

Form 3160-3  
(June 2015)FORM APPROVED  
OMB No. 1004-0137  
Expires: January 31, 2018

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input checked="" type="checkbox"/> Multiple Zone		5. Lease Serial No. <b>NMNM081616</b> 6. If Indian, Allottee or Tribe Name  7. If Unit or CA Agreement, Name and No.  8. Lease Name and Well No. <b>TAILS CC 10 3 FED COM</b> <b>312H</b> 9. API Well No. <b>30 015 48930</b>
2. Name of Operator <b>OXY USA INCORPORATED</b> 3a. Address <b>5 Greenway Plaza, Suite 110, Houston, TX 77046</b> 3b. Phone No. (include area code) <b>(713) 366-5716</b>		10. Field and Pool, or Exploratory <b>PIERCE CROSSING BONE SPRING, EA</b> 11. Sec., T. R. M. or Blk. and Survey or Area <b>SEC 15/T24S/R29E/NMP</b>
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface <b>NWSE / 305 FNL / 1880 FEL / LAT 32.224006 / LONG -103.969835</b> At proposed prod. zone <b>NWNE / 20 FNL / 1640 FEL / LAT 32.253947 / LONG -103.969196</b>		12. County or Parish <b>EDDY</b> 13. State <b>NM</b>
14. Distance in miles and direction from nearest town or post office* <b>7 miles</b>		15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>20 feet</b> 16. No of acres in lease  17. Spacing Unit dedicated to this well <b>640.0</b>
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>35 feet</b> 19. Proposed Depth <b>9991 feet / 20545 feet</b> 20. BLM/BIA Bond No. in file <b>FED:</b>		21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>2938 feet</b> 22. Approximate date work will start* <b>06/14/2021</b> 23. Estimated duration <b>45 days</b>
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.<br>2. A Drilling Plan.<br>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). | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).<br>5. Operator certification.<br>6. Such other site specific information and/or plans as may be requested by the BLM. |
|---|---|

25. Signature (Electronic Submission)	Name (Printed/Typed) <b>RONI MATHEW / Ph: (713) 366-5716</b>	Date <b>12/21/2020</b>
Title <b>REGULATORY SPECIALIST</b>		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) <b>Cody Layton / Ph: (575) 234-5959</b>	Date <b>07/19/2021</b>
Title <b>Assistant Field Manager Lands &amp; Minerals</b>		
Office <b>Carlsbad Field Office</b>		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

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

(Continued on page 2)

\*(Instructions on page 2)



Approval Date: 07/19/2021

**DISTRICT I**  
1625 N. FRENCH DR., HOBBS, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

**DISTRICT II**  
811 S. FIRST ST., ARTESIA, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

**DISTRICT III**  
1000 RIO BRAZOS RD., AZTEC, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

**DISTRICT IV**  
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
**OIL CONSERVATION DIVISION**  
1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

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

☒ AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

API Number <b>30-015-48930</b>	Pool Code 11520/96473	960 acres <b>Cedar Canyon;Bone Spring/Pierce Crossing;Bone Spring East</b>	Pool Name 320 acres
Property Code <b>329988</b>	Property Name <b>TAILS CC 10_3 FEDERAL COM</b>		Well Number 312H
OGRID No. <b>16696</b>	Operator Name <b>OXY USA INC.</b>		Elevation 2938.4'

**Surface Location**

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	15	24-S	29-E		305	NORTH	1880	EAST	EDDY

**Bottom Hole Location If Different From Surface**

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
2	3	24-S	29-E		20	NORTH	1640	EAST	EDDY
Dedicated Acres <b>1280</b>	Joint or Infill	Consolidation Code	Order No.						

**NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION**

**PROPOSED BOTTOM HOLE LOCATION NAD 83**  
Y=456310.1 N  
X=653903.6 E  
LAT.=32.253947° N  
LONG.=103.969197° W

**LTP NAD 83**  
100' FNL & 1640' FEL  
Y=456230.1 N  
X=653904.2 E  
LAT.=32.253727° N  
LONG.=103.969196° W

1	Y=456329.9 N	X=655543.5 E
2	Y=453684.6 N	X=655569.1 E
3	Y=451030.3 N	X=655595.1 E
4	Y=448375.2 N	X=655608.2 E
5	Y=445720.2 N	X=655621.5 E
6	Y=445724.1 N	X=652967.9 E
7	Y=451032.4 N	X=652940.0 E
8	Y=456330.2 N	X=652902.2 E

**FTP NAD 83**  
100' FSL & 1640' FEL  
Y=445822.6 N  
X=653980.8 E  
LAT.=32.225118° N  
LONG.=103.969062° W

**KOP NAD 83**  
50' FSL & 1640' FEL  
Y=445772.6 N  
X=653981.2 E  
LAT.=32.224980° N  
LONG.=103.969061° W

**SURFACE LOCATION NAD 83**  
Y=445418.0 N  
X=653742.7 E  
LAT.=32.224008° N  
LONG.=103.969837° W

**PROPOSED BOTTOM HOLE LOCATION NAD 27**  
Y=456250.9 N  
X=612720.0 E  
LAT.=32.253824° N  
LONG.=103.968707° W

**LTP NAD 27**  
100' FNL & 1640' FEL  
Y=456170.9 N  
X=612720.6 E  
LAT.=32.253605° N  
LONG.=103.968706° W

1	Y=456270.7 N	X=614359.9 E
2	Y=453625.5 N	X=614385.5 E
3	Y=450971.2 N	X=614411.3 E
4	Y=448316.2 N	X=614424.5 E
5	Y=445661.3 N	X=614437.6 E
6	Y=445665.1 N	X=611784.0 E
7	Y=450973.4 N	X=611756.3 E
8	Y=456271.0 N	X=611718.6 E

**FTP NAD 27**  
100' FSL & 1640' FEL  
Y=445763.7 N  
X=612796.9 E  
LAT.=32.224995° N  
LONG.=103.968574° W

**KOP NAD 27**  
50' FSL & 1640' FEL  
Y=445713.7 N  
X=612797.3 E  
LAT.=32.224858° N  
LONG.=103.968573° W

**SURFACE LOCATION NAD 27**  
Y=445359.1 N  
X=612558.8 E  
LAT.=32.223885° N  
LONG.=103.969348° W

HSU =

**OPERATOR CERTIFICATION**

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

*Roni Mathew* 9-7-2021

Signature \_\_\_\_\_ Date \_\_\_\_\_

**RONI MATHEW**

Printed Name \_\_\_\_\_

**roni\_mathew@oxy.com**

E-mail Address \_\_\_\_\_

**SURVEYOR CERTIFICATION**

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

MAY 30, 2019

Date of Survey \_\_\_\_\_

Signature & Seal of Professional Surveyor

*Chad Harcrow* 1/9/20

Certificate No. **CHAD HARCROW 17777**

W.O. # 19-2402 DRAWN BY: WN

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

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

## NATURAL GAS MANAGEMENT PLAN

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

### Section 1 – Plan Description

Effective May 25, 2021

**I. Operator:** OXY USA INC. (16696) **OGRID:** 16696 **Date:** 0 8/ 0 3/ 2 1

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

If Other, please describe: \_\_\_\_\_

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

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

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

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

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

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

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

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

## **Section 2 – Enhanced Plan**

### **EFFECTIVE APRIL 1, 2022**

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

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

#### **IX. Anticipated Natural Gas Production:**

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

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

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

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

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

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

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

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

### **Section 3 - Certifications**

**Effective May 25, 2021**

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

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

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

***If Operator checks this box, Operator will select one of the following:***

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

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

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

### **Section 4 - Notices**

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

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

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

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

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

Signature: <i>Leslie T. Reeves</i>
Printed Name: LESLIE REEVES
Title: REGULATORY ADVISOR
E-mail Address: LESLIE_REEVES@OXY.COM
Date: 08/03/2021
Phone: 713-497-2492
<b>OIL CONSERVATION DIVISION</b> <b>(Only applicable when submitted as a standalone form)</b>
Approved By:
Title:
Approval Date:
Conditions of Approval:

## III. Well(s)

Well Name	API	WELL LOCATION (ULSTR)	Footages	ANTICIPATED OIL BBL/D	ANTICIPATED GAS MCF/D	ANTICIPATED PROD WATER BBL/D
TAILS CC 10-3 FEDERAL COM 311H	PENDING	N-10-T24S-R29E	600 FSL 1710 FWL	1700	4000	6500
TAILS CC 10-3 FEDERAL COM 312H	PENDING	B-15-T24S-R29E	305 FNL 1880 FEL	1700	4000	6500
TAILS CC 10-3 FEDERAL COM 32H	PENDING	N-10-T24S-R29E	220 FSL 1760 FWL	2300	5500	6500
TAILS CC 10-3 FEDERAL COM 33H	PENDING	N-10-T24S-R29E	220 FSL 1795 FWL	2300	5500	6500
TAILS CC 10-3 FEDERAL COM 36H	PENDING	O-10-T24S-R29E	220 FSL 1670 FEL	2300	5500	6500
TAILS CC 10-3 FEDERAL COM 37H	PENDING	N-10-T24S-R29E	600 FSL 1775 FWL	2300	5500	6500
TAILS CC 10-3 FEDERAL COM 38H	PENDING	B-15-T24S-R29E	340 FNL 1880 FEL	2300	5500	6500
TAILS CC 10-3 FEDERAL COM 31H	PENDING	N-10-T24S-R29E	220 FSL 1725 FWL	2300	5500	6500
TAILS CC 10-3 FEDERAL COM 34H	PENDING	O-10-T24S-R29E	220 FSL 1740 FEL	2300	5500	6500
TAILS CC 10-3 FEDERAL COM 35H	PENDING	O-10-T24S-R29E	220 FSL 1705 FEL	2300	5500	6500

**V. Anticipated Schedule**

<b>Well Name</b>	<b>API</b>	<b>Spud Date</b>	<b>TD Reached Date</b>	<b>Completion Commencement Date</b>	<b>Initial Flow Back Date</b>	<b>First Production Date</b>
TAILS CC 10-3 FEDERAL COM 311H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 312H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 32H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 33H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 36H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 37H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 38H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 31H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 34H	PENDING	TBD	TBD	TBD	TBD	TBD
TAILS CC 10-3 FEDERAL COM 35H	PENDING	TBD	TBD	TBD	TBD	TBD



## **Part VI. Separation Equipment**

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

## **VII. Operational Practices**

### **Gathering System and Pipeline Notification**

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

### **Flowback Strategy**

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

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

### **VIII. Best Management Practices**

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

#### **Power Generation – On lease**

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

#### **Compressed Natural Gas – On lease**

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

#### **NGL Removal – On lease**

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

## Oxy USA Inc. - Tails CC 10\_3 Federal Com 312H

## 1. Geologic Formations

TVD of target	9996'	Pilot Hole Depth	N/A
MD at TD:	20545'	Deepest Expected fresh water:	178'

## Delaware Basin

Formation	TVD - RKB	Expected Fluids
Rustler	178	
Salado	571	Salt
Castile	1,567	Salt
Lamar/Delaware	3,018	Oil/Gas/Brine
Bell Canyon	3,038	Oil/Gas/Brine
Cherry Canyon	3,867	Oil/Gas/Brine
Brushy Canyon	5,124	Losses
Bone Spring	6,732	Oil/Gas
1st Bone Spring	7,754	Oil/Gas
2nd Bone Spring	8,540	Oil/Gas
<b>3rd Bone Spring</b>	<b>9,608</b>	<b>Oil/Gas</b>

\*H<sub>2</sub>S, 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	511	10.75	40.5	J-55	BTC	1.125	1.2	1.4	1.4
9.875	0	9403	7.625	26.4	L-80 HC	BTC	1.125	1.2	1.4	1.4
6.75	0	20545	5.5	20	P-110	DQX	1.125	1.2	1.4	1.4
SF Values will meet or Exceed										

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

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

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

## Oxy USA Inc. - Tails CC 10\_3 Federal Com 312H

**Annular Clearance Variance Request**

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

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

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	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?	

## Oxy USA Inc. - Tails CC 10\_3 Federal Com 312H

## 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)	414	14.8	1.33	6.365	5:26	Class C Cement, Accelerator
Intermediate 1st Stage (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Intermediate 1st Stage (Tail)	558	13.2	1.65	8.640	11:54	Class H Cement, Retarder, Dispersant, Salt
Intermediate 2nd Stage (Tail Slurry) to be pumped as Bradenhead Squeeze from surface, down the Intermediate annulus						
Intermediate 2nd Stage (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Intermediate 2nd Stage (Tail)	661	12.9	1.92	10.41	23:10	Class C Cement, Accelerator
Production (Lead)	N/A	N/A	N/A	N/A	N/A	N/A
Production (Tail)	854	13.2	1.38	6.686	3:39	Class H Cement, Retarder, Dispersant, Salt

Casing String	Top (ft)	Bottom (ft)	% Excess
Surface (Lead)	N/A	N/A	N/A
Surface (Tail)	0	511	100%
Intermediate 1st Stage (Lead)	N/A	N/A	N/A
Intermediate 1st Stage (Tail)	5374	9403	5%
Intermediate 2nd Stage (Lead)	N/A	N/A	N/A
Intermediate 2nd Stage (Tail)	0	5374	10%
Production (Lead)	N/A	N/A	N/A
Production (Tail)	8903	20545	20%

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

The summarized operational sequence will be as follows:

1. Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment (float collar and shoe).
2. Land casing.
3. Fill pipe with kill weight fluid, and confirm well is static.
  - a. If well is not static notify BLM and kill well.
  - b. Once well is static notify BLM with intent to proceed with nipple down and offline cementing.
4. Set and pressure test annular packoff.
5. After confirmation of both annular barriers and internal barriers, nipple down BOP and install cap flange. If any barrier fails to test, the BOP stack will not be nipped down until after the cement job is completed.
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.

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9. Install offline cement tool.
10. Rig up cement equipment.
  - a. Notify BLM prior to cement job.
11. Perform cement job.
12. Confirm well is static and floats are holding after cement job.
13. Remove cement equipment, offline cement tools and install night cap with pressure gauge for monitoring.

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

**Three string wells:**

- CBL will be required on one well per pad
- If the pumped volume of cement is less than permitted in the APD, BLM will be notified and a CBL may be run
- Echometer will be used after bradenhead cement job to determine TOC before pumping top-out cement

**Pilot Hole Cementing specs:**

Pilot hole depth: N/A

KOP: N/A

Plug top	Plug Bottom	% Excess	No. Sacks	Wt. lb/gal	Yld ft3/sack	Water gal/sk	Slurry Description and Cement Type
N/A							
N/A							

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## 4. Pressure Control Equipment

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

\*Specify if additional ram is utilized.

Oxy will utilize a 5M annular with a 10M BOPE stack. The BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

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 system must be tested. We will test the flange connection of the wellhead with a test port that is directly in the flange. We are proposing that we will run the wellhead through the rotary prior to cementing surface casing as discussed with the BLM on October 8, 2015.  See attached schematics.



## Oxy USA Inc. - Tails CC 10\_3 Federal Com 312H

### BOP Break Testing Request

Oxy requests permission to adjust the BOP break testing requirements as per the agreement reached in the OXY/BLM meeting on September 5, 2019. A separate sundry will be sent prior to spud that reflects the pad based break testing plan.

BOP break test under the following conditions:

- After a full BOP test is conducted
- When skidding to drill an intermediate section where ICP is set into the third Bone Spring or shallower.
- When skidding to drill a production section that does not penetrate into the third Bone Spring or deeper.

If the kill line is broken prior to skid, two tests will be performed.

- 1) Wellhead flange, co-flex hose, kill line connections and upper pipe rams
- 2) Wellhead flange, HCR valve, check valve, upper pipe rams

If the kill line is not broken prior to skid, only one test will be performed.

- 1) Wellhead flange, co-flex hose, check valve, upper pipe rams

## Oxy USA Inc. - Tails CC 10\_3 Federal Com 312H

## 5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From (ft)	To (ft)				
0	511	Water-Based Mud	8.6-8.8	40-60	N/C
511	9403	Saturated Brine-Based or Oil-Based Mud	8.0-10.0	35-45	N/C
9403	20545	Water-Based 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

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

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

## Oxy USA Inc. - Tails CC 10\_3 Federal Com 312H

## 7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6238 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	160°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 two well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well.</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:** 1443.5 bbls.

## Attachments

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

**Oxy USA Inc. - Tails CC 10\_3 Federal Com 312H****9. Company Personnel**

<b><u>Name</u></b>	<b><u>Title</u></b>	<b><u>Office Phone</u></b>	<b><u>Mobile Phone</u></b>
Garrett Granier	Drilling Engineer	713-513-6633	832-265-0581
William Turner	Drilling Engineer Supervisor	713-350-4951	661-817-4586
Simon Benavides	Drilling Superintendent	713-522-8652	281-684-6897
Diego Tellez	Drilling Manager	713-350-4602	713-303-4932

# **OXY**

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

**Tails CC 10\_3**

**Tails CC 10\_3 Federal Com 312H**

**Wellbore #1**

**Plan: Permitting Plan**

## **Standard Planning Report**

**30 January, 2020**

# Oxy Inc.

## Planning Report

<b>Database:</b>	HOPSP	<b>Local Co-ordinate Reference:</b>	Well Tails CC 10_3 Federal Com 312H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Site:</b>	Tails CC 10_3	<b>North Reference:</b>	Grid
<b>Well:</b>	Tails CC 10_3 Federal Com 312H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<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

Site		Tails CC 10_3			
Site Position:		Northing:	445,564.90 usft	Latitude:	32° 13' 27.942674 N
From:	Map	Easting:	651,912.10 usft	Longitude:	103° 58' 32.716598 W
Position Uncertainty:	2.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.19 °

Well	Tails CC 10_3 Federal Com 312H					
Well Position	+N/-S	-146.91 ft	Northing:	445,418.00 usft	Latitude:	32° 13' 26.428185 N
	+E/-W	1,830.74 ft	Easting:	653,742.70 usft	Longitude:	103° 58' 11.411335 W
Position Uncertainty		1.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	2,938.40 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	8/5/2019	6.93	59.93	47,887.00000000

<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	0.85

<b>Plan Survey Tool Program</b>	<b>Date</b>	1/30/2020		
<b>Depth From (ft)</b>	<b>Depth To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	20,545.15	Permitting Plan (Wellbore #1)	B001Mb_MWD+HRGM OWSG MWD + HRGM

<b>Plan Sections</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,060.00	0.00	0.00	8,060.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,560.00	10.00	53.79	8,557.47	25.71	35.12	2.00	2.00	0.00	53.79	
9,503.18	10.00	53.79	9,486.32	122.46	167.26	0.00	0.00	0.00	0.00	
10,345.18	90.03	359.58	9,995.90	693.26	235.99	10.00	9.50	-6.44	-54.62	
20,545.15	90.03	359.58	9,990.90	10,892.95	160.91	0.00	0.00	0.00	0.00	PBHL (Tails CC)

# Oxy Inc.

## Planning Report

<b>Database:</b>	HOPSP	<b>Local Co-ordinate Reference:</b>	Well Tails CC 10_3 Federal Com 312H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Site:</b>	Tails CC 10_3	<b>North Reference:</b>	Grid
<b>Well:</b>	Tails CC 10_3 Federal Com 312H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<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 Inc.

## Planning Report

<b>Database:</b>	HOPSP	<b>Local Co-ordinate Reference:</b>	Well Tails CC 10_3 Federal Com 312H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Site:</b>	Tails CC 10_3	<b>North Reference:</b>	Grid
<b>Well:</b>	Tails CC 10_3 Federal Com 312H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<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
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,060.00	0.00	0.00	8,060.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.80	53.79	8,100.00	0.16	0.23	0.17	2.00	2.00	0.00
8,200.00	2.80	53.79	8,199.94	2.02	2.76	2.06	2.00	2.00	0.00
8,300.00	4.80	53.79	8,299.72	5.94	8.11	6.05	2.00	2.00	0.00
8,400.00	6.80	53.79	8,399.20	11.90	16.26	12.14	2.00	2.00	0.00
8,500.00	8.80	53.79	8,498.27	19.92	27.21	20.32	2.00	2.00	0.00
8,560.00	10.00	53.79	8,557.47	25.71	35.12	26.23	2.00	2.00	0.00
8,600.00	10.00	53.79	8,596.86	29.81	40.72	30.41	0.00	0.00	0.00
8,700.00	10.00	53.79	8,695.34	40.07	54.73	40.88	0.00	0.00	0.00
8,800.00	10.00	53.79	8,793.82	50.33	68.74	51.34	0.00	0.00	0.00
8,900.00	10.00	53.79	8,892.30	60.59	82.75	61.80	0.00	0.00	0.00
9,000.00	10.00	53.79	8,990.78	70.85	96.76	72.27	0.00	0.00	0.00
9,100.00	10.00	53.79	9,089.26	81.11	110.78	82.73	0.00	0.00	0.00
9,200.00	10.00	53.79	9,187.74	91.36	124.79	93.20	0.00	0.00	0.00
9,300.00	10.00	53.79	9,286.22	101.62	138.80	103.66	0.00	0.00	0.00
9,400.00	10.00	53.79	9,384.70	111.88	152.81	114.12	0.00	0.00	0.00
9,500.00	10.00	53.79	9,483.18	122.14	166.82	124.59	0.00	0.00	0.00
9,503.18	10.00	53.79	9,486.32	122.46	167.26	124.92	0.00	0.00	0.00
9,600.00	17.47	26.61	9,580.39	140.47	180.59	143.12	10.00	7.72	-28.07
9,700.00	26.69	16.11	9,672.99	175.56	193.58	178.40	10.00	9.22	-10.50
9,800.00	36.31	10.80	9,758.17	226.35	205.39	229.36	10.00	9.62	-5.30
9,900.00	46.08	7.50	9,833.34	291.30	215.67	294.46	10.00	9.76	-3.30
10,000.00	55.91	5.14	9,896.21	368.44	224.10	371.71	10.00	9.83	-2.36
10,100.00	65.77	3.27	9,944.88	455.43	230.43	458.78	10.00	9.87	-1.87
10,200.00	75.66	1.68	9,977.86	549.61	234.46	553.01	10.00	9.89	-1.59
10,300.00	85.56	0.22	9,994.16	648.13	236.07	651.55	10.00	9.90	-1.46
10,345.18	90.03	359.58	9,995.90	693.26	235.99	696.67	10.00	9.90	-1.42



# Oxy Inc.

## Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Tails CC 10_3 Federal Com 312H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Site:</b>	Tails CC 10_3	<b>North Reference:</b>	Grid
<b>Well:</b>	Tails CC 10_3 Federal Com 312H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<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)
10,400.00	90.03	359.58	9,995.87	748.08	235.59	751.48	0.00	0.00	0.00
10,500.00	90.03	359.58	9,995.82	848.08	234.85	851.46	0.00	0.00	0.00
10,600.00	90.03	359.58	9,995.78	948.08	234.11	951.43	0.00	0.00	0.00
10,700.00	90.03	359.58	9,995.73	1,048.07	233.38	1,051.41	0.00	0.00	0.00
10,800.00	90.03	359.58	9,995.68	1,148.07	232.64	1,151.38	0.00	0.00	0.00
10,900.00	90.03	359.58	9,995.63	1,248.07	231.91	1,251.36	0.00	0.00	0.00
11,000.00	90.03	359.58	9,995.58	1,348.07	231.17	1,351.33	0.00	0.00	0.00
11,100.00	90.03	359.58	9,995.53	1,448.06	230.43	1,451.31	0.00	0.00	0.00
11,200.00	90.03	359.58	9,995.48	1,548.06	229.70	1,551.29	0.00	0.00	0.00
11,300.00	90.03	359.58	9,995.43	1,648.06	228.96	1,651.26	0.00	0.00	0.00
11,400.00	90.03	359.58	9,995.38	1,748.06	228.23	1,751.24	0.00	0.00	0.00
11,500.00	90.03	359.58	9,995.33	1,848.05	227.49	1,851.21	0.00	0.00	0.00
11,600.00	90.03	359.58	9,995.29	1,948.05	226.75	1,951.19	0.00	0.00	0.00
11,700.00	90.03	359.58	9,995.24	2,048.05	226.02	2,051.16	0.00	0.00	0.00
11,800.00	90.03	359.58	9,995.19	2,148.05	225.28	2,151.14	0.00	0.00	0.00
11,900.00	90.03	359.58	9,995.14	2,248.04	224.54	2,251.11	0.00	0.00	0.00
12,000.00	90.03	359.58	9,995.09	2,348.04	223.81	2,351.09	0.00	0.00	0.00
12,100.00	90.03	359.58	9,995.04	2,448.04	223.07	2,451.06	0.00	0.00	0.00
12,200.00	90.03	359.58	9,994.99	2,548.03	222.34	2,551.04	0.00	0.00	0.00
12,300.00	90.03	359.58	9,994.94	2,648.03	221.60	2,651.02	0.00	0.00	0.00
12,400.00	90.03	359.58	9,994.89	2,748.03	220.86	2,750.99	0.00	0.00	0.00
12,500.00	90.03	359.58	9,994.84	2,848.03	220.13	2,850.97	0.00	0.00	0.00
12,600.00	90.03	359.58	9,994.79	2,948.02	219.39	2,950.94	0.00	0.00	0.00
12,700.00	90.03	359.58	9,994.75	3,048.02	218.66	3,050.92	0.00	0.00	0.00
12,800.00	90.03	359.58	9,994.70	3,148.02	217.92	3,150.89	0.00	0.00	0.00
12,900.00	90.03	359.58	9,994.65	3,248.02	217.18	3,250.87	0.00	0.00	0.00
13,000.00	90.03	359.58	9,994.60	3,348.01	216.45	3,350.84	0.00	0.00	0.00
13,100.00	90.03	359.58	9,994.55	3,448.01	215.71	3,450.82	0.00	0.00	0.00
13,200.00	90.03	359.58	9,994.50	3,548.01	214.98	3,550.80	0.00	0.00	0.00
13,300.00	90.03	359.58	9,994.45	3,648.00	214.24	3,650.77	0.00	0.00	0.00
13,400.00	90.03	359.58	9,994.40	3,748.00	213.50	3,750.75	0.00	0.00	0.00
13,500.00	90.03	359.58	9,994.35	3,848.00	212.77	3,850.72	0.00	0.00	0.00
13,600.00	90.03	359.58	9,994.30	3,948.00	212.03	3,950.70	0.00	0.00	0.00
13,700.00	90.03	359.58	9,994.26	4,047.99	211.30	4,050.67	0.00	0.00	0.00
13,800.00	90.03	359.58	9,994.21	4,147.99	210.56	4,150.65	0.00	0.00	0.00
13,900.00	90.03	359.58	9,994.16	4,247.99	209.82	4,250.62	0.00	0.00	0.00
14,000.00	90.03	359.58	9,994.11	4,347.99	209.09	4,350.60	0.00	0.00	0.00
14,100.00	90.03	359.58	9,994.06	4,447.98	208.35	4,450.57	0.00	0.00	0.00
14,200.00	90.03	359.58	9,994.01	4,547.98	207.62	4,550.55	0.00	0.00	0.00
14,300.00	90.03	359.58	9,993.96	4,647.98	206.88	4,650.53	0.00	0.00	0.00
14,400.00	90.03	359.58	9,993.91	4,747.97	206.14	4,750.50	0.00	0.00	0.00
14,500.00	90.03	359.58	9,993.86	4,847.97	205.41	4,850.48	0.00	0.00	0.00
14,600.00	90.03	359.58	9,993.81	4,947.97	204.67	4,950.45	0.00	0.00	0.00
14,700.00	90.03	359.58	9,993.77	5,047.97	203.94	5,050.43	0.00	0.00	0.00
14,800.00	90.03	359.58	9,993.72	5,147.96	203.20	5,150.40	0.00	0.00	0.00
14,900.00	90.03	359.58	9,993.67	5,247.96	202.46	5,250.38	0.00	0.00	0.00
15,000.00	90.03	359.58	9,993.62	5,347.96	201.73	5,350.35	0.00	0.00	0.00
15,100.00	90.03	359.58	9,993.57	5,447.96	200.99	5,450.33	0.00	0.00	0.00
15,200.00	90.03	359.58	9,993.52	5,547.95	200.26	5,550.31	0.00	0.00	0.00
15,300.00	90.03	359.58	9,993.47	5,647.95	199.52	5,650.28	0.00	0.00	0.00
15,400.00	90.03	359.58	9,993.42	5,747.95	198.78	5,750.26	0.00	0.00	0.00
15,500.00	90.03	359.58	9,993.37	5,847.94	198.05	5,850.23	0.00	0.00	0.00
15,600.00	90.03	359.58	9,993.32	5,947.94	197.31	5,950.21	0.00	0.00	0.00
15,700.00	90.03	359.58	9,993.28	6,047.94	196.58	6,050.18	0.00	0.00	0.00

# Oxy Inc.

## Planning Report

<b>Database:</b>	HOPSP	<b>Local Co-ordinate Reference:</b>	Well Tails CC 10_3 Federal Com 312H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Site:</b>	Tails CC 10_3	<b>North Reference:</b>	Grid
<b>Well:</b>	Tails CC 10_3 Federal Com 312H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<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)
15,800.00	90.03	359.58	9,993.23	6,147.94	195.84	6,150.16	0.00	0.00	0.00
15,900.00	90.03	359.58	9,993.18	6,247.93	195.10	6,250.13	0.00	0.00	0.00
16,000.00	90.03	359.58	9,993.13	6,347.93	194.37	6,350.11	0.00	0.00	0.00
16,100.00	90.03	359.58	9,993.08	6,447.93	193.63	6,450.08	0.00	0.00	0.00
16,200.00	90.03	359.58	9,993.03	6,547.93	192.89	6,550.06	0.00	0.00	0.00
16,300.00	90.03	359.58	9,992.98	6,647.92	192.16	6,650.04	0.00	0.00	0.00
16,400.00	90.03	359.58	9,992.93	6,747.92	191.42	6,750.01	0.00	0.00	0.00
16,500.00	90.03	359.58	9,992.88	6,847.92	190.69	6,849.99	0.00	0.00	0.00
16,600.00	90.03	359.58	9,992.83	6,947.91	189.95	6,949.96	0.00	0.00	0.00
16,700.00	90.03	359.58	9,992.79	7,047.91	189.21	7,049.94	0.00	0.00	0.00
16,800.00	90.03	359.58	9,992.74	7,147.91	188.48	7,149.91	0.00	0.00	0.00
16,900.00	90.03	359.58	9,992.69	7,247.91	187.74	7,249.89	0.00	0.00	0.00
17,000.00	90.03	359.58	9,992.64	7,347.90	187.01	7,349.86	0.00	0.00	0.00
17,100.00	90.03	359.58	9,992.59	7,447.90	186.27	7,449.84	0.00	0.00	0.00
17,200.00	90.03	359.58	9,992.54	7,547.90	185.53	7,549.82	0.00	0.00	0.00
17,300.00	90.03	359.58	9,992.49	7,647.90	184.80	7,649.79	0.00	0.00	0.00
17,400.00	90.03	359.58	9,992.44	7,747.89	184.06	7,749.77	0.00	0.00	0.00
17,500.00	90.03	359.58	9,992.39	7,847.89	183.33	7,849.74	0.00	0.00	0.00
17,600.00	90.03	359.58	9,992.34	7,947.89	182.59	7,949.72	0.00	0.00	0.00
17,700.00	90.03	359.58	9,992.29	8,047.88	181.85	8,049.69	0.00	0.00	0.00
17,800.00	90.03	359.58	9,992.25	8,147.88	181.12	8,149.67	0.00	0.00	0.00
17,900.00	90.03	359.58	9,992.20	8,247.88	180.38	8,249.64	0.00	0.00	0.00
18,000.00	90.03	359.58	9,992.15	8,347.88	179.65	8,349.62	0.00	0.00	0.00
18,100.00	90.03	359.58	9,992.10	8,447.87	178.91	8,449.59	0.00	0.00	0.00
18,200.00	90.03	359.58	9,992.05	8,547.87	178.17	8,549.57	0.00	0.00	0.00
18,300.00	90.03	359.58	9,992.00	8,647.87	177.44	8,649.55	0.00	0.00	0.00
18,400.00	90.03	359.58	9,991.95	8,747.87	176.70	8,749.52	0.00	0.00	0.00
18,500.00	90.03	359.58	9,991.90	8,847.86	175.97	8,849.50	0.00	0.00	0.00
18,600.00	90.03	359.58	9,991.85	8,947.86	175.23	8,949.47	0.00	0.00	0.00
18,700.00	90.03	359.58	9,991.80	9,047.86	174.49	9,049.45	0.00	0.00	0.00
18,800.00	90.03	359.58	9,991.76	9,147.85	173.76	9,149.42	0.00	0.00	0.00
18,900.00	90.03	359.58	9,991.71	9,247.85	173.02	9,249.40	0.00	0.00	0.00
19,000.00	90.03	359.58	9,991.66	9,347.85	172.29	9,349.37	0.00	0.00	0.00
19,100.00	90.03	359.58	9,991.61	9,447.85	171.55	9,449.35	0.00	0.00	0.00
19,200.00	90.03	359.58	9,991.56	9,547.84	170.81	9,549.33	0.00	0.00	0.00
19,300.00	90.03	359.58	9,991.51	9,647.84	170.08	9,649.30	0.00	0.00	0.00
19,400.00	90.03	359.58	9,991.46	9,747.84	169.34	9,749.28	0.00	0.00	0.00
19,500.00	90.03	359.58	9,991.41	9,847.84	168.61	9,849.25	0.00	0.00	0.00
19,600.00	90.03	359.58	9,991.36	9,947.83	167.87	9,949.23	0.00	0.00	0.00
19,700.00	90.03	359.58	9,991.31	10,047.83	167.13	10,049.20	0.00	0.00	0.00
19,800.00	90.03	359.58	9,991.27	10,147.83	166.40	10,149.18	0.00	0.00	0.00
19,900.00	90.03	359.58	9,991.22	10,247.82	165.66	10,249.15	0.00	0.00	0.00
20,000.00	90.03	359.58	9,991.17	10,347.82	164.93	10,349.13	0.00	0.00	0.00
20,100.00	90.03	359.58	9,991.12	10,447.82	164.19	10,449.10	0.00	0.00	0.00
20,200.00	90.03	359.58	9,991.07	10,547.82	163.45	10,549.08	0.00	0.00	0.00
20,300.00	90.03	359.58	9,991.02	10,647.81	162.72	10,649.06	0.00	0.00	0.00
20,400.00	90.03	359.58	9,990.97	10,747.81	161.98	10,749.03	0.00	0.00	0.00
20,500.00	90.03	359.58	9,990.92	10,847.81	161.24	10,849.01	0.00	0.00	0.00
20,545.15	90.03	359.58	9,990.90	10,892.95	160.91	10,894.14	0.00	0.00	0.00

# Oxy Inc.

## Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Tails CC 10_3 Federal Com 312H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2964.90ft
<b>Site:</b>	Tails CC 10_3	<b>North Reference:</b>	Grid
<b>Well:</b>	Tails CC 10_3 Federal Com 312H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permitting Plan		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
PBHL (Tails CC 10_3 - plan hits target center - Point	0.00	0.00	9,990.90	10,892.95	160.91	456,310.10	653,903.60	32° 15' 14.209287 N	103° 58' 9.108320
FTP (Tails CC 10_3 - plan misses target center by 68.56ft at 10081.09ft MD (9936.84 TVD, 438.34 N, 229.40 E) - Point	0.00	0.00	9,995.90	404.63	238.12	445,822.60	653,980.80	32° 13' 30.424072 N	103° 58' 8.623524

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
8,060.00	8,060.00	0.00	0.00	Build 2°/100'
8,560.00	8,557.47	25.71	35.12	Hold 10° Tangent
9,503.18	9,486.32	122.46	167.26	KOP, Build & Turn 10°/100'
10,345.18	9,995.90	693.26	235.99	Landing Point
20,545.15	9,990.90	10,892.95	160.91	TD at 20545.15' MD



Project: PRD NM DIRECTIONAL PLANS (NAD 1983)  
 Site: Tails CC 10\_3  
 Well: Tails CC 10\_3 Federal Com 312H  
 Wellbore: Wellbore #1  
 Design: Permitting Plan

## PROJECT DETAILS: NM DIRECTIONAL PLANS (NAD 1983)

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

System Datum: Mean Sea Level

## WELL DETAILS: Tails CC 10\_3 Federal Com 312H

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
0.00	0.00	445418.00	2938.40 653742.70	32° 13' 26.428185 N	103° 58' 11.411335 W

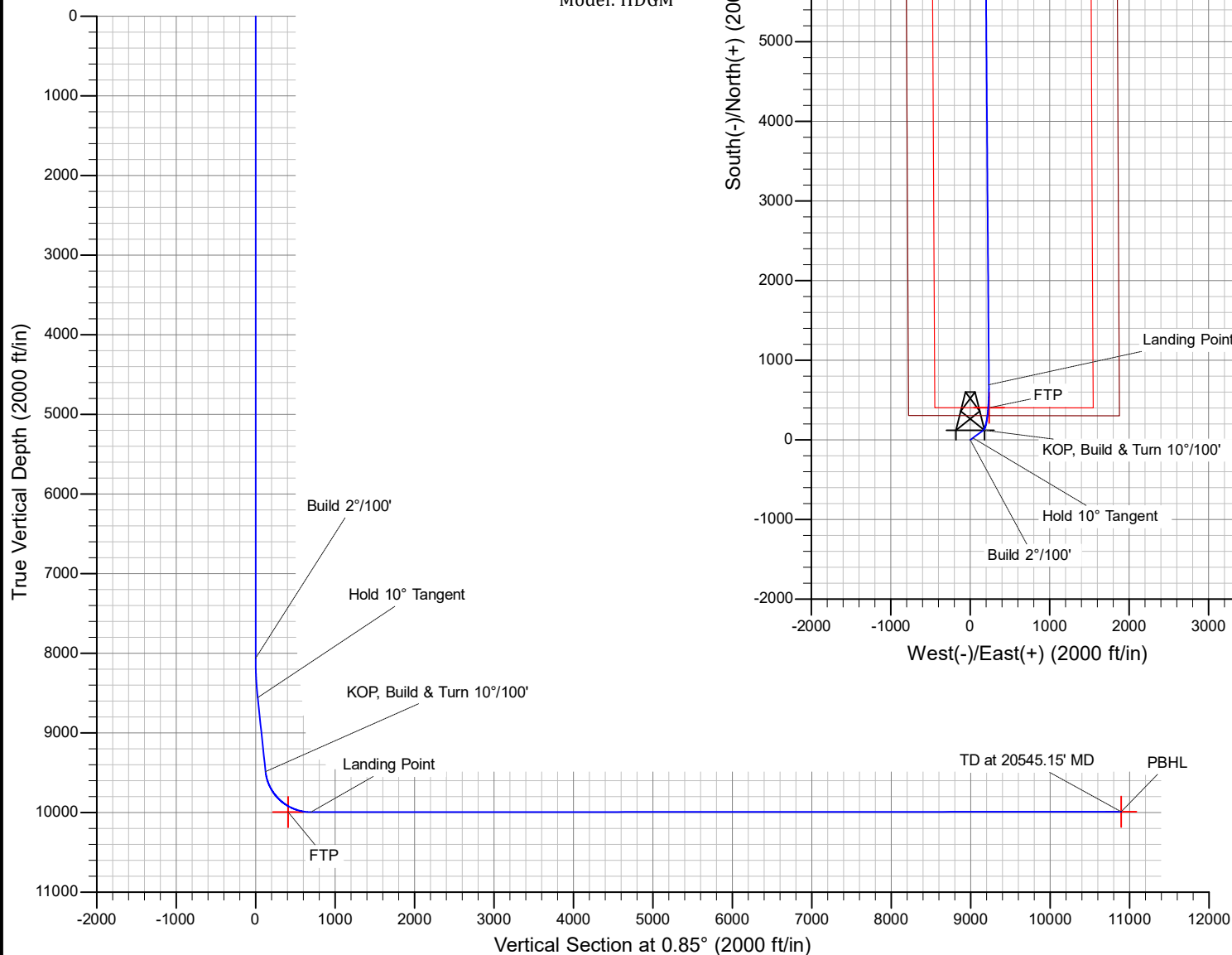
## SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8060.00	0.00	0.00	8060.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
8560.00	10.00	53.79	8557.47	25.71	35.12	2.00	53.79	26.23	Hold 10° Tangent
9503.18	10.00	53.79	9486.32	122.46	167.26	0.00	0.00	124.92	KOP, Build & Turn 10°/100'
10345.17	90.03	359.58	9995.90	693.26	235.99	10.00	-54.62	696.67	Landing Point
20545.15	90.03	359.58	9990.90	10892.95	160.91	0.00	0.00	10894.14	TD at 20545.15' MD



Azimuths to Grid North  
 True North: -0.19°  
 Magnetic North: 6.74°

Magnetic Field  
 Strength: 47887.0nT  
 Dip Angle: 59.93°  
 Date: 8/5/2019  
 Model: HDGM



## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	OXY USA INCORPORATED
<b>LEASE NO.:</b>	NMNM081616
<b>LOCATION:</b>	SECTION 15, T24S, R29E, NMPM
<b>COUNTY:</b>	EDDY COUNTY, NEW MEXICO

<b>WELL NAME &amp; NO.:</b>	TAILS CC 10_3 FED COM 312H
<b>SURFACE HOLE FOOTAGE:</b>	305'/N & 1880'/E
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 1640'/E

COA

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

### A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Owen Mesa Morrow, Cedar Canyon, and Bone Spring** formations. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please 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 **511** 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 fluid filled to meet BLM minimum collapse requirement.**

2. The **9-5/8** inch intermediate casing shall be set at approximately **9388** feet. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

**Option 1 (Single Stage):**

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

**Option 2:**

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

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**
- ❖ In **Medium Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
- ❖ In **Secretary Potash Areas** if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

**Operator has proposed to pump down 10-3/4" X 7-5/8" annulus. Operator must run a CBL or ECHO-METER from TD of the 7-5/8" casing to surface. Submit results to BLM.**

3. The minimum required fill of cement behind the 5-1/2 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).'
- 2.

**Option 1:**

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

**Option 2:**

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

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

##### **Communitization Agreement**

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

##### **Offline Cementing**

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

##### **BOPE Break Testing Variance**

- BOPE Break Testing is ONLY permitted for 5M BOPE or less.
- BOPE Break Testing is NOT permitted to drilling the production hole section.
- While in transfer between wells, the BOPE shall be secured by the hydraulic carrier or cradle.
- Any well control event while drilling require notification to the BLM Petroleum Engineer prior to the commencement of any BOPE Break Testing operations.



- A full BOPE test is required prior to drilling the first deep intermediate hole section. If any subsequent hole interval is deeper than the first, a full BOPE test will be required.
- The BLM is to be contacted (**575-361-2822 Eddy County**) 4 hours prior to BOPE tests.
- As a minimum, a full BOPE test shall be performed at 21-day intervals.
- In the event any repairs or replacement of the BOPE is required, the BOPE shall test as per Onshore Oil and Gas Order No. 2.

## 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)

☒ 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. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
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. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
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: The flex line must meet the requirements of API 16C. 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, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
- 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.

**NMK06092021**

<b>OXY Permian Delaware NM Basin Drilling &amp; Completions Incident Reporting</b> <b>OXY Permian Crisis Team Hotline Notification</b>					
Person	Location	Office Phone	Cell/Mobile Phone	Home Phone	Pager Number
<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 Tramell	Midland	(432) 699-4208	(575) 499-4919		
Rico Munoz	Midland	(432) 699-8366	(432) 803-4116		
Amber DuckWorth	Midland		(832) 966-1879		
Kelley Montgomery- Regulatory Manager	Houston	(713) 366-5716	(832) 454-8137		
Sandra Musallam -Regulatory Lead	Houston	+1 (713) 366-5106	+1 (713) 504-8577		
Bishop, Steve-DOT Pipeline Coordinator	Midland	432-685-5614			

Wilson, Dusty-Safety Advisor	Midland	432-685-5771	(432) 254-2336		
John W Dittrich Eniromental Advisor	Midland		(575) 390-2828		
William (Jack) Calhoun-Environmental Lead	Houston	+713 (350) 4906	(281) 917-8571		
Robert Barrow-Risk Engineer Manager	Houston	(713) 366-5611	(832) 867-5336		
Sarah Holmes-HSE Cordinator	Midland	432-685-5758			
<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			
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			
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(Andre	(432) 523-5545			
Crane Cty Sheriff's Department	Crane, County (Crane)	(432) 558-3571			
Crockett Cty Sheriff's Department	Crockett County (Ozon	(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(Levell	(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 (Abernath	(806) 296-2724			
Midland Cty Sheriff's Department	Midland County (Midla	(432) 688-1277			
Pecos Cty Sheriff's Department	Pecos County (Iraan)	(432) 639-2251			
Reeves Cty Sheriff's Department	Reeves County (Pecos)	(432) 445-4901			
Scurry Cty Sheriff's Department	Scurry County (Snyder)	(325) 573-3551			
Terry Cty Sheriff's Department	Terry County (Brownfi	(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			
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			

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	<b>911</b>			
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			
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			





## **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:      | <ol style="list-style-type: none"> <li>1. On alarm, don escape unit and report to the nearest upwind designated safe briefing / muster area upw</li> <li>2. Check status of personnel (buddy system).</li> <li>3. Secure breathing equipment.</li> <li>4. Await orders from supervisor.</li> </ol>   |
| Drill site manager: | <ol style="list-style-type: none"> <li>1. Don escape unit if necessary and report to nearest upwind designated safe briefing / muster area.</li> <li>2. Coordinate preparations of individuals to return to point of release with tool pusher and driller (using the buddy system).</li> <li>3. Determine H2S concentrations.</li> <li>4. Assess situation and take control measures.</li> </ol> |
| Tool pusher:        | <ol style="list-style-type: none"> <li>1. Don escape unit Report to up nearest upwind designated safe briefing / muster area.</li> <li>2. Coordinate preparation of individuals to return to point of release with tool pusher drill site manager (using the buddy system).</li> <li>3. Determine H2S concentration.</li> <li>4. Assess situation and take control measures.</li> </ol>          |
| Driller:            | <ol style="list-style-type: none"> <li>1. Don escape unit, shut down pumps, continue</li> </ol>  |

- 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 <u>100 std. Ft3*</u>	<u>Physical effects</u>
0.001	<10	00.65	Obvious and unpleasant odor.

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

\*at 15.00 psia and 60'f.

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

1. Written procedures shall be prepared covering safe use of SCBA's in dangerous atmosphere, which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available SCBA.
2. SCBA's shall be inspected frequently at random to insure that they are properly used, cleaned, and maintained.
3. Anyone who may use the SCBA's shall be trained in how to insure proper face-piece to face seal. They shall wear SCBA's in normal air and then wear them in a test atmosphere. (note: such items as facial hair {beard or sideburns} and eyeglasses will not allow proper seal.) Anyone that may be reasonably expected to wear SCBA's should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses or contact lenses.
4. Maintenance and care of SCBA's:
  - a. A program for maintenance and care of SCBA's shall include the following:
    1. Inspection for defects, including leak checks.
    2. Cleaning and disinfecting.
    3. Repair.
    4. Storage.
  - b. Inspection, self-contained breathing apparatus for emergency use shall be inspected monthly.
    1. Fully charged cylinders.
    2. Regulator and warning device operation.
    3. Condition of face piece and connections.
    4. Rubber parts shall be maintained to keep them pliable and prevent deterioration.
  - c. Routinely used SCBA's shall be collected, cleaned and disinfected as frequently as necessary to insure proper protection is provided.
5. Persons assigned tasks that requires use of self-contained breathing equipment shall be certified physically fit (medically cleared) for breathing equipment usage at least annually.
6. SCBA's should be worn when:
  - A. Any employee works near the top or on top of any tank unless test reveals less than 10 ppm of H<sub>2</sub>S.



- B. When breaking out any line where 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



## **Permian Drilling Hydrogen Sulfide Drilling Operations Plan Tails CC 10\_3 Fed Com 312H**

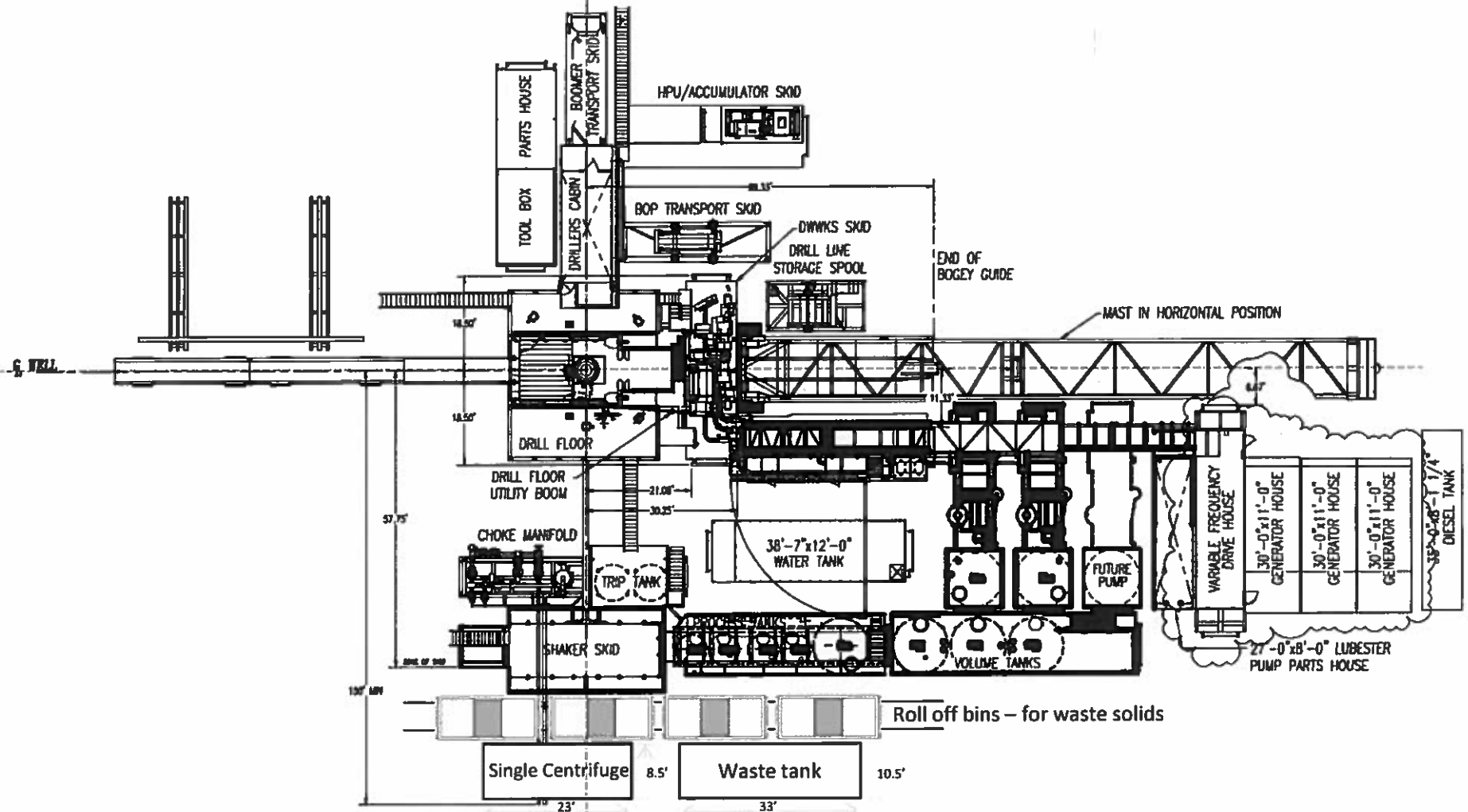
Open drill site. No homes or buildings are near the proposed location.

### **1. Escape**

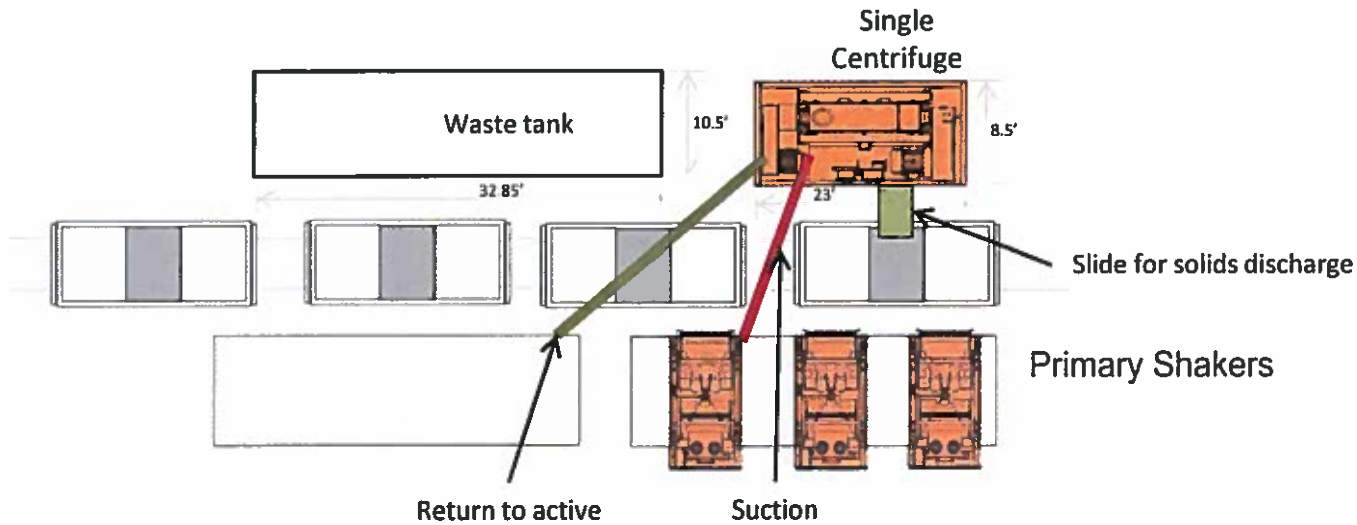
Personnel shall escape upwind of wellbore in the event of an emergency gas release. Escape can take place through the lease road on the Southeast side of the location. Personnel need to move to a safe distance and block the entrance to location. If the primary route is not an option due to the wind direction,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



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



Oxy



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

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**District II**  
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**District III**  
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**District IV**  
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**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

COMMENTS  
  
Action 46577

COMMENTS

Operator: OXY USA INC P.O. Box 4294 Houston, TX 772104294	OGRID:
	16696
	Action Number:
	46577
Action Type:	
[C-101] BLM - Federal/Indian Land Lease (Form 3160-3)	

COMMENTS

Created By	Comment	Comment Date
kpickford	KP GEO Review 9/9/2021	9/9/2021

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CONDITIONS

Action 46577

**CONDITIONS**

Operator: OXY USA INC P.O. Box 4294 Houston, TX 772104294	OGRID: 16696
	Action Number: 46577
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

**CONDITIONS**

Created By	Condition	Condition Date
kpickford	Notify OCD 24 hours prior to casing & cement	9/9/2021
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	9/9/2021
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	9/9/2021
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	9/9/2021
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	9/9/2021