substituted.

### 1) Casing Design Assumptions

#### a) Burst Loads

CSG Test (Surface)

- Internal: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
- External: Pore pressure in open hole.

CSG Test (Intermediate)

- Internal: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
- External: Mud Weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

CSG Test (Production)

- Internal:
  - For Drilling: Displacement fluid + pressure required to comply with regulatory casing test pressures. This will comply with both Onshore Oil and Gas Order No. 2 and 19.15.16 of the OCD Rules.
  - For Production: The design pressure test should be the greater of (1) the planned test pressure prior to stimulation down the casing. (2) the regulatory test pressure, and (3) the expected gas lift system pressure. The design test fluid should be the fluid associated with pressure test having the greatest pressure.
- External:
  - For Drilling: Mud Weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.
  - For Production: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Gas Column (Surface)

- Internal: Assumes a full column of gas in the casing with a Gas/Oil Gradient of 0.1 psi/ft in the absence of better information. It is limited to the controlling pressure based on the fracture pressure at the shoe or the maximum expected pore pressure within the next drilling interval, whichever results in a lower surface pressure.
- External: Fluid gradient below TOC, pore pressure from the TOC to the Intermediate CSG shoe (if applicable), and MW of the drilling mud that was in the hole when the CSG was run from Intermediate CSG shoe to surface.

Bullheading (Surface / Intermediate)

- Internal: The string must be designed to withstand a pressure profile based on the fracture pressure at the casing shoe with a column of water above the shoe plus an additional surface pressure (in psi) of 0.02 X MD of the shoe to account for pumping friction pressure.
- External: Mud weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Gas Kick (Intermediate)

- The string must be designed to at least a gas kick load case unless the rig is unable to detect a kick. For the gas kick load case, the internal pressure profile must be based on a minimum volume of 50 bbl or the minimum kick detection capability of the rig, whichever is greater, and a kick intensity of 2.0 ppg for Class 1, 1.0 ppg of Class 2, and 0.5 ppg for Class 3 and 4 wells.
- Internal: Influx depth of the maximum pore pressure of 0.55 “gas kick gravity” of gas to surface while drilling the next hole section.
- External: Mud weight to the TOC, cement mix water gradient below TOC, and pore pressure in open hole.

Tubing Leak Near Surface While Producing (Production)

- Internal: SITP plus a packer fluid gradient to the shoe or top of packer.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Tubing Leak Near Surface While Stimulating (Production)

- Internal: Surface pressure or pressure-relief system pressure, whichever is lower plus packer fluid gradient.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

Injection / Stimulation Down Casing (Production)

- Internal: Surface pressure plus injection fluid gradient.
- External: Mud base-fluid density to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

**b)** Collapse Loads

Lost Circulation (Surface / Intermediate)

- Internal: Lost circulation at the TD of the next hole section, and the fluid level falls to a depth where the hydrostatic of the mud equals pore pressure at the depth of the lost circulation zone.
- External: MW of the drilling mud that was in the hole when the casing was run.

Cementing (Surface / Intermediate / Production)

- Internal: Displacement fluid density.
- External: Mud weight from TOC to surface and cement slurry weight from TOC to casing shoe.

Full Evacuation (Production)

- Internal: Full void pipe.
- External: MW of drilling mud in the hole when the casing was run.

**c)** Tension Loads

Running Casing (Surface / Intermediate / Production)

- Axial: Buoyant weight of the string plus the lesser of 100,000 lb or the string weight in air.

Green Cement (Surface / Intermediate / Production)

- Axial: Buoyant weight of the string plus cement plug bump pressure load.

Project: PRD NM DIRECTIONAL PLANS (NAD 1983)
Site: Vanadium 32
Well: Vanadium 32 State 175H
Wellbore: Wellbore #1
Design: Permitting Plan

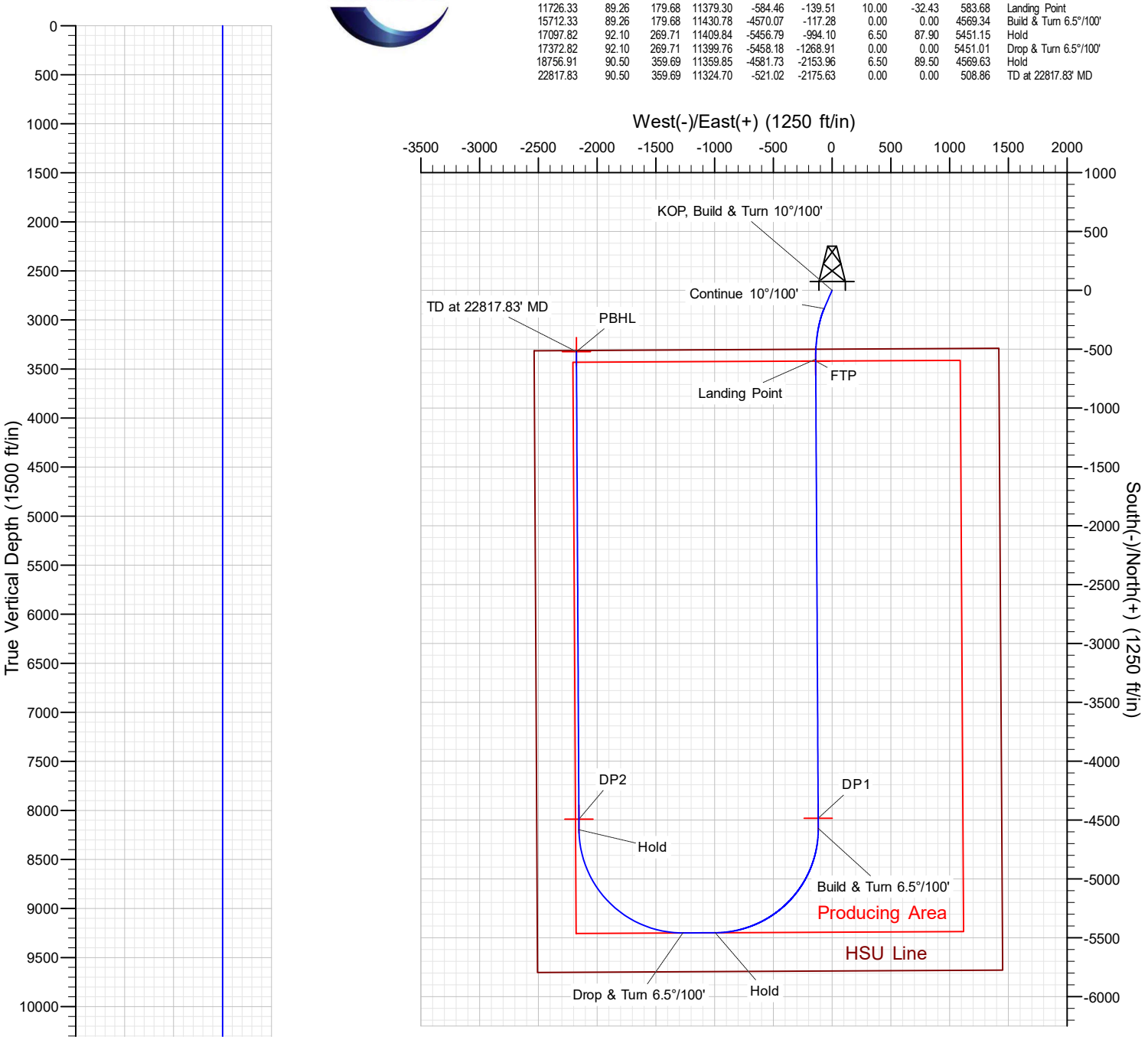
WELL DETAILS: Vanadium 32 State 175H

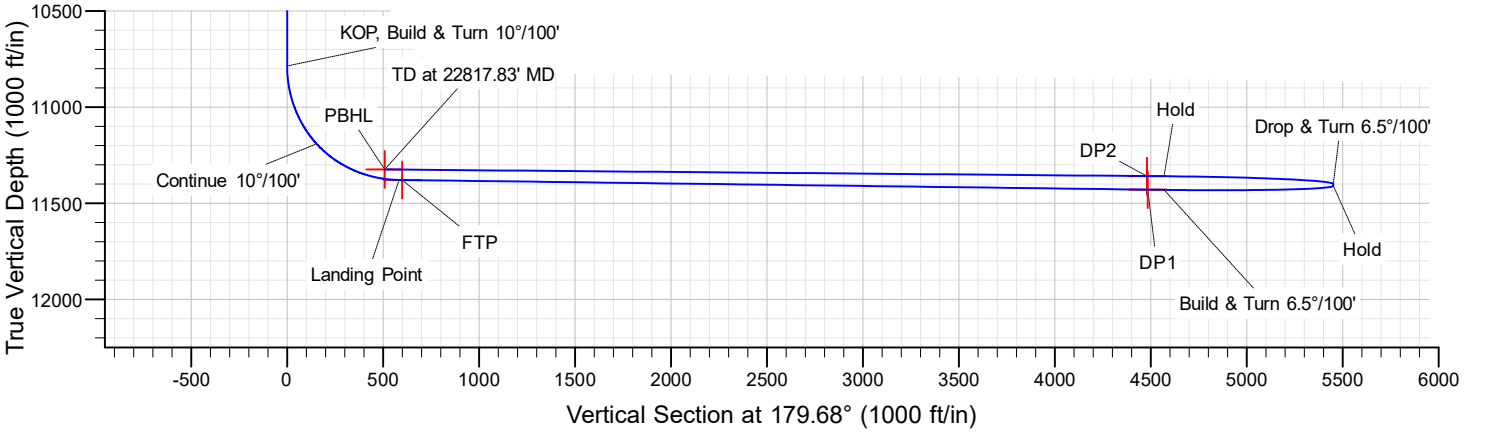
Ground Level: 3359.70

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|
| 0.00 | 0.00 | 462212.05 | 707454.93 | 32.269552 | -103.795875 |

SECTION DETAILS

| MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Annotation |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 10786.00 | 0.00 | 0.00 | 10786.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP, Build & Turn 10°/100' |
| 11235.90 | 44.99 | 203.57 | 11191.07 | -153.75 | -67.08 | 10.00 | 203.57 | 153.37 | Continue 10°/100' |
| 11726.33 | 89.26 | 179.68 | 11379.30 | -584.46 | -139.51 | 10.00 | -32.43 | 583.68 | Landing Point |
| 15712.33 | 89.26 | 179.68 | 11430.78 | -4570.07 | -117.28 | 0.00 | 0.00 | 4569.34 | Build & Turn 6.5°/100' |
| 17097.82 | 92.10 | 269.71 | 11409.84 | -5456.79 | -994.10 | 6.50 | 87.90 | 5451.15 | Hold |
| 17372.82 | 92.10 | 269.71 | 11399.76 | -5458.18 | -1268.91 | 0.00 | 0.00 | 5451.01 | Drop & Turn 6.5°/100' |
| 18756.91 | 90.50 | 359.69 | 11359.85 | -4581.73 | -2153.96 | 6.50 | 89.50 | 4569.63 | Hold |
| 22817.83 | 90.50 | 359.69 | 11324.70 | -521.02 | -2175.63 | 0.00 | 0.00 | 508.86 | TD at 22817.83' MD |



# OXY

**PRD NM DIRECTIONAL PLANS (NAD 1983)**
**Vanadium 32**
**Vanadium 32 State 175H**

**Wellbore #1**

**Plan: Permitting Plan**

# Standard Planning Report

**30 November, 2022**

# OXY
## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | HOPSPP | **Local Co-ordinate Reference:** | Well Vanadium 32 State 175H |
| **Company:** | ENGINEERING DESIGNS | **TVD Reference:** | RKB=25' @ 3384.70ft |
| **Project:** | PRD NM DIRECTIONAL PLANS (NAD 1983) | **MD Reference:** | RKB=25' @ 3384.70ft |
| **Site:** | Vanadium 32 | **North Reference:** | Grid |
| **Well:** | Vanadium 32 State 175H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Permitting Plan | | |

**Project** PRD NM DIRECTIONAL PLANS (NAD 1983)

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Eastern Zone | | Using geodetic scale factor |

**Site** Vanadium 32

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 461,451.09 usft | **Latitude:** | 32.267517 |
| **From:** | Map | **Easting:** | 703,295.81 usft | **Longitude:** | -103.809343 |
| **Position Uncertainty:** | 2.00 ft | **Slot Radius:** | 13.200 in | | |

**Well** Vanadium 32 State 175H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 ft | **Northing:** | 462,212.05 usf | **Latitude:** | 32.269552 |
| | **+E/-W** | 0.00 ft | **Easting:** | 707,454.93 usf | **Longitude:** | -103.795875 |
| **Position Uncertainty** | | 2.00 ft | **Wellhead Elevation:** | 0.00 ft | **Ground Level:** | 3,359.70 ft |
| **Grid Convergence:** | | 0.29 ° | | | | |

**Wellbore** Wellbore #1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | HDGM_FILE | 7/29/2019 | 6.77 | 59.97 | 47,946.00000000 |

**Design** Permitting Plan

**Audit Notes:**

| | | | | |
|---|---|---|---|---|
| **Version:** | **Phase:** | PROTOTYPE | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 179.68 |

**Plan Survey Tool Program** **Date** 11/30/2022

| | Depth From (ft) | Depth To (ft) | Survey (Wellbore) | Tool Name | Remarks |
|---|---|---|---|---|---|
| 1 | 0.00 | 22,816.83 | Permitting Plan (Wellbore #1) | B001Mb_MWD+HRGM<br>OWSG MWD + HRGM | |

**Plan Sections**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 10,786.00 | 0.00 | 0.00 | 10,786.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 11,235.90 | 44.99 | 203.57 | 11,191.07 | -153.75 | -67.08 | 10.00 | 10.00 | 0.00 | 203.57 | |
| 11,726.33 | 89.26 | 179.68 | 11,379.30 | -584.46 | -139.51 | 10.00 | 9.03 | -4.87 | -32.43 | FTP (Vanadium 32 |
| 15,712.33 | 89.26 | 179.68 | 11,430.78 | -4,570.07 | -117.28 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 17,097.82 | 92.10 | 269.71 | 11,409.84 | -5,456.79 | -994.10 | 6.50 | 0.20 | 6.50 | 87.90 | |
| 17,372.82 | 92.10 | 269.71 | 11,399.76 | -5,458.18 | -1,268.91 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 18,756.91 | 90.50 | 359.69 | 11,359.85 | -4,581.73 | -2,153.96 | 6.50 | -0.12 | 6.50 | 89.50 | |
| 22,817.83 | 90.50 | 359.69 | 11,324.70 | -521.02 | -2,175.63 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL (Vanadium 32 |

# OXY

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | HOPSPP | **Local Co-ordinate Reference:** | Well Vanadium 32 State 175H |
| **Company:** | ENGINEERING DESIGNS | **TVD Reference:** | RKB=25' @ 3384.70ft |
| **Project:** | PRD NM DIRECTIONAL PLANS (NAD 1983) | **MD Reference:** | RKB=25' @ 3384.70ft |
| **Site:** | Vanadium 32 | **North Reference:** | Grid |
| **Well:** | Vanadium 32 State 175H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Permitting Plan | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,500.00 | 0.00 | 0.00 | 1,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,600.00 | 0.00 | 0.00 | 1,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,700.00 | 0.00 | 0.00 | 1,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 0.00 | 0.00 | 1,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 0.00 | 0.00 | 1,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 0.00 | 0.00 | 2,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 0.00 | 0.00 | 2,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 0.00 | 0.00 | 2,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 0.00 | 0.00 | 2,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 0.00 | 0.00 | 2,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 0.00 | 0.00 | 2,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 0.00 | 0.00 | 2,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 0.00 | 0.00 | 2,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 0.00 | 0.00 | 2,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 0.00 | 0.00 | 2,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 0.00 | 0.00 | 3,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 0.00 | 0.00 | 3,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 0.00 | 0.00 | 3,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 0.00 | 0.00 | 3,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 0.00 | 0.00 | 3,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 0.00 | 0.00 | 3,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 0.00 | 0.00 | 3,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 0.00 | 0.00 | 3,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 0.00 | 0.00 | 3,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 0.00 | 0.00 | 3,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 0.00 | 0.00 | 4,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 0.00 | 0.00 | 4,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 0.00 | 0.00 | 4,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 0.00 | 0.00 | 4,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 0.00 | 0.00 | 4,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 0.00 | 0.00 | 4,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 0.00 | 0.00 | 4,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 0.00 | 0.00 | 4,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 0.00 | 0.00 | 4,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 0.00 | 0.00 | 4,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 0.00 | 0.00 | 5,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 0.00 | 0.00 | 5,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 0.00 | 0.00 | 5,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 0.00 | 0.00 | 5,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 0.00 | 0.00 | 5,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# OXY
## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | HOPSPP | **Local Co-ordinate Reference:** | Well Vanadium 32 State 175H |
| **Company:** | ENGINEERING DESIGNS | **TVD Reference:** | RKB=25' @ 3384.70ft |
| **Project:** | PRD NM DIRECTIONAL PLANS (NAD 1983) | **MD Reference:** | RKB=25' @ 3384.70ft |
| **Site:** | Vanadium 32 | **North Reference:** | Grid |
| **Well:** | Vanadium 32 State 175H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Permitting Plan | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 5,500.00 | 0.00 | 0.00 | 5,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 0.00 | 0.00 | 5,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 0.00 | 0.00 | 5,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 0.00 | 0.00 | 5,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 0.00 | 0.00 | 5,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 0.00 | 0.00 | 6,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 0.00 | 0.00 | 6,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 0.00 | 0.00 | 6,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 0.00 | 0.00 | 6,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 0.00 | 0.00 | 6,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 0.00 | 0.00 | 6,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 0.00 | 0.00 | 6,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,700.00 | 0.00 | 0.00 | 6,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,800.00 | 0.00 | 0.00 | 6,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6,900.00 | 0.00 | 0.00 | 6,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,000.00 | 0.00 | 0.00 | 7,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,100.00 | 0.00 | 0.00 | 7,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,200.00 | 0.00 | 0.00 | 7,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,300.00 | 0.00 | 0.00 | 7,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,400.00 | 0.00 | 0.00 | 7,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,500.00 | 0.00 | 0.00 | 7,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,600.00 | 0.00 | 0.00 | 7,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,700.00 | 0.00 | 0.00 | 7,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,800.00 | 0.00 | 0.00 | 7,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7,900.00 | 0.00 | 0.00 | 7,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,000.00 | 0.00 | 0.00 | 8,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,100.00 | 0.00 | 0.00 | 8,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,200.00 | 0.00 | 0.00 | 8,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,300.00 | 0.00 | 0.00 | 8,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,400.00 | 0.00 | 0.00 | 8,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,500.00 | 0.00 | 0.00 | 8,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,600.00 | 0.00 | 0.00 | 8,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,700.00 | 0.00 | 0.00 | 8,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,800.00 | 0.00 | 0.00 | 8,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8,900.00 | 0.00 | 0.00 | 8,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,000.00 | 0.00 | 0.00 | 9,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,100.00 | 0.00 | 0.00 | 9,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,200.00 | 0.00 | 0.00 | 9,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,300.00 | 0.00 | 0.00 | 9,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,400.00 | 0.00 | 0.00 | 9,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,500.00 | 0.00 | 0.00 | 9,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,600.00 | 0.00 | 0.00 | 9,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 0.00 | 0.00 | 9,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 0.00 | 0.00 | 9,800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 0.00 | 0.00 | 9,900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 0.00 | 0.00 | 10,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 0.00 | 0.00 | 10,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 0.00 | 0.00 | 10,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 0.00 | 0.00 | 10,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,400.00 | 0.00 | 0.00 | 10,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 0.00 | 0.00 | 10,500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 0.00 | 0.00 | 10,600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 0.00 | 0.00 | 10,700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,786.00 | 0.00 | 0.00 | 10,786.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 1.40 | 203.57 | 10,800.00 | -0.16 | -0.07 | 0.16 | 10.00 | 10.00 | 0.00 |

# OXY

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | HOPSPP | **Local Co-ordinate Reference:** | Well Vanadium 32 State 175H |
| **Company:** | ENGINEERING DESIGNS | **TVD Reference:** | RKB=25' @ 3384.70ft |
| **Project:** | PRD NM DIRECTIONAL PLANS (NAD 1983) | **MD Reference:** | RKB=25' @ 3384.70ft |
| **Site:** | Vanadium 32 | **North Reference:** | Grid |
| **Well:** | Vanadium 32 State 175H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Permitting Plan | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 10,900.00 | 11.40 | 203.57 | 10,899.25 | -10.36 | -4.52 | 10.34 | 10.00 | 10.00 | 0.00 |
| 11,000.00 | 21.40 | 203.57 | 10,995.06 | -36.21 | -15.80 | 36.12 | 10.00 | 10.00 | 0.00 |
| 11,100.00 | 31.40 | 203.57 | 11,084.52 | -76.91 | -33.55 | 76.72 | 10.00 | 10.00 | 0.00 |
| 11,200.00 | 41.40 | 203.57 | 11,164.90 | -131.23 | -57.25 | 130.91 | 10.00 | 10.00 | 0.00 |
| 11,235.90 | 44.99 | 203.57 | 11,191.07 | -153.75 | -67.08 | 153.37 | 10.00 | 10.00 | 0.00 |
| 11,300.00 | 50.49 | 199.12 | 11,234.17 | -197.93 | -84.25 | 197.45 | 10.00 | 8.58 | -6.94 |
| 11,400.00 | 59.35 | 193.43 | 11,291.62 | -276.41 | -106.94 | 275.81 | 10.00 | 8.86 | -5.69 |
| 11,500.00 | 68.41 | 188.71 | 11,335.62 | -364.43 | -124.01 | 363.73 | 10.00 | 9.06 | -4.72 |
| 11,600.00 | 77.59 | 184.55 | 11,364.84 | -459.30 | -134.95 | 458.54 | 10.00 | 9.18 | -4.16 |
| 11,700.00 | 86.82 | 180.68 | 11,378.40 | -558.15 | -139.43 | 557.37 | 10.00 | 9.24 | -3.87 |
| 11,726.33 | 89.26 | 179.68 | 11,379.30 | -584.46 | -139.51 | 583.68 | 10.00 | 9.25 | -3.80 |
| 11,800.00 | 89.26 | 179.68 | 11,380.25 | -658.13 | -139.10 | 657.34 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 89.26 | 179.68 | 11,381.54 | -758.12 | -138.54 | 757.33 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 89.26 | 179.68 | 11,382.83 | -858.11 | -137.98 | 857.32 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 89.26 | 179.68 | 11,384.12 | -958.10 | -137.42 | 957.32 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 89.26 | 179.68 | 11,385.41 | -1,058.09 | -136.87 | 1,057.31 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 89.26 | 179.68 | 11,386.71 | -1,158.08 | -136.31 | 1,157.30 | 0.00 | 0.00 | 0.00 |
| 12,400.00 | 89.26 | 179.68 | 11,388.00 | -1,258.07 | -135.75 | 1,257.29 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 89.26 | 179.68 | 11,389.29 | -1,358.06 | -135.19 | 1,357.28 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 89.26 | 179.68 | 11,390.58 | -1,458.05 | -134.64 | 1,457.27 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 89.26 | 179.68 | 11,391.87 | -1,558.04 | -134.08 | 1,557.27 | 0.00 | 0.00 | 0.00 |
| 12,800.00 | 89.26 | 179.68 | 11,393.16 | -1,658.03 | -133.52 | 1,657.26 | 0.00 | 0.00 | 0.00 |
| 12,900.00 | 89.26 | 179.68 | 11,394.45 | -1,758.02 | -132.96 | 1,757.25 | 0.00 | 0.00 | 0.00 |
| 13,000.00 | 89.26 | 179.68 | 11,395.75 | -1,858.01 | -132.41 | 1,857.24 | 0.00 | 0.00 | 0.00 |
| 13,100.00 | 89.26 | 179.68 | 11,397.04 | -1,958.00 | -131.85 | 1,957.23 | 0.00 | 0.00 | 0.00 |
| 13,200.00 | 89.26 | 179.68 | 11,398.33 | -2,057.99 | -131.29 | 2,057.22 | 0.00 | 0.00 | 0.00 |
| 13,300.00 | 89.26 | 179.68 | 11,399.62 | -2,157.98 | -130.73 | 2,157.22 | 0.00 | 0.00 | 0.00 |
| 13,400.00 | 89.26 | 179.68 | 11,400.91 | -2,257.97 | -130.17 | 2,257.21 | 0.00 | 0.00 | 0.00 |
| 13,500.00 | 89.26 | 179.68 | 11,402.20 | -2,357.96 | -129.62 | 2,357.20 | 0.00 | 0.00 | 0.00 |
| 13,600.00 | 89.26 | 179.68 | 11,403.50 | -2,457.95 | -129.06 | 2,457.19 | 0.00 | 0.00 | 0.00 |
| 13,700.00 | 89.26 | 179.68 | 11,404.79 | -2,557.94 | -128.50 | 2,557.18 | 0.00 | 0.00 | 0.00 |
| 13,800.00 | 89.26 | 179.68 | 11,406.08 | -2,657.93 | -127.94 | 2,657.17 | 0.00 | 0.00 | 0.00 |
| 13,900.00 | 89.26 | 179.68 | 11,407.37 | -2,757.92 | -127.39 | 2,757.17 | 0.00 | 0.00 | 0.00 |
| 14,000.00 | 89.26 | 179.68 | 11,408.66 | -2,857.91 | -126.83 | 2,857.16 | 0.00 | 0.00 | 0.00 |
| 14,100.00 | 89.26 | 179.68 | 11,409.95 | -2,957.90 | -126.27 | 2,957.15 | 0.00 | 0.00 | 0.00 |
| 14,200.00 | 89.26 | 179.68 | 11,411.24 | -3,057.89 | -125.71 | 3,057.14 | 0.00 | 0.00 | 0.00 |
| 14,300.00 | 89.26 | 179.68 | 11,412.54 | -3,157.88 | -125.16 | 3,157.13 | 0.00 | 0.00 | 0.00 |
| 14,400.00 | 89.26 | 179.68 | 11,413.83 | -3,257.87 | -124.60 | 3,257.12 | 0.00 | 0.00 | 0.00 |
| 14,500.00 | 89.26 | 179.68 | 11,415.12 | -3,357.86 | -124.04 | 3,357.12 | 0.00 | 0.00 | 0.00 |
| 14,600.00 | 89.26 | 179.68 | 11,416.41 | -3,457.85 | -123.48 | 3,457.11 | 0.00 | 0.00 | 0.00 |
| 14,700.00 | 89.26 | 179.68 | 11,417.70 | -3,557.84 | -122.93 | 3,557.10 | 0.00 | 0.00 | 0.00 |
| 14,800.00 | 89.26 | 179.68 | 11,418.99 | -3,657.83 | -122.37 | 3,657.09 | 0.00 | 0.00 | 0.00 |
| 14,900.00 | 89.26 | 179.68 | 11,420.28 | -3,757.82 | -121.81 | 3,757.08 | 0.00 | 0.00 | 0.00 |
| 15,000.00 | 89.26 | 179.68 | 11,421.58 | -3,857.81 | -121.25 | 3,857.07 | 0.00 | 0.00 | 0.00 |
| 15,100.00 | 89.26 | 179.68 | 11,422.87 | -3,957.80 | -120.69 | 3,957.07 | 0.00 | 0.00 | 0.00 |
| 15,200.00 | 89.26 | 179.68 | 11,424.16 | -4,057.79 | -120.14 | 4,057.06 | 0.00 | 0.00 | 0.00 |
| 15,300.00 | 89.26 | 179.68 | 11,425.45 | -4,157.78 | -119.58 | 4,157.05 | 0.00 | 0.00 | 0.00 |
| 15,400.00 | 89.26 | 179.68 | 11,426.74 | -4,257.77 | -119.02 | 4,257.04 | 0.00 | 0.00 | 0.00 |
| 15,500.00 | 89.26 | 179.68 | 11,428.03 | -4,357.76 | -118.46 | 4,357.03 | 0.00 | 0.00 | 0.00 |
| 15,600.00 | 89.26 | 179.68 | 11,429.33 | -4,457.75 | -117.91 | 4,457.02 | 0.00 | 0.00 | 0.00 |
| 15,700.00 | 89.26 | 179.68 | 11,430.62 | -4,557.74 | -117.35 | 4,557.02 | 0.00 | 0.00 | 0.00 |
| 15,712.33 | 89.26 | 179.68 | 11,430.78 | -4,570.07 | -117.28 | 4,569.34 | 0.00 | 0.00 | 0.00 |
| 15,800.00 | 89.47 | 185.38 | 11,431.75 | -4,657.61 | -121.14 | 4,656.86 | 6.50 | 0.24 | 6.50 |
| 15,900.00 | 89.72 | 191.87 | 11,432.45 | -4,756.43 | -136.13 | 4,755.59 | 6.50 | 0.25 | 6.50 |
| 16,000.00 | 89.97 | 198.37 | 11,432.72 | -4,852.91 | -162.20 | 4,851.93 | 6.50 | 0.25 | 6.50 |

# OXY

## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | HOPSPP | **Local Co-ordinate Reference:** | Well Vanadium 32 State 175H |
| **Company:** | ENGINEERING DESIGNS | **TVD Reference:** | RKB=25' @ 3384.70ft |
| **Project:** | PRD NM DIRECTIONAL PLANS (NAD 1983) | **MD Reference:** | RKB=25' @ 3384.70ft |
| **Site:** | Vanadium 32 | **North Reference:** | Grid |
| **Well:** | Vanadium 32 State 175H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Permitting Plan | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 16,100.00 | 90.22 | 204.86 | 11,432.55 | -4,945.83 | -199.01 | 4,944.65 | 6.50 | 0.25 | 6.50 |
| 16,200.00 | 90.47 | 211.36 | 11,431.94 | -5,033.99 | -246.10 | 5,032.54 | 6.50 | 0.25 | 6.50 |
| 16,300.00 | 90.72 | 217.85 | 11,430.90 | -5,116.25 | -302.86 | 5,114.48 | 6.50 | 0.24 | 6.50 |
| 16,400.00 | 90.95 | 224.35 | 11,429.45 | -5,191.56 | -368.55 | 5,189.42 | 6.50 | 0.23 | 6.50 |
| 16,500.00 | 91.17 | 230.85 | 11,427.59 | -5,258.94 | -442.34 | 5,256.39 | 6.50 | 0.22 | 6.50 |
| 16,600.00 | 91.38 | 237.34 | 11,425.36 | -5,317.54 | -523.28 | 5,314.54 | 6.50 | 0.21 | 6.50 |
| 16,700.00 | 91.57 | 243.84 | 11,422.79 | -5,366.60 | -610.32 | 5,363.11 | 6.50 | 0.19 | 6.50 |
| 16,800.00 | 91.74 | 250.34 | 11,419.90 | -5,405.48 | -702.35 | 5,401.48 | 6.50 | 0.17 | 6.50 |
| 16,900.00 | 91.88 | 256.85 | 11,416.74 | -5,433.70 | -798.18 | 5,429.15 | 6.50 | 0.15 | 6.50 |
| 17,000.00 | 92.01 | 263.35 | 11,413.35 | -5,450.88 | -896.58 | 5,445.78 | 6.50 | 0.12 | 6.50 |
| 17,097.82 | 92.10 | 269.71 | 11,409.84 | -5,456.79 | -994.10 | 5,451.15 | 6.50 | 0.10 | 6.50 |
| 17,100.00 | 92.10 | 269.71 | 11,409.76 | -5,456.80 | -996.28 | 5,451.15 | 0.00 | 0.00 | 0.00 |
| 17,200.00 | 92.10 | 269.71 | 11,406.09 | -5,457.31 | -1,096.22 | 5,451.10 | 0.00 | 0.00 | 0.00 |
| 17,300.00 | 92.10 | 269.71 | 11,402.43 | -5,457.81 | -1,196.15 | 5,451.05 | 0.00 | 0.00 | 0.00 |
| 17,372.82 | 92.10 | 269.71 | 11,399.76 | -5,458.18 | -1,268.91 | 5,451.01 | 0.00 | 0.00 | 0.00 |
| 17,400.00 | 92.11 | 271.48 | 11,398.76 | -5,457.90 | -1,296.08 | 5,450.58 | 6.50 | 0.05 | 6.50 |
| 17,500.00 | 92.15 | 277.98 | 11,395.04 | -5,449.66 | -1,395.61 | 5,441.78 | 6.50 | 0.04 | 6.50 |
| 17,600.00 | 92.16 | 284.49 | 11,391.28 | -5,430.20 | -1,493.57 | 5,421.78 | 6.50 | 0.01 | 6.50 |
| 17,700.00 | 92.14 | 290.99 | 11,387.53 | -5,399.77 | -1,588.70 | 5,390.82 | 6.50 | -0.02 | 6.50 |
| 17,800.00 | 92.09 | 297.50 | 11,383.84 | -5,358.76 | -1,679.77 | 5,349.30 | 6.50 | -0.05 | 6.50 |
| 17,900.00 | 92.01 | 304.00 | 11,380.25 | -5,307.69 | -1,765.61 | 5,297.75 | 6.50 | -0.07 | 6.50 |
| 18,000.00 | 91.91 | 310.50 | 11,376.82 | -5,247.23 | -1,845.12 | 5,236.84 | 6.50 | -0.10 | 6.50 |
| 18,100.00 | 91.79 | 317.00 | 11,373.59 | -5,178.15 | -1,917.28 | 5,167.36 | 6.50 | -0.13 | 6.50 |
| 18,200.00 | 91.64 | 323.51 | 11,370.60 | -5,101.33 | -1,981.15 | 5,090.19 | 6.50 | -0.15 | 6.50 |
| 18,300.00 | 91.47 | 330.01 | 11,367.88 | -5,017.77 | -2,035.92 | 5,006.33 | 6.50 | -0.17 | 6.50 |
| 18,400.00 | 91.28 | 336.51 | 11,365.47 | -4,928.55 | -2,080.88 | 4,916.85 | 6.50 | -0.19 | 6.50 |
| 18,500.00 | 91.08 | 343.00 | 11,363.41 | -4,834.79 | -2,115.46 | 4,822.90 | 6.50 | -0.20 | 6.50 |
| 18,600.00 | 90.86 | 349.50 | 11,361.72 | -4,737.73 | -2,139.21 | 4,725.70 | 6.50 | -0.22 | 6.50 |
| 18,700.00 | 90.63 | 356.00 | 11,360.41 | -4,638.59 | -2,151.82 | 4,626.50 | 6.50 | -0.23 | 6.50 |
| 18,756.91 | 90.50 | 359.69 | 11,359.85 | -4,581.73 | -2,153.96 | 4,569.63 | 6.50 | -0.24 | 6.50 |
| 18,800.00 | 90.50 | 359.69 | 11,359.48 | -4,538.64 | -2,154.19 | 4,526.54 | 0.00 | 0.00 | 0.00 |
| 18,900.00 | 90.50 | 359.69 | 11,358.62 | -4,438.65 | -2,154.73 | 4,426.54 | 0.00 | 0.00 | 0.00 |
| 19,000.00 | 90.50 | 359.69 | 11,357.75 | -4,338.65 | -2,155.26 | 4,326.55 | 0.00 | 0.00 | 0.00 |
| 19,100.00 | 90.50 | 359.69 | 11,356.88 | -4,238.66 | -2,155.79 | 4,226.55 | 0.00 | 0.00 | 0.00 |
| 19,200.00 | 90.50 | 359.69 | 11,356.02 | -4,138.66 | -2,156.33 | 4,126.55 | 0.00 | 0.00 | 0.00 |
| 19,300.00 | 90.50 | 359.69 | 11,355.15 | -4,038.67 | -2,156.86 | 4,026.56 | 0.00 | 0.00 | 0.00 |
| 19,400.00 | 90.50 | 359.69 | 11,354.29 | -3,938.67 | -2,157.39 | 3,926.56 | 0.00 | 0.00 | 0.00 |
| 19,500.00 | 90.50 | 359.69 | 11,353.42 | -3,838.68 | -2,157.93 | 3,826.57 | 0.00 | 0.00 | 0.00 |
| 19,600.00 | 90.50 | 359.69 | 11,352.56 | -3,738.68 | -2,158.46 | 3,726.57 | 0.00 | 0.00 | 0.00 |
| 19,700.00 | 90.50 | 359.69 | 11,351.69 | -3,638.69 | -2,159.00 | 3,626.57 | 0.00 | 0.00 | 0.00 |
| 19,800.00 | 90.50 | 359.69 | 11,350.82 | -3,538.69 | -2,159.53 | 3,526.58 | 0.00 | 0.00 | 0.00 |
| 19,900.00 | 90.50 | 359.69 | 11,349.96 | -3,438.70 | -2,160.06 | 3,426.58 | 0.00 | 0.00 | 0.00 |
| 20,000.00 | 90.50 | 359.69 | 11,349.09 | -3,338.70 | -2,160.60 | 3,326.58 | 0.00 | 0.00 | 0.00 |
| 20,100.00 | 90.50 | 359.69 | 11,348.23 | -3,238.71 | -2,161.13 | 3,226.59 | 0.00 | 0.00 | 0.00 |
| 20,200.00 | 90.50 | 359.69 | 11,347.36 | -3,138.71 | -2,161.66 | 3,126.59 | 0.00 | 0.00 | 0.00 |
| 20,300.00 | 90.50 | 359.69 | 11,346.50 | -3,038.72 | -2,162.20 | 3,026.60 | 0.00 | 0.00 | 0.00 |
| 20,400.00 | 90.50 | 359.69 | 11,345.63 | -2,938.72 | -2,162.73 | 2,926.60 | 0.00 | 0.00 | 0.00 |
| 20,500.00 | 90.50 | 359.69 | 11,344.77 | -2,838.73 | -2,163.26 | 2,826.60 | 0.00 | 0.00 | 0.00 |
| 20,600.00 | 90.50 | 359.69 | 11,343.90 | -2,738.73 | -2,163.80 | 2,726.61 | 0.00 | 0.00 | 0.00 |
| 20,700.00 | 90.50 | 359.69 | 11,343.03 | -2,638.74 | -2,164.33 | 2,626.61 | 0.00 | 0.00 | 0.00 |
| 20,800.00 | 90.50 | 359.69 | 11,342.17 | -2,538.74 | -2,164.87 | 2,526.61 | 0.00 | 0.00 | 0.00 |
| 20,900.00 | 90.50 | 359.69 | 11,341.30 | -2,438.75 | -2,165.40 | 2,426.62 | 0.00 | 0.00 | 0.00 |
| 21,000.00 | 90.50 | 359.69 | 11,340.44 | -2,338.76 | -2,165.93 | 2,326.62 | 0.00 | 0.00 | 0.00 |
| 21,100.00 | 90.50 | 359.69 | 11,339.57 | -2,238.76 | -2,166.47 | 2,226.63 | 0.00 | 0.00 | 0.00 |
| 21,200.00 | 90.50 | 359.69 | 11,338.71 | -2,138.77 | -2,167.00 | 2,126.63 | 0.00 | 0.00 | 0.00 |

# OXY
## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | HOPSPP | **Local Co-ordinate Reference:** | Well Vanadium 32 State 175H |
| **Company:** | ENGINEERING DESIGNS | **TVD Reference:** | RKB=25' @ 3384.70ft |
| **Project:** | PRD NM DIRECTIONAL PLANS (NAD 1983) | **MD Reference:** | RKB=25' @ 3384.70ft |
| **Site:** | Vanadium 32 | **North Reference:** | Grid |
| **Well:** | Vanadium 32 State 175H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Permitting Plan | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 21,300.00 | 90.50 | 359.69 | 11,337.84 | -2,038.77 | -2,167.53 | 2,026.63 | 0.00 | 0.00 | 0.00 |
| 21,400.00 | 90.50 | 359.69 | 11,336.97 | -1,938.78 | -2,168.07 | 1,926.64 | 0.00 | 0.00 | 0.00 |
| 21,500.00 | 90.50 | 359.69 | 11,336.11 | -1,838.78 | -2,168.60 | 1,826.64 | 0.00 | 0.00 | 0.00 |
| 21,600.00 | 90.50 | 359.69 | 11,335.24 | -1,738.79 | -2,169.13 | 1,726.64 | 0.00 | 0.00 | 0.00 |
| 21,700.00 | 90.50 | 359.69 | 11,334.38 | -1,638.79 | -2,169.67 | 1,626.65 | 0.00 | 0.00 | 0.00 |
| 21,800.00 | 90.50 | 359.69 | 11,333.51 | -1,538.80 | -2,170.20 | 1,526.65 | 0.00 | 0.00 | 0.00 |
| 21,900.00 | 90.50 | 359.69 | 11,332.65 | -1,438.80 | -2,170.74 | 1,426.66 | 0.00 | 0.00 | 0.00 |
| 22,000.00 | 90.50 | 359.69 | 11,331.78 | -1,338.81 | -2,171.27 | 1,326.66 | 0.00 | 0.00 | 0.00 |
| 22,100.00 | 90.50 | 359.69 | 11,330.91 | -1,238.81 | -2,171.80 | 1,226.66 | 0.00 | 0.00 | 0.00 |
| 22,200.00 | 90.50 | 359.69 | 11,330.05 | -1,138.82 | -2,172.34 | 1,126.67 | 0.00 | 0.00 | 0.00 |
| 22,300.00 | 90.50 | 359.69 | 11,329.18 | -1,038.82 | -2,172.87 | 1,026.67 | 0.00 | 0.00 | 0.00 |
| 22,400.00 | 90.50 | 359.69 | 11,328.32 | -938.83 | -2,173.40 | 926.67 | 0.00 | 0.00 | 0.00 |
| 22,500.00 | 90.50 | 359.69 | 11,327.45 | -838.83 | -2,173.94 | 826.68 | 0.00 | 0.00 | 0.00 |
| 22,600.00 | 90.50 | 359.69 | 11,326.59 | -738.84 | -2,174.47 | 726.68 | 0.00 | 0.00 | 0.00 |
| 22,700.00 | 90.50 | 359.69 | 11,325.72 | -638.84 | -2,175.00 | 626.69 | 0.00 | 0.00 | 0.00 |
| 22,800.00 | 90.50 | 359.69 | 11,324.85 | -538.85 | -2,175.54 | 526.69 | 0.00 | 0.00 | 0.00 |
| 22,817.83 | 90.50 | 359.69 | 11,324.70 | -521.02 | -2,175.63 | 508.86 | 0.00 | 0.00 | 0.00 |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| PBHL (Vanadium 32<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 11,324.70 | -521.02 | -2,175.63 | 461,691.06 | 705,279.43 | 32.268150 | -103.802922 |
| DP2 (Vanadium 32<br>- plan misses target center by 0.62ft at 18846.25ft MD (11359.08 TVD, -4492.39 N, -2154.44 E)<br>- Point | 0.00 | 0.00 | 11,359.70 | -4,492.39 | -2,154.45 | 457,719.94 | 705,300.61 | 32.257234 | -103.802917 |
| FTP (Vanadium 32<br>- plan misses target center by 0.20ft at 11742.39ft MD (11379.50 TVD, -600.52 N, -139.42 E)<br>- Point | 0.00 | 0.00 | 11,379.70 | -600.52 | -139.42 | 461,611.57 | 707,315.52 | 32.267904 | -103.796336 |
| DP1 (Vanadium 32<br>- plan misses target center by 0.15ft at 15627.23ft MD (11429.68 TVD, -4484.98 N, -117.75 E)<br>- Point | 0.00 | 0.00 | 11,429.70 | -4,484.98 | -117.61 | 457,727.35 | 707,337.33 | 32.257226 | -103.796328 |

# OXY
## Planning Report

| | | | |
|---|---|---|---|
| **Database:** | HOPSPP | **Local Co-ordinate Reference:** | Well Vanadium 32 State 175H |
| **Company:** | ENGINEERING DESIGNS | **TVD Reference:** | RKB=25' @ 3384.70ft |
| **Project:** | PRD NM DIRECTIONAL PLANS (NAD 1983) | **MD Reference:** | RKB=25' @ 3384.70ft |
| **Site:** | Vanadium 32 | **North Reference:** | Grid |
| **Well:** | Vanadium 32 State 175H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Permitting Plan | | |

**Formations**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 398.70 | 398.70 | RUSTLER | | | |
| 739.70 | 739.70 | SALADO | | | |
| 2,687.70 | 2,687.70 | CASTILE | | | |
| 4,132.70 | 4,132.70 | DELAWARE | | | |
| 4,162.70 | 4,162.70 | BELL CANYON | | | |
| 5,061.70 | 5,061.70 | CHERRY CANYON | | | |
| 6,305.70 | 6,305.70 | BRUSHY CANYON | | | |
| 7,952.70 | 7,952.70 | BONE SPRING | | | |
| 8,987.70 | 8,987.70 | BONE SPRING 1ST | | | |
| 9,644.70 | 9,644.70 | BONE SPRING 2ND | | | |
| 10,796.70 | 10,796.70 | BONE SPRING 3RD | | | |
| 11,362.74 | 11,271.70 | WOLFCAMP | | | |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 10,786.00 | 10,786.00 | 0.00 | 0.00 | KOP, Build & Turn 10°/100' |
| 11,235.90 | 11,191.07 | -153.75 | -67.08 | Continue 10°/100' |
| 11,726.33 | 11,379.30 | -584.47 | -139.51 | Landing Point |
| 15,712.33 | 11,430.78 | -4,570.07 | -117.28 | Build & Turn 6.5°/100' |
| 17,097.82 | 11,409.84 | -5,456.79 | -994.11 | Hold |
| 17,372.82 | 11,399.76 | -5,458.18 | -1,268.92 | Drop & Turn 6.5°/100' |
| 18,756.91 | 11,359.85 | -4,581.73 | -2,153.96 | Hold |
| 22,817.83 | 11,324.70 | -521.02 | -2,175.63 | TD at 22817.83' MD |

# Oxy USA Inc. - Vanadium 32 State 175H

## Drill Plan

## 1. Geologic Formations

| | | | |
|---|---|---|---|
| TVD of Target (ft): | 11379 | Pilot Hole Depth (ft): | |
| Total Measured Depth (ft): | 22818 | Deepest Expected Fresh Water (ft): | 401 |

### Delaware Basin

| Formation | MD-RKB (ft) | TVD-RKB (ft) | Expected Fluids |
|---|---|---|---|
| Rustler | 401 | 401 | |
| Salado | 742 | 742 | Salt |
| Castile | 2688 | 2688 | Salt |
| Delaware | 4135 | 4135 | Oil/Gas/Brine |
| Bell Canyon | 4163 | 4163 | Oil/Gas/Brine |
| Cherry Canyon | 5062 | 5062 | Oil/Gas/Brine |
| Brushy Canyon | 6308 | 6308 | Losses |
| Bone Spring | 7955 | 7955 | Oil/Gas |
| Bone Spring 1st | 8990 | 8990 | Oil/Gas |
| Bone Spring 2nd | 9645 | 9645 | Oil/Gas |
| Bone Spring 3rd | 10799 | 10799 | Oil/Gas |
| Wolfcamp | 11363 | 11272 | Oil/Gas |
| Penn | | | Oil/Gas |
| Strawn | | | Oil/Gas |

*H2S, water flows, loss of circulation, abnormal pressures, etc.

## 2. Casing Program

| | | MD | | TVD | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Section | Hole Size (in) | From (ft) | To (ft) | From (ft) | To (ft) | Csg. OD (in) | Csg Wt. (ppf) | Grade | Conn. |
| Surface | 17.5 | 0 | 461 | 0 | 461 | 13.375 | 54.5 | J-55 | BTC |
| Salt | 12.25 | 0 | 4235 | 0 | 4235 | 9.625 | 40 | L-80 HC | BTC |
| Intermediate | 8.75 | 0 | 10686 | 0 | 10686 | 7.625 | 26.4 | L-80 HC | Wedge 425 |
| Production | 6.75 | 0 | 22818 | 0 | 11379 | 5.5 | 20 | P-110 | Wedge 461 |

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

*Oxy requests the option to run production casing with DQX, TORQ DQW, Wedge 425, Wedge 461, and/or Wedge 441 connections to accommodate hole conditions or drilling operations.

| *All Casing SF Values will meet or exceed those below* | | | |
|---|---|---|---|
| **SF Collapse** | **SF Burst** | **Body SF Tension** | **Joint SF Tension** |
| 1.125 | 1.2 | 1.4 | 1.4 |

## Annular Clearance Variance Request

As per the agreement reached in the Oxy/BLM face-to-face meeting on Feb 22, 2018, Oxy requests permission to allow deviation from the 0.422" annular clearance requirement from Onshore Order #2 under the following conditions:

1. Annular clearance to meet or exceed 0.422" between intermediate casing ID and production casing coupling only on the first 500' overlap between both casings.
2. Annular clearance less than 0.422" is acceptable for the curve and lateral portions of the production open hole section.

| | Y or N |
|---|---|
| Is casing new? If used, attach certification as required in Onshore Order #1 | Y |
| Does casing meet API specifications? If no, attach casing specification sheet. | Y |
| Is premium or uncommon casing planned? If yes attach casing specification sheet. | Y |
| Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). | Y |
| Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing? | Y |
| | |
| Is well located within Capitan Reef? | N |
| If yes, does production casing cement tie back a minimum of 50' above the Reef? | |
| Is well within the designated 4 string boundary. | |
| | |
| Is well located in SOPA but not in R-111-P? | N |
| If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing? | |
| | |
| Is well located in R-111-P and SOPA? | Y |
| If yes, are the first three strings cemented to surface? | Y |
| Is 2nd string set 100' to 600' below the base of salt? | Y |
| | |
| Is well located in high Cave/Karst? | N |
| If yes, are there two strings cemented to surface? | |
| (For 2 string wells) If yes, is there a contingency casing if lost circulation occurs? | |
| | |
| Is well located in critical Cave/Karst? | N |
| If yes, are there three strings cemented to surface? | |

## 3. Cementing Program

| Section | Stage | Slurry: | Sacks | Yield (ft^3/ft) | Density (lb/gal) | Excess: | TOC | Placement | Description |
|---|---|---|---|---|---|---|---|---|---|
| Surface | 1 | Surface - Tail | 482 | 1.33 | 14.8 | 100% | - | Circulate | Class C+Accel. |
| Int.1 | 1 | Intermediate - Tail | 141 | 1.33 | 14.8 | 20% | 3,735 | Circulate | Class C+Accel. |
| Int.1 | 1 | Intermediate - Lead | 986 | 1.73 | 12.9 | 50% | - | Circulate | Class Pozz+Ret. |
| Int. 2 | 1 | Intermediate 1S - Tail | 264 | 1.65 | 13.2 | 5% | 6,558 | Circulate | Class H+Accel., Disper., Salt |
| Int. 2 | 2 | Intermediate 2S - Tail BH | 440 | 1.71 | 13.3 | 25% | - | Bradenhead Post-Frac | Class C+Accel. |
| Prod. | 1 | Production - Tail | 954 | 1.38 | 13.2 | 25% | 10,186 | Circulate | Class H+Ret., Disper., Salt |

## Offline Cementing

Oxy requests a variance to cement the 9.625" and/or 7.625" intermediate casing strings offline in accordance to the approved variance, EC Tran 461365.

The summarized operational sequence will be as follows:
Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment (float collar and shoe).
Land casing.
Fill pipe with kill weight fluid, and confirm well is static.
If well Oxy requests a variance to cement the 9.625" and/or 7.625" intermediate casing strings offline in accordance to the approved variance, EC Tran 461365.

The summarized operational sequence will be as follows:

1. Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment (float collar and shoe).
2. Land casing.
3. Fill pipe with kill weight fluid, and confirm well is static.
   a. If well is not static notify BLM and kill well.
   b. Once well is static notify BLM with intent to proceed with nipple down and offline cementing.
4. Set and pressure test annular packoff.
5. After confirmation of both annular barriers and internal barriers, nipple down BOP and install cap flange. If any barrier fails to test, the BOP stack will not be nippled down until after the cement job is completed.
6. Skid rig to next well on pad.
7. Confirm well is static before removing cap flange.
8. If well is not static notify BLM and kill well prior to cementing or nippling up for further remediation.
9. Install offline cement tool.
10. Rig up cement equipment.
    a. Notify BLM prior to cement job.
11. Perform cement job.
12. Confirm well is static and floats are holding after cement job.
13. Remove cement equipment, offline cement tools and install night cap with pressure gauge for monitoring.

Oxy requests permission to adjust the CBL requirement after bradenhead cement jobs, on 7-5/8" intermediate casings, as per the agreement reached in the OXY/BLM meeting on September 5, 2019.

**Four string wells:**

- CBL is not required
- If the pumped volume of cement is less than permitted in the APD, BLM will be notified and a CBL may be run
- Echometer will be used after bradenhead cement job to determine TOC before pumping top-out cement

## 4. Pressure Control Equipment

| BOP installed and tested before drilling which hole? | Size? | Min. Required WP | Type | ✓ | Tested to: | TVD Depth (ft) per Section: |
|---|---|---|---|---|---|---|
| 12.25" Hole | 13-5/8" | 3M | Annular | ✓ | 70% of working pressure | 4235 |
| | | 3M | Blind Ram | ✓ | 250 psi / 3000 psi | |
| | | | Pipe Ram | | | |
| | | | Double Ram | ✓ | | |
| | | | Other* | | | |
| 8.75" Hole | 13-5/8" | 5M | Annular | ✓ | 70% of working pressure | 10686 |
| | | 5M | Blind Ram | ✓ | 250 psi / 5000 psi | |
| | | | Pipe Ram | | | |
| | | | Double Ram | ✓ | | |
| | | | Other* | | | |
| 6.75" Hole | 13-5/8" | 5M | Annular | ✓ | 100% of working pressure | 11379 |
| | | 10M | Blind Ram | ✓ | 250 psi / 10000 psi | |
| | | | Pipe Ram | | | |
| | | | Double Ram | ✓ | | |
| | | | Other* | | | |

*Specify if additional ram is utilized

Per BLM's Memorandum No. NM-2017-008: *Decision and Rationale for a Variance Allowing the Use of a 5M Annular Preventer with a 10M BOP Stack*, Oxy requests to employ a 5M annular with a 10M BOPE stack in the pilot and lateral sections of the well and will ensure that two barriers to flow are maintained at all times. Please see attached Well Control Plan.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.

| | | |
|---|---|---|
| | Formation integrity test will be performed per Onshore Order #2. | |
| | On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. | |
| | | |
| | A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. | |
| | Y | Are anchors required by manufacturer? |
| | A multibowl or a unionized multibowl wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. We will test the flange connection of the wellhead with a test port that is directly in the flange. We are proposing that we will run the wellhead through the rotary prior to cementing surface casing as discussed with the BLM on October 8, 2015.<br><br>See attached schematics. | |

## BOP Break Testing Request

Oxy requests permission to adjust the BOP break testing requirements as per the agreement reached in the OXY/BLM meeting on September 5, 2019.

BOP break test under the following conditions:
- After a full BOP test is conducted
- When skidding to drill an intermediate section where ICP is set into the third Bone Spring or shallower.

If the kill line is broken prior to skid, two tests will be performed.
1) Wellhead flange, co-flex hose, kill line connections and upper pipe rams
2) Wellhead flange, HCR valve, check valve, upper pipe rams

If the kill line is not broken prior to skid, only one test will be performed.
1)Wellhead flange, co-flex hose, check valve, upper pipe rams

**Oxy will use Cameron ADAPT wellhead system that uses an OEC top flange connection. This connection has been fully vetted and verified by API to Spec 6A and carries an API monogram.**

## 5. Mud Program

| Section | Depth | | Depth - TVD | | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|---|---|---|---|
| | From (ft) | To (ft) | From (ft) | To (ft) | | | | |
| Surface | 0 | 461 | 0 | 461 | Water-Based Mud | 8.6 - 8.8 | 40-60 | N/C |
| Intermediate 1 | 461 | 4235 | 461 | 4235 | Saturated Brine-Based or Oil-Based Mud | 8.0 - 10.0 | 35-45 | N/C |
| Intermediate 2 | 4235 | 10686 | 4235 | 10686 | Water-Based or Oil-Based Mud | 8.0 - 10.0 | 38-50 | N/C |
| Production | 10686 | 22818 | 10686 | 11379 | Water-Based or Oil-Based Mud | 9.5 - 12.5 | 38-50 | N/C |

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CACL2. Oxy will use a closed mud system.

| | |
|---|---|
| What will be used to monitor the loss or gain of fluid? | PVT/MD Totco/Visual Monitoring |

## 6. Logging and Testing Procedures

| Logging, Coring and Testing. | |
|---|---|
| Yes | Will run GR from TD to surface (horizontal well – vertical portion of hole). |
| | Stated logs run will be in the Completion Report and submitted to the BLM. |
| No | Logs are planned based on well control or offset log information. |
| No | Drill stem test? If yes, explain |
| No | Coring? If yes, explain |

| Additional logs planned | | Interval |
|---|---|---|
| No | Resistivity | |
| No | Density | |
| Yes | CBL | Production string |
| Yes | Mud log | Bone Spring – TD |
| No | PEX | |

## 7. Drilling Conditions

| Condition | Specify what type and where? |
|---|---|
| BH Pressure at deepest TVD | 7397 psi |
| Abnormal Temperature | No |
| BH Temperature at deepest TVD | 172°F |

Pump high viscosity sweeps as needed for hole cleaning. The mud system will be monitored visually/manually as well as with an electronic PVT. The necessary mud products for additional weight and fluid loss control will be on location at all times. Appropriately weighted mud will be used to isolate potential gas, oil, and water zones until such time as casing can be cemented into place for zonal

| Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM. | |
|---|---|
| N | H2S is present |
| Y | H2S Plan attached |

## 8. Other facets of operation

| | Yes/No |
|---|---|
| Will the well be drilled with a walking/skidding operation? If yes, describe.<br>We plan to drill the 2 well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well. | Yes |
| Will more than one drilling rig be used for drilling operations? If yes, describe.<br>Oxy requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that Oxy would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig. | Yes |

**Total Estimated Cuttings Volume:** 1705 bbls

Attachments
_x__ Directional Plan
_x__ H2S Contingency Plan
_x__ Flex III Attachments
_x__ Spudder Rig Attachment
_x__ Premium Connection Specs

## 9. Company Personnel

| Name | Title | Office Phone | Mobile Phone |
|---|---|---|---|
| Garrett Granier | Drilling Engineer | 713-513-6633 | 832-265-0581 |
| Derek Adam | Drilling Engineer Supervisor | 713-366-5170 | 916-802-8873 |
| Casey Martin | Drilling Superintendent | 713-497-2530 | 337-764-4278 |
| Kevin Threadgill | Drilling Manager | 713-366-5958 | 361-815-0788 |

# Permian Drilling
# Hydrogen Sulfide Drilling Operations Plan

Open drill site. No homes or buildings are near the proposed location.

1. Escape

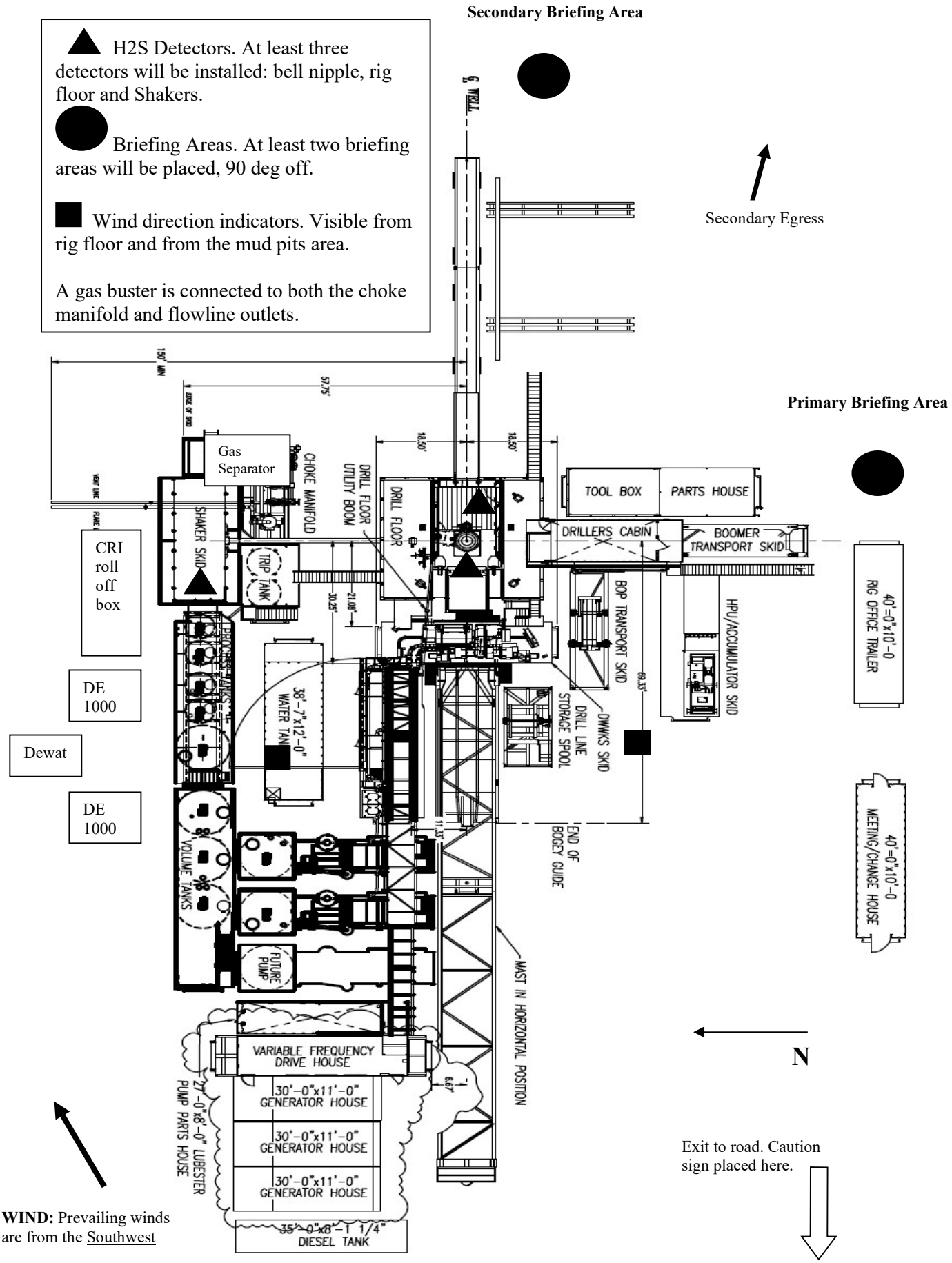
   Personnel shall escape upwind of wellbore in the event of an emergency gas release. Escape can take place through the lease road on the Southeast side of the location. Personnel need to move to a safe distance and block the entrance to location. If the primary route is not an option due to the wind direction, then a secondary egress route should be taken.

▲ H2S Detectors. At least three detectors will be installed: bell nipple, rig floor and Shakers.

● Briefing Areas. At least two briefing areas will be placed, 90 deg off.

■ Wind direction indicators. Visible from rig floor and from the mud pits area.

A gas buster is connected to both the choke manifold and flowline outlets.




**WIND:** Prevailing winds are from the Southwest

# Permian Drilling
# Hydrogen Sulfide Drilling Operations Plan
# New Mexico

## Scope

This contingency plan establishes guidelines for the public, all company employees, and contract employees who's work activities may involve exposure to hydrogen sulfide (H2S) gas.
While drilling this well, it is possible to encounter H2S bearing formations. At all times, the first barrier to control H2S emissions will be the drilling fluid, which will have a density high enough to control influx.

## Objective

1. Provide an immediate and predetermined response plan to any condition when H2S is detected. All H2S detections in excess of 10 parts per million (ppm) concentration are considered an Emergency.

2. Prevent any and all accidents, and prevent the uncontrolled release of hydrogen sulfide into the atmosphere.

3. Provide proper evacuation procedures to cope with emergencies.

4. Provide immediate and adequate medical attention should an injury occur.

## Discussion

| | |
|---|---|
| Implementation: | This plan with all details is to be fully implemented before drilling to commence. |
| Emergency response Procedure: | This section outlines the conditions and denotes steps to be taken in the event of an emergency. |
| Emergency equipment Procedure: | This section outlines the safety and emergency equipment that will be required for the drilling of this well. |
| Training provisions: | This section outlines the training provisions that must be adhered to prior to drilling. |
| Drilling emergency call lists: | Included are the telephone numbers of all persons to be contacted should an emergency exist. |
| Briefing: | This section deals with the briefing of all people involved in the drilling operation. |
| Public safety: | Public safety personnel will be made aware of any potential evacuation and any additional support needed. |
| Check lists: | Status check lists and procedural check lists have been included to insure adherence to the plan. |
| General information: | A general information section has been included to supply support information. |

## Hydrogen Sulfide Training

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on the well:

1. The hazards and characteristics of H2S.
2. Proper use and maintenance of personal protective equipment and life support systems.
3. H2S detection.
4. Proper use of H2S detectors, alarms, warning systems, briefing areas, evacuation procedures and prevailing winds.
5. Proper techniques for first aid and rescue procedures.
6. Physical effects of hydrogen sulfide on the human body.
7. Toxicity of hydrogen sulfide and sulfur dioxide.
8. Use of SCBA and supplied air equipment.
9. First aid and artificial respiration.
10. Emergency rescue.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H2S on metal components. If high tensile strength tubular is to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling a well, blowout prevention and well control procedures.
3. The contents and requirements of the H2S Drilling Operations Plan.

H2S training refresher must have been taken within one year prior to drilling the well. Specifics on the well to be drilled will be discussed during the pre-spud meeting. H2S and well control (choke) drills will be performed while drilling the well, at least on a weekly basis. This plan shall be available in the well site. All personnel will be required to carry the documentation proving that the H2S training has been taken.

Service company and visiting personnel

A. Each service company that will be on this well will be notified if the zone contains H2S.

B. Each service company must provide for the training and equipment of their employees before they arrive at the well site.

C. Each service company will be expected to attend a well site briefing

## Emergency Equipment Requirements

1. Well control equipment

The well shall have hydraulic BOP equipment for the anticipated pressures. Equipment is to be tested on installation and follow Oxy Well Control standard, as well as BLM Onshore Order #2.

*Special control equipment:*

A. Hydraulic BOP equipment with remote control on ground. Remotely operated choke.
B. Rotating head
C. Gas buster equipment shall be installed before drilling out of surface pipe.

2. Protective equipment for personnel

A. Four (4) 30-minute positive pressure air packs (2 at each briefing area) on location.

B. Adequate fire extinguishers shall be located at strategic locations.

C. Radio / cell telephone communication will be available at the rig.

- Rig floor and trailers.
- Vehicle.

3. Hydrogen sulfide sensors and alarms

A. H2S sensor with alarms will be located on the rig floor, at the bell nipple, and at the flow line. These monitors will be set to alarm at 10 ppm with strobe light, and audible alarm.
B. Hand operated detectors with tubes.
C. H2S monitor tester (to be provided by contract Safety Company.)
D. There shall be one combustible gas detector on location at all times.

4. Visual Warning Systems

A. One sign located at each location entrance with the following language:

**Caution – potential poison gas**
**Hydrogen sulfide**
**No admittance without authorization**

*Wind sock – wind streamers*:

A. One 36” (in length) wind sock located at protection center, at height visible from rig floor.
B. One 36” (in length) wind sock located at height visible from pit areas.

*Condition flags*

A. One each condition flag to be displayed to denote conditions.

**green – normal conditions**
**yellow – potential danger**
**red – danger, H2S present**

B. Condition flag shall be posted at each location sign entrance.

5. Mud Program

The mud program is designed to minimize the risk of having H2S and other formation fluids at surface. Proper mud weight and safe drilling practices will be applied. H2S scavengers will be used to minimize the hazards while drilling. Below is a summary of the drilling program.

*Mud inspection devices:*

Garrett gas train or hatch tester for inspection of sulfide concentration in mud system.

6. Metallurgy

A. Drill string, casing, tubing, wellhead, blowout preventers, drilling spools or adapters, kill lines, choke manifold, lines and valves shall be suitable for the H2S service.
B. All the elastomers, packing, seals and ring gaskets shall be suitable for H2S service.

7. Well Testing

No drill stem test will be performed on this well.

8. Evacuation plan

Evacuation routes should be established prior to well spud for each well and discussed with all rig personnel.

9. Designated area

A. Parking and visitor area: all vehicles are to be parked at a predetermined safe distance from the wellhead.
B. There will be a designated smoking area.
C. Two briefing areas on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds perpendicularly, or at a 45-degree angle if wind direction tends to shift in the area.

## Emergency procedures

A. In the event of any evidence of H2S level above 10 ppm, take the following steps:

1. The Driller will pick up off bottom, shut down the pumps, slow down the pipe rotation.

2. Secure and don escape breathing equipment, report to the upwind designated safe briefing / muster area.

3. All personnel on location will be accounted for and emergency search should begin for any missing, the Buddy System will be implemented.

4. Order non-essential personnel to leave the well site, order all essential personnel out of the danger zone and upwind to the nearest designated safe briefing / muster area.

5. Entrance to the location will be secured to a higher level than our usual "Meet and Greet" requirement, and the proper condition flag will be displayed at the entrance to the location.

6. Take steps to determine if the H2S level can be corrected or suppressed and, if so, proceed as required.

B. If uncontrollable conditions occur:

1. Take steps to protect and/or remove any public in the down-wind area from the rig – partial evacuation and isolation. Notify necessary public safety personnel and appropriate regulatory entities (i.e. BLM) of the situation.

2. Remove all personnel to the nearest upwind designated safe briefing / muster area or off location.

3. Notify public safety personnel of safe briefing / muster area.

4. An assigned crew member will blockade the entrance to the location. No unauthorized personnel will be allowed entry to the location.

5. Proceed with best plan (at the time) to regain control of the well. Maintain tight security and safety procedures.

C. Responsibility:

1. Designated personnel.

a. Shall be responsible for the total implementation of this plan.
b. Shall be in complete command during any emergency.
c. Shall designate a back-up.

| | |
|---|---|
| All personnel: | 1. On alarm, don escape unit and report to the nearest upwind designated safe briefing / muster area upw<br>2. Check status of personnel (buddy system).<br>3. Secure breathing equipment.<br>4. Await orders from supervisor. |
| Drill site manager: | 1. Don escape unit if necessary and report to nearest upwind designated safe briefing / muster area.<br>2. Coordinate preparations of individuals to return to point of release with tool pusher and driller (using the buddy system).<br>3. Determine H2S concentrations.<br>4. Assess situation and take control measures. |
| Tool pusher: | 1. Don escape unit Report to up nearest upwind designated safe briefing / muster area.<br>2. Coordinate preparation of individuals to return to point of release with tool pusher drill site manager (using the buddy system).<br>3. Determine H2S concentration.<br>4. Assess situation and take control measures. |
| Driller: | 1. Don escape unit, shut down pumps, continue |

| | | |
|---|---|---|
| | | rotating DP. |
| | 2. | Check monitor for point of release. |
| | 3. | Report to nearest upwind designated safe briefing / muster area. |
| | 4. | Check status of personnel (in an attempt to rescue, use the buddy system). |
| | 5. | Assigns least essential person to notify Drill Site Manager and tool pusher by quickest means in case of their absence. |
| | 6. | Assumes the responsibilities of the Drill Site Manager and tool pusher until they arrive should they be absent. |
| Derrick man<br>Floor man #1<br>Floor man #2 | 1. | Will remain in briefing / muster area until instructed by supervisor. |
| Mud engineer: | 1. | Report to nearest upwind designated safe briefing / muster area. |
| | 2. | When instructed, begin check of mud for ph and H2S level. (Garett gas train.) |
| Safety personnel: | 1. | Mask up and check status of all personnel and secure operations as instructed by drill site manager. |

**Taking a kick**

When taking a kick during an H2S emergency, all personnel will follow standard Well control procedures after reporting to briefing area and masking up.

**Open-hole logging**

All unnecessary personnel off floor. Drill Site Manager and safety personnel should monitor condition, advise status and determine need for use of air equipment.

**Running casing or plugging**

Following the same “tripping” procedure as above. Drill Site Manager and safety personnel should determine if all personnel have access to protective equipment.

## Ignition procedures

The decision to ignite the well is the responsibility of the operator (Oxy Drilling Management). The decision should be made only as a last resort and in a situation where it is clear that:

1. Human life and property are endangered.
2. There is no hope controlling the blowout under the prevailing conditions at the well.

Instructions for igniting the well

1. Two people are required for the actual igniting operation. They must wear self-contained breathing units and have a safety rope attached. One man (tool pusher or safety engineer) will check the atmosphere for explosive gases with the gas monitor. The other man is responsible for igniting the well.
2. Primary method to ignite: 25 mm flare gun with range of approximately 500 feet.
3. Ignite upwind and do not approach any closer than is warranted.
4. Select the ignition site best for protection, and which offers an easy escape route.
5. Before firing, check for presence of combustible gas.
6. After lighting, continue emergency action and procedure as before.
7. All unassigned personnel will remain in briefing area until instructed by supervisor or directed by the Drill Site Manager.

**Remember**: After well is ignited, burning hydrogen sulfide will convert to sulfur dioxide, which is also highly toxic. **Do not assume the area is safe after the well is ignited.**

## Status check list

Note: All items on this list must be completed before drilling to production casing point.

1. H2S sign at location entrance.
2. Two (2) wind socks located as required.
3. Four (4) 30-minute positive pressure air packs (2 at each Briefing area) on location for all rig personnel and mud loggers.
4. Air packs inspected and ready for use.
5. Cascade system and hose line hook-up as needed.
6. Cascade system for refilling air bottles as needed.
7. Condition flag on location and ready for use.
8. H2S detection system hooked up and tested.
9. H2S alarm system hooked up and tested.
10. Hand operated H2S detector with tubes on location.
11. 1 – 100’ length of nylon rope on location.
12. All rig crew and supervisors trained as required.
13. All outside service contractors advised of potential H2S hazard on well.
14. No smoking sign posted and a designated smoking area identified.
15. Calibration of all H2S equipment shall be noted on the IADC report.

Checked by:_____ Date:_____

## Procedural check list during H2S events

**Perform each tour:**

1. Check fire extinguishers to see that they have the proper charge.

2. Check breathing equipment to ensure that it in proper working order.

3. Make sure all the H2S detection system is operative.

**Perform each week:**

1. Check each piece of breathing equipment to make sure that demand or forced air regulator is working. This requires that the bottle be opened and the mask assembly be put on tight enough so that when you inhale, you receive air or feel air flow.

2. BOP skills (well control drills).

3. Check supply pressure on BOP accumulator stand by source.

4. Check breathing equipment mask assembly to see that straps are loosened and turned back, ready to put on.

5. Check pressure on breathing equipment air bottles to make sure they are charged to full volume. ( Air quality checked for proper air grade “D” before bringing to location)

6. Confirm pressure on all supply air bottles.

7. Perform breathing equipment drills with on-site personnel.

8. Check the following supplies for availability.

   A. Emergency telephone list.
   B. Hand operated H2S detectors and tubes.

## General evacuation plan

1. When the company approved supervisor (Drill Site Manager, consultant, rig pusher, or driller) determines the H2S gas cannot be limited to the well location and the public will be involved, he will activate the evacuation plan.

2. Drill Site Manager or designee will notify local government agency that a hazardous condition exists and evacuation needs to be implemented.

3. Company or contractor safety personnel that have been trained in the use of H2S detection equipment and self-contained breathing equipment will monitor H2S concentrations, wind directions, and area of exposure. They will delineate the outer perimeter of the hazardous gas area. Extension to the evacuation area will be determined from information gathered.

4. Law enforcement personnel (state police, police dept., fire dept., and sheriff's dept.) Will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.

5. After the discharge of gas has been controlled, company safety personnel will determine when the area is safe for re-entry.

**Important: Law enforcement personnel will not be asked to come into a contaminated area. Their assistance will be limited to uncontaminated areas. Constant radio contact will be maintained with them.**

## Emergency actions

Well blowout – if emergency

1. Evacuate all personnel to "Safe Briefing / Muster Areas" or off location if needed.
2. If sour gas – evacuate rig personnel.
3. If sour gas – evacuate public within 3000 ft radius of exposure.
4. Don SCBA and shut well in if possible using the buddy system.
5. Notify Drilling Superintendent and call 911 for emergency help (fire dept and ambulance) if needed.
6. Implement the Blowout Contingency Plan, and Drilling Emergency Action Plan.
6. Give first aid as needed.

Person down location/facility

1. If immediately possible, contact 911. Give location and wait for confirmation.
2. Don SCBA and perform rescue operation using buddy system.

## Toxic effects of hydrogen sulfide

Hydrogen sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 ppm, which is .001% by volume. Hydrogen sulfide is heavier than air (specific gravity – 1.192) and colorless. It forms an explosive mixture with air between 4.3 and 46.0 percent by volume. Hydrogen sulfide is almost as toxic as hydrogen cyanide and is between five and six times more toxic than carbon monoxide. Toxicity data for hydrogen sulfide and various other gases are compared in table i. Physical effects at various hydrogen sulfide exposure levels are shown in table ii.

Table i
Toxicity of various gases

| Common name | Chemical formula | Specific gravity (sc=1) | Threshold limit (1) | Hazardous limit (2) | Lethal concentration (3) |
|---|---|---|---|---|---|
| Hydrogen Cyanide | Hcn | 0.94 | 10 ppm | 150 ppm/hr | 300 ppm |
| Hydrogen Sulfide | H2S | 1.18 | 10 ppm | 250 ppm/hr | 600 ppm |
| Sulfur Dioxide | So2 | 2.21 | 5 ppm | - | 1000 ppm |
| Chlorine | Cl2 | 2.45 | 1 ppm | 4 ppm/hr | 1000 ppm |
| Carbon Monoxide | Co | 0.97 | 50 ppm | 400 ppm/hr | 1000 ppm |
| Carbon Dioxide | Co2 | 1.52 | 5000 ppm | 5% | 10% |
| Methane | Ch4 | 0.55 | 90,000 ppm | Combustible above 5% in air | |

1) threshold limit – concentration at which it is believed that all workers may be repeatedly exposed day after day without adverse effects.

2) hazardous limit – concentration that will cause death with short-term exposure.

3) lethal concentration – concentration that will cause death with short-term exposure.

## Toxic effects of hydrogen sulfide

Table ii
Physical effects of hydrogen sulfide

| Concentration | | | Physical effects |
|---|---|---|---|
| Percent (%) | Ppm | Grains 100 std. Ft3* | |
| 0.001 | <10 | 00.65 | Obvious and unpleasant odor. |

| | | | |
|---|---|---|---|
| 0.002 | 10 | 01.30 | Safe for 8 hours of exposure. |
| 0.010 | 100 | 06.48 | Kill smell in 3 – 15 minutes. May sting eyes and throat. |
| 0.020 | 200 | 12.96 | Kills smell shortly; stings eyes and throat. |
| 0.050 | 500 | 32.96 | Dizziness; breathing ceases in a few minutes; needs prompt artificial respiration. |
| 0.070 | 700 | 45.36 | Unconscious quickly; death will result if not rescued promptly. |
| 0.100 | 1000 | 64.30 | Unconscious at once; followed by death within minutes. |

*at 15.00 psia and 60’f.

## Use of self-contained breathing equipment (SCBA)

1. Written procedures shall be prepared covering safe use of SCBA's in dangerous atmosphere, which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available SCBA.

2 SCBA's shall be inspected frequently at random to insure that they are properly used, cleaned, and maintained.

3. Anyone who may use the SCBA's shall be trained in how to insure proper face-piece to face seal. They shall wear SCBA's in normal air and then wear them in a test atmosphere. (note: such items as facial hair {beard or sideburns} and eyeglasses will not allow proper seal.) Anyone that may be reasonably expected to wear SCBA's should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses or contact lenses.

4. Maintenance and care of SCBA's:

   a. A program for maintenance and care of SCBA's shall include the following:
      1. Inspection for defects, including leak checks.
      2. Cleaning and disinfecting.
      3. Repair.
      4. Storage.

   b. Inspection, self-contained breathing apparatus for emergency use shall be inspected monthly.
      1. Fully charged cylinders.
      2. Regulator and warning device operation.
      3. Condition of face piece and connections.
      4. Rubber parts shall be maintained to keep them pliable and prevent deterioration.

   c. Routinely used SCBA's shall be collected, cleaned and disinfected as frequently as necessary to insure proper protection is provided.

5. Persons assigned tasks that requires use of self-contained breathing equipment shall be certified physically fit (medically cleared) for breathing equipment usage at least annually.

6. SCBA's should be worn when:

   A. Any employee works near the top or on top of any tank unless test reveals less than 10 ppm of H2S.

B. When breaking out any line where H2S can reasonably be expected.

C. When sampling air in areas to determine if toxic concentrations of H2S exists.

D. When working in areas where over 10 ppm H2S has been detected.

E. At any time there is a doubt as to the H2S level in the area to be entered.

**Rescue**
**First aid for H2S poisoning**

Do not panic!

Remain calm – think!

1. Don SCBA breathing equipment.

2. Remove victim(s) utilizing buddy system to fresh air as quickly as possible. (go up-wind from source or at right angle to the wind. Not down wind.)

3. Briefly apply chest pressure – arm lift method of artificial respiration to clean the victim's lungs and to avoid inhaling any toxic gas directly from the victim's lungs.

4. Provide for prompt transportation to the hospital, and continue giving artificial respiration if needed.

5. Hospital(s) or medical facilities need to be informed, before-hand, of the possibility of H2S gas poisoning – no matter how remote the possibility is.

6. Notify emergency room personnel that the victim(s) has been exposed to H2S gas.

Besides basic first aid, everyone on location should have a good working knowledge of artificial respiration.

Revised CM 6/27/2012

**OXY Permian Delaware NM Basin Drilling & Completions Incident Reporting**

**OXY Permian Crisis Team Hotline Notification**

| Person | Location | Office Phone | Cell/Mobile Phone |
|---|---|---|---|
| **Drilling & Completions Department** | | | |
| Drilling & Completions Manager: John Willis | Houston | (713) 366-5556 | (713) 259-1417 |
| Drilling Superintendent: Simon Benavides | Houston | (713) 215-7403 | (832) 528-3547 |
| Completions Superintendent: Chris Winter | Houston | (713) 366-5212 | (806) 239-8774 |
| Drilling Eng. Supervisor: Diego Tellez | Houston | (713) 350-4602 | (713) 303-4932 |
| Drilling Eng. Supervisor: Randy Neel | Houston | (713) 215-7987 | (713) 517-5544 |
| Completions Eng. Supervisor: Evan Hinkel | Houston | (713) 366-5436 | (281) 236-6153 |
| Drilling & Completions HES Lead. Ryan Green | Houston | 713-336-5753 | 281-520-5216 |
| Drilling & Completions HES Advisor:Kenny Williams | Carlsbad | (432) 686-1434 | (337) 208-0911 |
| Drilling & Completions HES Advisor:Kyle Holden | Carlsbad | (432) 686-1435 | (661) 369-5328 |
| Drilling & Completions HES Advisor Sr:Dave Schmidt | Carlsbad | | (559) 310-8572 |
| Drilling & Completions HES Advisor. :Seth Doyle | Carlsbad | | (337) 499-0756 |
| HES / Enviromental & Regulatory Department | Location | Office | Cell Phone |
| Jon Hamil-HES Manager | Houston | (713) 497-2494 | (832) 537-9885 |
| Mark Birk-HES Manager | Houston | (713) 350-4615 | (949) 413-3127 |
| Austin Tramell | Midland | (432) 699-4208 | (575) 499-4919 |
| Rico Munoz | Midland | (432) 699-8366 | (432) 803-4116 |
| Amber DuckWorth | Midland | | (832) 966-1879 |
| Kelley Montgomery- Regulatory Manager | Houston | (713) 366-5716 | (832) 454-8137 |
| Sandra Musallam -Regulatory Lead | Houston | +1 (713) 366-5106 | +1 (713) 504-8577 |
| Bishop, Steve-DOT Pipeline Coordinator | Midland | 432-685-5614 | |
| Wilson, Dusty-Safety Advisor | Midland | 432-685-5771 | (432) 254-2336 |
| John W Dittrich Eniromental Advisor | Midland | | (575) 390-2828 |
| William (Jack) Calhoun-Environmental Lead | Houston | +713 (350) 4906 | (281) 917-8571 |
| Robert Barrow-Risk Engineer Manager | Houston | (713) 366-5611 | (832) 867-5336 |
| Sarah Holmes-HSE Cordinator | Midland | 432-685-5758 | |
| Administrative | Location | Office | |
| Sarah Holmes | Midland | 432-685-5830 | |
| Robertson, Debbie | Midland | 432-685-5812 | |
| Laci Hollaway | Midland | (432) 685-5716 | (432) 631-6341 |
| Administrative | Location | Office | |
| Rosalinda Escajeda | Midland | 432-685-5831 | |
| Moreno, Leslie (contract) | Hobbs | 575-397-8247 | |

| | | | |
|---|---|---|---|
| Sehon, Angela (contractor) | Levelland | 806-894-8347 | |
| Vasquez, Claudia (contractor) | North Cowden | 432-385-3120 | |
| **XstremeMD** | Location | Office | |
| Medical Case Management | Orla, TX | (337) 205-9314 | |
| **Axiom Medical Consulting** | Location | Office | |
| Medical Case Management | | (877) 502-9466 | |
| | | | |
| **Regulatory Agencies** | | | |
| Bureau of Land Management | Carlsbad, NM | (505) 887-6544 | |
| Bureau of Land Management | Hobbs, NM | (505) 393-3612 | |
| Bureau of Land Management | Roswell, NM | (505) 393-3612 | |
| Bureau of Land Management | Santa Fe, NM | (505) 988-6030 | |
| DOT Juisdictional Pipelines-Incident Reporting New Mexico Public Regulaion Commission | Santa Fe, NM | (505) 827-3549<br>(505) 490-2375 | |
| DOT Juisdictional Pipelines-Incident Reporting Texas Railroad Commission | Austin, TX | (512) 463-6788 | |
| EPA Hot Line | Dallas, Texas | (214) 665-6444 | |
| Federal OSHA, Area Office | Lubbock, Texas | (806) 472-7681 | |
| National Response Center | Washington, D. C. | (800) 424-8802 | |
| National Infrastructure Coordinator Center | | (202) 282-9201 | |
| New Mexico Air Quality Bureau | Santa Fe, NM | (505) 827-1494 | |
| New Mexico Oil Conservation Division | Artesia, NM | (505) 748-1283 | After Hours (505) 370-7545 |
| New Mexico Oil Conservation Division | Hobbs, NM | (505) 393-6161 | |
| New Mexico Oil Conservation Division | Santa Fe, NM | (505) 471-1068 | |
| New Mexico OCD Environmental Bureau | Santa Fe, NM | (505) 476-3470 | |
| New Mexico Environmental Department | Hobbs, NM | (505) 827-9329 | |
| NM State Emergency Response Center | Santa Fe, NM | (505) 827-9222 | |
| Railroad Commission of TX | District 1 San Antonio, TX | (210) 227-1313 | |
| Railroad Commission of TX | District 7C San Angelo, TX | (325) 657-7450 | |
| Railroad Commission of TX | District 8, 8A Midland, TX | (432) 684-5581 | |
| Texas Emergency Response Center | Austin, TX | (512) 463-7727 | |
| TCEQ Air | Region 2 Lubbock, TX | (806) 796-3494 | |
| TCEQ Water/Waste/Air | Region 3 Abilene, TX | (325) 698-9674 | |
| TCEQ Water/Waste/Air | Region 7 Midland, TX | (432) 570-1359 | |
| TCEQ Water/Waste/Air | Region 9 San Antonio, TX | (512) 734-7981 | |
| TCEQ Water/Waste/Air | Region 8 San Angelo | (325) 655-9479 | |
| | | | |
| **Medical Facilities** | | | |
| Abernathy Medical Clinic | Abernathy, TX | (806) 298-2524 | |
| Alliance Hospital | Odessa, TX | (432) 550-1000 | |
| Artesia General Hospital | Artesia, NM | (505) 748-3333 | |
| Brownfield Regional Medical Center | Brownfield, TX | (806) 637-3551 | |
| Cogdell Memorial Hospital | Snyder, TX | (325) 573-6374 | |
| Covenant Hospital Levelland | Levelland, TX | (806) 894-4963 | |

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|---|---|---|---|
| Covenant Medical Center | Lubbock, TX | (806) 725-1011 | |
| Covenant Medical Center Lakeside | Lubbock, TX | (806) 725-6000 | |
| Covenant Family Health | Synder, TX | (325) 573-1300 | |
| Crockett County Hospital | Ozona, TX | (325) 392-2671 | |
| Guadalupe Medical Center | Carlsbad, NM | (505) 887-6633 | |
| Lea Regional Hospital | Hobbs, NM | (505) 492-5000 | |
| McCamey Hospital | McCamey, TX | (432) 652-8626 | |
| Medical Arts Hospital | Lamesa, TX | (806) 872-2183 | |
| Medical Center Hospital | Odessa, TX | (432) 640-4000 | |
| Medi Center Hospital | San Angelo, TX | (325) 653-6741 | |
| Memorial Hospital | Ft. Stockton | (432) 336-2241 | |
| Memorial Hospital | Seminole, TX | (432) 758-5811 | |
| Midland Memorial Hospital | Midland, TX | (432) 685-1111 | |
| Nor-Lea General Hospital | Lovington, NM | (505) 396-6611 | |
| Odessa Regional Hospital | Odessa, TX | (432) 334-8200 | |
| Permian General Hospital | Andrews, TX | (432) 523-2200 | |
| Reagan County Hospital | Big Lake, TX | (325) 884-2561 | |
| Reeves County Hospital | Pecos, TX | (432) 447-3551 | |
| Shannon Medical Center | San Angelo, TX | (325) 653-6741 | |
| Union County General Hospital | Clayton, NM | (505) 374-2585 | |
| University Medical Center | Lubbock, TX | (806) 725-8200 | |
| Val Verde Regional Medical Center | Del Rio, TX | (830) 775-8566 | |
| Ward Memorial Hospital | Monahans, TX | (432) 943-2511 | |
| Yoakum County Hospital | Denver City, TX | (806) 592-5484 | |
| | | | |
| **Law Enforcement - Sheriff** | | | |
| Andrews Cty Sheriff's Department | Andrews County(Andrews) | (432) 523-5545 | |
| Crane Cty Sheriff's Department | Crane, County (Crane) | (432) 558-3571 | |
| Crockett Cty Sheriff's Department | Crockett County (Ozona) | (325) 392-2661 | |
| Dawson Cty Sheriff's Department | Dawson County (Lamesa) | (806) 872-7560 | |
| Ector Cty Sheriff's Department | Ector County (Odessa) | (432) 335-3050 | |
| Eddy Cty Sheriff's Department | Eddy County (Artesia) | (505) 746-2704 | |
| Eddy Cty Sheriff's Department | Eddy County (Carlsbad) | (505) 887-7551 | |
| Gaines Cty Sheriff's Department | Gaines County (Seminole) | (432) 758-9871 | |
| Hockley Cty Sheriff's Department | Hockley County(Levelland) | (806) 894-3126 | |
| Kent Cty (Jayton City Sheriff's Dept.) | Kent County(Jayton) | (806) 237-3801 | |
| Lea Cty Sheriff's Department | Lea County (Eunice) | (505) 384-2020 | |
| Lea Cty Sheriff's Department | Lea County (Hobbs) | (505) 393-2515 | |
| Lea Cty Sheriff's Department | Lea County (Lovington) | (505) 396-3611 | |
| Lubbock Cty Sheriff's Department | Lubbock Cty (Abernathy) | (806) 296-2724 | |
| Midland Cty Sheriff's Department | Midland County (Midland) | (432) 688-1277 | |
| Pecos Cty Sheriff's Department | Pecos County (Iraan) | (432) 639-2251 | |
| Reeves Cty Sheriff's Department | Reeves County (Pecos) | (432) 445-4901 | |
| Scurry Cty Sheriff's Department | Scurry County (Snyder) | (325) 573-3551 | |

| | | | |
|---|---|---|---|
| Terry Cty Sheriff's Department | Terry County (Brownfield) | (806) 637-2212 | |
| Union Cty Sheriff's Department | Union County (Clayton) | (505) 374-2583 | |
| Upton Cty Sheriff's Department | Upton County (Rankin) | (432) 693-2422 | |
| Ward Cty Sheriff's Department | Ward County (Monahans) | (432) 943-3254 | |
| Yoakum City Sheriff's Department | Yoakum Co. (Denever City) | (806) 456-2377 | |
| | | | |
| **Law Enforcement - Police** | | | |
| Abernathy City Police | Abernathy, TX | (806) 298-2545 | |
| Andrews City Police | Andrews, TX | (432) 523-5675 | |
| Artesia City Police | Artesia, NM | (505) 746-2704 | |
| Brownfield City Police | Brownfield, TX | (806) 637-2544 | |
| Carlsbad City Police | Carlsbad, NM | (505) 885-2111 | |
| Clayton City Police | Clayton, NM | (505) 374-2504 | |
| Denver City Police | Denver City, TX | (806) 592-3516 | |
| Eunice City Police | Eunice, NM | (505) 394-2112 | |
| Hobbs City Police | Hobbs, NM | (505) 397-9265 (505) 393-2677 | |
| Jal City Police | Jal, NM | (505) 395-2501 | |
| Jayton City Police | Jayton, TX | (806) 237-3801 | |
| Lamesa City Police | Lamesa, TX | (806) 872-2121 | |
| Levelland City Police | Levelland, TX | (806) 894-6164 | |
| Lovington City Police | Lovington, NM | (505) 396-2811 | |
| Midland City Police | Midland, TX | (432) 685-7113 | |
| Monahans City Police | Monahans, TX | (432) 943-3254 | |
| Odessa City Police | Odessa, TX | (432) 335-3378 | |
| Seminole City Police | Seminole, TX | (432) 758-9871 | |
| Snyder City Police | Snyder, TX | (325) 573-2611 | |
| Sundown City Police | Sundown, TX | (806) 229-8241 | |
| | | | |
| **Law Enforcement - FBI** | | | |
| FBI | Alburqueque, NM | (505) 224-2000 | |
| FBI | Midland, TX | (432) 570-0255 | |
| | | | |
| **Law Enforcement - DPS** | | | |
| NM State Police | Artesia, NM | (505) 746-2704 | |
| NM State Police | Carlsbad, NM | (505) 885-3137 | |
| NM State Police | Eunice, NM | (505) 392-5588 | |
| NM State Police | Hobbs, NM | (505) 392-5588 | |
| NM State Police | Clayton, NM | (505) 374-2473; 911 | |
| TX Dept of Public Safety | Andrews, TX | (432) 524-1443 | |
| TX Dept of Public Safety | Big Lake, TX | (325) 884-2301 | |
| TX Dept of Public Safety | Brownfield, TX | (806) 637-2312 | |
| TX Dept of Public Safety | Iraan, TX | (432) 639-3232 | |
| TX Dept of Public Safety | Lamesa, TX | (806) 872-8675 | |
| TX Dept of Public Safety | Levelland, TX | (806) 894-4385 | |

| | | | |
|---|---|---|---|
| TX Dept of Public Safety | Lubbock, TX | (806) 747-4491 | |
| TX Dept of Public Safety | Midland, TX | (432) 697-2211 | |
| TX Dept of Public Safety | Monahans, TX | (432) 943-5857 | |
| TX Dept of Public Safety | Odessa, TX | (432) 332-6100 | |
| TX Dept of Public Safety | Ozona, TX | (325) 392-2621 | |
| TX Dept of Public Safety | Pecos, TX | (432) 447-3533 | |
| TX Dept of Public Safety | Seminole, TX | (432) 758-4041 | |
| TX Dept of Public Safety | Snyder, TX | (325) 573-0113 | |
| TX Dept of Public Safety | Terry County TX | (806) 637-8913 | |
| TX Dept of Public Safety | Yoakum County TX | (806) 456-2377 | |
| | | | |
| **Firefighting & Rescue** | | | |
| Abernathy | Abernathy, TX | (806) 298-2022 | |
| Amistad/Rosebud | Amistad/Rosebud, NM | (505) 633-9113 | |
| Andrews | Andrews, TX | (432) 523-4820; (432) 523-3111 | |
| Artesia | Artesia, NM | (505) 746-5051 | |
| Big Lake | Big Lake, TX | (325) 884-3650 | |
| Brownfield-Administrative & other calls | Brownfield, TX | (816) 637-4547 | |
| Brownfield emergency only | Brownfield, TX | -911 | |
| Carlsbad | Carlsbad, NM | (505) 885-3125 | |
| Clayton | Clayton, NM | (505) 374-2435 | |
| Cotton Center | Cotton Center, TX | (806) 879-2157 | |
| Crane | Crane, TX | (432) 558-2361 | |
| Del Rio | Del Rio, TX | (830) 774-8650 | |
| Denver City | Denver City, TX | (806) 592-3516 | |
| Eldorado | Eldorado, TX | (325) 853-2691 | |
| Eunice | Eunice, NM | (505) 394-2111 | |
| Garden City | Garden City, TX | (432) 354-2404 | |
| Goldsmith | Goldsmith, TX | (432) 827-3445 | |
| Hale Center | Hale Center, TX | (806) 839-2411 | |
| Halfway | Halfway, TX | | |
| Hobbs | Hobbs, NM | (505) 397-9308 | |
| Jal | Jal, NM | (505) 395-2221 | |
| Jayton | Jayton, TX | (806) 237-3801 | |
| Kermit | Kermit, TX | (432) 586-3468 | |
| Lamesa | Lamesa, TX | (806) 872-4352 | |
| Levelland | Levelland, TX | (806) 894-3154 | |
| Lovington | Lovington, NM | (505) 396-2359 | |
| Maljamar | Maljamar, NM | (505) 676-4100 | |
| McCamey | McCamey, TX | (432) 652-8232 | |
| Midland | Midland, TX | (432) 685-7346 | |
| Monahans | Monahans, TX | (432) 943-4343 | |
| Nara Visa | Nara Visa, NM | (505) 461-3300 | |
| Notrees | Notress, TX | (432) 827-3445 | |

| | | | |
|---|---|---|---|
| Odessa | Odessa, TX | (432) 335-4659 | |
| Ozona | Ozona, TX | (325) 392-2626 | |
| Pecos | Pecos, TX | (432) 445-2421 | |
| Petersburg | Petersburg, TX | (806) 667-3461 | |
| Plains | Plains, TX | (806) 456-8067 | |
| Plainview | Plainview, TX | (806) 296-1170 | |
| Rankin | Rankin, TX | (432) 693-2252 | |
| San Angelo | San Angelo, TX | (325) 657-4355 | |
| Sanderson | Sanderson, TX | (432) 345-2525 | |
| Seminole | Seminole, TX | (432) 758-3676<br>(432) 758-9871 | |
| Smyer | Smyer, TX | (806) 234-3861 | |
| Snyder | Snyder, TX | (325) 573-6215 | |
| Sundown | Sundown, TX | **911** | |
| Tucumcari | Tucumcari, NM | 911 | |
| West Odessa | Odessa, TX | (432) 381-3033 | |
| | | | |
| **Ambulance** | | | |
| Abernathy Ambulance | Abernathy, TX | (806) 298-2241 | |
| Amistad/Rosebud | Amistad/Rosebud, NM | (505) 633-9113 | |
| Andrews Ambulance | Andrews, TX | (432) 523-5675 | |
| Artesia Ambulance | Artesia, NM | (505) 746-2701 | |
| Big Lake Ambulance | Big Lake, TX | (325) 884-2423 | |
| Big Spring Ambulance | Big Spring, TX | (432) 264-2550 | |
| Brownfield Ambulance | Brownfield, TX | (806) 637-2511 | |
| Carlsbad Ambulance | Carlsbad, NM | (505) 885-2111; 911 | |
| Clayton, NM | Clayton, NM | (505) 374-2501 | |
| Denver City Ambulance | Denver City, TX | (806) 592-3516 | |
| Eldorado Ambulance | Eldorado, TX | (325) 853-3456 | |
| Eunice Ambulance | Eunice, NM | (505) 394-3258 | |
| Goldsmith Ambulance | Goldsmith, TX | (432) 827-3445 | |
| Hobbs, NM | Hobbs, NM | (505) 397-9308 | |
| Jal, NM | Jal, NM | (505) 395-2501 | |
| Jayton Ambulance | Jayton, TX | (806) 237-3801 | |
| Lamesa Ambulance | Lamesa, TX | (806) 872-3464 | |
| Levelland Ambulance | Levelland, TX | (806) 894-8855 | |
| Lovington Ambulance | Lovington, NM | (505) 396-2811 | |
| McCamey Hospital | McCamey, TX | (432) 652-8626 | |
| Midland Ambulance | Midland, TX | (432) 685-7499 | |
| Monahans Ambulance | Monahans, TX | (432) 943-3385 or 3731 | |
| Nara Visa, NM | Nara Visa, NM | (505) 461-3300 | |
| Odessa Ambulance | Odessa, TX | (432) 335-3378 | |
| Ozona Ambulance | Ozona, TX | (325) 392-2671 | |
| Pecos Ambulance | Pecos, TX | (432) 445-4444 | |

| | | | |
|---|---|---|---|
| Rankin Ambulance | Rankin, TX | (432) 693-2443 | |
| San Angelo Ambulance | San Angelo, TX | (325) 657-4357 | |
| Seminole Ambulance | Seminole, TX | (432) 758-8816<br>(432) 758-9871 | |
| Snyder Ambulance | Snyder, TX | (325) 573-1911 | |
| Stanton Ambulance | Stanton, TX | (432) 756-2211 | |
| Sundown Ambulance | Sundown, TX | **911** | |
| Tucumcari, NM | Tucumcari, NM | 911 | |
| | | | |
| **Medical Air Ambulance Service** | | | |
| AEROCARE - Methodist Hospital | Lubbock, TX | (800) 627-2376 | |
| San Angelo Med-Vac Air Ambulance | San Angelo, TX | (800) 277-4354 | |
| Southwest Air Ambulance Service | Stanford, TX | (800) 242-6199 | |
| Southwest MediVac | Snyder, TX | (800) 242-6199 | |
| Southwest MediVac | Hobbs, NM | (800) 242-6199 | |
| Odessa Care Star | Odessa, TX | (888) 624-3571 | |
| NWTH Medivac | Amarillo, TX | (800) 692-1331 | |

WORKING DRAFT ONLY – March 16, 2022

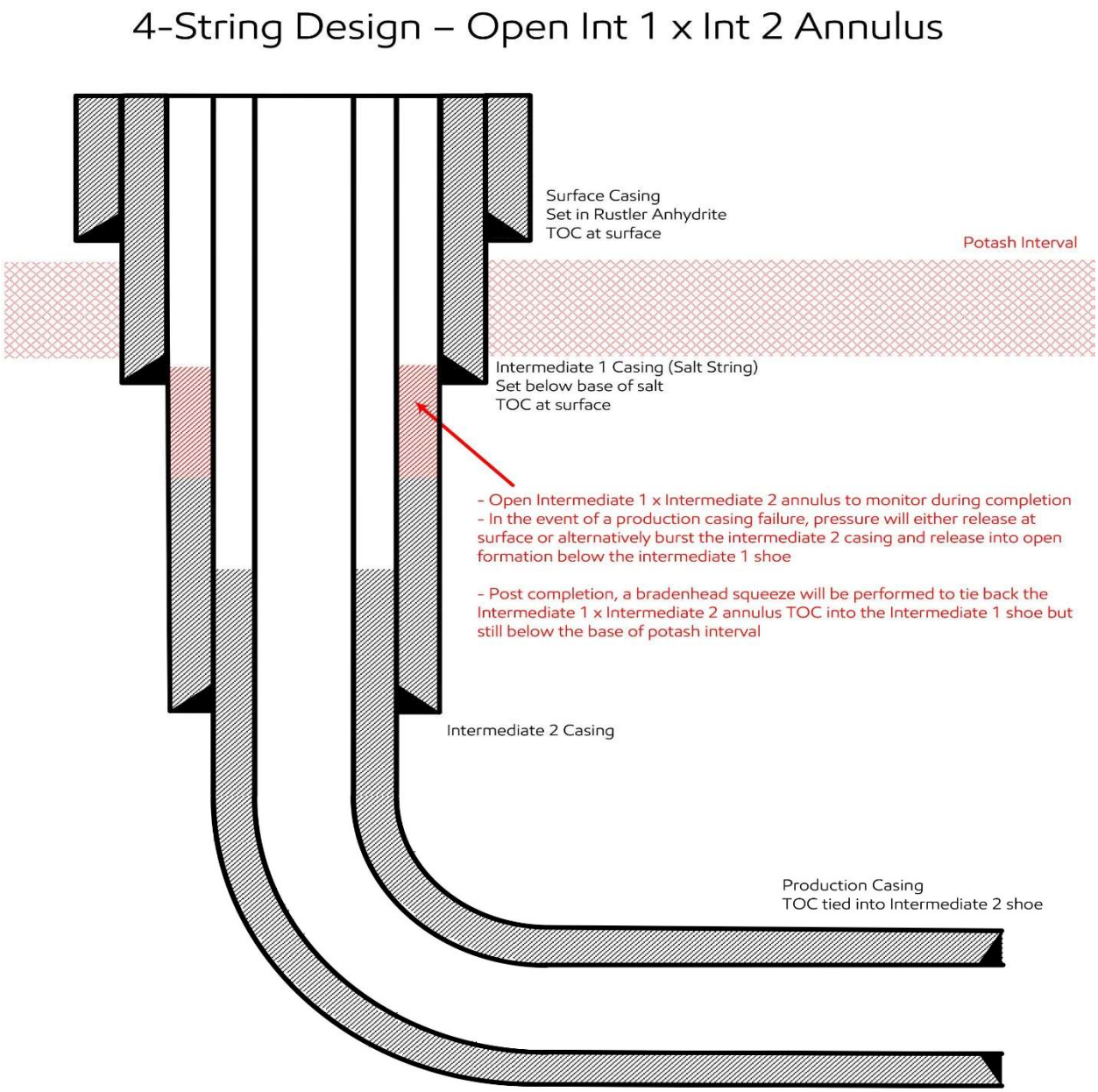



Figure C] 4 – String – Un Cemented Annulus

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

# NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

## Section 1 – Plan Description

**Effective May 25, 2021**

**I. Operator:** OXY USA INC. **OGRID:** 16696 **Date:** 12/08/22

**II. Type:** ☑ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

| Well Name | API | ULSTR | Footages | Anticipated Oil BBL/D | Anticipated Gas MCF/D | Anticipated Produced Water BBL/D |
|---|---|---|---|---|---|---|
| SEE ATTACHED | | | | | | |
| | | | | | | |

**IV. Central Delivery Point Name:** Pure Gold CTB [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

| Well Name | API | Spud Date | TD Reached Date | Completion Commencement Date | Initial Flow Back Date | First Production Date |
|---|---|---|---|---|---|---|
| SEE ATTACHED | | | | | | |
| | | | | | | |

**VI. Separation Equipment:** ☑ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:** ☑ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:** ☑ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

## Section 2 – Enhanced Plan
**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☑ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

| Well | API | Anticipated Average Natural Gas Rate MCF/D | Anticipated Volume of Natural Gas for the First Year MCF |
|---|---|---|---|
| | | | |
| | | | |

**X. Natural Gas Gathering System (NGGS):**

| Operator | System | ULSTR of Tie-in | Anticipated Gathering Start Date | Available Maximum Daily Capacity of System Segment Tie-in |
|---|---|---|---|---|
| | | | | |
| | | | | |

**XI. Map.** ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:** ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

## Section 3 - Certifications

**Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☑ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. ***If Operator checks this box, Operator will select one of the following:***

**Well Shut-In.** ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.** ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- **(a)** power generation on lease;
- **(b)** power generation for grid;
- **(c)** compression on lease;
- **(d)** liquids removal on lease;
- **(e)** reinjection for underground storage;
- **(f)** reinjection for temporary storage;
- **(g)** reinjection for enhanced oil recovery;
- **(h)** fuel cell production; and
- **(i)** other alternative beneficial uses approved by the division.

## Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

**(a)** Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

**(b)** Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

**I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.**

| | |
|---|---|
| Signature: | Leslie T. Reeves |
| Printed Name: | LESLIE REEVES |
| Title: | REGULATORY MANAGER |
| E-mail Address: | LESLIE_REEVES@OXY.COM |
| Date: | 12/8/2022 |
| Phone: | 713-497-2492 |

**OIL CONSERVATION DIVISION**
**(Only applicable when submitted as a standalone form)**

| | |
|---|---|
| Approved By: | |
| Title: | |
| Approval Date: | |
| Conditions of Approval: | |

**III. Well(s)**

| Well Name | API | WELL LOCATION (ULSTR) | Footages | ANTICIPATED OIL BBL/D | ANTICIPATED GAS MCF/D | ANTICIPATED PROD WATER BBL/D |
|---|---|---|---|---|---|---|
| VANADIUM 32 STATE 4H | PENDING | O-29-T23S-R31E | 620' FSL 2038' FEL | 3200 | 4200 | 5000 |
| VANADIUM 32 STATE 5H | PENDING | O-29-T23S-R31E | 620' FSL 2008' FEL | 3200 | 4200 | 5000 |
| VANADIUM 32 STATE 175H | PENDING | O-29-T23S-R31E | 500' FSL 1417' FEL | 2000 | 4300 | 4600 |
| VANADIUM 32 STATE 176H | PENDING | O-29-T23S-R31E | 472' FSL 1405' FEL | 2000 | 4300 | 4600 |

**V. Anticipated Schedule**

| Well Name | API | Spud Date | TD Reached Date | Completion Commencement Date | Initial Flow Back Date | First Production Date |
|---|---|---|---|---|---|---|
| VANADIUM 32 STATE 4H | PENDING | 3/1/2023 | 5/7/2023 | 5/7/2023 | 6/13/2023 | 6/14/2023 |
| VANADIUM 32 STATE 5H | PENDING | 3/1/2023 | 5/20/2023 | 5/27/2023 | 6/13/2023 | 6/14/2023 |
| VANADIUM 32 STATE 175H | PENDING | 3/1/2023 | 5/8/2023 | 5/20/2023 | 6/12/2023 | 6/13/2023 |
| VANADIUM 32 STATE 176H | PENDING | 3/1/2023 | 4/26/2023 | 5/20/2023 | 6/12/2023 | 6/13/2023 |

**Part VI. Separation Equipment**

Operator will size the flowback separator to handle 11,000 Bbls of fluid and 6-10MMscfd which is more than the expected peak rates for these wells. Each separator is rated to 1440psig, and pressure control valves and automated communication will cause the wells to shut in in the event of an upset at the facility, therefore no gas will be flared on pad during an upset. Current Oxy practices avoid use of flare or venting on pad, therefore if there is an upset or emergency condition at the facility, the wells will immediately shut down, and reassume production once the condition has cleared.

**VII. Operational Practices**

**Gathering System and Pipeline Notification**

Well(s) will be connected to a production facility after flowback operations are complete, where a gas transporter system is in place. The gas produced from production facility is dedicated to Enterprise Field Services, LLC ("Enterprise") and is connected to Enterprise low/high pressure gathering system located in Eddy County, New Mexico. OXY USA INC. ("OXY") provides (periodically) to Enterprise a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, OXY and Enterprise have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Enterprise's Processing Plant located in Sec. 36, Twn. 24S, Rng. 30E, Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

**Flowback Strategy**

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Enterprise system at that time. Based on current information, it is OXY's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

**VIII. Best Management Practices**

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease

  Only a portion of gas is consumed operating the generator, remainder of gas will be flared

- Compressed Natural Gas – On lease

  Gas flared would be minimal, but might be uneconomical to operate when gas volume declines

- NGL Removal – On lease

  Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

# OXY USA Inc
## APD ATTACHMENT: SPUDDER RIG DATA

**OPERATOR NAME / NUMBER:** OXY USA Inc

**1. SUMMARY OF REQUEST:**

Oxy USA respectfully requests approval for the following operations for the surface hole in the drill plan:

1. Utilize a spudder rig to pre-set surface casing for time and cost savings.

**2. Description of Operations**

**1.** Spudder rig will move in to drill the surface hole and pre-set surface casing on the well.
   - **a.** After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
   - **b.** The spudder rig will utilize fresh water-based mud to drill the surface hole to TD. Solids control will be handled entirely on a closed loop basis. No earth pits will be used.

**2.** The wellhead will be installed and tested as soon as the surface casing is cut off and the WOC time has been reached.

**3.** A blind flange at the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with needle valves installed on two wingvalves.
   - **a.** A means for intervention will be maintained while the drilling rig is not over the well.

**4.** Spudder rig operations are expected to take 2-3 days per well on the pad.

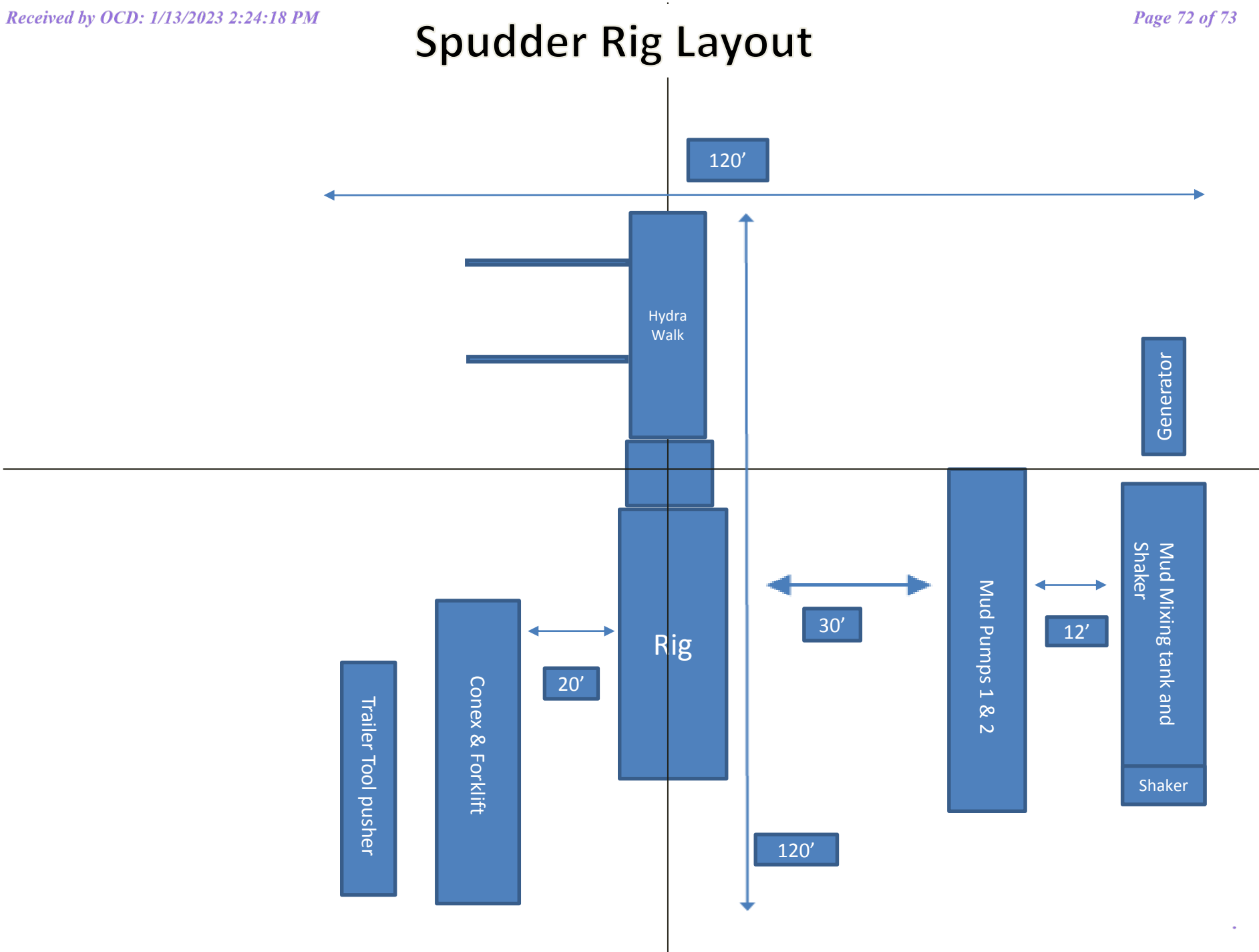
**5.** The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.

**6.** Drilling operations will begin with a larger rig and a BOP stack equal to or greater than the pressure rating that was permitted will be nippled up and tested on the wellhead before drilling operations resume on each well.
   - **a.** The larger rig will move back onto the location within 90 days from the point at which the wells are secured and the spudder rig is moved off location.
   - **b.** The BLM will be contacted / notified 24 hours before the larger rig moves back on the pre-set locations.

**7.** Oxy will have supervision on the rig to ensure compliance with all BLM and NMOCD regulations and to oversee operations.

**8.** Once the rig is removed, Oxy will secure the wellhead area by placing a guard rail around the cellar area.

# Spudder Rig Layout



Intent [X] As Drilled [ ]

| API # |
|---|
| 30-015 |

| Operator Name: | Property Name: | Well Number |
|---|---|---|
| OXY USA INC. | VANADIUM 32 STATE | 175H |

Kick Off Point (KOP)

| UL | Section | Township | Range | Lot | Feet | From N/S | Feet | From E/W | County |
|---|---|---|---|---|---|---|---|---|---|
| O | 29 | 23S | 31E | | 300 | FSL | 1560 | FEL | EDDY |

| Latitude | Longitude | NAD |
|---|---|---|
| 32.269003 | -103.796338 | NAD83 |

First Take Point (FTP)

| UL | Section | Township | Range | Lot | Feet | From N/S | Feet | From E/W | County |
|---|---|---|---|---|---|---|---|---|---|
| B | 32 | 23S | 31E | | 100 | FNL | 1560 | FEL | EDDY |

| Latitude | Longitude | NAD |
|---|---|---|
| 32.267903 | -103.796336 | NAD83 |

Last Take Point (LTP)

| UL | Section | Township | Range | Lot | Feet | From N/S | Feet | From E/W | County |
|---|---|---|---|---|---|---|---|---|---|
| C | 32 | 23S | 31E | | 100 | FNL | 1680 | FWL | EDDY |

| Latitude | Longitude | NAD |
|---|---|---|
| 32.267902 | -103.802922 | NAD83 |

Is this well the defining well for the Horizontal Spacing Unit? [Yes]

Is this well an infill well? [ ]

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

| API # |
|---|
| |

| Operator Name: | Property Name: | Well Number |
|---|---|---|
| | | |

KZ 06/29/2018