

RECEIVED

JUN 10 2019

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

DISTRICT II-ARTESIA O.C.D.

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM114979
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No. MESA VERDE WC UNIT / NMNM137099
2. Name of Operator OXY USA INCORPORATED		8. Lease Name and Well No. MESA VERDE WC UNIT 20H 320829
3a. Address 5 Greenway Plaza, Suite 110 Houston TX 77046	3b. Phone No. (include area code) (713)366-5716	9. API Well No. 30-015-46112
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SWSW / 118 FSL / 1068 FWL / LAT 32.2104432 / LONG -103.7366098 At proposed prod. zone NWNW / 20 FNL / 440 FWL / LAT 32.2245833 / LONG -103.7386432		10. Field and Pool, or Exploratory PURPLE SAGE WOLFCAMP / WOLFCAM
11. Sec., T. R. M. or Blk. and Survey or Area SEC 13 / T24S / R31E / NMP		11. Sec., T. R. M. or Blk. and Survey or Area SEC 13 / T24S / R31E / NMP
14. Distance in miles and direction from nearest town or post office*		12. County or Parish EDDY
13. State NM		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 20 feet	16. No of acres in lease 640	17. Spacing Unit dedicated to this well 320
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 35 feet	19. Proposed Depth 11947 feet / 16903 feet	20. BLM/BIA Bond No. in file FED: ESB000226
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3588 feet	22. Approximate date work will start* 01/01/2020	23. Estimated duration 45 days
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- |  |   |
|--|---|
| 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 requested by the BLM.            |

25. Signature (Electronic Submission)	Name (Printed/Typed) Leslie Reeves / Ph: (713)497-2492	Date 12/14/2018
Title Advisor Regulatory		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 05/30/2019
Title Assistant Field Manager Lands & Minerals 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.

**APPROVED WITH CONDITIONS**  
Approval Date: 05/30/2019

NSL

RW  
6-14-19

## INSTRUCTIONS

**GENERAL:** This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

**ITEM I:** If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

**ITEM 4:** Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

**ITEM 14:** Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

**ITEMS 15 AND 18:** If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

**ITEM 22:** Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

**ITEM 24:** If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48( d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

**ROUTINE USE:** Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

**EFFECT OF NOT PROVIDING INFORMATION:** Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

## **Additional Operator Remarks**

### **Location of Well**

1. SHL: SWSW / 118 FSL / 1068 FWL / TWSP: 24S / RANGE: 31E / SECTION: 13 / LAT: 32.2104432 / LONG: -103.7366098 ( TVD: 0 feet, MD: 0 feet )

PPP: SWSW / 100 FSL / 440 FWL / TWSP: 24S / RANGE: 31E / SECTION: 13 / LAT: 32.2103949 / LONG: -103.7386403 ( TVD: 11695 feet, MD: 11755 feet )

BHL: NWNW / 20 FNL / 440 FWL / TWSP: 24S / RANGE: 31E / SECTION: 13 / LAT: 32.2245833 / LONG: -103.7386432 ( TVD: 11947 feet, MD: 16903 feet )

### **BLM Point of Contact**

Name: Deborah Ham

Title: Legal Landlaw Examiner

Phone: 5752345965

Email: dham@blm.gov

## **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.

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

### **Alternatives to Reduce Flaring**

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

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

Sec P KFC

10 3/4 surface csg in a 14 3/4 inch hole.				Design Factors			SURFACE		
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	40.50	J 55	BUTT	19.88	4.43	0.55	781	31,631	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500				Tail Cmt	does	circ to sfc.	Totals:	781 31,631	
<b>Comparison of Proposed to Minimum Required Cement Volumes</b>									
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
14 3/4	0.5563	645	858	460	.86	8.80	3183	5M	1.50
Burst Frac Gradient(s) for Segment(s) A, B = , b					All > 0.70, OK.				
					Alternate Burst = 0.98 > 0.7 = Ok				

7 5/8 casing inside the 10 3/4				Design Factors			INTERMEDIATE		
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	26.40	L 80	BUTT	1.99	0.6	0.8	11,422	301,541	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig:							Totals:	11,422 301,541	
The cement volume(s) are intended to achieve a top of				0	ft from surface or a		781	overlap.	
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
9 7/8	0.2148	look ↘	0	2479		9.60	4858	5M	0.69
DV Tool(s):				4655	sum of sx		Σ CuFt	Σ%excess	
t by stage % :				28	164	2394	4554	84	
Class 'C' tail cmt yld > 1.35				MASP is within 10% of 5000psig, need					
Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.53, b, c, d				Aternate Burst = 1.24 > 1 = Ok & Alternate Collapse = 1.20 > 1.125					
<0.70 a Problem!!				Therefore keep 1/2 fluid filled					

5 1/2 casing inside the 7 5/8				Design Factors			PRODUCTION		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	20.00	P 110	DQX	1.68	1.37	1.68	11,972	239,440	
"B"	13.50	P 110	DQX	443.05	1.43	1.65	4,931	66,564	
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,634							Totals:	16,903 306,004	
The cement volume(s) are intended to achieve a top of				10922	ft from surface or a		500	overlap.	
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
6 3/4	0.0835	671	926	511	81	12.00			0.35
Class 'H' tail cmt yld > 1.20				(6.969" - 6.05")/2 = 0.46" = Ok					

0 5 1/2				Design Factors					
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"							0	0	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig:							Totals:	0 0	
Cmt vol calc below includes this csg, TOC intended				0	ft from surface or a		16903	overlap.	
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
0			0	0					

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	OXY USA INCORPORATED
<b>LEASE NO.:</b>	NMNM114979
<b>WELL NAME &amp; NO.:</b>	20H – MESA VERDE WC UNIT
<b>SURFACE HOLE FOOTAGE:</b>	118'/S & 1068'/W
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 440'/W
<b>LOCATION:</b>	SECTION 13, T24S, R31E, NMPM
<b>COUNTY:</b>	EDDY

COA

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

### A. HYDROGEN SULFIDE

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

### B. CASING

#### Casing Design:

1. The 10-3/4 inch surface casing shall be set at approximately 781 feet (a minimum of 70 feet (Eddy County)) into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

- b. Wait on cement (WOC) time for a primary cement job will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Intermediate casing must be kept ½ fluid filled to meet BLM minimum collapse requirement.**

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

**Option 1 (Single Stage):**

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

**Option 2:**

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

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

3. The minimum required fill of cement behind the 5 1/2 x 4 1/2 inch production casing is:

**Option 1 (Single Stage):**

- Cement should tie-back at least **500 feet** into previous casing string. Operator shall provide method of verification.

**Option 2:**

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

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement should tie-back at least **500 feet** into previous casing string. Operator shall provide method of verification.

### **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).<sup>2</sup>
- 2.

#### **Option 1:**

- a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M)** psi.

#### **Option 2:**

1. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M)** psi.
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
  - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

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

##### **Offline Cementing**

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

##### **Unit Wells**

The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

##### **Commercial Well Determination**

A commercial well determination shall be submitted after production has been established for at least six months.

## GENERAL REQUIREMENTS

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

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

Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.  
During office hours call (575) 627-0272.  
After office hours call (575)

Eddy County

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

Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)  
393-3612

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

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

A. CASING

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

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

**B. PRESSURE CONTROL**

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

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

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

**NMK5292019**

**OXY USA Inc.**  
**APD Attachment**  
**Offline Cementing**

OXY respectfully requests a variance to cement the 9-5/8" and/or 7-5/8" intermediate casing strings offline.

The summarized operational sequence will be as follows:

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

**Approval Date: 05/30/2019**

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	OXY USA INCORPORATED
LEASE NO.:	
WELL NAME & NO.:	20H – MESA VERDE WC UNIT
SURFACE HOLE FOOTAGE:	118'/S & 1068'/W
BOTTOM HOLE FOOTAGE:	20'/N & 440'/W
LOCATION:	SECTION 13, T24S, R31E, NMPM
COUNTY:	EDDY

**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**
  - Lesser Prairie Chicken Timing Stipulations
  - Below Ground Level Abandoned Well Marker
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- 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)

### **Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period.

Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted.

Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

**Below 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.

## **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**

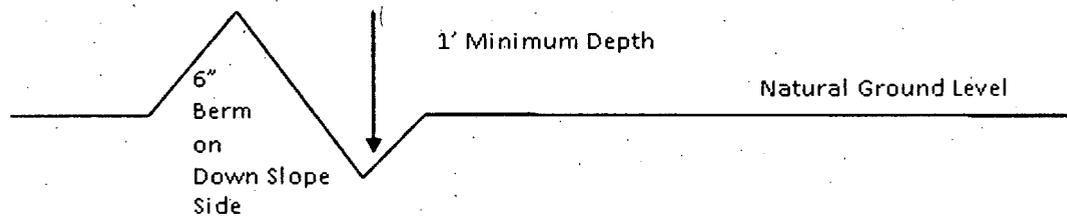
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

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 %);

### Formula for Spacing Interval of Lead-off Ditches

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

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

### Cattle guards

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.

### Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

### Public Access

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

**Construction Steps**

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

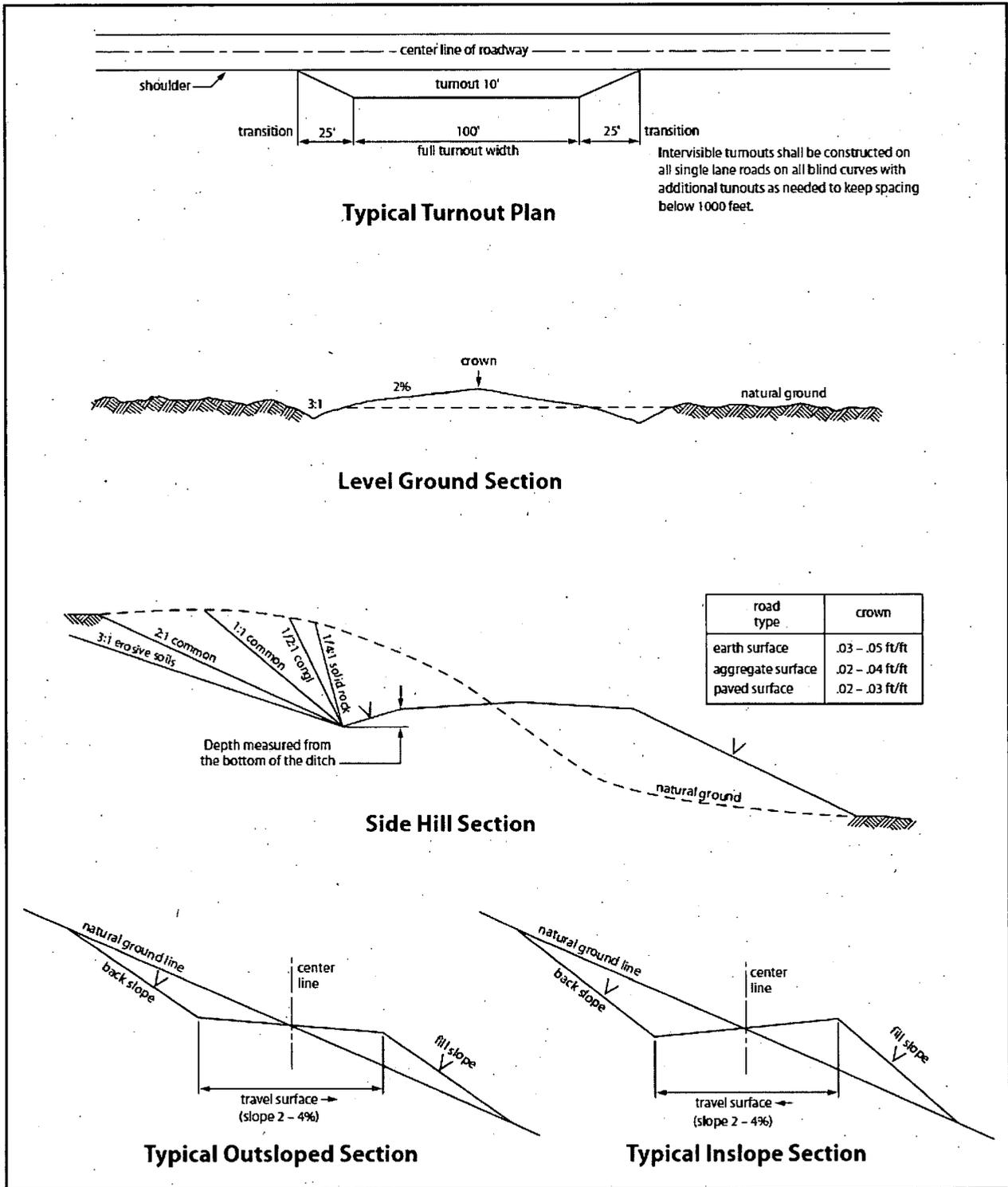


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## VII. PRODUCTION (POST DRILLING)

### A. WELL STRUCTURES & FACILITIES

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

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

#### **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.

#### **Chemical and Fuel Secondary Containment and Exclosure Screening**

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### **Open-Vent Exhaust Stack Exclosures**

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### **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. PIPELINES**

#### **BURIED PIPELINE STIPULATIONS**

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of

the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be 30 feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 20 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

- |  |  |
|--|--|
| <input type="checkbox"/> seed mixture 1                | <input type="checkbox"/> seed mixture 3          |
| <input type="checkbox"/> seed mixture 2                | <input type="checkbox"/> seed mixture 4          |
| <input checked="" type="checkbox"/> seed mixture 2/LPC | <input type="checkbox"/> Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. 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 associated roads, 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.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

- a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
- b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

19. Special Stipulations:

**Lesser Prairie-Chicken**

Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities

that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

#### STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

**A copy of the Grant and attachments, including stipulations, survey plat(s) and/or map(s), shall be on location during construction. BLM personnel may request to review a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, Holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC § 2601 *et seq.* (1982) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant (*see* 40 CFR, Part 702-799 and in particular, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way Holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way Holder on the Right-of-Way. This provision applies without regard to whether a release is caused by Holder, its agent, or unrelated third parties.
4. Holder shall be liable for damage or injury to the United States to the extent

provided by 43 CFR Sec. 2883.1-4. Holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

- a. Activities of Holder including, but not limited to: construction, operation, maintenance, and termination of the facility;
- b. Activities of other parties including, but not limited to:
  - (1) Land clearing
  - (2) Earth-disturbing and earth-moving work
  - (3) Blasting
  - (4) Vandalism and sabotage;
- c. Acts of God.

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

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

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of Holder, regardless of fault. Upon failure of Holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he/she deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of Holder. Such action by the Authorized Officer shall not relieve Holder of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized right-of-way width of 20 feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or right-of-ways.

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

8. Holder shall install the pipeline on the surface in such a manner that will minimize

suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline shall be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

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

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

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

17. Surface pipelines shall be less than or equal to 4 inches and a working pressure below 125 psi.

18. Special Stipulations:

- a. **Lesser Prairie-Chicken:** Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted.

### **C. ELECTRIC LINES**

#### **STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES**

**A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b.

A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply

with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:

- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

**Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

## **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).

Below 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 for LPC Sand/Shinnery Sites

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 shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall 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). 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. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may 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>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

\*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:** Leslie Reeves

**Signed on:** 12/14/2018

**Title:** Advisor Regulatory

**Street Address:** 5 Greenway Plaza, Suite 110

**City:** Houston

**State:** TX

**Zip:** 77046

**Phone:** (713)497-2492

**Email address:** leslie\_reeves@oxy.com

**Field Representative**

**Representative Name:** Jim Wilson

**Street Address:** 6001 Deauville

**City:** Midland

**State:** TX

**Zip:** 79706

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

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



APD ID: 10400037159

Submission Date: 12/14/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE WC UNIT

Well Number: 20H

Show Final Text

Well Type: OIL WELL

Well Work Type: Drill

**Section 1 - General**

APD ID: 10400037159

Tie to previous NOS?

Submission Date: 12/14/2018

BLM Office: CARLSBAD

User: Leslie Reeves

Title: Advisor Regulatory

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM114979

Lease Acres: 640

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? YES

Federal or Indian agreement: FEDERAL

Agreement number: NMNM137099X

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

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: MESA VERDE WC UNIT

Well Number: 20H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: PURPLE SAGE  
WOLFCAMP

Pool Name: WOLFCAMP

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE WC UNIT

Well Number: 20H

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: MESA Number: 18H, 19H, 20H  
VERDE WC UNIT

Well Class: HORIZONTAL

Number of Legs:

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town:

Distance to nearest well: 35 FT

Distance to lease line: 20 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: MesaVerdeWCUt20H\_C102\_20181211093725.pdf

MesaVerdeWCUt20H\_SitePlan\_20181211093733.pdf

Well work start Date: 01/01/2020

Duration: 45 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	118	FSL	1068	FWL	24S	31E	13	Aliquot SWS W	32.2104432	-103.7366098	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	3588	0	0
KOP Leg #1	50	FSL	440	FWL	24S	31E	13	Aliquot SWS W	32.2102574	-103.7386403	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	-7882	11523	11470
PPP Leg #1	100	FSL	440	FWL	24S	31E	13	Aliquot SWS W	32.2103949	-103.7386403	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	-8107	11755	11695

Operator Name: OXY USA INCORPORATED

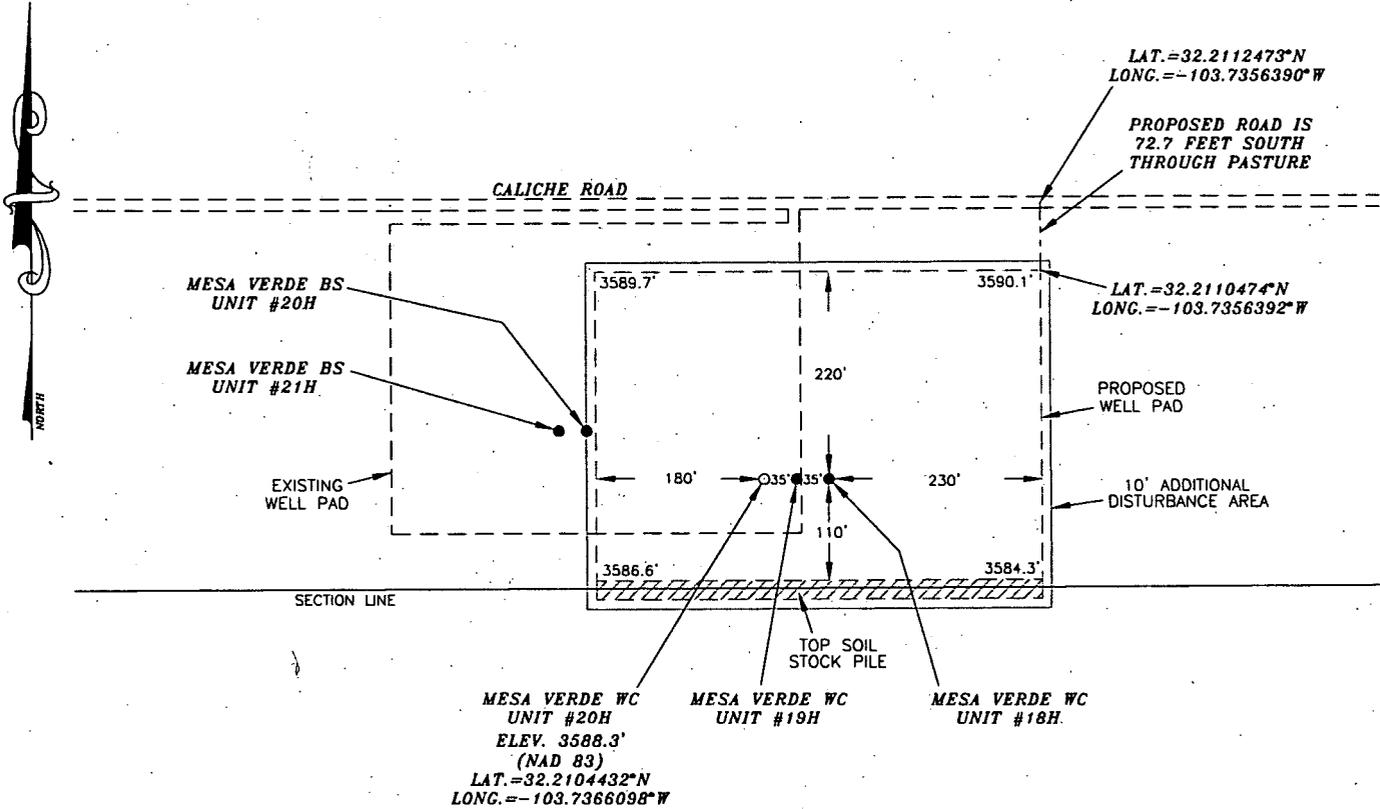
Well Name: MESA VERDE WC UNIT

Well Number: 20H

	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
EXIT Leg #1	100	FNL	440	FWL	24S	31E	13	Aliquot NWN W	32.22436 34	- 103.7386 432	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	- 836 1	168 03	119 49
BHL Leg #1	20	FNL	440	FWL	24S	31E	13	Aliquot NWN W	32.22458 33	- 103.7386 432	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 114979	- 835 9	169 03	119 47

# OXY USA INC. MESA VERDE WC UNIT #20H SITE PLAN

## FAA PERMIT: NO



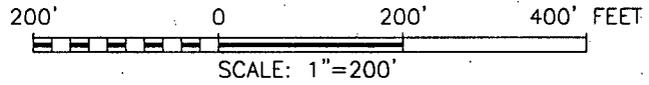
**SURVEYORS CERTIFICATE**

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* 8/28/2018  
Terry J. Asel, N.M. R.P.L.S. No. 15079

**LEGEND**

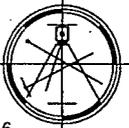
- DENOTES PROPOSED WELL PAD
- DENOTES PROPOSED ROAD
- ▨▨▨ DENOTES STOCK PILE AREA



<b>OXY USA INC.</b>		
MESA VERDE WC UNIT #20H LOCATED AT 118' FSL & 1068' FWL IN SECTION 13, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO		
Survey Date: 08/23/18	Sheet 1 of 1 Sheets	
W.O. Number: 180823WL-c	Drawn By: KA	Rev:
Date: 08/24/18	180823WL-c	Scale: 1"=200'

Asel Surveying

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





APD ID: 10400037159

Submission Date: 12/14/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE WC UNIT

Well Number: 20H

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	3588	731	731	SHALE, DOLOMITE, ANHYDRITE	USEABLE WATER	No
2	SALADO	2528	1060	1060	SHALE, DOLOMITE, HALITE, ANHYDRITE	OTHER : SALT	No
3	CASTILE	653	2935	2935	ANHYDRITE	OTHER : salt	No
4	LAMAR	-1017	4605	4605	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
5	BELL CANYON	-1040	4628	4628	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
6	CHERRY CANYON	-1915	5503	5503	SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
7	BRUSHY CANYON	-3141	6729	6729	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL, OTHER : BRINE	No
8	BONE SPRING	-4862	8450	8461	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	No
9	BONE SPRING 1ST	-5945	9533	9561	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	No
10	BONE SPRING 2ND	-6222	9810	9842	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	No
11	BONE SPRING 3RD	-7161	10749	10795	LIMESTONE, SANDSTONE, SILTSTONE	NATURAL GAS, OIL	No
12	WOLFCAMP	-8341	11929	12059	SANDSTONE, SILTSTONE	NATURAL GAS, OIL	Yes

**Section 2 - Blowout Prevention**

Pressure Rating (PSI): 10M

Rating Depth: 12043

Equipment: 13-5/8" 10M 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 working pressure listed in the table above. If the system is upgraded all the components installed will be functional and

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE WC UNIT

Well Number: 20H

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. As per the agreement reached in the OXY/BLM meeting on Feb 22, 2018, OXY requests permission to allow BOP Break Testing under the following conditions: 1. After a full BOP test is conducted on the first well on the pad. 2. When skidding to drill an intermediate section that does not penetrate into the Wolfcamp. 3. Full BOP test will be required prior to drilling any production hole.

**Choke Diagram Attachment:**

MesaVerdeWCUt20H\_ChokeManifold\_20181214073313.pdf

**BOP Diagram Attachment:**

MesaVerdeWCUt20H\_BOP\_\_10M\_\_20181214073323.pdf

MesaVerdeWCUt20H\_FlexHoseCert\_20181214073337.pdf

**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	781	0	781			781	J-55	40.5	BUTT	1.125	1.2	BUOY	1.4	BUOY	1.4
2	INTERMEDIATE	9.875	7.625	NEW	API	N	0	11422	0	11369			11422	L-80	26.4	BUTT	1.125	1.2	BUOY	1.4	BUOY	1.4
3	PRODUCTION	6.75	5.5	NEW	API	Y	0	11972	0	11873			11972	P-110	20	OTHER - DQX	1.125	1.2	BUOY	1.4	BUOY	1.4
4	PRODUCTION	6.75	4.5	NEW	API	Y	11972	16902	11873	11947			4930	P-110	13.5	OTHER - DQX	1.125	1.2	BUOY	1.4	BUOY	1.4

**Casing Attachments**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

**Casing Attachments**

---

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

MesaVerdeWCUt20H\_CsgCriteria\_20181214073425.pdf

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**Casing ID:** 2            **String Type:** INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

MesaVerdeWCUt20H\_CsgCriteria\_20181214073520.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

MesaVerdeWCUt20H\_5.500in\_x\_20.00\_\_P\_110\_DQX\_20181214073623.pdf

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

MesaVerdeWCUt20H\_CsgCriteria\_20181214073646.pdf

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Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE WC UNIT

Well Number: 20H

Casing Attachments

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

MesaVerdeWCut20H\_4.500in\_x\_13.50\_P\_110\_DQX\_20181214073740.pdf

Casing Design Assumptions and Worksheet(s):

MesaVerdeWCut20H\_CsgCriteria\_20181214073800.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	781	645	1.33	14.8	858	100	Class C	Accelerator

INTERMEDIATE	Lead		0	4655	1605	1.67	13.6	2680	200	Class C	Accelerator, Retarder
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INTERMEDIATE	Lead	4655	4555	1042 2	622	2.58	10.2	1605	20	Pozzolan C	Retarder
INTERMEDIATE	Tail		1042 2	1142 2	167	1.61	13.2	269	20	Class H	Retarder, Dispersant, Salt
PRODUCTION	Lead		1092 2	1690 2	671	1.38	13.2	926	20	Class H	Retarder, Dispersant, Salt

PRODUCTION	Lead		1092 2	1690 2	671	1.38	13.2	926	20	Class H	Retarder, Dispersant, Salt
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Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE WC UNIT

Well Number: 20H

### 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, CaCl<sub>2</sub>.

**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
0	781	WATER-BASED MUD	8.6	8.8							
1142 2	1690 2	OTHER : Water-Based and/or Oil-Based Mud	9.5	12							
781	1142 2	OTHER : Saturated Brine-Based Mud and/or Oil-Based Mud	9	9.6							

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

## 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 intermediate 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:** 7515

**Anticipated Surface Pressure:** 4886.21

**Anticipated Bottom Hole Temperature(F):** 177

**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:**

MesaVerdeWCUt20H\_H2S1\_20181214074339.pdf

MesaVerdeWCUt20H\_H2S2\_20181214074346.pdf

MesaVerdeWCUt20H\_H2SEmergencyContactList\_20181214074353.pdf

## Section 8 - Other Information

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

MesaVerdeWCUt20H\_DirectPlan\_20181214074428.pdf

MesaVerdeWCUt20H\_DirectPlot\_20181214074435.pdf

**Other proposed operations facets description:**

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.

**Annular Clearance Variance Request**

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

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

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

Well will be drilled with a walking/skidding operation. Plan to drill the multiple 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 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:**

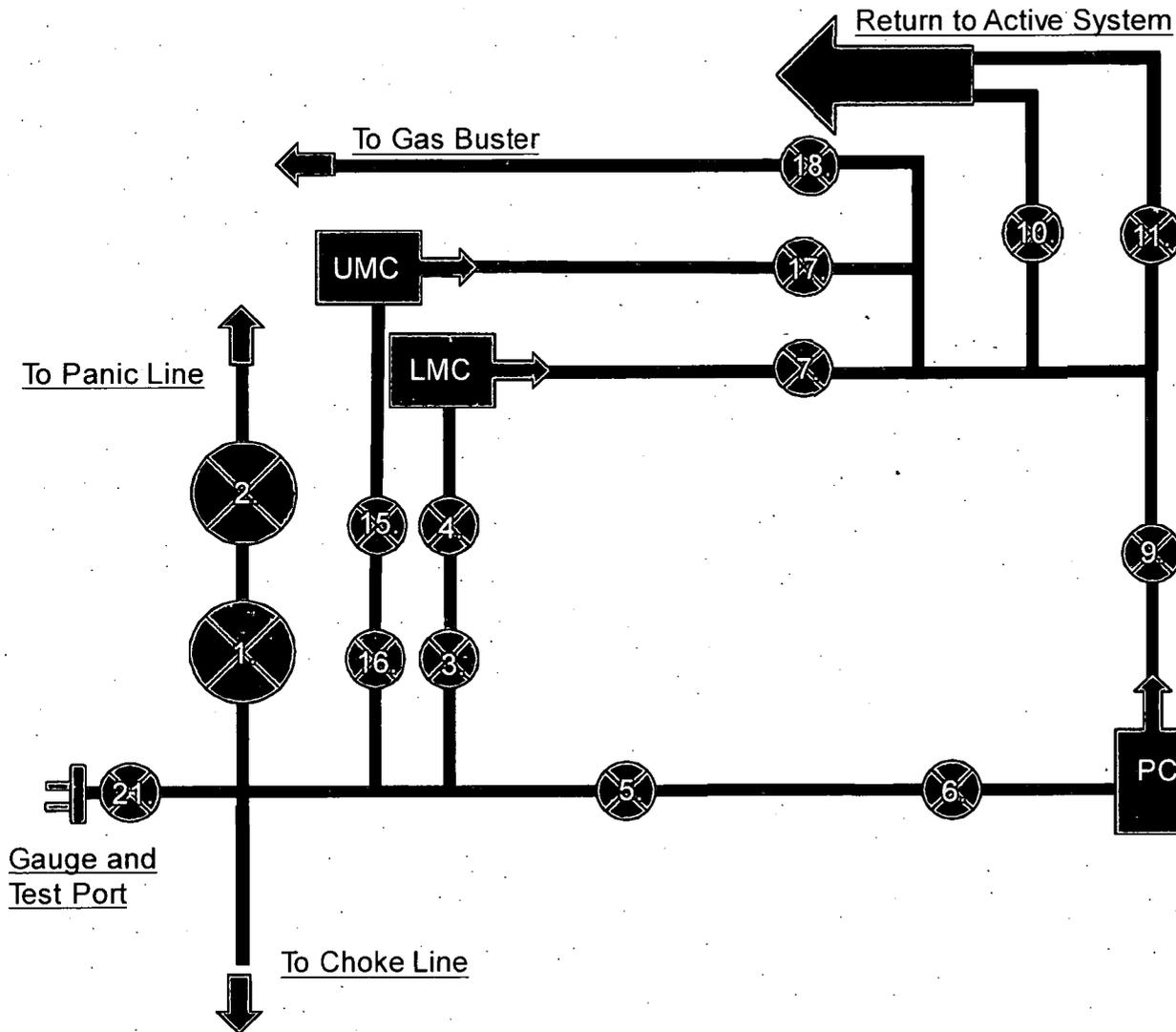
MesaVerdeWCUt20H\_GasCapPlan\_20181214074511.pdf

MesaVerdeWCUt20H\_SpudRigData\_20181214074519.pdf

MesaVerdeWCUt20H\_DrillPlan\_20181214074528.pdf

**Other Variance attachment:**

# 10M Choke Panel

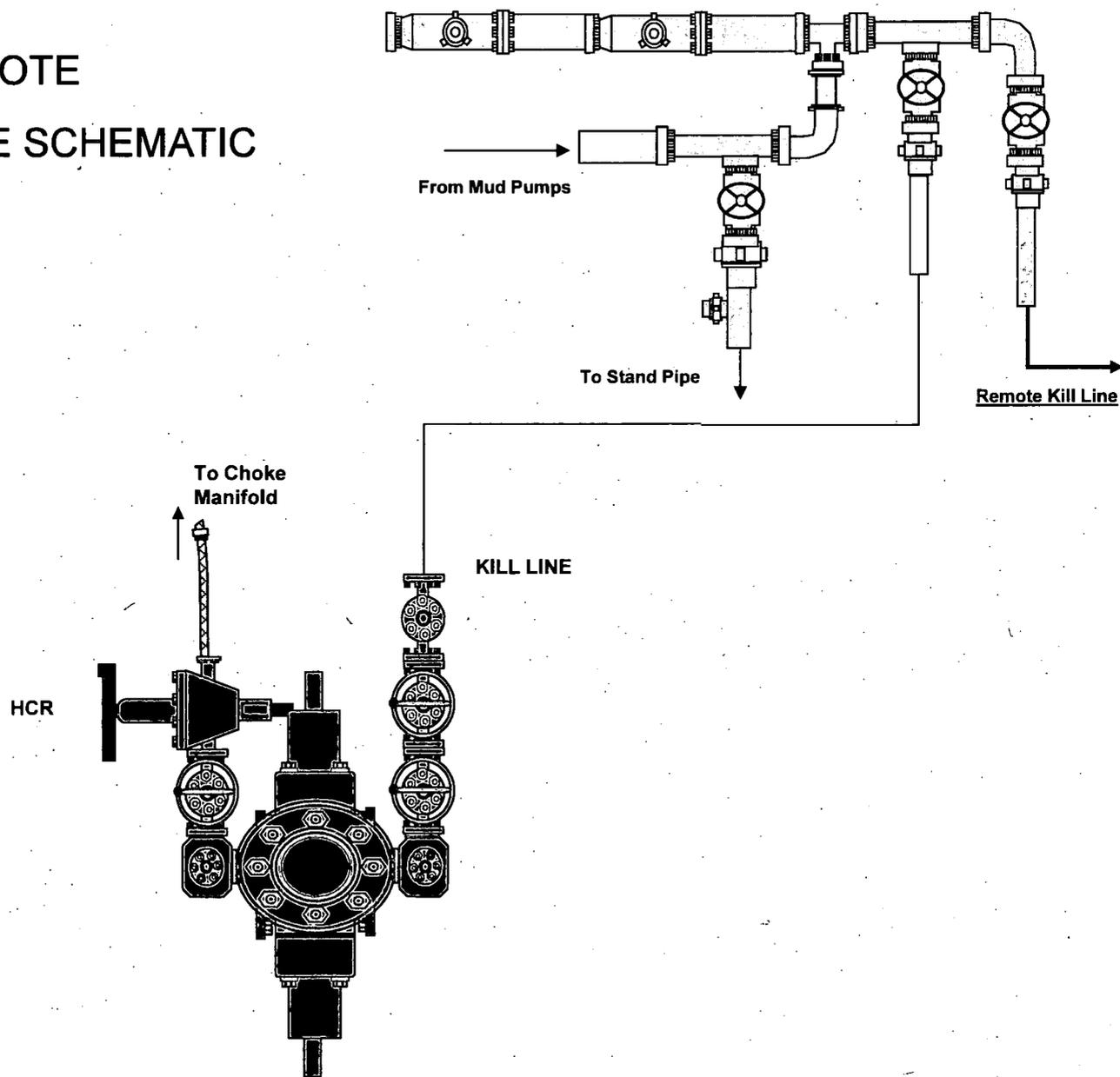


1. Choke Manifold Valve
2. Choke Manifold Valve
3. Choke Manifold Valve
4. Choke Manifold Valve
5. Choke Manifold Valve
6. Choke Manifold Valve
7. Choke Manifold Valve
8. PC – Power Choke
9. Choke Manifold Valve
10. Choke Manifold Valve
11. Choke Manifold Valve
12. LMC – Lower Manual Choke
13. UMC –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

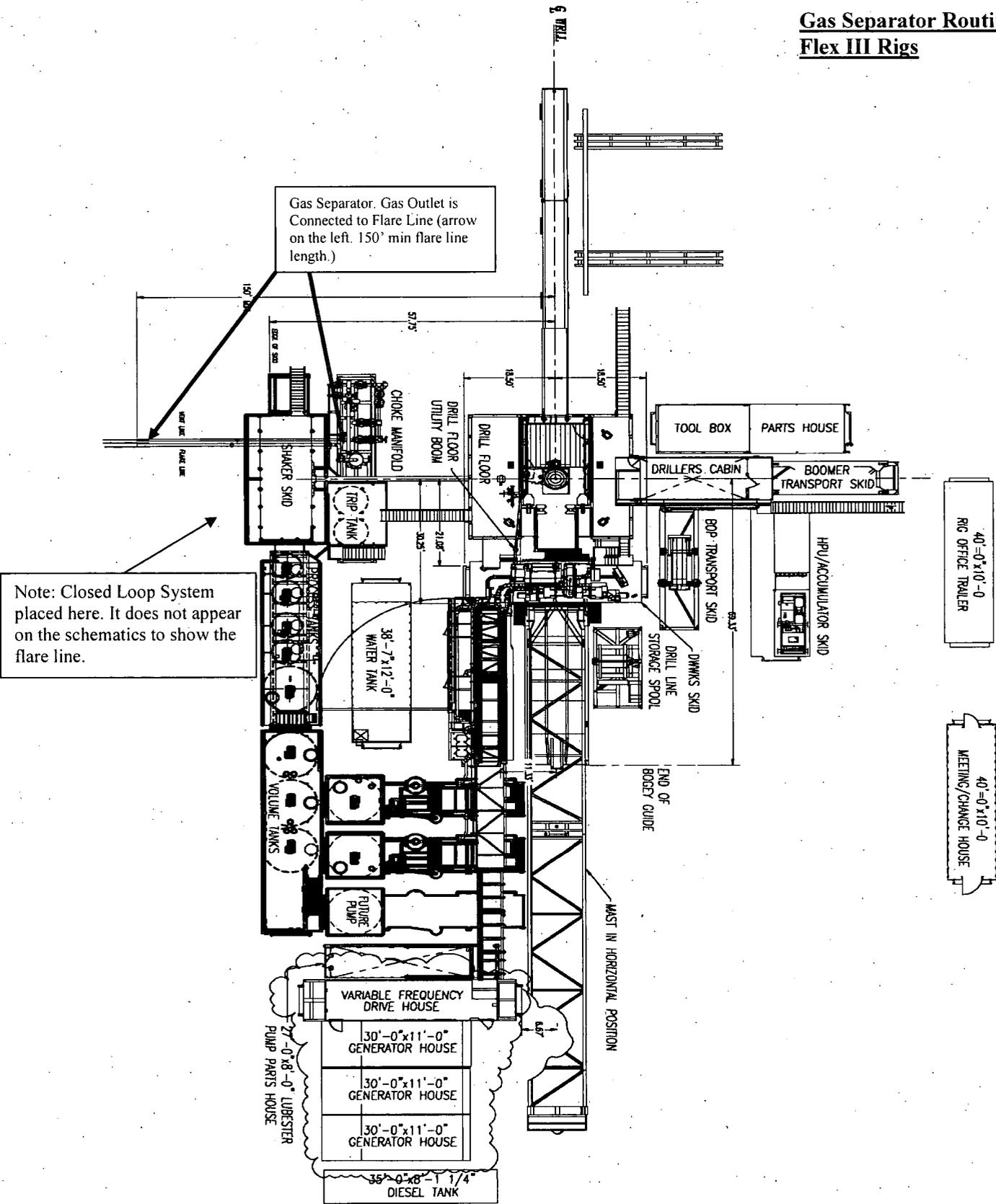
**\*All Valves 3" minimum**



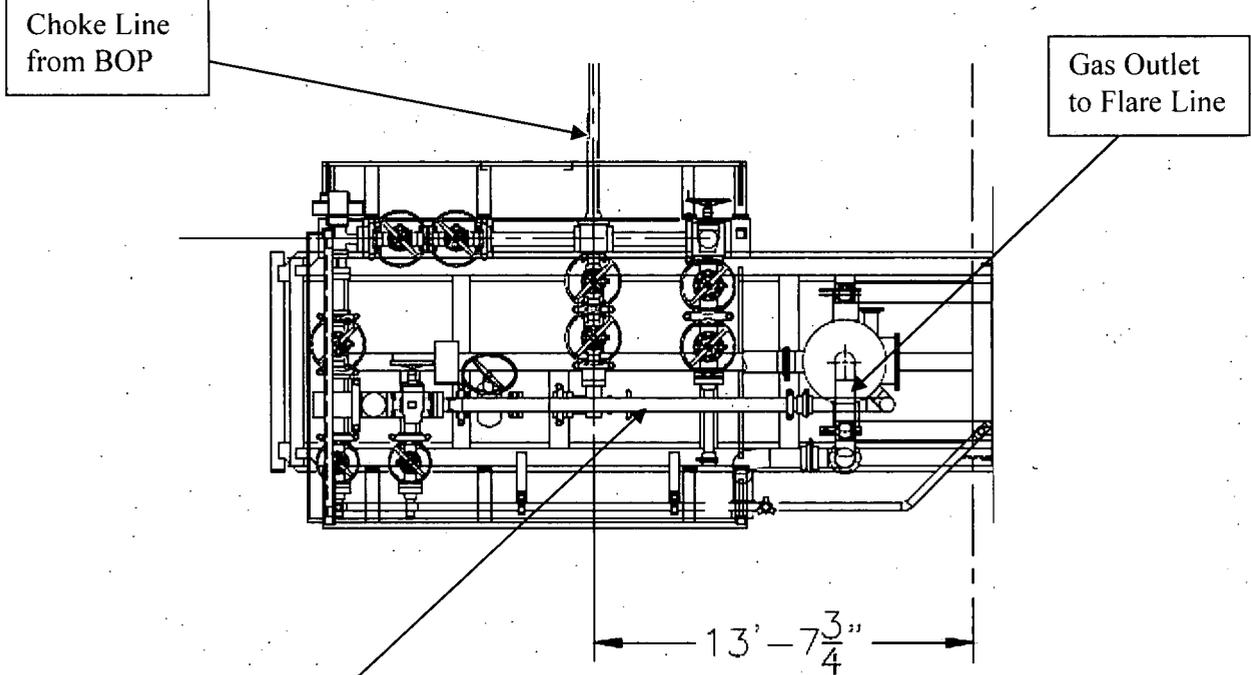
# 10M REMOTE KILL LINE SCHEMATIC



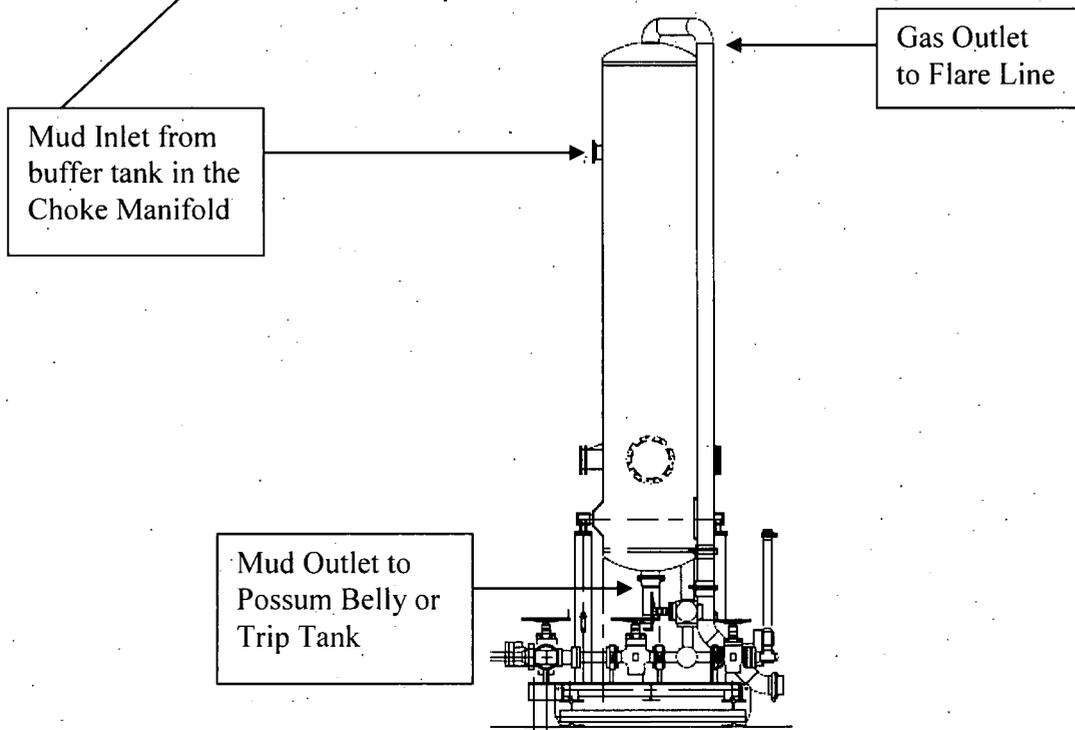
# Gas Separator Routing Flex III Rigs



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



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

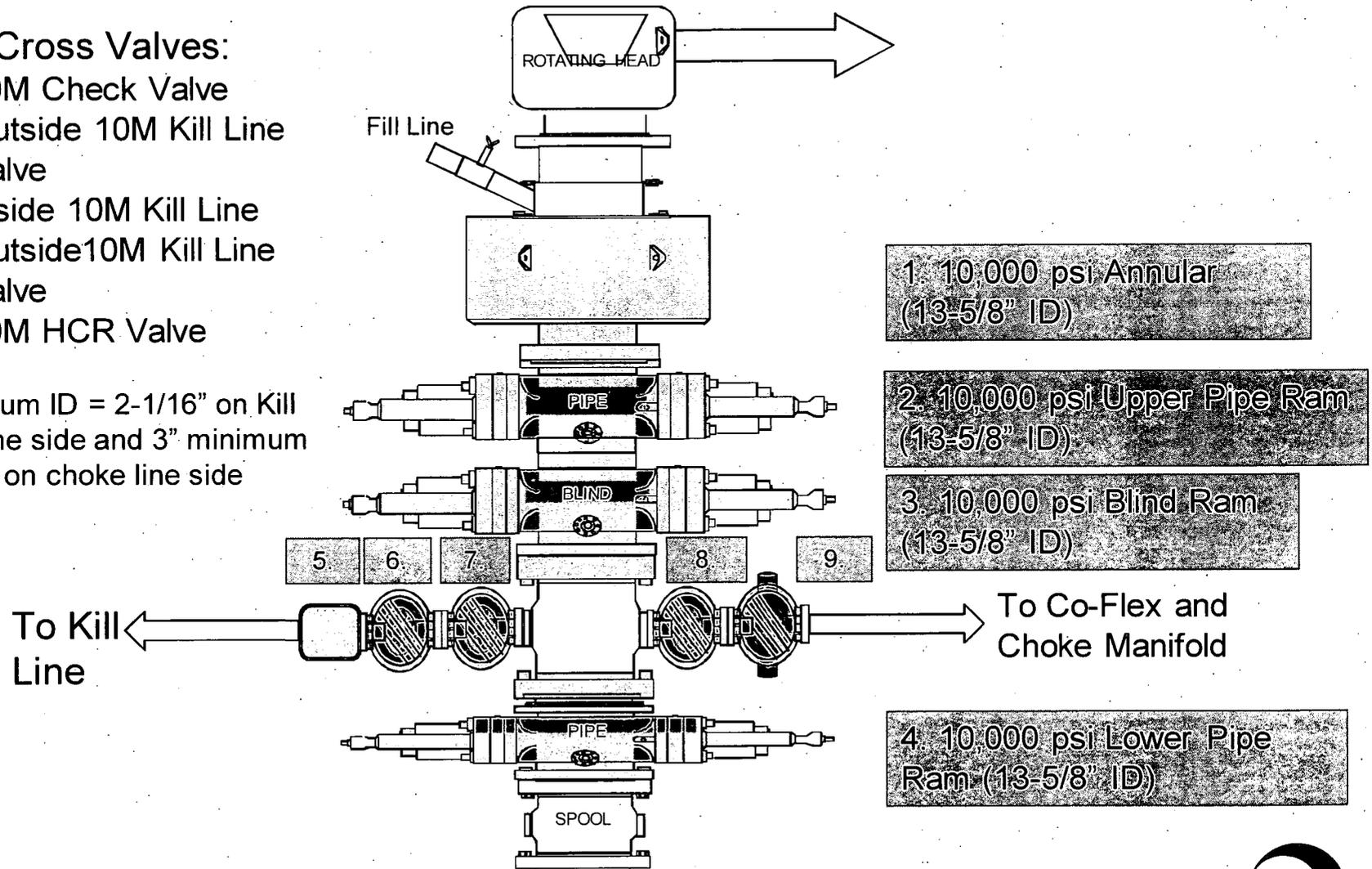


# 10M BOP Stack

## Mud Cross Valves:

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

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



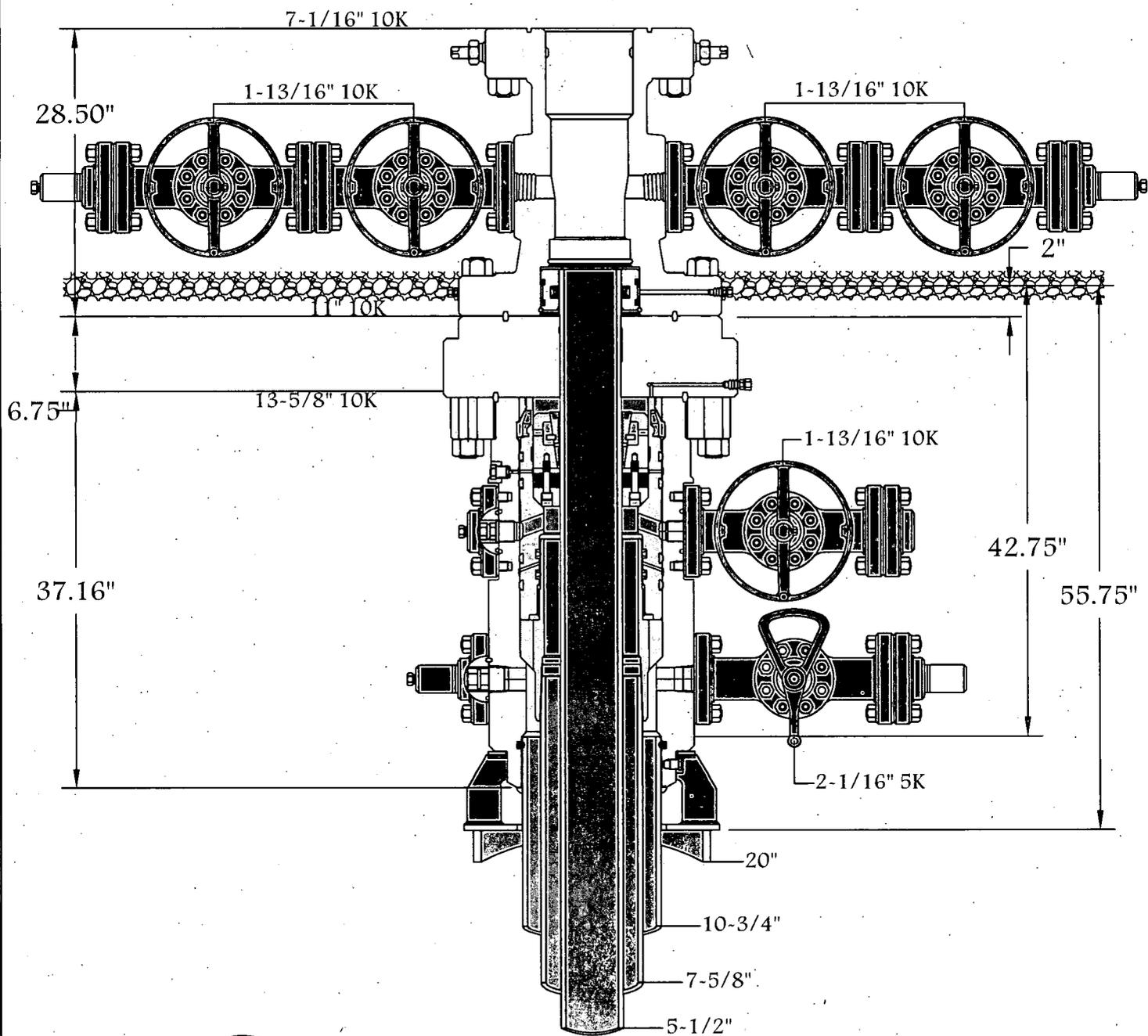
1. 10,000 psi Annular (13-5/8" ID)

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

3. 10,000 psi Blind Ram (13-5/8" ID)

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





13-5/8" 10K MN-DS



Name:	Date:	Working Pressure:	#
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**CERTIFICATE OF CONFORMITY**

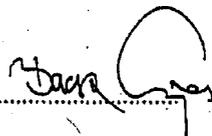
**Supplier** : CONTITECH RUBBER INDUSTRIAL KFT.  
**Equipment** : 6 pcs. Choke and Kill Hose with installed couplings  
**Type** : 3" x 10,67 m WP: 10000 psi  
**Supplier File Number** : 412638  
**Date of Shipment** : April. 2008  
**Customer** : Phoenix Beattie Co.  
**Customer P.o.** : 002491  
**Referenced 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





Coflex Hose Certification

Form No 100/12



**Phoenix Beattie Corp**

11535 Brittain Park Drive  
Houston, TX 77041  
Tel: (832) 327-0141  
Fax: (832) 327-0148  
E-mail [sa1@phoenixbeattie.com](mailto:sa1@phoenixbeattie.com)  
[www.phoenixbeattie.com](http://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

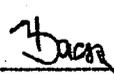
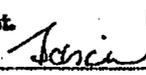
Continued...

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.

Coflex Hose Certification



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 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	28984	
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			 		

Coflex Hose Certification

Form No 100/12



**Phoenix Beattie Corp**

11535 Brittonore 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>	2
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<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.

# PERFORMANCE DATA

TMK UP ULTRA™ DQX  
Technical Data Sheet

4.500 in

13.50 lbs/ft

P-110

## Tubular Parameters

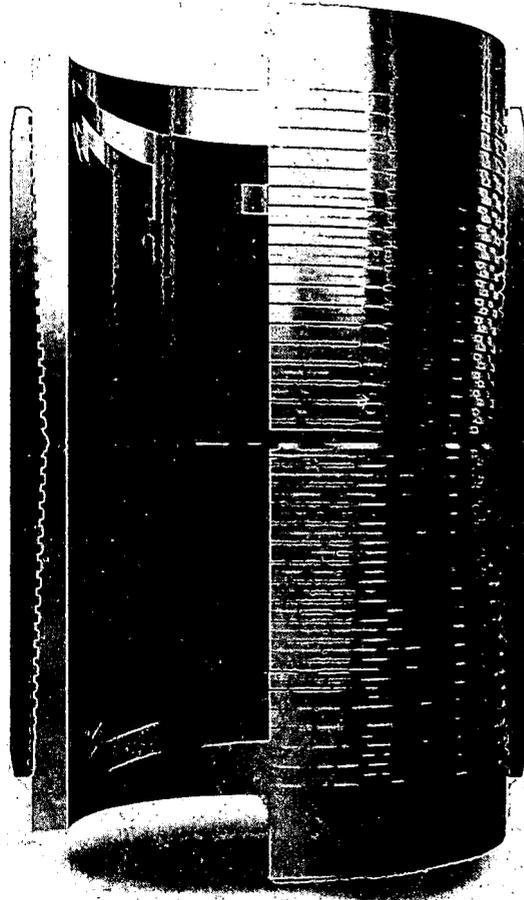
Size	4.500	in	Minimum Yield	110,000	psi
Nominal Weight	13.50	lbs/ft	Minimum Tensile	125,000	psi
Grade	P-110		Yield Load	422,000	lbs
PE Weight	13.04	lbs/ft	Tensile Load	479,000	lbs
Wall Thickness	0.290	in	Min. Internal Yield Pressure	12,400	psi
Nominal ID	3.920	in	Collapse Pressure	10,700	psi
Drift Diameter	3.795	in			
Nom. Pipe Body Area	3.836	in <sup>2</sup>			

## Connection Parameters

Connection OD	5.000	in
Connection ID	3.920	in
Make-Up Loss	3.772	in
Critical Section Area	3.836	in <sup>2</sup>
Tension Efficiency	100.0	%
Compression Efficiency	100.0	%
Yield Load In Tension	422,000	lbs
Min. Internal Yield Pressure	12,400	psi
Collapse Pressure	10,700	psi
Uniaxial Bending	112	°/ 100 ft

## Make-Up Torques

Min. Make-Up Torque	6,000	ft-lbs
Opt. Make-Up Torque	6,700	ft-lbs
Max. Make-Up Torque	7,300	ft-lbs
Yield Torque	10,800	ft-lbs



Printed on: October-22-2014

### NOTE:

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# PERFORMANCE DATA

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

**5.500 in**

**20.00 lbs/ft**

**P-110**

## Tubular Parameters

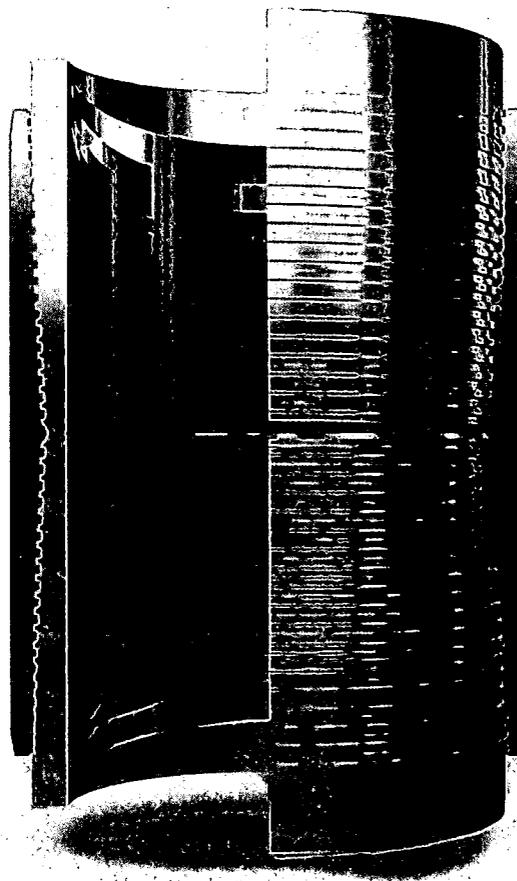
Size	5.500	in	Minimum Yield	110,000	psi
Nominal Weight	20.00	lbs/ft	Minimum Tensile	125,000	psi
Grade	P-110		Yield Load	641,000	lbs
PE Weight	19.81	lbs/ft	Tensile Load	729,000	lbs
Wall Thickness	0.361	in	Min. Internal Yield Pressure	12,600	psi
Nominal ID	4.778	in	Collapse Pressure	11,100	psi
Drift Diameter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

## Connection Parameters

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

## Make-Up Torques

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



Printed on: July-29-2014

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## OXY's Minimum Design Criteria

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

### 1) Casing Design Assumptions

#### a) Burst Loads

##### CSG Test (Surface)

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

##### CSG Test (Intermediate)

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

##### CSG Test (Production)

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

##### Gas Column (Surface)

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

##### Bullheading (Surface / Intermediate)

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

### Gas Kick (Intermediate)

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

### Tubing Leak Near Surface While Producing (Production)

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

### Tubing Leak Near Surface While Stimulating (Production)

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

### Injection / Stimulation Down Casing (Production)

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

## b) Collapse Loads

### Lost Circulation (Surface / Intermediate)

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

### Cementing (Surface / Intermediate / Production)

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

### Full Evacuation (Production)

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

## c) Tension Loads

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

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

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

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

# PERFORMANCE DATA

TMK UP ULTRA™ DQX  
Technical Data Sheet

4.500 in

13.50 lbs/ft

P-110

## Tubular Parameters

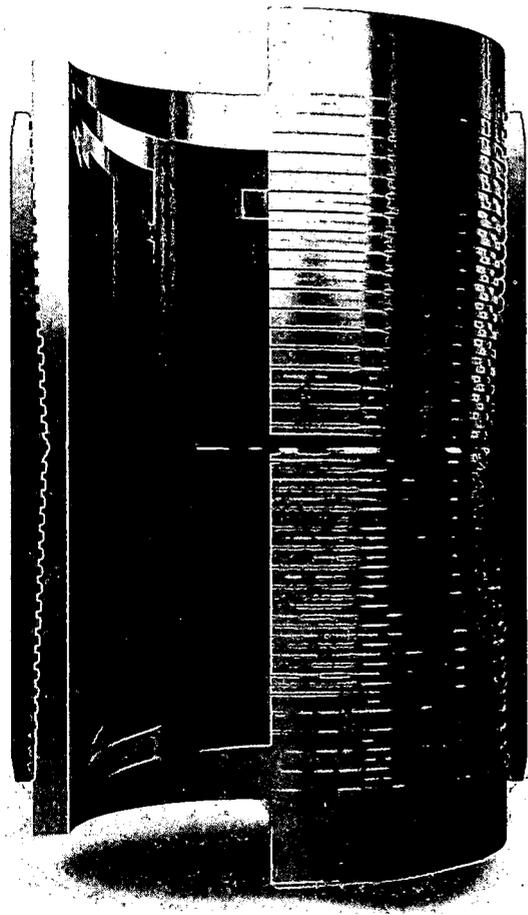
Size	4.500	in	Minimum Yield	110,000	psi
Nominal Weight	13.50	lbs/ft	Minimum Tensile	125,000	psi
Grade	P-110		Yield Load	422,000	lbs
PE Weight	13.04	lbs/ft	Tensile Load	479,000	lbs
Wall Thickness	0.290	in	Min. Internal Yield Pressure	12,400	psi
Nominal ID	3.920	in	Collapse Pressure	10,700	psi
Drift Diameter	3.795	in			
Nom. Pipe Body Area	3.836	in <sup>2</sup>			

## Connection Parameters

Connection OD	5.000	in
Connection ID	3.920	in
Make-Up Loss	3.772	in
Critical Section Area	3.836	in <sup>2</sup>
Tension Efficiency	100.0	%
Compression Efficiency	100.0	%
Yield Load In Tension	422,000	lbs
Min. Internal Yield Pressure	12,400	psi
Collapse Pressure	10,700	psi
Uniaxial Bending	112	°/ 100 ft

## Make-Up Torques

Min. Make-Up Torque	6,000	ft-lbs
Opt. Make-Up Torque	6,700	ft-lbs
Max. Make-Up Torque	7,300	ft-lbs
Yield Torque	10,800	ft-lbs



Printed on: October-22-2014

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## OXY's Minimum Design Criteria

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

### 1) Casing Design Assumptions

#### a) Burst Loads

##### CSG Test (Surface)

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

##### CSG Test (Intermediate)

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

##### CSG Test (Production)

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

##### Gas Column (Surface)

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

##### Bullheading (Surface / Intermediate)

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

#### Gas Kick (Intermediate)

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

#### Tubing Leak Near Surface While Producing (Production)

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

#### Tubing Leak Near Surface While Stimulating (Production)

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

#### Injection / Stimulation Down Casing (Production)

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

### b) Collapse Loads

#### Lost Circulation (Surface / Intermediate)

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

#### Cementing (Surface / Intermediate / Production)

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

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- 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.

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## OXY's Minimum Design Criteria

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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.

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- Internal: Full void pipe.
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### Running Casing (Surface / Intermediate / Production)

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

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

# PERFORMANCE DATA

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

**5.500 in**

**20.00 lbs/ft**

**P-110**

## Tubular Parameters

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

## Connection Parameters

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

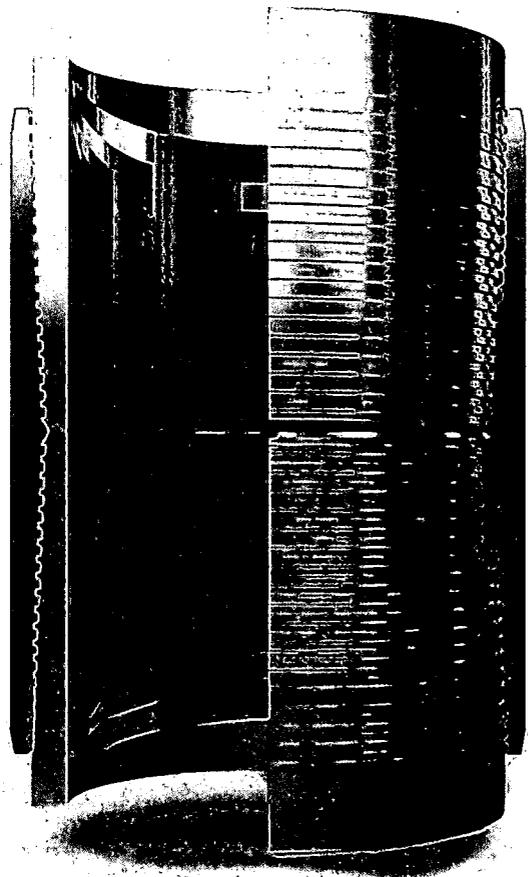
## Make-Up Torques

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

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

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The content of this Technical Data Sheet is for general information only and does not guarantee performance or imply fitness for a particular purpose, which only a competent drilling professional can determine considering the specific installation and operation parameters. Information that is printed or downloaded is no longer controlled by TMK IPSCO and might not be the latest information. Anyone using the information herein does so at their own risk. To verify that you have the latest TMK IPSCO technical information, please contact TMK IPSCO Technical Sales toll-free at 1-888-258-2000.



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- 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.
- External: Mud weight to TOC, cement mix water gradient (8.4 ppg) below TOC, and pore pressure in open hole.

### Gas Kick (Intermediate)

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

### Tubing Leak Near Surface While Producing (Production)

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

### Tubing Leak Near Surface While Stimulating (Production)

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

### Injection / Stimulation Down Casing (Production)

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

## b) Collapse Loads

### Lost Circulation (Surface / Intermediate)

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

### Cementing (Surface / Intermediate / Production)

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

### Full Evacuation (Production)

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

## c) Tension Loads

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

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

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

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

## OXY's Minimum Design Criteria

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#### a) Burst Loads

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- External: Pore pressure in open hole.

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## **Permian Drilling Hydrogen Sulfide Drilling Operations Plan Mesa Verde WC Unit 20H**

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.

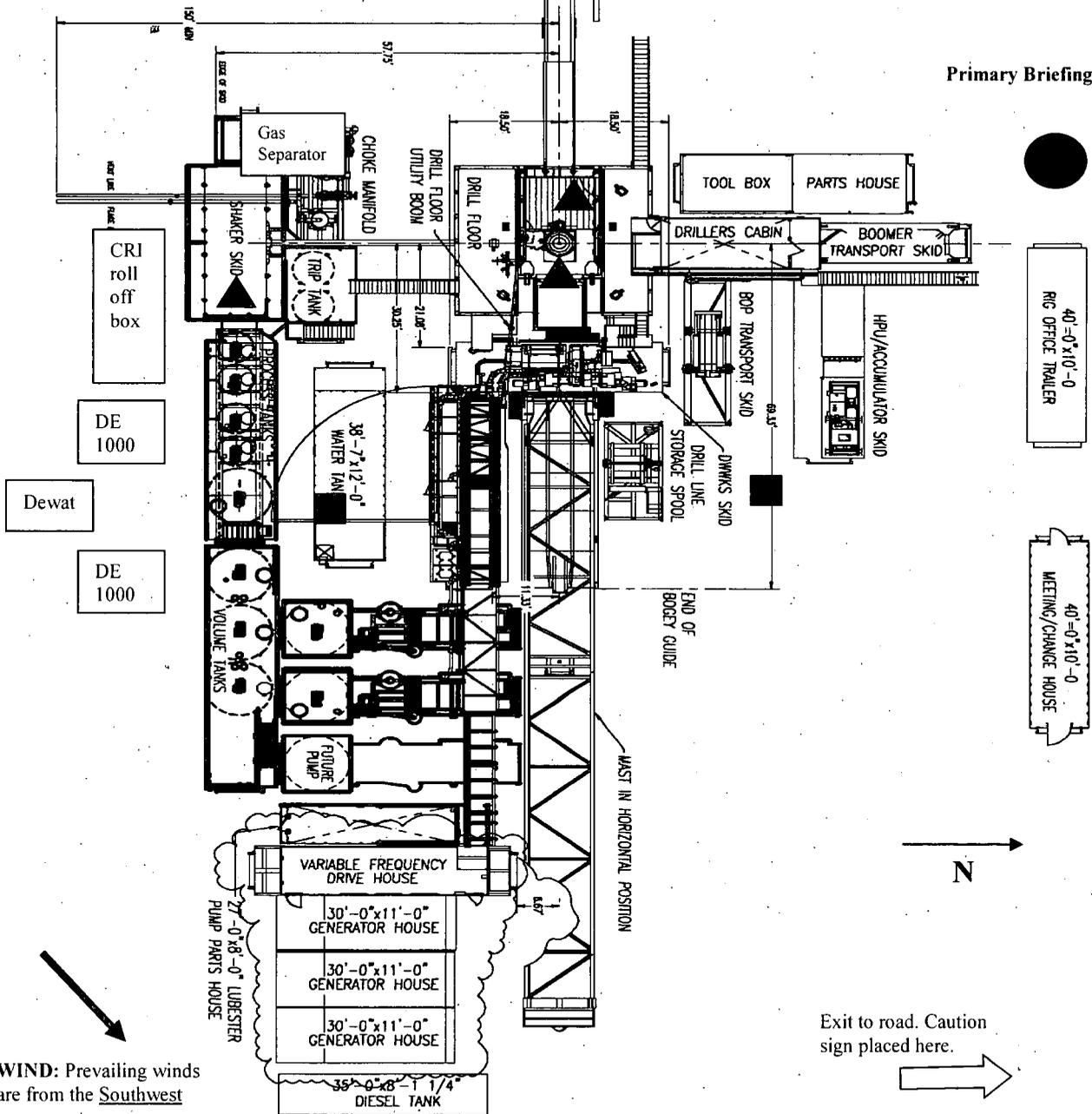
■ Wind direction indicators. Visible from rig floor and from the mud pits area.

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 H2S gas cannot be limited to the well location and the public will be involved, he will activate the evacuation plan.
2. Drill Site Manager or designee will notify local government agency that a hazardous condition exists and evacuation needs to be implemented.
3. Company or contractor safety personnel that have been trained in the use of H2S detection equipment and self-contained breathing equipment will monitor H2S concentrations, wind directions, and area of exposure. They will delineate the outer perimeter of the hazardous gas area. Extension to the evacuation area will be determined from information gathered.
4. Law enforcement personnel (state police, police dept., fire dept., and sheriff's dept.) Will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.
5. After the discharge of gas has been controlled, company safety personnel will determine when the area is safe for re-entry.

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

### Emergency actions

#### Well blowout – if emergency

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

#### Person down location/facility

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

### Toxic effects of hydrogen sulfide

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

Table i  
Toxicity of various gases

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

- 1) threshold limit – concentration at which it is believed that all workers may be repeatedly exposed day after day without adverse effects.
- 2) hazardous limit – concentration that will cause death with short-term exposure.
- 3) lethal concentration – concentration that will cause death with short-term exposure.

### Toxic effects of hydrogen sulfide

Table ii  
Physical effects of hydrogen sulfide

<u>Percent (%)</u>	<u>Ppm</u>	<u>Concentration</u> Grains 100 std. Ft3*	<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 H<sub>2</sub>S can reasonably be expected.
- C. When sampling air in areas to determine if toxic concentrations of H<sub>2</sub>S exists.
- D. When working in areas where over 10 ppm H<sub>2</sub>S has been detected.
- E. At any time there is a doubt as to the H<sub>2</sub>S level in the area to be entered.

**Rescue**  
**First aid for H<sub>2</sub>S 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 H<sub>2</sub>S gas poisoning – no matter how remote the possibility is.
6. Notify emergency room personnel that the victim(s) has been exposed to H<sub>2</sub>S gas.

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

Revised CM 6/27/2012

**OXY Permian Delaware NM Basin Drilling & Completions Incident Reporting**  
**OXY Permian Crisis Team Hotline Notification**

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

Person	Location	Office Phone	Cell/Mobile Phone
Moreno, Leslie (contract)	Hobbs	575-397-8247	
Sehon, Angela (contractor)	Levelland	806-894-8347	
Vasquez, Claudia (contractor)	North Cowden	432-385-3120	
<b>XstremeMD</b>	<b>Location</b>	<b>Office</b>	
Medical Case Management	Orla, TX	(337) 205-9314	
<b>Axiom Medical Consulting</b>	<b>Location</b>	<b>Office</b>	
Medical Case Management		(877) 502-9466	
<b>Regulatory Agencies</b>			
Bureau of Land Management	Carlsbad, NM	(505) 887-6544	
Bureau of Land Management	Hobbs, NM	(505) 393-3612	
Bureau of Land Management	Roswell, NM	(505) 393-3612	
Bureau of Land Management	Santa Fe, NM	(505) 988-6030	
DOT Juisdictional Pipelines-Incident Reporting New Mexico Public Regulaion Commission	Santa Fe, NM	(505) 827-3549 (505) 490-2375	
DOT Juisdictional Pipelines-Incident Reporting Texas Railroad Commission	Austin, TX	(512) 463-6788	
EPA Hot Line	Dallas, Texas	(214) 665-6444	
Federal OSHA, Area Office	Lubbock, Texas	(806) 472-7681	
National Response Center	Washington, D. C.	(800) 424-8802	
National Infrastructure Coordinator Center		(202) 282-9201	
New Mexico Air Quality Bureau	Santa Fe, NM	(505) 827-1494	
New Mexico Oil Conservation Division	Artesia, NM	(505) 748-1283	After Hours (505) 370-7545
New Mexico Oil Conservation Division	Hobbs, NM	(505) 393-6161	
New Mexico Oil Conservation Division	Santa Fe, NM	(505) 471-1068	
New Mexico OCD Environmental Bureau	Santa Fe, NM	(505) 476-3470	
New Mexico Environmental Department	Hobbs, NM	(505) 827-9329	
NM State Emergency Response Center	Santa Fe, NM	(505) 827-9222	
Railroad Commission of TX	District 1 San Antonio,	(210) 227-1313	
Railroad Commission of TX	District 7C San Angelo	(325) 657-7450	
Railroad Commission of TX	District 8, 8A Midland	(432) 684-5581	
Texas Emergency Response Center	Austin, TX	(512) 463-7727	
TCEQ Air	Region 2 Lubbock, TX	(806) 796-3494	
TCEQ Water/Waste/Air	Region 3 Abilene, TX	(325) 698-9674	
TCEQ Water/Waste/Air	Region 7 Midland, TX	(432) 570-1359	
TCEQ Water/Waste/Air	Region 9 San Antonio,	(512) 734-7981	
TCEQ Water/Waste/Air	Region 8 San Angelo	(325) 655-9479	
<b>Medical Facilities</b>			
Abernathy Medical Clinic	Abernathy, TX	(806) 298-2524	
Alliance Hospital	Odessa, TX	(432) 550-1000	
Artesia General Hospital	Artesia, NM	(505) 748-3333	
Brownfield Regional Medical Center	Brownfield, TX	(806) 637-3551	

Person	Location	Office Phone	Cell/Mobile Phone
Cogdell Memorial Hospital	Snyder, TX	(325) 573-6374	
Covenant Hospital Levelland	Levelland, TX	(806) 894-4963	
Covenant Medical Center	Lubbock, TX	(806) 725-1011	
Covenant Medical Center Lakeside	Lubbock, TX	(806) 725-6000	
Covenant Family Health	Snyder, TX	(325) 573-1300	
Crockett County Hospital	Ozona, TX	(325) 392-2671	
Guadalupe Medical Center	Carlsbad, NM	(505) 887-6633	
Lea Regional Hospital	Hobbs, NM	(505) 492-5000	
McCamey Hospital	McCamey, TX	(432) 652-8626	
Medical Arts Hospital	Lamesa, TX	(806) 872-2183	
Medical Center Hospital	Odessa, TX	(432) 640-4000	
Medi Center Hospital	San Angelo, TX	(325) 653-6741	
Memorial Hospital	Ft. Stockton	(432) 336-2241	
Memorial Hospital	Seminole, TX	(432) 758-5811	
Midland Memorial Hospital	Midland, TX	(432) 685-1111	
Nor-Lea General Hospital	Lovington, NM	(505) 396-6611	
Odessa Regional Hospital	Odessa, TX	(432) 334-8200	
Permian General Hospital	Andrews, TX	(432) 523-2200	
Reagan County Hospital	Big Lake, TX	(325) 884-2561	
Reeves County Hospital	Pecos, TX	(432) 447-3551	
Shannon Medical Center	San Angelo, TX	(325) 653-6741	
Union County General Hospital	Clayton, NM	(505) 374-2585	
University Medical Center	Lubbock, TX	(806) 725-8200	
Val Verde Regional Medical Center	Del Rio, TX	(830) 775-8566	
Ward Memorial Hospital	Monahans, TX	(432) 943-2511	
Yoakum County Hospital	Denver City, TX	(806) 592-5484	
<b>Law Enforcement - Sheriff</b>			
Andrews Cty Sheriff's Department	Andrews County(Andr	(432) 523-5545	
Crane Cty Sheriff's Department	Crane, County (Crane)	(432) 558-3571	
Crockett Cty Sheriff's Department	Crockett County (Ozor	(325) 392-2661	
Dawson Cty Sheriff's Department	Dawson County (Lame	(806) 872-7560	
Ector Cty Sheriff's Department	Ector County (Odessa)	(432) 335-3050	
Eddy Cty Sheriff's Department	Eddy County (Artesia)	(505) 746-2704	
Eddy Cty Sheriff's Department	Eddy County (Carlsbad	(505) 887-7551	
Gaines Cty Sheriff's Department	Gaines County (Semin	(432) 758-9871	
Hockley Cty Sheriff's Department	Hockley County(Level	(806) 894-3126	
Kent Cty (Jayton City Sheriff's Dept.)	Kent County(Jayton)	(806) 237-3801	
Lea Cty Sheriff's Department	Lea County (Eunice)	(505) 384-2020	
Lea Cty Sheriff's Department	Lea County (Hobbs)	(505) 393-2515	
Lea Cty Sheriff's Department	Lea County (Lovington)	(505) 396-3611	
Lubbock Cty Sheriff's Department	Lubbock Cty (Abernatt	(806) 296-2724	
Midland Cty Sheriff's Department	Midland County (Midl	(432) 688-1277	

Person	Location	Office Phone	Cell/Mobile Phone
Pecos Cty Sheriff's Department	Pecos County (Iraan)	(432) 639-2251	
Reeves Cty Sheriff's Department	Reeves County (Pecos)	(432) 445-4901	
Scurry Cty Sheriff's Department	Scurry County (Snyder)	(325) 573-3551	
Terry Cty Sheriff's Department	Terry County (Brownf)	(806) 637-2212	
Union Cty Sheriff's Department	Union County (Clayton)	(505) 374-2583	
Upton Cty Sheriff's Department	Upton County (Rankin)	(432) 693-2422	
Ward Cty Sheriff's Department	Ward County (Monaha)	(432) 943-3254	
Yoakum City Sheriff's Department	Yoakum Co. (Denever)	(806) 456-2377	
<b>Law Enforcement - Police</b>			
Abernathy City Police	Abernathy, TX	(806) 298-2545	
Andrews City Police	Andrews, TX	(432) 523-5675	
Artesia City Police	Artesia, NM	(505) 746-2704	
Brownfield City Police	Brownfield, TX	(806) 637-2544	
Carlsbad City Police	Carlsbad, NM	(505) 885-2111	
Clayton City Police	Clayton, NM	(505) 374-2504	
Denver City Police	Denver City, TX	(806) 592-3516	
Eunice City Police	Eunice, NM	(505) 394-2112	
Hobbs City Police	Hobbs, NM	393-2677	
Jal City Police	Jal, NM	(505) 395-2501	
Jayton City Police	Jayton, TX	(806) 237-3801	
Lamesa City Police	Lamesa, TX	(806) 872-2121	
Levelland City Police	Levelland, TX	(806) 894-6164	
Lovington City Police	Lovington, NM	(505) 396-2811	
Midland City Police	Midland, TX	(432) 685-7113	
Monahans City Police	Monahans, TX	(432) 943-3254	
Odessa City Police	Odessa, TX	(432) 335-3378	
Seminole City Police	Seminole, TX	(432) 758-9871	
Snyder City Police	Snyder, TX	(325) 573-2611	
Sundown City Police	Sundown, TX	(806) 229-8241	
<b>Law Enforcement - FBI</b>			
FBI	Albuquerque, NM	(505) 224-2000	
FBI	Midland, TX	(432) 570-0255	
<b>Law Enforcement - DPS</b>			
NM State Police	Artesia, NM	(505) 746-2704	
NM State Police	Carlsbad, NM	(505) 885-3137	
NM State Police	Eunice, NM	(505) 392-5588	
NM State Police	Hobbs, NM	(505) 392-5588	
NM State Police	Clayton, NM	(505) 374-2473; 911	
TX Dept of Public Safety	Andrews, TX	(432) 524-1443	
TX Dept of Public Safety	Big Lake, TX	(325) 884-2301	

Person	Location	Office Phone	Cell/Mobile Phone
TX Dept of Public Safety	Brownfield, TX	(806) 637-2312	
TX Dept of Public Safety	Iraan, TX	(432) 639-3232	
TX Dept of Public Safety	Lamesa, TX	(806) 872-8675	
TX Dept of Public Safety	Levelland, TX	(806) 894-4385	
TX Dept of Public Safety	Lubbock, TX	(806) 747-4491	
TX Dept of Public Safety	Midland, TX	(432) 697-2211	
TX Dept of Public Safety	Monahans, TX	(432) 943-5857	
TX Dept of Public Safety	Odessa, TX	(432) 332-6100	
TX Dept of Public Safety	Ozona, TX	(325) 392-2621	
TX Dept of Public Safety	Pecos, TX	(432) 447-3533	
TX Dept of Public Safety	Seminole, TX	(432) 758-4041	
TX Dept of Public Safety	Snyder, TX	(325) 573-0113	
TX Dept of Public Safety	Terry County TX	(806) 637-8913	
TX Dept of Public Safety	Yoakum County TX	(806) 456-2377	
<b>Firefighting &amp; Rescue</b>			
Abernathy	Abernathy, TX	(806) 298-2022	
Amistad/Rosebud	Amistad/Rosebud, NM	(505) 633-9113	
Andrews	Andrews, TX	523-3111	
Artesia	Artesia, NM	(505) 746-5051	
Big Lake	Big Lake, TX	(325) 884-3650	
Brownfield-Administrative & other calls	Brownfield, TX	(816) 637-4547	
Brownfield emergency only	Brownfield, TX	-911	
Carlsbad	Carlsbad, NM	(505) 885-3125	
Clayton	Clayton, NM	(505) 374-2435	
Cotton Center	Cotton Center, TX	(806) 879-2157	
Crane	Crane, TX	(432) 558-2361	
Del Rio	Del Rio, TX	(830) 774-8650	
Denver City	Denver City, TX	(806) 592-3516	
Eldorado	Eldorado, TX	(325) 853-2691	
Eunice	Eunice, NM	(505) 394-2111	
Garden City	Garden City, TX	(432) 354-2404	
Goldsmith	Goldsmith, TX	(432) 827-3445	
Hale Center	Hale Center, TX	(806) 839-2411	
Halfway	Halfway, TX		
Hobbs	Hobbs, NM	(505) 397-9308	
Jal	Jal, NM	(505) 395-2221	
Jayton	Jayton, TX	(806) 237-3801	
Kermit	Kermit, TX	(432) 586-3468	
Lamesa	Lamesa, TX	(806) 872-4352	
Levelland	Levelland, TX	(806) 894-3154	
Lovington	Lovington, NM	(505) 396-2359	
Maljamar	Maljamar, NM	(505) 676-4100	

Person	Location	Office Phone	Cell/Mobile Phone
McCamey	McCamey, TX	(432) 652-8232	
Midland	Midland, TX	(432) 685-7346	
Monahans	Monahans, TX	(432) 943-4343	
Nara Visa	Nara Visa, NM	(505) 461-3300	
Notrees	Notress, TX	(432) 827-3445	
Odessa	Odessa, TX	(432) 335-4659	
Ozona	Ozona, TX	(325) 392-2626	
Pecos	Pecos, TX	(432) 445-2421	
Petersburg	Petersburg, TX	(806) 667-3461	
Plains	Plains, TX	(806) 456-8067	
Plainview	Plainview, TX	(806) 296-1170	
Rankin	Rankin, TX	(432) 693-2252	
San Angelo	San Angelo, TX	(325) 657-4355	
Sanderson	Sanderson, TX	(432) 345-2525	
Seminole	Seminole, TX	758-9871	
Smyer	Smyer, TX	(806) 234-3861	
Snyder	Snyder, TX	(325) 573-6215	
Sundown	Sundown, TX	911	
Tucumcari	Tucumcari, NM	911	
West Odessa	Odessa, TX	(432) 381-3033	
<b>Ambulance</b>			
Abernathy Ambulance	Abernathy, TX	(806) 298-2241	
Amistad/Rosebud	Amistad/Rosebud, NM	(505) 633-9113	
Andrews Ambulance	Andrews, TX	(432) 523-5675	
Artesia Ambulance	Artesia, NM	(505) 746-2701	
Big Lake Ambulance	Big Lake, TX	(325) 884-2423	
Big Spring Ambulance	Big Spring, TX	(432) 264-2550	
Brownfield Ambulance	Brownfield, TX	(806) 637-2511	
Carlsbad Ambulance	Carlsbad, NM	(505) 885-2111; 911	
Clayton, NM	Clayton, NM	(505) 374-2501	
Denver City Ambulance	Denver City, TX	(806) 592-3516	
Eldorado Ambulance	Eldorado, TX	(325) 853-3456	
Eunice Ambulance	Eunice, NM	(505) 394-3258	
Goldsmith Ambulance	Goldsmith, TX	(432) 827-3445	
Hobbs, NM	Hobbs, NM	(505) 397-9308	
Jal, NM	Jal, NM	(505) 395-2501	
Jayton Ambulance	Jayton, TX	(806) 237-3801	
Lamesa Ambulance	Lamesa, TX	(806) 872-3464	
Levelland Ambulance	Levelland, TX	(806) 894-8855	
Lovington Ambulance	Lovington, NM	(505) 396-2811	
McCamey Hospital	McCamey, TX	(432) 652-8626	
Midland Ambulance	Midland, TX	(432) 685-7499	

<b>Person</b>	<b>Location</b>	<b>Office Phone</b>	<b>Cell/Mobile Phone</b>
Monahans Ambulance	Monahans, TX	3731	
Nara Visa, NM	Nara Visa, NM	(505) 461-3300	
Odessa Ambulance	Odessa, TX	(432) 335-3378	
Ozona Ambulance	Ozona, TX	(325) 392-2671	
Pecos Ambulance	Pecos, TX	(432) 445-4444	
Rankin Ambulance	Rankin, TX	(432) 693-2443	
San Angelo Ambulance	San Angelo, TX	(325) 657-4357	
Seminole Ambulance	Seminole, TX	758-9871	
Snyder Ambulance	Snyder, TX	(325) 573-1911	
Stanton Ambulance	Stanton, TX	(432) 756-2211	
Sundown Ambulance	Sundown, TX	<b>911</b>	
Tucumcari, NM	Tucumcari, NM	911	
<b>Medical Air Ambulance Service</b>			
AEROCARE - Methodist Hospital	Lubbock, TX	(800) 627-2376	
San Angelo Med-Vac Air Ambulance	San Angelo, TX	(800) 277-4354	
Southwest Air Ambulance Service	Stanford, TX	(800) 242-6199	
Southwest MediVac	Snyder, TX	(800) 242-6199	
Southwest MediVac	Hobbs, NM	(800) 242-6199	
Odessa Care Star	Odessa, TX	(888) 624-3571	
NWTH Medivac	Amarillo, TX	(800) 692-1331	

**OXY**

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

**MESA VERDE WC UNIT**

**MESA VERDE WC UNIT 20H**

**WB00**

**Plan: Permitting Plan**

# **Standard Planning Report**

**06 June, 2018**

# Oxy Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well MESA VERDE WC UNIT 20H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	DATUM @ 3616.10ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	DATUM @ 3616.10ft
<b>Site:</b>	MESA VERDE WC UNIT	<b>North Reference:</b>	Grid
<b>Well:</b>	MESA VERDE WC UNIT 20H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	WB00		
<b>Design:</b>	Permitting Plan		

<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> MESA VERDE WC UNIT			
<b>Site Position:</b>	<b>Northing:</b>	441,172.41 usft	<b>Latitude:</b> 32° 12' 40.751543 N
<b>From:</b> Map	<b>Easting:</b>	734,323.24 usft	<b>Longitude:</b> 103° 42' 33.640877 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b> 13.200 in	<b>Grid Convergence:</b> 0.33 °

<b>Well</b> MESA VERDE WC UNIT 20H			
<b>Well Position</b>	<b>+N-S</b>	-367.43 ft	<b>Northing:</b> 440,805.00 usft
	<b>+E-W</b>	-8,431.26 ft	<b>Easting:</b> 725,892.40 usft
			<b>Latitude:</b> 32° 12' 37.589573 N
			<b>Longitude:</b> 103° 44' 11.795146 W
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	0.00 ft
			<b>Ground Level:</b> 3,589.60 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	6/6/2018	6.80	59.92	48,004

<b>Design</b> Permitting Plan				
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<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	352.49

<b>Plan Sections</b>										
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	
7,390.00	0.00	0.00	7,390.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,890.52	10.01	263.61	7,887.98	-4.86	-43.34	2.00	2.00	0.00	263.61	
11,022.28	10.01	263.61	10,972.06	-65.49	-584.34	0.00	0.00	0.00	0.00	
11,522.80	0.00	359.67	11,470.04	-70.34	-627.68	2.00	-2.00	0.00	180.00	MESA
12,434.80	91.20	359.67	12,042.87	514.60	-631.02	10.00	10.00	0.00	-0.33	
16,902.69	91.26	359.67	11,947.00	4,981.39	-656.52	0.00	0.00	0.00	0.00	MESA

# Oxy Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well MESA VERDE WC UNIT 20H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	DATUM @ 3616.10ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	DATUM @ 3616.10ft
<b>Site:</b>	MESA VERDE WC UNIT	<b>North Reference:</b>	Grid
<b>Well:</b>	MESA VERDE WC UNIT 20H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	WB00		
<b>Design:</b>	Permitting Plan		

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

# Oxy Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well MESA VERDE WC UNIT 20H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	DATUM @ 3616.10ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	DATUM @ 3616.10ft
<b>Site:</b>	MESA VERDE WC UNIT	<b>North Reference:</b>	Grid
<b>Well:</b>	MESA VERDE WC UNIT 20H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	WB00		
<b>Design:</b>	Permitting Plan		

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,390.00	0.00	0.00	7,390.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.20	263.61	7,400.00	0.00	-0.02	0.00	2.00	2.00	0.00
7,500.00	2.20	263.61	7,499.97	-0.24	-2.10	0.04	2.00	2.00	0.00
7,600.00	4.20	263.61	7,599.81	-0.86	-7.65	0.15	2.00	2.00	0.00
7,700.00	6.20	263.61	7,699.40	-1.87	-16.65	0.33	2.00	2.00	0.00
7,800.00	8.20	263.61	7,798.60	-3.26	-29.11	0.57	2.00	2.00	0.00
7,890.52	10.01	263.61	7,887.98	-4.86	-43.34	0.85	2.00	2.00	0.00
7,900.00	10.01	263.61	7,897.31	-5.04	-44.98	0.88	0.00	0.00	0.00
8,000.00	10.01	263.61	7,995.79	-6.98	-62.25	1.22	0.00	0.00	0.00
8,100.00	10.01	263.61	8,094.27	-8.91	-79.53	1.56	0.00	0.00	0.00
8,200.00	10.01	263.61	8,192.75	-10.85	-96.80	1.89	0.00	0.00	0.00
8,300.00	10.01	263.61	8,291.22	-12.78	-114.08	2.23	0.00	0.00	0.00
8,400.00	10.01	263.61	8,389.70	-14.72	-131.35	2.57	0.00	0.00	0.00
8,500.00	10.01	263.61	8,488.18	-16.66	-148.63	2.91	0.00	0.00	0.00
8,600.00	10.01	263.61	8,586.66	-18.59	-165.90	3.24	0.00	0.00	0.00
8,700.00	10.01	263.61	8,685.13	-20.53	-183.18	3.58	0.00	0.00	0.00
8,800.00	10.01	263.61	8,783.61	-22.46	-200.45	3.92	0.00	0.00	0.00
8,900.00	10.01	263.61	8,882.09	-24.40	-217.73	4.26	0.00	0.00	0.00
9,000.00	10.01	263.61	8,980.57	-26.34	-235.00	4.60	0.00	0.00	0.00
9,100.00	10.01	263.61	9,079.04	-28.27	-252.27	4.93	0.00	0.00	0.00
9,200.00	10.01	263.61	9,177.52	-30.21	-269.55	5.27	0.00	0.00	0.00
9,300.00	10.01	263.61	9,276.00	-32.14	-286.82	5.61	0.00	0.00	0.00
9,400.00	10.01	263.61	9,374.48	-34.08	-304.10	5.95	0.00	0.00	0.00
9,500.00	10.01	263.61	9,472.96	-36.02	-321.37	6.28	0.00	0.00	0.00
9,600.00	10.01	263.61	9,571.43	-37.95	-338.65	6.62	0.00	0.00	0.00
9,700.00	10.01	263.61	9,669.91	-39.89	-355.92	6.96	0.00	0.00	0.00
9,800.00	10.01	263.61	9,768.39	-41.82	-373.20	7.30	0.00	0.00	0.00
9,900.00	10.01	263.61	9,866.87	-43.76	-390.47	7.64	0.00	0.00	0.00
10,000.00	10.01	263.61	9,965.34	-45.70	-407.75	7.97	0.00	0.00	0.00
10,100.00	10.01	263.61	10,063.82	-47.63	-425.02	8.31	0.00	0.00	0.00
10,200.00	10.01	263.61	10,162.30	-49.57	-442.30	8.65	0.00	0.00	0.00
10,300.00	10.01	263.61	10,260.78	-51.50	-459.57	8.99	0.00	0.00	0.00
10,400.00	10.01	263.61	10,359.25	-53.44	-476.85	9.33	0.00	0.00	0.00
10,500.00	10.01	263.61	10,457.73	-55.38	-494.12	9.66	0.00	0.00	0.00

# Oxy Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well MESA VERDE WC UNIT 20H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	DATUM @ 3616.10ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	DATUM @ 3616.10ft
<b>Site:</b>	MESA VERDE WC UNIT	<b>North Reference:</b>	Grid
<b>Well:</b>	MESA VERDE WC UNIT 20H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	WB00		
<b>Design:</b>	Permitting Plan		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,600.00	10.01	263.61	10,556.21	-57.31	-511.39	10.00	0.00	0.00	0.00
10,700.00	10.01	263.61	10,654.69	-59.25	-528.67	10.34	0.00	0.00	0.00
10,800.00	10.01	263.61	10,753.16	-61.18	-545.94	10.68	0.00	0.00	0.00
10,900.00	10.01	263.61	10,851.64	-63.12	-563.22	11.01	0.00	0.00	0.00
11,000.00	10.01	263.61	10,950.12	-65.06	-580.49	11.35	0.00	0.00	0.00
11,022.28	10.01	263.61	10,972.06	-65.49	-584.34	11.43	0.00	0.00	0.00
11,100.00	8.46	263.61	11,048.77	-66.88	-596.73	11.67	2.00	-2.00	0.00
11,200.00	6.46	263.61	11,147.92	-68.32	-609.63	11.92	2.00	-2.00	0.00
11,300.00	4.46	263.61	11,247.46	-69.38	-619.08	12.11	2.00	-2.00	0.00
11,400.00	2.46	263.61	11,347.28	-70.05	-625.07	12.22	2.00	-2.00	0.00
11,500.00	0.46	263.61	11,447.24	-70.33	-627.59	12.27	2.00	-2.00	0.00
11,522.80	0.00	359.67	11,470.04	-70.34	-627.68	12.27	2.00	-2.00	0.00
11,600.00	7.72	359.67	11,547.00	-65.15	-627.71	17.43	10.00	10.00	0.00
11,700.00	17.72	359.67	11,644.43	-43.16	-627.84	39.24	10.00	10.00	0.00
11,800.00	27.72	359.67	11,736.55	-4.59	-628.06	77.52	10.00	10.00	0.00
11,900.00	37.72	359.67	11,820.58	49.39	-628.37	131.08	10.00	10.00	0.00
12,000.00	47.72	359.67	11,893.95	117.15	-628.75	198.30	10.00	10.00	0.00
12,100.00	57.72	359.67	11,954.44	196.61	-629.21	277.14	10.00	10.00	0.00
12,200.00	67.72	359.67	12,000.22	285.38	-629.71	365.21	10.00	10.00	0.00
12,300.00	77.72	359.67	12,029.89	380.74	-630.26	459.83	10.00	10.00	0.00
12,400.00	87.72	359.67	12,042.54	479.81	-630.82	558.12	10.00	10.00	0.00
12,434.80	91.20	359.67	12,042.87	514.60	-631.02	592.64	10.00	10.00	0.00
12,500.00	91.20	359.67	12,041.51	579.79	-631.39	657.32	0.00	0.00	0.00
12,600.00	91.20	359.67	12,039.41	679.76	-631.96	756.51	0.00	0.00	0.00
12,700.00	91.20	359.67	12,037.31	779.74	-632.54	855.70	0.00	0.00	0.00
12,800.00	91.20	359.67	12,035.21	879.71	-633.11	954.90	0.00	0.00	0.00
12,900.00	91.21	359.67	12,033.11	979.69	-633.68	1,054.09	0.00	0.00	0.00
13,000.00	91.21	359.67	12,031.00	1,079.67	-634.25	1,153.28	0.00	0.00	0.00
13,100.00	91.21	359.67	12,028.89	1,179.64	-634.82	1,252.48	0.00	0.00	0.00
13,200.00	91.21	359.67	12,026.78	1,279.62	-635.39	1,351.67	0.00	0.00	0.00
13,300.00	91.21	359.67	12,024.67	1,379.60	-635.96	1,450.86	0.00	0.00	0.00
13,400.00	91.21	359.67	12,022.55	1,479.57	-636.53	1,550.06	0.00	0.00	0.00
13,500.00	91.21	359.67	12,020.43	1,579.55	-637.10	1,649.25	0.00	0.00	0.00
13,600.00	91.22	359.67	12,018.31	1,679.52	-637.67	1,748.44	0.00	0.00	0.00
13,700.00	91.22	359.67	12,016.19	1,779.50	-638.24	1,847.64	0.00	0.00	0.00
13,800.00	91.22	359.67	12,014.07	1,879.47	-638.81	1,946.83	0.00	0.00	0.00
13,900.00	91.22	359.67	12,011.94	1,979.45	-639.38	2,046.02	0.00	0.00	0.00
14,000.00	91.22	359.67	12,009.81	2,079.43	-639.95	2,145.22	0.00	0.00	0.00
14,100.00	91.22	359.67	12,007.68	2,179.40	-640.52	2,244.41	0.00	0.00	0.00
14,200.00	91.22	359.67	12,005.55	2,279.38	-641.09	2,343.60	0.00	0.00	0.00
14,300.00	91.22	359.67	12,003.41	2,379.35	-641.66	2,442.80	0.00	0.00	0.00
14,400.00	91.23	359.67	12,001.27	2,479.33	-642.24	2,541.99	0.00	0.00	0.00
14,500.00	91.23	359.67	11,999.13	2,579.30	-642.81	2,641.18	0.00	0.00	0.00
14,600.00	91.23	359.67	11,996.99	2,679.28	-643.38	2,740.38	0.00	0.00	0.00
14,700.00	91.23	359.67	11,994.84	2,779.25	-643.95	2,839.57	0.00	0.00	0.00
14,800.00	91.23	359.67	11,992.69	2,879.23	-644.52	2,938.76	0.00	0.00	0.00
14,900.00	91.23	359.67	11,990.54	2,979.21	-645.09	3,037.95	0.00	0.00	0.00
15,000.00	91.23	359.67	11,988.39	3,079.18	-645.66	3,137.15	0.00	0.00	0.00
15,100.00	91.24	359.67	11,986.24	3,179.16	-646.23	3,236.34	0.00	0.00	0.00
15,200.00	91.24	359.67	11,984.08	3,279.13	-646.80	3,335.53	0.00	0.00	0.00
15,300.00	91.24	359.67	11,981.92	3,379.11	-647.37	3,434.72	0.00	0.00	0.00
15,400.00	91.24	359.67	11,979.76	3,479.08	-647.94	3,533.92	0.00	0.00	0.00
15,500.00	91.24	359.67	11,977.60	3,579.06	-648.51	3,633.11	0.00	0.00	0.00
15,600.00	91.24	359.67	11,975.43	3,679.03	-649.08	3,732.30	0.00	0.00	0.00

# Oxy Planning Report

<b>Database:</b>	HOPSP	<b>Local Co-ordinate Reference:</b>	Well MESA VERDE WC UNIT 20H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	DATUM @ 3616.10ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	DATUM @ 3616.10ft
<b>Site:</b>	MESA VERDE WC UNIT	<b>North Reference:</b>	Grid
<b>Well:</b>	MESA VERDE WC UNIT 20H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	WB00		
<b>Design:</b>	Permitting Plan		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,700.00	91.24	359.67	11,973.26	3,779.01	-649.65	3,831.49	0.00	0.00	0.00
15,800.00	91.24	359.67	11,971.09	3,878.98	-650.22	3,930.69	0.00	0.00	0.00
15,900.00	91.25	359.67	11,968.92	3,978.96	-650.79	4,029.88	0.00	0.00	0.00
16,000.00	91.25	359.67	11,966.74	4,078.93	-651.36	4,129.07	0.00	0.00	0.00
16,100.00	91.25	359.67	11,964.56	4,178.90	-651.94	4,228.26	0.00	0.00	0.00
16,200.00	91.25	359.67	11,962.38	4,278.88	-652.51	4,327.45	0.00	0.00	0.00
16,300.00	91.25	359.67	11,960.20	4,378.85	-653.08	4,426.65	0.00	0.00	0.00
16,400.00	91.25	359.67	11,958.02	4,478.83	-653.65	4,525.84	0.00	0.00	0.00
16,500.00	91.25	359.67	11,955.83	4,578.80	-654.22	4,625.03	0.00	0.00	0.00
16,600.00	91.26	359.67	11,953.64	4,678.78	-654.79	4,724.22	0.00	0.00	0.00
16,700.00	91.26	359.67	11,951.45	4,778.75	-655.36	4,823.41	0.00	0.00	0.00
16,800.00	91.26	359.67	11,949.26	4,878.73	-655.93	4,922.61	0.00	0.00	0.00
16,900.00	91.26	359.67	11,947.06	4,978.70	-656.50	5,021.80	0.00	0.00	0.00
16,902.69	91.26	359.67	11,947.00	4,981.39	-656.52	5,024.46	0.05	0.05	0.00

Design Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
MESA	- plan hits target center - Point	0.00	0.00	11,470.04	-70.34	-627.68	440,734.66	725,264.75	32° 12' 36.927942 N	103° 44' 19.105135
MESA	- plan hits target center - Point	0.00	0.00	11,947.00	4,981.39	-656.52	445,786.12	725,235.92	32° 13' 26.916450 N	103° 44' 19.115339

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
7,390.00	7,390.00	0.00	0.00	STEP OUT DLS 2.00	
7,890.52	7,887.98	-4.86	-43.34	HOLD 10 DEG TANGENT	
11,022.28	10,972.06	-65.49	-584.34	DROP BACK TO VERTICAL DLS 2.00	
11,522.80	11,470.04	-70.34	-627.68	BUILD CURVE 10 DEG / 100	
12,434.80	12,042.87	514.60	-631.02	LANDING POINT	
16,902.69	11,947.00	4,981.39	-656.52	TD at 16902.69	

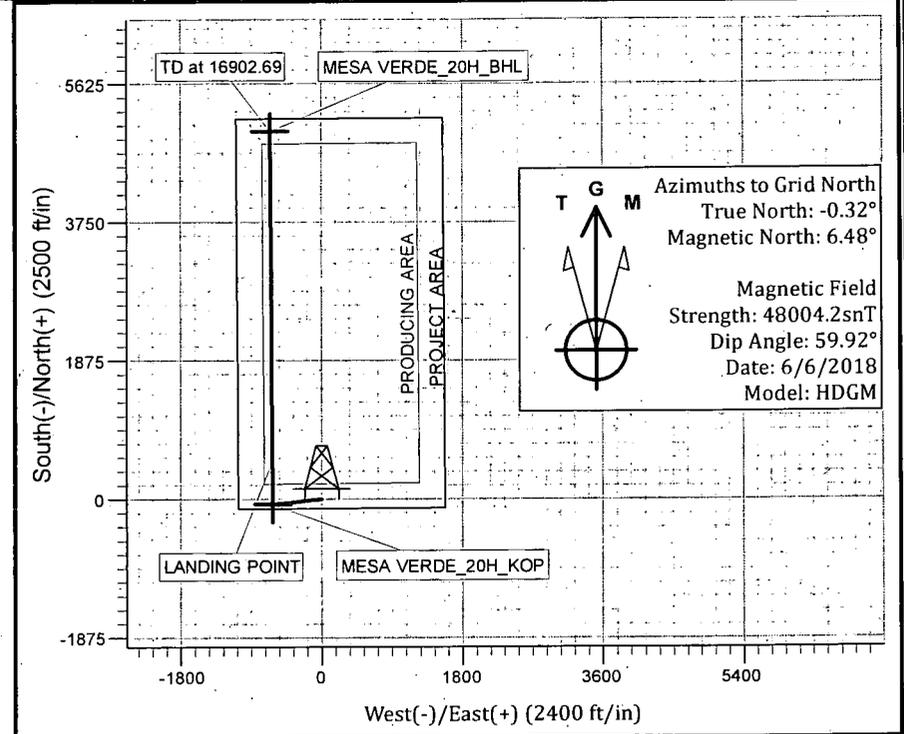
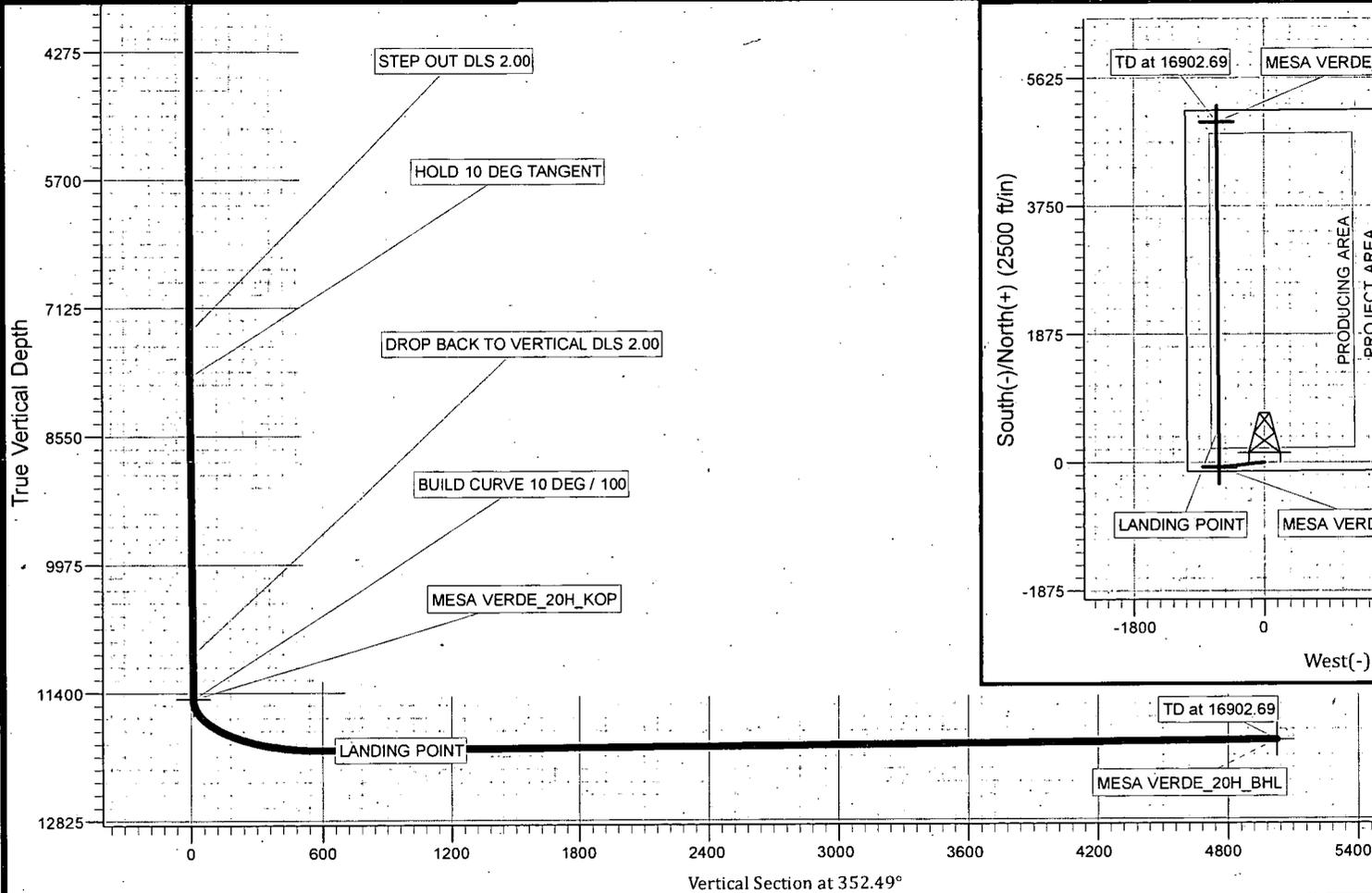


Project: PRD NM DIRECTIONAL PLANS (NAD 1983)  
 Site: MESA VERDE WC UNIT  
 Well: MESA VERDE WC UNIT 20H  
 Wellbore: WB00  
 Design: Permitting Plan

**WELL DETAILS: MESA VERDE WC UNIT 20H**

+N/-S    +E/-W    Northing  
 0.00    0.00    440805.00

Ground Level: 3589.60  
 Easting    Latitude    Longitude  
 725892.40    32° 12' 37.589573 N    103° 44' 11.795146 W  
 DATUM @ 3616.10ft



T G M  
 Azimuths to Grid North  
 True North: -0.32°  
 Magnetic North: 6.48°  
 Magnetic Field  
 Strength: 48004.2snT  
 Dip Angle: 59.92°  
 Date: 6/6/2018  
 Model: HDGM

PROJECT DETAILS: NM DIRECTIONAL PLANS (NAD 1983)  
 Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: New Mexico Eastern Zone  
 System Datum: Mean Sea Level

**SECTION DETAILS**

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	7390.00	0.00	0.00	7390.00	0.00	0.00	0.00	0.00	0.00		STEP OUT DLS 2.00
3	7890.52	10.01	263.61	7887.98	-4.86	-43.34	2.00	263.61	0.85		HOLD 10 DEG TANGENT
4	11022.28	10.01	263.61	10972.06	-65.49	-584.34	0.00	0.00	11.43		DROP BACK TO VERTICAL DLS 2.00
5	11522.80	0.00	359.67	11470.04	-70.34	-627.68	2.00	180.00	12.27	MESA VERDE_20H_KOP	BUILD CURVE 10 DEG / 100
6	12434.80	91.20	359.67	12042.87	514.60	-631.02	10.00	-0.33	592.64		LANDING POINT
7	16902.69	91.26	359.67	11947.00	4981.39	-656.52	0.00	0.00	5024.46	MESA VERDE_20H_BHL	TD at 16902.69

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

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Original  
to Appropriate  
District Office

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

**GAS CAPTURE PLAN**

Date: 11-27-2018

Original

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

Amended - Reason for Amendment: \_\_\_\_\_

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

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

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

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

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
Mesa Verde WC Unit 2H	Pending	M-16-24S-32E	250 S 1035 W	4184	0	
Mesa Verde WC Unit 3H	Pending	M-16-24S-32E	250 S 1000 W	4184	0	
Mesa Verde WC Unit 4H	Pending	M-16-24S-32E	250 S 965 W	4184	0	
Mesa Verde WC Unit 7H	Pending	N-17-24S-32E	280 S 1421 W	4184	0	
Mesa Verde WC Unit 8H	Pending	N-17-24S-32E	280 S 1386 W	4184	0	
Mesa Verde WC Unit 15H	Pending	P-13-24S-31E	171 S 1125 E	2719	0	
Mesa Verde WC Unit 16H	Pending	P-13-24S-31E	171 S 1160 E	2719	0	
Mesa Verde WC Unit 17H	Pending	P-13-24S-31E	171 S 1160 E	2719	0	
Mesa Verde WC Unit 18H	Pending	M-13-24S-31E	118 S 1138 W	2719	0	
Mesa Verde WC Unit 19H	Pending	M-13-24S-31E	118 S 1103 W	2719	0	
Mesa Verde WC Unit 20H	Pending	M-13-24S-31E	118 S 1068 W	2719	0	
Mesa Verde WC Unit 21H	Pending	M-13-24S-31E	271 S 210 W	4197	0	
Mesa Verde BS Unit 25H	Pending	M-13-24S-31E	940 S 1225 W	1640	0	
Mesa Verde BS Unit 26H	Pending	M-13-24S-31E	940 S 1260 W	1640	0	
Mesa Verde BS Unit 27H	Pending	M-13-24S-31E	940 S 1295 W	1640	0	
Mesa Verde BS Unit 28H	Pending	O-13-24S-31E	925 S 1460 E	1640	0	
Mesa Verde BS Unit 29H	Pending	O-13-24S-31E	925 S 1425 E	1640	0	
Mesa Verde BS Unit 30H	Pending	O-13-24S-31E	925 S 1390 E	1640	0	
Mesa Verde BS Unit 31H	Pending	M-13-24S-31E	236 S 210 W	945	0	

**Gathering System and Pipeline Notification**

Well(s) will be connected to a production facility after flowback operations are complete, where a gas transporter system is in place. The gas produced from production facility is dedicated to Delaware G&P LLC (“Enlink”) and is connected to Enlink low/high pressure gathering system located in Eddy County, New Mexico. OXY USA INC. (“OXY”) provides (periodically) to Enlink a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, OXY and Enlink have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at Enlink’s LOBO Processing Plant located in Sec. 3, Block C-27, PSL, Loving County, Texas. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

**Flowback Strategy**

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

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

### **Alternatives to Reduce Flaring**

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

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

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

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

**1. SUMMARY OF REQUEST:**

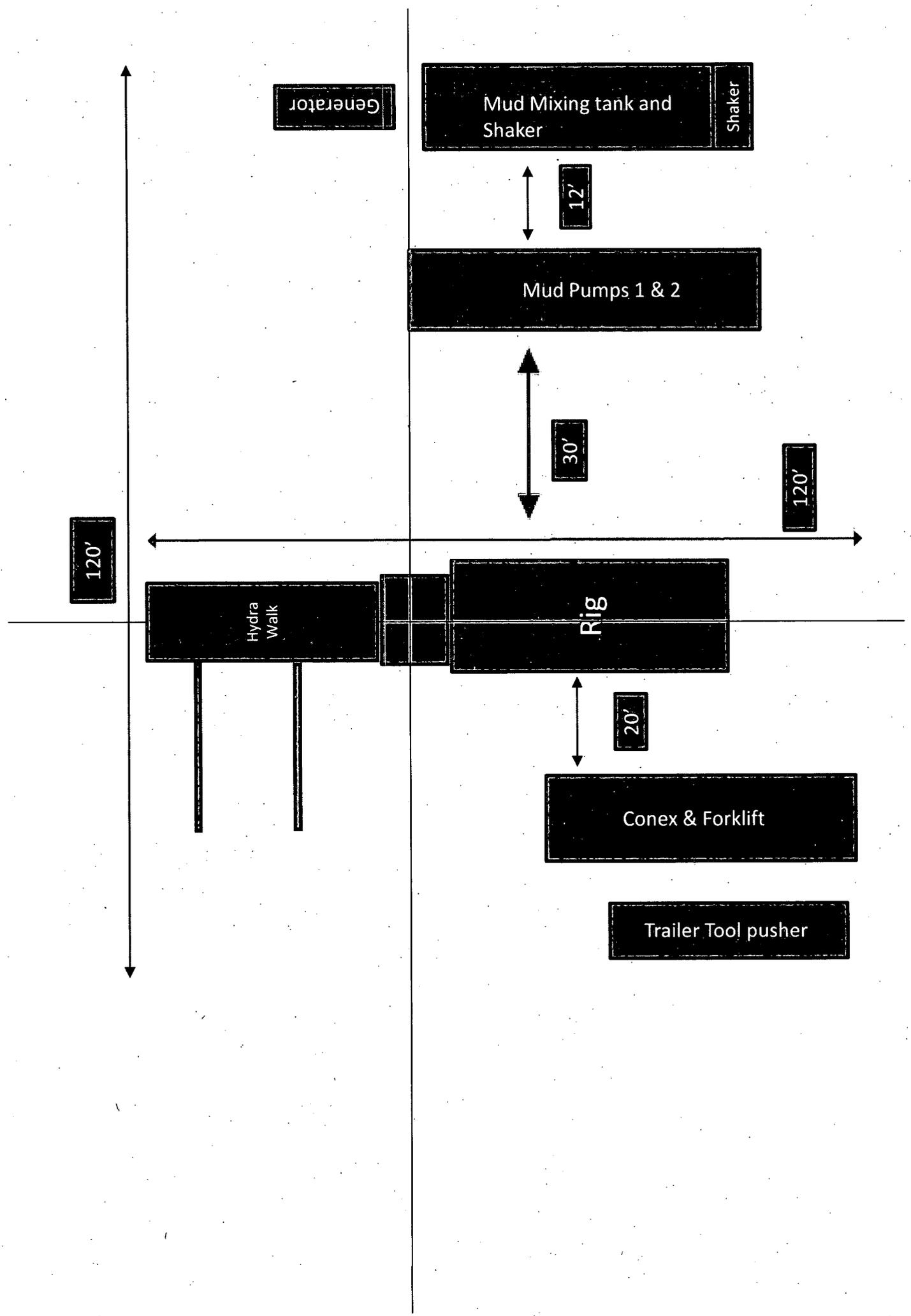
Oxy USA respectfully requests approval for the following operations for the surface hole in the drill plan:

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



## Oxy USA Inc. - Mesa Verde WC Unit 20H

### 1. Geologic Formations

TVD of target	12042'	Pilot Hole Depth	N/A
MD at TD:	16902'	Deepest Expected fresh water:	731'

### Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	731	Brine
Salado	1060	Brine
Castile	2935	Brine
Lamar/Delaware	4605	Brine
Bell Canyon	4628	Oil/Gas
Cherry Canyon	5503	Oil/Gas
Brushy Canyon	6729	Losses
Bone Spring	8450	Oil/Gas
1st Bone Spring	9533	Oil/Gas
2nd Bone Spring	9810	Oil/Gas
3rd Bone Spring	10749	Oil/Gas
<b>Wolfcamp</b>	<b>11929</b>	<b>Oil/Gas</b>

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

### 2. Casing Program

Hole Size (in)	Casing Interval		Csg. Size (in)	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	Buoyant	Buoyant
	From (ft)	To (ft)							Body SF Tension	Joint SF Tension
14.75	0	781	10.75	40.5	J55	BTC	1.125	1.2	1.4	1.4
9.875	0	11422	7.625	26.4	L80	BTC	1.125	1.2	1.4	1.4
6.75	0	11972	5.5	20	P110	DQX	1.125	1.2	1.4	1.4
6.75	11972	16902	4.5	13.5	P110	DQX	1.125	1.2	1.4	1.4

SF Values will meet or Exceed

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

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

#### Annular Clearance Variance Request

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

**Oxy USA Inc. - Mesa Verde WC Unit 20H**

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

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	Y
If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> string cement tied back 500' into previous casing?	Y
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 String	# Sks	Wt. (lb/gal)	Yld (ft <sup>3</sup> /sack)	H2O (gal/sk)	500# Comp. Strength (hours)	Slurry Description
Surface Lead	N/A	N/A	N/A	N/A	N/A	N/A
Surface Tail	645	14.8	1.33	6.365	5:26	Class C Cement, Accelerator
1st Stage Intermediate Lead	622	10.2	2.58	11.568	6:59	Pozzolan Cement, Retarder
1st Stage Intermediate Tail	167	13.2	1.61	7.804	7:11	Class H Cement, Retarder, Dispersant, Salt
DV/ECP Tool @ 4655 (We request the option to cancel the second stage if cement is circulated to surface during the first stage of cement operations)						
2nd Stage Intermediate Lead	N/A	N/A	N/A	N/A	N/A	N/A
2nd Stage Intermediate Tail	1605	13.6	1.67	8.765	7:32	Class C Cement, Accelerator, Retarder
Production Lead	N/A	N/A	N/A	N/A	N/A	N/A
Production Tail	671	13.2	1.38	6.686	3:39	Class H Cement, Retarder, Dispersant, Salt

**Oxy USA Inc. - Mesa Verde WC Unit 20H**

<b>Casing String</b>	<b>Top (ft)</b>	<b>Bottom (ft)</b>	<b>% Excess</b>
Surface Lead	N/A	N/A	N/A
Surface Tail	0	781	100%
1st Stage Intermediate Lead	4555	10422	20%
1st Stage Intermediate Tail	10422	11422	20%
2nd Stage Intermediate Lead	N/A	N/A	N/A
2nd Stage Intermediate Tail	0	4655	200%
Production Lead	N/A	N/A	N/A
Production Tail	10922	16902	20%

**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" Hole	13-5/8"	10M	Annular	✓	70% of working pressure
			Blind Ram	✓	250/10000
			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 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

**Oxy USA Inc. - Mesa Verde WC Unit 20H**

<p>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.</p> <p>See attached schematics.</p>
---

**BOP Break Testing Request**

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

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

**5. Mud Program**

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	781	Water-Based Mud	8.6-8.8	40-60	N/C
781	11422	Saturated Brine-Based Mud or Oil-Based Mud	9.0-9.6	35-45	N/C
11422	16902	Water-Based Mud or Oil-Based Mud	9.5-12.0	38-50	N/C

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

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

**6. Logging and Testing Procedures**

<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

**Oxy USA Inc. - Mesa Verde WC Unit 20H**

Additional logs planned		Interval
No	Resistivity	
No	Density	
No	CBL	
Yes	Mud log	ICP - TD
No	PEX	

**7. Drilling Conditions**

Condition	Specify what type and where?
BH Pressure at deepest TVD	7515 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	177°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 (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

**8. Other facets of operation**

	Yes/No
Will the well be drilled with a walking/skidding operation? If yes, describe. <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: 1415.6 bbls.**

## Oxy USA Inc. - Mesa Verde WC Unit 20H

### 9. Company Personnel

<b>Name</b>	<b>Title</b>	<b>Office Phone</b>	<b>Mobile Phone</b>
William Turner	Drilling Engineer	713-350-4951	661-817-4586
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

APD ID: 10400037159

Submission Date: 12/14/2018

Highlighted data  
reflects the most  
recent changes

Operator Name: OXY USA INCORPORATED

Well Name: MESA VERDE WC UNIT

Well Number: 20H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

**Section 1 - Existing Roads**

Will existing roads be used? YES

Existing Road Map:

MesaVerdeWCut20H\_ExistRoads\_20181214074551.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? YES

New Road Map:

MesaVerdeWCut20H\_NewRoads\_20181214074615.pdf

New road type: LOCAL

Length: 73

Feet

Width (ft.): 25

Max slope (%): 0

Max grade (%): 0

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Watershed Diversion every 200' if needed.

New road access plan or profile prepared? YES

New road access plan attachment:

MesaVerdeWCut20H\_NewRoads\_20181214074639.pdf

Access road engineering design? NO

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

**Access road engineering design attachment:**

**Access surfacing type:** OTHER

**Access topsoil source:** ONSITE

**Access surfacing type description:** Caliche

**Access onsite topsoil source depth:** 0

**Offsite topsoil source description:**

**Onsite topsoil removal process:** If available

**Access other construction information:** None

**Access miscellaneous information:** The access road will run from an existing road approximately 73' south through pasture to northeast corner of the pad.

**Number of access turnouts:**

**Access turnout map:**

### Drainage Control

**New road drainage crossing:** CULVERT

**Drainage Control comments:** Watershed Diversion every 200' if needed.

**Road Drainage Control Structures (DCS) description:** Watershed Diversion every 200' if needed.

**Road Drainage Control Structures (DCS) attachment:**

### Access Additional Attachments

**Additional Attachment(s):**

### Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

MesaVerdeWCUt20H\_ExistWells\_20181214074708.pdf

**Existing Wells description:**

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

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

**Production Facilities description:** a. In the event the well is found productive, the Mesa Verde Federal 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 three (3) 4" composite flowlines operating 75% MAWP, surface, lines to follow surveyed route. Survey of a strip of land 30' wide and 29971' (5.676 miles) in length crossing USA Land in Section 13&24 T24S R31E NMPM, Eddy County & Sections 16, 17&18 T24S R32E, Lea County, NM and being 25' left and 25' right of the centerline survey, see attached. Two (2) 6" steel gas lift line operating 1500 psig, buried, lines to follow surveyed route. Survey of a strip of land 30' wide and 1252' (0.237 mi) in length crossing USA Land in Section 13 & 24

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

T24S R31E, NMPM, Lea 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 1167.6' in length crossing USA Land in Sections 13 T24S R31E NMPM, Eddy County, NM and Section 18 T24S R32E NMPM, Lea County, NM and being 15' left and 15' right of the centerline survey, see attached. d. See attached for additional information on the Sand Dunes Mesa Verde WC Development Surface Production Facilities.

**Production Facilities map:**

MesaVerdeWCUt20H\_FacilityPLEL\_20181214074738.pdf

MesaVerdeWCUt20H\_LeaseFacilityInfo\_20181214074756.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:**

MesaVerdeWCUt20H\_MesqWtrSrc\_20181214075142.pdf

MesaVerdeWCUt20H\_GRRWtrSrc\_20181214075153.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) 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:**

**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.):**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

**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 a pit located in Section 6 T24S R32E. Water will be provided from a frac pond located in Sections 18 T24S R32E.

**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:** 1415.6 barrels

**Waste disposal frequency :** Daily

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

**Safe containmant attachment:**

**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

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

**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:**

### Section 9 - Well Site Layout

**Well Site Layout Diagram:**

MesaVerdeWCUt20H\_WellSiteCL\_20181214075731.pdf

**Comments:** V-Door-West - CL Tanks-South - 330' X 480' – 3 well pad

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

### Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** MESA VERDE WC UNIT

**Multiple Well Pad Number:** 18H, 19H, 20H

**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

<b>Well pad proposed disturbance (acres):</b> 3.64	<b>Well pad interim reclamation (acres):</b> 1.26	<b>Well pad long term disturbance (acres):</b> 2.38
<b>Road proposed disturbance (acres):</b> 0.05	<b>Road interim reclamation (acres):</b> 0.03	<b>Road long term disturbance (acres):</b> 0.02
<b>Powerline proposed disturbance (acres):</b> 0	<b>Powerline interim reclamation (acres):</b> 0	<b>Powerline long term disturbance (acres):</b> 0
<b>Pipeline proposed disturbance (acres):</b> 21.5	<b>Pipeline interim reclamation (acres):</b> 14.34	<b>Pipeline long term disturbance (acres):</b> 7.17
<b>Other proposed disturbance (acres):</b> 0.8	<b>Other interim reclamation (acres):</b> 0.8	<b>Other long term disturbance (acres):</b> 0
<b>Total proposed disturbance:</b> 25.99	<b>Total interim reclamation:</b> 16.43	<b>Total long term disturbance:</b> 9.57

**Disturbance Comments:** See Below

**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:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**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:**

<b>Seed Type</b>	<b>Pounds/Acre</b>
------------------	--------------------

**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:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

**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:**

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

**Pit closure description:** NA

**Pit closure attachment:**

### Section 11 - Surface Ownership

**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:**

**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:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

**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:** 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:**

**Operator Name:** OXY USA INCORPORATED

**Well Name:** MESA VERDE WC UNIT

**Well Number:** 20H

**Disturbance type:** NEW ACCESS ROAD

**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:**

## Section 12 - Other Information

**Right of Way needed? YES**

**Use APD as ROW? YES**

**ROW Type(s):** 281001 ROW - ROADS, 285003 ROW - POWER TRANS, 288100 ROW - O&G Pipeline, 289001 ROW - O&G Well Pad

### ROW Applications

**SUPO Additional Information:** Permian Basin MOA - To be submitted after APD acceptance. GIS Shapefiles available for BLM download from shared FTP site after APD submittal.

**Use a previously conducted onsite? NO**

**Previous Onsite information:**

### Other SUPO Attachment

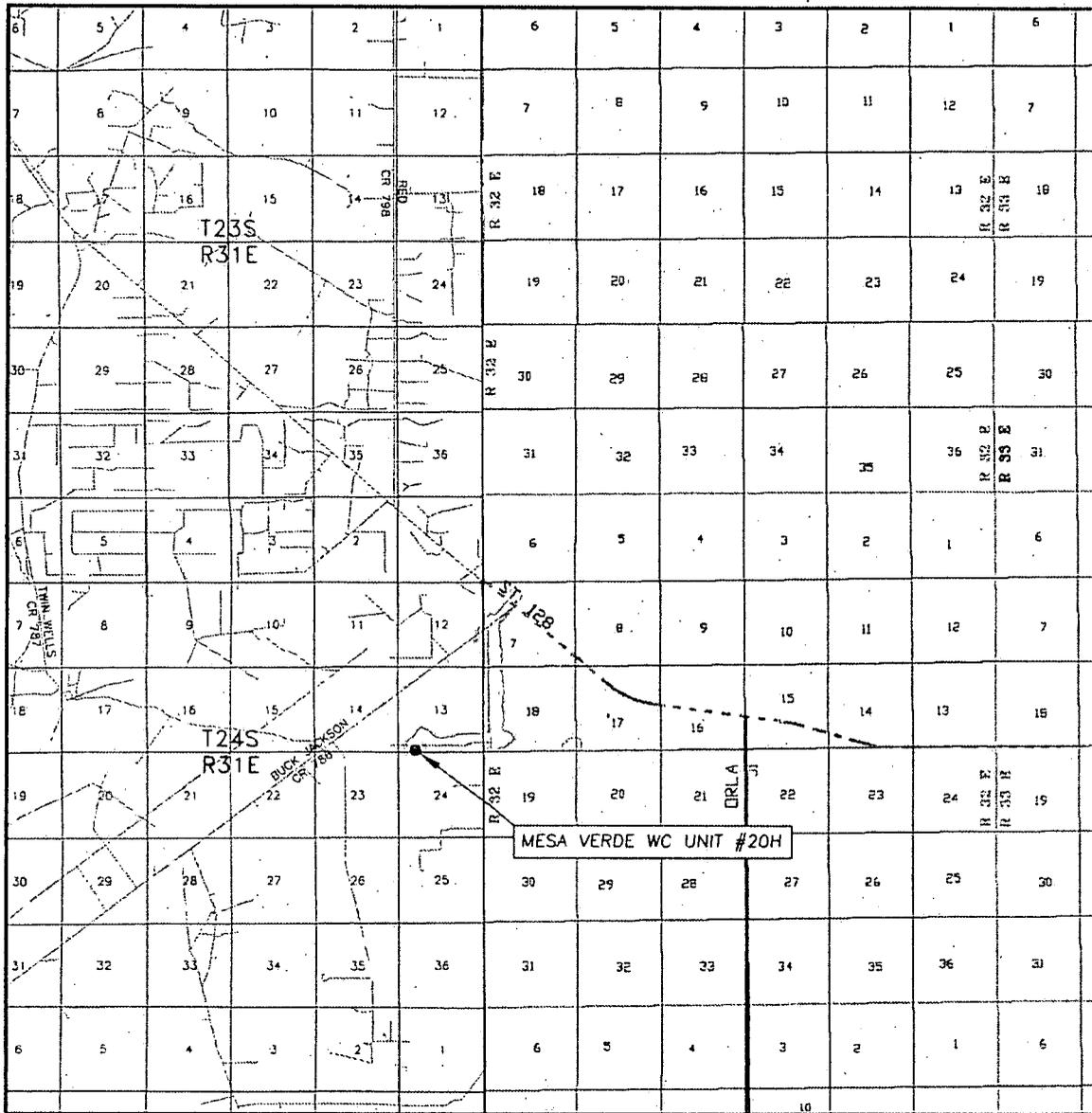
MesaVerdeWCut20H\_StakeForm\_20181214075938.pdf

MesaVerdeWCut20H\_SUPO\_20181214075949.pdf.

MesaVerdeWCut20H\_GasCapPlan\_20181214080000.pdf

MesaVerdeWCut20H\_MiscSvyPlats\_20181214080018.pdf

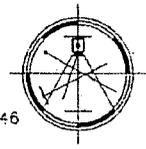
# VICINITY MAP



SEC. 13 TWP. 24-S RGE. 31-E  
 SURVEY N.M.P.M.  
 COUNTY EDDY  
 DESCRIPTION 118' FSL & 1068' FWL  
 ELEVATION 3588.3'  
 OPERATOR OXY USA INC.

SCALE: 1" = 2 MILES

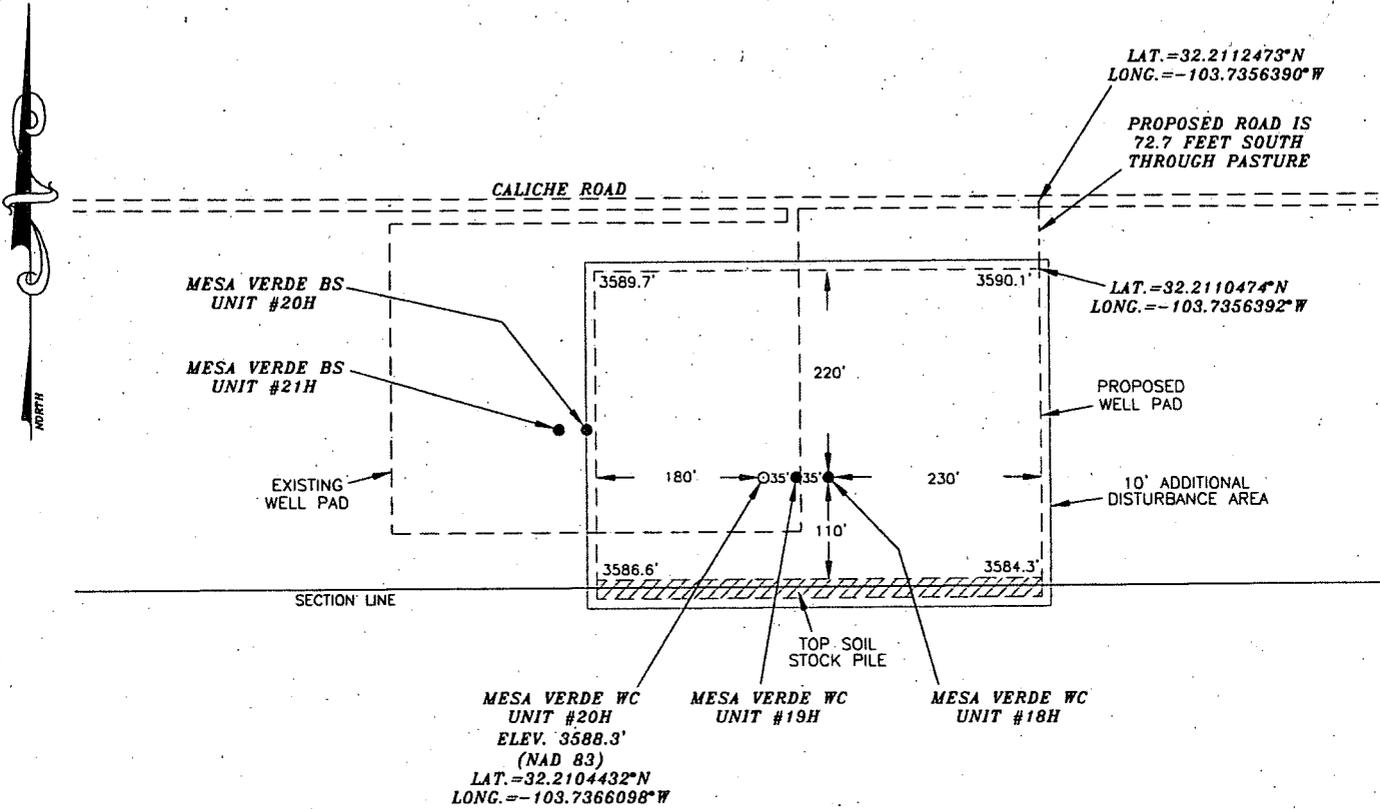
Asel Surveying  
 P.O. BOX 393 - 310 W. TAYLOR  
 HOBBS, NEW MEXICO - 575-393-9146



LEASE MESA VERDE WC UNIT #20H  
 DIRECTIONS BEGINNING AT THE INTERSECTION OF N.M. STATE HWY. #128 AND COUNTY ROAD #786 (BUCK JACKSON ROAD), GO SOUTHWEST ON COUNTY ROAD #786 FOR 0.4 MILES, TURN LEFT ON CALICHE ROAD AND GO SOUTH FOR 1.3 MILES, TURN RIGHT AND GO WEST FOR 0.2 MILES, GO SOUTHWEST FOR 0.1 MILES, GO WEST FOR 0.5 MILES, TURN LEFT ON PROPOSED ROAD AND GO SOUTH FOR 72.7 FEET TO LOCATION.

# OXY USA INC. MESA VERDE WC UNIT #20H SITE PLAN

## FAA PERMIT: NO



**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* 8/28/2018  
 Terry J. Asel, N.M. R.P.L.S. No. 15079

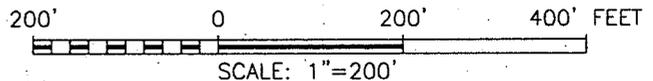
Asel Surveying

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



**LEGEND**

- DENOTES PROPOSED WELL PAD
- DENOTES PROPOSED ROAD
- ▨ DENOTES STOCK PILE AREA



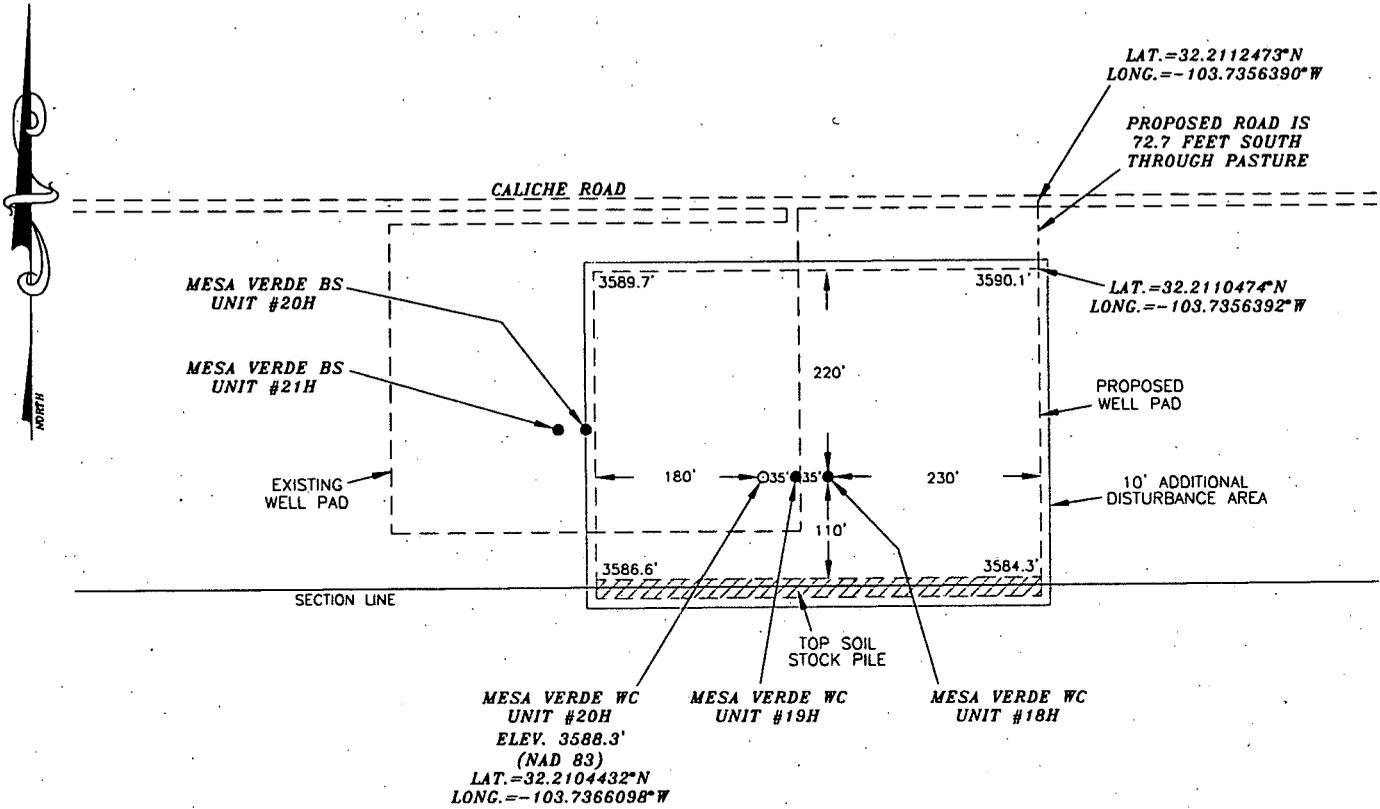
## OXY USA INC.

MESA VERDE WC UNIT #20H LOCATED AT  
 118' FSL & 1068' FWL IN SECTION 13,  
 TOWNSHIP 24 SOUTH, RANGE 31 EAST,  
 N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 08/23/18	Sheet 1 of 1 Sheets	
W.O. Number: 180823WL-c	Drawn By: KA	Rev:
Date: 08/24/18	180823WL-c	Scale: 1"=200'

# OXY USA INC. MESA VERDE WC UNIT #20H SITE PLAN

## FAA PERMIT: NO



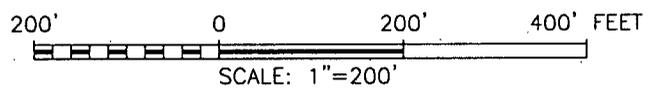
**SURVEYORS CERTIFICATE**

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* 8/28/2018  
Terry J. Asel, N.M. R.P.L.S. No. 15079

**LEGEND**

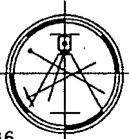
- DENOTES PROPOSED WELL PAD
- DENOTES PROPOSED ROAD
- ▨ DENOTES STOCK PILE AREA



## OXY USA INC.

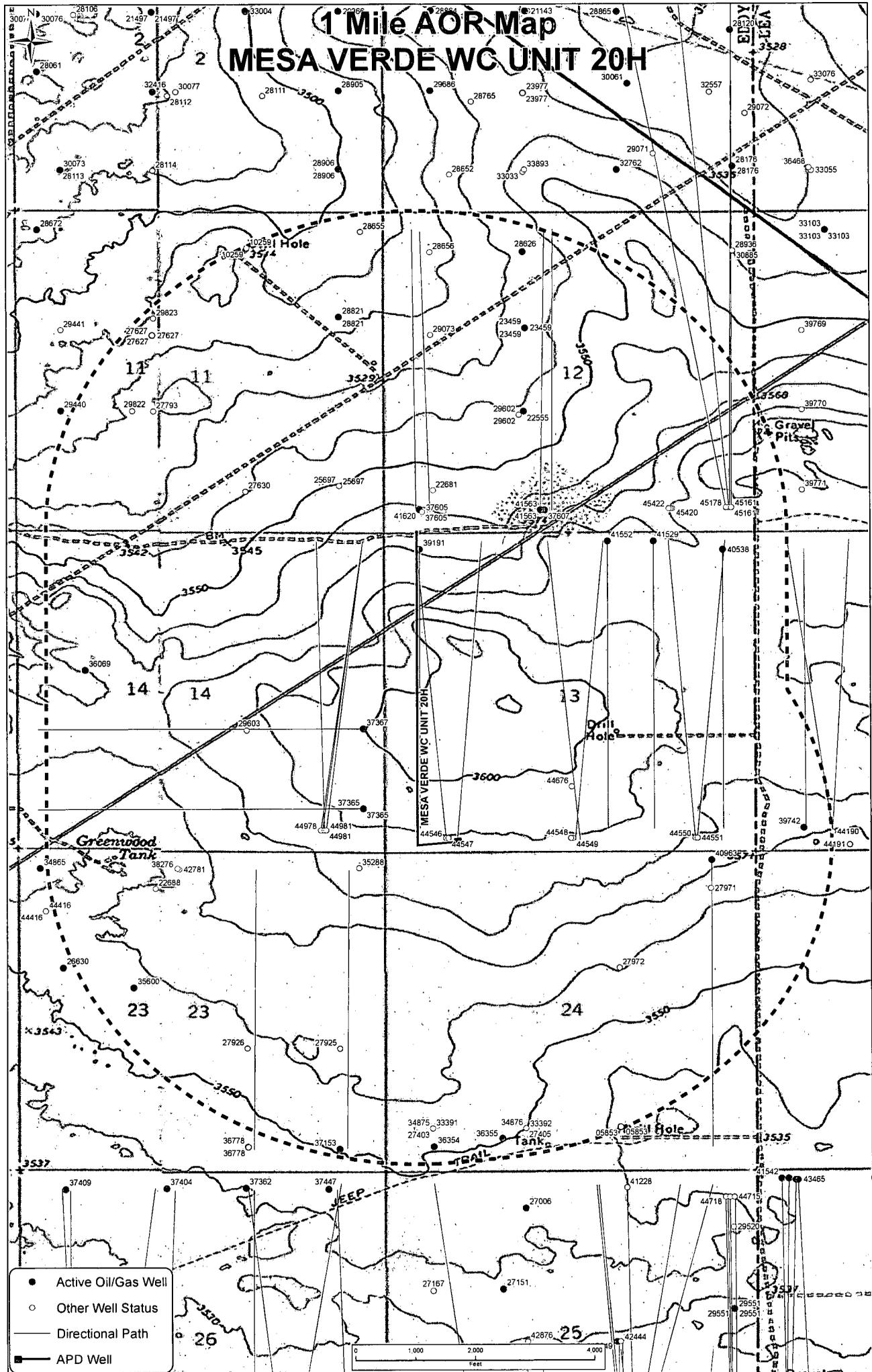
MESA VERDE WC UNIT #20H LOCATED AT  
118' FSL & 1068' FWL IN SECTION 13,  
TOWNSHIP 24 SOUTH, RANGE 31 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO

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

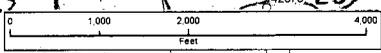


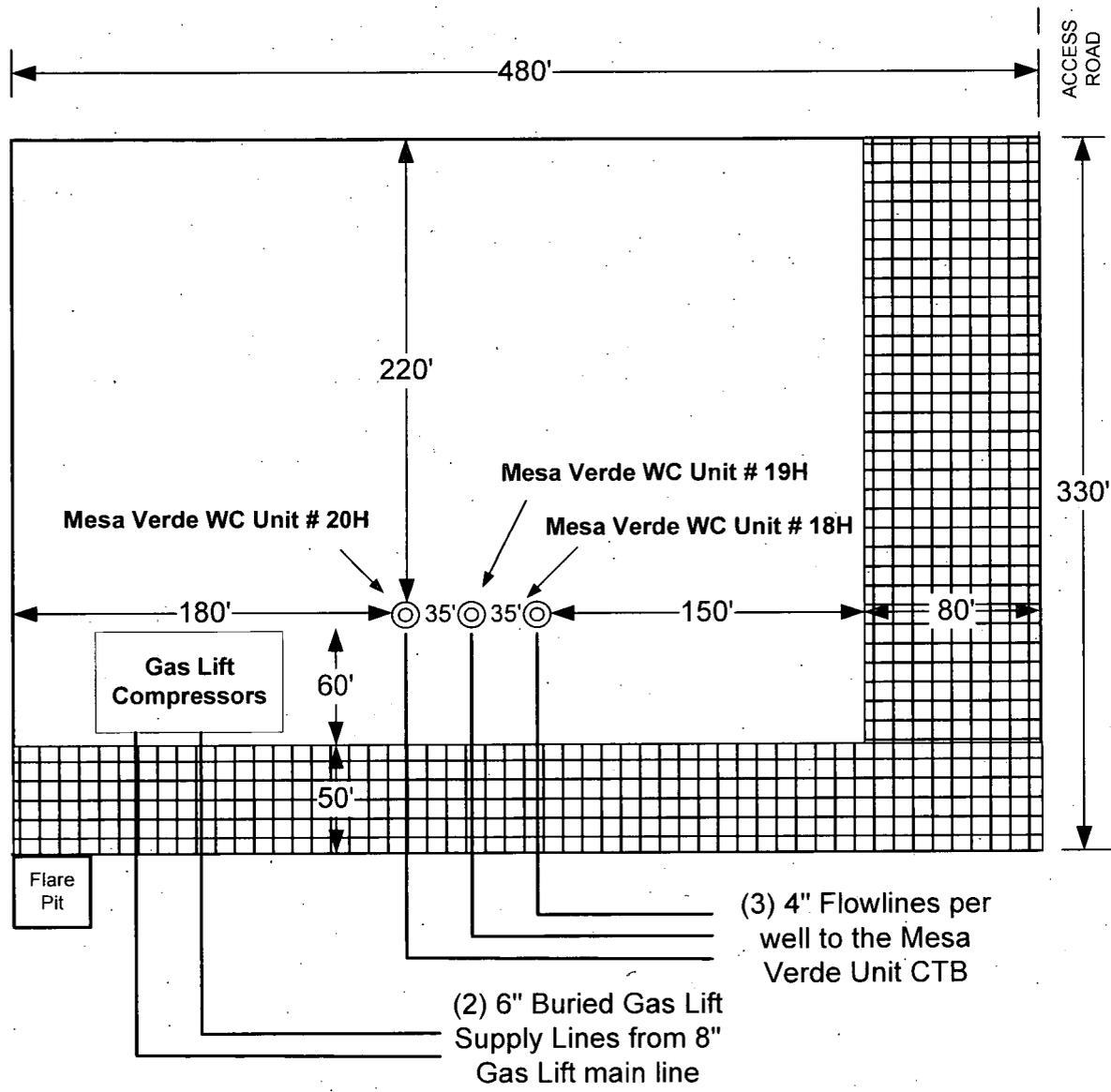
Survey Date: 08/23/18	Sheet 1 of 1 Sheets	
W.O. Number: 180823WL-c	Drawn By: KA	Rev: .
Date: 08/24/18	180823WL-c	Scale: 1"=200'

# 1 Mile AOR Map MESA VERDE WC UNIT 20H



- Active Oil/Gas Well
- Other Well Status
- Directional Path
- APD Well

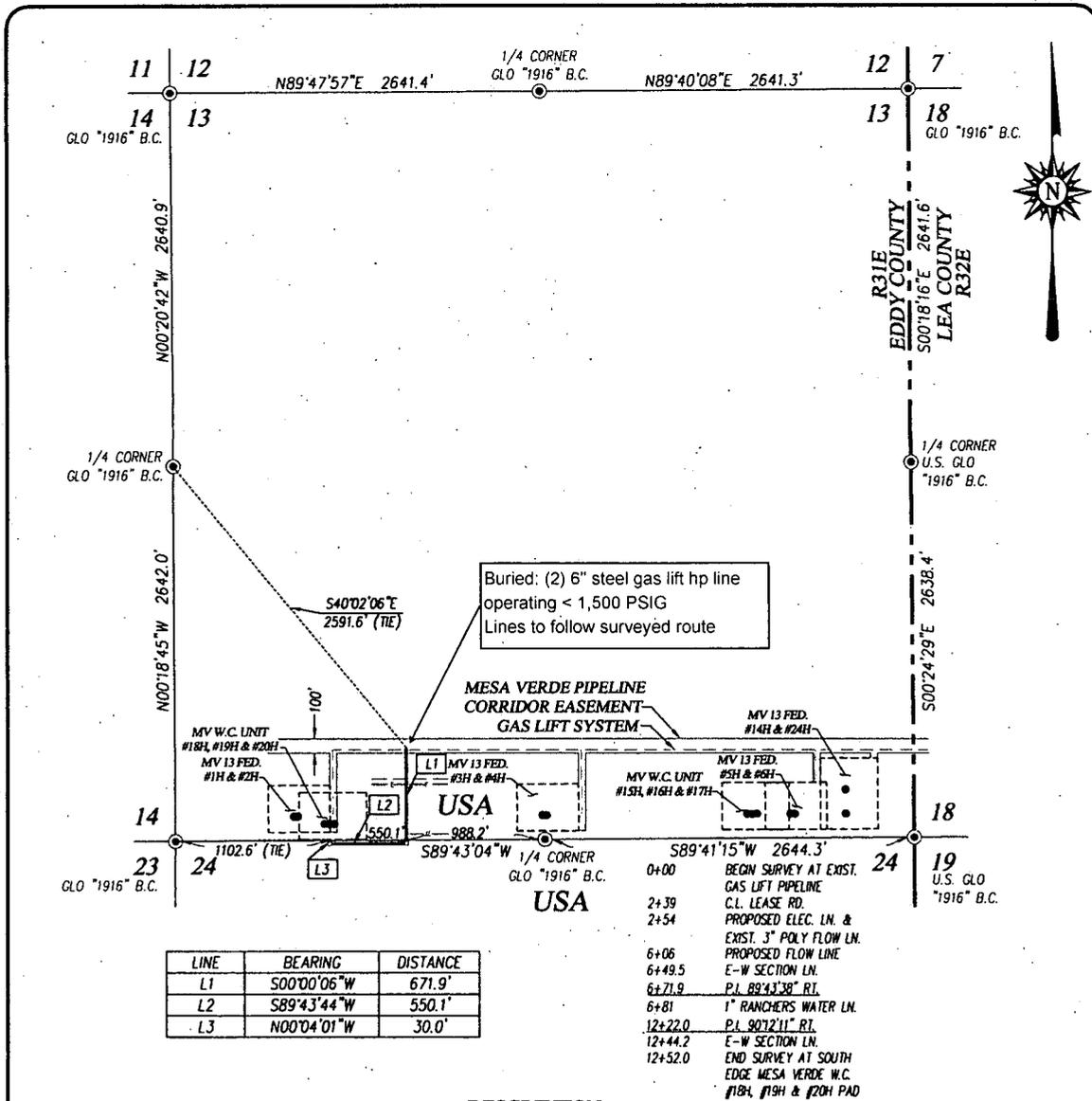




NORTH ↑

REVISION BLOCK						ENGINEERING RECORD		FACILITY LAYOUT DIAGRAM	
NO.	DATE	DESCRIPTION	BY	CHK	APP	BY	DATE	Mesa Verde WC Unit # 18H, 19H, 20H	
								EDDY COUNTY, NEW MEXICO	





LINE	BEARING	DISTANCE
L1	S00°00'06"W	671.9'
L2	S89°43'44"W	550.1'
L3	N00°04'01"W	30.0'

0+00	BEGIN SURVEY AT EXIST. GAS LIFT PIPELINE
2+39	C.I. LEASE RD.
2+54	PROPOSED ELEC. LN. & EXIST. 3" POLY FLOW LN.
6+06	PROPOSED FLOW LINE
6+49.5	E-W SECTION LN.
6+71.9	P.I. 89°43'38" RT.
6+81	1" RANCHERS WATER LN.
12+22.0	P.I. 90°12'11" RT.
12+44.2	E-W SECTION LN.
12+52.0	END SURVEY AT SOUTH EDGE MESA VERDE W.C. #184, #194 & #204 PAD

**DESCRIPTION**

SURVEY OF A STRIP OF LAND 30.0 FEET WIDE AND 1252.0 FEET OR 0.237 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 13 & 24, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

**NOTE**

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

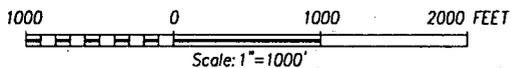
I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAN AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED, WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS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

RONALD J. EIDSON

DATE: 8/08/2018

**LEGEND**

- ⊙ - DENOTES FOUND CORNER AS NOTED
- - DENOTES CENTERLINE SURVEY

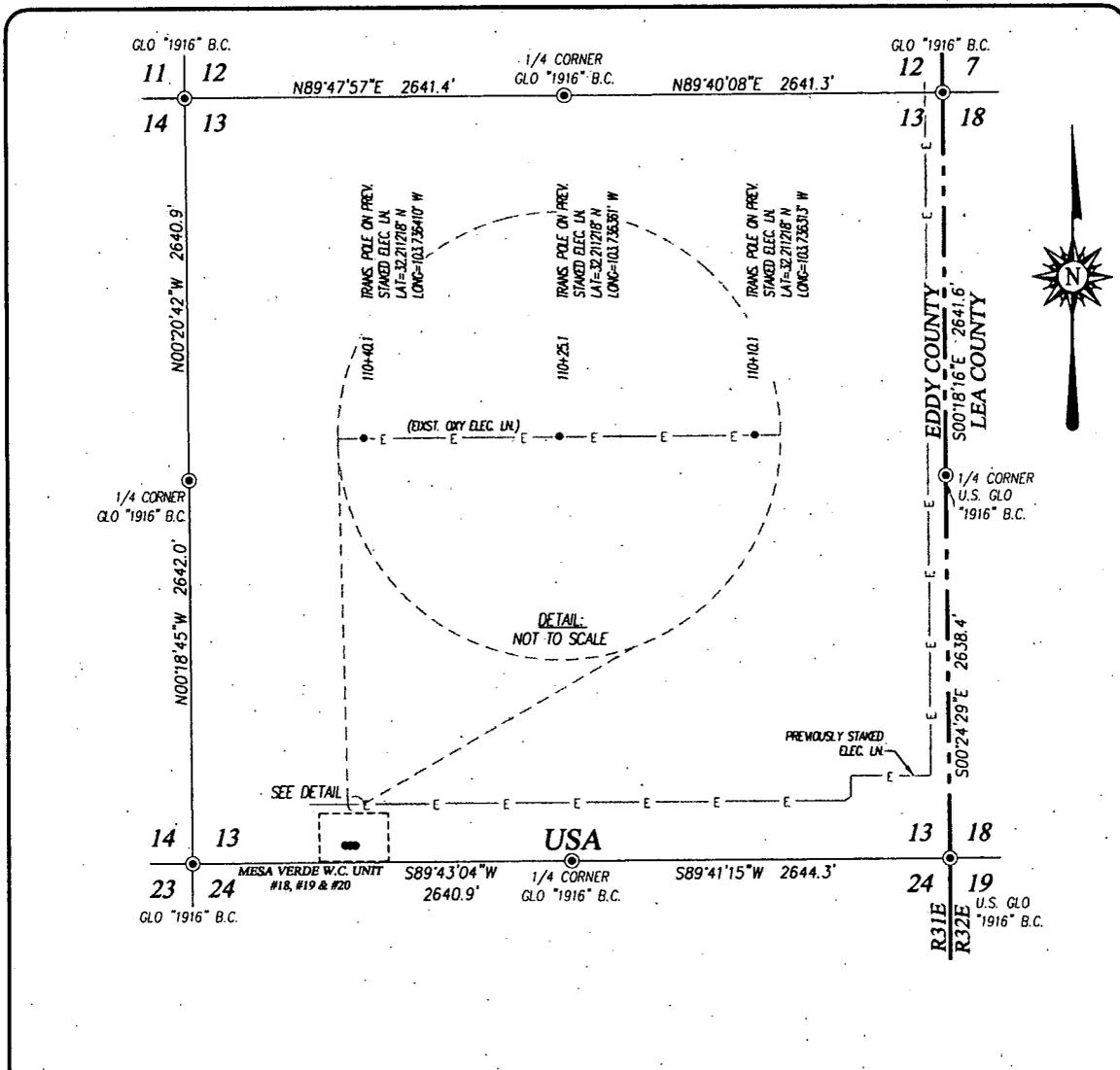


**OXY U.S.A. INC.**

**SURVEY FOR A GAS LIFT PIPELINE TO THE MESA VERDE W.C. UNIT #18H, #19H & #20H CROSSING SECTIONS 13 & 24, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. LEA COUNTY, NEW MEXICO**

Survey Date: 7/10/18	CAD Date: 8/07/18	Drawn By: ACK
W.O. No.: 18110766	Rev.:	Rel. W.O.:

Sheet 1 of 1



**NOTE**

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

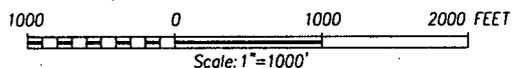
I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR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

RONALD J. EIDSON *Ronald J. Eidson*  
 DATE: 9/10/2018

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

**LEGEND**

● DENOTES FOUND CORNER AS NOTED



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

**SURVEY FOR AN ELECTRIC LINE TO THE MESA VERDE W.C. UNIT #18H, #19H & #20H CROSSING SECTION 13, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, NEW MEXICO**

Survey Date: 3/02/18	CAD Date: 9/10/18	Drawn By: ACK
W.O. No.: 18131029	Rev.:	Ret. W.O.: 18110267

## **Sand Dunes Mesa Verde WC Development – Surface Production Facilities (pg1)**

### **Mesa Verde WC Unit 18H, 19H & 20H**

#### **CTB Site**

A new Central Tank Battery is required in northwest section 18 which will be composed of (3) tracts with the following dimensions: 600'x600', 200'x30', and 150'x150' and an access road. This will be called the Mesa Verde WC CTB in order to differentiate it from the existing Mesa Verde CTB in southeast section 18.

Reference plats:

(4) John West Surveying Company W.O. No: 1811100 Survey: 9/5/18 CAD: 9/28/18

#### **Production Flowlines**

Each well will have (3) surface laid flowlines operating at less than 75% of the MAWP of the flowline per the survey plats from the well site to the CTB following access roads. The flowlines will be routed to the new Mesa Verde WC CTB and to the existing Mesa Verde CTB. The wells will produce to only one of these CTBs at any given time.

Reference plats per well APD package

(1) John West Surveying Company W.O. No: 18111012 Survey: 9/10-11/18 CAD: 10/02/18

#### **Gas Lift**

Each well pad will have two (2) 6" buried gas lift supply lines operating at < 1500 PSIG branching off of a common 8" main line (existing).

Reference plats per well APD package

(1) John West Surveying Company W.O. No: 18110766 Survey: 7/10/18 CAD: 8/07/18

#### **Gas Sales**

The Mesa Verde WC CTB in Section 18 will require a gas sales pipeline. Gas will flow into two (2) 20" CS buried lines operating at less than 250 PSIG. The gas-line will interconnect to the existing Mesa Verde CTB.

Reference plats:

(1) John West Surveying Company W.O. No: 18111125 Survey: 9/24/18 CAD: 10/11/18

#### **Oil Sales**

The Mesa Verde WC CTB will require an oil sales pipeline. Oil will be pumped into two (2) 8" buried pipelines operating less than 750 PSIG. This will be routed to the existing Mesa Verde CTB where it will be sold via pipeline through a 3<sup>rd</sup> Party Processor.

Reference plats:

(1) John West Surveying Company W.O. No: 18111125 Survey: 9/24/18 CAD: 10/11/18

#### **Water Disposal**

The Mesa Verde WC CTB will require a Water Disposal pipeline to the existing water disposal system. Water will be pumped through two (2) 16" HDPE buried lines operating at less than 300 PSIG. The disposal line will connect to the disposal system at the Mesa Verde AST water polishing facility just south of the existing treated water ponds.

Reference plats:

(1) John West Surveying Company W.O. No: 18111125 Survey: 9/24/18 CAD: 10/11/18

#### **Electrical Systems**

The new Mesa Verde WC CTB will require electricity for site lighting, PLC, pumps, etc. Overhead electrical will be taken from the main electrical lines.

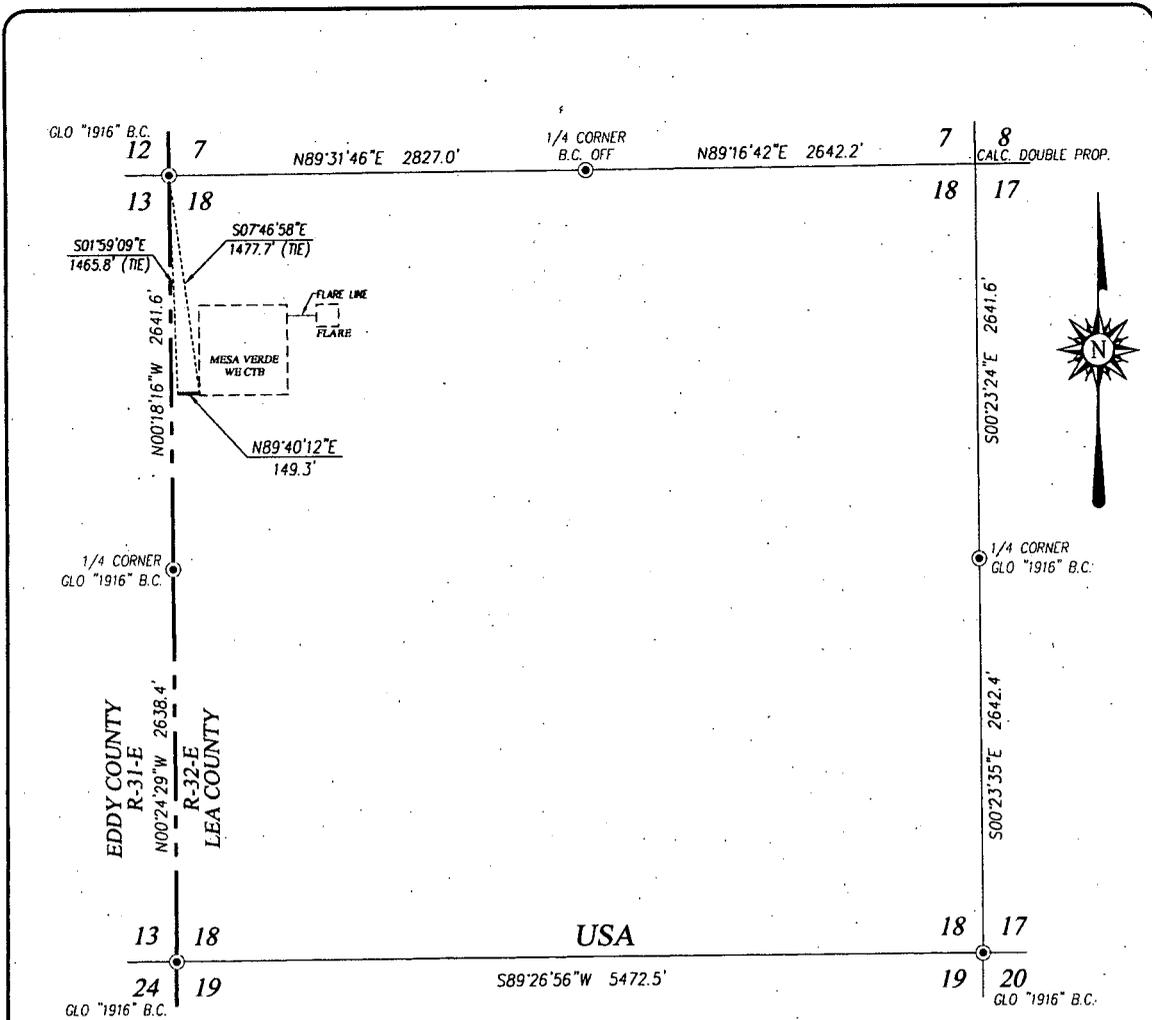
Reference plats:

(1) John West Surveying Company W.O. No: 18111014 Survey: 9/10-24/18 CAD: 10/11/18

Electrical overhead connections are required from the existing electrical infrastructure to connect to each individual well pad.

Reference plats per well APD package

(1) John West Surveying Company W.O. No: 18131029 Survey: 3/02/18 CAD: 9/10/18



**DESCRIPTION**

SURVEY FOR A STRIP OF LAND 30.0 FEET WIDE AND 149.3 FEET OR 0.028 MILES IN LENGTH CROSSING USA LAND IN SECTION 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

**NOTE**

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

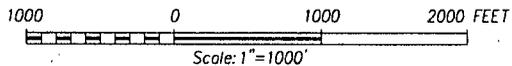
I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAN AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED, WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS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

RONALD J. EIDSON

DATE: 10/03/2018

**LEGEND**

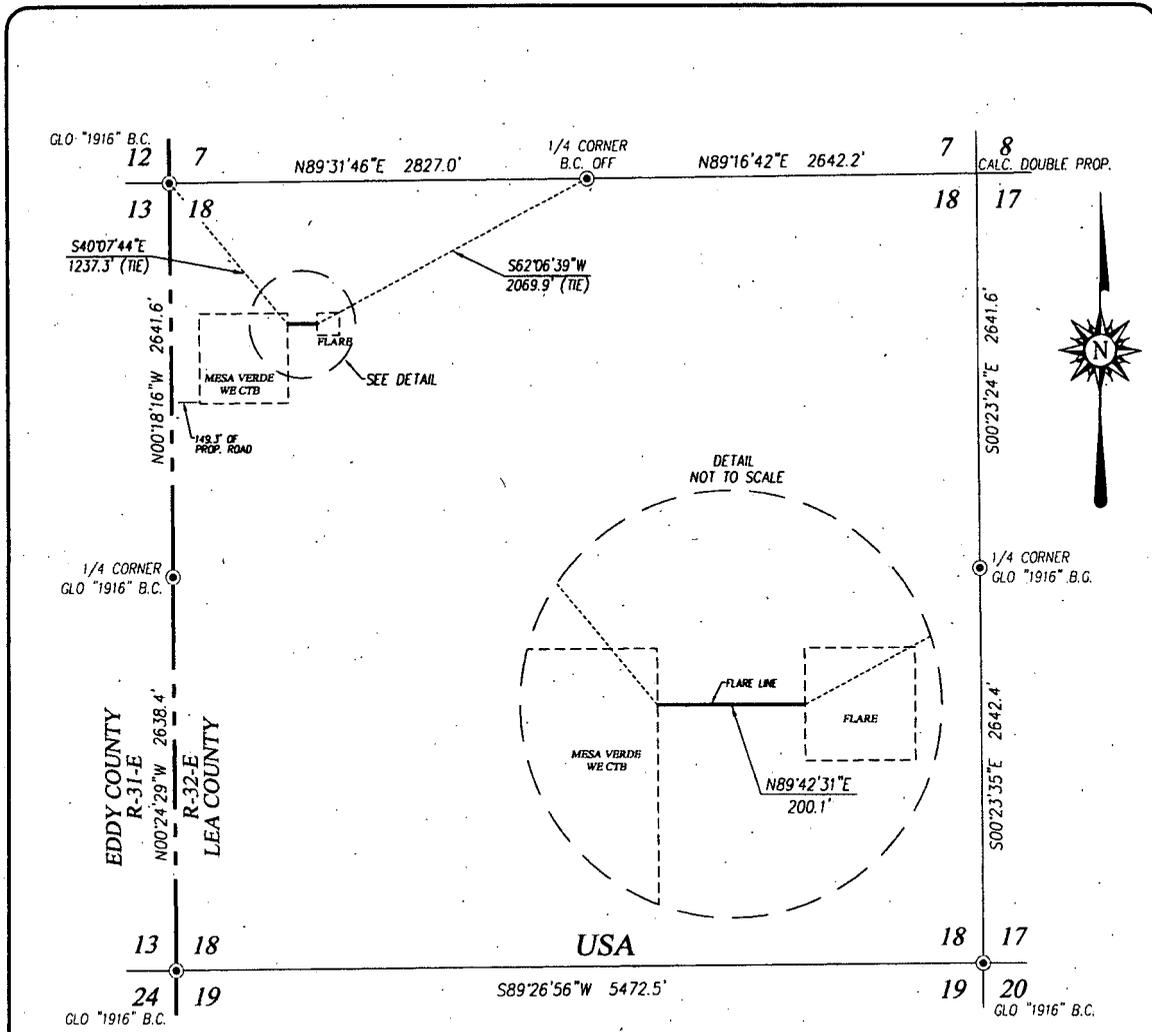
- - DENOTES FOUND CORNER AS NOTED
- - DENOTES CENTERLINE SURVEY



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

**SURVEY FOR AN ACCESS ROAD TO THE  
MESA VERDE WE CTB  
CROSSING SECTION 18,  
TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M.  
LEA COUNTY, NEW MEXICO**

Survey Date: 09/05/18	CAD Date: 09/28/18	Drawn By: LSL
W.O. No.: 18111000	Rev.:	Rel. W.O.:
		Sheet 1 of 1



**DESCRIPTION**

SURVEY FOR A STRIP OF LAND 30.0 FEET WIDE AND 200.1 FEET OR 0.038 MILES IN LENGTH CROSSING USA LAND IN SECTION 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

**NOTE**

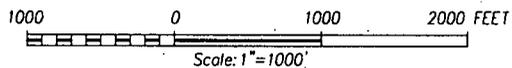
BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

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RONALD J. EIDSON *Ronald J. Eidson*  
 DATE: 10/03/2018

**LEGEND**

- ⊙ - DENOTES FOUND CORNER AS NOTED
- - DENOTES CENTERLINE SURVEY

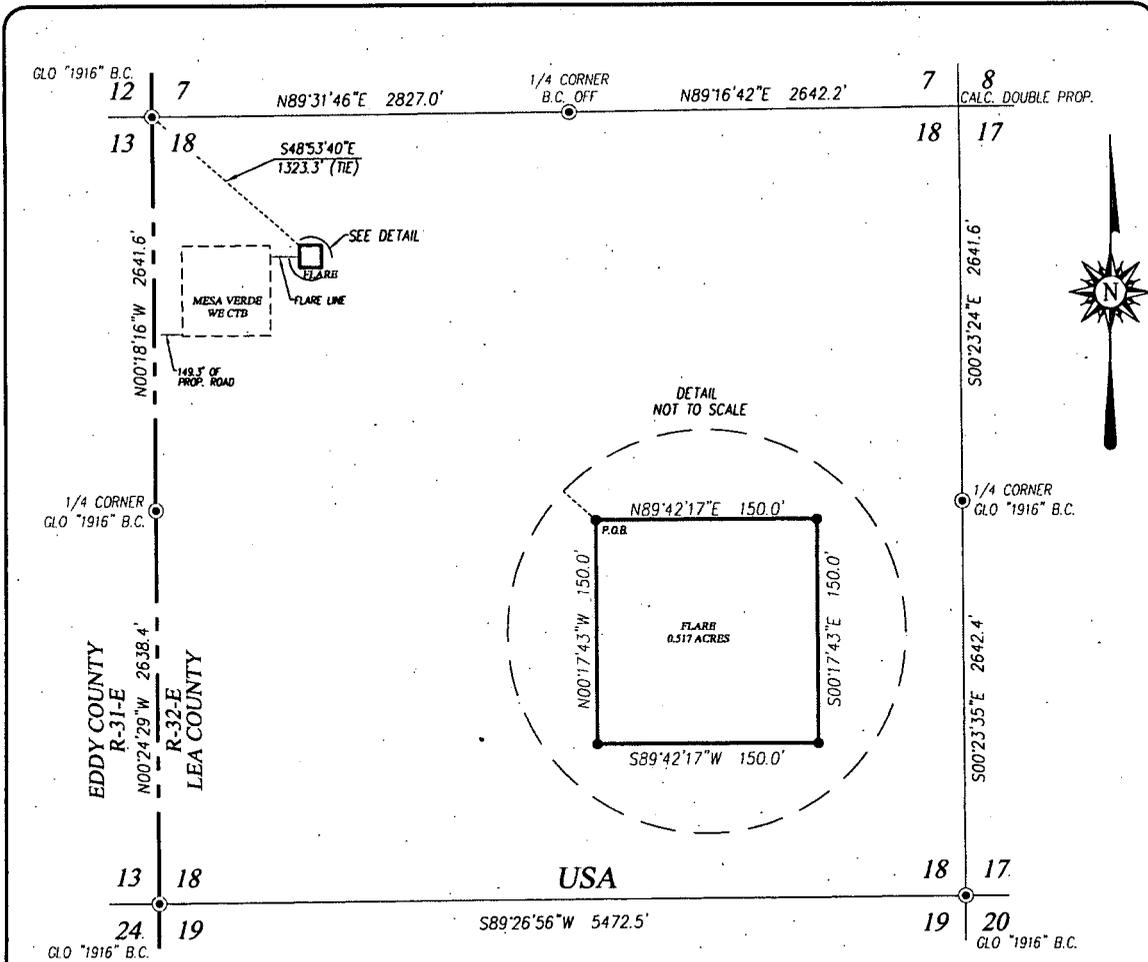


**OXY U.S.A. INC.**

**SURVEY FOR A FLARE LINE  
 CROSSING SECTION 18,  
 TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M.  
 LEA COUNTY, NEW MEXICO**

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

Survey Date: 09/05/18	CAD Date: 09/28/18	Drawn By: LSL
W.O. No.: 18111000	Rev.:	Rel. W.O.:
		Sheet 1 of 1



**DESCRIPTION**

A TRACT IN THE NORTHWEST QUARTER OF SECTION 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF THE TRACT WHICH LIES S48°53'40"E 1323.3 FEET FROM THE NORTHWEST CORNER; THEN N89°42'17"E 150.0 FEET; THEN S00°17'43"E 150.0 FEET; THEN S89°42'17"W 150.0 FEET; THEN N00°17'43"W 150.0 FEET TO THE POINT OF BEGINNING AND CONTAINING 0.517 ACRES MORE OR LESS.

**NOTE**

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

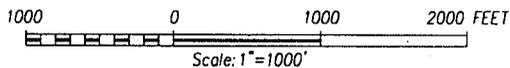
I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAN AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR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

RONALD J. EIDSON

DATE: 10/03/2018

**LEGEND**

- - DENOTES SET SPK. NAIL
- ⊙ - DENOTES FOUND CORNER AS NOTED
- - DENOTES SURVEY LINE

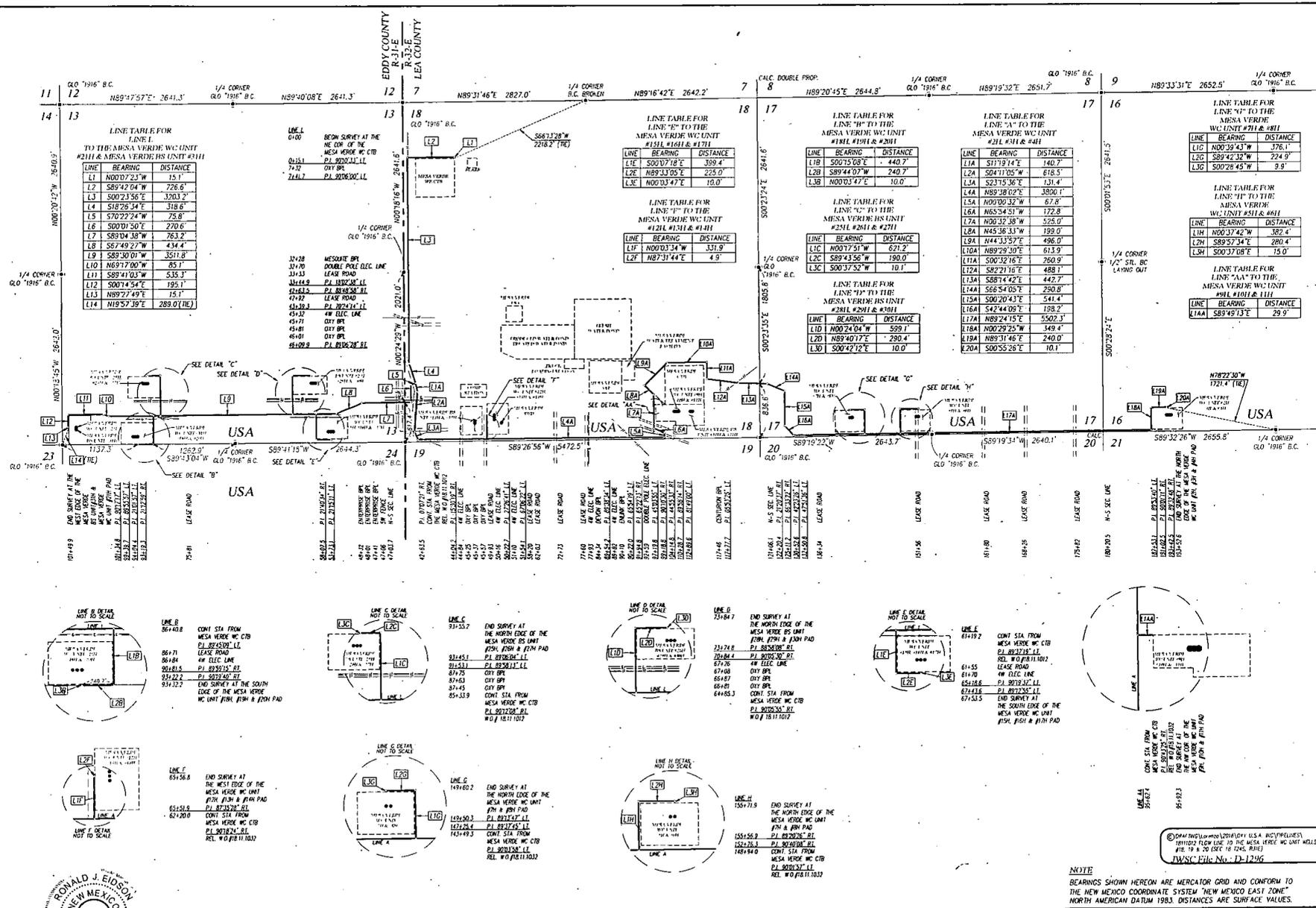


**OXY U.S.A. INC.**

**SURVEY FOR A FLARE PAD  
SITUATED ON THE NORTHWEST QUARTER OF  
SECTION 18,  
TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M.  
LEA COUNTY, NEW MEXICO**

Survey Date: 09/05/18	CAD Date: 09/28/18	Drawn By: LSL
W.O. No.: 18111000	Rev.:	Rel. W.O.:

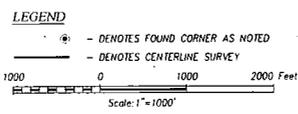
Sheet 1 of 1



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

RONALD J. EDISON *Ronald J. Edison* DATE: 10/29/2018

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 412 N. DAL PASO • HOBBBS, N.M. 88340  
 (575) 393-3115 • www.jwsc.biz  
 TPLS# 10021000



**DESCRIPTION**

SURVEY FOR A STRIP OF LAND 30.0 FEET WIDE AND 2997.0 FEET OR 5.676 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 13 & 24, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., EDDY COUNTY, AND SECTIONS 16, 17 & 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING 25.0 FEET LEFT AND 25.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

**NOTE**

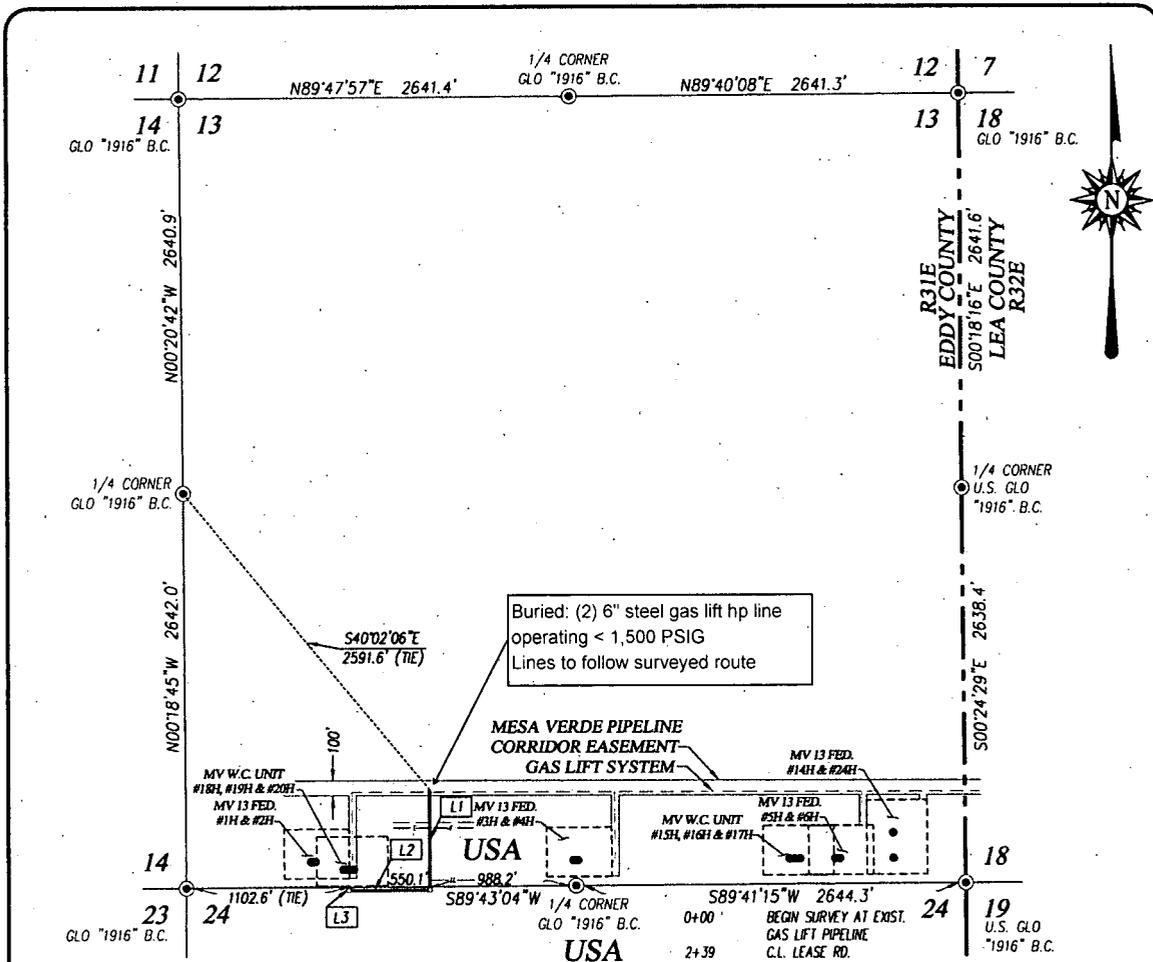
BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURVEY VALUES.

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

SURVEY FOR FLOW LINES FROM THE MESA VERDE WE CTD TO THE MESA VERDE WC UNIT #211 & #211H AND THE MESA VERDE BS UNIT #2511 & #311H CROSSING SECTIONS 13 & 24, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

N.M.P.M., EDDY COUNTY, SECTIONS 16, 17 & 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO.

Survey Date: 09/10 & 09/11/18 CAD Date: 10/02/18 Drawn By: LSL  
 W.O. No.: 1811012 Rev: Rel. W.O.: Sheet 1 of 1



LINE	BEARING	DISTANCE
L1	S00°00'06"W	671.9'
L2	S89°43'44"W	550.1'
L3	N00°04'01"W	30.0'

**DESCRIPTION**

SURVEY OF A STRIP OF LAND 30.0 FEET WIDE AND 1252.0 FEET OR 0.237 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 13 & 24, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

**NOTE**

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

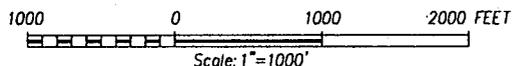
I, RONALD J. EIDSON, NEW MEXICO PROFESSIONAL SURVEYOR No. 3239, DO HEREBY CERTIFY THAT THIS SURVEY PLAN AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED, WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION, THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS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

RONALD J. EIDSON

DATE: 8/08/2018

**LEGEND**

- - DENOTES FOUND CORNER AS NOTED
- - DENOTES CENTERLINE SURVEY



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

**SURVEY FOR A GAS LIFT PIPELINE TO THE MESA VERDE W.C. UNIT #18H, #19H & #20H CROSSING SECTIONS 13 & 24, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. LEA COUNTY, NEW MEXICO**

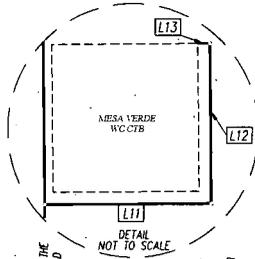
Survey Date: 7/10/18	CAD Date: 8/07/18	Drawn By: ACK
W.O. No.: 18110766	Rev.:	Rel. W.O.:
		Sheet 1 of 1

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 TBPLS# 10021000



**LINE TABLE**

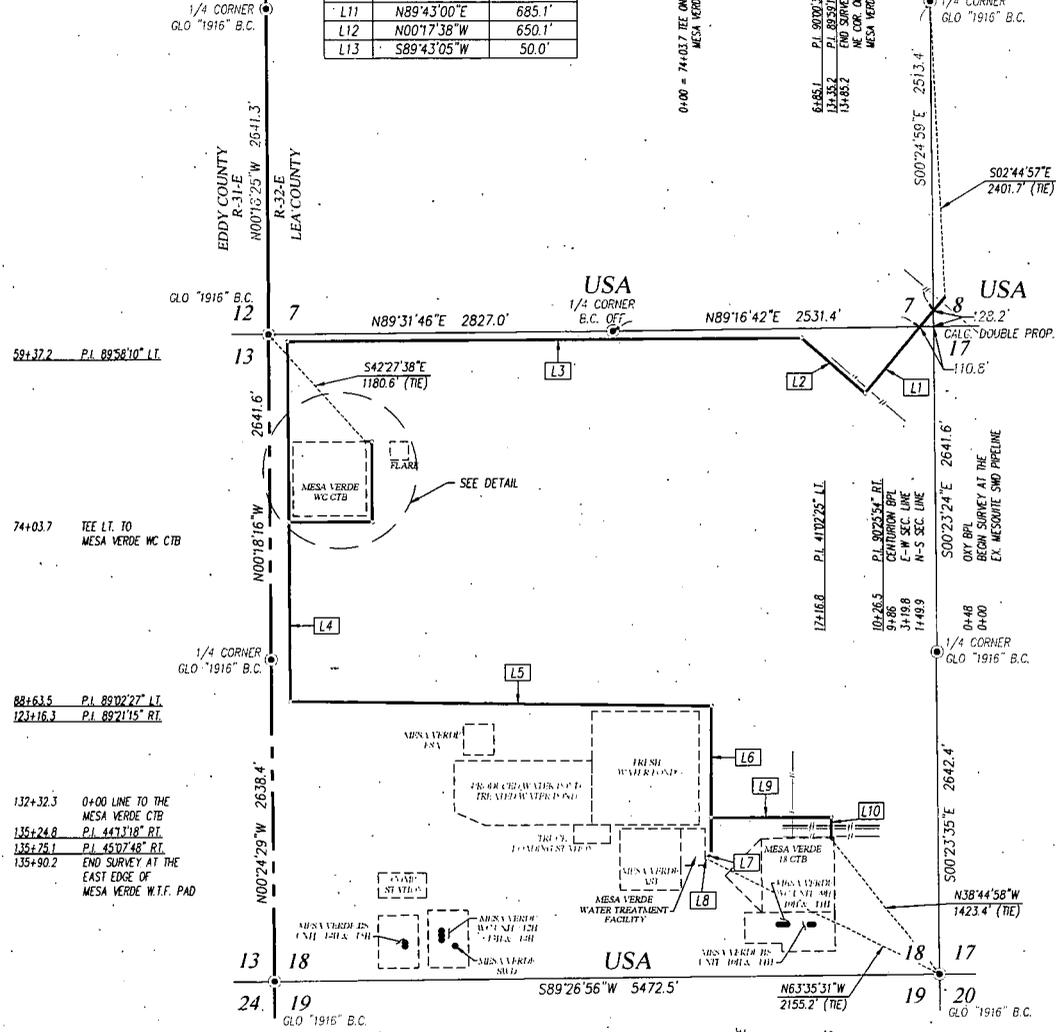
LINE	BEARING	DISTANCE
L1	S40°16'56"W	1026.5
L2	N49°17'10"W	690.3
L3	S89°40'25"W	4220.4
L4	S00°17'45"E	2926.3
L5	S89°20'12"E	3452.8
L6	S00°01'03"W	1208.5
L7	S44°14'21"W	50.3
L8	S89°22'09"W	15.1
L9	N89°59'54"E	989.2
L10	S00°00'55"W	177.2
L11	N89°43'00"E	685.1
L12	N00°17'38"W	650.1
L13	S89°43'05"W	50.0



0+00 = 74+03.7 TIE ON LINE TO THE MESA VERDE AST PAD

6+66.1  
8+88.2  
10+10.3  
11+88.2

PI 0000.0E LL  
PI 0000.0E LL  
END SURVEY AT THE NE COR OF THE MESA VERDE WC CTB



59+37.2 PI 89°58'10" LT.

74+03.7 TIE LT. TO MESA VERDE WC CTB

88+63.5 PI 89°02'27" LT.  
123+16.3 PI 89°21'15" RT.

132+32.3 0+00 LINE TO THE MESA VERDE CTB  
135+24.8 PI 44°13'18" RT.  
136+25.1 PI 45°07'48" RT.  
135+90.2 END SURVEY AT THE EAST EDGE OF MESA VERDE W.T.F. PAD

**DESCRIPTION**

SURVEY FOR A STRIP OF LAND 30.0 FEET WIDE AND 16141.8 FEET OR 3.057 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 7, 8 & 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

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

RONALD J. EIDSON  
DATE: 11/05/2018

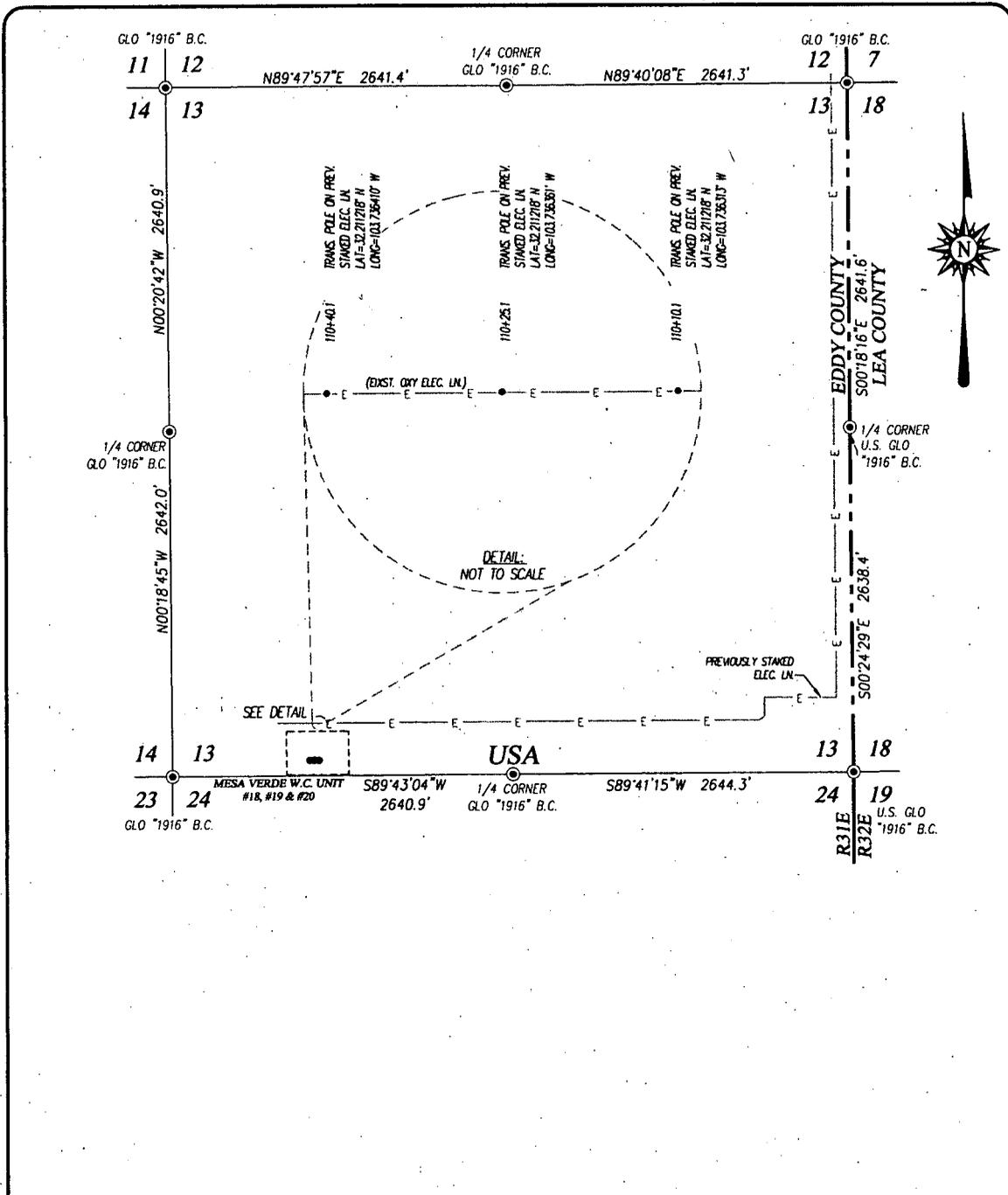
**NOTE**  
BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

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

SURVEY FOR A MULTI-USE STRIP FROM THE MESQUITE SWD ROW TO THE MESA VERDE AST PAD AND THE MESA VERDE WC CTB CROSSING SECTIONS 7, 8 & 18, TOWNSHIP 24 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 09/24/18	CAD Date: 10/11/18	Drawn By: LSL
W.O. No.: 18111125	Rev.:	Rel. W.O.: 18111038
		Sheet 1 of 1





**NOTE**

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

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

RONALD J. EIDSON

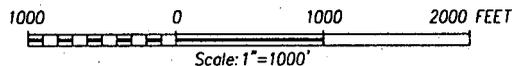
DATE: 9/10/2018



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**LEGEND**

⊙ DENOTES FOUND CORNER AS NOTED



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

**SURVEY FOR AN ELECTRIC LINE TO THE MESA VERDE W.C. UNIT #18H, #19H & #20H CROSSING SECTION 13, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, NEW MEXICO**

Survey Date: 3/02/18	CAD Date: 9/10/18	Drawn By: ACK
W.O. No.: 18131029	Rev.:	Rel. W.O.: 18110267

Sheet 1 of 1

## **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/Ivory/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

Prepared by:  
Dave Andersen  
GRR Land Department

GRR, INC. WATER SOURCES  
FOR OXY CERTAIN POND LOCATIONS

08/26/2016

<u>Pond Name</u>	<u>Water Source1</u>	<u>Water Source2</u>	<u>Water Source3</u>	<u>Water Source4</u>
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.

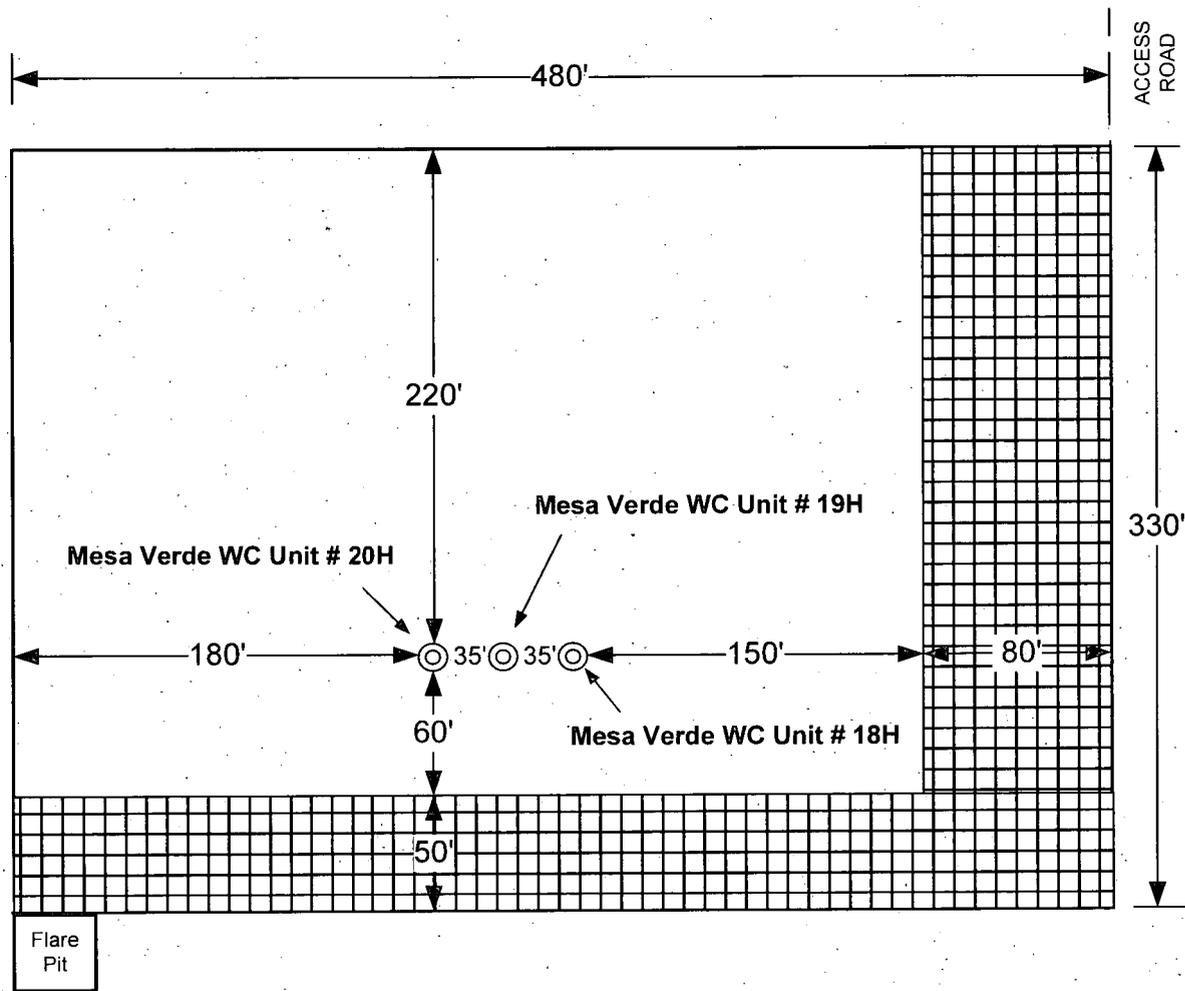
NMOSE WELL NUMBER	WELL COMMON NAME	LAND OWNERSHIP	GPS LOCATION
C-100	Tres Rios - Next to well shack	PRIVATE	32.201921° -104.254317°
C-100-A	Tres Rios - Center of turnaround	PRIVATE	32.201856° -104.254443°
C-272-B	Tres Rios - Northwest	PRIVATE	32.202315° -104.254812°
C-906	Whites City Commercial	PRIVATE	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°

## GRR Inc.

NMOSE WELL NUMBER	WELL COMMON NAME	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

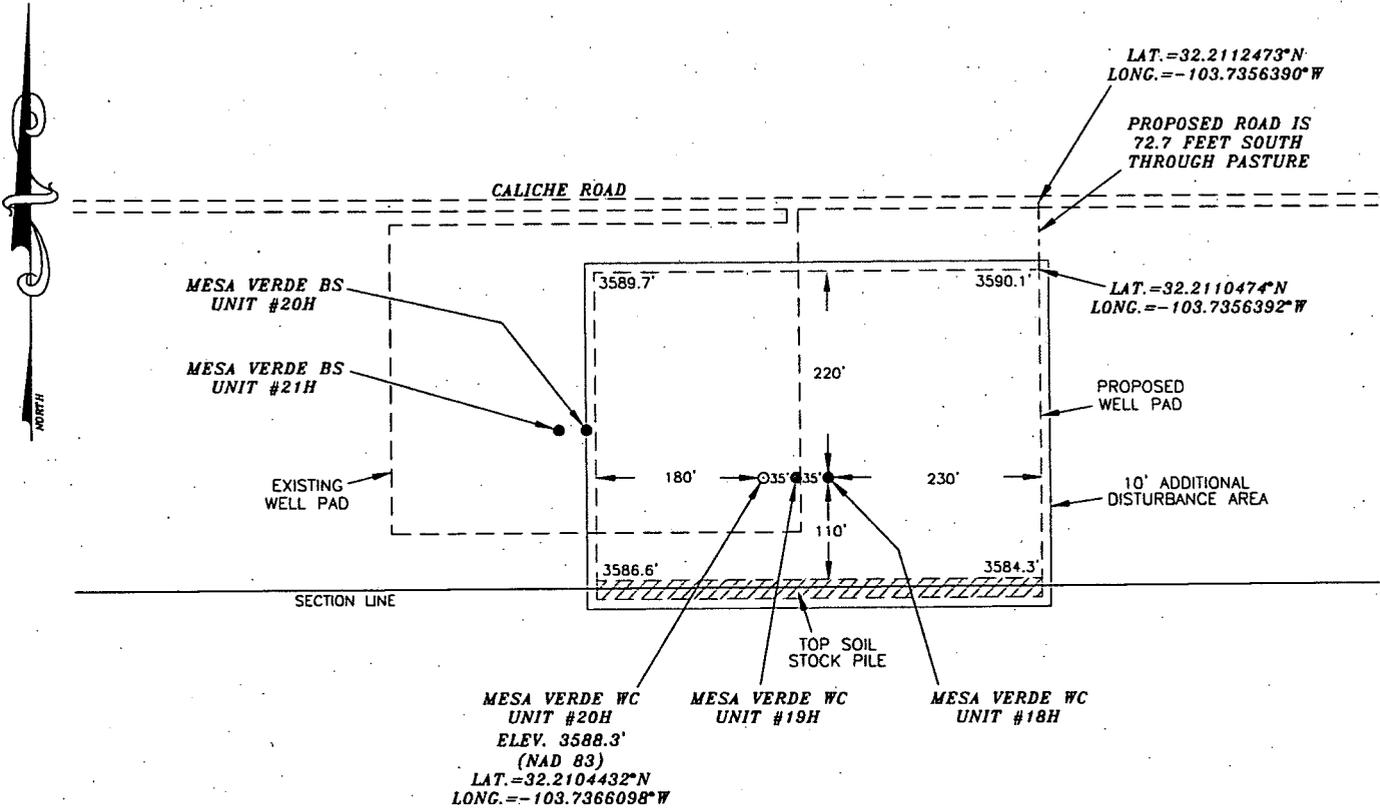


NORTH ↑

REVISION BLOCK						ENGINEERING RECORD		FLEX 3 RIG DIAGRAM	
NO.	DATE	DESCRIPTION	BY	CHK	APP	BY	DATE	Mesa Verde WC Unit # 18H, 19H, 20H	
								EDDY COUNTY, NEW MEXICO	

# OXY USA INC. MESA VERDE WC UNIT #20H SITE PLAN

FAA PERMIT: NO



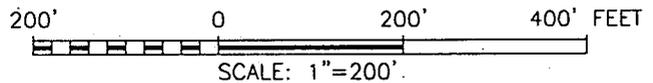
**SURVEYORS CERTIFICATE**

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* 8/28/2018  
Terry J. Asel, N.M. R.P.L.S. No. 15079

**LEGEND**

- DENOTES PROPOSED WELL PAD
- DENOTES PROPOSED ROAD
- ▨ DENOTES STOCK PILE AREA

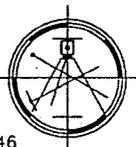


## OXY USA INC.

MESA VERDE WC UNIT #20H LOCATED AT  
118' FSL & 1068' FWL IN SECTION 13,  
TOWNSHIP 24 SOUTH, RANGE 31 EAST,  
N.M.P.M., EDDY COUNTY, NEW MEXICO

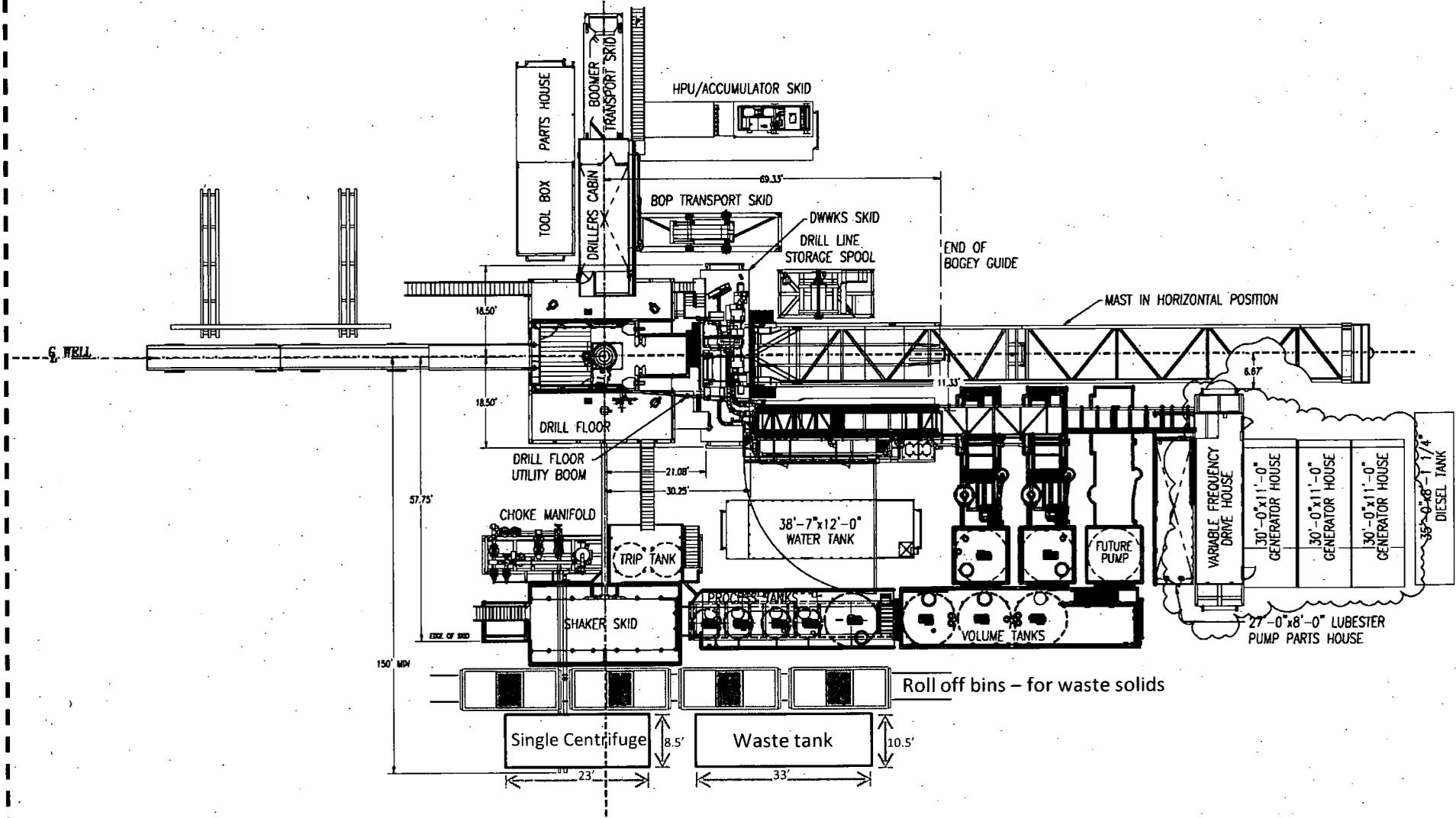
Asel Surveying

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

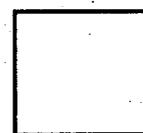
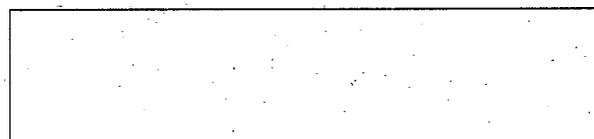
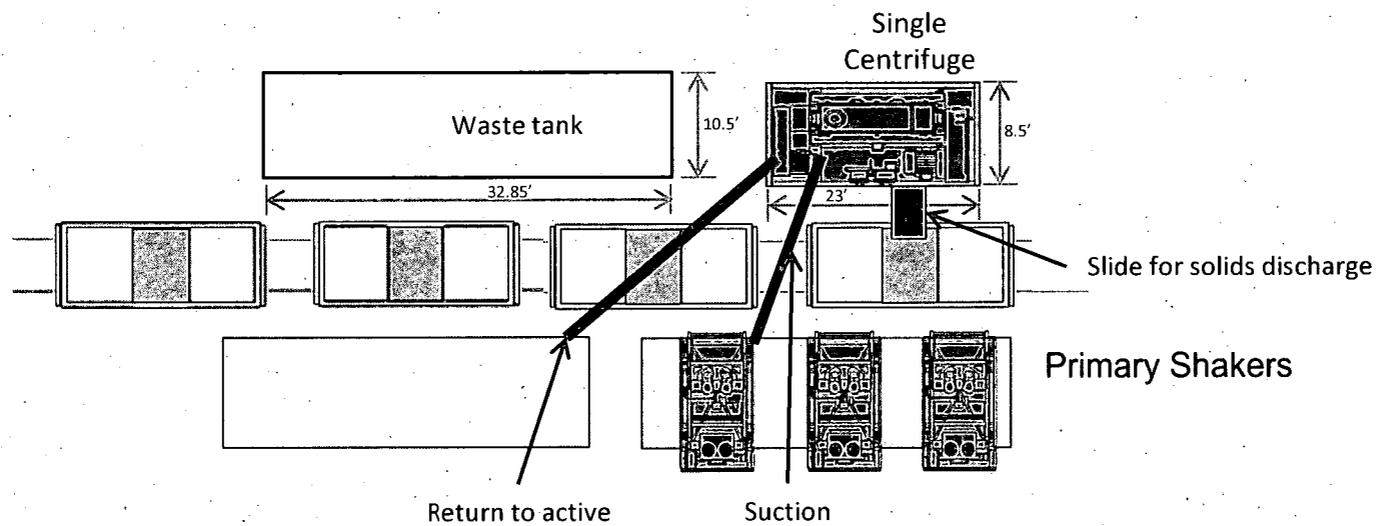


Survey Date: 08/23/18	Sheet 1 of 1 Sheets	
W.O. Number: 180823WL-c	Drawn By: KA	Rev:
Date: 08/24/18	180823WL-c	Scale: 1"=200'

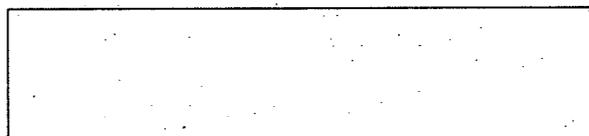
Oxy Single Centrifuge  
 Closed Loop System – New  
 Mexico Flex III  
 May 28, 2013



# Oxy



Well Head



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

New name: Mesa Verde Wc Unit #20



OXY U.S.A. INC.

NEW MEXICO STAKING FORM

Date Staked: 2-13-18

Lease / Well Name: Mesa Verde 13 Fed # 171 H

Legal Description: 118' FSL 1068' FWL Sec 13 T24S R31E

Latitude: 32° 12' 37.60" NAD 83

Longitude: -103° 44' 11.79" NAD 83

X: 725892.40 NAD 83

Y: 440805.62 NAD 83

Elevation: 3589.6 NAD 83

Move information: 0

County: Eddy

Surface Owner: BLM

Nearest Residence: ?

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

V-Door: WEST

Top soil: SOUTH

Road Description: 0

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

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

Interim Reclamation: 50' SOUTH

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

Onsite Attendees: Jessie Bassett - BLM Jim Wilson - Oxy  
SWCA Asel Surucey

DATE: 2-14-18

**Surface Use Plan of Operations**

**Operator Name/Number:** OXY USA Inc. – 16696  
**Lease Name/Number:** Mesa Verde WC Unit #20H NMNM137099X  
**Pool Name/Number:** Purple Sage Wolfcamp 98220  
**Surface Location:** 118' FSL 1068' FWL SWSW (M) Sec 13 T24S R31E – NMNM114979  
**Bottom Hole Location:** 20' FNL 440' FWL NWNW (D) Sec 13 T24S R31E – NMNM114979

**1. Existing Roads**

- a. A copy of the USGS "Paduca Breaks, NW, 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 8/23/18, certified 8/28/18.
- c. Directions to Location: From the intersection of SH 128 and CR 786 (Buck Jackson Rd), go southwest on CR 786 for 0.4 miles. Turn left on caliche road and go south for 1.3 miles. Turn right and go west for 0.2 miles, go southwest for 0.1 miles, go west for 0.5 miles. Turn left on proposed road and go south for ~73' to location.

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

- a. A new access road will be built. The access road will run approximately 73' south through pasture to the northeast corner of the pad.
- b. The maximum width of the road will be 30'. It will be crowned and made up of 6" of rolled and compacted caliche. Water will be deflected, as necessary, to avoid accumulation and prevent surface erosion.
- c. Surface material will be native caliche. This material will be obtained from a BLM approved pit nearest in proximity to the location. The average grade will be approximately 1%.
- d. No cattle guards, grates or fence cuts will be required. Turnouts are planned every 1000' as needed.
- e. Blade, water and repair existing caliche roads as needed.
- f. Water Bars will be incorporated every 200' during the construction of the road.

**3. Location of Existing Wells:**

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

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

- a. In the event the well is productive, the Mesa Verde Federal 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 three (3) 4" composite flowlines operating < 75% MAWP, surface, lines to follow surveyed route. Survey of a strip of land 30' wide and 29971' (5.676 miles) in length crossing USA Land in Section 13&24 T24S R31E NMPM, Eddy County & Sections 16, 17&18 T24S R32E, Lea County, NM and being 25' left and 25' right of the centerline survey, see attached. Two (2) 6" steel gas lift line operating <1500 psig, buried, lines to follow surveyed route. Survey of a strip of land 30' wide and 1252' (0.237 mi) in length crossing USA Land in Section 13 & 24 T24S R31E, NMPM, Lea 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 1167.6' in length crossing USA Land in Sections 13 T24S R31E NMPM, Eddy County, NM and Section 18 T24S R32E NMPM, Lea 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 – West

CL Tanks – South

Pad – 330' X 480' – Three 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 NGL, 6120 S. Yale Avenue #805, Tulsa, OK 74136. 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 Mesa Verde WC Unit #7H.
- 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:

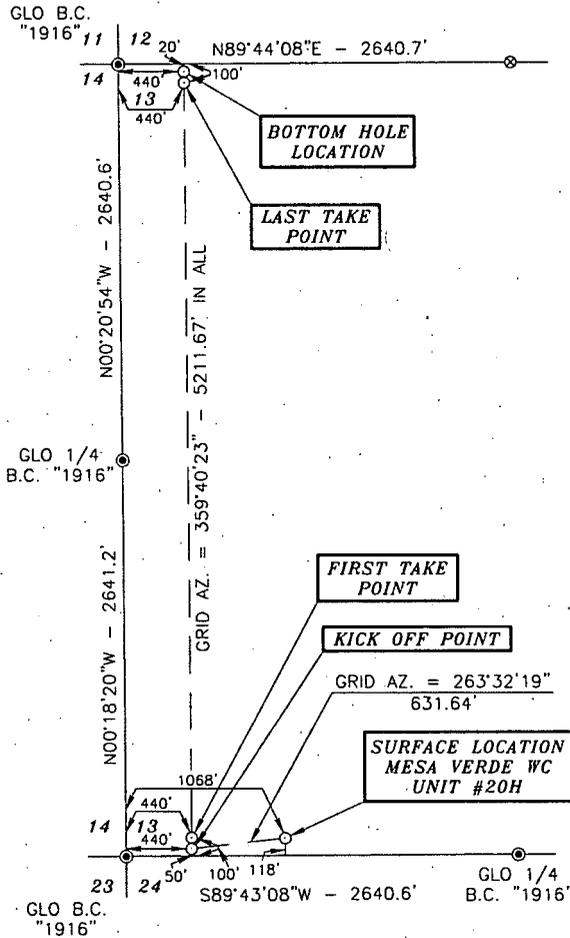
Leo Ortega  
Operations Superintendent  
1502 West Commerce Dr.  
Carlsbad, NM 88220  
Office – 575-628-4012  
Cellular – 575-706-8995

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

Cuong Q. Phan  
Asset Manager  
P.O. Box 4294  
Houston, TX Carlsbad, NM 88220  
Office – 713-513-6645  
Cellular – 281-832-0978

Michael Walton  
RMT Lead  
P.O. Box 4294  
Houston, TX 77210  
Office – 713-366-5526  
Cellular – 281-814-2971

SECTION 13, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO



Basis of Bearings - GPS Geodetic Measurements  
 NAD East Zone (83) North American Datum of 1983

**DRIVING DIRECTIONS:**  
 BEGINNING AT THE INTERSECTION OF  
 N.M. STATE HWY. #128 AND COUNTY  
 ROAD #786 (BUCK JACKSON ROAD),  
 GO SOUTHWEST ON COUNTY ROAD  
 #786 FOR 0.4 MILES, TURN LEFT ON  
 CALICHE ROAD AND GO SOUTH FOR  
 1.3 MILES, TURN RIGHT AND GO  
 WEST FOR 0.2 MILES, GO SOUTHWEST  
 FOR 0.1 MILES, GO WEST FOR 0.5  
 MILES, TURN LEFT ON PROPOSED  
 ROAD AND GO SOUTH FOR 72.7 FEET  
 TO LOCATION.

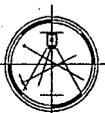


**SURVEYORS CERTIFICATE**

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* 8/24/2018  
 Terry J. Asel, N.M. R.P.L.S. No. 15079

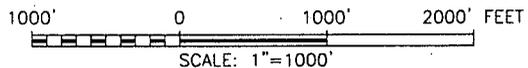
Asel Surveying



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

**LEGEND**

- ⊙ - DENOTES FOUND MONUMENT AS NOTED.
- ⊗ - DENOTES CALCULATED CORNER

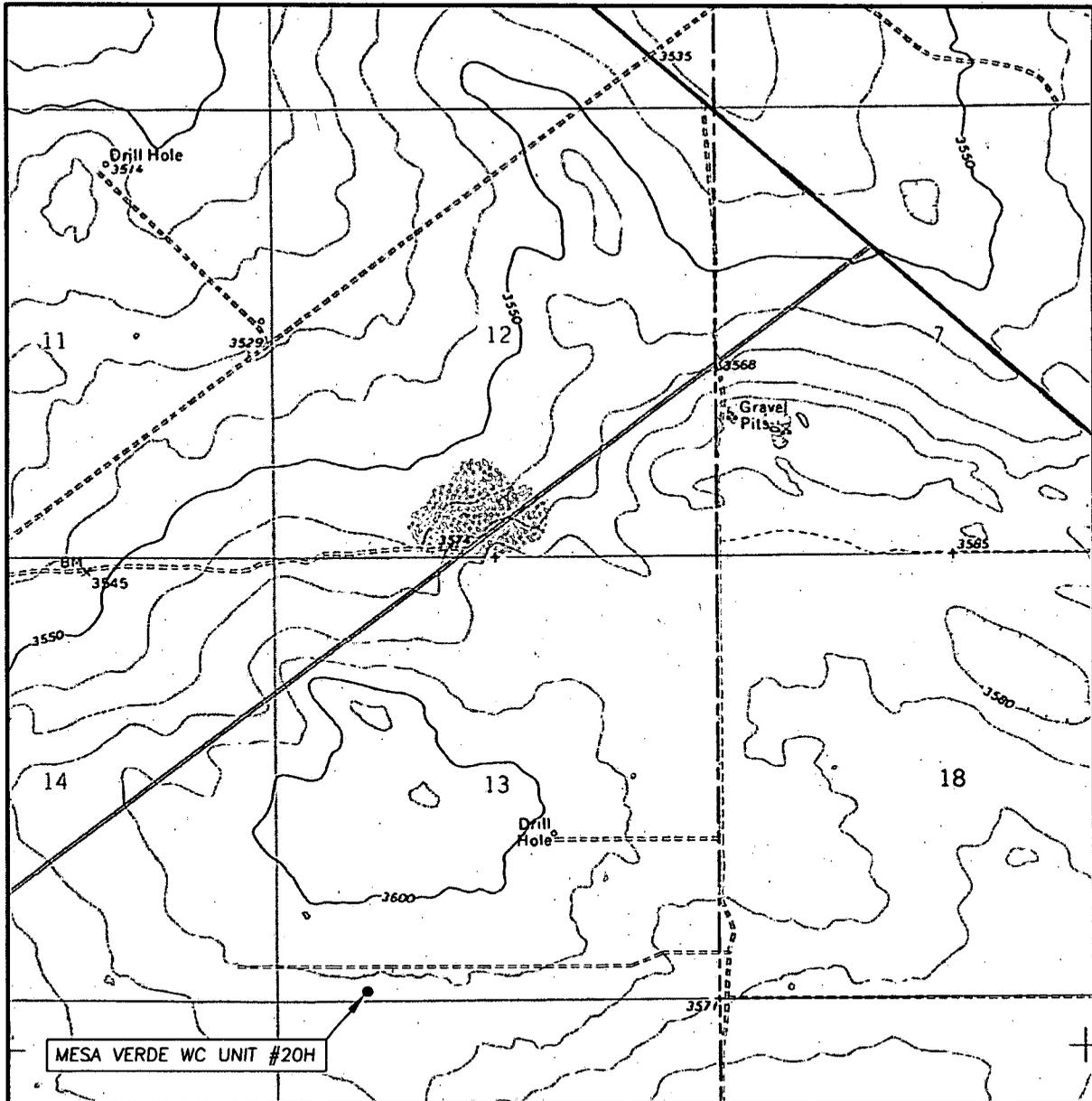


**OXY USA INC.**

MESA VERDE WC UNIT #20H LOCATED AT  
 118' FSL & 1068' FWL IN SECTION 13,  
 TOWNSHIP 24 SOUTH, RANGE 31 EAST,  
 N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 08/23/18	Sheet 1 of 1 Sheets
W.O. Number: 180823WL-c	Drawn By: KA Rev:
Date: 08/24/18	180823WL-c Scale: 1"=1000'

# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: 10'

SEC. 13 TWP. 24-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 118' FSL & 1068' FWL

ELEVATION 3588.3'

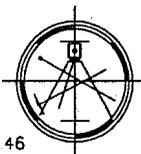
OPERATOR OXY USA INC.

LEASE MESA VERDE WC UNIT #20H

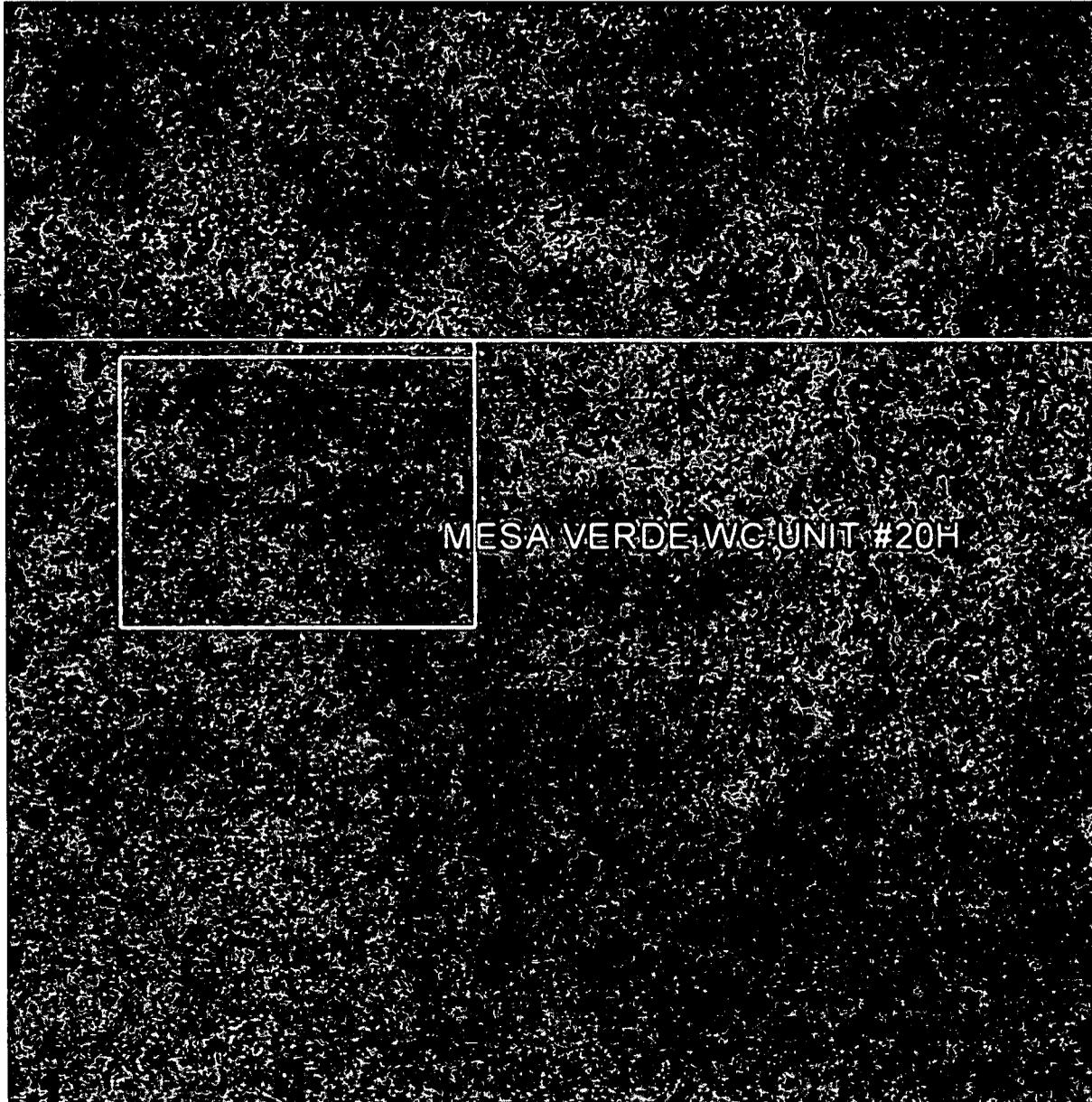
U.S.G.S. TOPOGRAPHIC MAP  
PADUCA BREAKS NW, N.M.

Asel Surveying

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



# AERIAL MAP



SCALE: NOT TO SCALE

SEC. 13 TWP. 24-S RGE. 31-E

SURVEY N.M.P.M.

COUNTY EDDY

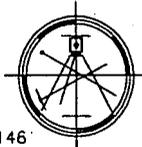
DESCRIPTION 118' FSL & 1068' FWL

ELEVATION 3588.3'

OPERATOR OXY USA INC.

LEASE MESA VERDE WC UNIT #20H

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



**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: