District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | Pool Code | Pool Name |
|---|---|---|
| 30-015-43844 | 96473 | Pierce Crossing; Bone Spring, East |

| Property Code | Property Name | Well Number |
|---|---|---|
| 39669 | CEDAR CANYON "16" STATE | 33H |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 16696 | OXY USA INC. | 2927.3' |

## Surface Location

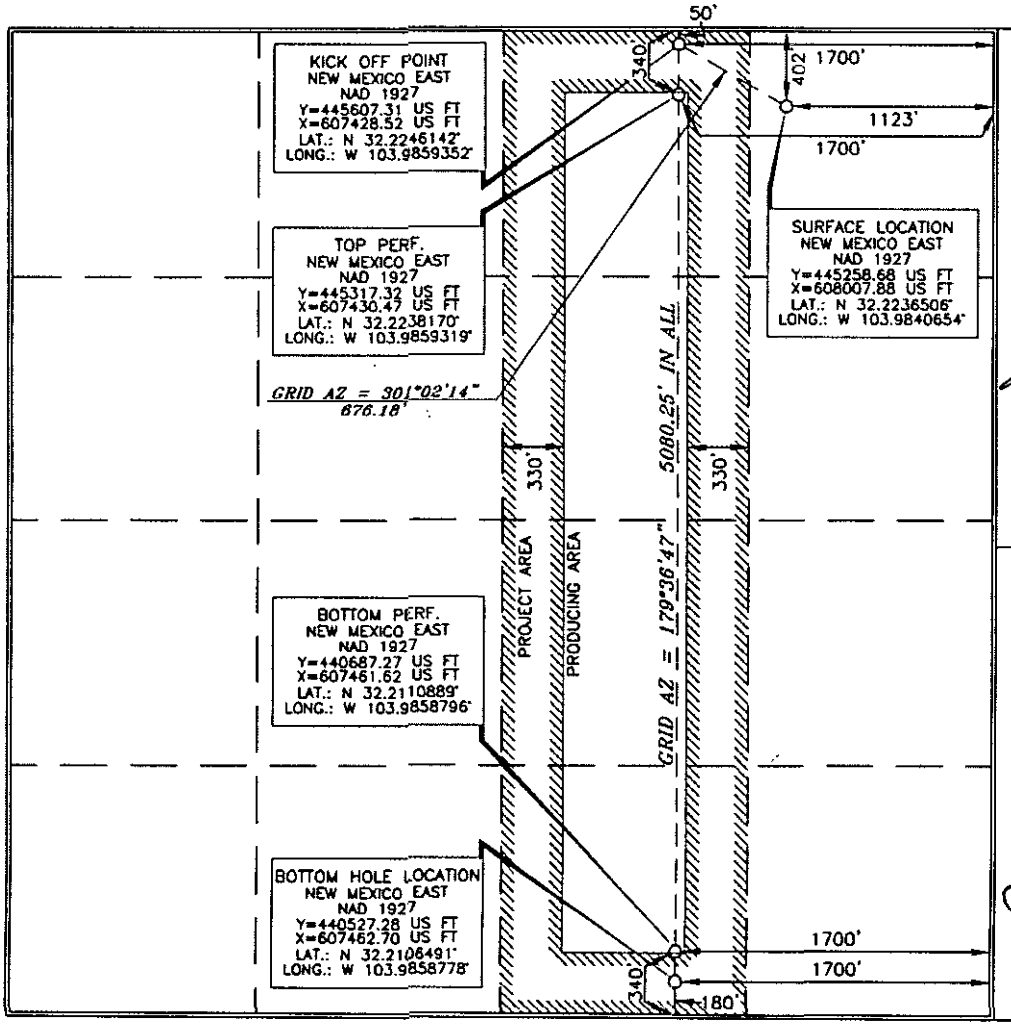
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| A | 16 | 24 SOUTH | 29 EAST, N.M.P.M. | | 402' | NORTH | 1123' | EAST | EDDY |

## Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| O | 16 | 24 SOUTH | 29 EAST, N.M.P.M. | | 180' | SOUTH | 1700' | EAST | EDDY |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 160 | Y | | |

*No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.*




## OPERATOR CERTIFICATION

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

Signature — Date: 6/29/16

David Stewart Sr. Reg. Adv.
Printed Name

david_stewart@oxy.com
E-mail Address

## SURVEYOR CERTIFICATION

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

JERRY J. ASE — NEW MEXICO — 15079 — REGISTERED PROFESSIONAL LAND SURVEYOR

APRIL 19, 2016
Date of Survey

Signature and Seal of Professional Surveyor

5/23/2016

Certificate Number 15079

WO# 160419WL-a (KA)

# OXY USA Inc. - Cedar Canyon 16 State #33H

## 1. Geologic Formations

| | | | |
|---|---|---|---|
| TVD of target | 9915' | Pilot Hole Depth | N/A |
| MD at TD: | 14819' | Deepest Expected fresh water: | 193' |

**Delaware Basin**

| Formation | TVD - RKB | Expected Fluids |
|---|---|---|
| Rustler | 193 | |
| Salado | 614 | |
| Lamar/Delaware | 2908 | Oil/Gas |
| Bell Canyon* | 2964 | Water/Oil/Gas |
| Cherry Canyon* | 3642 | Oil/Gas |
| Brushy Canyon* | 5041 | Oil/Gas |
| 1st Bone Spring | 6606 | Oil/Gas |
| 2nd Bone Spring | 7889 | Oil/Gas |
| 3rd Bone Spring | 8816 | Oil/Gas |
| **3rd Bone Spring (target)** | **9868** | **Oil/Gas** |

*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 | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| | From (ft) | To (ft) | | | | | | | |
| 14.75 | 0 | 400 | 10.75 | 40.5 | J55 | BTC | 7.59 | 1.54 | 2.89 |
| 9.875 | 0 | 8011 | 7.625 | 29.7 | L80 | BTC | 1.14 | 1.28 | 1.71 |
| 9.875 | 8011 | 9311 | 7.625 | 29.7 | HCL80 | BTC | 1.18 | 1.43 | 3.19 |
| 6.75 | 9211 | 14819 | 5.5 | 20 | P-110 | UltraSF | 2.06 | 1.23 | 2.42 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1.2 | 1.6 Dry<br>1.8 Wet |

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 will be run in case a contingency second stage is required for cement to reach surface. If cement circulated to surface during first stage we will drop a cancelation cone and not pump the second stage.

| | Y or N |
|---|---|
| Is casing new? If used, attach certification as required in Onshore Order #1 | Y |
| Does casing meet API specifications? If no, attach casing specification sheet. | Y |
| Is premium or uncommon casing planned? If yes attach casing specification sheet. | Y |
| Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). | Y |
| Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing? | Y |
| | |
| Is well located within Capitan Reef? | N |
| If yes, does production casing cement tie back a minimum of 50' above the Reef? | |
| Is well within the designated 4 string boundary. | |

| | |
|---|---|
| Is well located in SOPA but not in R-111-P? | N |
| If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing? | |
| Is well located in R-111-P and SOPA? | N |
| If yes, are the first three strings cemented to surface? | |
| Is 2nd string set 100' to 600' below the base of salt? | |
| 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 | # Sks | Wt. lb/ gal | Yld ft3/ sack | H20 gal/sk | 500# Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| Surface | 265 | 14.8 | 1.35 | 6.53 | 6:50 | Premium Plus Cement<br>2% Calcium Chloride – Flake (Accelerator) |
| Production Casing | 846 | 10.2 | 3.05 | 15.63 | 15:07 | TUNED LIGHT (TM) SYSTEM<br>0.80% HR-601(Retarder), 3 lbm/sk Kol-Seal (Lost Circulation Additive), 0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive) |
| | 366 | 13.2 | 1.65 | 8.45 | 12:57 | Super H Cement, 0.1 % HR-800 (Retarder), 0.5 % Halad(R)-344 (Low Fluid Loss Control), 0.3 % CFR-3 (Dispersant), 2 lbm Kol-Seal (Lost Circulation Additive), 3 lbm Salt (Salt) |
| DV/ECP Tool @ 2959' (We request the option to cancel the second stage if cement is circulated to surface during the first stage of cement operations) | | | | | | |
| 2nd Stage Prodution Casing | 469 | 12.9 | 1.85 | 9.86 | 12:44 | Halliburton Light Premium Plus Cement with 5% Salt (Accelerator), 0.125 lbs/sk Poly-E-Flake (Lost Circulation Additive), 5 lbs/sk Kol-Seal (Lost Circulation Additive), 0.35% HR-800 (Retarder) |
| | 182 | 14.8 | 1.33 | 6.34 | 6:31 | Premium Plus cement |
| Production Liner | 334 | 13.2 | 1.631 | 8.37 | 15:15 | Super H Cement, 0.1 % HR-800 (Retarder), 0.5 % Halad(R)-344 (Low Fluid Loss Control), 0.4 % CFR-3 (Dispersant), 3 lbm Salt (Salt) |

| Casing String | TOC (ft) | % Excess Lead | % Excess Tail |
|---|---|---|---|
| Surface | 0 | | 50% |
| Production Casing | 0 | 75% | 20% |
| 2nd Stage Prodution Casing | 0 | 75% | 125% |
| Production Liner | 9211 | | 15% |

## 4. Pressure Control Equipment

| BOP installed and tested before drilling which hole? | Size? | Min. Required WP | Type | ✓ | Tested to: |
|---|---|---|---|---|---|
| 9.875" Intermediate | 13-5/8" | 5M | Annular | ✓ | 70% of working pressure |
| | | | Blind Ram | ✓ | 250/5000psi |
| | | | Pipe Ram | | |
| | | | Double Ram | ✓ | |
| | | | Other* | | |

*Specify if additional ram is utilized.

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

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. 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 wellhead is being used. 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.<br><br>See attached schematic.<br><br>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. |

## 5. Mud Program

| Depth | | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|---|
| From (ft) | To (ft) | | | | |
| 0 | 400 | EnerSeal (MMH) | 8.4-8.6 | 40-60 | N/C |
| 400 | 2959 | Brine | 9.8-10.0 | 35-45 | N/C |
| 2959 | 9311 | EnerSeal (MMH) | 8.8-9.6 | 38-50 | N/C |
| 9311 | 14819 | Oil-Based Mud | 10.0-12.0 | 35-50 | N/C |

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Oxy proposes to drill out the 10.75" surface casing shoe with a saturated brine system from 400' - 2959', which is the base of the salt system. At this point we will swap fluid systems to a high viscosity mixed metal hydroxide system. We will drill with this system to the intermediate TD @ 9311'.

| | |
|---|---|
| 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 | Surface Shoe - TD |
| No | PEX | |

## 7. Drilling Conditions

| Condition | Specify what type and where? |
|---|---|
| BH Pressure at deepest TVD | 4591 psi |
| Abnormal Temperature | No |

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.

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

## 8. Other facets of operation

| | Yes/No |
|---|---|
| Will the well be drilled with a walking/skidding operation? If yes, describe.<br>• We plan to drill the two well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well. | Yes |
| Will more than one drilling rig be used for drilling operations? If yes, describe. | No |

Attachments
_x__ Directional Plan
_x__ H2S Contingency Plan

## 9. Company Personnel

| Name | Title | Office Phone | Mobile Phone |
|---|---|---|---|
| Ludwing Franco | Drilling Engineer | 713-366-5174 | 832-523-6392 |
| Tim Barnard | Drilling Engineer Team Lead | 713-366-5706 | 281-740-3084 |
| Amrut Athavale | Drilling Engineer Supervisor | 713-350-4747 | 281-740-4448 |
| Simon Benavides | Drilling Superintendent | 713-522-8652 | 281-684-6897 |
| Angie Contreras | Drilling & Completions Manager | 713-497-2012 | 832-605-4882 |
| Daniel Holderman | Drilling Manager | 713-497-2006 | 832-525-9029 |

## Spacing Units

The following wells are in the Corral Draw/East Pierce Crossing Bone Spring Pools.

1. Cedar Canyon 16 State #2H – 30-015-41024 - TVD-8626' – Units P-O-N-M – 2nd Bone Spring
2. Cedar Canyon 16 State #6H – 30-015-41595 - TVD-8620' – Units I-J-K-L – 2nd Bone Spring
3. Cedar Canyon 16 State #7H – 30-015-41251 - TVD-8644' – Units H-G-F-E – 2nd Bone Spring
4. Cedar Canyon 16 State #8H – 30-015-41596 - TVD-8618' – Units A-B-C-D – 2nd Bone Spring
5. Cedar Canyon 16 State #12H – 30-015-42683 - TVD-8624' – Units P-O-N-M – 2nd Bone Spring
6. H. Buck State #3 – 30-015-33820 – TVD 7675' – Units A-B-C – 1st Bone Spring
7. H. Buck State #4H – 30-015-34444 – TVD 7689' – Units H-G-F – 1st Bone Spring
8. H. Buck State #5 – 30-015-335042 – TVD 7630' – Units I-J-K – 1st Bone Spring
9. H. Buck State #10 – 30-015-34695 – TVD 7692' – Units P-O-N-M – 1st Bone Spring

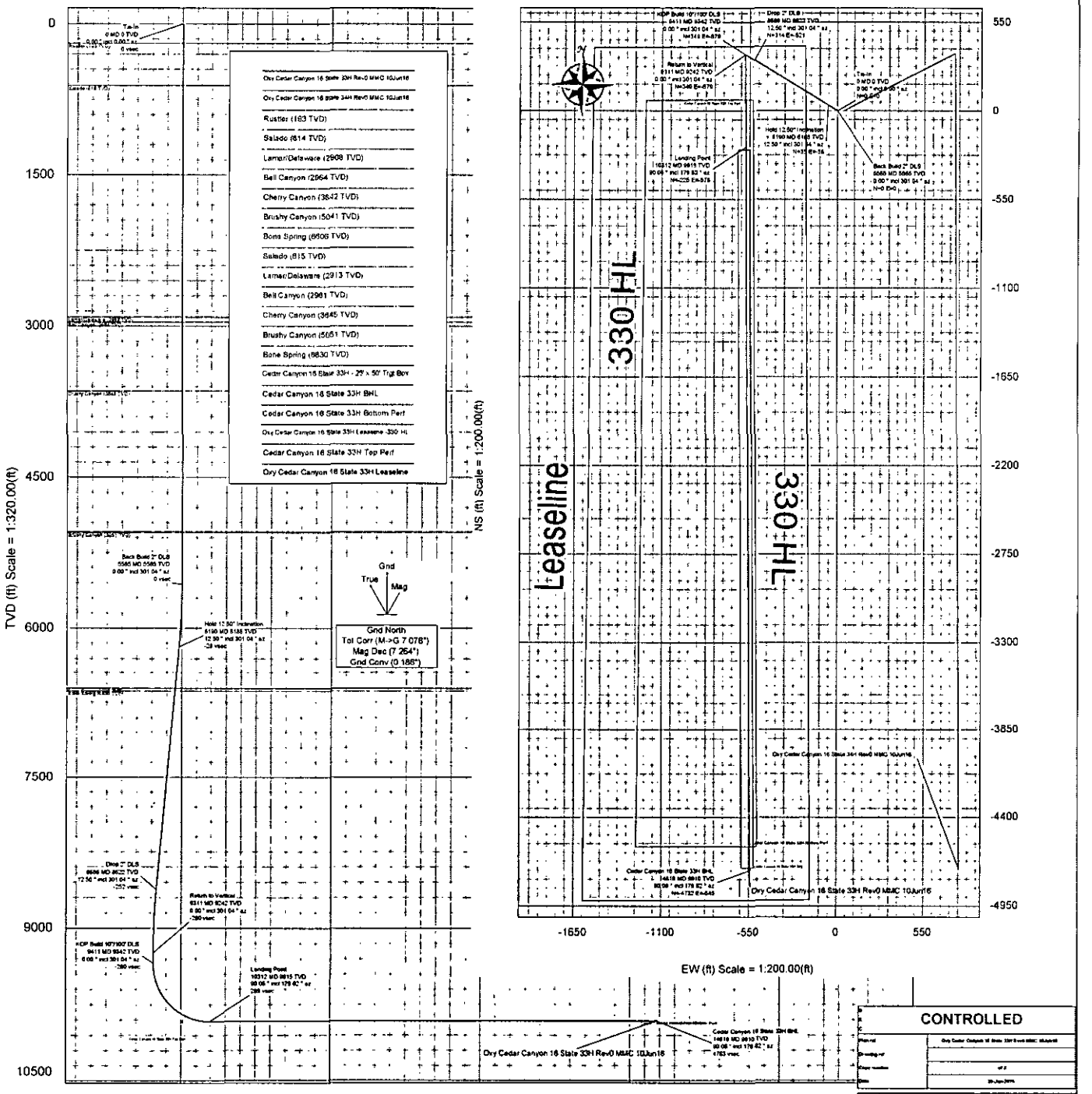
**Schlumberger** Plan - Rev0 **OXY** RKB = 26.5 ft

| Borehole: | Well: | Field: | Structure: |
|---|---|---|---|
| Original Borehole | Oxy Cedar Canyon 16 State 33H | NM Eddy County (NAD 27) | TBD |

| Gravity & Magnetic Parameters | | | | | Surface Location | NAD27 New Mexico State Plane, Eastern Zone, US Foot | | | | Miscellaneous | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model: | HDGM 2015 | Dip: | 60.084° | Date | 15-Jun-2016 | Lat: | N 32 13 25.14 | Northing: | 445258.68MUS | Grid Conv: | 0.1882° | Slot: Oxy Cedar Canyon 16 State 33H | TVD Ref. | RKB=26.5'(2953.8ft above MSL) |
| MagDec: | 7.264° | FS: | 48237.296nT | Gravity FS: | 998.471mgn (9.80665 Based) | Lon: | W 103 59 2.64 | Easting: | 608007.88MUS | Scale Fact: | 0.99992245 | Plan: Oxy Cedar Canyon 16 State 33H Rev0 MMC 10Jun16 | | |

*Critical Points*

| Comments | Survey MD(ft) | Inclination(deg) | Azimuth(deg) | TVD(ft) | Sub-Sea TVD | VS(ft) | NS(ft) | EW(ft) | Latitude(deg) | Longitude(deg) | Easting(ftUS) | Northing(ftUS) | Closure(ft) | Closure Azimuth(deg) | DLS(°/10 0ft) | Tool Face(deg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tie-In | 0.00 | 0.00 | 0.00 | 0.00 | -2953.80 | 0.00 | 0.00 | 0.00 | N 32 13 25.142 | W 103 59 2.635 | 608007.88 | 445258.68 | 0.00 | 0.00 | 0.00 | 301.04 |
| Rustler | 193.00 | 0.00 | 301.04 | 193.00 | -2760.80 | 0.00 | 0.00 | 0.00 | N 32 13 25.142 | W 103 59 2.635 | 608007.88 | 445258.68 | 0.00 | 0.00 | 0.00 | 301.04 |
| Salado | 614.00 | 0.00 | 301.04 | 614.00 | -2339.80 | 0.00 | 0.00 | 0.00 | N 32 13 25.142 | W 103 59 2.635 | 608007.88 | 445258.68 | 0.00 | 0.00 | 0.00 | 301.04 |
| Lamar/Delaware | 2908.00 | 0.00 | 301.04 | 2908.00 | -45.80 | 0.00 | 0.00 | 0.00 | N 32 13 25.142 | W 103 59 2.635 | 608007.88 | 445258.68 | 0.00 | 0.00 | 0.00 | 301.04 |
| Bell Canyon | 2964.00 | 0.00 | 301.04 | 2964.00 | 10.20 | 0.00 | 0.00 | 0.00 | N 32 13 25.142 | W 103 59 2.635 | 608007.88 | 445258.68 | 0.00 | 0.00 | 0.00 | 301.04 |
| Cherry Canyon | 3642.00 | 0.00 | 301.04 | 3642.00 | 688.20 | 0.00 | 0.00 | 0.00 | N 32 13 25.142 | W 103 59 2.635 | 608007.88 | 445258.68 | 0.00 | 0.00 | 0.00 | 301.04 |
| Brushy Canyon | 5041.00 | 0.00 | 301.04 | 5041.00 | 2087.20 | 0.00 | 0.00 | 0.00 | N 32 13 25.142 | W 103 59 2.635 | 608007.88 | 445258.68 | 0.00 | 0.00 | 0.00 | 301.04 |
| Back Build 2° DLS | 5565.00 | 0.00 | 301.04 | 5565.00 | 2611.20 | 0.00 | 0.00 | 0.00 | N 32 13 25.142 | W 103 59 2.635 | 608007.88 | 445258.68 | 0.00 | 0.00 | 0.00 | 301.04 |
| Hold 12.50° Inclination | 6190.15 | 12.50 | 301.04 | 6185.26 | 3231.40 | -28.14 | 35.03 | -58.21 | N 32 13 25.491 | W 103 59 3.312 | 607949.67 | 445293.71 | 67.94 | 301.04 | 2.00 | 0.00 |
| Bone Spring | 6621.17 | 12.50 | 301.04 | 6606.00 | 3652.20 | -66.78 | 83.14 | -138.17 | N 32 13 25.969 | W 103 59 4.240 | 607869.73 | 445341.81 | 161.25 | 301.04 | 0.00 | 0.00 |
| Drop 2° DLS | 8886.04 | 12.50 | 301.04 | 8621.90 | 5668.10 | -251.91 | 313.63 | -521.19 | N 32 13 28.263 | W 103 59 8.690 | 607486.73 | 445572.28 | 608.28 | 301.04 | 0.00 | 180.00 |
| Return to Vertical | 9311.15 | 0.00 | 301.04 | 9242.10 | 6288.30 | -280.04 | 348.66 | -579.41 | N 32 13 28.611 | W 103 59 9.367 | 607428.52 | 445607.31 | 676.22 | 301.04 | 2.00 | 301.04 |
| KOP Build 10°/100' DLS | 9411.15 | 0.00 | 301.04 | 9342.10 | 6388.30 | -280.04 | 348.66 | -579.41 | N 32 13 28.611 | W 103 59 9.367 | 607428.52 | 445607.31 | 676.22 | 301.04 | 0.00 | 179.61 |
| Landing Point | 10311.83 | 90.06 | 179.61 | 9915.05 | 6961.26 | 289.33 | -224.93 | -575.55 | N 32 13 22.935 | W 103 59 9.343 | 607432.28 | 445033.77 | 617.94 | 248.65 | 10.00 | 0.00 |
| Cedar Canyon 16 State 33H BHL | 14818.75 | 90.06 | 179.61 | 9918.00 | 6956.20 | 4763.08 | -4731.78 | -545.22 | N 32 12 38.337 | W 103 59 9.160 | 607462.70 | 440527.28 | 4763.08 | 186.57 | 0.00 | |




CONTROLLED

| | | |
|---|---|---|
| 1 | Originator | Maneia Corbett |
| 2 | DE Sign Off Authority | |
| 3 | D&M Line Manager | Joel Dunn |
| 4 | Client | Oxy |

Schlumberger

# Oxy Cedar Canyon 16 State 33H Rev0 MMC 10Jun16 Proposal Geodetic Report

**(Non-Def Plan)**

| | | | |
|---|---|---|---|
| **Report Date:** | June 20, 2016 - 09 22 AM | **Survey / DLS Computation:** | Minimum Curvature / Lubinski |
| **Client:** | OXY | **Vertical Section Azimuth:** | 186 573 ° (Grid North) |
| **Field:** | NM Eddy County (NAD 27) | **Vertical Section Origin:** | 0 000 ft, 0 000 ft |
| **Structure / Slot:** | Oxy Cedar Canyon 16 State 33H / Oxy Cedar Canyon 16 State 33H | **TVD Reference Datum:** | RKB=26 5' |
| **Well:** | Oxy Cedar Canyon 16 State 33H | **TVD Reference Elevation:** | 2953 800 ft above MSL |
| **Borehole:** | Original Borehole | **Seabed / Ground Elevation:** | 2927.300 ft above MSL |
| **UWI / API#:** | Unknown / Unknown | **Magnetic Declination:** | 7.264 ° |
| **Survey Name:** | Oxy Cedar Canyon 16 State 33H Rev0 MMC 10Jun16 | **Total Gravity Field Strength:** | 998.4710mgn (9 80665 Based) |
| **Survey Date:** | June 08, 2016 | **Gravity Model:** | GARM |
| **Tort / AHD / DDI / ERD Ratio:** | 115.070 ° / 5756 769 ft / 5 996 / 0 561 | **Total Magnetic Field Strength:** | 48237.296 nT |
| **Coordinate Reference System:** | NAD27 New Mexico State Plane, Eastern Zone, US Feet | **Magnetic Dip Angle:** | 60 064 ° |
| **Location Lat / Long:** | N 32° 13' 25.14231", W 103° 59' 2.63528" | **Declination Date:** | June 10, 2016 |
| **Location Grid N/E Y/X:** | N 445258.680 ftUS, E 608007.880 ftUS | **Magnetic Declination Model:** | HDGM 2016 |
| **CRS Grid Convergence Angle:** | 0.1862 ° | **North Reference:** | Grid North |
| **Grid Scale Factor:** | 0 99992245 | **Grid Convergence Used:** | 0.1862 ° |
| **Version / Patch:** | 2.9 365.0 | **Total Corr Mag North->Grid North:** | 7.0778 ° |
| | | **Local Coord Referenced To:** | Well Head |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | TVDSS (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tie-In | 0.00 | 0.00 | 0.00 | 0 00 | -2953 80 | 0.00 | 0.00 | 0 00 | N/A | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 100 00 | 0.00 | 301.04 | 100.00 | -2853 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| *Rustler* | *193.00* | *0.00* | *301.04* | *193.00* | *-2760 80* | *0.00* | *0.00* | *0.00* | *0.00* | *445258.68* | *608007.88* | *N 32 13 25 14* | *W 103 59 2.64* |
| | 200 00 | 0.00 | 301.04 | 200 00 | -2753 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 300.00 | 0.00 | 301.04 | 300.00 | -2653 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 400.00 | 0.00 | 301.04 | 400 00 | -2553.80 | 0.00 | 0 00 | 0.00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 500.00 | 0.00 | 301.04 | 500 00 | -2453.80 | 0.00 | 0 00 | 0.00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 600.00 | 0 00 | 301.04 | 600.00 | -2353.80 | 0.00 | 0 00 | 0.00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| *Salado* | *614.00* | *0.00* | *301.04* | *614.00* | *-2339.80* | *0.00* | *0.00* | *0.00* | *0 00* | *445258.68* | *608007.88* | *N 32 13 25.14* | *W 103 59 2.64* |
| | 700.00 | 0 00 | 301.04 | 700.00 | -2253 80 | 0 00 | 0 00 | 0.00 | 0.00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 800.00 | 0.00 | 301 04 | 800.00 | -2153.80 | 0.00 | 0 00 | 0 00 | 0 00 | 445258.68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 900.00 | 0 00 | 301 04 | 900.00 | -2053 80 | 0.00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 1000.00 | 0 00 | 301.04 | 1000.00 | -1953.80 | 0.00 | 0.00 | 0 00 | 0 00 | 445258.68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 1100 00 | 0 00 | 301.04 | 1100.00 | -1853.80 | 0.00 | 0.00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 1200.00 | 0 00 | 301.04 | 1200.00 | -1753.80 | 0.00 | 0.00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 1300 00 | 0.00 | 301.04 | 1300.00 | -1653 80 | 0.00 | 0.00 | 0.00 | 0.00 | 445258.68 | 608007.88 | N 32 13 25 14 | W 103 59 2 64 |
| | 1400 00 | 0 00 | 301.04 | 1400.00 | -1553.80 | 0.00 | 0.00 | 0 00 | 0.00 | 445258 68 | 608007.88 | N 32 13 25 14 | W 103 59 2.64 |
| | 1500 00 | 0.00 | 301.04 | 1500.00 | -1453.80 | 0.00 | 0 00 | 0.00 | 0.00 | 445258 68 | 608007 88 | N 32 13 25.14 | W 103 59 2.64 |
| | 1600.00 | 0.00 | 301.04 | 1600 00 | -1353.80 | 0.00 | 0.00 | 0.00 | 0 00 | 445258 68 | 608007 88 | N 32 13 25.14 | W 103 59 2.64 |
| | 1700 00 | 0.00 | 301.04 | 1700.00 | -1253.80 | 0.00 | 0 00 | 0.00 | 0 00 | 445258 68 | 608007 88 | N 32 13 25.14 | W 103 59 2.64 |
| | 1800 00 | 0 00 | 301.04 | 1800.00 | -1153 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 1900.00 | 0 00 | 301.04 | 1900 00 | -1053 80 | 0.00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007 88 | N 32 13 25.14 | W 103 59 2.64 |
| | 2000.00 | 0.00 | 301.04 | 2000.00 | -953 80 | 0.00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 2100 00 | 0.00 | 301.04 | 2100 00 | -853 80 | 0.00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 2200 00 | 0 00 | 301.04 | 2200.00 | -753 80 | 0 00 | 0 00 | 0 00 | 0.00 | 445258.68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 2300 00 | 0.00 | 301.04 | 2300.00 | -653 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25 14 | W 103 59 2.64 |
| | 2400 00 | 0.00 | 301.04 | 2400.00 | -553 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 2500.00 | 0.00 | 301.04 | 2500 00 | -453 80 | 0 00 | 0.00 | 0.00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25 14 | W 103 59 2.64 |
| | 2600.00 | 0.00 | 301.04 | 2600 00 | -353 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 2700.00 | 0.00 | 301.04 | 2700 00 | -253.80 | 0.00 | 0.00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 2800 00 | 0.00 | 301.04 | 2800.00 | -153 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 2900 00 | 0.00 | 301.04 | 2900.00 | -53 80 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| *Lamar/Delaware* | *2908.00* | *0.00* | *301.04* | *2908.00* | *-45.80* | *0.00* | *0.00* | *0 00* | *0 00* | *445258.68* | *608007.88* | *N 32 13 25.14* | *W 103 59 2.64* |
| *Bell Canyon* | *2964.00* | *0.00* | *301.04* | *2964.00* | *10.20* | *0.00* | *0.00* | *0 00* | *0 00* | *445258.68* | *608007.88* | *N 32 13 25.14* | *W 103 59 2.64* |
| | 3000.00 | 0 00 | 301 04 | 3000.00 | 46 20 | 0 00 | 0.00 | 0.00 | 0 00 | 445258 68 | 608007 88 | N 32 13 25.14 | W 103 59 2 64 |
| | 3100.00 | 0 00 | 301 04 | 3100.00 | 146 20 | 0.00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 3200.00 | 0 00 | 301.04 | 3200 00 | 246.20 | 0.00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 3300.00 | 0 00 | 301.04 | 3300 00 | 346.20 | 0.00 | 0.00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 3400.00 | 0.00 | 301.04 | 3400.00 | 446 20 | 0 00 | 0 00 | 0 00 | 0.00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 3500.00 | 0.00 | 301.04 | 3500.00 | 546 20 | 0 00 | 0 00 | 0 00 | 0.00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 3600.00 | 0.00 | 301 04 | 3600.00 | 646 20 | 0 00 | 0 00 | 0.00 | 0.00 | 445258 68 | 608007.88 | N 32 13 25 14 | W 103 59 2.64 |
| *Cherry Canyon* | *3642.00* | *0.00* | *301.04* | *3642.00* | *688.20* | *0.00* | *0.00* | *0.00* | *0.00* | *445258.68* | *608007.88* | *N 32 13 25.14* | *W 103 59 2.64* |
| | 3700.00 | 0.00 | 301.04 | 3700 00 | 746.20 | 0.00 | 0 00 | 0.00 | 0.00 | 445258.68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 3800.00 | 0.00 | 301.04 | 3800 00 | 846.20 | 0.00 | 0 00 | 0 00 | 0 00 | 445258.68 | 608007.88 | N 32 13 25 14 | W 103 59 2.64 |
| | 3900.00 | 0 00 | 301 04 | 3900 00 | 946.20 | 0 00 | 0.00 | 0 00 | 0 00 | 445258.68 | 608007.88 | N 32 13 25 14 | W 103 59 2.64 |
| | 4000 00 | 0.00 | 301 04 | 4000 00 | 1046.20 | 0 00 | 0 00 | 0 00 | 0.00 | 445258.68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 4100 00 | 0.00 | 301.04 | 4100 00 | 1146 20 | 0 00 | 0.00 | 0.00 | 0.00 | 445258.68 | 608007.88 | N 32 13 25 14 | W 103 59 2 64 |
| | 4200.00 | 0 00 | 301.04 | 4200 00 | 1246 20 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 4300 00 | 0.00 | 301.04 | 4300.00 | 1346 20 | 0 00 | 0 00 | 0.00 | 0 00 | 445258.68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 4400 00 | 0 00 | 301.04 | 4400 00 | 1446 20 | 0 00 | 0 00 | 0 00 | 0 00 | 445258.68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 4500 00 | 0 00 | 301.04 | 4500.00 | 1546.20 | 0 00 | 0.00 | 0 00 | 0 00 | 445258.68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 4600 00 | 0 00 | 301.04 | 4600 00 | 1646 20 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 4700.00 | 0.00 | 301.04 | 4700.00 | 1746.20 | 0.00 | 0.00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 4800.00 | 0 00 | 301.04 | 4800 00 | 1846 20 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 4900.00 | 0.00 | 301.04 | 4900 00 | 1946 20 | 0 00 | 0.00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 5000 00 | 0 00 | 301.04 | 5000 00 | 2046 20 | 0 00 | 0 00 | 0.00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| *Brushy Canyon* | *5041.00* | *0 00* | *301.04* | *5041.00* | *2087.20* | *0.00* | *0.00* | *0.00* | *0 00* | *445258.68* | *608007.88* | *N 32 13 25.14* | *W 103 59 2.64* |
| | 5100 00 | 0 00 | 301.04 | 5100.00 | 2146.20 | 0.00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 5200.00 | 0 00 | 301 04 | 5200 00 | 2246 20 | 0.00 | 0.00 | 0 00 | 0.00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 5300 00 | 0.00 | 301 04 | 5300 00 | 2346 20 | 0 00 | 0 00 | 0 00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 5400.00 | 0.00 | 301 04 | 5400 00 | 2446 20 | 0 00 | 0 00 | 0.00 | 0 00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2 64 |
| | 5500 00 | 0.00 | 301.04 | 5500 00 | 2546.20 | 0 00 | 0 00 | 0 00 | 0.00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| Back Build 2° DLS | 5565.00 | 0.00 | 301.04 | 5565.00 | 2611 20 | 0 00 | 0 00 | 0 00 | 0.00 | 445258 68 | 608007.88 | N 32 13 25.14 | W 103 59 2.64 |
| | 5600.00 | 0 70 | 301.04 | 5600 00 | 2646.20 | -0 09 | 0.11 | -0 18 | 2 00 | 445258 79 | 608007.70 | N 32 13 25.14 | W 103 59 2 64 |
| | 5700.00 | 2.70 | 301 04 | 5699.95 | 2746 15 | -1.32 | 1.64 | -2.72 | 2.00 | 445260 32 | 608005 16 | N 32 13 25.16 | W 103 59 2 67 |
| | 5800 00 | 4 70 | 301 04 | 5799.74 | 2845.94 | -3 99 | 4 97 | -8.25 | 2 00 | 445263 65 | 607999 63 | N 32 13 25.19 | W 103 59 2.73 |
| | 5900 00 | 6.70 | 301.04 | 5899 24 | 2945 44 | -8.10 | 10 09 | -16.76 | 2.00 | 445268.77 | 607991.12 | N 32 13 25 24 | W 103 59 2.83 |
| | 6000.00 | 8.70 | 301 04 | 5998 33 | 3044 53 | -13 65 | 17.00 | -28.24 | 2.00 | 445275 67 | 607979 64 | N 32 13 25 31 | W 103 59 2 96 |
| | 6100 00 | 10 70 | 301 04 | 6096.90 | 3143.10 | -20 63 | 25 68 | -42 68 | 2 00 | 445284.36 | 607965 20 | N 32 13 25 40 | W 103 59 3.13 |
| Hold 12.50° Inclination | 6190 15 | 12 50 | 301 04 | 6185.20 | 3231.40 | -28.14 | 35 03 | -58 21 | 2 00 | 445293 71 | 607949 67 | N 32 13 25 49 | W 103 59 3.31 |
| | 6200 00 | 12.50 | 301.04 | 6194.82 | 3241.02 | -29 02 | 36 13 | -60 04 | 0 00 | 445294.81 | 607947.85 | N 32 13 25 50 | W 103 59 3 33 |
| | 6300.00 | 12.50 | 301 04 | 6292 45 | 3338.65 | -37.98 | 47 29 | -78.59 | 0 00 | 445305.97 | 607929 30 | N 32 13 25 61 | W 103 59 3.55 |
| | 6400 00 | 12 50 | 301.04 | 6390 07 | 3436.27 | -46 95 | 58 45 | -97.14 | 0 00 | 445317.13 | 607910.75 | N 32 13 25.72 | W 103 59 3.76 |
| | 6500.00 | 12.50 | 301.04 | 6487 70 | 3533.90 | -55 92 | 69.62 | -115 69 | 0.00 | 445328.29 | 607892.20 | N 32 13 25 83 | W 103 59 3 98 |
| | 6600 00 | 12.50 | 301.04 | 6585.33 | 3631.53 | -64 88 | 80 78 | -134 24 | 0 00 | 445339.45 | 607873 65 | N 32 13 25 95 | W 103 59 4.19 |
| *Bone Spring* | *6621.17* | *12.50* | *301.04* | *6606.00* | *3652.20* | *-66 76* | *83.14* | *-138.17* | *0.00* | *445341.81* | *607869 73* | *N 32 13 25.97* | *W 103 59 4.24* |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | TVDSS (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6700.00 | 12.50 | 301.04 | 6682.96 | 3729.16 | -73.85 | 91.94 | -152.79 | 0.00 | 445350.61 | 607855.10 | N 32 13 26.06 | W 103 59 4.41 |
| | 6800.00 | 12.50 | 301.04 | 6780.59 | 3826.79 | -82.81 | 103.10 | -171.34 | 0.00 | 445361.77 | 607836.56 | N 32 13 26.17 | W 103 59 4.63 |
| | 6900.00 | 12.50 | 301.04 | 6878.22 | 3924.42 | -91.78 | 114.27 | -189.89 | 0.00 | 445372.94 | 607818.01 | N 32 13 26.28 | W 103 59 4.84 |
| | 7000.00 | 12.50 | 301.04 | 6975.84 | 4022.04 | -100.74 | 125.43 | -208.44 | 0.00 | 445384.10 | 607799.46 | N 32 13 26.39 | W 103 59 5.06 |
| | 7100.00 | 12.50 | 301.04 | 7073.47 | 4119.67 | -109.71 | 136.59 | -226.99 | 0.00 | 445395.26 | 607780.91 | N 32 13 26.50 | W 103 59 5.27 |
| | 7200.00 | 12.50 | 301.04 | 7171.10 | 4217.30 | -118.67 | 147.75 | -245.54 | 0.00 | 445406.42 | 607762.36 | N 32 13 26.61 | W 103 59 5.49 |
| | 7300.00 | 12.50 | 301.04 | 7268.73 | 4314.93 | -127.64 | 158.91 | -264.09 | 0.00 | 445417.58 | 607743.81 | N 32 13 26.72 | W 103 59 5.70 |
| | 7400.00 | 12.50 | 301.04 | 7366.36 | 4412.56 | -136.61 | 170.08 | -282.64 | 0.00 | 445428.74 | 607725.27 | N 32 13 26.83 | W 103 59 5.92 |
| | 7500.00 | 12.50 | 301.04 | 7463.99 | 4510.19 | -145.57 | 181.24 | -301.19 | 0.00 | 445439.90 | 607706.72 | N 32 13 26.95 | W 103 59 6.13 |
| | 7600.00 | 12.50 | 301.04 | 7561.61 | 4607.81 | -154.54 | 192.40 | -319.74 | 0.00 | 445451.07 | 607688.17 | N 32 13 27.06 | W 103 59 6.35 |
| | 7700.00 | 12.50 | 301.04 | 7659.24 | 4705.44 | -163.50 | 203.56 | -338.29 | 0.00 | 445462.23 | 607669.62 | N 32 13 27.17 | W 103 59 6.57 |
| | 7800.00 | 12.50 | 301.04 | 7756.87 | 4803.07 | -172.47 | 214.73 | -356.84 | 0.00 | 445473.39 | 607651.07 | N 32 13 27.28 | W 103 59 6.78 |
| | 7900.00 | 12.50 | 301.04 | 7854.50 | 4900.70 | -181.43 | 225.89 | -375.39 | 0.00 | 445484.55 | 607632.52 | N 32 13 27.39 | W 103 59 7.00 |
| | 8000.00 | 12.50 | 301.04 | 7952.13 | 4998.33 | -190.40 | 237.05 | -393.93 | 0.00 | 445495.71 | 607613.98 | N 32 13 27.50 | W 103 59 7.21 |
| | 8100.00 | 12.50 | 301.04 | 8049.76 | 5095.96 | -199.36 | 248.21 | -412.48 | 0.00 | 445506.87 | 607595.43 | N 32 13 27.61 | W 103 59 7.43 |
| | 8200.00 | 12.50 | 301.04 | 8147.39 | 5193.59 | -208.33 | 259.37 | -431.03 | 0.00 | 445518.03 | 607576.88 | N 32 13 27.72 | W 103 59 7.64 |
| | 8300.00 | 12.50 | 301.04 | 8245.01 | 5291.21 | -217.30 | 270.54 | -449.58 | 0.00 | 445529.20 | 607558.33 | N 32 13 27.83 | W 103 59 7.86 |
| | 8400.00 | 12.50 | 301.04 | 8342.64 | 5388.84 | -226.26 | 281.70 | -468.13 | 0.00 | 445540.36 | 607539.78 | N 32 13 27.94 | W 103 59 8.07 |
| | 8500.00 | 12.50 | 301.04 | 8440.27 | 5486.47 | -235.23 | 292.86 | -486.68 | 0.00 | 445551.52 | 607521.24 | N 32 13 28.06 | W 103 59 8.29 |
| | 8600.00 | 12.50 | 301.04 | 8537.90 | 5584.10 | -244.19 | 304.02 | -505.23 | 0.00 | 445562.68 | 607502.69 | N 32 13 28.17 | W 103 59 8.50 |
| Drop 2° DLS | 8686.04 | 12.50 | 301.04 | 8621.90 | 5668.10 | -251.91 | 313.63 | -521.19 | 0.00 | 445572.28 | 607486.73 | N 32 13 28.26 | W 103 59 8.69 |
| | 8700.00 | 12.22 | 301.04 | 8635.53 | 5681.73 | -253.14 | 315.17 | -523.75 | 2.00 | 445573.82 | 607484.17 | N 32 13 28.28 | W 103 59 8.72 |
| | 8800.00 | 10.22 | 301.04 | 8733.62 | 5779.82 | -261.20 | 325.20 | -540.43 | 2.00 | 445583.86 | 607467.49 | N 32 13 28.38 | W 103 59 8.91 |
| | 8900.00 | 8.22 | 301.04 | 8832.32 | 5878.52 | -267.84 | 333.47 | -554.16 | 2.00 | 445592.12 | 607453.76 | N 32 13 28.46 | W 103 59 9.07 |
| | 9000.00 | 6.22 | 301.04 | 8931.52 | 5977.72 | -273.05 | 339.95 | -564.94 | 2.00 | 445598.60 | 607442.99 | N 32 13 28.52 | W 103 59 9.20 |
| | 9100.00 | 4.22 | 301.04 | 9031.10 | 6077.30 | -276.82 | 344.65 | -572.74 | 2.00 | 445603.30 | 607435.19 | N 32 13 28.57 | W 103 59 9.29 |
| | 9200.00 | 2.22 | 301.04 | 9130.94 | 6177.14 | -279.15 | 347.55 | -577.56 | 2.00 | 445606.20 | 607430.37 | N 32 13 28.60 | W 103 59 9.35 |
| | 9300.00 | 0.22 | 301.04 | 9230.91 | 6277.11 | -280.03 | 348.65 | -579.39 | 2.00 | 445607.30 | 607428.54 | N 32 13 28.61 | W 103 59 9.37 |
| Return to Vertical | 9311.19 | 0.00 | 301.04 | 9242.10 | 6288.30 | -280.04 | 348.66 | -579.41 | 2.00 | 445607.31 | 607428.52 | N 32 13 28.61 | W 103 59 9.37 |
| | 9400.00 | 0.00 | 301.04 | 9330.91 | 6377.11 | -280.04 | 348.66 | -579.41 | 0.00 | 445607.31 | 607428.52 | N 32 13 28.61 | W 103 59 9.37 |
| KOP Build 10°/100' DLS | 9411.19 | 0.00 | 301.04 | 9342.10 | 6388.30 | -280.04 | 348.66 | -579.41 | 0.00 | 445607.31 | 607428.52 | N 32 13 28.61 | W 103 59 9.37 |
| | 9500.00 | 8.88 | 179.61 | 9430.55 | 6476.75 | -273.22 | 341.79 | -579.36 | 10.00 | 445600.44 | 607428.57 | N 32 13 28.54 | W 103 59 9.37 |
| | 9600.00 | 18.88 | 179.61 | 9527.51 | 6573.71 | -249.44 | 317.83 | -579.20 | 10.00 | 445576.48 | 607428.73 | N 32 13 28.31 | W 103 59 9.37 |
| | 9700.00 | 28.88 | 179.61 | 9618.83 | 6665.03 | -209.31 | 277.40 | -578.93 | 10.00 | 445536.06 | 607429.00 | N 32 13 27.91 | W 103 59 9.36 |
| | 9800.00 | 38.88 | 179.61 | 9701.75 | 6747.95 | -154.04 | 221.72 | -578.55 | 10.00 | 445480.39 | 607429.37 | N 32 13 27.35 | W 103 59 9.36 |
| | 9900.00 | 48.88 | 179.61 | 9773.73 | 6819.93 | -85.32 | 152.50 | -578.09 | 10.00 | 445411.16 | 607429.84 | N 32 13 26.67 | W 103 59 9.36 |
| | 10000.00 | 58.88 | 179.61 | 9832.61 | 6878.81 | -5.24 | 71.82 | -577.54 | 10.00 | 445330.50 | 607430.38 | N 32 13 25.87 | W 103 59 9.36 |
| | 10100.00 | 68.88 | 179.61 | 9876.57 | 6922.77 | 83.77 | -17.85 | -576.94 | 10.00 | 445240.83 | 607430.99 | N 32 13 24.98 | W 103 59 9.35 |
| | 10200.00 | 78.88 | 179.61 | 9904.30 | 6950.50 | 179.01 | -113.79 | -576.29 | 10.00 | 445144.89 | 607431.63 | N 32 13 24.03 | W 103 59 9.35 |
| | 10300.00 | 88.88 | 179.61 | 9914.95 | 6961.15 | 277.59 | -213.10 | -575.63 | 10.00 | 445045.60 | 607432.30 | N 32 13 23.05 | W 103 59 9.34 |
| Landing Point | 10311.83 | 90.06 | 179.61 | 9915.06 | 6961.26 | 289.33 | -224.93 | -575.55 | 10.00 | 445033.77 | 607432.38 | N 32 13 22.93 | W 103 59 9.34 |
| | 10400.00 | 90.06 | 179.61 | 9914.96 | 6961.16 | 376.85 | -313.09 | -574.95 | 0.00 | 444945.61 | 607432.97 | N 32 13 22.06 | W 103 59 9.34 |
| | 10500.00 | 90.06 | 179.61 | 9914.85 | 6961.05 | 476.11 | -413.09 | -574.28 | 0.00 | 444845.62 | 607433.64 | N 32 13 21.07 | W 103 59 9.34 |
| | 10600.00 | 90.06 | 179.61 | 9914.73 | 6960.93 | 575.38 | -513.09 | -573.61 | 0.00 | 444745.63 | 607434.32 | N 32 13 20.08 | W 103 59 9.33 |
| | 10700.00 | 90.06 | 179.61 | 9914.62 | 6960.82 | 674.64 | -613.09 | -572.94 | 0.00 | 444645.64 | 607434.99 | N 32 13 19.09 | W 103 59 9.33 |
| | 10800.00 | 90.06 | 179.61 | 9914.51 | 6960.71 | 773.90 | -713.08 | -572.26 | 0.00 | 444545.65 | 607435.66 | N 32 13 18.10 | W 103 59 9.32 |
| | 10900.00 | 90.06 | 179.61 | 9914.40 | 6960.60 | 873.17 | -813.08 | -571.59 | 0.00 | 444445.66 | 607436.34 | N 32 13 17.11 | W 103 59 9.32 |
| | 11000.00 | 90.06 | 179.61 | 9914.29 | 6960.49 | 972.43 | -913.08 | -570.92 | 0.00 | 444345.67 | 607437.01 | N 32 13 16.13 | W 103 59 9.32 |
| | 11100.00 | 90.06 | 179.61 | 9914.17 | 6960.37 | 1071.69 | -1013.08 | -570.24 | 0.00 | 444245.68 | 607437.68 | N 32 13 15.14 | W 103 59 9.31 |
| | 11200.00 | 90.06 | 179.61 | 9914.06 | 6960.26 | 1170.96 | -1113.08 | -569.57 | 0.00 | 444145.69 | 607438.35 | N 32 13 14.15 | W 103 59 9.31 |
| | 11300.00 | 90.06 | 179.61 | 9913.95 | 6960.15 | 1270.22 | -1213.07 | -568.90 | 0.00 | 444045.70 | 607439.03 | N 32 13 13.16 | W 103 59 9.30 |
| | 11400.00 | 90.06 | 179.61 | 9913.84 | 6960.04 | 1369.48 | -1313.07 | -568.23 | 0.00 | 443945.71 | 607439.70 | N 32 13 12.17 | W 103 59 9.30 |
| | 11500.00 | 90.06 | 179.61 | 9913.72 | 6959.92 | 1468.75 | -1413.07 | -567.55 | 0.00 | 443845.72 | 607440.37 | N 32 13 11.18 | W 103 59 9.29 |
| | 11600.00 | 90.06 | 179.61 | 9913.61 | 6959.81 | 1568.01 | -1513.07 | -566.88 | 0.00 | 443745.73 | 607441.05 | N 32 13 10.19 | W 103 59 9.29 |
| | 11700.00 | 90.06 | 179.61 | 9913.50 | 6959.70 | 1667.27 | -1613.06 | -566.21 | 0.00 | 443645.74 | 607441.72 | N 32 13 9.20 | W 103 59 9.29 |
| | 11800.00 | 90.06 | 179.61 | 9913.39 | 6959.59 | 1766.54 | -1713.06 | -565.53 | 0.00 | 443545.76 | 607442.39 | N 32 13 8.21 | W 103 59 9.28 |
| | 11900.00 | 90.06 | 179.61 | 9913.28 | 6959.48 | 1865.80 | -1813.06 | -564.86 | 0.00 | 443445.77 | 607443.06 | N 32 13 7.22 | W 103 59 9.28 |
| | 12000.00 | 90.06 | 179.61 | 9913.16 | 6959.36 | 1965.06 | -1913.06 | -564.19 | 0.00 | 443345.78 | 607443.74 | N 32 13 6.23 | W 103 59 9.27 |
| | 12100.00 | 90.06 | 179.61 | 9913.05 | 6959.25 | 2064.33 | -2013.05 | -563.52 | 0.00 | 443245.79 | 607444.41 | N 32 13 5.24 | W 103 59 9.27 |
| | 12200.00 | 90.06 | 179.61 | 9912.94 | 6959.14 | 2163.59 | -2113.05 | -562.84 | 0.00 | 443145.80 | 607445.08 | N 32 13 4.25 | W 103 59 9.27 |
| | 12300.00 | 90.06 | 179.61 | 9912.83 | 6959.03 | 2262.85 | -2213.05 | -562.17 | 0.00 | 443045.81 | 607445.75 | N 32 13 3.26 | W 103 59 9.26 |
| | 12400.00 | 90.06 | 179.61 | 9912.71 | 6958.91 | 2362.12 | -2313.05 | -561.50 | 0.00 | 442945.82 | 607446.43 | N 32 13 2.27 | W 103 59 9.26 |
| | 12500.00 | 90.06 | 179.61 | 9912.60 | 6958.80 | 2461.38 | -2413.04 | -560.82 | 0.00 | 442845.83 | 607447.10 | N 32 13 1.28 | W 103 59 9.25 |
| | 12600.00 | 90.06 | 179.61 | 9912.49 | 6958.69 | 2560.64 | -2513.04 | -560.15 | 0.00 | 442745.84 | 607447.77 | N 32 13 0.29 | W 103 59 9.25 |
| | 12700.00 | 90.06 | 179.61 | 9912.38 | 6958.58 | 2659.91 | -2613.04 | -559.48 | 0.00 | 442645.85 | 607448.45 | N 32 12 59.30 | W 103 59 9.25 |
| | 12800.00 | 90.06 | 179.61 | 9912.27 | 6958.47 | 2759.17 | -2713.04 | -558.81 | 0.00 | 442545.86 | 607449.12 | N 32 12 58.31 | W 103 59 9.24 |
| | 12900.00 | 90.06 | 179.61 | 9912.15 | 6958.35 | 2858.43 | -2813.04 | -558.13 | 0.00 | 442445.87 | 607449.79 | N 32 12 57.32 | W 103 59 9.24 |
| | 13000.00 | 90.06 | 179.61 | 9912.04 | 6958.24 | 2957.70 | -2913.03 | -557.46 | 0.00 | 442345.88 | 607450.46 | N 32 12 56.33 | W 103 59 9.23 |
| | 13100.00 | 90.06 | 179.61 | 9911.93 | 6958.13 | 3056.96 | -3013.03 | -556.79 | 0.00 | 442245.89 | 607451.14 | N 32 12 55.34 | W 103 59 9.23 |
| | 13200.00 | 90.06 | 179.61 | 9911.82 | 6958.02 | 3156.22 | -3113.03 | -556.11 | 0.00 | 442145.90 | 607451.81 | N 32 12 54.36 | W 103 59 9.23 |
| | 13300.00 | 90.06 | 179.61 | 9911.70 | 6957.90 | 3255.49 | -3213.03 | -555.44 | 0.00 | 442045.91 | 607452.48 | N 32 12 53.37 | W 103 59 9.22 |
| | 13400.00 | 90.06 | 179.61 | 9911.59 | 6957.79 | 3354.75 | -3313.02 | -554.77 | 0.00 | 441945.92 | 607453.15 | N 32 12 52.38 | W 103 59 9.22 |
| | 13500.00 | 90.06 | 179.61 | 9911.48 | 6957.68 | 3454.01 | -3413.02 | -554.10 | 0.00 | 441845.93 | 607453.83 | N 32 12 51.39 | W 103 59 9.21 |
| | 13600.00 | 90.06 | 179.61 | 9911.37 | 6957.57 | 3553.28 | -3513.02 | -553.42 | 0.00 | 441745.94 | 607454.50 | N 32 12 50.40 | W 103 59 9.21 |
| | 13700.00 | 90.06 | 179.61 | 9911.26 | 6957.46 | 3652.54 | -3613.02 | -552.75 | 0.00 | 441645.95 | 607455.17 | N 32 12 49.41 | W 103 59 9.21 |
| | 13800.00 | 90.06 | 179.61 | 9911.14 | 6957.34 | 3751.80 | -3713.01 | -552.08 | 0.00 | 441545.96 | 607455.85 | N 32 12 48.42 | W 103 59 9.20 |
| | 13900.00 | 90.06 | 179.61 | 9911.03 | 6957.23 | 3851.07 | -3813.01 | -551.41 | 0.00 | 441445.97 | 607456.52 | N 32 12 47.43 | W 103 59 9.20 |
| | 14000.00 | 90.06 | 179.61 | 9910.92 | 6957.12 | 3950.33 | -3913.01 | -550.73 | 0.00 | 441345.98 | 607457.19 | N 32 12 46.44 | W 103 59 9.19 |
| | 14100.00 | 90.06 | 179.61 | 9910.81 | 6957.01 | 4049.59 | -4013.01 | -550.06 | 0.00 | 441245.99 | 607457.86 | N 32 12 45.45 | W 103 59 9.19 |
| | 14200.00 | 90.06 | 179.61 | 9910.69 | 6956.89 | 4148.86 | -4113.01 | -549.39 | 0.00 | 441146.00 | 607458.54 | N 32 12 44.46 | W 103 59 9.19 |
| | 14300.00 | 90.06 | 179.61 | 9910.58 | 6956.78 | 4248.12 | -4213.00 | -548.71 | 0.00 | 441046.01 | 607459.21 | N 32 12 43.47 | W 103 59 9.18 |
| | 14400.00 | 90.06 | 179.61 | 9910.47 | 6956.67 | 4347.38 | -4313.00 | -548.04 | 0.00 | 440946.02 | 607459.88 | N 32 12 42.48 | W 103 59 9.18 |
| | 14500.00 | 90.06 | 179.61 | 9910.36 | 6956.55 | 4446.65 | -4413.00 | -547.37 | 0.00 | 440846.03 | 607460.56 | N 32 12 41.49 | W 103 59 9.17 |
| | 14600.00 | 90.06 | 179.61 | 9910.25 | 6956.45 | 4545.91 | -4513.00 | -546.70 | 0.00 | 440746.04 | 607461.23 | N 32 12 40.50 | W 103 59 9.17 |
| | 14700.00 | 90.06 | 179.61 | 9910.13 | 6956.33 | 4645.17 | -4612.99 | -546.02 | 0.00 | 440646.05 | 607461.90 | N 32 12 39.51 | W 103 59 9.16 |
| | 14800.00 | 90.06 | 179.61 | 9910.02 | 6956.22 | 4744.44 | -4712.99 | -545.35 | 0.00 | 440546.06 | 607462.57 | N 32 12 38.52 | W 103 59 9.16 |
| Cedar Canyon 16 State 33H BHL | 14818.79 | 90.06 | 179.61 | 9910.00 | 6956.20 | 4763.08 | -4731.78 | -545.22 | 0.00 | 440527.28 | 607462.70 | N 32 12 38.34 | W 103 59 9.16 |

**Survey Type:** Non-Def Plan

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

**Survey Program:**

| Description | Part | MD From (ft) | MD To (ft) | EOU Freq (ft) | Hole Size (in) | Casing Diameter (in) | Expected Max Inclination (deg) | Survey Tool Type | Borehole / Survey |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 0.000 | 26.500 | 1/100.000 | 30.000 | 30.000 | | NAL_MWD_HDGM-Depth Only | Original Borehole / Oxy Cedar Canyon 16 State 33H Rev0 MMC |
| | 1 | 26.500 | 14818.785 | 1/100.000 | 30.000 | 30.000 | | NAL_MWD_HDGM | Original Borehole / Oxy Cedar Canyon 16 State 33H Rev0 MMC |

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Submit Original to Appropriate District Office

# GAS CAPTURE PLAN

Date: 6-28-2016

☒ Original

Operator & OGRID No.: OXY USA INC. - 16696

☐ Amended - Reason for Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

*Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).*

## Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

| Well Name | API | Well Location (ULSTR) | Footages | Expected MCF/D | Flared or Vented | Comments |
|---|---|---|---|---|---|---|
| Cedar Canyon 16 State #33H | Pending | Unit A Sec. 16, T24S, R29E | 402FNL 1123FEL | 1,598 | 0 | |
| Cedar Canyon 16 State #34H | Pending | Unit A Sec. 16, T24S, R29E | 402FNL 1083FEL | 1,598 | 0 | |

## Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, where a gas transporter system is in place. The gas produced from production facility is dedicated to Enterprise Field Services, LLC ("Enterprise") and is connected to Enterprise low/high pressure gathering system located in Eddy County, New Mexico. OXY USA INC. ("OXY") provides (periodically) to Enterprise a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, OXY and Enterprise have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at OXY USA WTP LP Processing Plant located in Sec. 23, Twn. 21S, Rng. 23E, Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

## Flowback Strategy

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

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

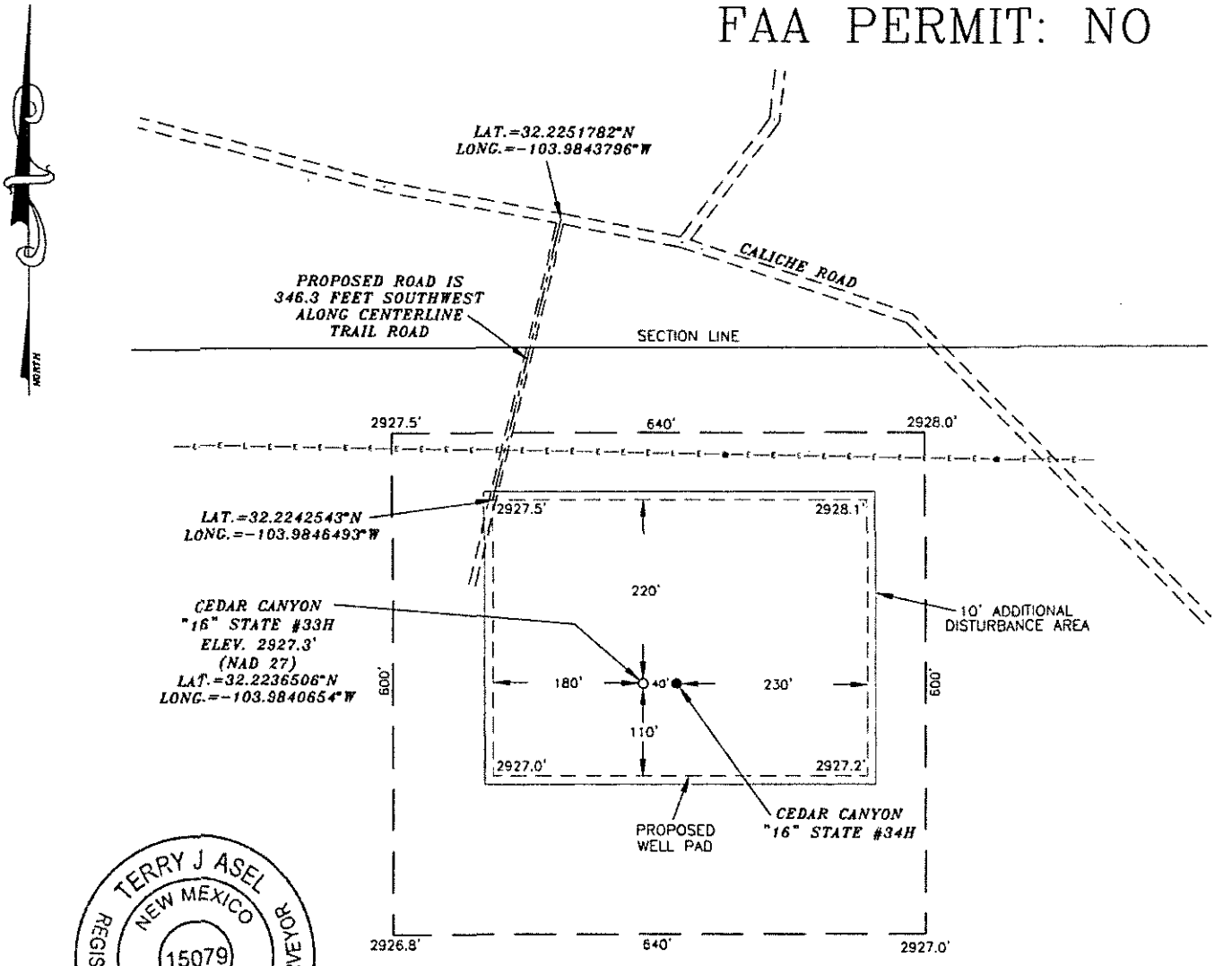
## Alternatives to Reduce Flaring

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

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

# OXY USA INC.
## CEDAR CANYON "16" STATE #33H
## SITE PLAN

## FAA PERMIT: NO




TERRY J ASEL
NEW MEXICO
15079
REGISTERED PROFESSIONAL LAND SURVEYOR

***LEGEND***

- - - - DENOTES PROPOSED WELL PAD
———— DENOTES PROPOSED ROAD

200' 0 200' 400' FEET
SCALE: 1"=200'

**SURVEYORS CERTIFICATE**

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel 5/23/2016
Terry J. Asel N.M. R.P.L.S. No. 15079

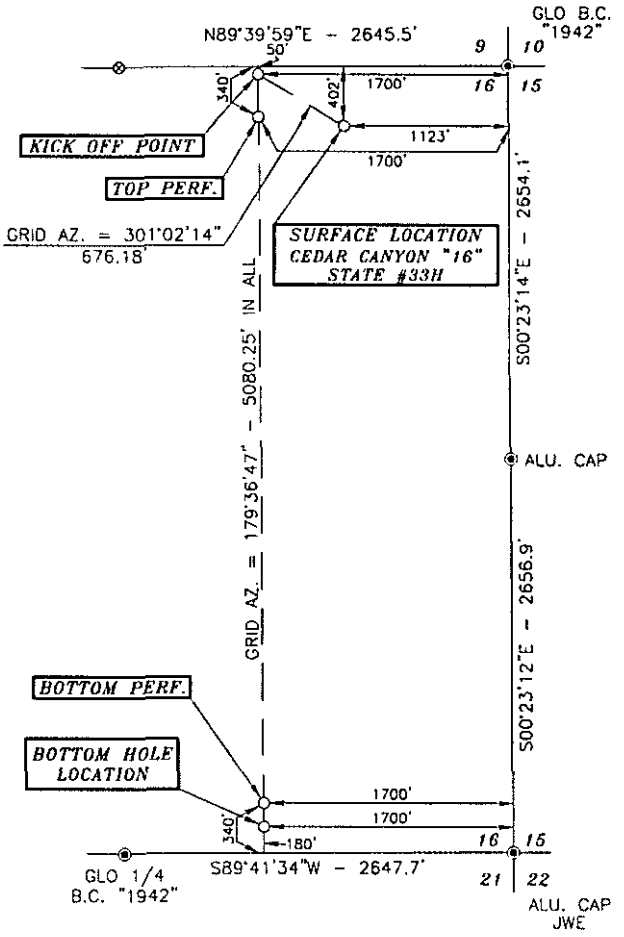

Asel Surveying
P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146

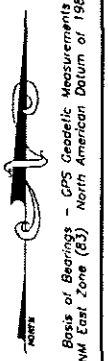

# OXY USA INC.

CEDAR CANYON "16" STATE #33H LOCATED AT 402' FNL & 1123' FEL IN SECTION 16, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

| | | |
|---|---|---|
| Survey Date: 04/19/16 | Sheet 1 of 1 Sheets | |
| W.O. Number: 160419WL-a | Drawn By: KA | Rev: |
| Date: 05/17/16 | 160419WL-a | Scale:1"=200' |

# SECTION 16, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY NEW MEXICO




DRIVING DIRECTIONS:
FROM THE INTERSECTION OF U.S. HWY. #285 AND BLACK RIVER VILLAGE ROAD IN MALAGA, GO EAST ON COUNTY ROAD #720 FOR 1.3 MILES, TURN RIGHT ON COUNTY ROAD #746 (MCDONALD ROAD) AND GO SOUTH FOR 0.8 MILES, CONTINUE SOUTHEAST/EAST FOR 4.8 MILES, CURVE TO THE LEFT FOR 0.4 MILES, TURN LEFT AND GO WEST FOR 0.1 MILES, TURN RIGHT AND GO NORTH FOR 0.4 MILES, TURN LEFT AND GO WEST FOR 0.3 MILES, TURN RIGHT AND GO NORTH FOR 0.5 MILES, GO EAST FOR 0.2 MILES, GO NORTH FOR 0.1 MILES, TURN LEFT AND GO NORTHERLY FOR 1.6 MILES, TURN LEFT ON PROPOSED ROAD AND GO SOUTHWEST FOR 346.3 FEET TO LOCATION.


*LEGEND*
⊛ – DENOTES FOUND MONUMENT AS NOTED
⊗ – DENOTES CALCULATED CORNER

1000' 0 1000' 2000' FEET
SCALE: 1"=1000'

SURVEYORS CERTIFICATE

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel 5/23/2016
Terry J. Asel, N.M. R.P.L.S. No. 15079

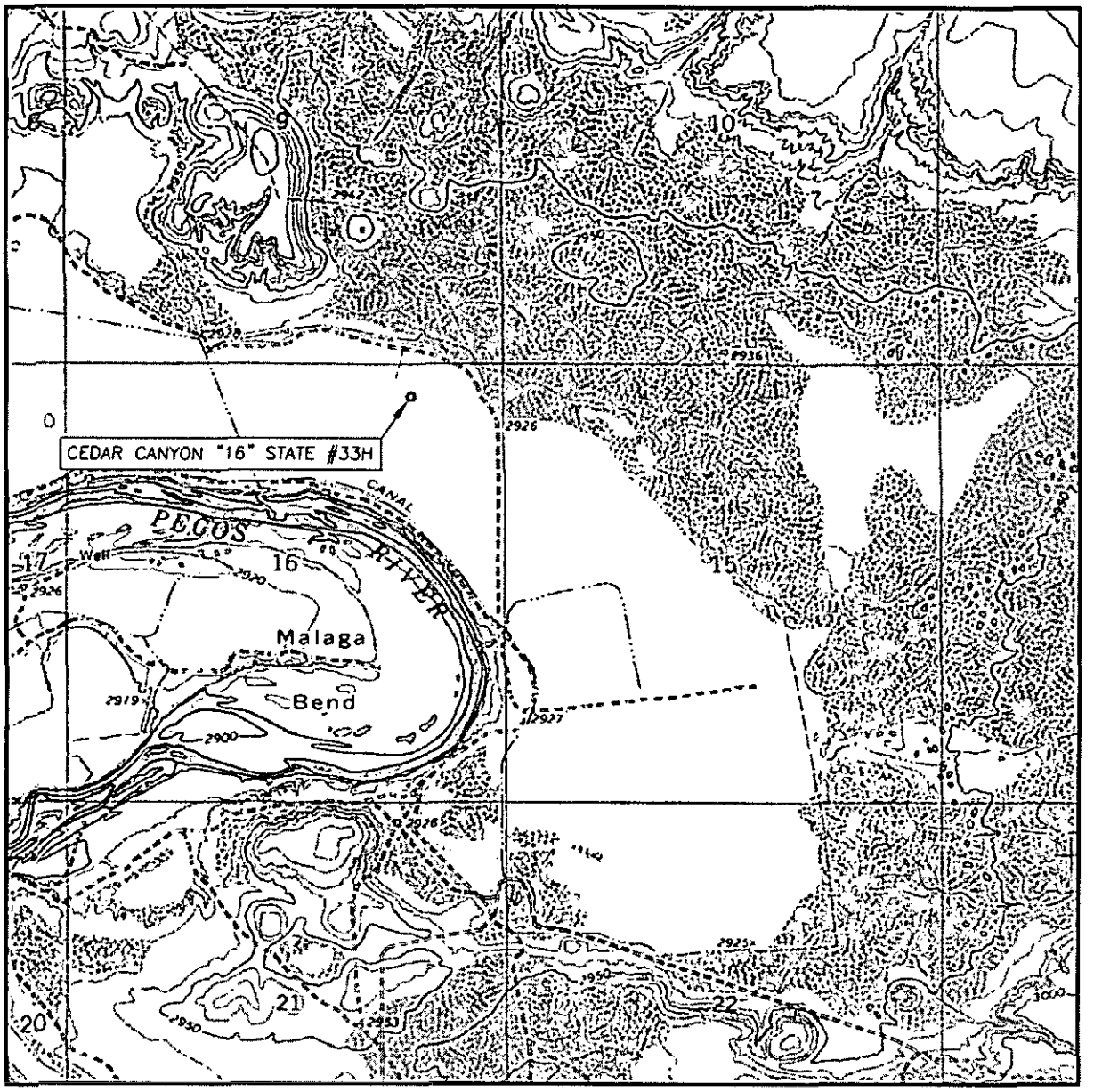

Asel Surveying
P.O. BOX 393 – 310 W. TAYLOR
HOBBS, NEW MEXICO – 575-393-9146


# OXY USA INC.

CEDAR CANYON "16" STATE #33H LOCATED AT 402' FNL & 1123' FEL IN SECTION 16, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

| | | |
|---|---|---|
| Survey Date: 04/19/16 | Sheet 1 of 1 Sheets | |
| W.O. Number: 160419WL-a | Drawn By: KA | Rev: |
| Date: 05/17/16 | 160419WL-a | Scale:1"=1000' |

# LOCATION VERIFICATION MAP




SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'

SEC. 16 TWP. 24-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 402' FNL & 1123' FEL

ELEVATION 2927.3'

OPERATOR OXY USA INC.

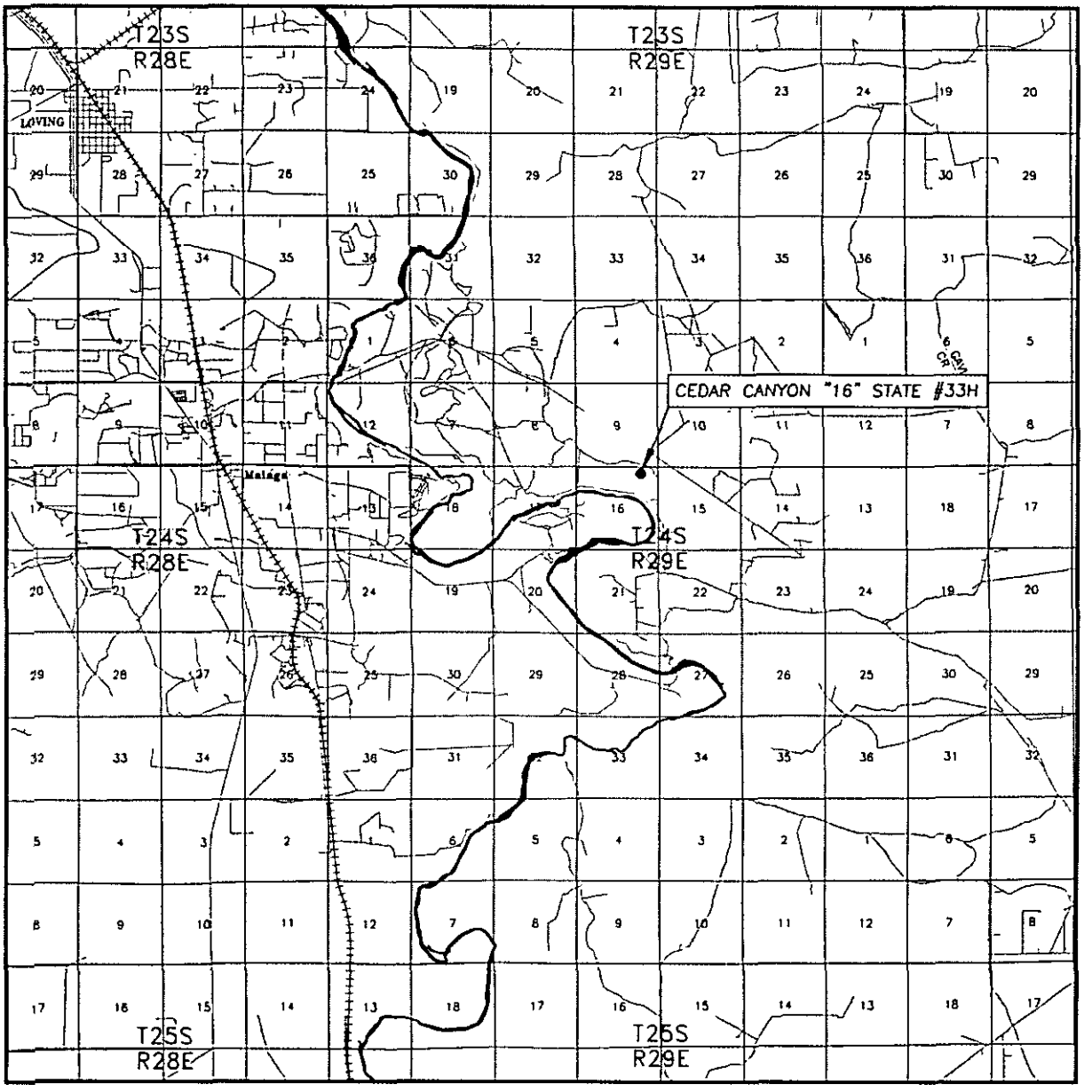
LEASE CEDAR CANYON "16" STATE #33H

U.S.G.S. TOPOGRAPHIC MAP
PIERCE CANYON, N.M.

Asel Surveying

P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146

# VICINITY MAP




SCALE: 1" = 2 MILES

SEC. 16 TWP. 24-S RGE. 29-E
SURVEY N.M.P.M.
COUNTY EDDY
DESCRIPTION 402' FNL & 1123' FEL
ELEVATION 2927.3'
OPERATOR OXY USA INC.
LEASE CEDAR CANYON "16" STATE #33H


Asel Surveying
P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146


DIRECTIONS FROM THE INTERSECTION OF U.S. HWY. #285 AND BLACK RIVER VILLAGE ROAD IN MALAGA, GO EAST ON COUNTY ROAD #720 FOR 1.3 MILES, TURN RIGHT ON COUNTY ROAD #746 (MCDONALD ROAD) AND GO SOUTH FOR 0.8 MILES, CONTINUE SOUTHEAST/EAST FOR 4.8 MILES, CURVE TO THE LEFT FOR 0.4 MILES, TURN LEFT AND GO WEST FOR 0.1 MILES, TURN RIGHT AND GO NORTH FOR 0.4 MILES, TURN LEFT AND GO WEST FOR 0.3 MILES, TURN RIGHT AND GO NORTH FOR 0.5 MILES, GO EAST FOR 0.2 MILES, GO NORTH FOR 0.1 MILES, TURN LEFT AND GO NORTHERLY FOR 1.6 MILES, TURN LEFT ON PROPOSED ROAD AND GO SOUTHWEST FOR 346.3 FEET TO LOCATION.

# AERIAL MAP


SCALE: NOT TO SCALE

SEC. 16 TWP. 24-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 402' FNL & 1123' FEL

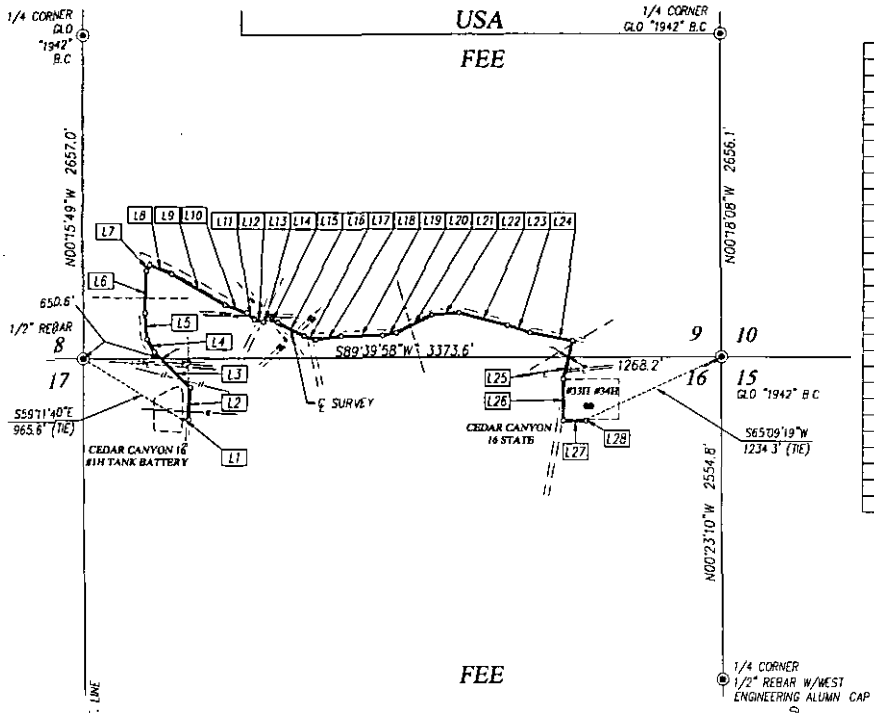
ELEVATION 2927.3'

OPERATOR OXY USA INC.

LEASE CEDAR CANYON "16" STATE #33H

Asel Surveying

P.O. BOX 393 - 310 W. TAYLOR
HOBBS, NEW MEXICO - 575-393-9146




**LINE TABLE**

| LINE | BEARING | DISTANCE |
|---|---|---|
| L1 | S88°19'32"E | 52.9' |
| L2 | N02°46'50"E | 262.7' |
| L3 | N45°49'29"W | 416.1' |
| L4 | N30°41'22"W | 122.2' |
| L5 | N04°36'13"W | 217.4' |
| L6 | N01°30'48"E | 346.1' |
| L7 | N38°49'12"E | 58.5' |
| L8 | S68°06'19"E | 188.3' |
| L9 | S60°07'55"E | 510.0' |
| L10 | S70°37'24"E | 194.2' |
| L11 | S48°35'31"E | 81.1' |
| L12 | S74°27'16"E | 77.4' |
| L13 | N47°02'25"E | 42.4' |
| L14 | S70°31'49"E | 93.5' |
| L15 | S62°48'49"E | 242.5' |
| L16 | S72°48'09"E | 101.7' |
| L17 | N82°05'39"E | 211.5' |
| L18 | N89°49'58"E | 344.7' |
| L19 | N79°05'39"E | 115.6' |
| L20 | N63°09'24"E | 328.8' |
| L21 | N85°02'22"E | 227.2' |
| L22 | S75°40'31"E | 412.4' |
| L23 | S72°31'03"E | 194.8' |
| L24 | S79°28'08"E | 359.3' |
| L25 | S13°30'18"W | 325.2' |
| L26 | S00°19'20"E | 340.1' |
| L27 | N89°41'42"E | 190.0' |
| L28 | N00°05'49"W | 10.1' |

| | | | | |
|---|---|---|---|---|
| 0+00 | BEGIN SURVEY E. EDGE PAD | | | |
| 0+38 | 4W O/H ELEC. LINE | | | |
| 0+52.9 | P.I. 88°53'30" LT. | | | |
| 1+19 | OXY BPL & 2-3" POLY SURF. LINE | | | |
| 1+24.2 | 4W O/H ELEC. LINE | | | |
| 1+34 | 2 BURIED OXY WTR. LINES | | | |
| 3+12.6 | P.I. 48°36'19" LT. | | | |
| 3+36 | 4W O/H ELEC. LINE | | | |
| 4+08 | OXY GAS LINE BPL | | | |
| 5+75 | 4W O/H ELEC. LINE | | | |
| 6+15 | 4W O/H ELEC. LINE | | | |
| 6+56.4 | E-W SEC. LINE | | | |
| 7+31.7 | P.I. 15°08'07" RT. | | | |
| 8+53.9 | P.I. 26°05'09" RT. | | | |
| 10+71.3 | P.I. 06°17'01" RT. | | | |
| 11+90 | 2' X 1' IRR DITCH | | | |
| EQUATION 14+17.4 B.K. = 32+64.7 F.W.D. | | | | |
| 33+23.2 | P.I. 37°18'34" RT. | | | |
| 35+11.5 | P.I. 33°04'26" RT. | | | |
| 40+21.6 | P.I. 07°58'24" RT. | | | |
| 42+15.7 | P.I. 10°29'28" LT. | | | |
| 42+40 | P.I. 22°01'53" RT. | | | |
| 42+96.8 | C.L. 5D X 45°W IRR. DITCH | | | |
| 43+74.2 | P.I. 23°51'45" LT. | | | |
| 44+16.6 | P.I. 58°30'19" LT. | | | |
| 44+62 | P.I. 59°25'46" RT. | | | |
| 45+10.1 | C.L. IRR. DITCH | | | |
| 46+88 | P.I. 07°43'00" RT. | | | |
| 47+52.6 | C.L. IRR. DITCH | | | |
| 48+04 | P.I. 09°59'20" LT. | | | |
| 48+54.3 | C.L. LEASE RD. | | | |
| 50+65.8 | P.I. 25°06'12" LT. | | | |
| 54+10.5 | P.I. 07°44'19" RT. | | | |
| 55+26.1 | P.I. 15°56'15" LT. | | | |
| 56+58 | FENCE LN. | | | |
| 58+54.9 | P.I. 21°52'58" RT. | | | |
| 60+82.1 | P.I. 19°17'02" RT. | | | |
| 64+94.5 | P.I. 01°09'28" RT. | | | |
| 66+89.3 | P.I. 06°57'06" LT. | | | |
| 70+46.6 | P.I. 90°58'26" RT. | | | |
| 70+83 | C.L. IRR. DITCH | | | |
| 72+93 | UNMARKED BPL | | | |
| 73+14 | 4W O/H ELECTRIC LINE | | | |
| 73+73.8 | P.I. 13°49'38" LT. | | | |
| 76+54 | 2-TRACK TRAIL ROAD | | | |
| 77+13.9 | P.I. 89°58'58" LT. | | | |
| 77+22.6 | C.L. IRR. DITCH | | | |
| 79+03.9 | P.I. 89°47'31" LT. | | | |
| 79+14.0 | END SURVEY AT EDGE OF PAD | | | |

## DESCRIPTION

SURVEY FOR A PIPELINE CROSSING SECTIONS 9 & 16, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE NORTHWEST QUARTER OF SECTION 16, WHICH LIES S59°11'40"E 965.6 FEET FROM THE NORTHWEST CORNER OF SAID SECTION 16; THEN S88°19'32"E 52.9 FEET; THEN N02°46'50"E 262.7 FEET; THEN N45°49'29"E 416.1 FEET, THEN N30°41'22"W 122.2 FEET; THEN N04°36'13"W 217.4 FEET; THEN N01°30'48"E 346.1 FEET; THEN N38°49'12"E 58.5 FEET; THEN S68°06'19"E 188.3 FEET; THEN S60°07'56"E 510.0 FEET; THEN S70°37'24"E 194.2 FEET; THEN S48°35'31"E 81.1 FEET; THEN S74°27'16"E 77.4 FEET; THEN N47°02'25"E 42.4 FEET; THEN S70°31'49"E 93.5 FEET; THEN S62°48'49"E 242.5 FEET; THEN S72°48'09"E 101.7 FEET; THEN N82°05'39"E 211.5 FEET; THEN N89°49'58"E 344.7 FEET; THEN N79°05'39"E 115.6 FEET; THEN N63°09'24"E 328.8 FEET; THEN N85°02'22"E 227.2 FEET; THEN S75°40'31"E 412.4 FEET; THEN S72°31'03"E 194.8 FEET; THEN S79°28'08"E 359.3 FEET; THEN S13°30'18"W 325.2 FEET; THEN S00°19'20"E 340.1 FEET; THEN N89°41'42"E 190.0 FEET; THEN N00°05'49"W 10.1 FEET TO A POINT IN THE NORTHEAST QUARTER OF SAID SECTION 16, WHICH LIES S65°09'19"W 1234.3 FEET FROM THE NORTHEAST CORNER OF SAID SECTION 16

TOTAL LENGTH EQUALS 6066.7 FEET OR 367.68 RODS.

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY: THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON Ronald J. Eidson

DATE: 5/24/2016

STATE OF NEW MEXICO 3239 PROFESSIONAL SURVEYOR


PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
NMPLS# 10021000

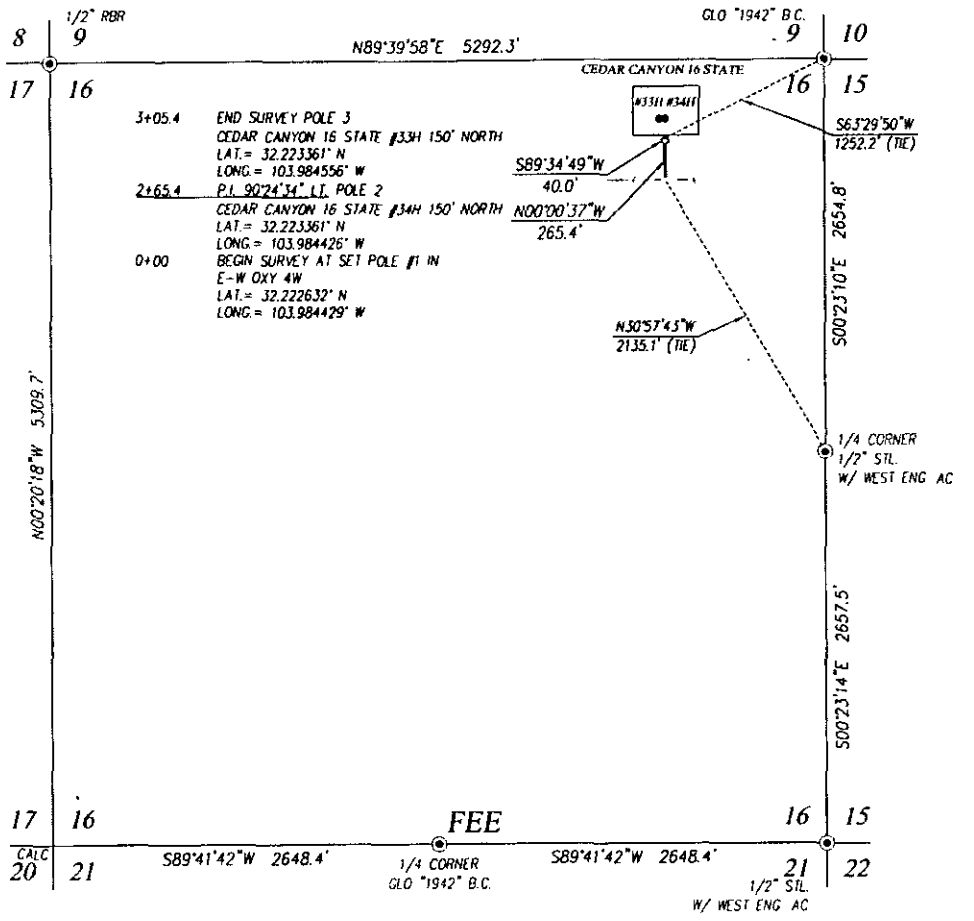

**NOTE**

BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

# OXY U.S.A. INC.

SURVEY FOR A SURFACE PIPELINE FROM THE CEDAR CANYON 16 #1H TANK BATTERY TO THE CEDAR CANYON 16 STATE #33H CROSSING SECTIONS 9 & 16, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

| | | | |
|---|---|---|---|
| Survey Date: 4/27/16 | CAD Date: 5/20/16 | | Drawn By: LSL |
| W.O. No.: 16110326 | Rev: . | Rel. W.O.: | Sheet 1 of 1 |




## DESCRIPTION

SURVEY FOR AN ELECTRIC LINE CROSSING SECTION 16, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE NORTHEAST QUARTER, WHICH LIES N30°57'43"W 2135.1 FEET FROM THE EAST QUARTER CORNER; THEN N00°00'37"W 265.4 FEET; THEN S89°34'49"W 40.0 FEET TO A POINT, WHICH LIES S63°29'50"W 1252.2 FEET FROM THE NORTHEAST CORNER.

TOTAL LENGTH EQUALS 305.4 FEET OR 18.51 RODS.

## NOTE

1) BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

2) LATITUDE AND LONGITUDE VALUES SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN DATUM 1983 (NAD83).

I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

RONALD J. EIDSON Ronald J. Eidson

DATE: 5/25/2016

## LEGEND

◉ DENOTES FOUND CORNER AS NOTED

1000 0 1000 2000 FEET

Scale: 1"=1000'

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(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

# OXY U.S.A. INC.

## SURVEY FOR AN ELECTRIC LINE TO THE CEDAR CANYON 16 STATE #33H & #34H CROSSING SECTION 16, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, NEW MEXICO

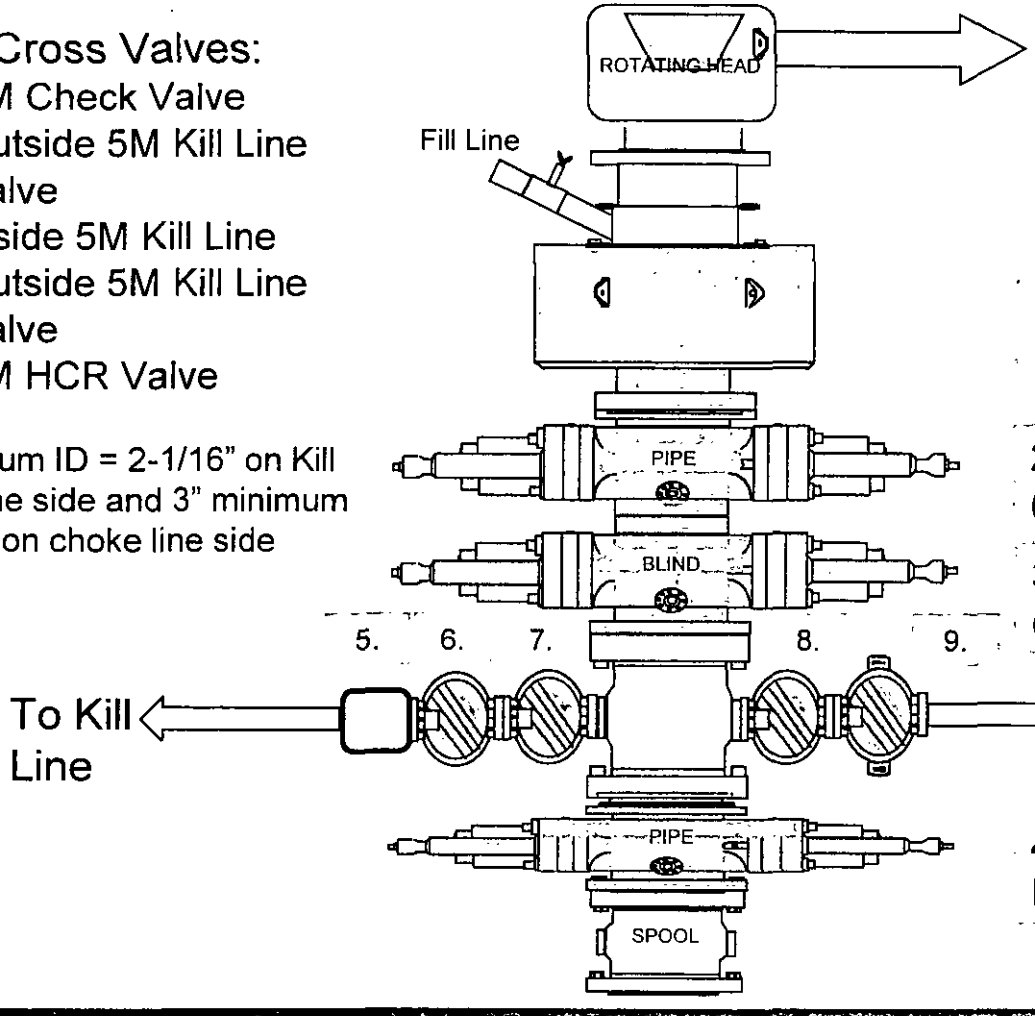
| Survey Date: 5/6/16 | CAD Date: 5/20/16 | Drawn By: LSL |
|---|---|---|
| W.O. No.: 16110322 | Rev: . | Rel. W.O.: | Sheet 1 of 1 |

# 5M BOP Stack

Mud Cross Valves:

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

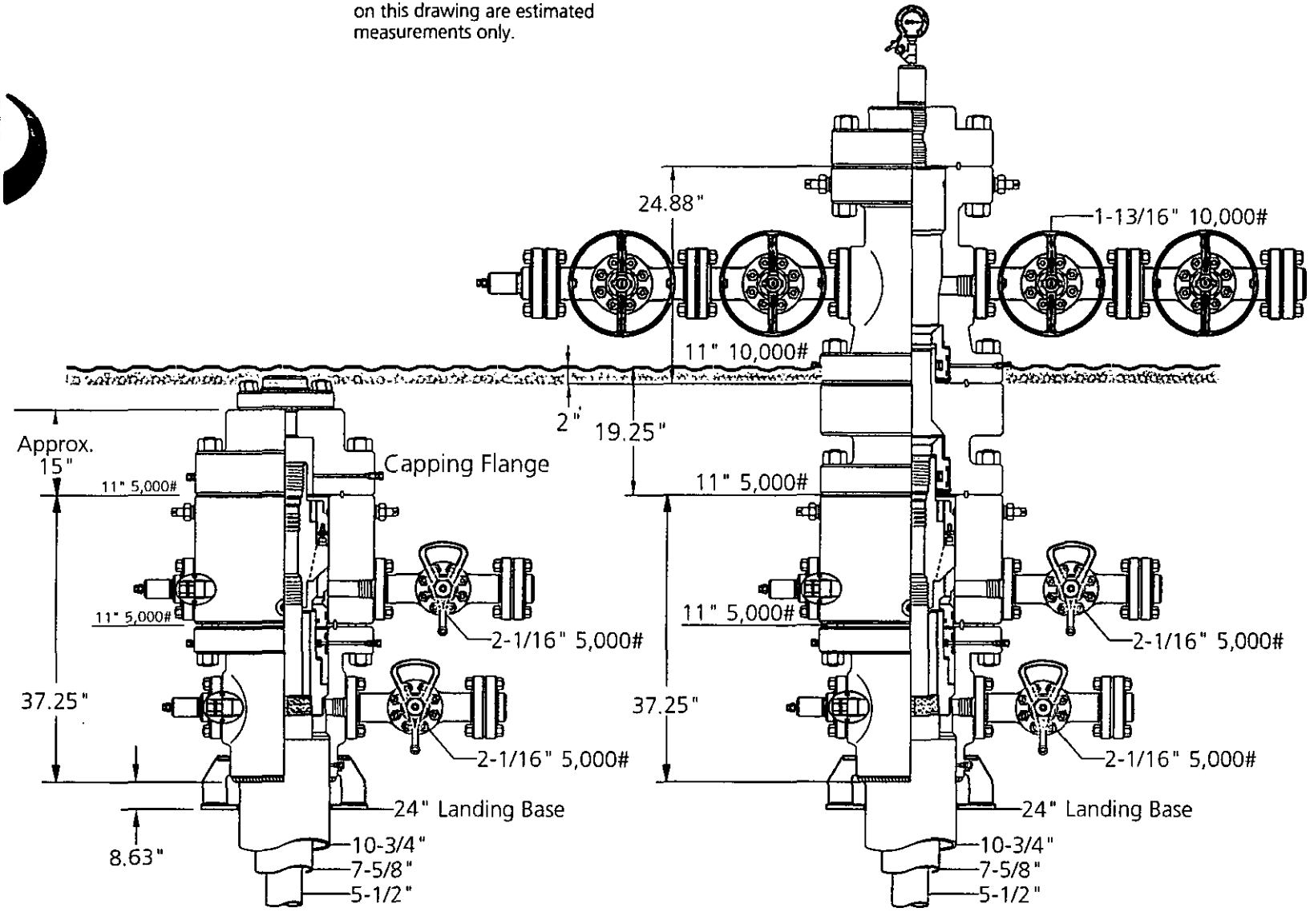
*Minimum ID = 2-1/16" on Kill Line side and 3" minimum ID on choke line side




1. 5000 psi Annular (13-3/8" ID)
2. 5,000 psi Upper Pipe Ram (13-3/8" ID)
3. 5,000 psi Blind Ram (13-3/8" ID)
4. 5,000 psi Lower Pipe Ram (13-3/8" ID)

11" 10K MBS w/ 5.5" Mandrel

Note: Dimensional information reflected on this drawing are estimated measurements only.



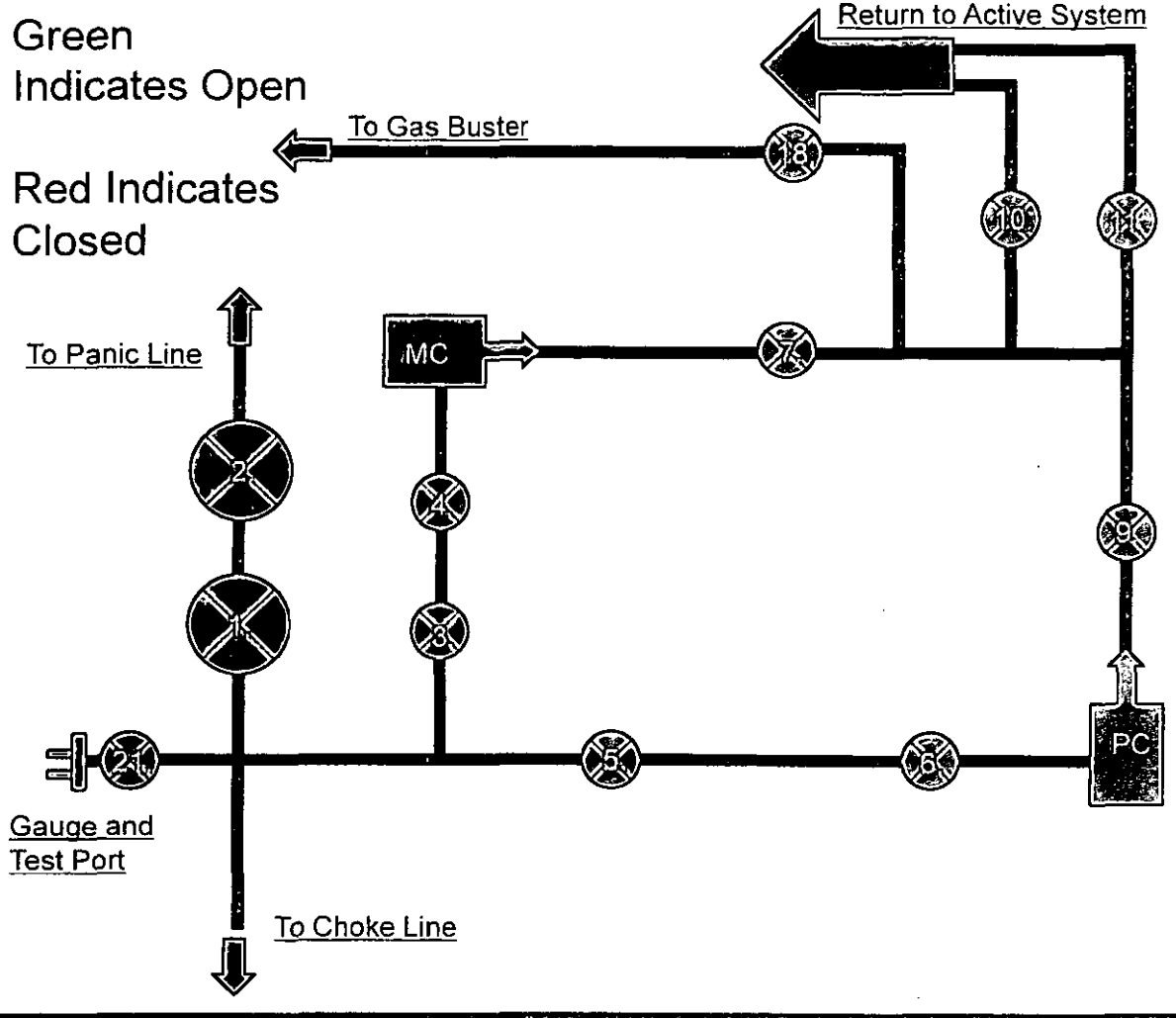

| Name | Date | Working Pressure | # |
|---|---|---|---|
| Jeanette | 8-5-15 | | J-9579-4 |

CAMERON

# 5M Choke Panel

Green
Indicates Open

Red Indicates
Closed




1. 4" Choke Manifold Valve
2. 4" Choke Manifold Valve
3. 3" Choke Manifold Valve
4. 3" Choke Manifold Valve
5. 3" Choke Manifold Valve
6. 3" Choke Manifold Valve
7. 3" Choke Manifold Valve
8. **PC – Power Choke**
9. 3" Choke Manifold Valve
10. 3" Choke Manifold Valve
11. Choke Manifold Valve
12. **MC – Manual Choke**

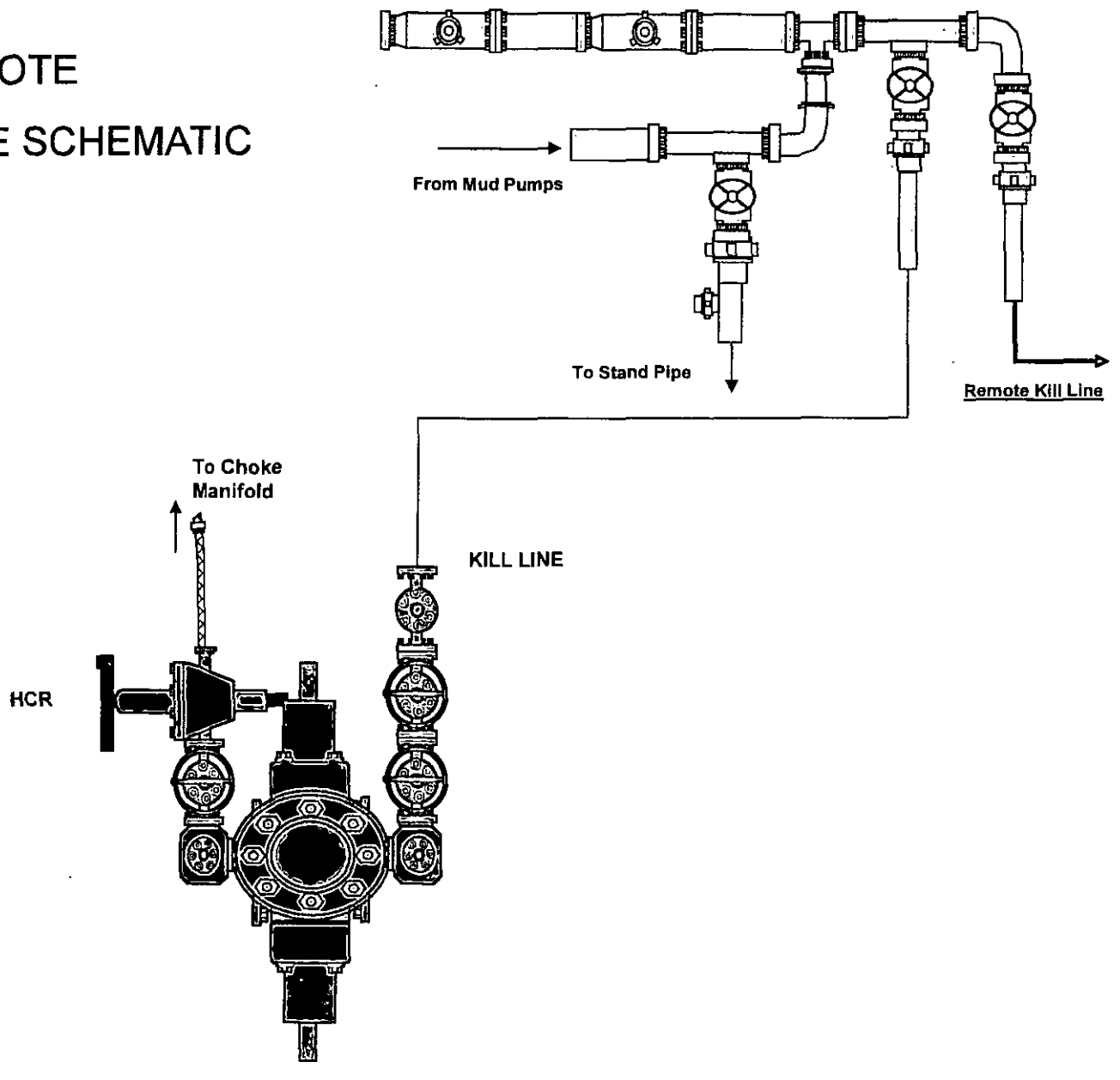
18. Choke Manifold Valve

21. Vertical Choke Manifold Valve

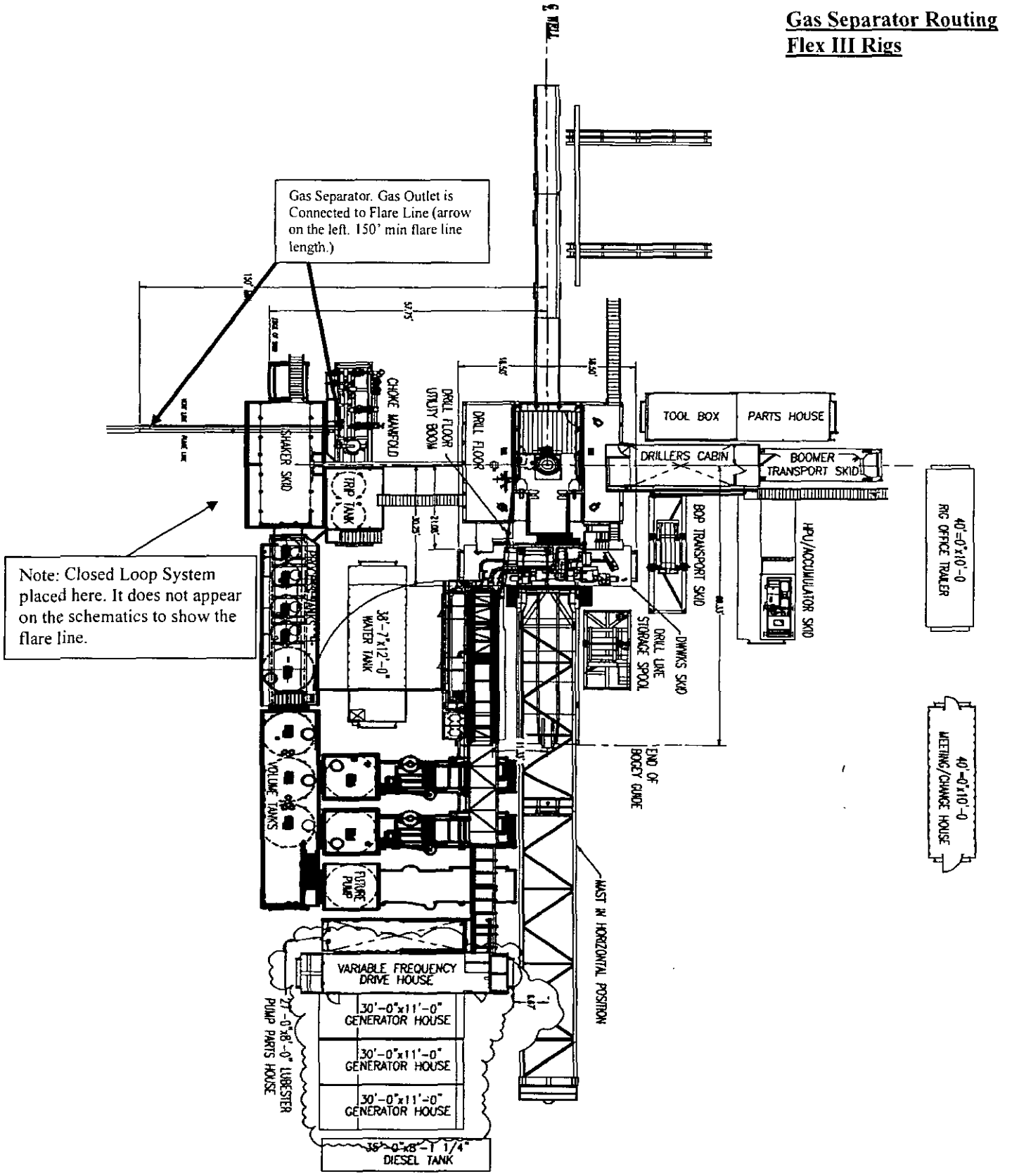
***All Valves 3" minimum**

# 10M REMOTE

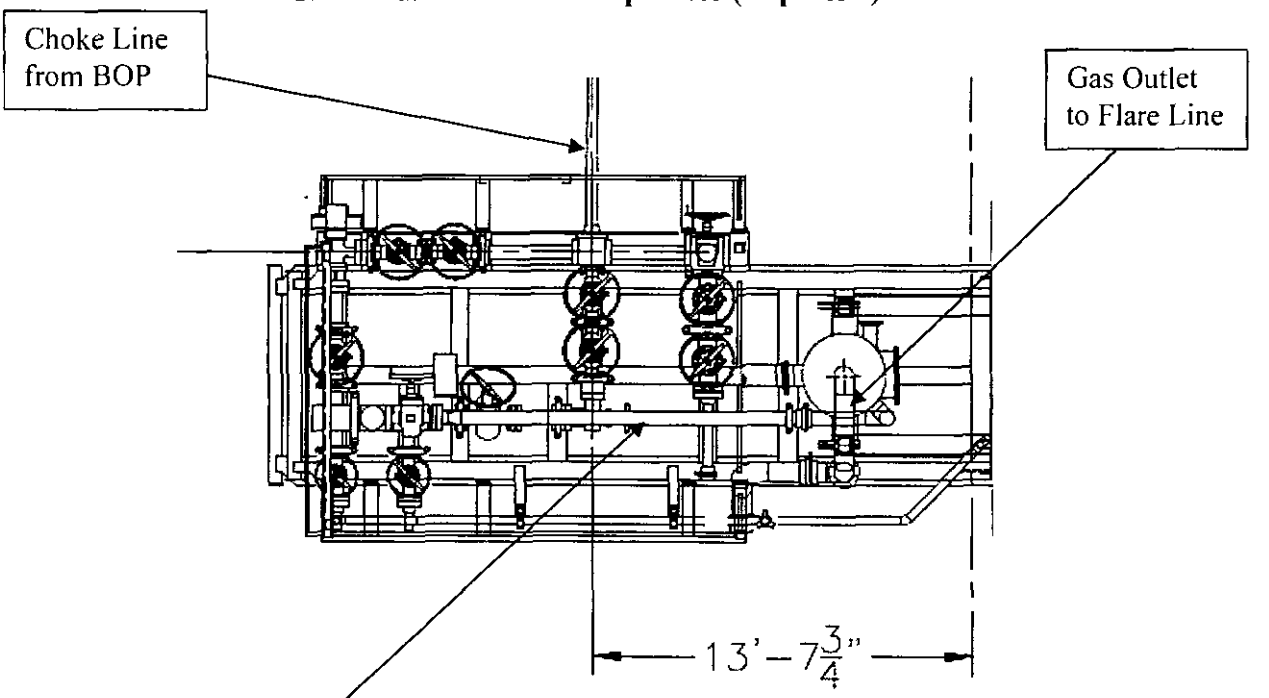
# KILL LINE SCHEMATIC



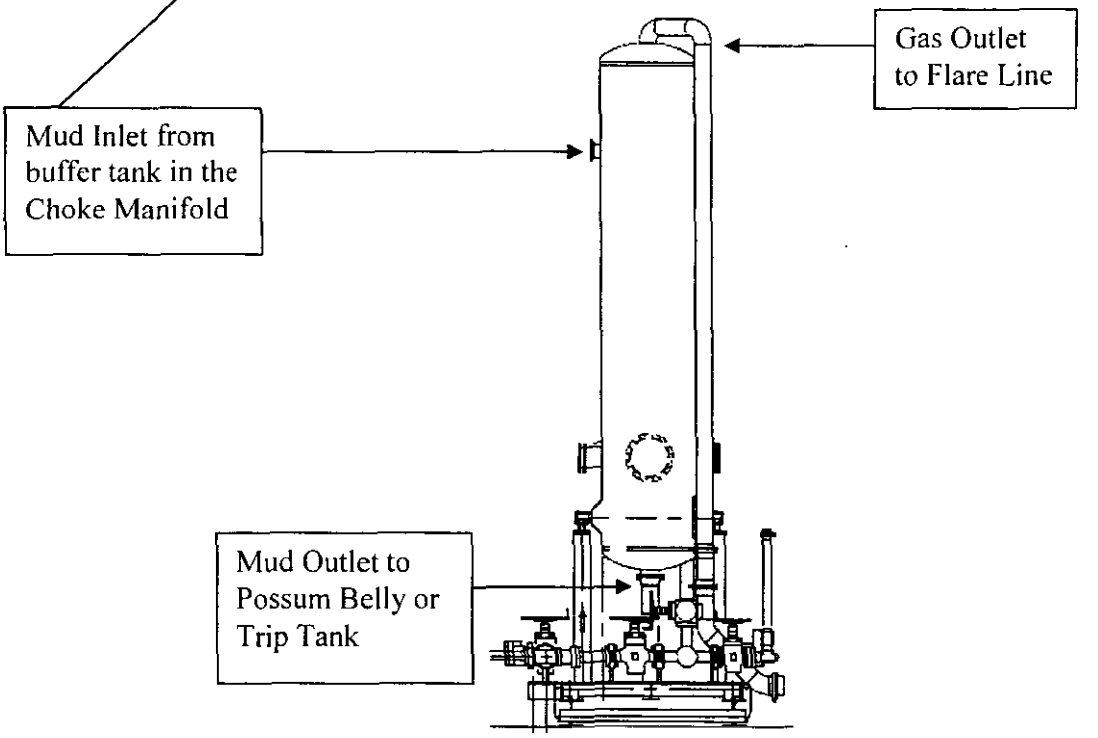
## Gas Separator Routing
## Flex III Rigs



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

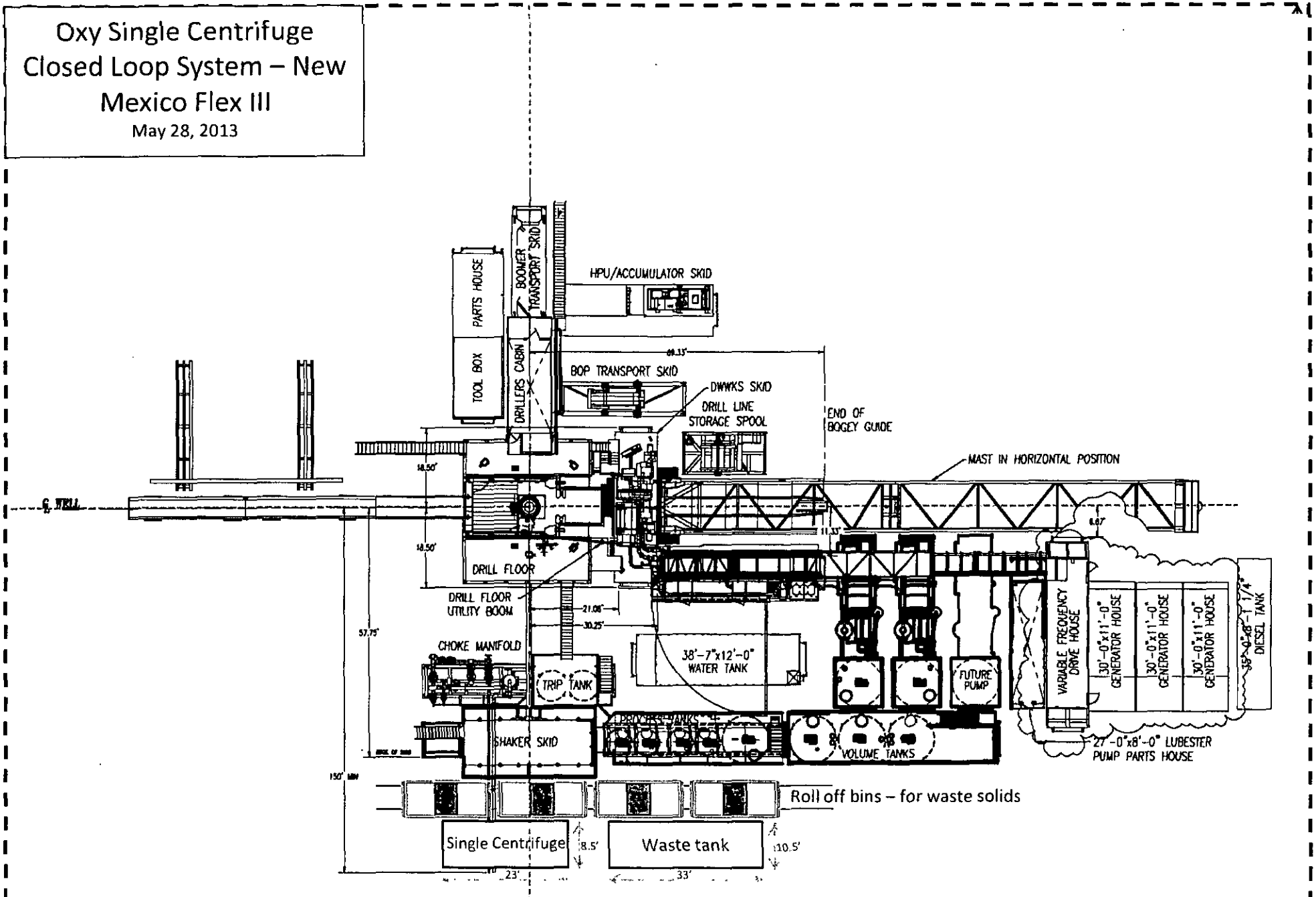



**Choke Manifold – Gas Separator (Side View)**

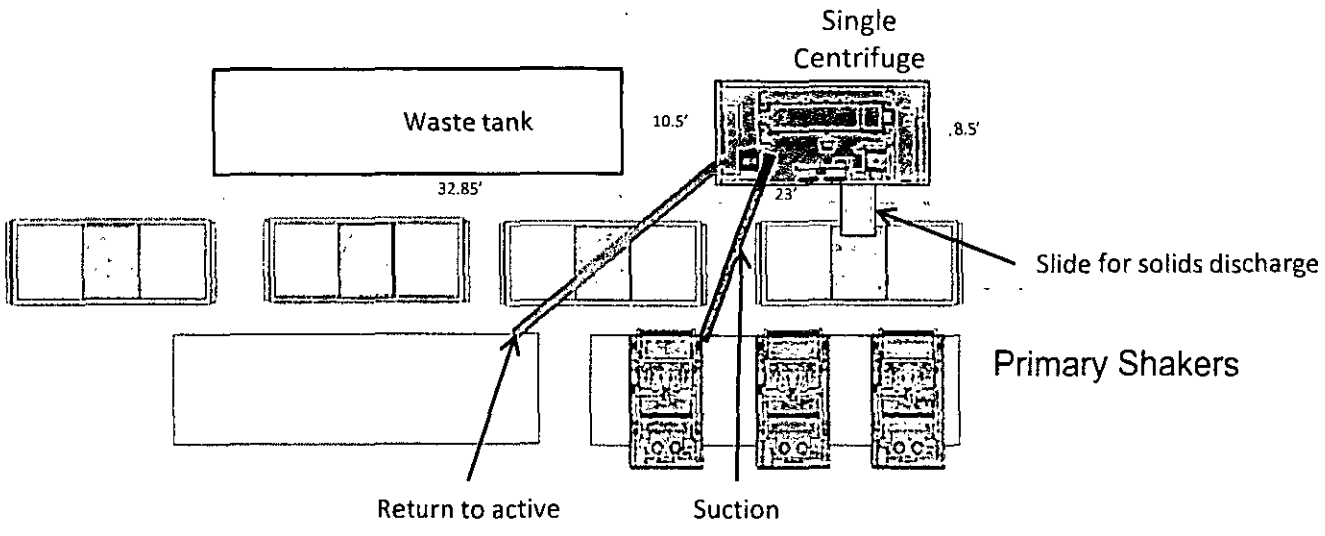


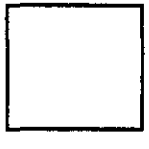
# Oxy Single Centrifuge Closed Loop System – New Mexico Flex III

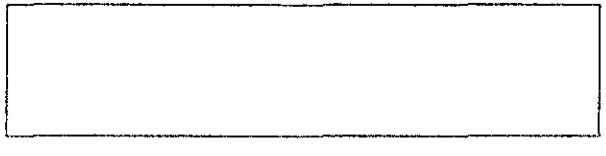
May 28, 2013



Oxy



Oxy Single Centrifuge Closed Loop System – New Mexico Flex III

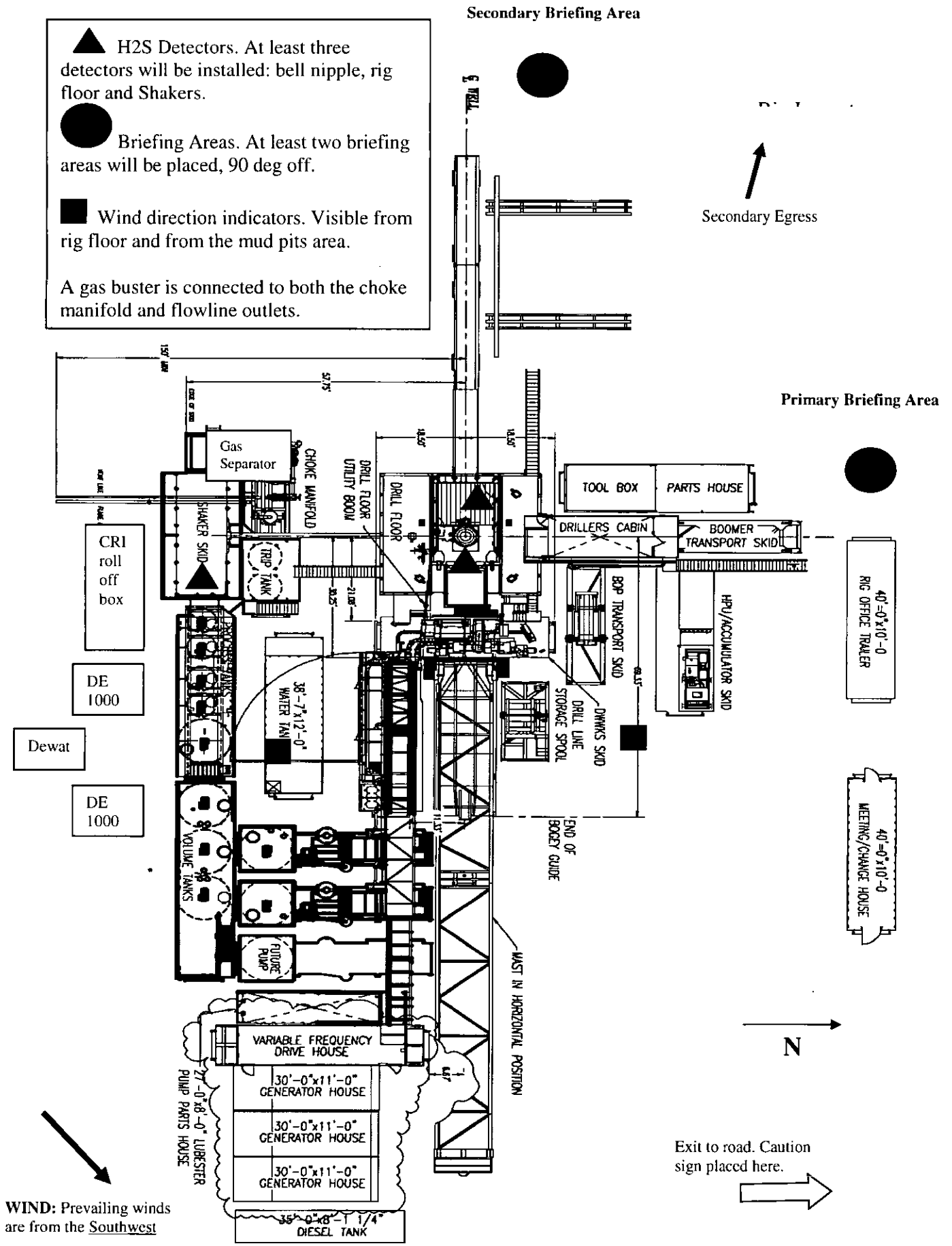
May 28, 2013

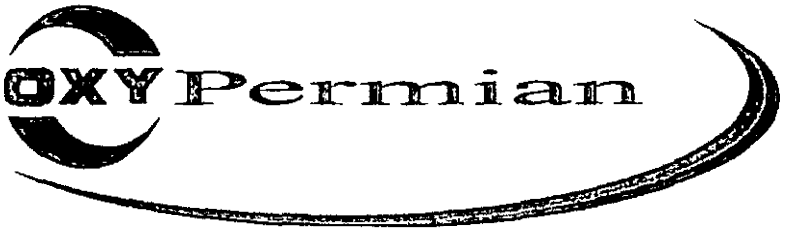
# Permian Drilling
# Hydrogen Sulfide Drilling Operations Plan
# Cedar Canyon 16 State 33H

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

1. Escape

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


▲ H2S Detectors. At least three detectors will be installed: bell nipple, rig floor and Shakers.
● Briefing Areas. At least two briefing areas will be placed, 90 deg off.
■ Wind direction indicators. Visible from rig floor and from the mud pits area.
A gas buster is connected to both the choke manifold and flowline outlets.
Secondary Briefing Area
Secondary Egress
Primary Briefing Area
Gas Separator
CHOKE MANIFOLD
DRILL FLOOR UTILITY BOOM
DRILL FLOOR
SHAKER SKID
TRIP TANK
TOOL BOX
PARTS HOUSE
DRILLERS CABIN
BOOMER TRANSPORT SKID
BOP TRANSPORT SKID
HPU/ACCUMULATOR SKID
DRILL LINE STORAGE SPOOL
DWKKS SKID
40'-0"x10'-0" RIG OFFICE TRAILER
40'-0"x10'-0" MEETING/CHANGE HOUSE
CR1 roll off box
DE 1000
Dewat
DE 1000
38'-7"x12'-0" WATER TAN
VOLUME TANKS
FUTURE PUMP
END OF BOGEY GUIDE
MAST IN HORIZONTAL POSITION
VARIABLE FREQUENCY DRIVE HOUSE
30'-0"x11'-0" GENERATOR HOUSE
30'-0"x11'-0" GENERATOR HOUSE
30'-0"x11'-0" GENERATOR HOUSE
27'-0"x8'-0" LUBESTER PUMP PARTS HOUSE
35'-0"x8'-1 1/4" DIESEL TANK
N
WIND: Prevailing winds are from the Southwest
Exit to road. Caution sign placed here.




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

## Scope

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

## Objective

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

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

3. Provide proper evacuation procedures to cope with emergencies.

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

## Discussion

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

## Hydrogen Sulfide Training

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

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

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

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

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

Service company and visiting personnel

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

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

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

## Emergency Equipment Requirements

1. Well control equipment

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

*Special control equipment:*

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

2. Protective equipment for personnel

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

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

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

- Rig floor and trailers.
- Vehicle.

3. Hydrogen sulfide sensors and alarms

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

4. Visual Warning Systems

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

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

*Wind sock – wind streamers:*

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

*Condition flags*

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

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

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

5. Mud Program

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

*Mud inspection devices:*

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

6. Metallurgy

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

7. Well Testing

No drill stem test will be performed on this well.

8. Evacuation plan

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

9. Designated area

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

## Emergency procedures

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

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

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

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

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

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

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

B. If uncontrollable conditions occur:

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

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

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

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

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

C. Responsibility:

1. Designated personnel.

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

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

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

**Taking a kick**

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

**Open-hole logging**

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

**Running casing or plugging**

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

## Ignition procedures

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

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

Instructions for igniting the well

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

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

## Status check list

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

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

Checked by:_____ Date:_____

## Procedural check list during H2S events

**Perform each tour:**

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

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

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

**Perform each week:**

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

2. BOP skills (well control drills).

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

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

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

6. Confirm pressure on all supply air bottles.

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

8. Check the following supplies for availability.

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

## General evacuation plan

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

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

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

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

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

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

## Emergency actions

Well blowout – if emergency

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

Person down location/facility

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

## Toxic effects of hydrogen sulfide

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

Table i
Toxicity of various gases

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

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

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

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

## Toxic effects of hydrogen sulfide

Table ii
Physical effects of hydrogen sulfide

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

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

*at 15.00 psia and 60°f.

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

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

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

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

4. Maintenance and care of SCBA's:

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

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

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

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

6. SCBA's should be worn when:

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

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

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

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

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

## Rescue
## First aid for H2S poisoning

Do not panic!

Remain calm – think!

1. Don SCBA breathing equipment.

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

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

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

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

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

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

Revised CM 6/27/2012

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

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

Form APD Comments

Permit 223008

## PERMIT COMMENTS

| Operator Name and Address: | API Number: |
|---|---|
| OXY USA INC [16696]<br>PO Box 4294<br>Houston, TX 77210 | Well:<br>CEDAR CANYON 16 STATE #033H |

| Created By | Comment | Comment Date |
|---|---|---|
| stewartd | Top Perforated Interval: 340 FNL 1700 FEL B 16-24S-29E - Lat: 32.2238170 Long: 103.99859319 Bottom Perforated Interval: 340 FSL 1700 FEL O 16-24S-29E - Lat: 32.2110889 Long: 103.9858796 A closed loop system will be utilized consisting of above ground steel tanks and haul-off bins. Disposal of liquids, drilling fluids and cuttings will be disposed of at an approved facility. | 6/28/2016 |
| stewartd | The following wells are in the Corral Draw/East Pierce Crossing Bone Spring Pools. 1. Cedar Canyon 16 State #2H – 30-015-41024 – TVD 8626' – Units P-O-N-M – 2nd Bone Spring 2. Cedar Canyon 16 State #6H – 30-015-41595 – TVD 8620' – Units I-J-K-L – 2nd Bone Spring 3. Cedar Canyon 16 State #7H – 30-015-41251 – TVD 8644' – Units H-G-F-E – 2nd Bone Spring 4. Cedar Canyon 16 State #8H – 30-015-41596 – TVD 8618' – Units A-B-C-D – 2nd Bone Spring 5. Cedar Canyon 16 State #12H – 30-015-42683 – TVD 8624' – Units P-O-N-M – 2nd Bone Spring 6. H. Buck State #3 – 30-015-33820 – TVD 7675' – Units A-B-C – 1st | 6/29/2016 |
| stewartd | Bone Spring 7. H. Buck State #4H – 30-015-34444 – TVD 7689' – Units H-G-F – 1st Bone Spring 8. H. Buck State #5 – 30-015-335042 – TVD 7630' – Units I-J-K – 1st Bone Spring 9. H. Buck State #10 – 30-015-34695 – TVD 7692' – Units P-O-N-M – 1st Bone Spring | 6/29/2016 |

NMOCD CONDITION OF APPROVAL

The *New!* Gas Capture Plan (GCP) notice is posted on the NMOCD website under Announcements. The Plan became effective May 1, 2016. A copy of the GCP form is included with the NOTICE and is also in our FORMS section under Unnumbered Forms. Please review filing dates for all applicable activities currently approved or pending and submit accordingly. Failure to file a GCP may jeopardize the operator's ability to obtain C-129 approval to flare gas after the initial 60-day completion period.