

**NM OIL CONSERVATION**

ARTESIA DISTRICT

Form 3160-3  
(March 2012)

30 2017

RECEIVED

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**APPLICATION FOR PERMIT TO DRILL OR REENTER**

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

5. Lease Serial No.  
NMNM53229

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No. *Com*  
CEDAR CANYON 29 FEDERAL 25H *314329*

9. API Well No.  
*30-015-44522*

1a. Type of work:  DRILL  REENTER

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

2. Name of Operator  
OXY USA INCORPORATED

*16696*

3a. Address  
5 Greenway Plaza, Suite 110 Houston TX 770

3b. Phone No. (include area code)  
(713)366-5716

10. Field and Pool, or Exploratory  
PIERCE CROSSING; BONE SPRING / 2

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*  
At surface NWSW / 1640 FSL / 420 FWL / LAT 32.1856453 / LONG -104.0138024  
At proposed prod. zone NESE / 1400 FSL / 180 FEL / LAT 32.1849111 / LONG -103.9986622

11. Sec., T. R. M. or Blk. and Survey or Area  
SEC 29 / T24S / R29E / NMP

14. Distance in miles and direction from nearest town or post office\*  
6 miles

12. County or Parish  
EDDY

13. State  
NM

15. Distance from proposed\* location to nearest property or lease line, ft. *50 feet*  
(Also to nearest drig. unit line, if any)

16. No. of acres in lease  
280

17. Spacing Unit dedicated to this well  
160

18. Distance from proposed location\* to nearest well, drilling, completed, 30 feet applied for, on this lease, ft.

19. Proposed Depth  
8625 feet / 13384 feet

20. BLM/BIA Bond No. on file  
FED: ESB000226

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
2929 feet

22. Approximate date work will start\*  
11/04/2017

23. Estimated duration  
20 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification   |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM.             |

25. Signature (Electronic Submission)	Name (Printed/Typed) David Stewart / Ph: (713)366-5716	Date 05/02/2017
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Title  
Sr. Regulatory Advisor

Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 10/20/2017
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Title  
Supervisor Multiple Resources

Office  
CARLSBAD

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

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

(Continued on page 2)

\*(Instructions on page 2)

NM OIL CONSERVATION  
ARTESIA DISTRICT

OCT 30 2017

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**APPROVED WITH CONDITIONS**

*11-2-2017*  
*RWP*

**APD Package Report**

Date Printed: 10/23/2017 08:14 AM

APD ID: 10400013659	Well Status: AAPD
APD Received Date: 05/02/2017 02:43 PM	Well Name: CEDAR CANYON 29 FEDERAL
Operator: OXY USA INCORPORATED	Well Number: 25H

## APD Package Report Contents

- Form 3160-3
- Operator Certification Report
- Application Report
- Application Attachments
  - Well Plat: 1 file(s)
- Drilling Plan Report
- Drilling Plan Attachments
  - Blowout Prevention Choke Diagram Attachment: 1 file(s)
  - Blowout Prevention BOP Diagram Attachment: 2 file(s)
  - Casing Design Assumptions and Worksheet(s): 5 file(s)
  - Hydrogen sulfide drilling operations plan: 2 file(s)
  - Proposed horizontal/directional/multi-lateral plan submission: 2 file(s)
  - Other Facets: 3 file(s)
- SUPO Report
- SUPO Attachments
  - Existing Road Map: 1 file(s)
  - Attach Well map: 1 file(s)
  - Production Facilities map: 1 file(s)
  - Water source and transportation map: 2 file(s)
  - Well Site Layout Diagram: 2 file(s)
  - Other SUPO Attachment: 4 file(s)
- PWD Report
- PWD Attachments
  - None
- Bond Report
- Bond Attachments
  - None

**NM OIL CONSERVATION**  
ARTESIA DISTRICT  
OCT 30 2017  
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**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	OXY USA INC.
LEASE NO.:	NMNM53229
WELL NAME & NO.:	25H -CEDAR CANYON 29 FEDERAL
SURFACE HOLE FOOTAGE:	1640'/S & 420'/W
BOTTOM HOLE FOOTAGE:	1400'/S & 180'/E
LOCATION:	Section 29 T.24 S., R.29 E., NMPM
COUNTY:	EDDY County, New Mexico

Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input checked="" type="radio"/> Medium	<input type="radio"/> High
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP

**A. Hydrogen Sulfide**

1. Hydrogen Sulfide (H<sub>2</sub>S) monitors shall be installed prior to drilling out the surface shoe. If H<sub>2</sub>S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

**B. CASING**

1. The **10 3/4** inch surface casing shall be set at approximately **400** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength,

## **Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

whichever is greater.

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

2. The minimum required fill of cement behind the 7 5/8 inch intermediate casing is:

**Operator has proposed a contingency DV tool at 2844'. If operator circulates cement on the first stage, operator is approved to inflate the ACP and run the DV tool cancellation plug and cancel the second stage of the proposed cement plan. If cement does not circulate, operator will inflate ACP and proceed with the second stage.**

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

❖ In **Medium Cave / Karst Areas** if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the 4 1/2 inch production liner is:

- Cement should tie-back at least **100** feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 15% - additional cement might be required.**

### **C. PRESSURE CONTROL**

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.**
  - a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**

- b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
- c. **Manufacturer representative shall install the test plug for the initial BOP test.**
- d. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

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

##### **Communitization Agreement**

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

##### **Waste Minimization Plan (WMP)**

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

**MHH 09122017**

## GENERAL REQUIREMENTS

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

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

Chaves and Roosevelt Counties

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

During office hours call (575) 627-0272.

After office hours call (575)

Eddy County

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

(575) 361-2822

Lea County

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

393-3612

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

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

A. CASING

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

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

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after

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

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	OXY USA INC.
LEASE NO.:	NMNM53229
WELL NAME & NO.:	25H -CEDAR CANYON 29 FEDERAL
SURFACE HOLE FOOTAGE:	1640'/S & 420'/W
BOTTOM HOLE FOOTAGE:	1400'/S & 180'/E
LOCATION:	Section 29 T.24 S., R.29 E., NMPM
COUNTY:	EDDY County, New Mexico

**TABLE OF CONTENTS**

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

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Wildlife
  - Karst
  - Watershed/Water Quality
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

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

## **II. PERMIT EXPIRATION**

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

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

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

## **IV. NOXIOUS WEEDS**

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

## V. SPECIAL REQUIREMENT(S)

### **Power and Flowlines are not approved at this time a Sundry will need to be done.**

**Ground-level Abandoned Well Marker to avoid raptor perching:** Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

#### **Watershed/Water Quality:**

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

#### **Cave/Karst Surface Mitigation**

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

**Construction:**

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

**No Blasting:**

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

**Pad Berming:**

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

**Tank Battery Liners and Berms:**

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

**Leak Detection System:**

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

**Automatic Shut-off Systems:**

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

**Cave/Karst Subsurface Mitigation**

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

**Rotary Drilling with Fresh Water:**

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

**Directional Drilling:**

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

**Lost Circulation:**

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

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

**Abandonment Cementing:**

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

**Pressure Testing:**

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



## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

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

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

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

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

### **D. FEDERAL MINERAL MATERIALS PIT**

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

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

### **F. EXCLOSURE FENCING (CELLARS & PITS)**

**Exclosure Fencing**

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

**G. ON LEASE ACCESS ROADS****Road Width**

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

**Surfacing**

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

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

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

**Crowning**

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

**Ditching**

Ditching shall be required on both sides of the road.

**Turnouts**

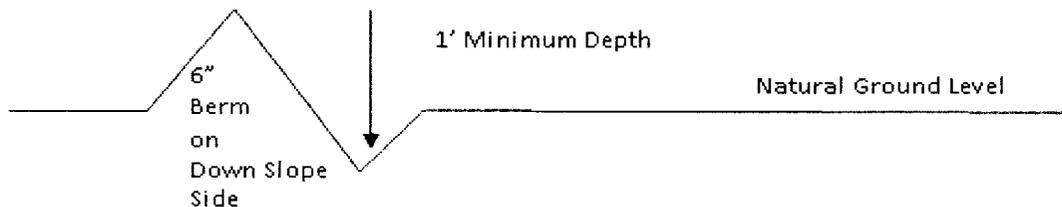
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Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out-sloping and in-sloping, lead-off ditches, culvert installation, and low water crossings).

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

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



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

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

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An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

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

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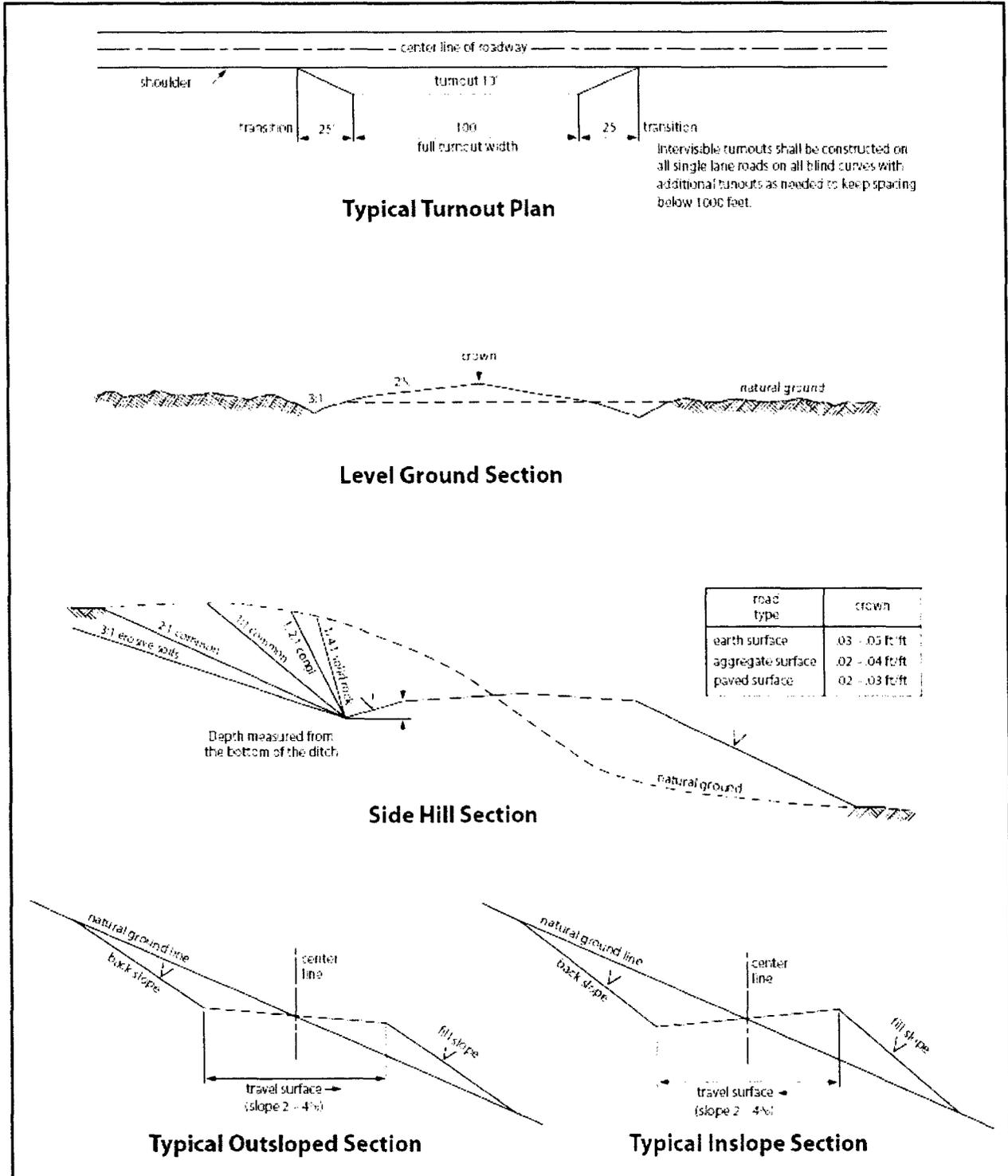


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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### A. WELL STRUCTURES & FACILITIES

#### **Placement of Production Facilities**

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

#### **Exclosure Netting (Open-top Tanks)**

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

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#### **Containment Structures**

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

#### **Painting Requirement**

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

**B. Power and Flowlines are not approved at this time a Sundry will need to be done.**

### **VIII. INTERIM RECLAMATION**

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

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

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

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

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

### **IX. FINAL ABANDONMENT & RECLAMATION**

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

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

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

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

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 2, for Sandy Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

\*Pounds of pure live seed:

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

## PECOS DISTRICT SURFACE USE CONDITIONS OF APPROVAL

OPERATOR'S NAME:	OXY USA INC.
LEASE NO.:	NMNM53229
WELL NAME & NO.:	25H -CEDAR CANYON 29 FEDERAL
SURFACE HOLE FOOTAGE:	1640'/S & 420'/W
BOTTOM HOLE FOOTAGE:	1400'/S & 180'/E
LOCATION:	Section 29 T.24 S., R.29 E., NMPM
COUNTY:	EDDY County, New Mexico

### TABLE OF CONTENTS

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

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Wildlife
  - Karst
  - Watershed/Water Quality
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

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

## **II. PERMIT EXPIRATION**

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

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

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

## **IV. NOXIOUS WEEDS**

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

## V. SPECIAL REQUIREMENT(S)

### **Power and Flowlines are not approved at this time a Sundry will need to be done.**

**Ground-level Abandoned Well Marker to avoid raptor perching:** Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

#### **Watershed/Water Quality:**

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

#### **Cave/Karst Surface Mitigation**

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

**Construction:**

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

**No Blasting:**

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

**Pad Berming:**

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
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**Tank Battery Liners and Berms:**

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

**Leak Detection System:**

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

**Automatic Shut-off Systems:**

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

**Cave/Karst Subsurface Mitigation**

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

**Rotary Drilling with Fresh Water:**

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

**Directional Drilling:**

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

**Lost Circulation:**

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

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

**Abandonment Cementing:**

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

**Pressure Testing:**

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

## **VI. CONSTRUCTION**

### **A. NOTIFICATION**

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

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

### **B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

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Tanks are required for drilling operations: No Pits.

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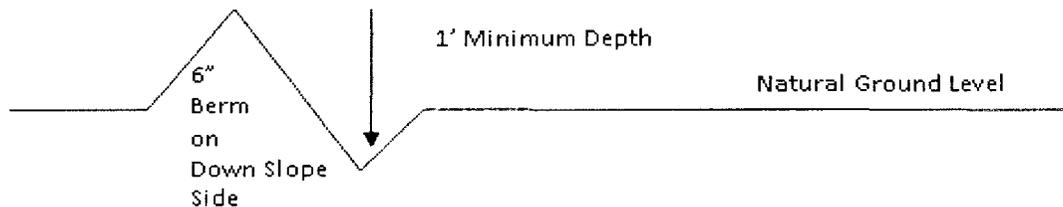
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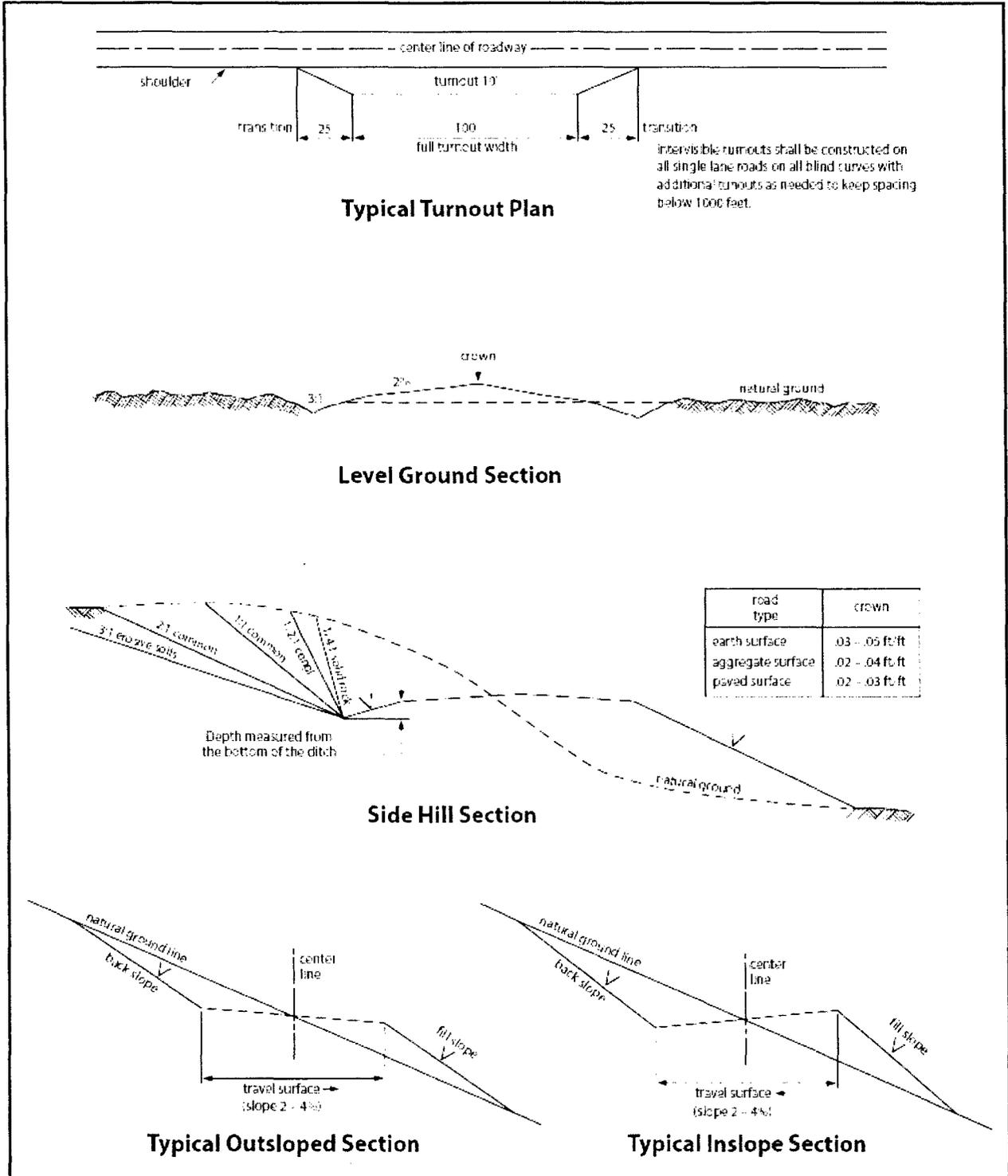


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During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

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

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

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

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

**IX. FINAL ABANDONMENT & RECLAMATION**

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

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

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

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

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

## Seed Mixture 2, for Sandy Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sand love grass ( <i>Eragrostis trichodes</i> )	1.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed:

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

**Operator Certification**

*I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.*

**NAME:** David Stewart**Signed on:** 05/02/2017**Title:** Sr. Regulatory Advisor**Street Address:** 5 Greenway Plaza, Suite 110**City:** Houston**State:** TX**Zip:** 77046**Phone:** (713)366-5716**Email address:** David\_stewart@oxy.com**Field Representative****Representative Name:** Jim Wilson**Street Address:** P.O. Box 50250**City:** Midland**State:** TX**Zip:** 79710**Phone:** (575)631-2442**Email address:** jim\_wilson@oxy.com

**APD ID:** 10400013659**Submission Date:** 05/02/2017Highlighted data  
reflects the most  
recent changes**Operator Name:** OXY USA INCORPORATED**Well Name:** CEDAR CANYON 29 FEDERAL COM**Well Number:** 25H[Show Final Text](#)**Well Type:** OIL WELL**Well Work Type:** Drill

### Section 1 - General

**APD ID:** 10400013659**Tie to previous NOS?****Submission Date:** 05/02/2017**BLM Office:** CARLSBAD**User:** David Stewart**Title:** Sr. Regulatory Advisor**Federal/Indian APD:** FED**Is the first lease penetrated for production Federal or Indian?** FED**Lease number:** NMNM53229**Lease Acres:** 280**Surface access agreement in place?****Allotted?****Reservation:****Agreement in place?** NO**Federal or Indian agreement:****Agreement number:****Agreement name:****Keep application confidential?** NO**Permitting Agent?** NO**APD Operator:** OXY USA INCORPORATED**Operator letter of designation:**

### Operator Info

**Operator Organization Name:** OXY USA INCORPORATED**Operator Address:** 5 Greenway Plaza, Suite 110**Zip:** 77046**Operator PO Box:****Operator City:** Houston**State:** TX**Operator Phone:** (713)366-5716**Operator Internet Address:**

### Section 2 - Well Information

**Well in Master Development Plan?** NO**Mater Development Plan name:****Well in Master SUPO?** NO**Master SUPO name:****Well in Master Drilling Plan?** NO**Master Drilling Plan name:****Well Name:** CEDAR CANYON 29 FEDERAL COM**Well Number:** 25H**Well API Number:****Field/Pool or Exploratory?** Field and Pool**Field Name:** PIERCE  
CROSSING; BONE SPRING**Pool Name:** 2ND BONE  
SPRING**Is the proposed well in an area containing other mineral resources?** NATURAL GAS,OIL

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

**Describe other minerals:**

**Is the proposed well in a Helium production area?** N

**Use Existing Well Pad?** NO

**New surface disturbance?**

**Type of Well Pad:** MULTIPLE WELL

**Multiple Well Pad Name:**

**Number:** 24H

**Well Class:** HORIZONTAL

CEDAR CANYON 29 FEDERAL  
COM

**Number of Legs:** 1

**Well Work Type:** Drill

**Well Type:** OIL WELL

**Describe Well Type:**

**Well sub-Type:** INFILL

**Describe sub-type:**

**Distance to town:** 6 Miles

**Distance to nearest well:** 30 FT

**Distance to lease line:** 50 FT

**Reservoir well spacing assigned acres Measurement:** 160 Acres

**Well plat:** CedarCanyon29FdCom25H\_C102\_04-21-2017.pdf

**Well work start Date:** 11/04/2017

**Duration:** 20 DAYS

### Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:**

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	164 0	FSL	420	FWL	24S	29E	29	Aliquot NWS W	32.18564 53	- 104.0138 024	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 53229	292 9	0	0
KOP Leg #1	140 0	FSL	50	FWL	24S	29E	29	Aliquot NWS W	32.18499 17	- 104.0149 948	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 53229	- 503 8	800 3	796 7
PPP Leg #1	140 0	FSL	340	FWL	24S	29E	29	Aliquot NWS W	32.18498 71	- 104.0140 574	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 53229	- 561 1	889 2	854 0

APD ID: 10400013659

Submission Date: 05/02/2017

Highlighted data reflects the most recent changes

Operator Name: OXY USA INCORPORATED

Well Name: CEDAR CANYON 29 FEDERAL COM

Well Number: 25H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

**Section 1 - Geologic Formations**

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	RUSTLER	2929	280	280	SHALE, DOLOMITE, ANHYDRITE	USEABLE WATER	No
2	SALADO	2206	723	723	SHALE, DOLOMITE, HALITE, ANHYDRITE	OTHER : SALT	No
3	CASTILE	1687	1242	1242	ANHYDRITE	OTHER : Salt	No
4	LAMAR	135	2794	2794	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
5	BELL CANYON	103	2826	2826	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
6	CHERRY CANYON	-651	3580	3580	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
7	BRUSHY CANYON	-2036	4965	4965	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
8	BONE SPRING	-3543	6472	6490	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Yes
9	BONE SPRING 1ST	-4551	7480	7513	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Yes
10	BONE SPRING 2ND	-4797	7726	7762	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Yes

**Section 2 - Blowout Prevention**

Pressure Rating (PSI): 5M

Rating Depth: 8625

Equipment: 13-5/8" 5M Annular, Blind Ram, Double Ram

Requesting Variance? YES

Variance request: Request for the use of a flexible choke line from the BOP to Choke Manifold.

Testing Procedure: 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

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

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. A multibowl wellhead or a unionized multibowl wellhead system will be employed. The wellhead and connection to the BOPE will meet all API 6A requirements. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system will be tested. We will test the flange connection of the wellhead with a test port that is directly in the flange. We are proposing that we will run the wellhead through the rotary prior to cementing surface casing as discussed with the BLM on October 8, 2015.

**Choke Diagram Attachment:**

CedarCanyon29FdCom25H\_ChkManifold\_04-26-2017.pdf

**BOP Diagram Attachment:**

CedarCanyon29FdCom25H\_BOP\_5M13\_58\_04-26-2017.pdf

CedarCanyon29FdCom25H\_FlexHoseCert\_04-26-2017.pdf

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**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.75	10.75	NEW	API	N	0	400	0	400	-5696	-6096	400	J-55	45.5	BUTT	8.91	1.75	BUOY	3.56	BUOY	3.51
2	PRODUCTI ON	9.875	7.625	NEW	API	N	0	7500	0	7467	-5696	-13163	7500	L-80	29.7	BUTT	1.22	1.84	BUOY	2.16	BUOY	4.65
3	PRODUCTI ON	9.875	7.625	NEW	API	N	7500	7903	7467	7867	-13163	-13563	403	HCL-80	29.7	BUTT	1.46	1.95	BUOY	2.15	BUOY	2.13
4	LINER	6.75	4.5	NEW	API	N	7803	13384	7767	8625	-13463	-14321	5581	P-110	11.6	OTHER - DQX	1.68	1.2	BUOY	2.28	BUOY	2.25

**Casing Attachments**

---

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

**Casing Attachments**

---

**Casing ID:** 1            **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

CedarCanyon29FdCom25H\_CsgCriteria\_04-26-2017.pdf

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**Casing ID:** 2            **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

CedarCanyon29FdCom25H\_CsgCriteria\_04-26-2017.pdf

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**Casing ID:** 3            **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

CedarCanyon29FdCom25H\_CsgCriteria\_04-26-2017.pdf

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Operator Name: OXY USA INCORPORATED

Well Name: CEDAR CANYON 29 FEDERAL COM

Well Number: 25H

### Casing Attachments

Casing ID: 4 String Type: LINER

Inspection Document:

Spec Document:

Tapered String Spec:

### Casing Design Assumptions and Worksheet(s):

CedarCanyon29FdCom25H\_CsgCriteria\_04-26-2017.pdf

CedarCanyon29FdCom25H\_4.5\_11.6P110DQX\_04-26-2017.pdf

### Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	400	265	1.35	14.8	358	50	Class C Cement	Accelerator

PRODUCTION	Lead	2844	0	2344	444	1.85	12.9	821	75	Class C Cement	Accelerator, Retarder
PRODUCTION	Tail		2344	2844	182	1.33	14.8	242	125	Class C Cement	none
PRODUCTION	Lead		0	6903	831	3.05	10.2	2535	75	Pozzolan Cement	Retarder
PRODUCTION	Tail		6903	7903	163	1.65	13.2	269	20	Class H Cement	Retarder, Dispersant, Salt
LINER	Lead		7803	13384	545	1.63	13.2	883	15	Class H Cement	Retarder, Dispersant, Salt

Operator Name: OXY USA INCORPORATED

Well Name: CEDAR CANYON 29 FEDERAL COM

Well Number: 25H

### Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

**Describe what will be on location to control well or mitigate other conditions:** Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CACL2. Oxy proposes to drill out the 10-3/4" surface casing shoe with a saturated brine system from 400- 2844', 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 @ 7903'.

**Describe the mud monitoring system utilized:** PVT/MD Totco/Visual Monitoring

**Circulating Medium Table**

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
2844	7903	WATER-BASED MUD	8.8	9.6							
7903	1338 4	OIL-BASED MUD	8.8	9.6							
0	400	WATER-BASED MUD	8.4	8.6							
400	2844	OTHER : BRINE	9.8	10							

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

## Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

GR from TD to surface (horizontal well – vertical portion of hole). Mud Log from Surface Shoe to TD.

**List of open and cased hole logs run in the well:**

GR,MUDLOG

**Coring operation description for the well:**

No coring is planned at this time.

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 4306

**Anticipated Surface Pressure:** 4306

**Anticipated Bottom Hole Temperature(F):** 149

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

CedarCanyon29FdCom25H\_H2S1\_04-26-2017.pdf

CedarCanyon29FdCom25H\_H2S2\_04-26-2017.pdf

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

CedarCanyon29FdCom25H\_DirectPlan\_04-26-2017.pdf

CedarCanyon29FdCom25H\_DirectPlot\_04-26-2017.pdf

**Other proposed operations facets description:**

Well will be drilled with a walking/skidding operation. Plan to drill the three 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.

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 cancellation cone and not pump the second stage.

**Cement Top and Liner Overlap**

1. Oxy is requesting permission to have minimum fill of cement behind the 4-1/2" production liner to be 100' into previous casing string. The reason for this is so that we can come back and develop shallower benches from the same 7-5/8" mainbore in the future.

2. Our plan is to use a whipstock for our exit through the mainbore. Based on our lateral target, we are planning a whipstock cased/hole exit so that kick-off point will allow for roughly 10deg/100' doglegs needed

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

for the curve.

3. Cement will be brought to the top of this liner hanger.

4. See attached for additional casing tie-back information.

**Spudder Rig**

OXY requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that Oxy would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig.

**Other proposed operations facets attachment:**

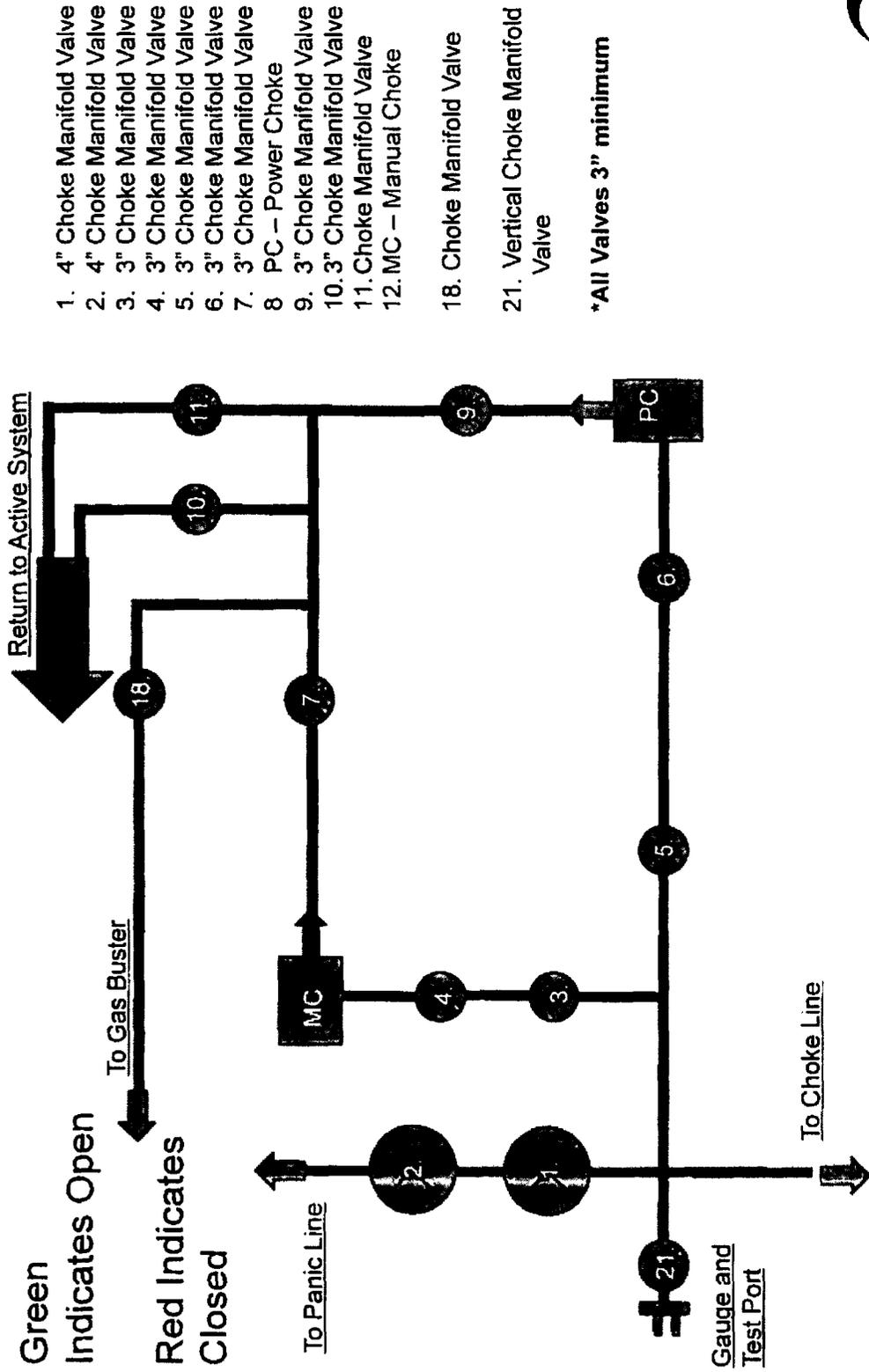
CedarCanyon29FdCom25H\_DrillPlan\_04-26-2017.pdf

CedarCanyon29FdCom25H\_CsgTieBackDetail\_04-26-2017.pdf

CedarCanyon29FdCom25H\_SpudRigData\_04-26-2017.pdf

**Other Variance attachment:**

# 5M Choke Panel



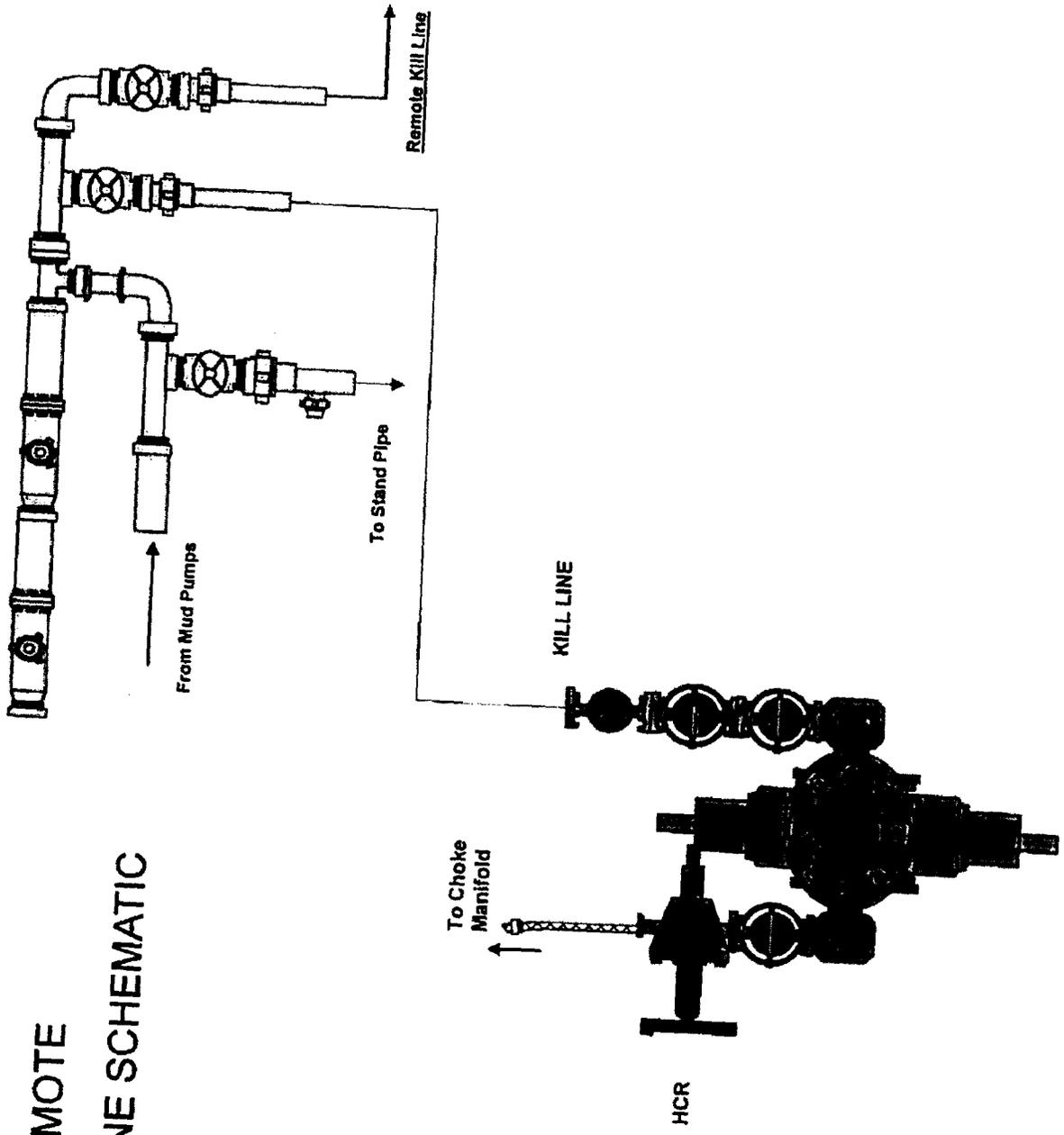
Green  
Indicates Open  
Red Indicates  
Closed

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

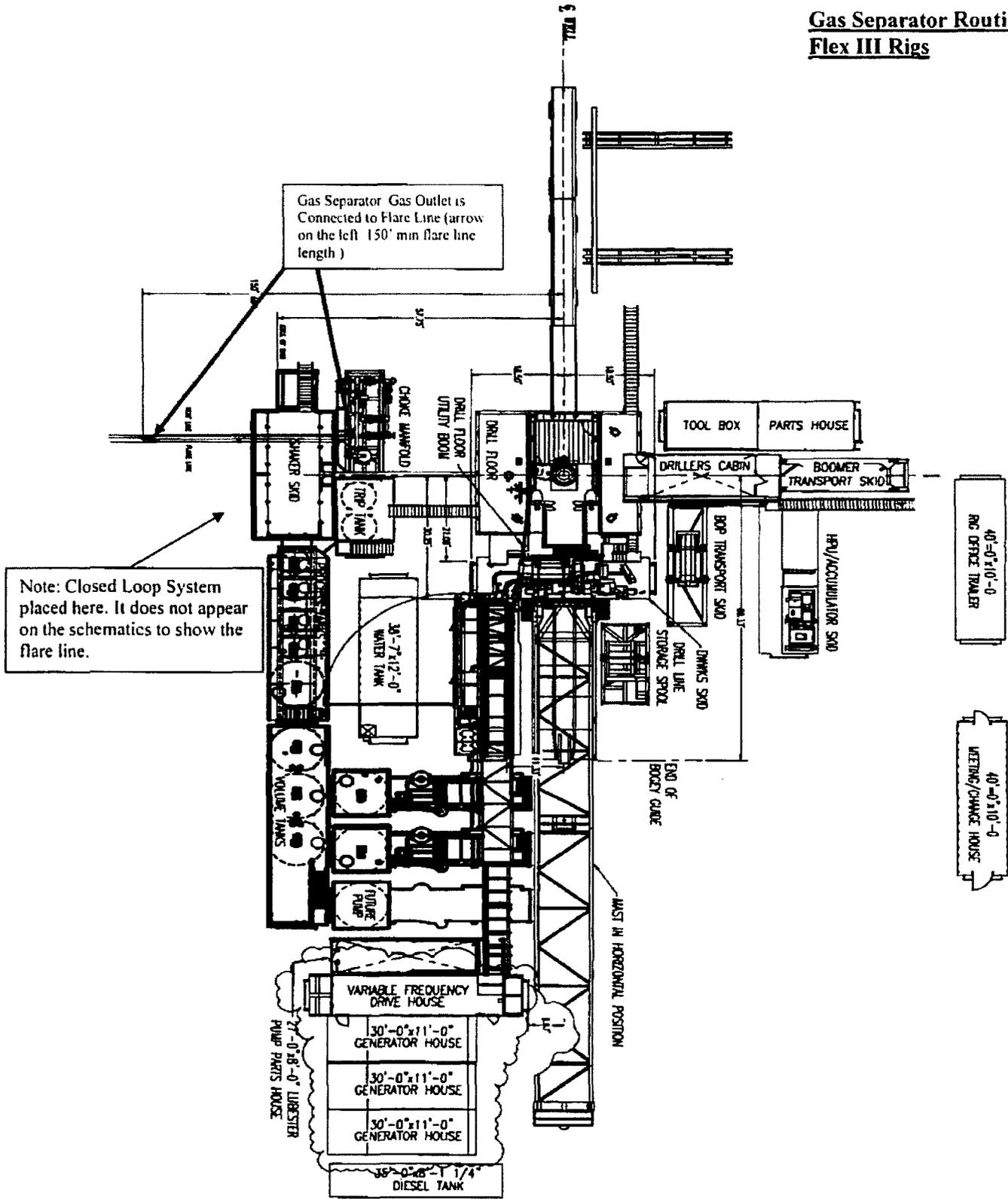
\*All Valves 3" minimum



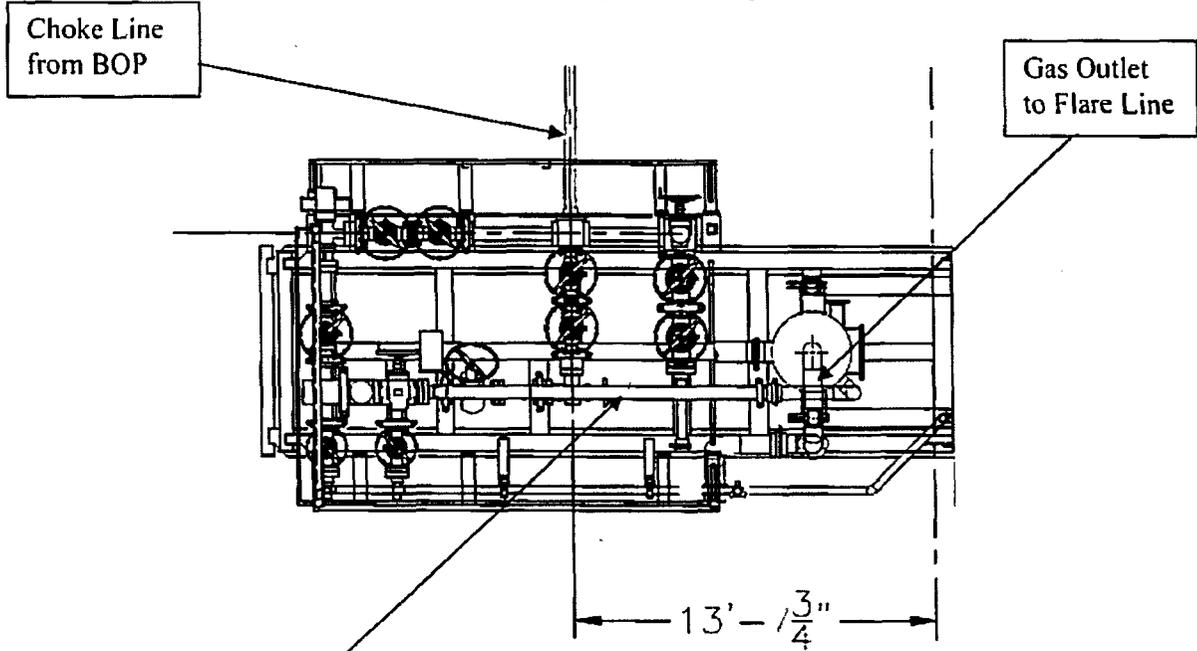
# 10M REMOTE KILL LINE SCHEMATIC



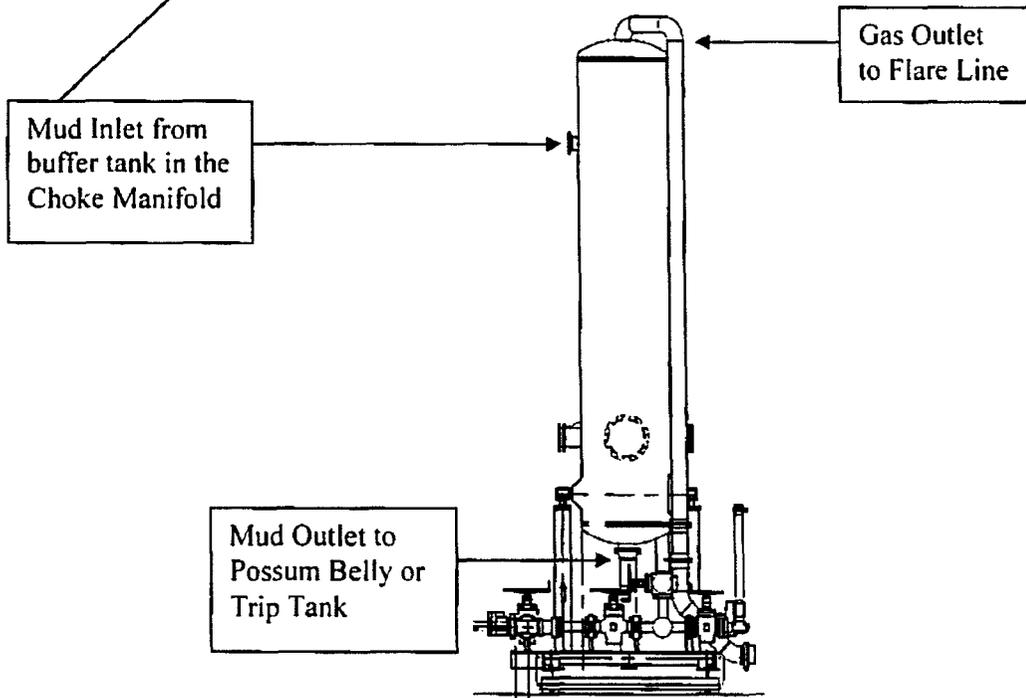
# Gas Separator Routing Flex III Rigs



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



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

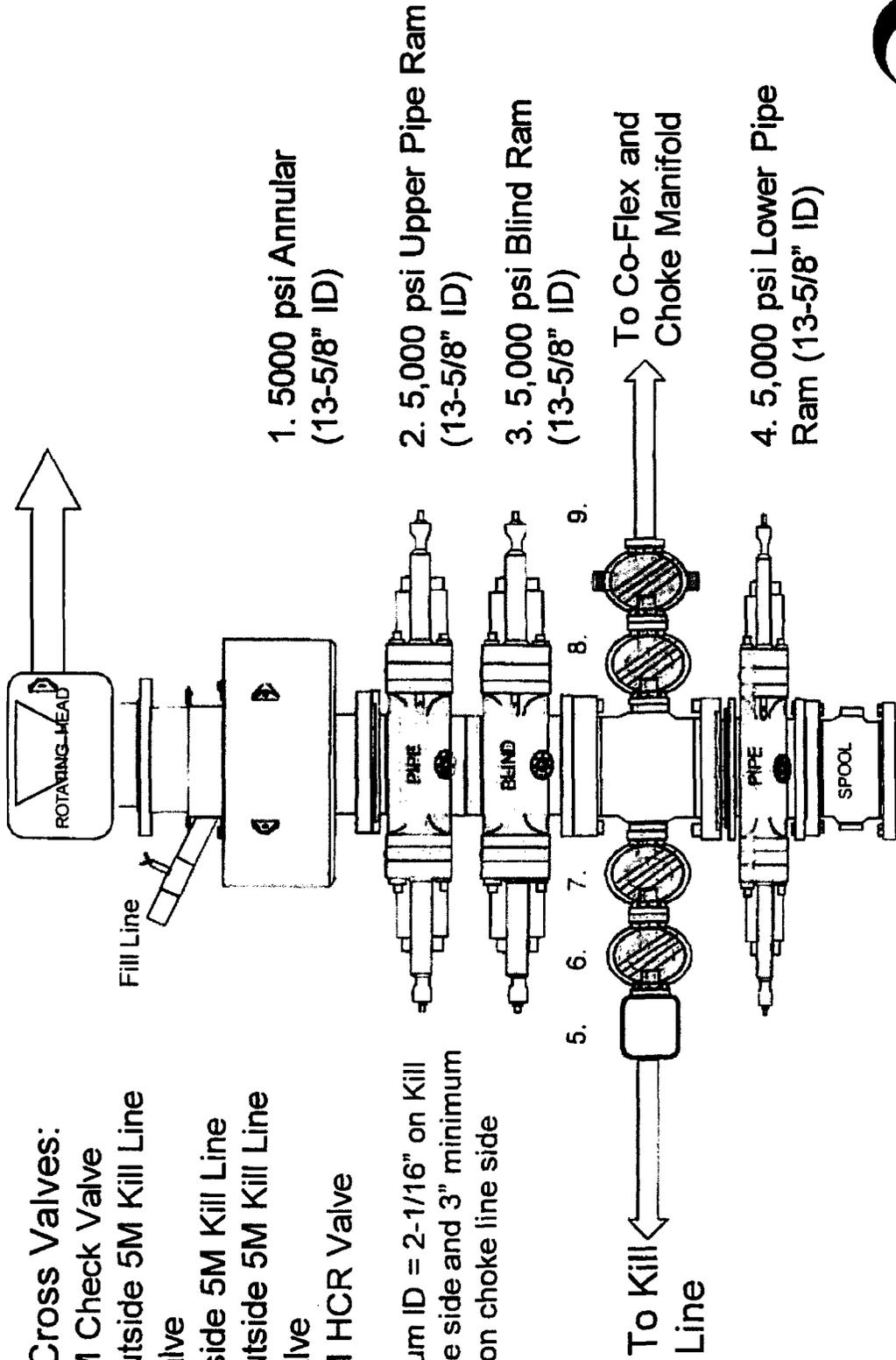


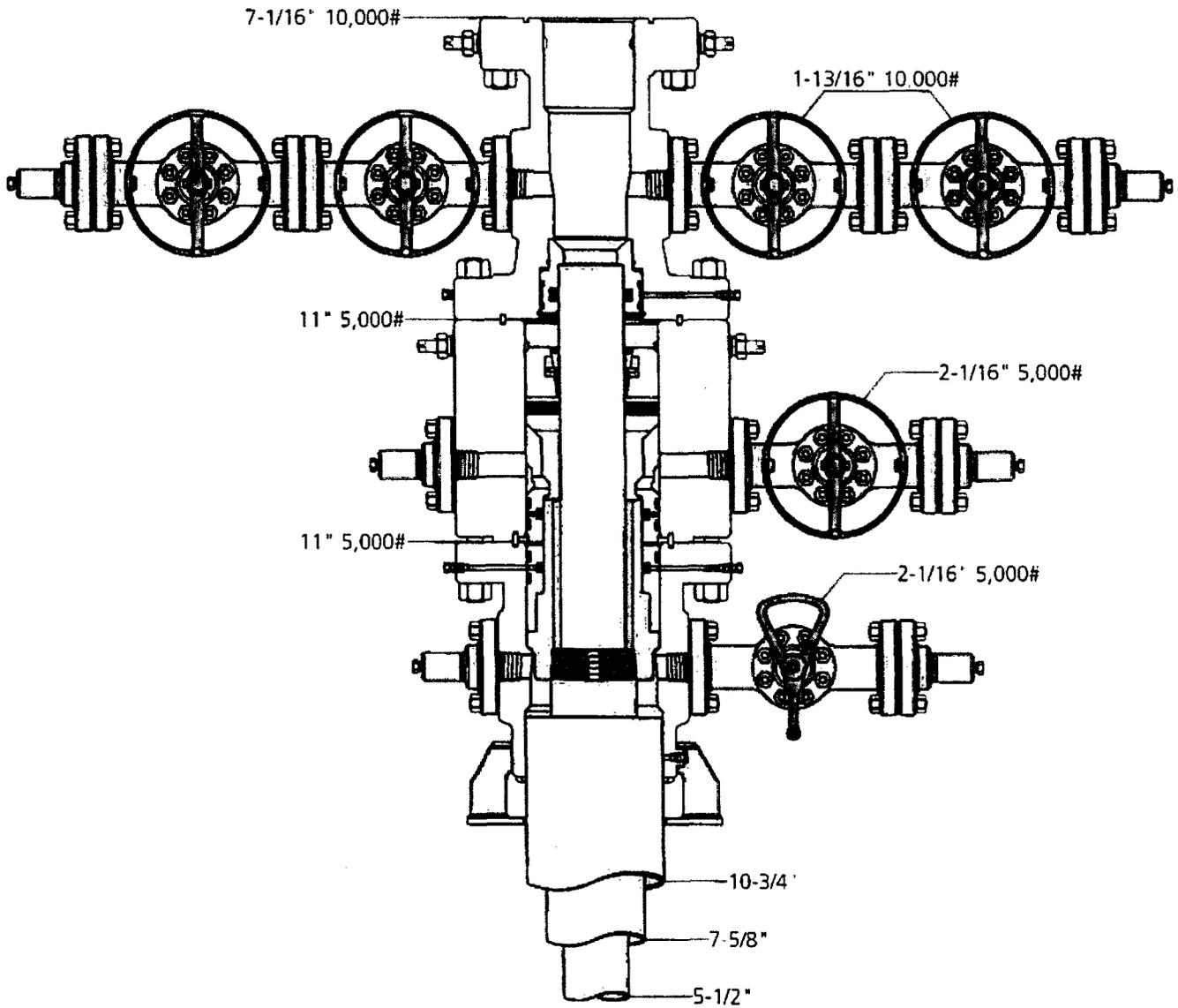
# 5M BOP Stack

## 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





11" 5K MBS SL2 Wellhead



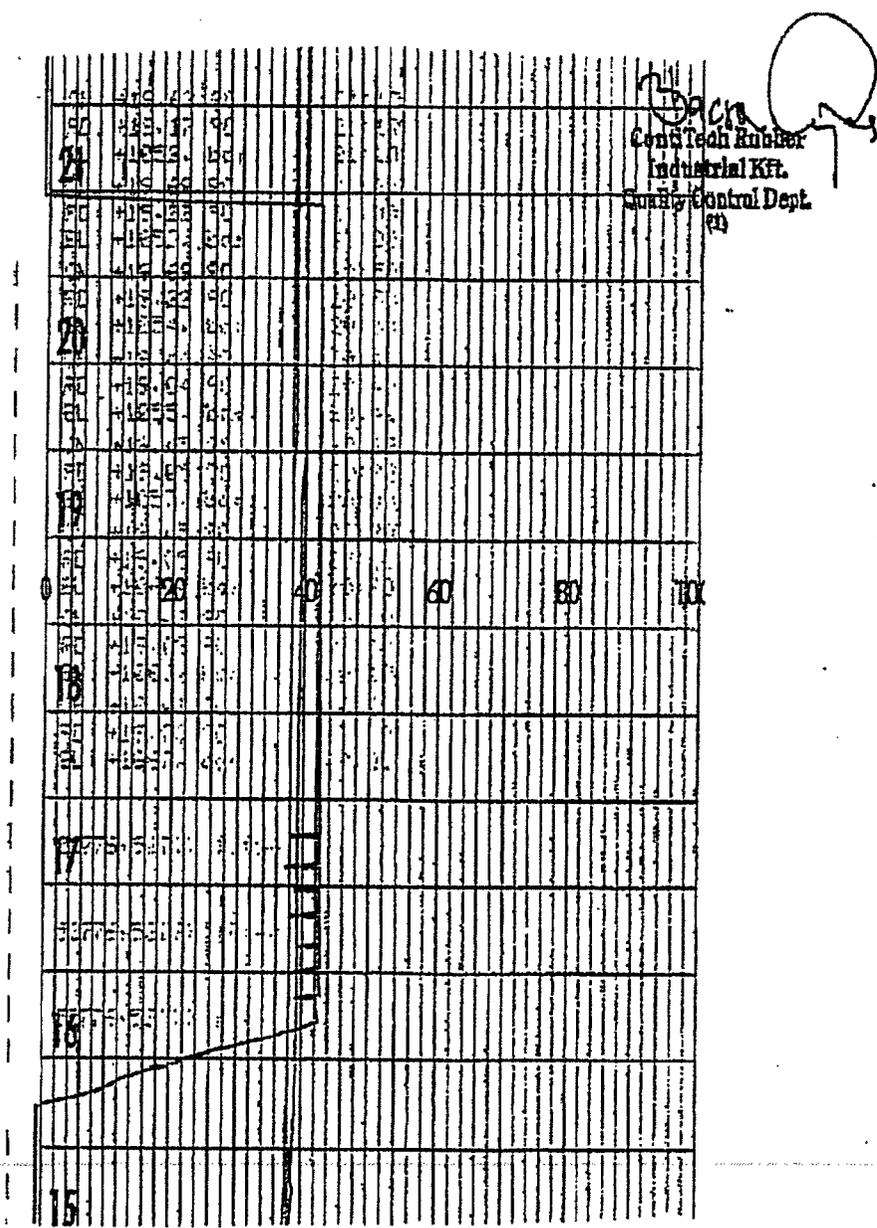
Jeanette	7-6-16	#	J-9786-3
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Fluid Technology  
Quality Document

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 746	
PURCHASER: Phoenix Beattie Co.			P.O. N°: 002491		
CONTITECH ORDER N°: 412638		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 52777		NOMINAL / ACTUAL LENGTH: 10,67 m			
W.P. 68,96 MPa	10000	psi	T.P. 103,4 MPa	15000	psi
			Duration: 60 ~ min.		
Pressure test with water at ambient temperature  <p style="text-align: center;">See attachment. (1 page)</p>					
↑ 10 mm = 10 Min. → 10 mm = 25 MPa					
COUPLINGS					
Type	Serial N°		Quality	Heat N°	
3" coupling with 4 1/16" Flange end	917	913	AISI 4130	T7998A	
			AISI 4130	26984	
INFOCHIP INSTALLED				API Spec 16 C Temperature rate: "B"	
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
Date:	Inspector		Quality Control		
04. April. 2008			Contitech Rubber Industrial Kft. Quality Control Dept. (1)		

Coflex Hose Certification



Coflex Hose Certification

Form No 100/12



**Phoenix Beattie Corp**

11535 Brittoncove Park Drive  
Houston, TX 77041  
Tel: (832) 327-0141  
Fax: (832) 327-0148  
E-mail: mail@phoenixbeattie.com  
www.phoenixbeattie.com

**Delivery Note**

<b>Customer Order Number</b>	370-369-001	<b>Delivery Note Number</b>	003078	<b>Page</b>	1
<b>Customer / Invoice Address</b> HELMERICH & PAYNE INT'L DRILLING CO 1437 SOUTH BOULDER TULSA, OK 74119		<b>Delivery / Address</b> HELMERICH & PAYNE IDC ATTN: JOE STEPHENSON - RIG 370 13609 INDUSTRIAL ROAD HOUSTON, TX 77015			

<b>Customer Acc No</b>	<b>Phoenix Beattie Contract Manager</b>	<b>Phoenix Beattie Reference</b>	<b>Date</b>
H01	JJL	006330	05/23/2008

Item No	Beattie Part Number / Description	Qty Ordered	Qty Sent	Qty To Follow
1	HP10CK3A-35-4F1 3" 10K 16C C&K HOSE x 35ft OAL CW 4.1/16" API SPEC FLANGE E/ End 1: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange End 2: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange c/w BX155 Standard ring groove at each end Suitable for H2S Service Working pressure: 10,000psi Test pressure: 15,000psi Standard: API 16C Full specification Armor Guarding: Included Fire Rating: Not Included Temperature rating: -20 Deg C to +100 Deg C	1	1	0
2	SECK3-HPF3 LIFTING & SAFETY EQUIPMENT TO SUIT HP10CK3-35-F1 2 x 160mm ID Safety Clamps 2 x 244mm ID Lifting Collars & element C's 2 x 7ft Stainless Steel wire rope 3/4" OD 4 x 7.75t Shackles	1	1	0
3	SC725-200CS SAFETY CLAMP 200MM 7.25T C/S GALVANISED	1	1	0

Continued...

All goods remain the property of Phoenix Beattie until paid for in full. Any damage or shortage on this delivery must be advised within 5 days. Returns may be subject to a handling charge.



**Phoenix Beattie Corp**  
 11535 Brittonore Park Drive  
 Houston, TX 77041  
 Tel: (832) 327-0141  
 Fax: (832) 327-0148  
 E-mail: sa1@phoenixbeattie.com  
 www.phoenixbeattie.com

## Delivery Note

<b>Customer Order Number</b>	370-369-001	<b>Delivery Note Number</b>	003078	<b>Page</b>	2
<b>Customer / Invoice Address</b> HELMERICH & PAYNE INT'L DRILLING CO 1437 SOUTH BOULDER TULSA, OK 74119		<b>Delivery / Address</b> HELMERICH & PAYNE IDC ATTN: JOE STEPHENSON - RIG 370 13609 INDUSTRIAL ROAD HOUSTON, TX 77015			

<b>Customer Acc No</b>	<b>Phoenix Beattie Contract Manager</b>	<b>Phoenix Beattie Reference</b>	<b>Date</b>
H01	JJL	006330	05/23/2008

Item No	Beattie Part Number / Description	Qty Ordered	Qty Sent	Qty To Follow
4	SC725-132CS SAFETY CLAMP 132MM 7.25T C/S GALVANIZED C/W BOLTS	1	1	0
5	00CERT-HYDRO HYDROSTATIC PRESSURE TEST CERTIFICATE	1	1	0
6	00CERT-LOAD LOAD TEST CERTIFICATES	1	1	0
7	00FREIGHT INBOUND / OUTBOUND FREIGHT PRE-PAY & ADD TO FINAL INVOICE NOTE: MATERIAL MUST BE ACCOMPANIED BY PAPERWORK INCLUDING THE PURCHASE ORDER, RIG NUMBER TO ENSURE PROPER PAYMENT	1	1	0

Phoenix Beattie Inspection Signature : \_\_\_\_\_  
 Received In Good Condition : Signature \_\_\_\_\_  
 Print Name \_\_\_\_\_  
 Date \_\_\_\_\_

All goods remain the property of Phoenix Beattie until paid for in full. Any damage or shortage on this delivery must be advised within 5 days. Returns may be subject to a handling charge.



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CERTIFICATE OF CONFORMITY

**Supplier** : CONTITECH RUBBER INDUSTRIAL KFT.  
**Equipment** : 6 pcs. Choke and Kill Hose with installed couplings  
**Type** : 3" x 10,67 m WP: 10000 psi  
**Supplier File Number** : 412638  
**Date of Shipment** : April. 2008  
**Customer** : Phoenix Beattie Co.  
**Customer P.o.** : 002491  
**Referenced Standards**  
**/ Codes / Specifications** : API Spec 16 C  
**Serial No.:** 52754,52755,52776,52777,52778,52782

STATEMENT OF CONFORMITY

We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU

Signed : 

Position: Q.C. Manager

ContiTech Rubber  
Industrial Kft.  
Quality Control Dept.  
(1)

Date: 04. April. 2008

## OXY's Minimum Design Criteria

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### 1) Casing Design Assumptions

#### a) Burst Loads

##### CSG Test (Surface)

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

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- External: Fluid gradient below TOC, pore pressure from the TOC to the Intermediate CSG shoe (if applicable), and MW of the drilling mud that was in the hole when the CSG was run from Intermediate CSG shoe to surface.

##### Bullheading (Surface / Intermediate)

- Internal: The string must be designed to withstand a pressure profile based on the fracture pressure at the casing shoe with a column of water above the shoe plus an additional surface pressure (in psi) of  $0.02 \times MD$  of the shoe to account for pumping friction pressure.
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### Tubing Leak Near Surface While Producing (Production)

- Internal: SITP plus a packer fluid gradient to the shoe or top of packer.
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- External: MW of the drilling mud that was in the hole when the casing was run.

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

### Full Evacuation (Production)

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

## **c) Tension Loads**

### Running Casing (Surface / Intermediate / Production)

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

### Green Cement (Surface / Intermediate / Production)

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**Permian Drilling  
Hydrogen Sulfide Drilling Operations Plan  
Cedar Canyon 29 Fed Com #25H**

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.

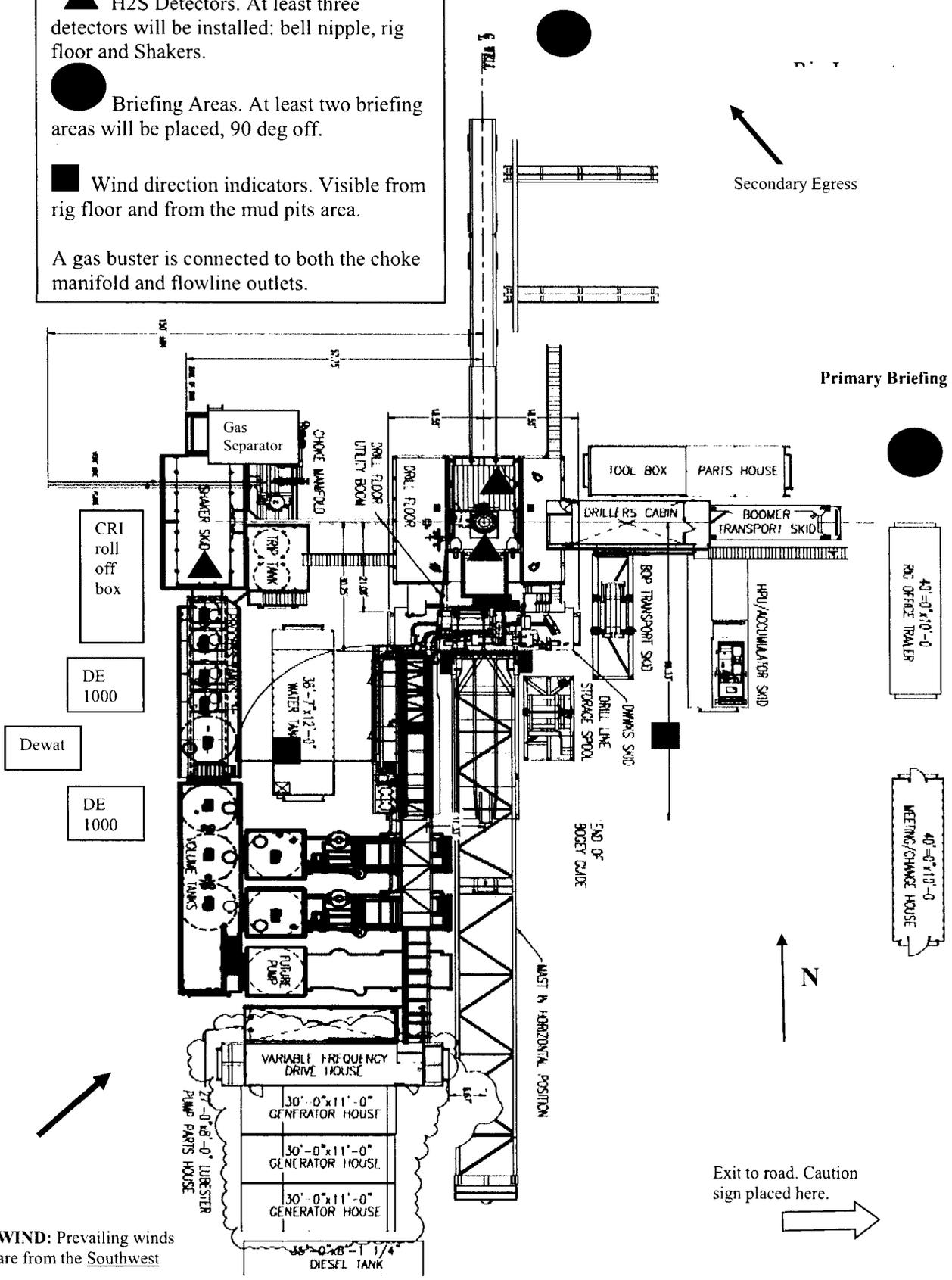
■ Wind direction indicators. Visible from rig floor and from the mud pits area.

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

Secondary Briefing Area

Secondary Egress

Primary Briefing Area



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 (H<sub>2</sub>S) gas.

While drilling this well, it is possible to encounter H<sub>2</sub>S bearing formations. At all times, the first barrier to control H<sub>2</sub>S 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 H<sub>2</sub>S is detected. All H<sub>2</sub>S 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 <u>commence</u> .
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 H<sub>2</sub>S.
2. Proper use and maintenance of personal protective equipment and life support systems.
3. H<sub>2</sub>S detection.
4. Proper use of H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S Drilling Operations Plan.

H<sub>2</sub>S 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. H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S.
- 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. H<sub>2</sub>S 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. H<sub>2</sub>S 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 H<sub>2</sub>S 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 H<sub>2</sub>S 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  
Floor man #1  
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 is 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 H<sub>2</sub>S 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 H<sub>2</sub>S detection equipment and self-contained breathing equipment will monitor H<sub>2</sub>S 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

<u>Percent (%)</u>	<u>Ppm</u>	<u>Concentration</u> Grains <u>100 std. Ft3*</u>	<u>Physical effects</u>
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 H<sub>2</sub>S.

- 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

# **ENGINEERING DESIGNS**

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

**Cedar Canyon 29**

**Cedar Canyon 29 Fed Com 25H**

**WB00**

**Plan: Permitting Plan**

## **Standard Planning Report**

**23 March, 2017**

# Oxy Planning Report

**Database:** HOPSPP  
**Company:** ENGINEERING DESIGNS  
**Project:** PRD NM DIRECTIONAL PLANS (NAD 1983)  
**Site:** Cedar Canyon 29  
**Well:** Cedar Canyon 29 Fed Com 25H  
**Wellbore:** WB00  
**Design:** Permitting Plan

**Local Co-ordinate Reference:** Well Cedar Canyon 29 Fed Com 25H  
**TVD Reference:** RKB @ 2955.10ft  
**MD Reference:** RKB @ 2955.10ft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

<b>Project</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		Using geodetic scale factor

<b>Site</b>	Cedar Canyon 29				
<b>Site Position:</b>		<b>Northing:</b>	431,449.17 usft	<b>Latitude:</b>	32° 11' 8.619887 N
<b>From:</b>	Map	<b>Easting:</b>	640,188.19 usft	<b>Longitude:</b>	104° 0' 49.690087 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.17 °

<b>Well</b>	Cedar Canyon 29 Fed Com 25H					
<b>Well Position</b>	<b>+N/-S</b>	-30.00 ft	<b>Northing:</b>	431,419.17 usft	<b>Latitude:</b>	32° 11' 8.323002 N
	<b>+E/-W</b>	0.22 ft	<b>Easting:</b>	640,188.41 usft	<b>Longitude:</b>	104° 0' 49.688563 W
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	2,928.60 ft	<b>Ground Level:</b>	2,928.60 ft

<b>Wellbore</b>	WB00				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	12/31/2016	7.18	60.02	48,182

<b>Design</b>	Permitting Plan				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	93.09	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,977.00	0.00	0.00	4,977.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,477.11	10.00	237.03	5,474.57	-23.70	-36.53	2.00	2.00	0.00	237.03	
7,502.79	10.00	237.03	7,469.47	-215.17	-331.69	0.00	0.00	0.00	0.00	
8,002.90	0.00	90.16	7,967.04	-238.87	-368.22	2.00	-2.00	0.00	180.00	CC_29_25H_KOP
8,892.05	88.92	90.16	8,539.90	-240.43	193.89	10.00	10.00	0.00	90.16	
13,384.04	88.92	90.16	8,625.00	-252.86	4,685.05	0.00	0.00	0.00	0.00	CC_29_25H_BHL

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**Survey Calculation Method:** Minimum Curvature

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
280.00	0.00	0.00	280.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Rustler</b>									
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
723.00	0.00	0.00	723.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Salado</b>									
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,242.00	0.00	0.00	1,242.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Castile (Anhydrite)</b>									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,794.00	0.00	0.00	2,794.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Lamar/Delaware</b>									
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,826.00	0.00	0.00	2,826.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Bell Canyon</b>									
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,580.00	0.00	0.00	3,580.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Cherry Canyon</b>									
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00

# Oxy Planning Report

**Database:** HOPSPP  
**Company:** ENGINEERING DESIGNS  
**Project:** PRD NM DIRECTIONAL PLANS (NAD 1983)  
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**Wellbore:** WB00  
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4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,965.00	0.00	0.00	4,965.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Brushy Canyon</b>										
4,977.00	0.00	0.00	4,977.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Start Build 2.00</b>										
5,000.00	0.46	237.03	5,000.00	-0.05	-0.08	-0.07	2.00	2.00	0.00	
5,100.00	2.46	237.03	5,099.96	-1.44	-2.21	-2.13	2.00	2.00	0.00	
5,200.00	4.46	237.03	5,199.77	-4.72	-7.28	-7.01	2.00	2.00	0.00	
5,300.00	6.46	237.03	5,299.32	-9.90	-15.26	-14.70	2.00	2.00	0.00	
5,400.00	8.46	237.03	5,398.46	-16.96	-26.15	-25.20	2.00	2.00	0.00	
5,477.11	10.00	237.03	5,474.57	-23.70	-36.53	-35.20	2.00	2.00	0.00	
<b>Hold 2026' Tangent</b>										
5,500.00	10.00	237.03	5,497.12	-25.86	-39.86	-38.41	0.00	0.00	0.00	
5,600.00	10.00	237.03	5,595.60	-35.31	-54.44	-52.45	0.00	0.00	0.00	
5,700.00	10.00	237.03	5,694.08	-44.77	-69.01	-66.49	0.00	0.00	0.00	
5,800.00	10.00	237.03	5,792.56	-54.22	-83.58	-80.53	0.00	0.00	0.00	
5,900.00	10.00	237.03	5,891.04	-63.67	-98.15	-94.57	0.00	0.00	0.00	
6,000.00	10.00	237.03	5,989.52	-73.12	-112.72	-108.61	0.00	0.00	0.00	
6,100.00	10.00	237.03	6,088.00	-82.57	-127.29	-122.66	0.00	0.00	0.00	
6,200.00	10.00	237.03	6,186.48	-92.03	-141.86	-136.70	0.00	0.00	0.00	
6,300.00	10.00	237.03	6,284.96	-101.48	-156.43	-150.74	0.00	0.00	0.00	
6,400.00	10.00	237.03	6,383.44	-110.93	-171.00	-164.78	0.00	0.00	0.00	
6,489.93	10.00	237.03	6,472.00	-119.43	-184.11	-177.40	0.00	0.00	0.00	
<b>Bone Spring</b>										
6,500.00	10.00	237.03	6,481.92	-120.38	-185.57	-178.82	0.00	0.00	0.00	
6,600.00	10.00	237.03	6,580.40	-129.84	-200.15	-192.86	0.00	0.00	0.00	
6,700.00	10.00	237.03	6,678.88	-139.29	-214.72	-206.90	0.00	0.00	0.00	
6,800.00	10.00	237.03	6,777.36	-148.74	-229.29	-220.94	0.00	0.00	0.00	
6,900.00	10.00	237.03	6,875.84	-158.19	-243.86	-234.98	0.00	0.00	0.00	
7,000.00	10.00	237.03	6,974.32	-167.65	-258.43	-249.02	0.00	0.00	0.00	
7,100.00	10.00	237.03	7,072.80	-177.10	-273.00	-263.06	0.00	0.00	0.00	
7,200.00	10.00	237.03	7,171.28	-186.55	-287.57	-277.10	0.00	0.00	0.00	
7,300.00	10.00	237.03	7,269.76	-196.00	-302.14	-291.14	0.00	0.00	0.00	
7,400.00	10.00	237.03	7,368.24	-205.46	-316.71	-305.18	0.00	0.00	0.00	
7,500.00	10.00	237.03	7,466.72	-214.91	-331.28	-319.22	0.00	0.00	0.00	
7,502.79	10.00	237.03	7,469.47	-215.17	-331.69	-319.61	0.00	0.00	0.00	
<b>Start Drop -2.00</b>										
7,513.48	9.79	237.03	7,480.00	-216.17	-333.23	-321.10	2.00	-2.00	0.00	
<b>1st Bone Spring</b>										
7,600.00	8.06	237.03	7,565.47	-223.48	-344.49	-331.95	2.00	-2.00	0.00	
7,700.00	6.06	237.03	7,664.70	-230.16	-354.80	-341.88	2.00	-2.00	0.00	
7,761.58	4.83	237.03	7,726.00	-233.34	-359.70	-346.60	2.00	-2.00	0.00	
<b>2nd Bone Spring</b>										
7,800.00	4.06	237.03	7,764.31	-234.96	-362.19	-349.01	2.00	-2.00	0.00	
7,900.00	2.06	237.03	7,864.16	-237.86	-366.67	-353.32	2.00	-2.00	0.00	

# Oxy Planning Report

**Database:** HOPSPP  
**Company:** ENGINEERING DESIGNS  
**Project:** PRD NM DIRECTIONAL PLANS (NAD 1983)  
**Site:** Cedar Canyon 29  
**Well:** Cedar Canyon 29 Fed Com 25H  
**Wellbore:** WB00  
**Design:** Permitting Plan

**Local Co-ordinate Reference:** Well Cedar Canyon 29 Fed Com 25H  
**TVD Reference:** RKB @ 2955.10ft  
**MD Reference:** RKB @ 2955.10ft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,000.00	0.06	237.03	7,964.14	-238.87	-368.22	-354.81	2.00	-2.00	0.00
8,002.90	0.00	90.16	7,967.04	-238.87	-368.22	-354.81	2.00	-2.00	0.00
<b>Build Curve at 10.00° DLS</b>									
8,100.00	9.71	90.16	8,063.68	-238.89	-360.01	-346.61	10.00	10.00	0.00
8,200.00	19.71	90.16	8,160.28	-238.96	-334.65	-321.29	10.00	10.00	0.00
8,300.00	29.71	90.16	8,251.00	-239.08	-292.90	-279.59	10.00	10.00	0.00
8,400.00	39.71	90.16	8,333.10	-239.24	-236.03	-222.80	10.00	10.00	0.00
8,500.00	49.71	90.16	8,404.08	-239.43	-165.77	-152.63	10.00	10.00	0.00
8,600.00	59.71	90.16	8,461.78	-239.66	-84.25	-71.21	10.00	10.00	0.00
8,700.00	69.71	90.16	8,504.45	-239.91	6.05	18.97	10.00	10.00	0.00
8,800.00	79.71	90.16	8,530.78	-240.17	102.39	115.18	10.00	10.00	0.00
8,892.05	88.92	90.16	8,539.90	-240.43	193.89	206.56	10.00	10.00	0.00
<b>Landing Point</b>									
8,900.00	88.92	90.16	8,540.05	-240.45	201.83	214.50	0.00	0.00	0.00
9,000.00	88.92	90.16	8,541.94	-240.72	301.82	314.35	0.00	0.00	0.00
9,100.00	88.92	90.16	8,543.83	-241.00	401.80	414.20	0.00	0.00	0.00
9,200.00	88.92	90.16	8,545.73	-241.28	501.78	514.05	0.00	0.00	0.00
9,300.00	88.92	90.16	8,547.62	-241.56	601.76	613.90	0.00	0.00	0.00
9,400.00	88.92	90.16	8,549.51	-241.83	701.74	713.76	0.00	0.00	0.00
9,500.00	88.92	90.16	8,551.41	-242.11	801.72	813.61	0.00	0.00	0.00
9,600.00	88.92	90.16	8,553.30	-242.39	901.71	913.46	0.00	0.00	0.00
9,700.00	88.92	90.16	8,555.19	-242.66	1,001.69	1,013.31	0.00	0.00	0.00
9,800.00	88.92	90.16	8,557.09	-242.94	1,101.67	1,113.16	0.00	0.00	0.00
9,900.00	88.92	90.16	8,558.98	-243.22	1,201.65	1,213.01	0.00	0.00	0.00
10,000.00	88.92	90.16	8,560.88	-243.49	1,301.63	1,312.86	0.00	0.00	0.00
10,100.00	88.92	90.16	8,562.77	-243.77	1,401.61	1,412.72	0.00	0.00	0.00
10,200.00	88.92	90.16	8,564.66	-244.05	1,501.60	1,512.57	0.00	0.00	0.00
10,300.00	88.92	90.16	8,566.56	-244.32	1,601.58	1,612.42	0.00	0.00	0.00
10,400.00	88.92	90.16	8,568.45	-244.60	1,701.56	1,712.27	0.00	0.00	0.00
10,500.00	88.92	90.16	8,570.34	-244.88	1,801.54	1,812.12	0.00	0.00	0.00
10,600.00	88.92	90.16	8,572.24	-245.15	1,901.52	1,911.97	0.00	0.00	0.00
10,700.00	88.92	90.16	8,574.13	-245.43	2,001.50	2,011.82	0.00	0.00	0.00
10,800.00	88.92	90.16	8,576.02	-245.71	2,101.49	2,111.67	0.00	0.00	0.00
10,900.00	88.92	90.16	8,577.92	-245.98	2,201.47	2,211.53	0.00	0.00	0.00
11,000.00	88.92	90.16	8,579.81	-246.26	2,301.45	2,311.38	0.00	0.00	0.00
11,100.00	88.92	90.16	8,581.70	-246.54	2,401.43	2,411.23	0.00	0.00	0.00
11,200.00	88.92	90.16	8,583.60	-246.81	2,501.41	2,511.08	0.00	0.00	0.00
11,300.00	88.92	90.16	8,585.49	-247.09	2,601.40	2,610.93	0.00	0.00	0.00
11,400.00	88.92	90.16	8,587.39	-247.37	2,701.38	2,710.78	0.00	0.00	0.00
11,500.00	88.92	90.16	8,589.28	-247.65	2,801.36	2,810.63	0.00	0.00	0.00
11,600.00	88.92	90.16	8,591.17	-247.92	2,901.34	2,910.48	0.00	0.00	0.00
11,700.00	88.92	90.16	8,593.07	-248.20	3,001.32	3,010.34	0.00	0.00	0.00
11,800.00	88.92	90.16	8,594.96	-248.48	3,101.30	3,110.19	0.00	0.00	0.00
11,900.00	88.92	90.16	8,596.85	-248.75	3,201.29	3,210.04	0.00	0.00	0.00
12,000.00	88.92	90.16	8,598.75	-249.03	3,301.27	3,309.89	0.00	0.00	0.00
12,100.00	88.92	90.16	8,600.64	-249.31	3,401.25	3,409.74	0.00	0.00	0.00
12,200.00	88.92	90.16	8,602.53	-249.58	3,501.23	3,509.59	0.00	0.00	0.00
12,300.00	88.92	90.16	8,604.43	-249.86	3,601.21	3,609.44	0.00	0.00	0.00
12,400.00	88.92	90.16	8,606.32	-250.14	3,701.19	3,709.30	0.00	0.00	0.00
12,500.00	88.92	90.16	8,608.21	-250.41	3,801.18	3,809.15	0.00	0.00	0.00
12,600.00	88.92	90.16	8,610.11	-250.69	3,901.16	3,909.00	0.00	0.00	0.00
12,700.00	88.92	90.16	8,612.00	-250.97	4,001.14	4,008.85	0.00	0.00	0.00
12,800.00	88.92	90.16	8,613.89	-251.24	4,101.12	4,108.70	0.00	0.00	0.00
12,900.00	88.92	90.16	8,615.79	-251.52	4,201.10	4,208.55	0.00	0.00	0.00

# Oxy Planning Report

**Database:** HOPSPP  
**Company:** ENGINEERING DESIGNS  
**Project:** PRD NM DIRECTIONAL PLANS (NAD 1983)  
**Site:** Cedar Canyon 29  
**Well:** Cedar Canyon 29 Fed Com 25H  
**Wellbore:** WB00  
**Design:** Permitting Plan

**Local Co-ordinate Reference:** Well Cedar Canyon 29 Fed Com 25H  
**TVD Reference:** RKB @ 2955.10ft  
**MD Reference:** RKB @ 2955.10ft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
13,000.00	88.92	90.16	8,617.68	-251.80	4,301.08	4,308.40	0.00	0.00	0.00
13,100.00	88.92	90.16	8,619.58	-252.07	4,401.07	4,408.25	0.00	0.00	0.00
13,200.00	88.92	90.16	8,621.47	-252.35	4,501.05	4,508.11	0.00	0.00	0.00
13,300.00	88.92	90.16	8,623.36	-252.63	4,601.03	4,607.96	0.00	0.00	0.00
13,384.04	88.92	90.16	8,625.00	-252.86	4,685.05	4,691.87	0.00	0.00	0.00
<b>TD at 13384.04</b>									

### Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
CC_29_25H_KOP - plan hits target center - Point	0.00	0.00	7,967.04	-238.87	-368.22	431,180.32	639,820.22	32° 11' 5.970152 N	104° 0' 53.981298
CC_29_25H_BHL - plan hits target center - Point	0.00	0.00	8,625.00	-252.86	4,685.05	431,166.33	644,873.08	32° 11' 5.679928 N	103° 59' 55.183780

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
280.00	280.00	Rustler			
723.00	723.00	Salado			
1,242.00	1,242.00	Castile (Anhydrite)			
2,794.00	2,794.00	Lamar/Delaware			
2,826.00	2,826.00	Bell Canyon			
3,580.00	3,580.00	Cherry Canyon			
4,965.00	4,965.00	Brushy Canyon			
6,489.93	6,472.00	Bone Spring			
7,513.48	7,480.00	1st Bone Spring			
7,761.58	7,726.00	2nd Bone Spring			

### Plan Annotations

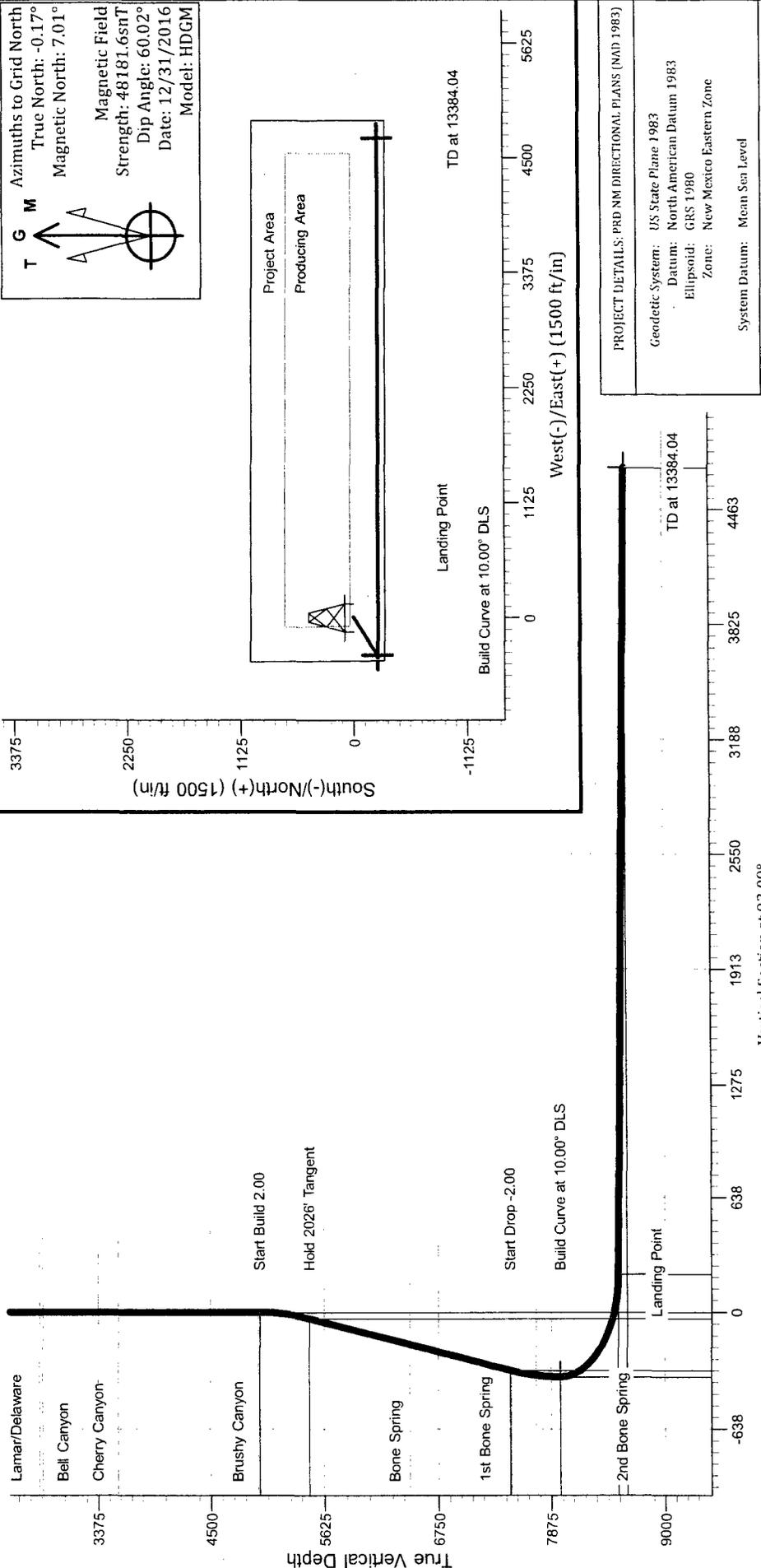
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,977.00	4,977.00	0.00	0.00	Start Build 2.00
5,477.11	5,474.57	-23.70	-36.53	Hold 2026' Tangent
7,502.79	7,469.47	-215.17	-331.69	Start Drop -2.00
8,002.90	7,967.04	-238.87	-368.22	Build Curve at 10.00° DLS
8,892.05	8,539.90	-240.43	193.89	Landing Point
13,384.04	8,625.00	-252.86	4,685.05	TD at 13384.04



Project: PRD NM DIRECTIONAL PLANS (NAD 1983)  
 Site: Cedar Canyon 29  
 Well: Cedar Canyon 29 Fed Com 25H  
 Wellbore: WR00  
 Design: Permitting Plan

**WELL DETAILS: Cedar Canyon 29 Fed Com 25H**

Ground Level: 2928.60  
 +N/-S +E/-W Northing Easting RKB @ 2955.10ft  
 0.00 0.00 431419.17 640188.41 32° 11' 8.323002 N 104° 0' 49.688563 W



**Azimuths to Grid North**  
 True North: -0.17°  
 Magnetic North: 7.01°

**Magnetic Field**  
 Strength: 48181.6snT  
 Dip Angle: 60.02°  
 Date: 12/31/2016  
 Model: HDGM

**PROJECT DETAILS: PRD NM DIRECTIONAL PLANS (NAD 1983)**

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

System Datum: Mean Sea Level

**SECTION DETAILS**

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		Start Build 2.00
2	4977.00	0.00	0.00	4977.00	0.00	0.00	0.00	0.00	0.00		Hold 2026' Tangent
3	5477.11	10.00	237.03	5474.57	-23.70	-36.53	2.00	237.03	-35.20		Start Drop -2.00
4	7502.79	10.00	237.03	7469.47	-215.17	-331.69	0.00	0.00	-319.61		Build Curve at 10.00° DLS
5	8002.90	0.00	90.16	7967.04	-238.87	-368.22	2.00	180.00	-354.81		Landing Point
6	8892.05	88.92	90.16	8539.90	-240.43	193.89	10.00	90.16	206.56		TD at 13384.04
7	13384.04	88.92	90.16	8625.00	-252.86	4685.05	0.00	0.00	4691.87		

## OXY USA Inc. - Cedar Canyon 29 Federal Com 25H

### 1. Geologic Formations

TVD of target	8625'	Pilot Hole Depth	N/A
MD at TD:	13384'	Deepest Expected fresh water:	280'

### Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	280	Water/Oil/Gas
Salado	723	
Catile (Anhydrite)	1242	
Lamar/Delaware	2794	
Bell Canyon*	2826	
Cherry Canyon*	3580	
Brushy Canyon*	4965	Oil/Gas
Bone Spring	6472	Oil/Gas
1st Bone Spring	7480	Oil/Gas
<b>2nd Bone Spring</b>	7726	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	Buoyant	Buoyant
	From (ft)	To (ft)							Body SF Tension	Joint SF Tension
14.75	0	400	10.75	45.5	J55	BTC	8.91	1.75	3.51	3.56
9.875	0	7500	7.625	29.7	L80	BTC	1.22	1.84	4.65	2.16
9.875	7500	7903	7.625	29.7	HP L80	BTC	1.46	1.95	2.13	2.15
6.75	7803	13384	4.5	11.6	P-110	DQX	1.68	1.20	2.25	2.28

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 cancellation cone and not pump the second stage.

	<b>Y or N</b>
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.	

**OXY USA Inc. - Cedar Canyon 29 Federal Com 25H**

Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 <sup>nd</sup> 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	# Sk	Wt. lb/ gal	Yld ft3/ sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	265	14.8	1.35	6.53	6:50	Class C Cement, Accelerator
Production Casing	831	10.2	3.05	15.63	15:07	Pozzolan Cement, Retarder
	163	13.2	1.65	8.45	12:57	Class H Cement, Retarder, Dispersant, Salt
DV/ECP Tool @ 2844' (We request the option to cancel the second stage if cement is circulated to surface during the first stage of cement operations)						
2nd Stage	444	12.9	1.85	9.86	12:44	Class C Cement, Accelerator, Retarder
	182	14.8	1.33	6.34	6:31	Class C Cement
Production Liner	545	13.2	1.631	8.37	15:15	Class H Cement, Retarder, Dispersant, Salt

Casing String	Top of Lead (ft)	Bottom of Lead (ft)	Top of Tail (ft)	Bottom of Tail (ft)	% Excess Lead	% Excess Tail
Surface	N/A	N/A	0	400	N/A	50%
Production Casing	0	6903	6903	7903	75%	20%
2nd Stage Production Casing	0	2344	2344	2844	75%	125%
Production Liner	N/A	N/A	7803	13384	N/A	15%

• **Cement Top and Liner Overlap**

- Oxy is requesting permission to have minimum fill of cement behind the 4.5" production liner to be 100 ft into previous casing string. The reason for this is so that we can come back and develop shallower benches from the same 7.625" mainbore in the future
- Our plan is to use a whipstock for our exit through the mainbore. Based on our lateral target, we are planning a whipstock cased/hole exit so that kick-off point will allow for roughly 10deg/100' doglegs needed for the curve
- Cement will be brought to the top of this liner hanger.

**OXY USA Inc. - Cedar Canyon 29 Federal Com 25H**

**4. Pressure Control Equipment**

<b>BOP installed and tested before drilling which hole?</b>	<b>Size?</b>	<b>Min. Required WP</b>	<b>Type</b>	<b>✓</b>	<b>Tested to:</b>
9.875" Production	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. 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. We will test the flange connection of the wellhead with a test port that is directly in the flange. We are proposing that we will run the wellhead through the rotary prior to cementing surface casing as discussed with the BLM on October 8, 2015. See attached schematic.	

**OXY USA Inc. - Cedar Canyon 29 Federal Com 25H**

**5. Mud Program**

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	400	Water-Based Mud	8.4-8.6	40-60	N/C
400	2844	Brine	9.8-10.0	35-45	N/C
2844	7903	Water-Based Mud	8.8-9.6	38-50	N/C
7903	13384	Oil-Based Mud	8.8-9.6	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. The following is a general list of products: Barite, Bentonite, Gypsum, Lime, Soda Ash, Caustic Soda, Nut Plug, Cedar Fiber, Cotton Seed Hulls, Drilling Paper, Salt Water Clay, CACL2. Oxy will use a closed mud system.

Oxy proposes to drill out the 10.75" surface casing shoe with a saturated brine system from 400' - 2844', 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 @ 7903'.

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

**6. Logging and Testing Procedures**

<b>Logging, Coring and Testing.</b>	
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
No	PEX
	Surface Shoe - TD

**OXY USA Inc. - Cedar Canyon 29 Federal Com 25H**

**7. Drilling Conditions**

<b>Condition</b>	<b>Specify what type and where?</b>
BH Pressure at deepest TVD	4306 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	149°F

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

Hydrogen Sulfide (H <sub>2</sub> S) monitors will be installed prior to drilling out the surface shoe. If H <sub>2</sub> S 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	H <sub>2</sub> S is present
Y	H <sub>2</sub> S Plan attached

**8. Other facets of operation**

	<b>Yes/No</b>
Will the well be drilled with a walking/skidding operation? If yes, describe. <ul style="list-style-type: none"> <li>We plan to drill the three well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well.</li> </ul>	Yes
Will more than one drilling rig be used for drilling operations? If yes, describe. <ul style="list-style-type: none"> <li>Oxy requests the option to contract a Surface Rig to drill, set surface casing, and cement for this well. If the timing between rigs is such that Oxy would not be able to preset surface, the Primary Rig will MIRU and drill the well in its entirety per the APD. Please see the attached document for information on the spudder rig.</li> </ul>	Yes

**Total estimated cuttings volume: 1037.9 bbls.**

**9. Company Personnel**

<b>Name</b>	<b>Title</b>	<b>Office Phone</b>	<b>Mobile Phone</b>
Philippe Haffner	Drilling Engineer	713-985-6379	832-767-9047
Diego Tellez	Drilling Engineer Supervisor	713-350-4602	713-303-4932
Simon Benavides	Drilling Superintendent	713-522-8652	281-684-6897
John Willis	Drilling Manager	713-366-5556	713-259-1417

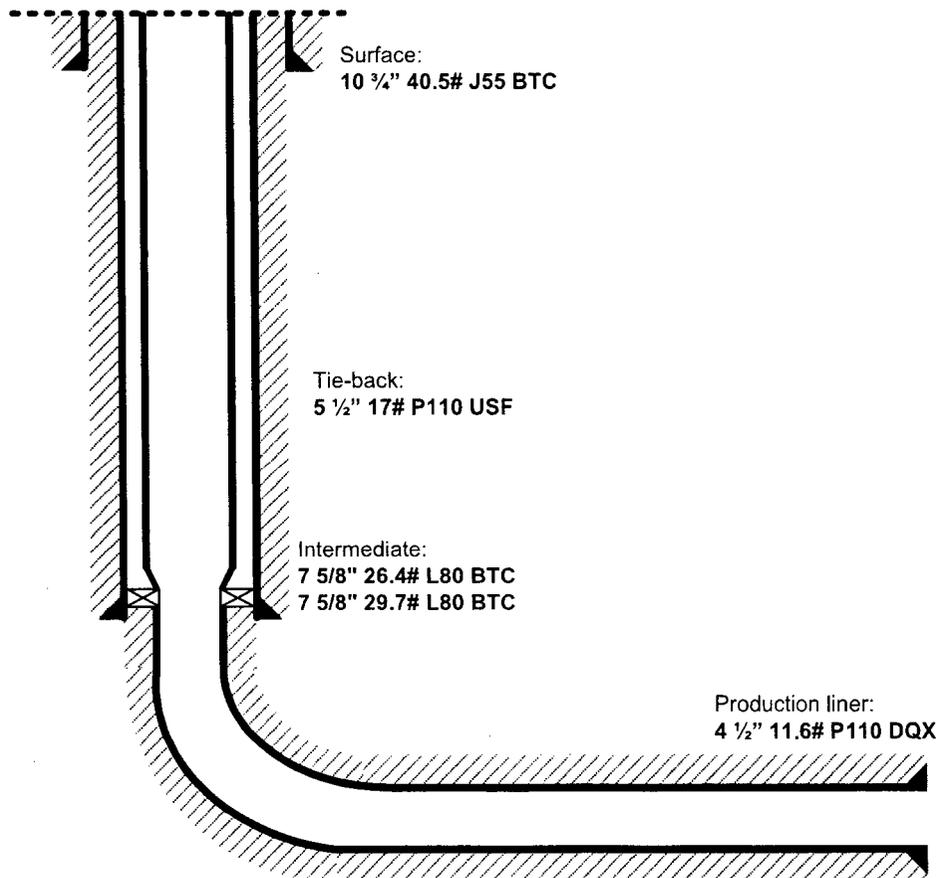
**OXY USA Inc**  
**Cedar Canyon 29 Fd Com #25H**

Below is a summary that describes the general operational steps to drill and complete the well.

- Drill 14-3/4" hole x 10-3/4" casing for surface section. Cement to surface.
- Drill 9-7/8" hole x 7-5/8" casing for intermediate section. Cement to surface.
- Drill 6-3/4" hole x 4-1/2" liner for production section. Cement to top of liner, 100' inside 7-5/8" shoe.
- Release drilling rig from location.
- Move in workover rig and run a 5-1/2" 17# P110 USF tie-back frack string and seal assembly (see connection specs below). Tie into liner hanger Polished Bore Receptacle (PBR) with seal assembly.
- Pump hydraulic fracture job.
- Flowback and produce well.

When a decision is made to develop a secondary bench from this wellbore, a workover rig will be moved to location. The workover rig will then retrieve the tie-back frack string and seal assembly before temporarily abandoning the initial lateral.

General well schematic:





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

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

**1. SUMMARY OF REQUEST:**

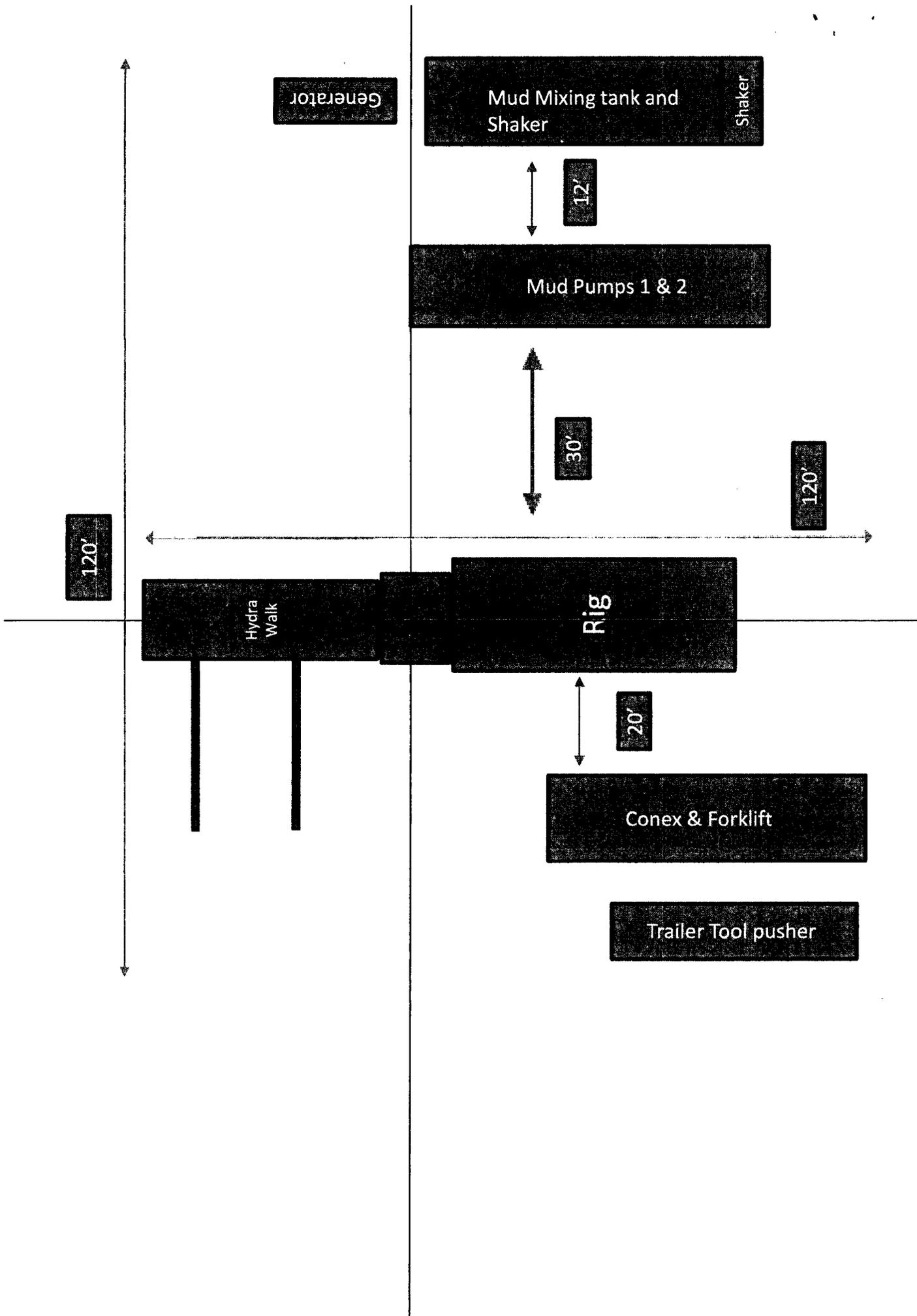
Oxy USA respectfully requests approval for the following operations for the surface hole in the drill plan:

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

**2. Description of Operations**

1. Spudder rig will move in to drill the surface hole and pre-set surface casing on the well.
  - a. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
  - b. The spudder rig will utilize fresh water-based mud to drill the surface hole to TD. Solids control will be handled entirely on a closed loop basis. No earth pits will be used.
2. The wellhead will be installed and tested as soon as the surface casing is cut off and the WOC time has been reached.
3. A blind flange at the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with needle valves installed on two wingvalves.
  - a. A means for intervention will be maintained while the drilling rig is not over the well.
4. Spudder rig operations are expected to take 2-3 days per well on the pad.
5. The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.
6. Drilling operations will begin with a larger rig and a BOP stack equal to or greater than the pressure rating that was permitted will be nipped up and tested on the wellhead before drilling operations resume on each well.
  - a. The larger rig will move back onto the location within 90 days from the point at which the wells are secured and the spudder rig is moved off location.
  - b. The BLM will be contacted / notified 24 hours before the larger rig moves back on the pre-set locations.
7. Oxy will have supervision on the rig to ensure compliance with all BLM and NMOCD regulations and to oversee operations.
8. Once the rig is removed, Oxy will secure the wellhead area by placing a guard rail around the cellar area.

# Spudder Rig Layout



APD ID: 10400013659

Submission Date: 05/02/2017

Highlighted data  
reflects the most  
recent changes

Operator Name: OXY USA INCORPORATED

Well Name: CEDAR CANYON 29 FEDERAL COM

Well Number: 25H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

CedarCanyon29FdCom25H\_ExistRoads\_04-26-2017.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

### ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

## Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

## Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

CedarCanyon29FdCom25H\_ExistWells\_04-26-2017.pdf

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

**Existing Wells description:**

## Section 4 - Location of Existing and/or Proposed Production Facilities

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Estimated Production Facilities description:**

**Production Facilities description:** a. In the event the well is found productive, the Cedar Canyon 28 Federal 4 Central Tank Battery would be utilized and the necessary production equipment will be installed at the well site. See proposed facilities layout diagram. b. All flow lines will adhere to API standards. They will consist of 2 – 4" composite flowlines operating 75% MAWP, surface and 2 – 8" steel gas lift supply line operating 1500 psig, buried, lines to follow surveyed route. Survey of a strip of land 30' wide and 10196.4' in length crossing USA Land in Section 28 & 29, T24S R29E, NMPM, Eddy County, NM and being 15' left and 15' right of the centerline survey, see attached. c. Electric line will follow a route approved by the BLM. Survey of a strip of land 30' wide and 5661.6' in length crossing USA Land in Section 29, T24S R29E, NMPM, Eddy County, NM and being 15' left and 15' right of the centerline survey, see attached.

**Production Facilities map:**

CedarCanyon29FdCom25H\_FacilityPLEL1\_05-02-2017.pdf

## Section 5 - Location and Types of Water Supply

### Water Source Table

**Water source use type:** INTERMEDIATE/PRODUCTION CASING,  
OTHER, SURFACE CASING

**Water source type:** GW WELL

**Describe type:**

**Source latitude:**

**Source longitude:**

**Source datum:**

**Water source permit type:** WATER WELL

**Source land ownership:** COMMERCIAL

**Water source transport method:** PIPELINE,TRUCKING

**Source transportation land ownership:** COMMERCIAL

**Water source volume (barrels):** 2000

**Source volume (acre-feet):** 0.25778618

**Source volume (gal):** 84000

**Water source and transportation map:**

CedarCanyon29FdCom25H\_GRRWtrSrc\_04-26-2017.pdf

CedarCanyon29FdCom25H\_MesqWtrSrc\_04-26-2017.pdf

**Water source comments:** This well will be drilled using a combination of water mud systems. It will be obtained from commercial water stations (Gregory Rockhouse, Mesquite, MMX) in the area and will be hauled to location by transport truck using existing and proposed roads.

**New water well?** NO

### New Water Well Info

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

**Well target aquifer:**

**Est. depth to top of aquifer(ft):**

**Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):**

**Well casing type:**

**Well casing outside diameter (in.):**

**Well casing inside diameter (in.):**

**New water well casing?**

**Used casing source:**

**Drilling method:**

**Drill material:**

**Grout material:**

**Grout depth:**

**Casing length (ft.):**

**Casing top depth (ft.):**

**Well Production type:**

**Completion Method:**

**Water well additional information:**

**State appropriation permit:**

**Additional information attachment:**

## Section 6 - Construction Materials

**Construction Materials description:** Primary - All caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM/State/Fee approved pit or from prevailing deposits found on the location. Will use BLM recommended extra caliche from other locations close by for roads, if available. Secondary - The secondary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cubic yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel: a. The top 6" of topsoil is pushed off and stockpiled along the side of the location. b. An approximate 120' X 120' area is used within the proposed well site to remove caliche. c. Subsoil is removed and piled alongside the 120' X 120' within the pad site. d. When caliche is found, material will be stockpiled within the pad site to build the location and road. e. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road. f. Once the well is drilled the stockpiled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stockpiled outside of the well pad. Topsoil will be stockpiled along the edge of the pad. Caliche will be provided from one of the following three pits located in Sections 6, 20, 22 T24S R29E. Water will be provided from one of the three frac ponds located in Sections 15, 21, 22 T24S R29E.

**Construction Materials source location attachment:**

## Section 7 - Methods for Handling Waste

**Waste type:** DRILLING

**Waste content description:** Water-Based Cuttings, Water-Based Mud, Oil-Based Cuttings, Oil-Based Mud, Produced Water

**Amount of waste:** 1037.9 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** Haul-Off Bins

**Safe containmant attachment:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** An approved facility that can process drill cuttings, drill fluids, flowback water, produced water, contaminated soils, and other non-hazardous wastes.

### Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)**

**Reserve pit width (ft.)**

**Reserve pit depth (ft.)**

**Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** YES

**Description of cuttings location** 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.

**Cuttings area length (ft.)**

**Cuttings area width (ft.)**

**Cuttings area depth (ft.)**

**Cuttings area volume (cu. yd.)**

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

### Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

## Section 9 - Well Site Layout

### Well Site Layout Diagram:

CedarCanyon29FdCom25H\_WellSiteCL\_04-26-2017.pdf

CedarCanyon29FdCom25H\_CutFillLocationLayout\_20170831155421.pdf

**Comments:** V-Door-North - CL Tanks-West - 330' X 470' – 3 Well Pad

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** NEW

**Recontouring attachment:**

**Drainage/Erosion control construction:** Reclamation to be wind rowed as needed to control erosion

**Drainage/Erosion control reclamation:** Reclamation to be wind rowed as needed to control erosion

**Wellpad long term disturbance (acres):** 2.31

**Wellpad short term disturbance (acres):** 3.56

**Access road long term disturbance (acres):** 0

**Access road short term disturbance (acres):** 0

**Pipeline long term disturbance (acres):** 2.3407714

**Pipeline short term disturbance (acres):** 7.022314

**Other long term disturbance (acres):** 0

**Other short term disturbance (acres):** 3.9

**Total long term disturbance:** 4.650771

**Total short term disturbance:** 14.482314

**Reconstruction method:** If the well is deemed commercially productive, caliche from the areas of the pad site not required for operations will be reclaimed. The original topsoil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation. After concluding the drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original topsoil will again be returned to the pad and contoured, as close as possible, to the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

**Topsoil redistribution:** The original topsoil will be returned to the area of the drill pad not necessary to operate the well.

**Soil treatment:** To be determined by the BLM.

**Existing Vegetation at the well pad:** To be determined by the BLM at Onsite.

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:** To be determined by the BLM at Onsite.

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:** To be determined by the BLM at Onsite.

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:** To be determined by the BLM at Onsite.

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** NO

**Seed harvest description:**

**Seed harvest description attachment:**

## Seed Management

### Seed Table

**Seed type:**

**Seed source:**

**Seed name:**

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:**

**Proposed seeding season:**

### Seed Summary

**Total pounds/Acre:**

Seed Type	Pounds/Acre
-----------	-------------

**Seed reclamation attachment:**

### Operator Contact/Responsible Official Contact Info

**First Name:** JIM

**Last Name:** WILSON

**Phone:** (575)631-2442

**Email:** jim\_wilson@oxy.com

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** To be determined by the BLM.

**Weed treatment plan attachment:**

**Monitoring plan description:** To be determined by the BLM.

**Monitoring plan attachment:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

**Success standards:** To be determined by the BLM.

**Pit closure description:** Not applicable.

**Pit closure attachment:**

## **Section 11 - Surface Ownership**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** PIPELINE

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** OTHER

**Describe:** ELECTRIC LINE

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

## **Section 12 - Other Information**

**Right of Way needed?** YES

**Use APD as ROW?** YES

**ROW Type(s):** 285003 ROW – POWER TRANS,288100 ROW – O&G Pipeline,289001 ROW- O&G Well Pad

### **ROW Applications**

**SUPO Additional Information:** \*Permian Basin MOA – see attached SUPO and to be determined by BLM. GIS Shapefiles

**Operator Name:** OXY USA INCORPORATED

**Well Name:** CEDAR CANYON 29 FEDERAL COM

**Well Number:** 25H

furnished after APD submittal.

**Use a previously conducted onsite?** NO

**Previous Onsite information:**

### **Other SUPO Attachment**

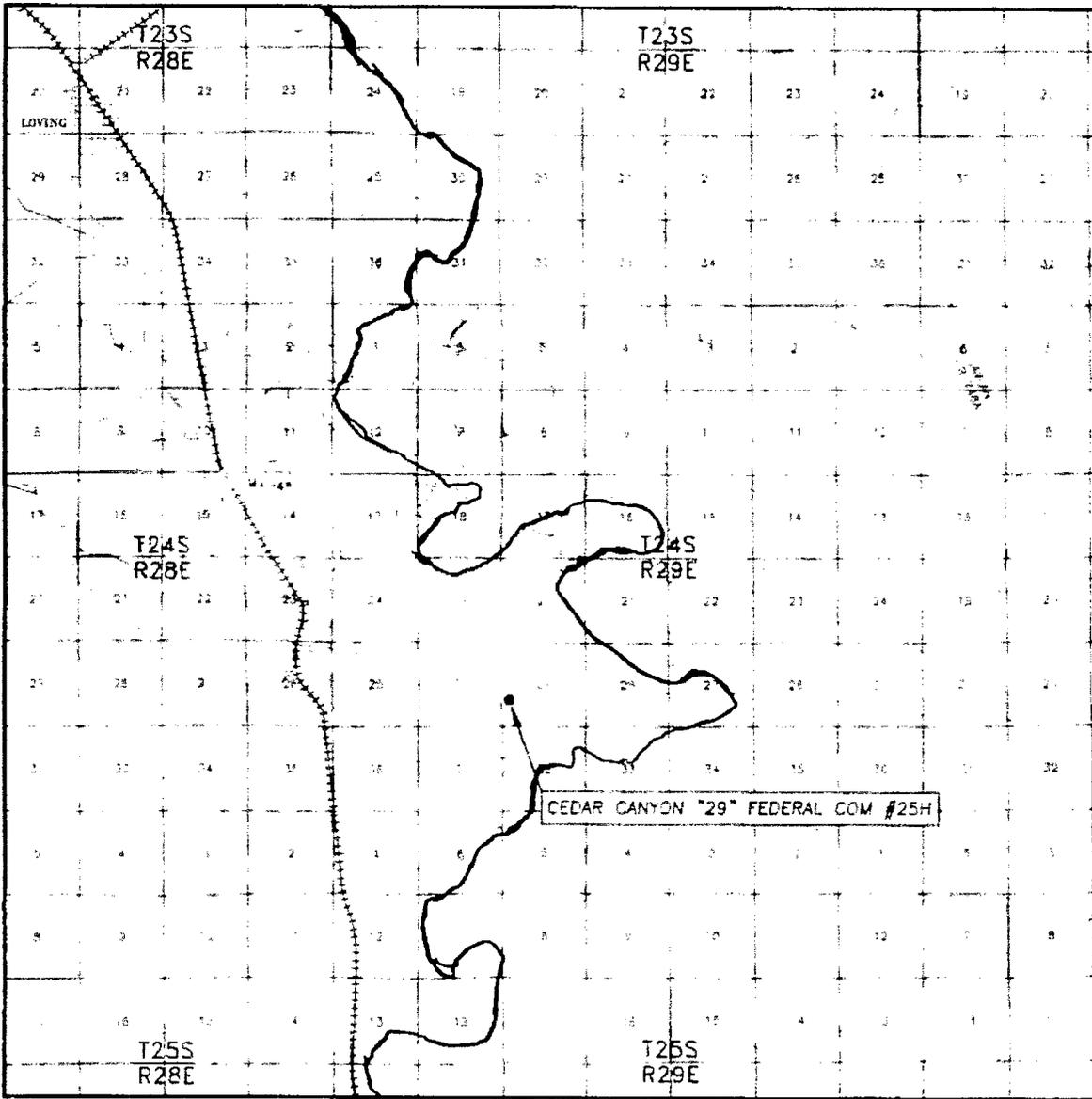
CedarCanyon29FdCom25H\_GasCapPlan\_04-26-2017.pdf

CedarCanyon29FdCom25H\_StakeNotice\_04-26-2017.pdf

CedarCanyon29FdCom25H\_MiscSvyPlats\_04-26-2017.pdf

CedarCanyon29FdCom25H\_SUPO\_05-02-2017.pdf

# VICINITY MAP



SEC 29 T24S R28E  
 SURVEYOR: KILPATRICK  
 COUNTY: DEER  
 DESCR: ROAD 748 & 749  
 ELEVATION: 2828.6  
 OPERATOR: DAN BRADY

ALL 1" = 200'

Real Surveying

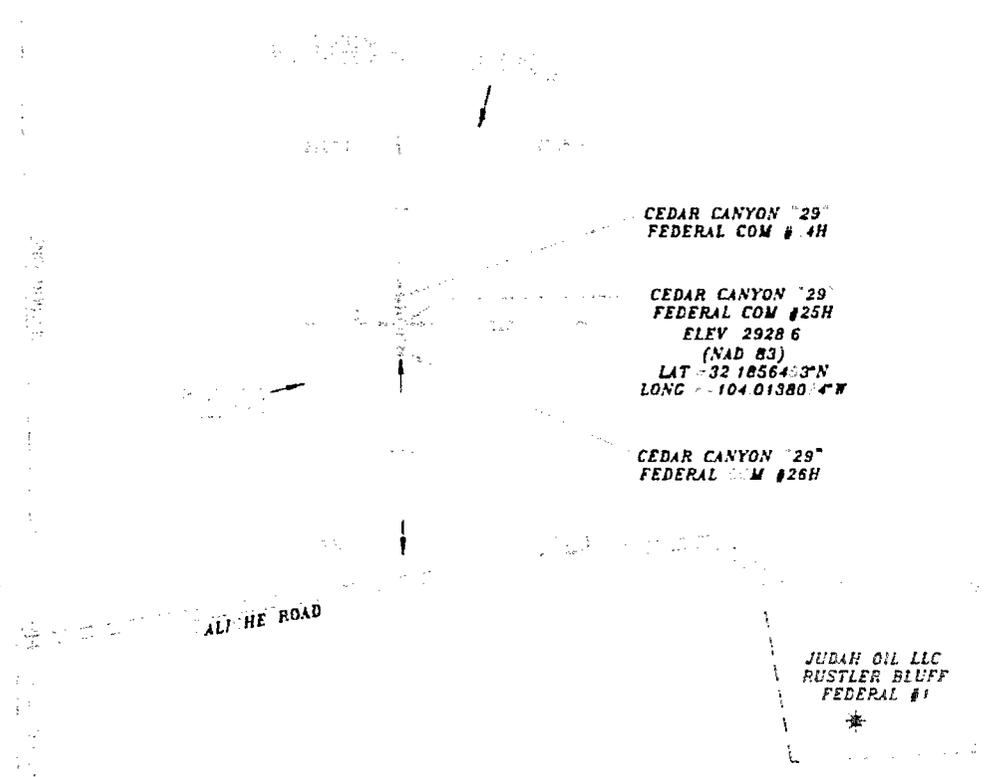
112 E. 3rd St. Ste W. JARVIS  
 11405 NEW AVE. P.O. BOX 385 BURLINGAME, OR 97148



LEVST: CEDAR CANYON "29" FEDERAL COM #25H  
 DIRECTIONS: FROM THE INTERSECTION OF US 101 W/41 AND BLACK RIVER W/45E ROAD W/41/45E GO EAST ON COUNTY ROAD #771 FOR 1.1 MILES, TURN RIGHT ON COUNTY ROAD #748 (MCDONOUGH ROAD) AND GO SOUTH FOR 0.8 MILES, CONTINUE SOUTHEAST/0-51 FOR 2.1 MILES, TURN RIGHT ON CANYON ROAD AND GO SOUTH FOR 1.3 MILES, TURN LEFT AND GO EAST 212 W/4 W/41 TURN RIGHT AND GO SOUTH FOR 1.3 MILES, TURN LEFT AND GO EAST FOR 0.3 MILES TO LOCATED.

OXY USA INC.  
 CEDAR CANYON "29" FEDERAL COM #25H  
 SITE PLAN

FAA PERMIT: NO



CEDAR CANYON "29"  
 FEDERAL COM # 4H

CEDAR CANYON "29"  
 FEDERAL COM #25H  
 ELEV 2928.6  
 (NAD 83)  
 LAT = 32 18 56.403" N  
 LONG = 104 01 38.014" W

CEDAR CANYON "29"  
 FEDERAL COM #26H

JUDAH OIL LLC  
 RUSTLER BLUFF  
 FEDERAL #1



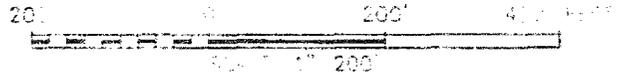
**SURVEYORS CERTIFICATE**

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* 3/16/2017  
 Terry J. Asel, P.M. R.P.L.S. No. 15079

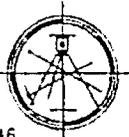
**LEGEND**

- PROPOSED WELL PAD
- PROPOSED ROAD
- STAKE FILE AREA
- \* EXISTING WELL



Asel Surveying

P.O. BOX 353 - 31 W. TAYLOR  
 HOBBS, NEW MEX. 782 191 9146



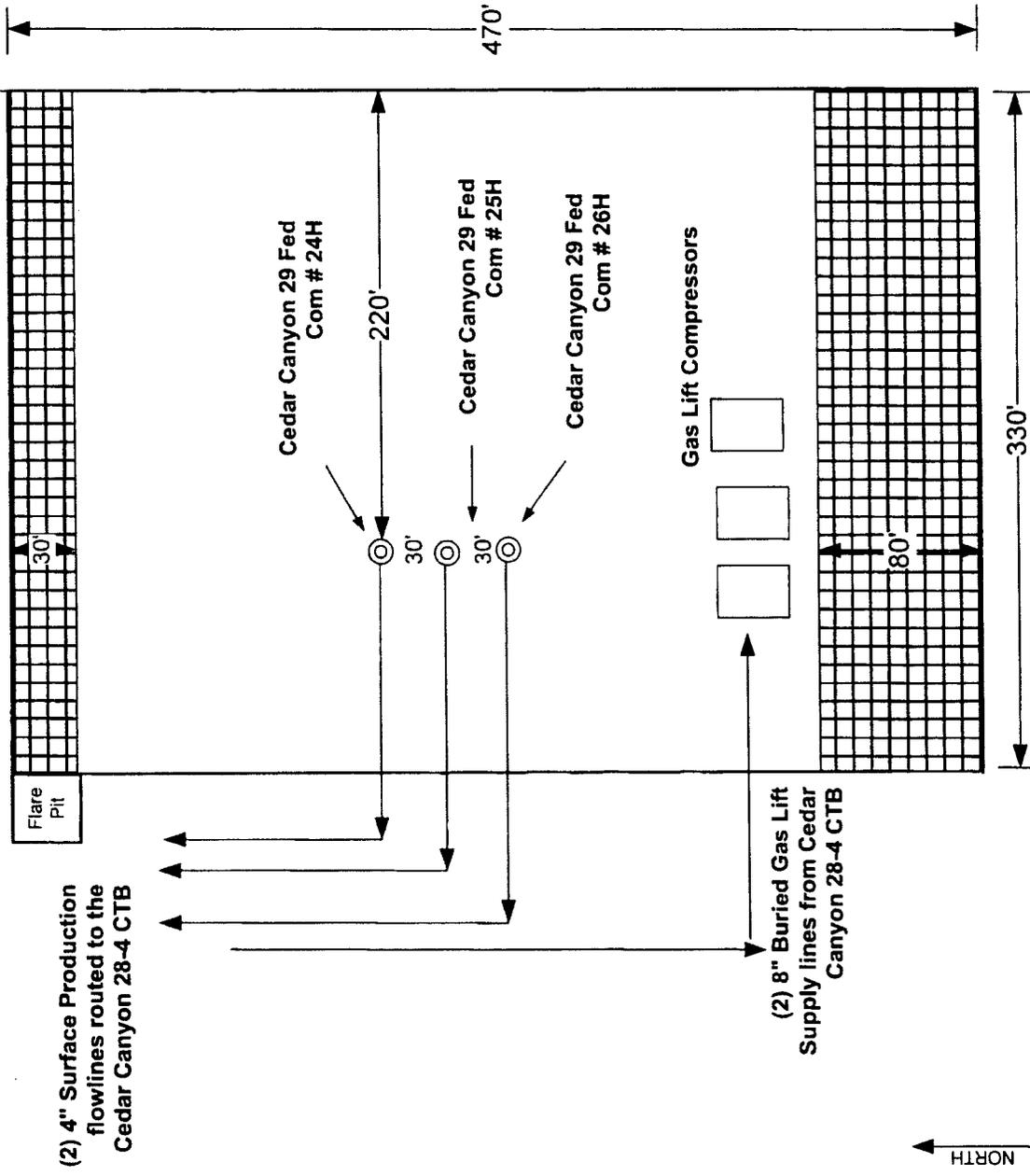
OXY USA INC.

CEDAR CANYON "29" FEDERAL COM #25H  
 6" AT 1640' FSL & 420' FW IN  
 SE 1/4 IN 29, TOWNSHIP 24 SOUTH, RANGE 29  
 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 01/24/17	Sheet 1 of 1 Sheets
W.O. Number: 151110WL-b (Rev. A)	Drawn By: KA Rev: A
Date: 03/15/17	Scale: 1" = 200'



ACCESS ROAD



(2) 4" Surface Production flowlines routed to the Cedar Canyon 28-4 CTB

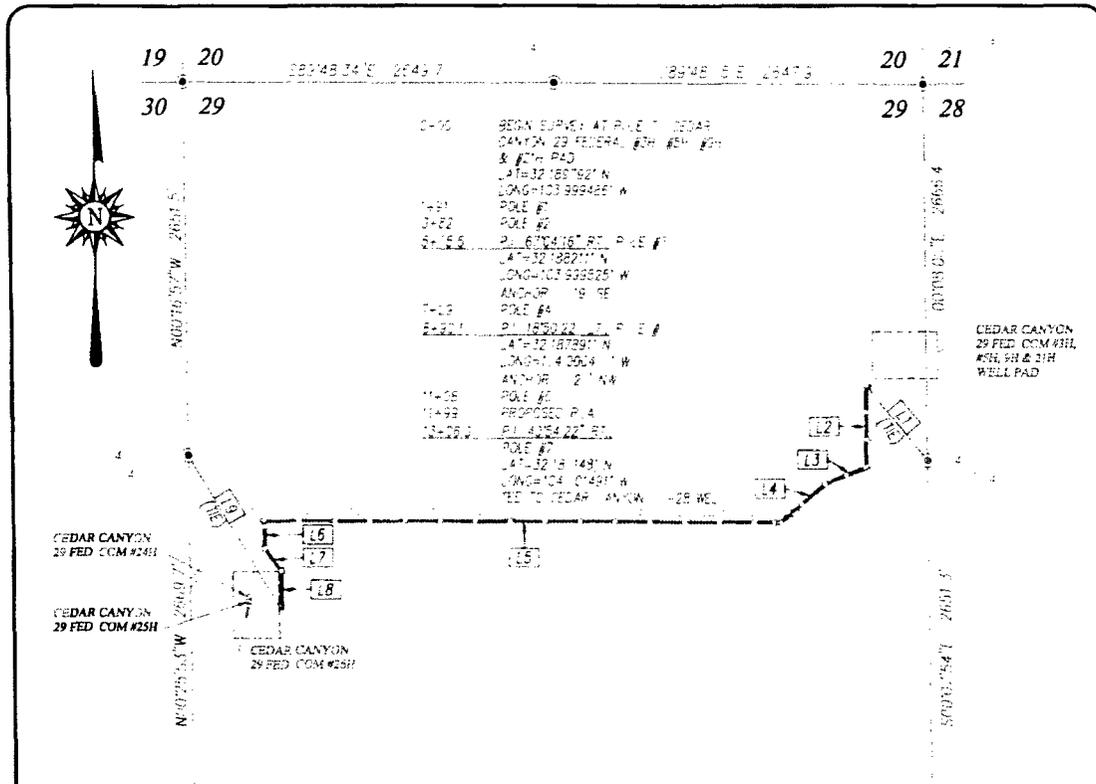
(2) 8" Buried Gas Lift Supply lines from Cedar Canyon 28-4 CTB

8' Diameter x 8' Deep Tinhorn Cellar

Facility Layout Diagram  
Cedar Canyon 29 Fed Com # 24H,  
25H & 26H  
EDDY COUNTY, NEW MEXICO

REVISION BLOCK		ENGINEERING RECORD			
NO.	DATE	DESCRIPTION	BY	CHK	APP





19 20 30 29 20 21 29 28

USA

30 29 29 28

31 32 32 33

- AND SURVEY AT ANCHOR POLE #1
- ANCHOR POLE #2
- ANCHOR POLE #3
- ANCHOR POLE #4
- ANCHOR POLE #5
- ANCHOR POLE #6
- ANCHOR POLE #7
- ANCHOR POLE #8
- ANCHOR POLE #9
- ANCHOR POLE #10
- ANCHOR POLE #11
- ANCHOR POLE #12
- ANCHOR POLE #13
- ANCHOR POLE #14
- ANCHOR POLE #15
- ANCHOR POLE #16

**DESCRIPTION**

SURVEY FOR A STRIP OF LAND 30 FEET WIDE AND 681.6 FEET OR 1072 FEET IN LENGTH CROSSING USA LAND IN THE NORTHWEST QUARTER OF SECTION 29, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO, AND BEING 150 FEET LEFT AND 184 FEET RIGHT OF THE ABOVE RELATED CENTER LINE.

**NOTE**

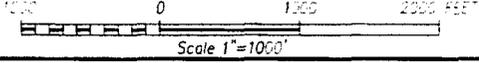
- 1) BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.
- 2) LATITUDE AND LONGITUDE VALUES SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN DATUM 1983 (NAD83).

**LINE TABLE**

LINE	BEARING	DISTANCE
L1 (TIE)	N39°48'45"W	683.6'
L2	S01°01'22"W	575.5'
L3	S68°05'38"W	314.6'
L4	S49°15'16"W	415.9'
L5	N89°50'22"W	3690.5'
L6	S00°01'16"W	194.4'
L7	S36°36'17"E	195.1'
L8	S00°23'10"E	275.5'
L9 (TIE)	S31°21'55"E	1274.6'

**LEGEND**

● DENOTES FOUND CORNER AS NOTED



RONALD J. EIDSON, SURVEYOR No. 2239,  
DO HEREBY CERTIFY THAT THE SURVEY DATA AND THE ACCURACY THEREON  
ON THE GROUND UPON WHICH THIS REPORT IS BASED WERE PERFORMED BY ME OR  
UNDER MY DIRECT SUPERVISION AND 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  
DATE 05/01/2017

**OXY U.S.A. INC.**

**SURVEY FOR AN ELECTRIC LINE TO THE CEDAR CANYON  
29 FEDERAL COM #24H, #25H & #26H WELLS  
CROSSING SECTION 29, TOWNSHIP 24 SOUTH,  
RANGE 29 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO**

Survey Date: 4/23/17	CAD Date: 4/30/17	Drawn By: DSS
W.O. No: 1710367	Rev:	Rel. W.O.:

Sheet 1 of 1

PROVIDING SURVEYING SERVICES  
SINCE 1946

**JOHN WEST SURVEYING COMPANY**  
422 N DAL PASO HOBBS, NM 88240  
(575) 393-3117 www.jwsc.biz  
TBPLS# 10021000

Prepared by:  
Dave Andersen  
GRR Land Department

GRR, INC. WATER SOURCES  
FOR OXY CERTAIN POND LOCATIONS

08/26/2016

Pond Name	Water Source1	Water Source2	Water Source3	Water Source4
Cedar Canyon	<u>Mine Industrial</u>	<u>C-3478</u>	<u>C-2772</u>	<u>C-1360</u>
Corral Fly	<u>C-1360</u>	<u>C-1361</u>	<u>C-3358</u>	<u>C-3836</u>
Cypress	<u>Mine Industrial</u>	<u>C-3478</u>	<u>C-2772</u>	<u>C-1361</u>
Mesa Verde	<u>C-2571</u>	<u>C-2574</u>	<u>J-27</u>	<u>J-5</u>
Peaches	<u>C-906</u>	<u>C-3200</u>	<u>SP-55 &amp; SP-1279</u> <u>A</u>	<u>C-100</u>

## GRR Inc.

NMOSE WELL NUMBER	WELL COMMON NAME	LAND OWNERSHIP	GPS LOCATION
C-100	Tres Rios - Next to well shack	PRIVATE	32.201921° -104.254317°
C-100-A	Tres Rios - Center of turnaround	PRIVATE	32.201856° -104.254443°
C-272-B	Tres Rios - Northwest	PRIVATE	32.202315° -104.254812°
C-906	Whites City Commercial	PRIVATE	32.176949°-104.374371°
C-1246-AC & C-1246-AC-S	Lackey	PRIVATE	32.266978°-104.271212°
C-1886	1886 Tank	BLM	32.229316° -104.312930°
C-1083	Petska	PRIVATE	32.30904° -104.16979°
C-1142	Winston West	BLM	32.507845-104.177410
C-1360	ENG#1	PRIVATE	32.064922° -103.908818°
C-1361	ENG#2	PRIVATE	32.064908° -103.906266°
C-1573	Cooksey	PRIVATE	32.113463° -104.108092°
C-1575	ROCKHOUSE Ranch Well - Wildcat	BLM	32.493190° -104.444163°
C-2270	CW#1 (Oliver Kiehne)	PRIVATE	32.021440° -103.559208°
C-2242	Walterscheid	PRIVATE	32.39199° -104.17694°
C-2492POD2	Stacy Mills	PRIVATE	32.324203° -103.812472°
C-2569	Paduca well #2	BLM	32.160588 -103.742051
C-2569POD2	Paduca well replacement	BLM	32.160588 -103.742051
C-2570	Paduca (tank) well #4	BLM	32.15668 -103.74114
C-2571	Paduca (road) well	BLM	32.163993° -103.745457°
C-2572	Paduca well #6	BLM	32.163985 -103.7412
C-2573	Paduca (in the bush) well	BLM	32.16229 -103.74363
C-2574	Paduca well (on grid power)	BLM	32.165777° -103.747590°
C-2701	401 Water Station	BLM	32.458767° -104.528097°
C-2772	Mobley Alternate	BLM	32.305220° -103.852360°
C-3011	ROCKY ARROYO - MIDDLE	BLM	32.409046° -104.452045°
C-3060	Max Vasquez	PRIVATE	32.31291° -104.17033°
C-3095	ROCKHOUSE Ranch Well - North of Rockcrusher	PRIVATE	32.486794° -104.426227°
C-3200	Beard East	PRIVATE	32.168720 -104.276600
C-3260	Hayhurst	PRIVATE	32.227110° -104.150925°
C-3350	Winston Barn	PRIVATE	32.511871° -104.139094°
C-3358	Branson	PRIVATE	32.19214° -104.06201°
C-3363	Watts#2	PRIVATE	32.444637° -103.931313°
C-3453	ROCKY ARROYO - FIELD	PRIVATE	32.458657° -104.460804°
C-3478	Mobley Private	PRIVATE	32.294937° -103.888656°
C-3483pod1	ENG#3	BLM	32.065556° -103.894722°
C-3483pod3	ENG#5	BLM	32.06614° -103.89231°
C-3483POD4	CW#4 (Oliver Kiehne)	PRIVATE	32.021803° -103.559030°
C-3483POD5	CW#5 (Oliver Kiehne)	PRIVATE	32.021692° -103.560158°
C-3554	Jesse Baker #1 well	PRIVATE	32.071937° -103.723030°
C-3577	CW#3 (Oliver Kiehne)	PRIVATE	32.021773° -103.559738°
C-3581	ENG#4	BLM	32.066083° -103.895024°
C-3595	Oliver Kiehne house well #2	PRIVATE	32.025484° -103.682529°
C-3596	CW#2 (Oliver Kiehne)	PRIVATE	32.021793° -103.559018°

## GRR Inc.

NMOSE WELL NUMBER	WELL COMMON NAME	LAND OWNERSHIP	GPS LOCATION
C-3614	Dale Hood #2 well	PRIVATE	32.449290° -104.214500°
C-3639	Jesse Baker #2 well	PRIVATE	32.073692° -103.727121°
C-3679	McCloy-Batty	PRIVATE	32.215790° -103.537690°
C-3689	Winston Barn_South	PRIVATE	32.511504° -104.139073°
C-3731	Ballard Construction	PRIVATE	32.458551° -104.144219°
C-3764	Watts#4	PRIVATE	32.443360° -103.942890°
C-3795	Beckham#6	BLM	32.023434° -103.321968°
C-3821	Three River Trucking	PRIVATE	32.34636° -104.21355
C-3824	Collins	PRIVATE	32.224053° -104.090129°
C-3829	Jesse Baker #3 well	PRIVATE	32.072545° -103.722258°
C-3830	Paduca	BLM	32.156400° -103.742060°
C-3836	Granger	PRIVATE	32.10073° -104.10284°
C-384	ROCKHOUSE Ranch Well - Rockcrusher	PRIVATE	32.481275° -104.420706°
C-459	Walker	PRIVATE	32.3379° -104.1498°
C-496pod2	Munoz #3 Trash Pit Well	PRIVATE	32.34224° -104.15365°
C-496pod3&4	Munoz #2 Corner of Porter & Derrick	PRIVATE	32.34182° -104.15272°
C-552	Dale Hood #1 well	PRIVATE	32.448720° -104.214330°
C-764	Mike Vasquez	PRIVATE	32.230553° -104.083518°
C-766(old)	Grandi	PRIVATE	32.32352° -104.16941°
C-93-S	Don Kidd well	PRIVATE	32.344876 -104.151793
C-987	ROCKY ARROYO - HOUSE	PRIVATE	32.457049° -104.461506°
C-98-A	Bindel well	PRIVATE	32.335125° -104.187255°
CP-1170POD1	Beckham#1	PRIVATE	32.065889° -103.312583°
CP-1201	Winston Ballard	BLM	32.580380° -104.115980°
CP-1202	Winston Ballard	BLM	32.538178° -104.046024°
CP-1231	Winston Ballard	PRIVATE	32.618968° -104.122690°
CP-1263POD5	Beckham#5	PRIVATE	32.065670° -103.307530°
CP-1414	Crawford #1	PRIVATE	32.238380° -103.260890°
CP-1414 POD 1	RRR	PRIVATE	32.23911° -103.25988°
CP-1414 POD 2	RRR	PRIVATE	32.23914° -103.25981°
CP-519	Bond_Private	PRIVATE	32.485546 -104.117583
CP-556	Jimmy Mills (Stacy)	STATE	32.317170° -103.495080°
CP-626	Oi Loco (W)	STATE	32.692660° -104.068064°
CP-626-S	Beach Exploration/ Oi Loco (E)	STATE	32.694229° -104.064759°
CP-73	Laguna #1	BLM	32.615015° -103.747615°
CP-74	Laguna #2	BLM	32.615255° -103.747688°
CP-741	Jimmy Richardson	BLM	32.61913° -104.06101°
CP-742	Jimmy Richardson	BLM	32.614061° -104.017211°
CP-742	Hidden Well	BLM	32.614061 -104.017211
CP-745	Leaning Tower of Pisa	BLM	32.584619° -104.037179°
CP-75	Laguna #3	BLM	32.615499° -103.747715°
CP-924	Winston Ballard	BLM	32.545888° -104.110114°
CP-926	Winchester well (Winston)	BLM	32.601125° -104.128358°

NMOSE WELL NUMBER	WELL COMMON NAME	GRR Inc.	
		LAND OWNERSHIP	GPS LOCATION
J-27	Beckham	PRIVATE	32.020403° -103.299333°
J-5	EPNG Jal Well	PRIVATE	32.050232° -103.313117°
J-33	Beckham	PRIVATE	32.016443° -103.297714°
J-34	Beckham	PRIVATE	32.016443° -103.297714°
J-35	Beckham	PRIVATE	32.016443° -103.297714°
L-10167	Angell Ranch well	PRIVATE	32.785847° -103.644705°
L-10613	Northcutt3 (2nd House well)	PRIVATE	32.687922° -103.472452°
L-11281	Northcutt4	PRIVATE	32.687675° -103.471512°
L-12459	Northcutt1 (House well)	PRIVATE	32.689498° -103.472697°
L-12462	Northcutt8 Private Well	PRIVATE	32.686238° -103.435409°
L-13049	EPNG Maljamar well	PRIVATE	32.81274° -103.67730°
L-13129	Pearce State	STATE	32.726305° -103.553172°
L-13179	Pearce Trust	STATE	32.731304° -103.548461°
L-13384	Northcutt7 (State) CAZA	STATE	32.694651° -103.434997°
L-1880S-2	HB Intrepid well #7	PRIVATE	32.842212° -103.621299°
L-1880S-3	HB Intrepid well #8	PRIVATE	32.852415° -103.620405°
L-1881	HB Intrepid well #1	PRIVATE	32.829124° -103.624139°
L-1883	HB Intrepid well #4	PRIVATE	32.828041° -103.607654°
L-3887	Northcutt2 (Tower or Pond well)	PRIVATE	32.689036° -103.472437°
L-5434	Northcutt5 (State)	STATE	32.694074° -103.405111°
L-5434-S	Northcutt6 (State)	STATE	32.693355° -103.407004°
RA-14	Horner Can	PRIVATE	32.89348° -104.37208°
RA-1474	Irvin Smith	PRIVATE	32.705773° -104.393043°
RA-1474-B	NLake WS / Jack Clayton	PRIVATE	32.561221° -104.293095°
RA-9193	Angell Ranch North Hummingbird	PRIVATE	32.885162° -103.676376°
SP-55 & SP-1279-A	Blue Springs Surface POD	PRIVATE	32.181358° -104.294009°
SP-55 & SP-1279 (Bounds)	Bounds Surface POD	PRIVATE	32.203875° -104.247076°
SP-55 & SP-1279 (Wilson)	Wilson Surface POD	PRIVATE	32.243010° -104.052197°
City Treated Effluent	City of Carlsbad Waste Treatment Plant	PRIVATE	32.411122° -104.177030°
Mine Industrial	Mosaic Industrial Water	PRIVATE	32.370286° -103.947839°
Mobley State Well (NO OSE)	Mobley Ranch	STATE	32.308859° -103.891806°
EPNG Industrial	Monument Water Well Pipeline (Oil Center, Eunice)	PRIVATE	32.512943° -103.290300°
MCOX Commercial	Matt Cox Commercial	PRIVATE	32.529431° -104.188017°
AMAX Mine Industrial	Mosaic Industrial Water	N/A	VARIOUS TAPS
WAG Mine Industrial	Mosaic Industrial Water	N/A	VARIOUS TAPS
HB Mine Industrial	Intrepid Industrial Water	N/A	VARIOUS TAPS

## **Mesquite**

### **Cedar Canyon**

Major Source: C464 (McDonald) Sec. 13 T24S R28E

Secondary Source: C-00738 (McDonald/Faulk) Sec. 12 T24S R28E

### **Corral Fly – South of Cedar Canyon**

Major Source: C464 (McDonald) Sec. 13 T24S R28E

Secondary Source: C-00738 (McDonald/Faulk) Sec. 12 T24S R28E

### **Cypress – North of Cedar Canyon**

Major Source: Caviness B: C-501-AS2 Sec 23 T28S R15E

Secondary Source: George Arnis; C-1303

### **Sand Dunes – new frac pond**

Major Source: 128 Fresh Water Pond (Mesquite/Mosaic) – located at MM 4 on 128; 240,000 bbl pond

Secondary Source: George Arnis; C-1303

### **Mesa Verde – east of Sand Dunes**

Major Source: 128 Fresh Water Pond (Mesquite/Mosaic) – located at MM 4 on 128; 240,000 bbl pond

Secondary Source: Unknown at this time; needs coordinates to determine secondary source

### **Smokey Bits/Ivore/Misty – had posiden tanks before**

Major Source: Unknown at this time; need coordinates to determine major source

Secondary Source: Unknown at this time; needs coordinates to determine secondary source

### **Red Tank/Lost Tank**

Major Source: Unknown at this time; need coordinates to determine major source

Secondary Source: Unknown at this time; needs coordinates to determine secondary source

### **Peaches**

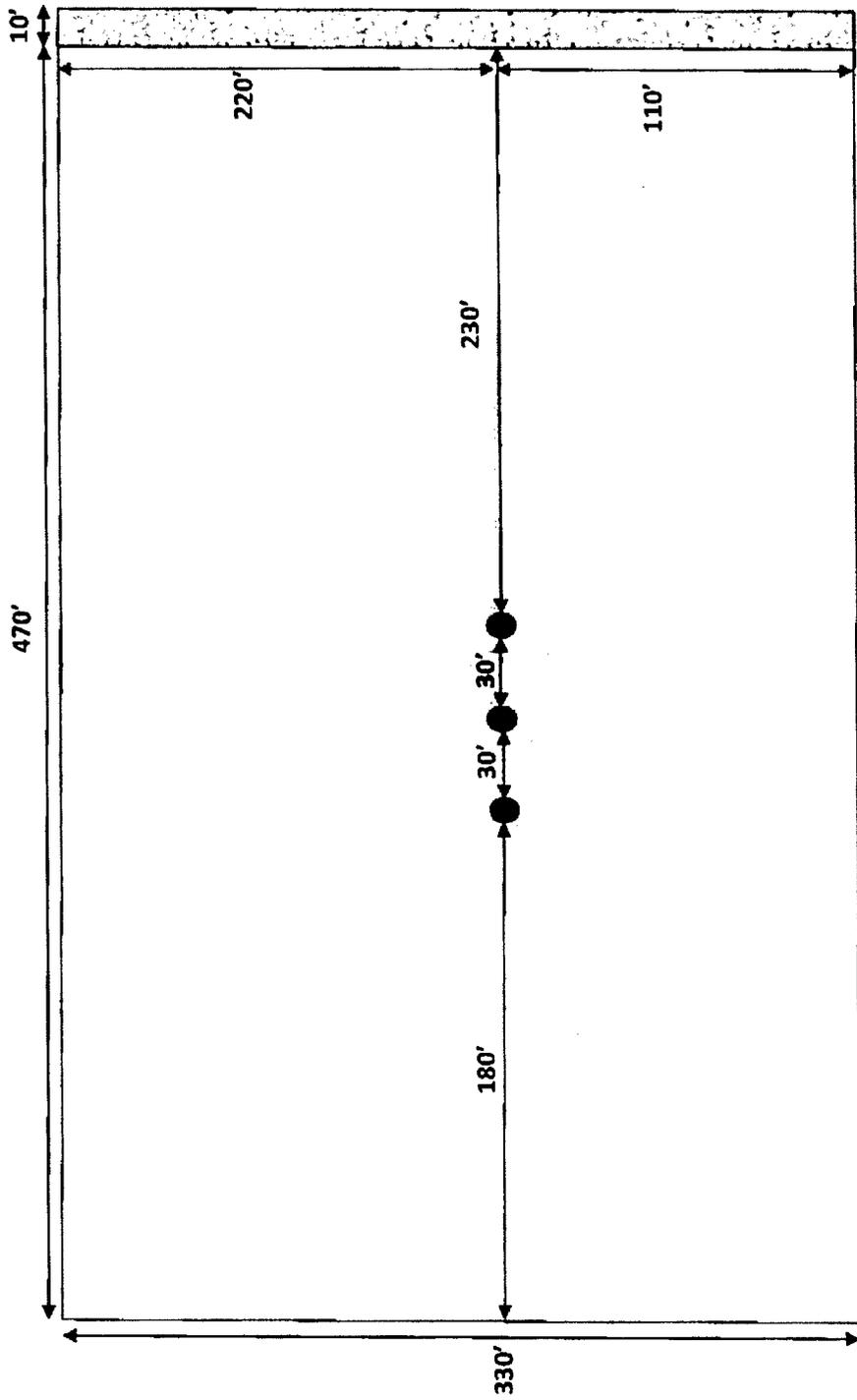
Major Source: Unknown at this time; need coordinates to determine major source

Secondary Source: Unknown at this time; needs coordinates to determine secondary source

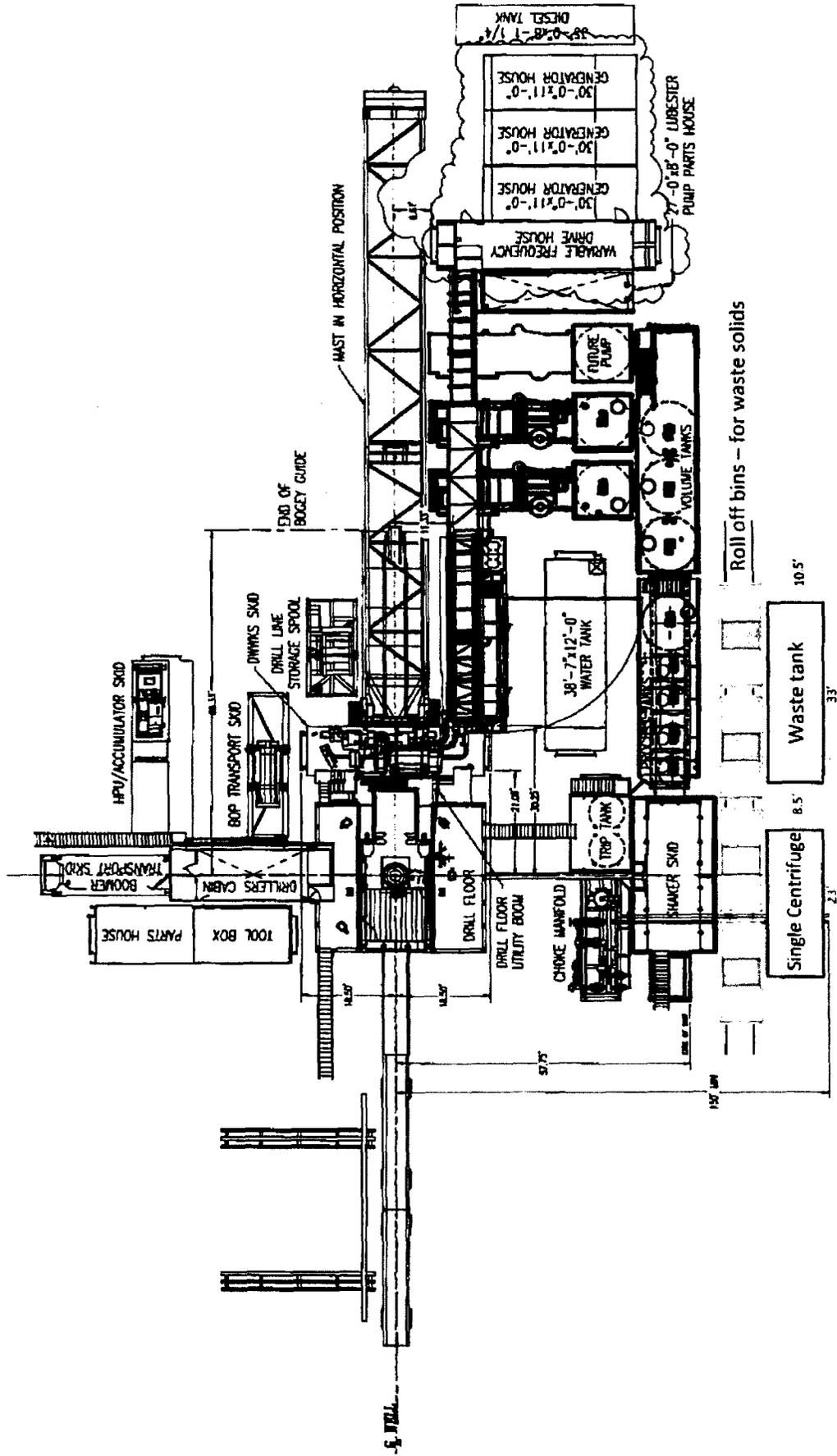




**Pad Site Overall Rig Layout  
3 Well Pad Site**



Oxy Single Centrifuge  
 Closed Loop System – New  
 Mexico Flex III  
 May 28, 2013

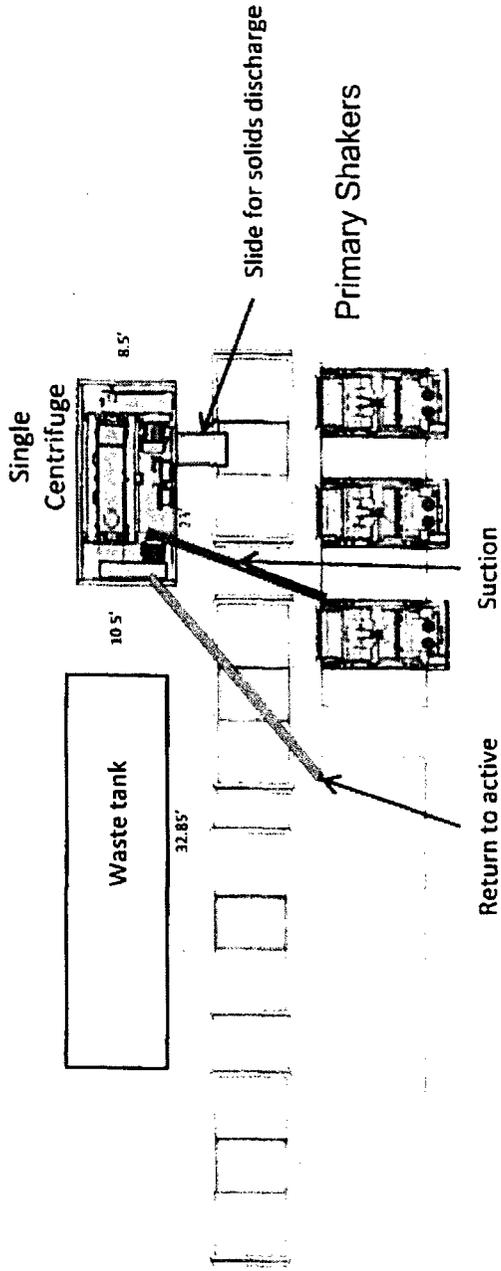


Roll off bins – for waste solids

Single Centrifuge 8.5' 23'

Waste tank 10.5' 33'

# Oxy



Oxy Single Centrifuge  
Closed Loop System – New  
Mexico Flex III  
May 28, 2013

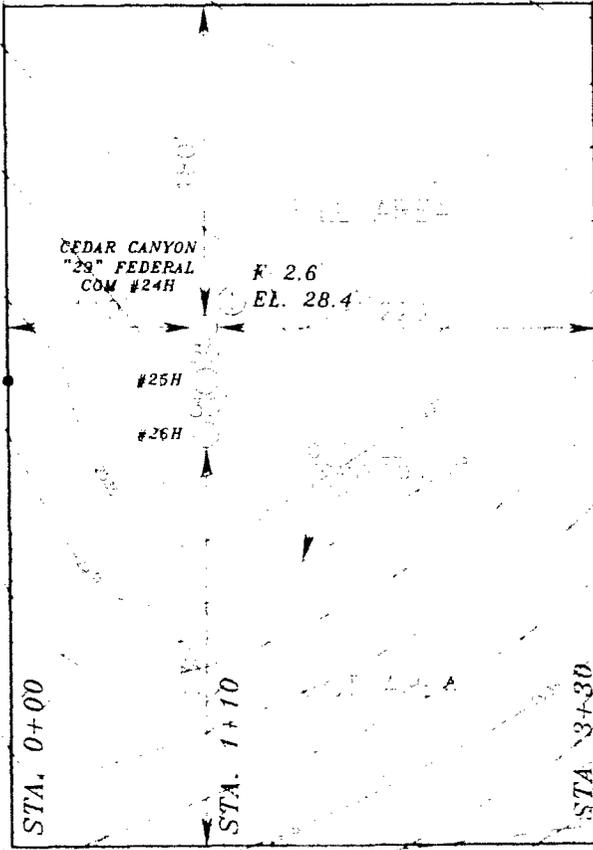
# OXY USA INC. CEDAR CANYON "29" FEDERAL COM #24H LOCATION LAYOUT



F-3.3'  
EL. 27.7'

F-5.2'  
EL. 25.8'

F-0.3'  
EL. 30.7'



C-2.6'  
EL. 33.6'

C-6.5'  
EL. 37.5'



CONTOUR INTERVAL: 1.00'  
ELEV. UNGRADED GROUND AT LOC. STAKE = 2928.4'  
FINISHED GRADE ELEV. AT LOC. STAKE = 2931.0'

**SURVEYORS CERTIFICATE**

I, TERRY J. ASEEL, 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. Aseel* 6/30/2017  
Terry J. Aseel, N.M. R.P.L.S. No. 15079

Asel Surveying

P.O. BOX 393 • 3 J W TAYLOR  
MORBES (NEW MEXICO) 575-363-9146



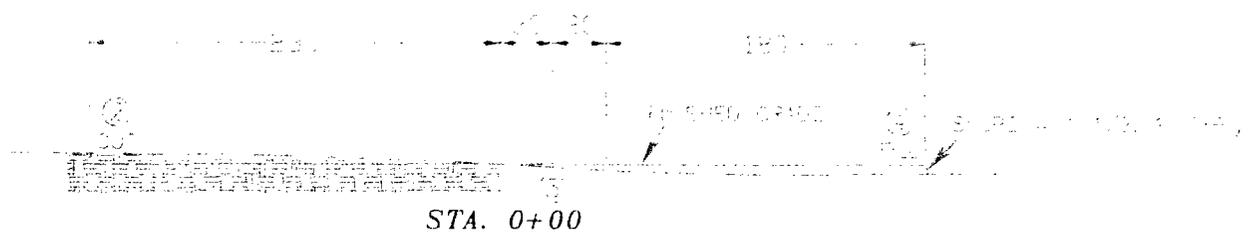
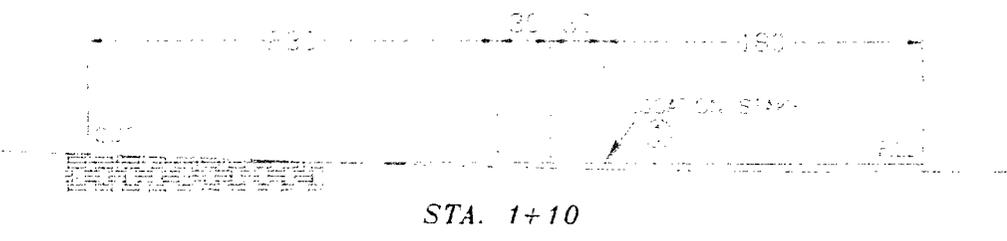
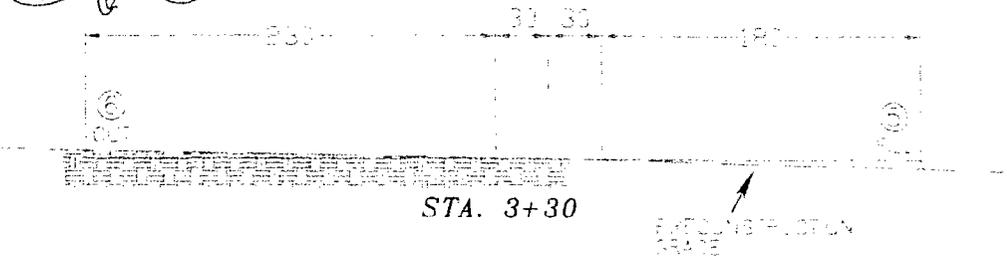
## OXY USA INC.

CEDAR CANYON "29" FEDERAL COM #24H  
PROJECT LOCATED AT 15-10' Twp. 8. 49D T1W 15  
SE. 1/4 29, T8A R1W 24 S00E, HARRIS CO  
COUNTY, NEW MEXICO

Survey Date	01/24/17	Sheet	of	7	Sheets
W.O. Number	1702231000	Drawn By	KA	Rev.	
Date	12/19/17	1702231000	Scale	1"=100'	

# OXY USA INC.

## CEDAR CANYON "29" FEDERAL COM #24H TYPICAL CROSS SECTIONS

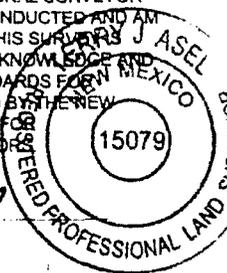


APPROXIMATE EARTHWORK QUANTITIES		APPROXIMATE SURFACE DISTURBANCE AREAS	
(30) TOPSOIL STRIP (15)	15,000 cu. yds.	WATER LINE DISTURBANCE	NA
PERMANENT EARTHWORK	15,000 cu. yds.	ACCESS ROAD DISTURBANCE	0
TOTAL CUT	15,000 cu. yds.	PIPELINE DISTURBANCE	NA
FILL	15,000 cu. yds.	POWER LINE DISTURBANCE	NA
EXCESS MATERIAL TOPSOIL	15,000 cu. yds.	TOTAL DISTURBANCE	0
EXCESS EARTHWORK (AFTER NERM RE-ADJUST)	0 cu. yds.		

### 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*  
Terry J. Asel, N.M. R.P.L.S. No. 15079



Asel Surveying

P.O. BOX 393 - 310 W TAYLOR  
HOBBS, NEW MEXICO - 575-393-2146



## OXY USA INC.

CEDAR CANYON "29" FEDERAL COM #24H WELL  
P/O LOCATED AT 1670' FSL & 420' FWL IN  
SECTION 29, TOWNSHIP 24 SOUTH, RANGE 29  
EAST, N.M.P.M. EDDY COUNTY, NEW MEXICO

Survey Date: 01/24/17	Sheet 2 of 2 Sheets
W.O. Number: 170829TOPO	Drawn By: KA Rev:
Date: 08/29/17	170829TOPO Scale: 1"=100'

Revised!!!

Oxy U.S.A Inc.

Moved!!!

New Mexico Staking Form

1-24-17 Arc Site  
Per Jim Goodwin  
BLM

Date Staked: 1-24-17

Lease/Well Name: Cedar Canyon 29 Fed Com #25H

Legal Description: 1640' ECL 420' FWL Sec 29 T24S R29E

Latitude: 32° 11' 08.32" NAD 83

Longitude: -104° 00' 49.68"

Move Information: \_\_\_\_\_

County: Eddy

Surface Owner/Tenant: BLM

Nearest Residence: 3 miles

Nearest Water Well: \_\_\_\_\_

V-Door: NORTH

Road Description: Road into SE corner from SOUTH

New Road: \_\_\_\_\_

Upgrade Existing Road: \_\_\_\_\_

Interim Reclamation: 50' West

Source of Caliche: \_\_\_\_\_

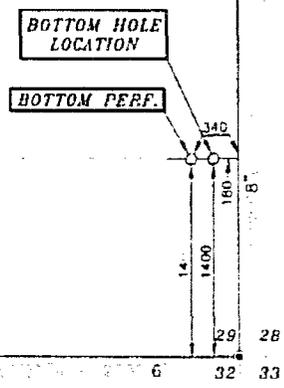
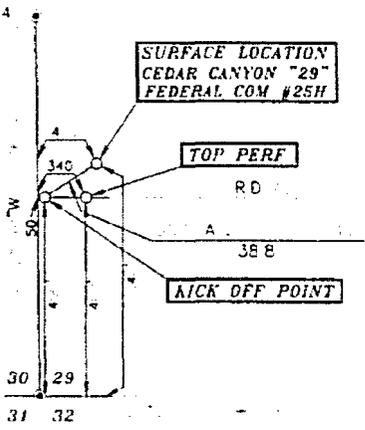
Top Soil: NORTH

Onsite Date Performed: 1-24-17

Onsite Attendees: Brooke Wilson - BLM Jim Wilson - Oxy  
SWCA Asel Survey

Special Notes: \_\_\_\_\_

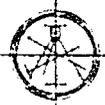
SECTION 29, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M.,  
EDDY COUNTY NEW MEXICO



**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* 3/16/2017  
Terry J. ASEL, N.M. R.P.L.S. No 15079

Asel Surveying



BOX 372, S.W. CORNER, TOWNSHIP 24 SOUTH, RANGE 29 EAST, EDDY COUNTY, NEW MEXICO

**LEGEND**

<b>OXY USA INC.</b>			
WELL HEAD LOCATION FOR CEDAR CANYON "29" FEDERAL COM #25H LOCATED AT 1840' ESE & 420' ERL IN SECTION 29, TOWNSHIP 24 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO			
Survey Date	3/16/17	Sheet	1 of 1 Sheets
W.O. Number	15079-1 (Rs. 4)	Drawn By	JA RJA
Date	3/16/17	Scale	AS SHOWN

# AERIAL MAP



SCALE: NOT TO SCALE

SEC. 29, TWP 24NS, R. 12E, S. 11N

SURVEYED BY: M. J. ASSEL

COUNTY: BOONE

DESCRIPTION: 1840' ASL & 840' ASL

ELEVATION: 2825'

OPERATOR: L. J. ASSEL

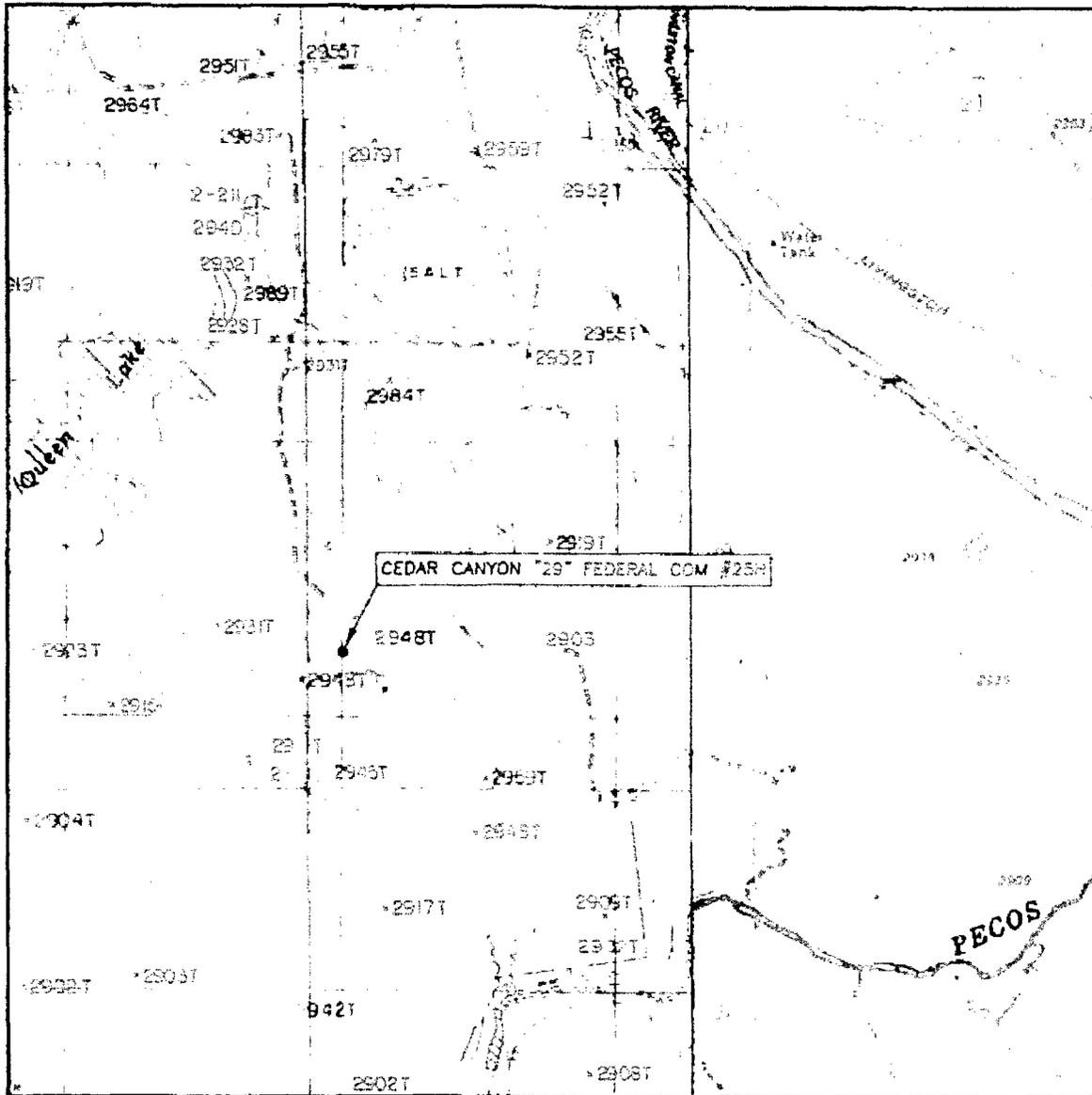
USASF, CEDAR CANYON, 29 FED COM #25H

Asel Surveying

P.O. BOX 393 - 310 W. TAYLOR  
HOBBS, NEW MEXICO - 575 393 9746



# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL 10'

SEC. 19 T4R. 34S. R6E 19-E

SURVEY R.M.P.M.

COUNTY EDDY

DESCRIPTION 1640' E.S. & 420' F.W.

ELEVATION 2928 c'

OPERATOR QTY USA INC.

LEASE CEDAR CANYON '29' FEDERAL COM #25

U.S. S. TOPOGRAPHIC MAP

ALABAMA, N.M.

Asel Surveying

P.O. BOX 322 - 810 W. 19100  
MOSBY, NEW MEX CO - 875-253-0142



**Surface Use Plan of Operations**

**Operator Name/Number:** OXY USA Inc. – 16696  
**Lease Name/Number:** Cedar Canyon 29 Federal Com #25H  
**Pool Name/Number:** Pierce Crossing Bone Spring 50371  
**Surface Location:** 1670 FSL 420 FWL NWSW (L) Sec 29 T24S R29E – NMNM53229  
**Bottom Hole Location:** 1400 FSL 180 FEL NESE (I) Sec 29 T24S R29E – NMNM54289

**1. Existing Roads**

- a. A copy of the USGS “Malaga, NM” quadrangle map is attached showing the proposed location. The well location is spotted on the map, which shows the existing road system.
- b. The well was staked by Terry J. Asel, Certificate No. 15079 on 1/24/17, certified 3/16/17.
- c. Directions to Location: From the intersection of USH 285 and Black River Village Road in Malaga, go east on CR 720 for 1.3 miles. Turn right on CR 746 (McDonald Rd) and go south for 0.8 miles. Continue southeast/east for 2.1 miles. Turn right on caliche road and go south for 1.5 miles. Turn left and go east for 0.4 miles. Turn right and go south for 170.5', turn left and go east for 0.1 miles to location.

**2. New or Reconstructed Access Roads:**

- a. No new access road will be built.
- b. Surfacing material: N/A
- c. Maximum Grade: N/A
- d. Turnouts: None needed
- e. Drainage Design: N/A
- f. Culverts: None needed
- g. Cut and fills: N/A
- h. Gates or cattleguards: none required
- i. Blade, water & repair existing caliche road as needed.

**3. Location of Existing Wells:**

Existing wells within a one mile radius of the proposed well are shown on attached plat.

**4. Location of Existing and/or Proposed Facilities:**

- a. In the event the well is found productive, the Cedar Canyon 28 Federal 4 Central Tank Battery would be utilized and the necessary production equipment will be installed at the well site. See proposed facilities layout diagram.
- b. All flow lines will adhere to API standards. They will consist of 2 – 4” composite flowlines operating < 75% MAWP, surface and 2 – 8” steel gas lift supply line operating <1500 psig, buried, lines to follow surveyed route. Survey of a strip of land 30' wide and 10196.4' in length crossing USA Land in Section 28 & 29, T24S R29E, NMPM, Eddy County, NM and being 15' left and 15' right of the centerline survey, see attached.
- c. Electric line will follow a route approved by the BLM. Survey of a strip of land 30' wide and 5661.6' in length crossing USA Land in Section 29, T24S R29E, NMPM, Eddy County, NM and being 15' left and 15' right of the centerline survey, see attached.

## 5. Location and types of Water Supply

This well will be drilled using a combination of water mud systems. It will be obtained from commercial water stations in the area and will be hauled to location by transport truck using existing and proposed roads.

## 6. Construction Materials:

### Primary

All caliche utilized for the drilling pad and proposed access road will be obtained from an existing BLM/State/Fee approved pit or from prevailing deposits found on the location. Will use BLM recommended extra caliche from other locations close by for roads, if available.

### Secondary

The secondary way of obtaining caliche to build locations and roads will be by “turning over” the location. This means, caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cubic yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

- a. The top 6” of topsoil is pushed off and stockpiled along the side of the location.
- b. An approximate 120’ X 120’ area is used within the proposed well site to remove caliche.
- c. Subsoil is removed and piled alongside the 120’ X 120’ within the pad site.
- d. When caliche is found, material will be stockpiled within the pad site to build the location and road.
- e. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.
- f. Once the well is drilled the stockpiled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stockpiled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in the attached plat.

## 7. Methods of Handling Waste Material:

- a. 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. Solids-CRI, Liquids-Laguna
- b. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering. When the job is completed, all contents will be removed and disposed of in an approved sanitary landfill.
- c. The supplier, including broken sacks, will pickup slats remaining after completion of well.
- d. A Porto-john will be provided for the rig crews. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
- e. Disposal of fluids to be transported will be by the following companies. TFH Ltd, Laguna SWD Facility

## 8. Ancillary Facilities: None needed.

## 9. Well Site Layout:

The proposed well site layout with dimensions of the pad layout and equipment location.

V-Door – North

CL Tanks – West

Pad – 330’ X 470’ – 3 Well Pad

## 10. Plans for Surface Reclamation:

- a. After concluding the drilling and/or completion operations, if the well is found non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original topsoil will again be returned to the pad and contoured, as close as possible, to the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

- b. If the well is deemed commercially productive, caliche from the areas of the pad site not required for operations will be reclaimed. The original topsoil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography, and the area will be seeded with an approved BLM mixture to re-establish vegetation.

**11. Surface Ownership:**

The surface is owned by the U.S. Government and is administered by the BLM. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas. The surface is leased to: Henry McDonald and John D. Brantley, P.O. Box 597, Loving, NM 88256. They will be notified of our intention to drill prior to any activity.

**12. Other Information:**

- a. The vegetation cover is generally sparse consisting of mesquite, yucca, shinnery oak, sandsage and perennial native range grass. The topsoil is sandy in nature. Wildlife in the area is also sparse consisting of deer, coyotes, rabbits, rodents, reptiles, dove and quail.
- b. There is no permanent or live water in the general proximity of the location.
- c. There are no dwellings within one mile of the proposed well site.
- d. Cultural Resources Examination—This well is located in the Permian Basin PA. Payment to be determined by BLM. This well shares the same pad as the Cedar Canyon 29 Federal Com #24H, 26H.

Pad + ¼ mile road	<u>\$1550.00</u>	\$.24/ft over ¼ mile	<u>\$ 0.00</u>	<u>\$1550.00</u>
Pipeline-up to 1 mile	<u>\$1431.00</u>	\$.27/ft over 1 mile	<u>\$1327.43</u>	<u>\$2758.43</u>
Electric Line-up to 1 mile	<u>\$ 717.00</u>	\$.11/ft over 1 mile	<u>\$ 41.98</u>	<u>\$ 758.98</u>
Total	<u>\$3698.00</u>		<u>\$1369.41</u>	<u>\$5067.41</u>

- e. Copy of this application has been mailed to SWCA Environmental Consultants, 5647 Jefferson St. NE, Albuquerque, NM 87109. No Potash leases within one mile of surface location.

**13. Bond Coverage:**

Bond coverage is Individual-NMB000862, Nationwide-ESB00226.

**14. Operators Representatives:**

The OXY Permian representatives responsible for ensuring compliance of the surface use plan are listed below:

Van Barton  
 Supt. Operations  
 1502 West Commerce Dr.  
 Carlsbad, NM 88220  
 Office – 575-628-4111  
 Cellular – 575-706-7671

Corrie Hartman  
 Manager Asset  
 P.O. Box 4294  
 Houston, TX Carlsbad, NM 88220  
 Office – 713-215-7084  
 Cellular – 832-541-3190

Jim Wilson  
 Operation Specialist  
 P.O. Box 50250  
 Midland, TX 79710  
 Cellular – 575-631-2442

Cuong Q. Phan  
 RMT Leader  
 P.O. Box 4294  
 Houston, TX 77210  
 Office – 713-513-6645  
 Cellular – 281-832-0978

## Section 1 - General

Would you like to address long-term produced water disposal? NO

## Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

### **Section 3 - Unlined Pits**

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### **Section 4 - Injection**

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

**Injection well type:**

**Injection well number:**

**Assigned injection well API number?**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

**Injection well name:**

**Injection well API number:**

## **Section 5 - Surface Discharge**

**Would you like to utilize Surface Discharge PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

## **Section 6 - Other**

**Would you like to utilize Other PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Other PWD discharge volume (bbl/day):**

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**

**Bond Information**

Federal/Indian APD: FED

BLM Bond number: ESB000226

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: