

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECEIVED

JUL 23 2019

FORM APPROVED  
OMB NO. 1004-0137  
Expires: January 31, 2018

## SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

5. Lease Serial No.  
NMNM45236

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.  
STERLING SILVER MDP1 33-4 FD C 179H9. API Well No.  
30-015-46049-00-X110. Field and Pool or Exploratory Area  
PURPLE SAGE-WOLFCAMP (GAS)11. County or Parish, State  
EDDY COUNTY, NM

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

OXY USA INCORPORATED

Contact: SARAH E CHAPMAN

E-Mail: SARAH\_CHAPMAN@OXY.COM

3a. Address

5 GREENWAY PLAZA SUITE 110  
HOUSTON, TX 77046-0521

3b. Phone No. (include area code)

Ph: 713-350-4997

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 33 T23S R31E NENW 34FNL 2504FWL  
32.267994 N Lat, 103.783188 W Lon

## 12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

## TYPE OF SUBMISSION

## TYPE OF ACTION

☒ Notice of Intent☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☐ Alter Casing☐ Casing Repair☐ Change Plans☐ Convert to Injection☐ Deepen☐ Hydraulic Fracturing☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Production (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☒ Other  
Change to Original A  
PD

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

OXY USA Inc. respectfully requests to amend the approved APD because of the following changes:

1. BHL is moving 100' west, to be 2300' FEL
2. Landing zone change
3. Cement Design (3-string to 4-string)
4. Casing Design
5. Well Control Plan

SPACING

Carlsbad Field Office  
Operator CopyPlease find updated documentation for your use.  
Thank you.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #467999 verified by the BLM Well Information System

For OXY USA INCORPORATED, sent to the Carlsbad

Committed to AFMSS for processing by PRISCILLA PEREZ on 06/13/2019 (19PP2421SE)

Name (Printed/Typed) SARAH E CHAPMAN

Title REGULATORY SPECIALIST

Signature (Electronic Submission)

Date 06/06/2019

## THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By NDUNGU KAMAU

Title PETROLEUM ENGINEER

Date 07/09/2019

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

Office Carlsbad

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

(Instructions on page 2)

\*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\*

RW 10-9-19

**Revisions to Operator-Submitted EC Data for Sundry Notice #467999**

|                | <b>Operator Submitted</b>   | <b>BLM Revised (AFMSS)</b>  |
|----------------|---|---|
| Sundry Type:   | APDCH<br>NOI  | APDCH<br>NOI  |
| Lease:         | NMNM45236   | NMNM45236   |
| Agreement:     |   |   |
| Operator:      | OXY USA INC.<br>P.O. BOX 4294<br>HOUSTON, TX 77210<br>Ph: 713-350-4997  | OXY USA INCORPORATED<br>5 GREENWAY PLAZA SUITE 110<br>HOUSTON, TX 77046-0521<br>Ph: 713.350.4816                    |
| Admin Contact: | SARAH E CHAPMAN<br>REGULATORY SPECIALIST<br>E-Mail: SARAH_CHAPMAN@OXY.COM<br>Cell: 281-642-5503<br>Ph: 713-350-4997 | SARAH E CHAPMAN<br>REGULATORY SPECIALIST<br>E-Mail: SARAH_CHAPMAN@OXY.COM<br>Cell: 281-642-5503<br>Ph: 713-350-4997 |
| Tech Contact:  | SARAH E CHAPMAN<br>REGULATORY SPECIALIST<br>E-Mail: SARAH_CHAPMAN@OXY.COM<br>Cell: 281-642-5503<br>Ph: 713-350-4997 | SARAH E CHAPMAN<br>REGULATORY SPECIALIST<br>E-Mail: SARAH_CHAPMAN@OXY.COM<br>Cell: 281-642-5503<br>Ph: 713-350-4997 |
| Location:      |   |   |
| State:         | NM  | NM  |
| County:        | EDDY COUNTY   | EDDY  |
| Field/Pool:    | PURPLE SAGE WOLFCAMP  | PURPLE SAGE-WOLFCAMP (GAS)  |
| Well/Facility: | STERLING SILVER MDP1 33-4 FEDE 179H<br>Sec 33 T23S R31E NENW 34FNL 2504FWL<br>32.268089 N Lat, 103.783189 W Lon     | STERLING SILVER MDP1 33-4 FD C 179H<br>Sec 33 T23S R31E NENW 34FNL 2504FWL<br>32.267994 N Lat, 103.783188 W Lon     |

# PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

|                              |                                    |
|------------------------------|------------------------------------|
| <b>OPERATOR'S NAME:</b>      | OXY USA INCORPORATED               |
| <b>LEASE NO.:</b>            | NMNM045236                         |
| <b>WELL NAME &amp; NO.:</b>  | 179H:STERLING SILVER MDP1 33-4 FDC |
| <b>SURFACE HOLE FOOTAGE:</b> | 34'/N & 2504'/W                    |
| <b>BOTTOM HOLE FOOTAGE:</b>  | 20'/S & 2300'/W                    |
| <b>LOCATION:</b>             | T-23S, R-31E, S33. NMPM            |
| <b>COUNTY:</b>               | EDDY, NM                           |

COA

|                      |  |  |  |
|----------------------|--|--|--|
| H2S                  | <input type="radio"/> Yes                        | <input checked="" type="radio"/> No                |  |
| Potash               | <input type="radio"/> None                       | <input type="radio"/> Secretary                    | <input checked="" type="radio"/> R-111-P |
| Cave/Karst Potential | <input checked="" type="radio"/> Low             | <input type="radio"/> Medium                       | <input type="radio"/> High               |
| Variance             | <input type="radio"/> None                       | <input checked="" type="radio"/> Flex Hose         | <input type="radio"/> Other              |
| Wellhead             | <input type="radio"/> Conventional               | <input type="radio"/> Multibowl                    | <input checked="" type="radio"/> Both    |
| Other                | <input type="checkbox"/> 4 String Area           | <input type="checkbox"/> Capitan Reef              | <input type="checkbox"/> WIPP            |
| Other                | <input checked="" type="checkbox"/> Fluid Filled | <input checked="" type="checkbox"/> Cement Squeeze | <input type="checkbox"/> Pilot Hole      |
| Special Requirements | <input type="checkbox"/> Water Disposal          | <input checked="" type="checkbox"/> COM            | <input type="checkbox"/> Unit            |

## ALL PREVIOUS COAs STILL APPLY

### A. HYDROGEN SULFIDE

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

### B. CASING

#### Primary Casing Design:

1. The 13-3/8 inch surface casing shall be set at approximately **503 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of

six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

- b. Wait on cement (WOC) time for a primary cement job will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The 9-5/8 inch surface casing shall be set at approximately 4292 feet. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is:

**Option 1 (Single Stage):**

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

**Option 2:**

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**

**2<sup>nd</sup> Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.**

3. The minimum required fill of cement behind the 7-5/8 inch 2<sup>nd</sup> intermediate casing is:

**Option 1 (Single Stage):**

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.

**Option 2:**

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office.

**Operator has proposed to pump down 9-5/8" X 7-5/8" annulus. Operator must run a CBL from TD of the 7-5/8" casing to surface. Submit results to BLM. Excess calculates to 7% - additional cement might be required.**

4. The minimum required fill of cement behind the 5-1/2 inch production casing is:
  - Cement should tie-back **500 feet** into the previous casing. Operator shall provide method of verification. **Excess calculates to 20% - additional cement might be required.**

**C. PRESSURE CONTROL**

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
- 2.

**Option 1:**

- a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
- b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **5000 (5M)** psi.

**Option 2:**

1. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
  - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

#### **D. SPECIAL REQUIREMENT (S)**

##### **BOP Break Testing Variance**

- While in transfer between wells, the BOPE shall be secured by the hydraulic carrier or cradle.
- Any well control event while drilling require notification to the BLM Petroleum Engineer prior to the commencement of any BOP Break Testing operations.
- A full BOP test is required prior to drilling the first deep intermediate hole section. If any subsequent hole interval is deeper than the first, a full BOP test will be required.

##### **Offline Cementing**

- Contact the BLM prior to the commencement of any offline cementing procedure.

##### **Communitization Agreement**

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.

- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

## GENERAL REQUIREMENTS

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

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

☒ Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 627-0272.

After office hours call (575)

☒ Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,

(575) 361-2822

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)

393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.



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

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. 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. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

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

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the

plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

**C. DRILLING MUD**

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

**D. WASTE MATERIAL AND FLUIDS**

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

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

**NMK792019**

**OXY**

**PRD NM DIRECTIONAL PLANS (NAD 1983)  
STERLING SILVER MDP1 33-4 FED COM  
STERLING SILVER MDP1 33-4 FEDERAL COM 179H**

**Wellbore #1**

**Plan: Permitting Plan**

## **Standard Planning Report**

**20 May, 2019**

# Oxy Planning Report

|           |  |                              |   |
|-----------|--|------------------------------|---|
| Database: | HOPSPP                                     | Local Co-ordinate Reference: | Well STERLING SILVER MDP1 33-4 FEDERAL COM 179H |
| Company:  | ENGINEERING DESIGNS                        | TVD Reference:               | RKB=26.5' @ 3413.00ft                           |
| Project:  | PRD NM DIRECTIONAL PLANS (NAD 1983)        | MD Reference:                | RKB=26.5' @ 3413.00ft                           |
| Site:     | STERLING SILVER MDP1 33-4 FED COM          | North Reference:             | Grid  |
| Well:     | STERLING SILVER MDP1 33-4 FEDERAL COM 179H | 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:                 | STERLING SILVER MDP1 33-4 FED COM |                   |                      |
| Site Position:        |                                   | Northing:         | 461,634.30 usft      |
| From:                 | Map                               | Easting:          | 709,709.04 usft      |
| Position Uncertainty: | 50.00 ft                          | Slot Radius:      | 13.200 in            |
|                       |                                   | Latitude:         | 32° 16' 4.557918 N   |
|                       |                                   | Longitude:        | 103° 47' 18.930890 W |
|                       |                                   | Grid Convergence: | 0.29 °               |

|                      |  |                     |                      |
|----------------------|--|---------------------|----------------------|
| Well:                | STERLING SILVER MDP1 33-4 FEDERAL COM 179H |                     |                      |
| Well Position:       | +N-S                                       | 65.34 ft            | Northing:            |
|                      | +E-W                                       | 1,669.73 ft         | Easting:             |
| Position Uncertainty | 2.00 ft                                    | Wellhead Elevation: | 0.00 ft              |
|                      |  | Latitude:           | 32° 16' 5.120211 N   |
|                      |  | Longitude:          | 103° 46' 59.481120 W |
|                      |  | Ground Level:       | 3,386.50 ft          |

|            |             |             |                |
|------------|-------------|-------------|----------------|
| Wellbore:  | Wellbore #1 |             |                |
| Magnetics: | Model Name  | Sample Date | Declination    |
|            | HDGM        | 5/20/2019   | 6.80           |
|            |             |             | Dip Angle      |
|            |             |             | 59.97          |
|            |             |             | Field Strength |
|            |             |             | 47,955         |

|                   |                  |           |               |
|-------------------|------------------|-----------|---------------|
| Design:           | Permitting Plan  |           |               |
| Audit Notes:      |                  |           |               |
| Version:          | Phase:           | PROTOTYPE | Tie On Depth: |
|                   |                  |           | 0.00          |
| Vertical Section: | Depth From (TVD) | +N-S      | +E-W          |
|                   | (ft)             | (ft)      | (ft)          |
|                   | 0.00             | 0.00      | 0.00          |
|                   |                  |           | Direction     |
|                   |                  |           | 180.87        |

| 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    |                       |
| 6,795.00            | 0.00            | 0.00        | 6,795.00            | 0.00       | 0.00      | 0.00                  | 0.00                 | 0.00                | 0.00    |                       |
| 7,294.93            | 10.00           | 340.36      | 7,292.39            | 40.98      | -14.62    | 2.00                  | 2.00                 | 0.00                | 340.36  |                       |
| 10,084.25           | 10.00           | 340.36      | 10,039.35           | 497.10     | -177.38   | 0.00                  | 0.00                 | 0.00                | 0.00    |                       |
| 11,069.74           | 10.00           | 179.76      | 11,019.56           | 492.06     | -206.05   | 2.00                  | 0.00                 | -16.30              | -170.15 |                       |
| 11,864.70           | 89.50           | 179.76      | 11,493.00           | -67.14     | -203.69   | 10.00                 | 10.00                | 0.00                | 0.00    | FTP (Sterling Silver) |
| 22,317.81           | 89.50           | 179.76      | 11,585.00           | -10,519.76 | -159.57   | 0.00                  | 0.00                 | 0.00                | 0.00    | PBHL (Sterling)       |

# Oxy Planning Report

|           |  |                              |   |
|-----------|--|------------------------------|---|
| Database: | HOPSPP                                     | Local Co-ordinate Reference: | Well STERLING SILVER MDP1 33-4 FEDERAL COM 179H |
| Company:  | ENGINEERING DESIGNS                        | TVD Reference:               | RKB=26.5' @ 3413.00ft                           |
| Project:  | PRD NM DIRECTIONAL PLANS (NAD 1983)        | MD Reference:                | RKB=26.5' @ 3413.00ft                           |
| Site:     | STERLING SILVER MDP1 33-4 FED COM          | North Reference:             | Grid  |
| Well:     | STERLING SILVER MDP1 33-4 FEDERAL COM 179H | 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                |

# Oxy Planning Report

|           |  |                              |   |
|-----------|--|------------------------------|---|
| Database: | HOPSP                                      | Local Co-ordinate Reference: | Well STERLING SILVER MDP1 33-4 FEDERAL COM 179H |
| Company:  | ENGINEERING DESIGNS                        | TVD Reference:               | RKB=26.5' @ 3413.00ft                           |
| Project:  | PRD NM DIRECTIONAL PLANS (NAD 1983)        | MD Reference:                | RKB=26.5' @ 3413.00ft                           |
| Site:     | STERLING SILVER MDP1 33-4 FED COM          | North Reference:             | Grid  |
| Well:     | STERLING SILVER MDP1 33-4 FEDERAL COM 179H | 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) |
| 5,200.00            | 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                |
| 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                |
| 6,795.00            | 0.00            | 0.00        | 6,795.00            | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 6,800.00            | 0.10            | 340.36      | 6,800.00            | 0.00       | 0.00       | 0.00                  | 2.00                  | 2.00                 | 0.00                |
| 6,900.00            | 2.10            | 340.36      | 6,899.98            | 1.81       | -0.65      | -1.80                 | 2.00                  | 2.00                 | 0.00                |
| 7,000.00            | 4.10            | 340.36      | 6,999.83            | 6.91       | -2.46      | -6.87                 | 2.00                  | 2.00                 | 0.00                |
| 7,100.00            | 6.10            | 340.36      | 7,099.42            | 15.28      | -5.45      | -15.19                | 2.00                  | 2.00                 | 0.00                |
| 7,200.00            | 8.10            | 340.36      | 7,198.65            | 26.92      | -9.61      | -26.77                | 2.00                  | 2.00                 | 0.00                |
| 7,294.93            | 10.00           | 340.36      | 7,292.39            | 40.98      | -14.62     | -40.75                | 2.00                  | 2.00                 | 0.00                |
| 7,300.00            | 10.00           | 340.36      | 7,297.39            | 41.81      | -14.92     | -41.58                | 0.00                  | 0.00                 | 0.00                |
| 7,400.00            | 10.00           | 340.36      | 7,395.87            | 58.16      | -20.75     | -57.84                | 0.00                  | 0.00                 | 0.00                |
| 7,500.00            | 10.00           | 340.36      | 7,494.35            | 74.51      | -26.59     | -74.10                | 0.00                  | 0.00                 | 0.00                |
| 7,600.00            | 10.00           | 340.36      | 7,592.83            | 90.87      | -32.42     | -90.36                | 0.00                  | 0.00                 | 0.00                |
| 7,700.00            | 10.00           | 340.36      | 7,691.31            | 107.22     | -38.26     | -106.63               | 0.00                  | 0.00                 | 0.00                |
| 7,800.00            | 10.00           | 340.36      | 7,789.80            | 123.57     | -44.09     | -122.89               | 0.00                  | 0.00                 | 0.00                |
| 7,900.00            | 10.00           | 340.36      | 7,888.28            | 139.92     | -49.93     | -139.15               | 0.00                  | 0.00                 | 0.00                |
| 8,000.00            | 10.00           | 340.36      | 7,986.76            | 156.28     | -55.76     | -155.41               | 0.00                  | 0.00                 | 0.00                |
| 8,100.00            | 10.00           | 340.36      | 8,085.24            | 172.63     | -61.60     | -171.67               | 0.00                  | 0.00                 | 0.00                |
| 8,200.00            | 10.00           | 340.36      | 8,183.72            | 188.98     | -67.43     | -187.94               | 0.00                  | 0.00                 | 0.00                |
| 8,300.00            | 10.00           | 340.36      | 8,282.20            | 205.33     | -73.27     | -204.20               | 0.00                  | 0.00                 | 0.00                |
| 8,400.00            | 10.00           | 340.36      | 8,380.68            | 221.68     | -79.10     | -220.46               | 0.00                  | 0.00                 | 0.00                |
| 8,500.00            | 10.00           | 340.36      | 8,479.16            | 238.04     | -84.94     | -236.72               | 0.00                  | 0.00                 | 0.00                |
| 8,600.00            | 10.00           | 340.36      | 8,577.65            | 254.39     | -90.77     | -252.98               | 0.00                  | 0.00                 | 0.00                |
| 8,700.00            | 10.00           | 340.36      | 8,676.13            | 270.74     | -96.61     | -269.25               | 0.00                  | 0.00                 | 0.00                |
| 8,800.00            | 10.00           | 340.36      | 8,774.61            | 287.09     | -102.44    | -285.51               | 0.00                  | 0.00                 | 0.00                |
| 8,900.00            | 10.00           | 340.36      | 8,873.09            | 303.45     | -108.28    | -301.77               | 0.00                  | 0.00                 | 0.00                |
| 9,000.00            | 10.00           | 340.36      | 8,971.57            | 319.80     | -114.11    | -318.03               | 0.00                  | 0.00                 | 0.00                |
| 9,100.00            | 10.00           | 340.36      | 9,070.05            | 336.15     | -119.95    | -334.29               | 0.00                  | 0.00                 | 0.00                |
| 9,200.00            | 10.00           | 340.36      | 9,168.53            | 352.50     | -125.78    | -350.56               | 0.00                  | 0.00                 | 0.00                |
| 9,300.00            | 10.00           | 340.36      | 9,267.01            | 368.86     | -131.62    | -366.82               | 0.00                  | 0.00                 | 0.00                |
| 9,400.00            | 10.00           | 340.36      | 9,365.50            | 385.21     | -137.45    | -383.08               | 0.00                  | 0.00                 | 0.00                |
| 9,500.00            | 10.00           | 340.36      | 9,463.98            | 401.56     | -143.29    | -399.34               | 0.00                  | 0.00                 | 0.00                |
| 9,600.00            | 10.00           | 340.36      | 9,562.46            | 417.91     | -149.12    | -415.60               | 0.00                  | 0.00                 | 0.00                |
| 9,700.00            | 10.00           | 340.36      | 9,660.94            | 434.27     | -154.96    | -431.87               | 0.00                  | 0.00                 | 0.00                |
| 9,800.00            | 10.00           | 340.36      | 9,759.42            | 450.62     | -160.79    | -448.13               | 0.00                  | 0.00                 | 0.00                |
| 9,900.00            | 10.00           | 340.36      | 9,857.90            | 466.97     | -166.63    | -464.39               | 0.00                  | 0.00                 | 0.00                |
| 10,000.00           | 10.00           | 340.36      | 9,956.38            | 483.32     | -172.46    | -480.65               | 0.00                  | 0.00                 | 0.00                |
| 10,084.25           | 10.00           | 340.36      | 10,039.35           | 497.10     | -177.38    | -494.35               | 0.00                  | 0.00                 | 0.00                |



# Oxy Planning Report

|                  |  |                              |   |
|------------------|--|------------------------------|---|
| Database:        | HOPSPP                                     | Local Co-ordinate Reference: | Well STERLING SILVER MDP1 33-4 FEDERAL COM 179H |
| Company:         | ENGINEERING DESIGNS                        | TVD Reference:               | RKB=26.5' @ 3413.00ft                           |
| Project:         | PRD NM DIRECTIONAL PLANS (NAD 1983)        | MD Reference:                | RKB=26.5' @ 3413.00ft                           |
| Site:            | STERLING SILVER MDP1 33-4 FED COM          | North Reference:             | Grid  |
| Well:            | STERLING SILVER MDP1 33-4 FEDERAL COM 179H | Survey Calculation Method:   | Minimum Curvature                               |
| Wellbore Design: | Wellbore #1<br>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) |  |
| 10,100.00           | 9.69            | 340.04      | 10,054.87           | 499.63    | -178.29  | -496.87               | 2.00                  | -1.97                | -2.03               |  |
| 10,200.00           | 7.73            | 337.42      | 10,153.71           | 513.75    | -183.75  | -510.91               | 2.00                  | -1.96                | -2.62               |  |
| 10,300.00           | 5.79            | 333.04      | 10,253.01           | 524.46    | -188.62  | -521.54               | 2.00                  | -1.93                | -4.38               |  |
| 10,400.00           | 3.93            | 324.42      | 10,352.65           | 531.74    | -192.90  | -528.76               | 2.00                  | -1.87                | -8.62               |  |
| 10,500.00           | 2.29            | 302.21      | 10,452.50           | 535.59    | -196.58  | -532.55               | 2.00                  | -1.63                | -22.21              |  |
| 10,600.00           | 1.76            | 244.90      | 10,552.45           | 536.01    | -199.67  | -532.92               | 2.00                  | -0.53                | -57.31              |  |
| 10,700.00           | 2.99            | 204.70      | 10,652.37           | 532.99    | -202.15  | -529.86               | 2.00                  | 1.23                 | -40.20              |  |
| 10,800.00           | 4.77            | 190.89      | 10,752.14           | 526.53    | -204.03  | -523.37               | 2.00                  | 1.78                 | -13.80              |  |
| 10,900.00           | 6.68            | 184.75      | 10,851.64           | 516.64    | -205.30  | -513.47               | 2.00                  | 1.91                 | -6.14               |  |
| 11,000.00           | 8.63            | 181.35      | 10,950.74           | 503.35    | -205.96  | -500.17               | 2.00                  | 1.95                 | -3.40               |  |
| 11,069.74           | 10.00           | 179.76      | 11,019.56           | 492.06    | -206.05  | -488.88               | 2.00                  | 1.97                 | -2.28               |  |
| 11,100.00           | 13.03           | 179.76      | 11,049.21           | 486.02    | -206.03  | -482.84               | 10.00                 | 10.00                | 0.00                |  |
| 11,200.00           | 23.03           | 179.76      | 11,144.18           | 455.12    | -205.90  | -451.94               | 10.00                 | 10.00                | 0.00                |  |
| 11,300.00           | 33.03           | 179.76      | 11,232.34           | 408.19    | -205.70  | -405.02               | 10.00                 | 10.00                | 0.00                |  |
| 11,400.00           | 43.03           | 179.76      | 11,311.01           | 346.67    | -205.44  | -343.51               | 10.00                 | 10.00                | 0.00                |  |
| 11,500.00           | 53.03           | 179.76      | 11,377.81           | 272.42    | -205.13  | -269.27               | 10.00                 | 10.00                | 0.00                |  |
| 11,600.00           | 63.03           | 179.76      | 11,430.69           | 187.70    | -204.77  | -184.57               | 10.00                 | 10.00                | 0.00                |  |
| 11,700.00           | 73.03           | 179.76      | 11,468.06           | 95.08     | -204.38  | -91.97                | 10.00                 | 10.00                | 0.00                |  |
| 11,800.00           | 83.03           | 179.76      | 11,488.78           | -2.62     | -203.96  | 5.71                  | 10.00                 | 10.00                | 0.00                |  |
| 11,864.70           | 89.50           | 179.76      | 11,493.00           | -67.14    | -203.69  | 70.23                 | 10.00                 | 10.00                | 0.00                |  |
| 11,900.00           | 89.50           | 179.76      | 11,493.31           | -102.45   | -203.54  | 105.52                | 0.00                  | 0.00                 | 0.00                |  |
| 12,000.00           | 89.50           | 179.76      | 11,494.19           | -202.44   | -203.12  | 205.50                | 0.00                  | 0.00                 | 0.00                |  |
| 12,100.00           | 89.50           | 179.76      | 11,495.07           | -302.44   | -202.70  | 305.48                | 0.00                  | 0.00                 | 0.00                |  |
| 12,200.00           | 89.50           | 179.76      | 11,495.95           | -402.43   | -202.28  | 405.45                | 0.00                  | 0.00                 | 0.00                |  |
| 12,300.00           | 89.50           | 179.76      | 11,496.83           | -502.43   | -201.85  | 505.43                | 0.00                  | 0.00                 | 0.00                |  |
| 12,400.00           | 89.50           | 179.76      | 11,497.71           | -602.42   | -201.43  | 605.41                | 0.00                  | 0.00                 | 0.00                |  |
| 12,500.00           | 89.50           | 179.76      | 11,498.59           | -702.42   | -201.01  | 705.39                | 0.00                  | 0.00                 | 0.00                |  |
| 12,600.00           | 89.50           | 179.76      | 11,499.47           | -802.41   | -200.59  | 805.36                | 0.00                  | 0.00                 | 0.00                |  |
| 12,700.00           | 89.50           | 179.76      | 11,500.35           | -902.41   | -200.17  | 905.34                | 0.00                  | 0.00                 | 0.00                |  |
| 12,800.00           | 89.50           | 179.76      | 11,501.23           | -1,002.40 | -199.74  | 1,005.32              | 0.00                  | 0.00                 | 0.00                |  |
| 12,900.00           | 89.50           | 179.76      | 11,502.11           | -1,102.40 | -199.32  | 1,105.30              | 0.00                  | 0.00                 | 0.00                |  |
| 13,000.00           | 89.50           | 179.76      | 11,502.99           | -1,202.39 | -198.90  | 1,205.27              | 0.00                  | 0.00                 | 0.00                |  |
| 13,100.00           | 89.50           | 179.76      | 11,503.87           | -1,302.39 | -198.48  | 1,305.25              | 0.00                  | 0.00                 | 0.00                |  |
| 13,200.00           | 89.50           | 179.76      | 11,504.75           | -1,402.38 | -198.06  | 1,405.23              | 0.00                  | 0.00                 | 0.00                |  |
| 13,300.00           | 89.50           | 179.76      | 11,505.63           | -1,502.38 | -197.63  | 1,505.20              | 0.00                  | 0.00                 | 0.00                |  |
| 13,400.00           | 89.50           | 179.76      | 11,506.51           | -1,602.38 | -197.21  | 1,605.18              | 0.00                  | 0.00                 | 0.00                |  |
| 13,500.00           | 89.50           | 179.76      | 11,507.39           | -1,702.37 | -196.79  | 1,705.16              | 0.00                  | 0.00                 | 0.00                |  |
| 13,600.00           | 89.50           | 179.76      | 11,508.27           | -1,802.37 | -196.37  | 1,805.14              | 0.00                  | 0.00                 | 0.00                |  |
| 13,700.00           | 89.50           | 179.76      | 11,509.15           | -1,902.36 | -195.95  | 1,905.11              | 0.00                  | 0.00                 | 0.00                |  |
| 13,800.00           | 89.50           | 179.76      | 11,510.03           | -2,002.36 | -195.52  | 2,005.09              | 0.00                  | 0.00                 | 0.00                |  |
| 13,900.00           | 89.50           | 179.76      | 11,510.91           | -2,102.35 | -195.10  | 2,105.07              | 0.00                  | 0.00                 | 0.00                |  |
| 14,000.00           | 89.50           | 179.76      | 11,511.79           | -2,202.35 | -194.68  | 2,205.05              | 0.00                  | 0.00                 | 0.00                |  |
| 14,100.00           | 89.50           | 179.76      | 11,512.67           | -2,302.34 | -194.26  | 2,305.02              | 0.00                  | 0.00                 | 0.00                |  |
| 14,200.00           | 89.50           | 179.76      | 11,513.55           | -2,402.34 | -193.83  | 2,405.00              | 0.00                  | 0.00                 | 0.00                |  |
| 14,300.00           | 89.50           | 179.76      | 11,514.43           | -2,502.33 | -193.41  | 2,504.98              | 0.00                  | 0.00                 | 0.00                |  |
| 14,400.00           | 89.50           | 179.76      | 11,515.31           | -2,602.33 | -192.99  | 2,604.96              | 0.00                  | 0.00                 | 0.00                |  |
| 14,500.00           | 89.50           | 179.76      | 11,516.19           | -2,702.32 | -192.57  | 2,704.93              | 0.00                  | 0.00                 | 0.00                |  |
| 14,600.00           | 89.50           | 179.76      | 11,517.07           | -2,802.32 | -192.15  | 2,804.91              | 0.00                  | 0.00                 | 0.00                |  |
| 14,700.00           | 89.50           | 179.76      | 11,517.95           | -2,902.31 | -191.72  | 2,904.89              | 0.00                  | 0.00                 | 0.00                |  |
| 14,800.00           | 89.50           | 179.76      | 11,518.83           | -3,002.31 | -191.30  | 3,004.86              | 0.00                  | 0.00                 | 0.00                |  |
| 14,900.00           | 89.50           | 179.76      | 11,519.71           | -3,102.30 | -190.88  | 3,104.84              | 0.00                  | 0.00                 | 0.00                |  |
| 15,000.00           | 89.50           | 179.76      | 11,520.59           | -3,202.30 | -190.46  | 3,204.82              | 0.00                  | 0.00                 | 0.00                |  |

# Oxy Planning Report

|           |  |                              |   |
|-----------|--|------------------------------|---|
| Database: | HOPSP                                      | Local Co-ordinate Reference: | Well STERLING SILVER MDP1 33-4 FEDERAL COM 179H |
| Company:  | ENGINEERING DESIGNS                        | TVD Reference:               | RKB=26.5' @ 3413.00ft                           |
| Project:  | PRD NM DIRECTIONAL PLANS (NAD 1983)        | MD Reference:                | RKB=26.5' @ 3413.00ft                           |
| Site:     | STERLING SILVER MDP1 33-4 FED COM          | North Reference:             | Grid  |
| Well:     | STERLING SILVER MDP1 33-4 FEDERAL COM 179H | 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) |
| 15,100.00           | 89.50           | 179.76      | 11,521.47           | -3,302.29 | -190.04   | 3,304.80              | 0.00                  | 0.00                 | 0.00                |
| 15,200.00           | 89.50           | 179.76      | 11,522.35           | -3,402.29 | -189.61   | 3,404.77              | 0.00                  | 0.00                 | 0.00                |
| 15,300.00           | 89.50           | 179.76      | 11,523.24           | -3,502.28 | -189.19   | 3,504.75              | 0.00                  | 0.00                 | 0.00                |
| 15,400.00           | 89.50           | 179.76      | 11,524.12           | -3,602.28 | -188.77   | 3,604.73              | 0.00                  | 0.00                 | 0.00                |
| 15,500.00           | 89.50           | 179.76      | 11,525.00           | -3,702.28 | -188.35   | 3,704.71              | 0.00                  | 0.00                 | 0.00                |
| 15,600.00           | 89.50           | 179.76      | 11,525.88           | -3,802.27 | -187.93   | 3,804.68              | 0.00                  | 0.00                 | 0.00                |
| 15,700.00           | 89.50           | 179.76      | 11,526.76           | -3,902.27 | -187.50   | 3,904.66              | 0.00                  | 0.00                 | 0.00                |
| 15,800.00           | 89.50           | 179.76      | 11,527.64           | -4,002.26 | -187.08   | 4,004.64              | 0.00                  | 0.00                 | 0.00                |
| 15,900.00           | 89.50           | 179.76      | 11,528.52           | -4,102.26 | -186.66   | 4,104.62              | 0.00                  | 0.00                 | 0.00                |
| 16,000.00           | 89.50           | 179.76      | 11,529.40           | -4,202.25 | -186.24   | 4,204.59              | 0.00                  | 0.00                 | 0.00                |
| 16,100.00           | 89.50           | 179.76      | 11,530.28           | -4,302.25 | -185.81   | 4,304.57              | 0.00                  | 0.00                 | 0.00                |
| 16,200.00           | 89.50           | 179.76      | 11,531.16           | -4,402.24 | -185.39   | 4,404.55              | 0.00                  | 0.00                 | 0.00                |
| 16,300.00           | 89.50           | 179.76      | 11,532.04           | -4,502.24 | -184.97   | 4,504.52              | 0.00                  | 0.00                 | 0.00                |
| 16,400.00           | 89.50           | 179.76      | 11,532.92           | -4,602.23 | -184.55   | 4,604.50              | 0.00                  | 0.00                 | 0.00                |
| 16,500.00           | 89.50           | 179.76      | 11,533.80           | -4,702.23 | -184.13   | 4,704.48              | 0.00                  | 0.00                 | 0.00                |
| 16,600.00           | 89.50           | 179.76      | 11,534.68           | -4,802.22 | -183.70   | 4,804.46              | 0.00                  | 0.00                 | 0.00                |
| 16,700.00           | 89.50           | 179.76      | 11,535.56           | -4,902.22 | -183.28   | 4,904.43              | 0.00                  | 0.00                 | 0.00                |
| 16,800.00           | 89.50           | 179.76      | 11,536.44           | -5,002.21 | -182.86   | 5,004.41              | 0.00                  | 0.00                 | 0.00                |
| 16,900.00           | 89.50           | 179.76      | 11,537.32           | -5,102.21 | -182.44   | 5,104.39              | 0.00                  | 0.00                 | 0.00                |
| 17,000.00           | 89.50           | 179.76      | 11,538.20           | -5,202.20 | -182.02   | 5,204.37              | 0.00                  | 0.00                 | 0.00                |
| 17,100.00           | 89.50           | 179.76      | 11,539.08           | -5,302.20 | -181.59   | 5,304.34              | 0.00                  | 0.00                 | 0.00                |
| 17,200.00           | 89.50           | 179.76      | 11,539.96           | -5,402.19 | -181.17   | 5,404.32              | 0.00                  | 0.00                 | 0.00                |
| 17,300.00           | 89.50           | 179.76      | 11,540.84           | -5,502.19 | -180.75   | 5,504.30              | 0.00                  | 0.00                 | 0.00                |
| 17,400.00           | 89.50           | 179.76      | 11,541.72           | -5,602.18 | -180.33   | 5,604.28              | 0.00                  | 0.00                 | 0.00                |
| 17,500.00           | 89.50           | 179.76      | 11,542.60           | -5,702.18 | -179.91   | 5,704.25              | 0.00                  | 0.00                 | 0.00                |
| 17,600.00           | 89.50           | 179.76      | 11,543.48           | -5,802.18 | -179.48   | 5,804.23              | 0.00                  | 0.00                 | 0.00                |
| 17,700.00           | 89.50           | 179.76      | 11,544.36           | -5,902.17 | -179.06   | 5,904.21              | 0.00                  | 0.00                 | 0.00                |
| 17,800.00           | 89.50           | 179.76      | 11,545.24           | -6,002.17 | -178.64   | 6,004.18              | 0.00                  | 0.00                 | 0.00                |
| 17,900.00           | 89.50           | 179.76      | 11,546.12           | -6,102.16 | -178.22   | 6,104.16              | 0.00                  | 0.00                 | 0.00                |
| 18,000.00           | 89.50           | 179.76      | 11,547.00           | -6,202.16 | -177.80   | 6,204.14              | 0.00                  | 0.00                 | 0.00                |
| 18,100.00           | 89.50           | 179.76      | 11,547.88           | -6,302.15 | -177.37   | 6,304.12              | 0.00                  | 0.00                 | 0.00                |
| 18,200.00           | 89.50           | 179.76      | 11,548.76           | -6,402.15 | -176.95   | 6,404.09              | 0.00                  | 0.00                 | 0.00                |
| 18,300.00           | 89.50           | 179.76      | 11,549.64           | -6,502.14 | -176.53   | 6,504.07              | 0.00                  | 0.00                 | 0.00                |
| 18,400.00           | 89.50           | 179.76      | 11,550.52           | -6,602.14 | -176.11   | 6,604.05              | 0.00                  | 0.00                 | 0.00                |
| 18,500.00           | 89.50           | 179.76      | 11,551.40           | -6,702.13 | -175.68   | 6,704.03              | 0.00                  | 0.00                 | 0.00                |
| 18,600.00           | 89.50           | 179.76      | 11,552.28           | -6,802.13 | -175.26   | 6,804.00              | 0.00                  | 0.00                 | 0.00                |
| 18,700.00           | 89.50           | 179.76      | 11,553.16           | -6,902.12 | -174.84   | 6,903.98              | 0.00                  | 0.00                 | 0.00                |
| 18,800.00           | 89.50           | 179.76      | 11,554.04           | -7,002.12 | -174.42   | 7,003.96              | 0.00                  | 0.00                 | 0.00                |
| 18,900.00           | 89.50           | 179.76      | 11,554.92           | -7,102.11 | -174.00   | 7,103.94              | 0.00                  | 0.00                 | 0.00                |
| 19,000.00           | 89.50           | 179.76      | 11,555.80           | -7,202.11 | -173.57   | 7,203.91              | 0.00                  | 0.00                 | 0.00                |
| 19,100.00           | 89.50           | 179.76      | 11,556.68           | -7,302.10 | -173.15   | 7,303.89              | 0.00                  | 0.00                 | 0.00                |
| 19,200.00           | 89.50           | 179.76      | 11,557.56           | -7,402.10 | -172.73   | 7,403.87              | 0.00                  | 0.00                 | 0.00                |
| 19,300.00           | 89.50           | 179.76      | 11,558.44           | -7,502.09 | -172.31   | 7,503.84              | 0.00                  | 0.00                 | 0.00                |
| 19,400.00           | 89.50           | 179.76      | 11,559.32           | -7,602.09 | -171.89   | 7,603.82              | 0.00                  | 0.00                 | 0.00                |
| 19,500.00           | 89.50           | 179.76      | 11,560.20           | -7,702.08 | -171.46   | 7,703.80              | 0.00                  | 0.00                 | 0.00                |
| 19,600.00           | 89.50           | 179.76      | 11,561.08           | -7,802.08 | -171.04   | 7,803.78              | 0.00                  | 0.00                 | 0.00                |
| 19,700.00           | 89.50           | 179.76      | 11,561.96           | -7,902.08 | -170.62   | 7,903.75              | 0.00                  | 0.00                 | 0.00                |
| 19,800.00           | 89.50           | 179.76      | 11,562.84           | -8,002.07 | -170.20   | 8,003.73              | 0.00                  | 0.00                 | 0.00                |
| 19,900.00           | 89.50           | 179.76      | 11,563.72           | -8,102.07 | -169.78   | 8,103.71              | 0.00                  | 0.00                 | 0.00                |
| 20,000.00           | 89.50           | 179.76      | 11,564.60           | -8,202.06 | -169.35   | 8,203.69              | 0.00                  | 0.00                 | 0.00                |
| 20,100.00           | 89.50           | 179.76      | 11,565.48           | -8,302.06 | -168.93   | 8,303.66              | 0.00                  | 0.00                 | 0.00                |
| 20,200.00           | 89.50           | 179.76      | 11,566.36           | -8,402.05 | -168.51   | 8,403.64              | 0.00                  | 0.00                 | 0.00                |

# Oxy Planning Report

|           |  |                              |   |
|-----------|--|------------------------------|---|
| Database: | HOPSPP                                     | Local Co-ordinate Reference: | Well STERLING SILVER MDP1 33-4 FEDERAL COM 179H |
| Company:  | ENGINEERING DESIGNS                        | TVD Reference:               | RKB=26.5' @ 3413.00ft                           |
| Project:  | PRD NM DIRECTIONAL PLANS (NAD 1983)        | MD Reference:                | RKB=26.5' @ 3413.00ft                           |
| Site:     | STERLING SILVER MDP1 33-4 FED COM          | North Reference:             | Grid  |
| Well:     | STERLING SILVER MDP1 33-4 FEDERAL COM 179H | 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) |  |
| 20,300.00           | 89.50           | 179.76      | 11,567.24           | -8,502.05  | -168.09    | 8,503.62              | 0.00                  | 0.00                 | 0.00                |  |
| 20,400.00           | 89.50           | 179.76      | 11,568.12           | -8,602.04  | -167.66    | 8,603.60              | 0.00                  | 0.00                 | 0.00                |  |
| 20,500.00           | 89.50           | 179.76      | 11,569.00           | -8,702.04  | -167.24    | 8,703.57              | 0.00                  | 0.00                 | 0.00                |  |
| 20,600.00           | 89.50           | 179.76      | 11,569.88           | -8,802.03  | -166.82    | 8,803.55              | 0.00                  | 0.00                 | 0.00                |  |
| 20,700.00           | 89.50           | 179.76      | 11,570.76           | -8,902.03  | -166.40    | 8,903.53              | 0.00                  | 0.00                 | 0.00                |  |
| 20,800.00           | 89.50           | 179.76      | 11,571.64           | -9,002.02  | -165.98    | 9,003.50              | 0.00                  | 0.00                 | 0.00                |  |
| 20,900.00           | 89.50           | 179.76      | 11,572.52           | -9,102.02  | -165.55    | 9,103.48              | 0.00                  | 0.00                 | 0.00                |  |
| 21,000.00           | 89.50           | 179.76      | 11,573.40           | -9,202.01  | -165.13    | 9,203.46              | 0.00                  | 0.00                 | 0.00                |  |
| 21,100.00           | 89.50           | 179.76      | 11,574.28           | -9,302.01  | -164.71    | 9,303.44              | 0.00                  | 0.00                 | 0.00                |  |
| 21,200.00           | 89.50           | 179.76      | 11,575.16           | -9,402.00  | -164.29    | 9,403.41              | 0.00                  | 0.00                 | 0.00                |  |
| 21,300.00           | 89.50           | 179.76      | 11,576.04           | -9,502.00  | -163.87    | 9,503.39              | 0.00                  | 0.00                 | 0.00                |  |
| 21,400.00           | 89.50           | 179.76      | 11,576.92           | -9,601.99  | -163.44    | 9,603.37              | 0.00                  | 0.00                 | 0.00                |  |
| 21,500.00           | 89.50           | 179.76      | 11,577.80           | -9,701.99  | -163.02    | 9,703.35              | 0.00                  | 0.00                 | 0.00                |  |
| 21,600.00           | 89.50           | 179.76      | 11,578.68           | -9,801.98  | -162.60    | 9,803.32              | 0.00                  | 0.00                 | 0.00                |  |
| 21,700.00           | 89.50           | 179.76      | 11,579.56           | -9,901.98  | -162.18    | 9,903.30              | 0.00                  | 0.00                 | 0.00                |  |
| 21,800.00           | 89.50           | 179.76      | 11,580.44           | -10,001.98 | -161.76    | 10,003.28             | 0.00                  | 0.00                 | 0.00                |  |
| 21,900.00           | 89.50           | 179.76      | 11,581.32           | -10,101.97 | -161.33    | 10,103.26             | 0.00                  | 0.00                 | 0.00                |  |
| 22,000.00           | 89.50           | 179.76      | 11,582.20           | -10,201.97 | -160.91    | 10,203.23             | 0.00                  | 0.00                 | 0.00                |  |
| 22,100.00           | 89.50           | 179.76      | 11,583.08           | -10,301.96 | -160.49    | 10,303.21             | 0.00                  | 0.00                 | 0.00                |  |
| 22,200.00           | 89.50           | 179.76      | 11,583.96           | -10,401.96 | -160.07    | 10,403.19             | 0.00                  | 0.00                 | 0.00                |  |
| 22,300.00           | 89.50           | 179.76      | 11,584.84           | -10,501.95 | -159.64    | 10,503.16             | 0.00                  | 0.00                 | 0.00                |  |
| 22,317.81           | 89.50           | 179.76      | 11,585.00           | -10,519.76 | -159.57    | 10,520.97             | 0.00                  | 0.00                 | 0.00                |  |

| Design Targets        |                           |               |             |           |            |            |                 |                |                     |                   |
|-----------------------|---------------------------|---------------|-------------|-----------|------------|------------|-----------------|----------------|---------------------|-------------------|
| Target Name           | hit/miss/target           | Dip Angle (°) | Dip Dir (°) | TVD (ft)  | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude            | Longitude         |
| FTP (Sterling Silver  | - plan hits target center | 0.00          | 0.00        | 11,493.00 | -67.14     | -203.69    | 461,632.50      | 711,174.99     | 32° 16' 4.466151 N  | 103° 47' 1.857350 |
| - Point               |                           |               |             |           |            |            |                 |                |                     |                   |
| PBHL (Sterling Silver | - plan hits target center | 0.00          | 0.00        | 11,585.00 | -10,519.76 | -159.57    | 451,180.51      | 711,219.11     | 32° 14' 21.035599 N | 103° 47' 1.966508 |
| - Point               |                           |               |             |           |            |            |                 |                |                     |                   |

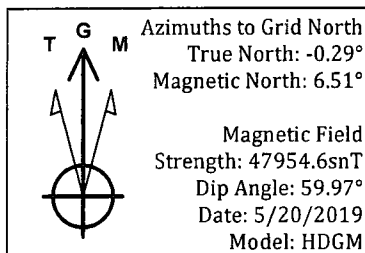
| Plan Annotations    |                     |                   |            |                        |  |
|---------------------|---------------------|-------------------|------------|------------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates |            |                        |  |
|                     |                     | +N/-S (ft)        | +E/-W (ft) | Comment                |  |
| 6,795.00            | 6,795.00            | 0.00              | 0.00       | Build 2.00°/100'       |  |
| 7,294.93            | 7,292.40            | 40.98             | -14.62     | Hold 10.00° Tangent    |  |
| 10,084.25           | 10,039.35           | 497.10            | -177.38    | Turn 2.00°/100'        |  |
| 11,069.74           | 11,019.56           | 492.06            | -206.05    | KOP, Build 10.00°/100' |  |
| 11,864.70           | 11,493.00           | -67.15            | -203.69    | Landing Point          |  |
| 22,317.81           | 11,585.00           | -10,519.76        | -159.57    | TD at 22317.81' MD     |  |



Project: PRD NM DIRECTIONAL PLANS (NAD 1983)  
 Site: STERLING SILVER MDP1 33-4 FED COM  
 Well: STERLING SILVER MDP1 33-4 FEDERAL COM 179H  
 Wellbore: Wellbore #1  
 Design: Permitting Plan

# PROJECT DETAILS: NM DIRECTIONAL PLANS (NAD 1983)

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: New Mexico Eastern Zone  
 System Datum: Mean Sea Level

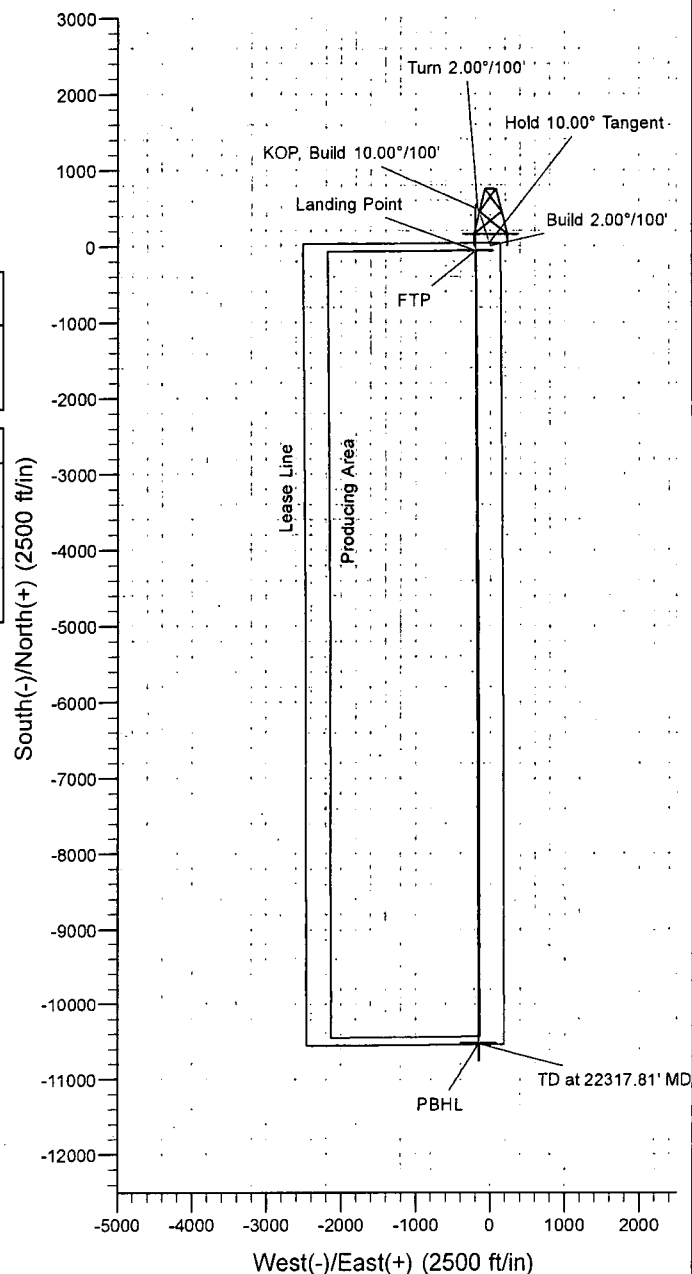
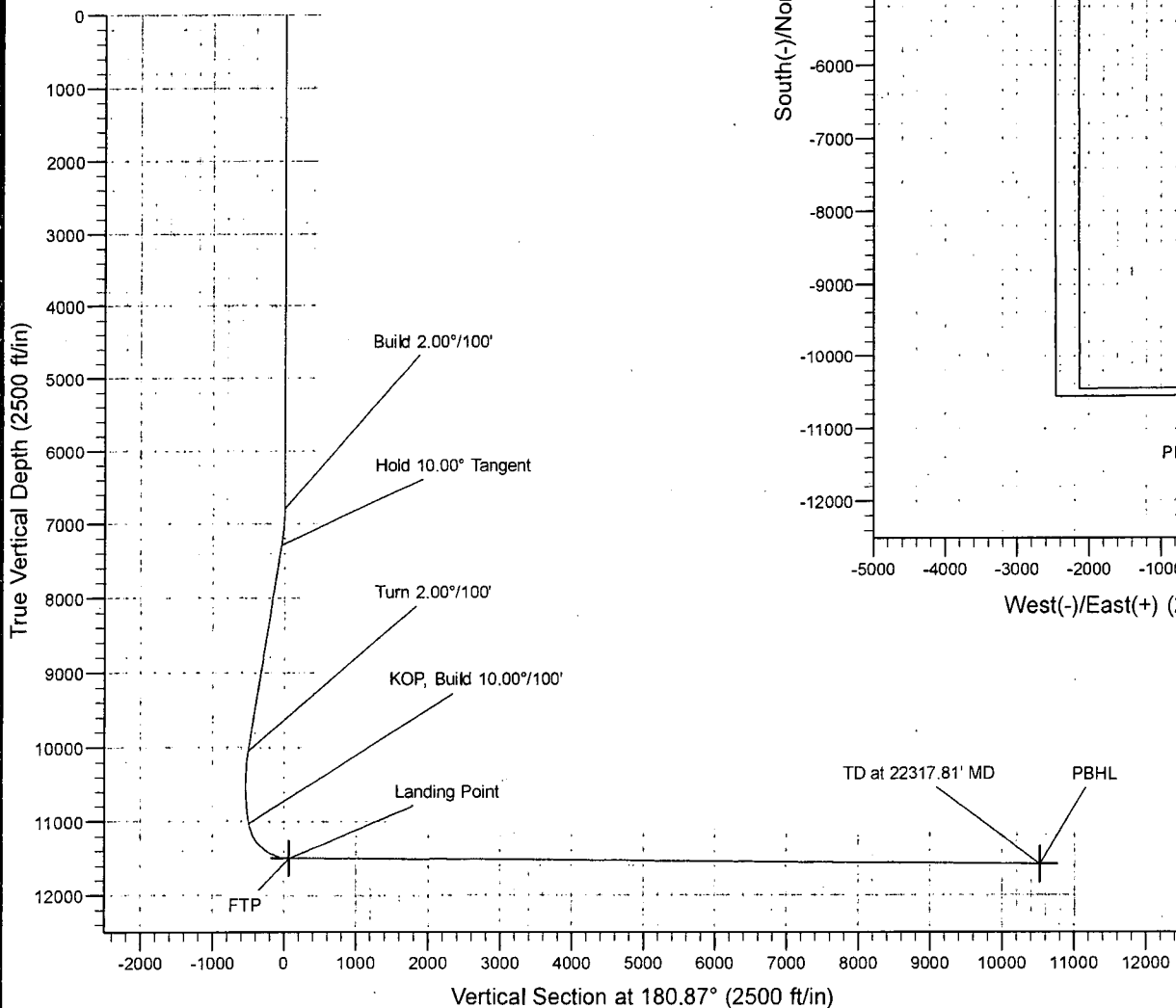


## WELL DETAILS: STERLING SILVER MDP1 33-4 FEDERAL COM 179H

|      | +N/-S | +E/-W     | Ground Level | 3385.50            | Latitude             | Longitude |
|------|-------|-----------|--------------|--------------------|----------------------|-----------|
| 0.00 | 0.00  | 461699.64 | 711378.67    | 32° 16' 5.120211 N | 103° 46' 59.481120 W |           |

## SECTION DETAILS

| MD       | Inc   | Azi    | TVD      | +N/-S     | +E/-W   | Dleg  | TFace   | VSeet    | Annotation             |
|----------|-------|--------|----------|-----------|---------|-------|---------|----------|------------------------|
| 0.00     | 0.00  | 0.00   | 0.00     | 0.00      | 0.00    | 0.00  | 0.00    | 0.00     |                        |
| 6795.00  | 0.00  | 0.00   | 6795.00  | 0.00      | 0.00    | 0.00  | 0.00    | 0.00     | Build 2.00°/100'       |
| 7294.93  | 10.00 | 340.36 | 7292.39  | 40.98     | -14.62  | 2.00  | 340.36  | -40.75   | Hold 10.00° Tangent    |
| 10084.25 | 10.00 | 340.36 | 10039.35 | 497.10    | -177.38 | 0.00  | 0.00    | -494.35  | Turn 2.00°/100'        |
| 11069.74 | 10.00 | 179.76 | 11019.56 | 492.06    | -206.05 | 2.00  | -170.15 | -488.88  | KOP, Build 10.00°/100' |
| 11864.70 | 89.50 | 179.76 | 11493.00 | -67.14    | -203.69 | 10.00 | 0.00    | 70.23    | Landing Point          |
| 22317.81 | 89.50 | 179.76 | 11585.00 | -10519.76 | -159.57 | 0.00  | 0.00    | 10520.97 | TD at 22317.81' MD     |



# Oxy USA Inc. - Sterling Silver MDP1 33-4 Federal Com 179H

## 1. Geologic Formations

|               |        |                               |      |
|---------------|--------|-------------------------------|------|
| TVD of target | 11585' | Pilot Hole Depth              | N/A  |
| MD at TD:     | 22317' | Deepest Expected fresh water: | 455' |

## Delaware Basin

| Formation       | TVD - RKB     | Expected Fluids |
|-----------------|---------------|-----------------|
| Rustler         | 455           |                 |
| Salado          | 824           | Brine           |
| Castile         | 2,740         | Brine           |
| Lamar/Delaware  | 4,242         | Brine           |
| Bell Canyon     | 4,270         | Oil/Gas         |
| Cherry Canyon   | 5,140         | Oil/Gas         |
| Brushy Canyon   | 6,426         | Losses          |
| Bone Spring     | 8,043         | Oil/Gas         |
| 1st Bone Spring | 9,105         | Oil/Gas         |
| 2nd Bone Spring | 9,760         | Oil/Gas         |
| 3rd Bone Spring | 10,910        | Oil/Gas         |
| <b>Wolfcamp</b> | <b>11,376</b> | <b>Oil/Gas</b>  |

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

## 2. Casing Program

| Hole Size (in)                | Casing Interval |         | Csg. Size (in) | Weight (lbs) | Grade   | Conn.  | SF Collapse | SF Burst | Buoyant         |                  |
|-------------------------------|-----------------|---------|----------------|--------------|---------|--|-------------|----------|-----------------|------------------|
|                               | From (ft)       | To (ft) |                |              |         |  |             |          | Body SF Tension | Joint SF Tension |
| 17.5                          | 0               | 505     | 13.375         | 54.5         | J-55    | BTC  | 1.125       | 1.2      | 1.4             | 1.4              |
| 12.25                         | 0               | 4292    | 9.625          | 43.5         | L-80    | BTC  | 1.125       | 1.2      | 1.4             | 1.4              |
| 8.5                           | 0               | 10969   | 7.625          | 26.4         | L-80 HC | SF (0 ft to 4000 ft)<br>FJ (4000 ft to 10969 ft) | 1.125       | 1.2      | 1.4             | 1.4              |
| 6.75                          | 0               | 22317   | 5.5            | 20           | P-110   | DQX  | 1.125       | 1.2      | 1.4             | 1.4              |
| SF Values will meet or Exceed |                 |         |                |              |         |  |             |          |                 |                  |

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

\*Oxy requests the option to set casing shallower yet still below the salts if losses or hole conditions require this. Cement volumes may be adjusted if casing is set shallower and a DV tool may be run in case hole conditions merit pumping a second stage cement job to comply with permitted top of cement. If cement circulated to surface during first stage we will drop a cancelation cone and not pump the second stage.

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

## Oxy USA Inc. - Sterling Silver MDP1 33-4 Federal Com 179H

### 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 3 <sup>rd</sup> 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 2 <sup>nd</sup> 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

| Casing String  | # Sk | Wt<br>(lb/gal) | Yld<br>(ft <sup>3</sup> /sack) | H <sub>2</sub> O<br>(gal/sk) | 500#<br>Comp.<br>Strength<br>(hours) | Slurry Description                         |
|--|------|----------------|--------------------------------|------------------------------|--------------------------------------|--|
| Surface (Lead)   | N/A  | N/A            | N/A                            | N/A                          | N/A                                  | N/A  |
| Surface (Tail)   | 539  | 14.8           | 1.33                           | 6.365                        | 5:26                                 | Class C Cement, Accelerator                |
| Intermediate (Lead)  | 919  | 12.9           | 1.88                           | 10.130                       | 14:22                                | Pozzolan Cement, Retarder                  |
| Intermediate (Tail)  | 155  | 14.8           | 1.33                           | 6.370                        | 12:45                                | Class C Cement, Accelerator                |
| Intermediate II 1st Stage (Lead)   | N/A  | N/A            | N/A                            | N/A                          | N/A                                  | N/A  |
| Intermediate II 1st Stage (Tail)   | 211  | 13.2           | 1.65                           | 8.640                        | 11:54                                | Class H Cement, Retarder, Dispersant, Salt |
| Intermediate II 2nd Stage (Tail Slurry) to be pumped as Bradenhead Squeeze from surface, down the intermediate annulus |      |                |                                |                              |                                      |  |
| Intermediate II 2nd Stage (Lead)   | N/A  | N/A            | N/A                            | N/A                          | N/A                                  | N/A  |
| Intermediate II 2nd Stage (Tail)   | 351  | 12.9           | 1.92                           | 10.410                       | 23:10                                | Class C Cement, Accelerator                |
| Production (Lead)  | N/A  | N/A            | N/A                            | N/A                          | N/A                                  | N/A  |
| Production (Tail)  | 868  | 13.2           | 1.38                           | 6.686                        | 3:49                                 | Class H Cement, Retarder, Dispersant, Salt |

| Casing String                    | Top (ft) | Bottom (ft) | % Excess |
|----------------------------------|----------|-------------|----------|
| Surface (Lead)                   | N/A      | N/A         | N/A      |
| Surface (Tail)                   | 0        | 505         | 100%     |
| Intermediate (Lead)              | 0        | 3792        | 50%      |
| Intermediate (Tail)              | 3792     | 4292        | 20%      |
| Intermediate II 1st Stage (Lead) | N/A      | N/A         | N/A      |
| Intermediate II 1st Stage (Tail) | 6676     | 10969       | 5%       |
| Intermediate II 2nd Stage (Lead) | N/A      | N/A         | N/A      |
| Intermediate II 2nd Stage (Tail) | 0        | 6676        | 25%      |
| Production (Lead)                | N/A      | N/A         | N/A      |
| Production (Tail)                | 10469    | 22317       | 20%      |

### 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:

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 nipped down until after the cement job is completed.

## Oxy USA Inc. - Sterling Silver MDP1 33-4 Federal Com 179H

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 nipping 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

### 4. Pressure Control Equipment

| BOP installed and tested before drilling which hole? | Size?   | Min. Required WP | Type       | ✓ | Tested to:              |
|--|---------|------------------|------------|---|-------------------------|
| 12.25" Hole  | 13-5/8" | 3M               | Annular    | ✓ | 70% of working pressure |
|  |         | 3M               | Blind Ram  | ✓ | 250 psi / 3000 psi      |
|  |         |                  | Pipe Ram   |   |                         |
|  |         |                  | Double Ram | ✓ |                         |
|  |         |                  | Other*     |   |                         |
| 8.5" Hole  | 13-5/8" | 5M               | Annular    | ✓ | 70% of working pressure |
|  |         | 5M               | Blind Ram  | ✓ | 250 psi / 5000 psi      |
|  |         |                  | Pipe Ram   |   |                         |
|  |         |                  | Double Ram | ✓ |                         |
|  |         |                  | Other*     |   |                         |
| 6.75" Hole   | 13-5/8" | 5M               | Annular    | ✓ | 70% of working pressure |
|  |         | 5M               | Blind Ram  | ✓ | 250 psi / 5000 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.

Oxy will utilize a 5M annular with a 10M BOPE stack. The 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.



## Oxy USA Inc. - Sterling Silver MDP1 33-4 Federal Com 179H

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. See attached schematics.

|   |   |
|---|---|
|   | Formation integrity test will be performed per Onshore Order #2.<br>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. Due to the four string design, Oxy plans to employ a 13-3/8" 3K sacrificial wellhead that will be employed to drill the 12.25" Intermediate Hole. Upon completion of drilling and cementing operations on the 12.25" Intermediate Hole section (along with proper WOC time), the wellhead will be cut off and salvaged. At this point, a standard 13-5/8 MNDS 10x10 Slips (13.375 x 9.625 x 7.625 x 5.5) wellhead will be welded onto the 9-5/8" casing for the remainder of drilling operations on the pad.<br>See attached schematics. |

### BOP Break Testing Request

As per the agreement reached in the Oxy/BLM face-to-face meeting on Feb 22, 2018, Oxy requests permission to allow BOP Break Testing under the following conditions:

- After a full BOP test is conducted on the first well on the pad.
- When skidding to drill an intermediate section that does not penetrate into the Wolfcamp.
- Full BOP test will be required prior to drilling any production hole.

### 5. Mud Program

| Depth     |         | Type                         | Weight (ppg) | Viscosity | Water Loss |
|-----------|---------|------------------------------|--------------|-----------|------------|
| From (ft) | To (ft) |                              |              |           |            |
| 0         | 505     | Water-Based Mud              | 8.6-8.8      | 40-60     | N/C        |
| 505       | 4292    | Saturated Brine-Based Mud    | 9.8-10.0     | 35-45     | N/C        |
| 4292      | 10969   | Water-Based or Oil-Based Mud | 8.0-9.6      | 38-50     | N/C        |
| 10969     | 22317   | Water-Based or Oil-Based Mud | 9.5-12.0     | 38-50     | N/C        |

## Oxy USA Inc. - Sterling Silver MDP1 33-4 Federal Com 179H

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   |          |
| No                          | CBL   |          |
| Yes                         | Mud log   | ICP - TD |
| No                          | PEX   |          |

### 7. Drilling Conditions

| Condition                     | Specify what type and where? |
|-------------------------------|------------------------------|
| BH Pressure at deepest TVD    | 7230 psi                     |
| Abnormal Temperature          | No                           |
| BH Temperature at deepest TVD | 173°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 isolation.

## Oxy USA Inc. - Sterling Silver MDP1 33-4 Federal Com 179H

|  |                   |
|--|-------------------|
| 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 |
|---|--------|
| <p>Will the well be drilled with a walking/skidding operation? If yes, describe.</p> <ul style="list-style-type: none"> <li>We plan to drill the five 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.</li> </ul>  | Yes    |
| <p>Will more than one drilling rig be used for drilling operations? If yes, describe.</p> <ul style="list-style-type: none"> <li>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.</li> </ul> | Yes    |

**Total estimated cuttings volume:** 1673.2 bbls.

#### Attachments

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

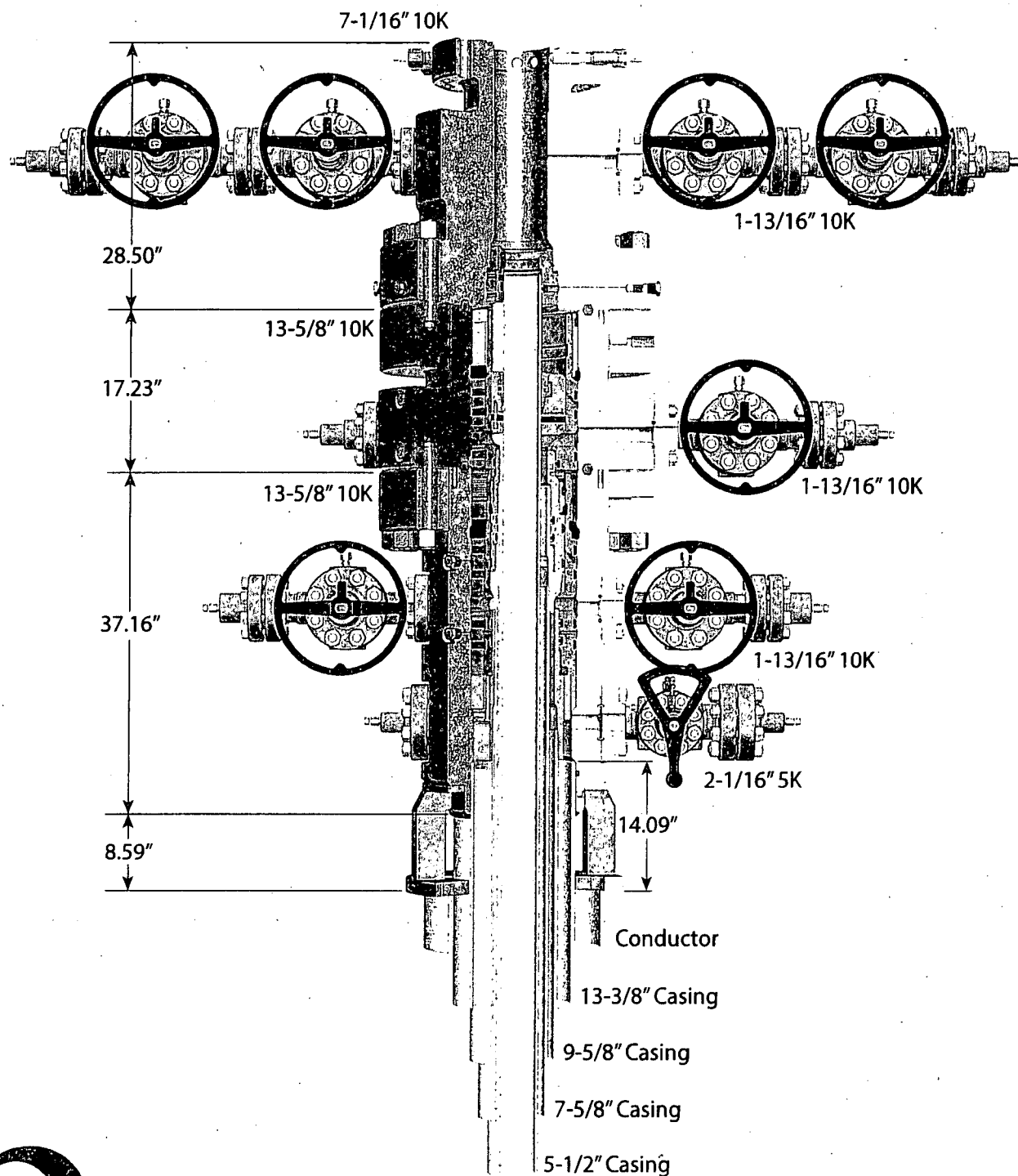
### 9. Company Personnel

| Name             | Title                        | Office Phone | Mobile Phone |
|------------------|------------------------------|--------------|--------------|
| Lucas Garibaldi  | Drilling Engineer            | 713-366-5763 | 281-795-9270 |
| Margaret Giltner | Drilling Engineer Supervisor | 713-366-5026 | 210-683-8480 |
| Simon Benavides  | Drilling Superintendent      | 713-522-8652 | 281-684-6897 |
| Diego Tellez     | Drilling Manager             | 713-350-4602 | 713-303-4932 |

# CAMERON

A Schlumberger Company

## 13-5/8" 10K MN-DS Wellhead Four String



1615045

NOTE: All dimensions on this drawing are estimated measurements and should be evaluated by engineering.

# PERFORMANCE DATA

TMK UP TORQ™ DQW  
Technical Data Sheet

5.500 in

20.00 lbs/ft

P110 CY

## Tubular Parameters

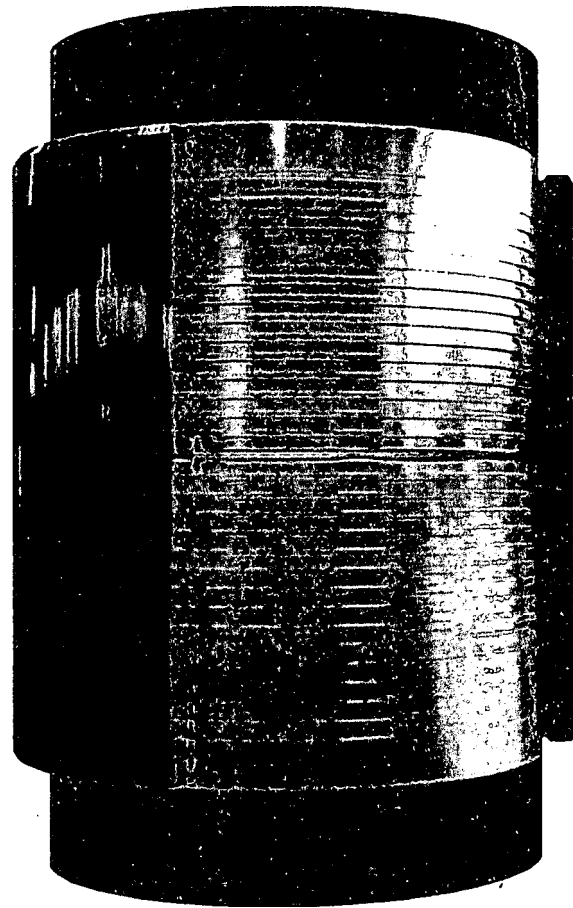
|                     |         |                 |                              |         |     |
|---------------------|---------|-----------------|------------------------------|---------|-----|
| Size                | 5.500   | in              | Minimum Yield                | 110,000 | psi |
| Nominal Weight      | 20.00   | lbs/ft          | Minimum Tensile              | 125,000 | psi |
| Grade               | P110 CY |                 | Yield Load                   | 641,000 | lbs |
| PE Weight           | 19.81   | lbs/ft          | Tensile Load                 | 729,000 | lbs |
| Wall Thickness      | 0.361   | in              | Min. Internal Yield Pressure | 12,640  | psi |
| Nominal ID          | 4.778   | in              | Collapse Pressure            | 11,110  | psi |
| Drift Diameter      | 4.653   | in              |                              |         |     |
| Nom. Pipe Body Area | 5.828   | in <sup>2</sup> |                              |         |     |

## Connection Parameters

|                              |         |                 |
|------------------------------|---------|-----------------|
| Connection OD                | 6.050   | in              |
| Connection ID                | 4.778   | in              |
| Make-Up Loss                 | 4.324   | in              |
| Critical Section Area        | 5.828   | in <sup>2</sup> |
| Tension Efficiency           | 100.0   | %               |
| Compression Efficiency       | 100.0   | %               |
| Yield Load In Tension        | 641,000 | lbs             |
| Min. Internal Yield Pressure | 12,640  | psi             |
| Collapse Pressure            | 11,110  | psi             |
| Uniaxial Bending             | 92      | °/ 100 ft       |

## Make-Up Torques

|                     |        |        |
|---------------------|--------|--------|
| Min. Make-Up Torque | 14,000 | ft-lbs |
| Opt. Make-Up Torque | 16,000 | ft-lbs |
| Max. Make-Up Torque | 18,000 | ft-lbs |
| Operating Torque    | 36,800 | ft-lbs |
| Yield Torque        | 46,000 | ft-lbs |



Printed on: March-05-2019

### NOTE:

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# PERFORMANCE DATA

**TMK UP DQX**  
**Technical Data Sheet**

**5.500 in**

**20.00 lbs/ft**

**P-110**

## Tubular Parameters

|                     |       |                 |                              |         |     |
|---------------------|-------|-----------------|------------------------------|---------|-----|
| Size                | 5.500 | in              | Minimum Yield                | 110,000 | psi |
| Nominal Weight      | 20.00 | lbs/ft          | Minimum Tensile              | 125,000 | psi |
| Grade               | P-110 |                 | Yield Load                   | 641,000 | lbs |
| PE Weight           | 19.81 | lbs/ft          | Tensile Load                 | 729,000 | lbs |
| Wall Thickness      | 0.361 | in              | Min. Internal Yield Pressure | 12,600  | psi |
| Nominal ID          | 4.778 | in              | Collapse Pressure            | 11,100  | psi |
| Drift Diameter      | 4.653 | in              |                              |         |     |
| Nom. Pipe Body Area | 5.828 | in <sup>2</sup> |                              |         |     |

## Connection Parameters

|                              |         |                 |
|------------------------------|---------|-----------------|
| Connection OD                | 6.050   | in              |
| Connection ID                | 4.778   | in              |
| Make-Up Loss                 | 4.122   | in              |
| Critical Section Area        | 5.828   | in <sup>2</sup> |
| Tension Efficiency           | 100.0   | %               |
| Compression Efficiency       | 100.0   | %               |
| Yield Load In Tension        | 641,000 | lbs             |
| Min. Internal Yield Pressure | 12,600  | psi             |
| Collapse Pressure            | 11,100  | psi             |

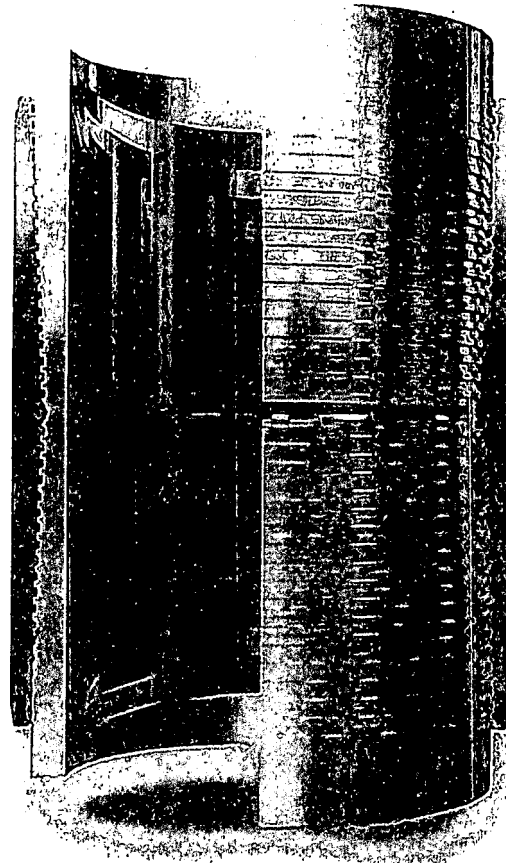
## Make-Up Torques

|                     |        |        |
|---------------------|--------|--------|
| Min. Make-Up Torque | 11,600 | ft-lbs |
| Opt. Make-Up Torque | 12,900 | ft-lbs |
| Max. Make-Up Torque | 14,100 | ft-lbs |
| Yield Torque        | 20,600 | ft-lbs |

**Printed on: July-29-2014**

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# TECHNICAL DATA SHEET TMK UP DQX 5.5 X 20 P110

## TUBULAR PARAMETERS

|                        |          |
|------------------------|----------|
| Nominal OD, (inch)     | 5.500    |
| Wall Thickness, (inch) | 0.361    |
| Pipe Grade             | P110     |
| Coupling               | Regular  |
| Coupling Grade         | P110     |
| Drift                  | Standard |

## PIPE BODY PROPERTIES

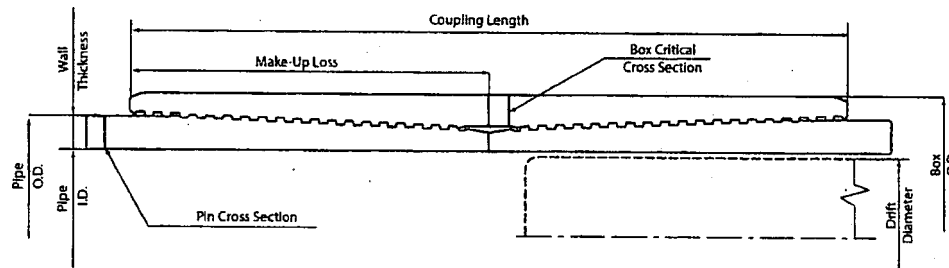
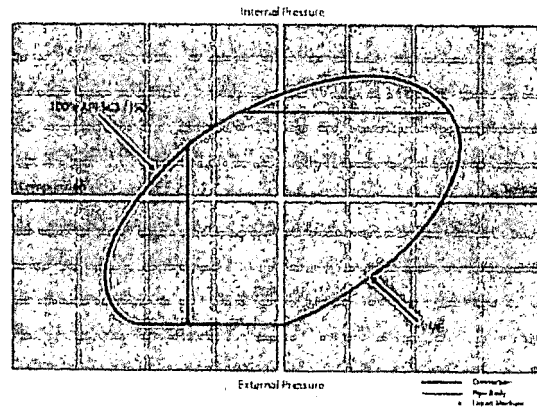
|                                     |        |
|-------------------------------------|--------|
| PE Weight, (lbs/ft)                 | 19.81  |
| Nominal Weight, (lbs/ft)            | 20.00  |
| Nominal ID, (inch)                  | 4.778  |
| Drift Diameter, (inch)              | 4.653  |
| Nominal Pipe Body Area, (sq inch)   | 5.828  |
| Yield Strength in Tension, (klbs)   | 641    |
| Min. Internal Yield Pressure, (psi) | 12 640 |
| Collapse Pressure, (psi)            | 11 110 |

## CONNECTION PARAMETERS

|                                       |        |
|---------------------------------------|--------|
| Connection OD (inch)                  | 6.05   |
| Connection ID, (inch)                 | 4.778  |
| Make-Up Loss, (inch)                  | 4.122  |
| Connection Critical Area, (sq inch)   | 5.828  |
| Yield Strength in Tension, (klbs)     | 641    |
| Yield Strength in Compression, (klbs) | 641    |
| Tension Efficiency                    | 100%   |
| Compression Efficiency                | 100%   |
| Min. Internal Yield Pressure, (psi)   | 12 640 |
| Collapse Pressure, (psi)              | 11 110 |
| Uniaxial Bending (deg/100ft)          | 91.7   |

## MAKE-UP TORQUES

|                                 |        |
|---------------------------------|--------|
| Yield Torque, (ft-lb)           | 20 600 |
| Minimum Make-Up Torque, (ft-lb) | 11 600 |
| Optimum Make-Up Torque, (ft-lb) | 12 900 |
| Maximum Make-Up Torque, (ft-lb) | 14 100 |



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# PERFORMANCE DATA

TMK UP SF TORQ™

5.500 in

20.00 lbs/ft

P110 HC

## Technical Data Sheet

### Tubular Parameters

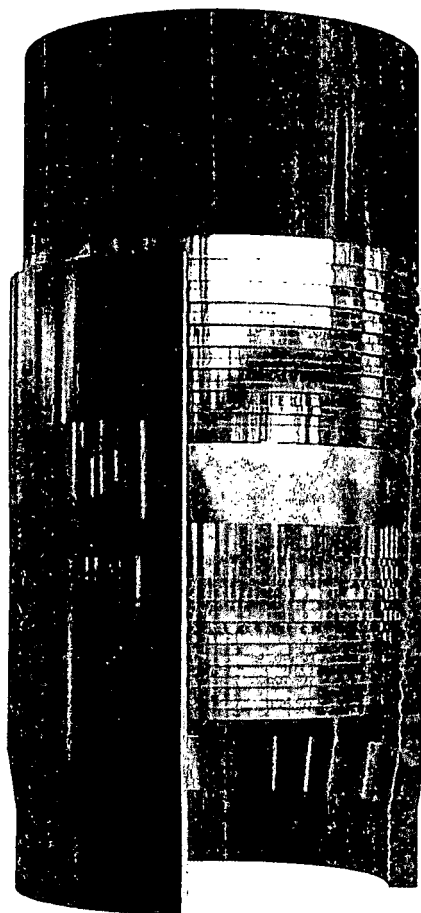
|                     |         |                 |                              |         |     |
|---------------------|---------|-----------------|------------------------------|---------|-----|
| Size                | 5.500   | in              | Minimum Yield                | 110,000 | psi |
| Nominal Weight      | 20.00   | lbs/ft          | Minimum Tensile              | 125,000 | psi |
| Grade               | P110 HC |                 | Yield Load                   | 641,000 | lbs |
| PE Weight           | 19.81   | lbs/ft          | Tensile Load                 | 728,000 | lbs |
| Wall Thickness      | 0.361   | in              | Min. Internal Yield Pressure | 12,640  | psi |
| Nominal ID          | 4.778   | in              | Collapse Pressure            | 12,780  | psi |
| Drift Diameter      | 4.653   | in              |                              |         |     |
| Nom. Pipe Body Area | 5.828   | in <sup>2</sup> |                              |         |     |

### Connection Parameters

|                              |         |                 |
|------------------------------|---------|-----------------|
| Connection OD                | 5.777   | in              |
| Connection ID                | 4.734   | in              |
| Make-Up Loss                 | 5.823   | in              |
| Critical Section Area        | 5.875   | in <sup>2</sup> |
| Tension Efficiency           | 90.0    | %               |
| Compression Efficiency       | 90.0    | %               |
| Yield Load In Tension        | 576,000 | lbs             |
| Min. Internal Yield Pressure | 12,640  | psi             |
| Collapse Pressure            | 12,780  | psi             |
| Uniaxial Bending             | 83      | %/ 100 ft       |

### Make-Up Torques

|                     |        |        |
|---------------------|--------|--------|
| Min. Make-Up Torque | 15,700 | ft-lbs |
| Opt. Make-Up Torque | 19,600 | ft-lbs |
| Max. Make-Up Torque | 21,600 | ft-lbs |
| Operating Torque    | 29,000 | ft-lbs |
| Yield Torque        | 36,000 | ft-lbs |



Printed on: February-22-2018

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# TECHNICAL DATA SHEET TMK UP FJ 7.625 X 26.4 L80 HC

## TUBULAR PARAMETERS

|                        |          |
|------------------------|----------|
| Nominal OD, (inch)     | 7.625    |
| Wall Thickness, (inch) | 0.328    |
| Pipe Grade             | L80 HC   |
| Drift                  | Standard |

## PIPE BODY PROPERTIES

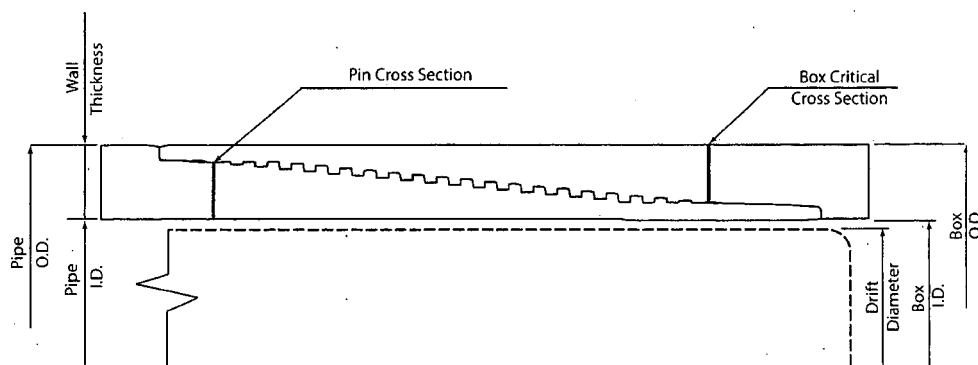
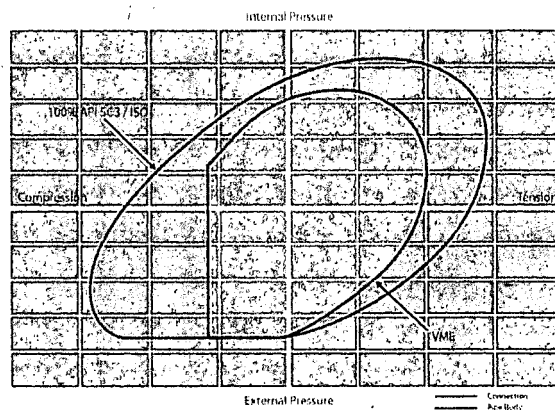
|                                     |       |
|-------------------------------------|-------|
| PE Weight, (lbs/ft)                 | 25.56 |
| Nominal Weight, (lbs/ft)            | 26.40 |
| Nominal ID, (inch)                  | 6.969 |
| Drift Diameter, (inch)              | 6.844 |
| Nominal Pipe Body Area, (sq inch)   | 7.519 |
| Yield Strength in Tension, (klbs)   | 601   |
| Min. Internal Yield Pressure, (psi) | 6 020 |
| Collapse Pressure, (psi)            | 3 910 |

## CONNECTION PARAMETERS

|                                       |       |
|---------------------------------------|-------|
| Connection OD (inch)                  | 7.63  |
| Connection ID, (inch)                 | 6.975 |
| Make-Up Loss, (inch)                  | 4.165 |
| Connection Critical Area, (sq inch)   | 2.520 |
| Yield Strength in Tension, (klbs)     | 347   |
| Yield Strength in Compression, (klbs) | 347   |
| Tension Efficiency                    | 58%   |
| Compression Efficiency                | 58%   |
| Min. Internal Yield Pressure, (psi)   | 6 020 |
| Collapse Pressure, (psi)              | 3 910 |
| Uniaxial Bending (deg/100ft)          | 28.0  |

## MAKE-UP TORQUES

|                                 |        |
|---------------------------------|--------|
| Yield Torque, (ft-lb)           | 22 200 |
| Minimum Make-Up Torque, (ft-lb) | 12 500 |
| Optimum Make-Up Torque, (ft-lb) | 13 900 |
| Maximum Make-Up Torque, (ft-lb) | 15 300 |



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Print date: 07/10/2018 20:11

# TECHNICAL DATA SHEET TMK UP SF 7.625 X 26.4 L80 HC

## TUBULAR PARAMETERS

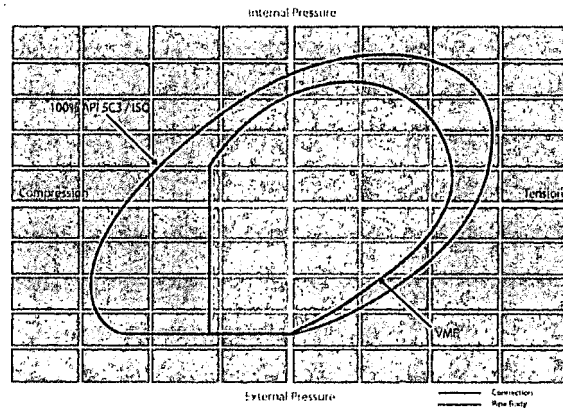
|                        |          |
|------------------------|----------|
| Nominal OD, (inch)     | 7.625    |
| Wall Thickness, (inch) | 0.328    |
| Pipe Grade             | L80 HC   |
| Drift                  | Standard |

## PIPE BODY PROPERTIES

|                                     |       |
|-------------------------------------|-------|
| PE Weight, (lbs/ft)                 | 25.56 |
| Nominal Weight, (lbs/ft)            | 26.40 |
| Nominal ID, (inch)                  | 6.969 |
| Drift Diameter, (inch)              | 6.844 |
| Nominal Pipe Body Area, (sq inch)   | 7.519 |
| Yield Strength in Tension, (klbs)   | 601   |
| Min. Internal Yield Pressure, (psi) | 6 020 |
| Collapse Pressure, (psi)            | 3 910 |

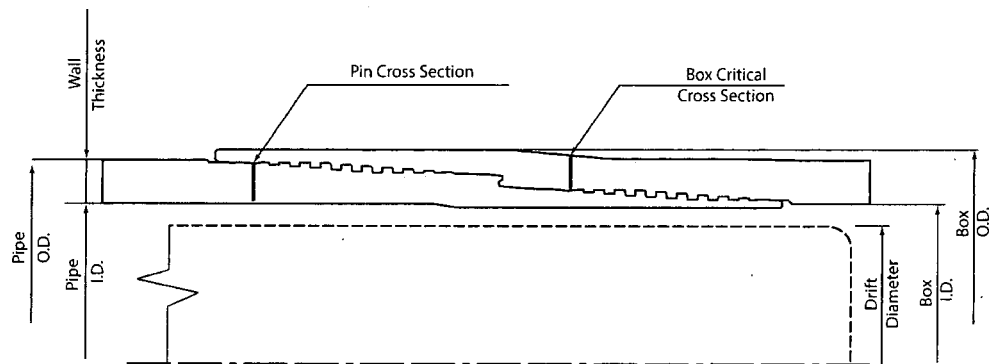
## CONNECTION PARAMETERS

|                                       |       |
|---------------------------------------|-------|
| Connection OD (inch)                  | 7.79  |
| Connection ID, (inch)                 | 6.938 |
| Make-Up Loss, (inch)                  | 6.029 |
| Connection Critical Area, (sq inch)   | 5.948 |
| Yield Strength in Tension, (klbs)     | 533   |
| Yield Strength in Compression, (klbs) | 533   |
| Tension Efficiency                    | 89%   |
| Compression Efficiency                | 89%   |
| Min. Internal Yield Pressure, (psi)   | 6 020 |
| Collapse Pressure, (psi)              | 3 910 |
| Uniaxial Bending (deg/100ft)          | 42.7  |



## MAKE-UP TORQUES

|                                 |        |
|---------------------------------|--------|
| Yield Torque, (ft-lb)           | 22 600 |
| Minimum Make-Up Torque, (ft-lb) | 15 000 |
| Optimum Make-Up Torque, (ft-lb) | 16 500 |
| Maximum Make-Up Torque, (ft-lb) | 18 200 |



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## Oxy Well Control Plan

### A. Component and Preventer Compatibility Table

The table below, which covers the drilling and casing of the >5M MASP portion of the well, outlines the tubulars and the compatible preventers in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

Pilot hole and Lateral sections, 10M requirement

| Component                   | OD              | Preventer  | RWP |
|-----------------------------|-----------------|--|-----|
| Drillpipe                   | 4-1/2"-5"       | Lower 3-1/2 - 5-1/2" VBR<br>Upper 3-1/2 - 5-1/2" VBR | 10M |
| HWDP                        | 4-1/2"-5"       | Lower 3-1/2 - 5-1/2" VBR<br>Upper 3-1/2 - 5-1/2" VBR | 10M |
| Drill collars and MWD tools | 4-3/4" - 5-1/2" | Lower 3-1/2 - 5-1/2" VBR<br>Upper 3-1/2 - 5-1/2" VBR | 10M |
| Mud Motor                   | 4-3/4"          | Lower 3-1/2 - 5-1/2" VBR<br>Upper 3-1/2 - 5-1/2" VBR | 10M |
| Production casing           | 5-1/2"          | Lower 3-1/2 - 5-1/2" VBR<br>Upper 3-1/2 - 5-1/2" VBR | 10M |
| ALL                         | 0" - 13-5/8"    | Annular  | 5M  |
| Open-hole                   | 6-3/4"          | Blind Rams   | 10M |

VBR = Variable Bore Ram. Compatible range listed in chart.

HWDP = Heavy Weight Drill Pipe

MWD = Measurement While Drilling

### B. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the Bottom Hole Assembly (BHA) through the Blowout Preventers (BOP). The pressure at which control is swapped from the annular to another compatible ram will occur when the anticipated pressure is approaching or envisioned to exceed 70% of the 5M annular Rated Working Pressure (RWP) or 3500 PSI.

#### General Procedure While Drilling

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in Well (uppermost applicable BOP, typically annular preventer first. The Hydraulic Control Remote (HCR) valve and choke will already be in the closed position).
5. Confirm shut-in
6. Notify tool pusher/company representative

7. Read and record the following:
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
8. Regroup and identify forward plan
9. If pressure has built or expected to reach 70% of the annular RWP during kill operations, crew will reconfirm spacing and swap to the upper pipe ram

#### General Procedure While Tripping

1. Sound alarm (alert crew)
2. Stab full opening safety valve and close
3. Space out drill string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. The HCR and choke will already be in the closed position)
5. Confirm shut-in
6. Notify tool pusher/company representative
7. Read and record the following
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
  - d. Regroup and identify forward plan
  - e. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram

#### General Procedure While Running Casing

1. Sound alarm (alert crew)
2. Stab crossover and full opening safety valve and close
3. Space out string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. The HCR and choke will already be in the closed position).
5. Confirm shut-in
6. Notify tool pusher/company representative
7. Read and record the following:
  - a. SIDPP and SICP
  - b. Pit gain
  - c. Time
  - d. Regroup and identify forward plan.
  - e. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to compatible pipe ram.

#### General Procedure With No Pipe In Hole (Open Hole)

1. Sound alarm (alert crew)
2. Shut-in with blind rams or BSR. (The HCR and choke will already be in the closed position)
3. Confirm shut-in
4. Notify tool pusher/company representative

5. Read and record the following:
  - a. SICP
  - b. Pit gain
  - c. Time
6. Regroup and identify forward plan

#### General Procedures While Pulling BHA thru Stack

1. PRIOR to pulling last joint of drill pipe thru the stack.
  - a. Perform flow check, if flowing:
  - b. Sound alarm (alert crew)
  - c. Stab full opening safety valve and close
  - d. Space out drill string with tool joint just beneath the upper pipe ram
  - e. Shut-in using upper pipe ram. (The HCR and choke will already be in the closed position)
  - f. Confirm shut-in
  - g. Notify tool pusher/company representative
  - h. Read and record the following:
    - i. SIDPP and SICP
    - ii. Pit gain
    - iii. Time
    - iv. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combo immediately available.
  - a. Sound alarm (alert crew)
  - b. Stab crossover and full opening safety valve and close
  - c. Space out drill string with upset just beneath the compatible pipe ram
  - d. Shut-in using compatible pipe ram. (The HCR and choke will already be in the closed position.)
  - e. Confirm shut-in
  - f. Notify tool pusher/company representative
  - g. Read and record the following:
    - i. SIDPP and SICP
    - ii. Pit gain
    - iii. Time
    - iv. Regroup and identify forward plan
3. With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.
  - a. Sound alarm (alert crew)
  - b. If possible to pick up high enough, pull string clear of the stack and follow "Open Hole" scenario
  - c. If impossible to pick up high enough to pull the string clear of the stack
  - d. Stab crossover, make up one joint/stand of drill pipe, and full opening safety valve and close
  - e. Space out drill string with tool joint just beneath the upper pipe ram

- f. Shut-in using upper pipe ram. (The HCR and choke will already be in the closed position)
- g. Confirm shut-in
- h. Notify tool pusher/company representative
- i. Read and record the following:
  - i. SIDPP and SICP
  - ii. Pit gain
  - iii. Time
- j. Regroup and identify forward plan