

U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

<b>Well Name:</b> HEADS CC 9-4 FEDERAL COM	<b>Well Location:</b> T24S / R29E / SEC 9 / SWSW / 32.225542 / -103.994966	<b>County or Parish/State:</b> EDDY / NM
<b>Well Number:</b> 33H	<b>Type of Well:</b> OIL WELL	<b>Allottee or Tribe Name:</b>
<b>Lease Number:</b> NMNM099034, NMNM99034	<b>Unit or CA Name:</b>	<b>Unit or CA Number:</b>
<b>US Well Number:</b> 3001547193	<b>Well Status:</b> Drilling Well	<b>Operator:</b> OXY USA INCORPORATED

**Notice of Intent**

**Sundry ID:** 2673313

**Type of Submission:** Notice of Intent

**Type of Action:** APD Change

**Date Sundry Submitted:** 05/25/2022

**Time Sundry Submitted:** 02:05

**Date proposed operation will begin:** 06/17/2022

**Procedure Description:** 6/8/22 Drill Plan Change- An 8-3/4" hole size will be drilled from the ICP to the landing point to resolve the 0.422" clearance concern. OXY USA Inc. respectfully requests approval to amend the subject well APD with the following changes: 1280 acre horizontal spacing unit, BHL well spacing, casing, cement, mud, BOP, wellhead, and directional plan. The following documents are attached: Amended C-102, directional survey, directional plot, wellhead diagram, drill plan, and casing data sheets.

**NOI Attachments**

**Procedure Description**

- HeadsCC9\_4FederalCom33H\_TNSWedge461\_5.500in\_20.00\_\_P110CY\_20220524143439.pdf
- HeadsCC9\_4FederalCom33H\_TNSWedge461\_7.000in\_32.00\_\_P110CY\_20220524143439.pdf
- HeadsCC9\_4FederalCom33H\_TNSWedge441\_5.500in\_20.00\_\_P110CY\_20220524143439.pdf
- HeadsCC9\_4FederalCom33H\_TMKUPTORQDQW\_5.500in\_20.00\_\_P110CY\_20220524143439.pdf
- HeadsCC9\_4FederalCom33H\_TNSWedge425\_5.500in\_20.00\_\_P110CY\_20220524143439.pdf
- HeadsCC9\_4FederalCom33H\_10K\_3\_String\_Adapt\_20220524143436.pdf
- HeadsCC9\_4FederalCom33H\_DirectPlan\_20220524143436.pdf
- HeadsCC9\_4FederalCom33H\_DrillPlan\_20220524143436.pdf

**Well Name:** HEADS CC 9-4 FEDERAL COM

**Well Location:** T24S / R29E / SEC 9 / SWSW / 32.225542 / -103.994966

**County or Parish/State:** EDDY 7 NM

**Well Number:** 33H

**Type of Well:** OIL WELL

**Allottee or Tribe Name:**

**Lease Number:** NMNM099034, NMNM99034

**Unit or CA Name:**

**Unit or CA Number:**

**US Well Number:** 3001547193

**Well Status:** Drilling Well

**Operator:** OXY USA INCORPORATED

HeadsCC9\_4FederalCom33H\_TMKUPDQX\_5.500in\_20.00\_\_P110\_20220524143436.pdf

HeadsCC9\_4FederalCom33H\_DirectPlot\_20220524143436.pdf

22\_18\_HEADS\_CC\_9\_4\_FED\_COM\_33H\_C102\_FLAT\_20220524143436.pdf

### Conditions of Approval

#### Additional

Heads\_CC\_9\_4\_Federal\_Com\_33H\_DrillingCOA\_Sundry\_2673313\_20220609111747.pdf

### Operator

*I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a*

**Operator Electronic Signature:** STEPHEN JANACEK

**Signed on:** JUN 08, 2022 09:25 AM

**Name:** OXY USA INCORPORATED

**Title:** Regulatory Engineer

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

**City:** Houston **State:** TX

**Phone:** (713) 497-2417

**Email address:** stephen\_janacek@oxy.com

### Field

**Representative Name:**

**Street Address:**

**City:** **State:** **Zip:**

**Phone:**

**Email address:**

### BLM Point of Contact

**BLM POC Name:** NDUNGU KAMAU

**BLM POC Title:** Petroleum Engineering Technician

**BLM POC Phone:** 5752345938

**BLM POC Email Address:** nkamau@blm.gov

**Disposition:** Approved

**Disposition Date:** 06/30/2022

**Signature:** Chris Walls

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

*ALL PREVIOUS COAs STILL APPLY.*

<b>OPERATOR'S NAME:</b>	OXY USA Inc.
<b>LEASE NO.:</b>	NMNM099034
<b>LOCATION:</b>	Section 9, T.24 S., R.29 E., NMP
<b>COUNTY:</b>	Eddy County, New Mexico

<b>WELL NAME &amp; NO.:</b>	HEADS CC 9-4 FEDERAL COM / 31H
<b>SURFACE HOLE FOOTAGE:</b>	250'/S & 880'/W
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 330'/W

<b>WELL NAME &amp; NO.:</b>	HEADS CC 9-4 FEDERAL COM / 32H
<b>SURFACE HOLE FOOTAGE:</b>	250'/S & 880'/W
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 330'/W

<b>WELL NAME &amp; NO.:</b>	HEADS CC 9-4 FEDERAL COM / 33H
<b>SURFACE HOLE FOOTAGE:</b>	250'/S & 880'/W
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 330'/W

<b>WELL NAME &amp; NO.:</b>	HEADS CC 9-4 FEDERAL COM / 36H
<b>SURFACE HOLE FOOTAGE:</b>	250'/S & 880'/W
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 330'/W

<b>WELL NAME &amp; NO.:</b>	HEADS CC 9-4 FEDERAL COM / 38H
<b>SURFACE HOLE FOOTAGE:</b>	250'/S & 880'/W
<b>BOTTOM HOLE FOOTAGE:</b>	20'/N & 330'/W

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input checked="" type="radio"/> Medium	<input type="radio"/> High
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. CASING**

**Casing Design:**

1. The **13-3/8** inch surface casing shall be set at approximately **579** 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 **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

**Intermediate casing must be kept 1/3 fluid filled to meet BLM minimum collapse requirement.**

2. The **9-5/8** inch intermediate casing shall be set at approximately **9362** 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.

**Operator has proposed to pump down 13-3/8" X 9-5/8" annulus. Operator must run a CBL or Echo-meter from TD of the 9-5/8" casing to surface. Submit results to BLM.**

3. The minimum required fill of cement behind the 7 x 5-1/2 inch production casing and a 8-3/4 x 8-1/2 inch production hole is:

**Option 1 (Single Stage):**

- Cement should tie-back at least **200 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 **200 feet** into previous casing string. Operator shall provide method of verification.

**Operator has proposed to pump down 9-5/8" X 7 x 5-1/2" annulus. Operator must run a CBL or Echo-meter from TD of the 7 x 5-1/2" casing to surface. Submit results to BLM.**

**B. SPECIAL REQUIREMENT (S)**

**BOPE Break Testing Variance (Note: For 5M BOPE or less)**

- 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.

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>30-015-47193</b>		Pool Code <b>98220</b>	Pool Name <b>PURPLE SAGE WOLFCAMP (GAS)</b>
Property Code <b>328290</b>	Property Name <b>HEADS CC 9_4 FEDERAL COM</b>		Well Number <b>33H</b>
OGRID No. <b>16696</b>	Operator Name <b>OXY USA INC.</b>		Elevation <b>2926.9'</b>

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	9	24-S	29-E		250	SOUTH	950	WEST	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
3	4	24-S	29-E		20	NORTH	2160	WEST	EDDY

Dedicated Acres <b>1280</b>	Joint or Infill <b>Y</b>	Consolidation Code	Order No.
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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

**NAD 83 PROPOSED BOTTOM HOLE LOCATION**  
Y=456299.0 N  
X=647130.0 E  
LAT.=32.253978° N  
LONG.=103.991108° W

**LTP NAD 83**  
100' FNL & 2160' FWL  
Y=456219.0 N  
X=647130.3 E  
LAT.=32.253758° N  
LONG.=103.991108° W

POINT LEGEND NAD 83	Y	X
1	456311.0	644969.9
2	453660.3	644983.8
3	451006.6	644997.4
4	448351.8	645008.9
5	445695.4	645021.1
6	445710.8	647666.6
7	445726.2	650312.0
8	448382.0	650298.1
9	451034.0	650284.7
10	453688.3	650273.5
11	456330.3	650262.8
12	456320.9	647615.9
13	451020.7	647641.0

**FTP NAD 83**  
100' FSL & 2160' FWL  
Y=445807.9 N  
X=647180.6 E  
LAT.=32.225139° N  
LONG.=103.991053° W

**KOP NAD 83**  
50' FSL & 2160' FWL  
Y=445757.9 N  
X=647180.9 E  
LAT.=32.225001° N  
LONG.=103.991052° W

**NAD 83 SURFACE LOCATION**  
Y=445950.90 N  
X=645969.9 E  
LAT.=32.225542° N  
LONG.=103.994966° W

**NAD 27 PROPOSED BOTTOM HOLE LOCATION**  
Y=456239.9 N  
X=605946.4 E  
LAT.=32.253855° N  
LONG.=103.990618° W

**LTP NAD 27**  
100' FNL & 2160' FWL  
Y=456159.9 N  
X=605946.8 E  
LAT.=32.253636° N  
LONG.=103.990618° W

POINT LEGEND NAD 27	Y	X
1	456251.8	603786.3
2	453601.2	603800.0
3	450947.8	603813.7
4	448292.8	603825.1
5	445636.4	603837.3
6	445651.8	606482.7
7	445667.2	609126.2
8	448323.0	609114.4
9	450974.9	609101.0
10	453629.2	609089.8
11	456271.1	609079.2
12	456261.7	606432.3
13	450961.7	606457.3

**FTP NAD 27**  
100' FSL & 2160' FWL  
Y=445749.0 N  
X=605996.8 E  
LAT.=32.225016° N  
LONG.=103.990564° W

**KOP NAD 27**  
50' FSL & 2160' FWL  
Y=445699.0 N  
X=605997.0 E  
LAT.=32.224879° N  
LONG.=103.990563° W

**NAD 27 SURFACE LOCATION**  
Y=445891.9 N  
X=604786.1 E  
LAT.=32.225420° N  
LONG.=103.994477° W

**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.

*Stephen Janacek*      5/23/22  
Signature      Date

**STEPHEN JANACEK**  
Printed Name

**STEPHEN\_JANACEK@OXY.COM**  
E-mail Address


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**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.

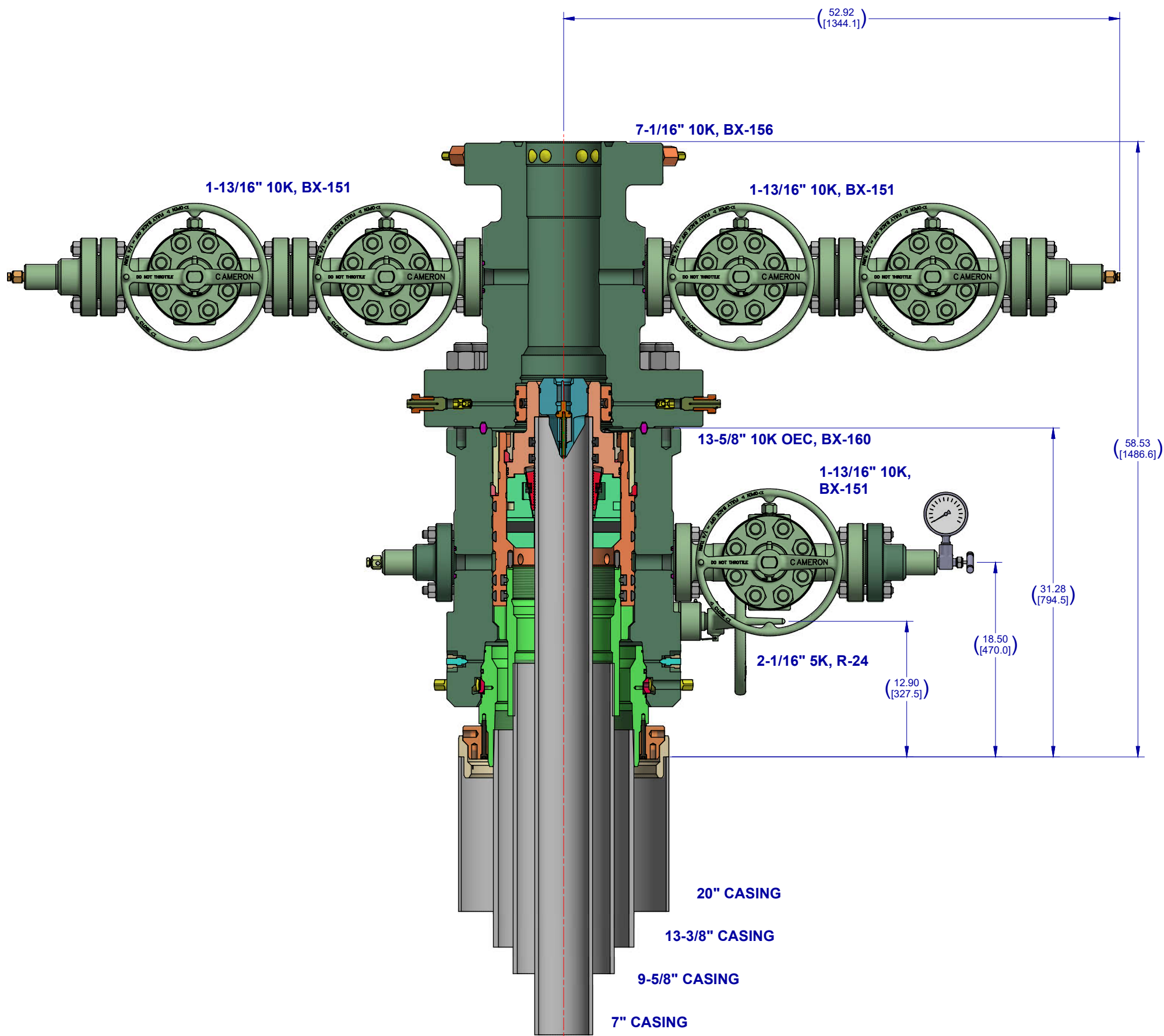
MARCH 5, 2019  
Date of Survey

Signature & Seal of Professional Surveyor




*Chad Harcrow*      1/20/22  
Certificate No. CHAD HARCROW      17777  
W.O. #22-18      DRAWN BY: WN





**Notes:**

1. THIS IS A PROPOSAL DRAWING AND DIMENSIONS SHOWN ARE SUBJECT TO CHANGE DURING THE FINAL DESIGN PROCESS.
2. DIGITALLY ENABLED SOLUTIONS, CHOKES AND ESD'S AVAILABLE ON REQUEST

CONFIDENTIAL			
SURFACE TREATMENT	DO NOT SCALE		SURFACE SYSTEMS
DRAWN BY: D. GOTTUNG	DATE 18 Feb 22	 A Schlumberger Company	OXY 13-5/8" 10K ADAPT 20" X 13-3/8" X 9-5/8" X 7"
CHECKED BY: D. GOTTUNG	DATE 18 Feb 22		
MATERIAL & HEAT TREAT	APPROVED BY: D. GOTTUNG	DATE 18 Feb 22	
ESTIMATED WEIGHT: 6115.068 LBS 2773.748 KG	INITIAL USE B/M:	SHEET 1 of 1	REV: 01 INVENTOR - B
			SD-053434-94-12



# **OXY**

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

**Heads CC 9\_4**

**Heads CC 9\_4 Federal Com 33H**

**Wellbore #1**

**Plan: Permitting Plan**

## **Standard Planning Report**

**19 May, 2022**

## OXY Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Heads CC 9_4 Federal Com 33H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Site:</b>	Heads CC 9_4	<b>North Reference:</b>	Grid
<b>Well:</b>	Heads CC 9_4 Federal Com 33H	<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

<b>Site</b> Heads CC 9_4			
<b>Site Position:</b>		<b>Northing:</b>	446,198.60 usft
<b>From:</b>	Map	<b>Easting:</b>	648,677.50 usft
<b>Position Uncertainty:</b>	2.00 ft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	32.226200
		<b>Longitude:</b>	-103.986208
		<b>Grid Convergence:</b>	0.19 °

<b>Well</b> Heads CC 9_4 Federal Com 33H			
<b>Well Position</b>	<b>+N/-S</b>	-247.72 ft	<b>Northing:</b> 445,950.90 usft
	<b>+E/-W</b>	-2,707.82 ft	<b>Easting:</b> 645,969.90 usft
<b>Position Uncertainty</b>		1.00 ft	<b>Wellhead Elevation:</b> 0.00 ft
			<b>Latitude:</b> 32.225543
			<b>Longitude:</b> -103.994967
			<b>Ground Level:</b> 2,926.90 ft

<b>Wellbore</b> Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
		7/18/2019	6.97	59.95	47,890.60000000
	HDGM_FILE	2/17/2021	6.77	59.90	47,732.80000000

<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	6.40

<b>Plan Survey Tool Program</b>		<b>Date</b> 5/19/2022		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,088.34 Permitting Plan (Wellbore #1)	B001Mb_MWD+HRGM OWSG MWD + HRGM	

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,565.00	0.00	0.00	3,565.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,964.77	14.00	123.43	4,950.88	-93.73	141.99	1.00	1.00	0.00	123.43	
9,616.81	14.00	123.43	9,464.78	-713.66	1,081.07	0.00	0.00	0.00	0.00	
10,596.19	90.23	359.72	10,101.00	-143.01	1,210.80	10.00	7.78	-12.63	-122.87	FTP (Heads CC 9_4
21,088.34	90.23	359.72	10,059.00	10,348.93	1,160.19	0.00	0.00	0.00	0.00	PBHL (Heads CC

# OXY

## Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Heads CC 9_4 Federal Com 33H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2953.40ft
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<b>Well:</b>	Heads CC 9_4 Federal Com 33H	<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
3,565.00	0.00	0.00	3,565.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.35	123.43	3,600.00	-0.06	0.09	-0.05	1.00	1.00	0.00
3,700.00	1.35	123.43	3,699.99	-0.88	1.33	-0.72	1.00	1.00	0.00
3,800.00	2.35	123.43	3,799.93	-2.65	4.02	-2.19	1.00	1.00	0.00
3,900.00	3.35	123.43	3,899.81	-5.39	8.17	-4.45	1.00	1.00	0.00
4,000.00	4.35	123.43	3,999.58	-9.09	13.77	-7.50	1.00	1.00	0.00
4,100.00	5.35	123.43	4,099.22	-13.75	20.83	-11.34	1.00	1.00	0.00
4,200.00	6.35	123.43	4,198.70	-19.37	29.34	-15.98	1.00	1.00	0.00
4,300.00	7.35	123.43	4,297.99	-25.94	39.29	-21.40	1.00	1.00	0.00
4,400.00	8.35	123.43	4,397.05	-33.46	50.69	-27.61	1.00	1.00	0.00
4,500.00	9.35	123.43	4,495.86	-41.94	63.53	-34.60	1.00	1.00	0.00
4,600.00	10.35	123.43	4,594.38	-51.36	77.80	-42.37	1.00	1.00	0.00
4,700.00	11.35	123.43	4,692.59	-61.73	93.51	-50.93	1.00	1.00	0.00
4,800.00	12.35	123.43	4,790.46	-73.05	110.65	-60.26	1.00	1.00	0.00
4,900.00	13.35	123.43	4,887.95	-85.30	129.21	-70.37	1.00	1.00	0.00
4,964.77	14.00	123.43	4,950.88	-93.73	141.99	-77.33	1.00	1.00	0.00
5,000.00	14.00	123.43	4,985.07	-98.43	149.10	-81.20	0.00	0.00	0.00
5,100.00	14.00	123.43	5,082.10	-111.75	169.29	-92.20	0.00	0.00	0.00
5,200.00	14.00	123.43	5,179.13	-125.08	189.47	-103.19	0.00	0.00	0.00

# OXY

## Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Heads CC 9_4 Federal Com 33H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Site:</b>	Heads CC 9_4	<b>North Reference:</b>	Grid
<b>Well:</b>	Heads CC 9_4 Federal Com 33H	<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)	
5,300.00	14.00	123.43	5,276.16	-138.41	209.66	-114.19	0.00	0.00	0.00	
5,400.00	14.00	123.43	5,373.19	-151.73	229.85	-125.18	0.00	0.00	0.00	
5,500.00	14.00	123.43	5,470.22	-165.06	250.03	-136.17	0.00	0.00	0.00	
5,600.00	14.00	123.43	5,567.25	-178.38	270.22	-147.17	0.00	0.00	0.00	
5,700.00	14.00	123.43	5,664.29	-191.71	290.40	-158.16	0.00	0.00	0.00	
5,800.00	14.00	123.43	5,761.32	-205.04	310.59	-169.16	0.00	0.00	0.00	
5,900.00	14.00	123.43	5,858.35	-218.36	330.78	-180.15	0.00	0.00	0.00	
6,000.00	14.00	123.43	5,955.38	-231.69	350.96	-191.14	0.00	0.00	0.00	
6,100.00	14.00	123.43	6,052.41	-245.01	371.15	-202.14	0.00	0.00	0.00	
6,200.00	14.00	123.43	6,149.44	-258.34	391.34	-213.13	0.00	0.00	0.00	
6,300.00	14.00	123.43	6,246.47	-271.67	411.52	-224.13	0.00	0.00	0.00	
6,400.00	14.00	123.43	6,343.50	-284.99	431.71	-235.12	0.00	0.00	0.00	
6,500.00	14.00	123.43	6,440.53	-298.32	451.90	-246.11	0.00	0.00	0.00	
6,600.00	14.00	123.43	6,537.56	-311.64	472.08	-257.11	0.00	0.00	0.00	
6,700.00	14.00	123.43	6,634.59	-324.97	492.27	-268.10	0.00	0.00	0.00	
6,800.00	14.00	123.43	6,731.62	-338.30	512.45	-279.10	0.00	0.00	0.00	
6,900.00	14.00	123.43	6,828.65	-351.62	532.64	-290.09	0.00	0.00	0.00	
7,000.00	14.00	123.43	6,925.68	-364.95	552.83	-301.09	0.00	0.00	0.00	
7,100.00	14.00	123.43	7,022.71	-378.27	573.01	-312.08	0.00	0.00	0.00	
7,200.00	14.00	123.43	7,119.74	-391.60	593.20	-323.07	0.00	0.00	0.00	
7,300.00	14.00	123.43	7,216.77	-404.93	613.39	-334.07	0.00	0.00	0.00	
7,400.00	14.00	123.43	7,313.80	-418.25	633.57	-345.06	0.00	0.00	0.00	
7,500.00	14.00	123.43	7,410.84	-431.58	653.76	-356.06	0.00	0.00	0.00	
7,600.00	14.00	123.43	7,507.87	-444.90	673.95	-367.05	0.00	0.00	0.00	
7,700.00	14.00	123.43	7,604.90	-458.23	694.13	-378.04	0.00	0.00	0.00	
7,800.00	14.00	123.43	7,701.93	-471.55	714.32	-389.04	0.00	0.00	0.00	
7,900.00	14.00	123.43	7,798.96	-484.88	734.50	-400.03	0.00	0.00	0.00	
8,000.00	14.00	123.43	7,895.99	-498.21	754.69	-411.03	0.00	0.00	0.00	
8,100.00	14.00	123.43	7,993.02	-511.53	774.88	-422.02	0.00	0.00	0.00	
8,200.00	14.00	123.43	8,090.05	-524.86	795.06	-433.01	0.00	0.00	0.00	
8,300.00	14.00	123.43	8,187.08	-538.18	815.25	-444.01	0.00	0.00	0.00	
8,400.00	14.00	123.43	8,284.11	-551.51	835.44	-455.00	0.00	0.00	0.00	
8,500.00	14.00	123.43	8,381.14	-564.84	855.62	-466.00	0.00	0.00	0.00	
8,600.00	14.00	123.43	8,478.17	-578.16	875.81	-476.99	0.00	0.00	0.00	
8,700.00	14.00	123.43	8,575.20	-591.49	896.00	-487.98	0.00	0.00	0.00	
8,800.00	14.00	123.43	8,672.23	-604.81	916.18	-498.98	0.00	0.00	0.00	
8,900.00	14.00	123.43	8,769.26	-618.14	936.37	-509.97	0.00	0.00	0.00	
9,000.00	14.00	123.43	8,866.29	-631.47	956.55	-520.97	0.00	0.00	0.00	
9,100.00	14.00	123.43	8,963.32	-644.79	976.74	-531.96	0.00	0.00	0.00	
9,200.00	14.00	123.43	9,060.35	-658.12	996.93	-542.95	0.00	0.00	0.00	
9,300.00	14.00	123.43	9,157.39	-671.44	1,017.11	-553.95	0.00	0.00	0.00	
9,400.00	14.00	123.43	9,254.42	-684.77	1,037.30	-564.94	0.00	0.00	0.00	
9,500.00	14.00	123.43	9,351.45	-698.10	1,057.49	-575.94	0.00	0.00	0.00	
9,600.00	14.00	123.43	9,448.48	-711.42	1,077.67	-586.93	0.00	0.00	0.00	
9,616.81	14.00	123.43	9,464.78	-713.66	1,081.07	-588.78	0.00	0.00	0.00	
9,700.00	11.74	86.75	9,546.02	-718.73	1,097.94	-591.94	10.00	-2.72	-44.09	
9,800.00	15.76	47.08	9,643.34	-708.88	1,118.09	-579.90	10.00	4.03	-39.67	
9,900.00	23.59	28.14	9,737.52	-681.92	1,137.53	-550.94	10.00	7.82	-18.94	
10,000.00	32.58	18.72	9,825.70	-638.67	1,155.65	-505.94	10.00	8.99	-9.42	
10,100.00	41.99	13.10	9,905.20	-580.45	1,171.92	-446.27	10.00	9.41	-5.62	
10,200.00	51.59	9.24	9,973.60	-509.02	1,185.82	-373.74	10.00	9.60	-3.86	
10,300.00	61.29	6.30	10,028.83	-426.55	1,196.95	-290.54	10.00	9.70	-2.94	
10,400.00	71.03	3.86	10,069.20	-335.55	1,204.97	-199.22	10.00	9.75	-2.44	
10,500.00	80.81	1.69	10,093.50	-238.79	1,209.62	-102.54	10.00	9.78	-2.17	
10,596.19	90.23	359.72	10,101.00	-143.01	1,210.80	-7.23	10.00	9.79	-2.05	

## OXY Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Heads CC 9_4 Federal Com 33H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Site:</b>	Heads CC 9_4	<b>North Reference:</b>	Grid
<b>Well:</b>	Heads CC 9_4 Federal Com 33H	<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)
10,600.00	90.23	359.72	10,100.98	-139.21	1,210.78	-3.45	0.00	0.00	0.00
10,700.00	90.23	359.72	10,100.58	-39.21	1,210.30	95.87	0.00	0.00	0.00
10,800.00	90.23	359.72	10,100.18	60.79	1,209.81	195.20	0.00	0.00	0.00
10,900.00	90.23	359.72	10,099.78	160.79	1,209.33	294.52	0.00	0.00	0.00
11,000.00	90.23	359.72	10,099.38	260.79	1,208.85	393.84	0.00	0.00	0.00
11,100.00	90.23	359.72	10,098.98	360.78	1,208.37	493.16	0.00	0.00	0.00
11,200.00	90.23	359.72	10,098.58	460.78	1,207.89	592.48	0.00	0.00	0.00
11,300.00	90.23	359.72	10,098.18	560.78	1,207.40	691.81	0.00	0.00	0.00
11,400.00	90.23	359.72	10,097.78	660.78	1,206.92	791.13	0.00	0.00	0.00
11,500.00	90.23	359.72	10,097.38	760.78	1,206.44	890.45	0.00	0.00	0.00
11,600.00	90.23	359.72	10,096.98	860.77	1,205.96	989.77	0.00	0.00	0.00
11,700.00	90.23	359.72	10,096.58	960.77	1,205.47	1,089.09	0.00	0.00	0.00
11,800.00	90.23	359.72	10,096.18	1,060.77	1,204.99	1,188.41	0.00	0.00	0.00
11,900.00	90.23	359.72	10,095.78	1,160.77	1,204.51	1,287.74	0.00	0.00	0.00
12,000.00	90.23	359.72	10,095.38	1,260.77	1,204.03	1,387.06	0.00	0.00	0.00
12,100.00	90.23	359.72	10,094.98	1,360.76	1,203.54	1,486.38	0.00	0.00	0.00
12,200.00	90.23	359.72	10,094.58	1,460.76	1,203.06	1,585.70	0.00	0.00	0.00
12,300.00	90.23	359.72	10,094.18	1,560.76	1,202.58	1,685.02	0.00	0.00	0.00
12,400.00	90.23	359.72	10,093.78	1,660.76	1,202.10	1,784.34	0.00	0.00	0.00
12,500.00	90.23	359.72	10,093.38	1,760.76	1,201.62	1,883.67	0.00	0.00	0.00
12,600.00	90.23	359.72	10,092.98	1,860.75	1,201.13	1,982.99	0.00	0.00	0.00
12,700.00	90.23	359.72	10,092.58	1,960.75	1,200.65	2,082.31	0.00	0.00	0.00
12,800.00	90.23	359.72	10,092.18	2,060.75	1,200.17	2,181.63	0.00	0.00	0.00
12,900.00	90.23	359.72	10,091.78	2,160.75	1,199.69	2,280.95	0.00	0.00	0.00
13,000.00	90.23	359.72	10,091.38	2,260.75	1,199.20	2,380.28	0.00	0.00	0.00
13,100.00	90.23	359.72	10,090.98	2,360.74	1,198.72	2,479.60	0.00	0.00	0.00
13,200.00	90.23	359.72	10,090.58	2,460.74	1,198.24	2,578.92	0.00	0.00	0.00
13,300.00	90.23	359.72	10,090.18	2,560.74	1,197.76	2,678.24	0.00	0.00	0.00
13,400.00	90.23	359.72	10,089.78	2,660.74	1,197.27	2,777.56	0.00	0.00	0.00
13,500.00	90.23	359.72	10,089.38	2,760.74	1,196.79	2,876.88	0.00	0.00	0.00
13,600.00	90.23	359.72	10,088.98	2,860.73	1,196.31	2,976.21	0.00	0.00	0.00
13,700.00	90.23	359.72	10,088.58	2,960.73	1,195.83	3,075.53	0.00	0.00	0.00
13,800.00	90.23	359.72	10,088.18	3,060.73	1,195.35	3,174.85	0.00	0.00	0.00
13,900.00	90.23	359.72	10,087.78	3,160.73	1,194.86	3,274.17	0.00	0.00	0.00
14,000.00	90.23	359.72	10,087.37	3,260.73	1,194.38	3,373.49	0.00	0.00	0.00
14,100.00	90.23	359.72	10,086.97	3,360.73	1,193.90	3,472.81	0.00	0.00	0.00
14,200.00	90.23	359.72	10,086.57	3,460.72	1,193.42	3,572.14	0.00	0.00	0.00
14,300.00	90.23	359.72	10,086.17	3,560.72	1,192.93	3,671.46	0.00	0.00	0.00
14,400.00	90.23	359.72	10,085.77	3,660.72	1,192.45	3,770.78	0.00	0.00	0.00
14,500.00	90.23	359.72	10,085.37	3,760.72	1,191.97	3,870.10	0.00	0.00	0.00
14,600.00	90.23	359.72	10,084.97	3,860.72	1,191.49	3,969.42	0.00	0.00	0.00
14,700.00	90.23	359.72	10,084.57	3,960.71	1,191.00	4,068.75	0.00	0.00	0.00
14,800.00	90.23	359.72	10,084.17	4,060.71	1,190.52	4,168.07	0.00	0.00	0.00
14,900.00	90.23	359.72	10,083.77	4,160.71	1,190.04	4,267.39	0.00	0.00	0.00
15,000.00	90.23	359.72	10,083.37	4,260.71	1,189.56	4,366.71	0.00	0.00	0.00
15,100.00	90.23	359.72	10,082.97	4,360.71	1,189.08	4,466.03	0.00	0.00	0.00
15,200.00	90.23	359.72	10,082.57	4,460.70	1,188.59	4,565.35	0.00	0.00	0.00
15,300.00	90.23	359.72	10,082.17	4,560.70	1,188.11	4,664.68	0.00	0.00	0.00
15,400.00	90.23	359.72	10,081.77	4,660.70	1,187.63	4,764.00	0.00	0.00	0.00
15,500.00	90.23	359.72	10,081.37	4,760.70	1,187.15	4,863.32	0.00	0.00	0.00
15,600.00	90.23	359.72	10,080.97	4,860.70	1,186.66	4,962.64	0.00	0.00	0.00
15,700.00	90.23	359.72	10,080.57	4,960.69	1,186.18	5,061.96	0.00	0.00	0.00
15,800.00	90.23	359.72	10,080.17	5,060.69	1,185.70	5,161.29	0.00	0.00	0.00
15,900.00	90.23	359.72	10,079.77	5,160.69	1,185.22	5,260.61	0.00	0.00	0.00
16,000.00	90.23	359.72	10,079.37	5,260.69	1,184.73	5,359.93	0.00	0.00	0.00

## OXY Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Heads CC 9_4 Federal Com 33H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Site:</b>	Heads CC 9_4	<b>North Reference:</b>	Grid
<b>Well:</b>	Heads CC 9_4 Federal Com 33H	<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)
16,100.00	90.23	359.72	10,078.97	5,360.69	1,184.25	5,459.25	0.00	0.00	0.00
16,200.00	90.23	359.72	10,078.57	5,460.68	1,183.77	5,558.57	0.00	0.00	0.00
16,300.00	90.23	359.72	10,078.17	5,560.68	1,183.29	5,657.89	0.00	0.00	0.00
16,400.00	90.23	359.72	10,077.77	5,660.68	1,182.81	5,757.22	0.00	0.00	0.00
16,500.00	90.23	359.72	10,077.37	5,760.68	1,182.32	5,856.54	0.00	0.00	0.00
16,600.00	90.23	359.72	10,076.97	5,860.68	1,181.84	5,955.86	0.00	0.00	0.00
16,700.00	90.23	359.72	10,076.57	5,960.67	1,181.36	6,055.18	0.00	0.00	0.00
16,800.00	90.23	359.72	10,076.17	6,060.67	1,180.88	6,154.50	0.00	0.00	0.00
16,900.00	90.23	359.72	10,075.77	6,160.67	1,180.39	6,253.82	0.00	0.00	0.00
17,000.00	90.23	359.72	10,075.37	6,260.67	1,179.91	6,353.15	0.00	0.00	0.00
17,100.00	90.23	359.72	10,074.97	6,360.67	1,179.43	6,452.47	0.00	0.00	0.00
17,200.00	90.23	359.72	10,074.57	6,460.66	1,178.95	6,551.79	0.00	0.00	0.00
17,300.00	90.23	359.72	10,074.16	6,560.66	1,178.46	6,651.11	0.00	0.00	0.00
17,400.00	90.23	359.72	10,073.76	6,660.66	1,177.98	6,750.43	0.00	0.00	0.00
17,500.00	90.23	359.72	10,073.36	6,760.66	1,177.50	6,849.76	0.00	0.00	0.00
17,600.00	90.23	359.72	10,072.96	6,860.66	1,177.02	6,949.08	0.00	0.00	0.00
17,700.00	90.23	359.72	10,072.56	6,960.65	1,176.54	7,048.40	0.00	0.00	0.00
17,800.00	90.23	359.72	10,072.16	7,060.65	1,176.05	7,147.72	0.00	0.00	0.00
17,900.00	90.23	359.72	10,071.76	7,160.65	1,175.57	7,247.04	0.00	0.00	0.00
18,000.00	90.23	359.72	10,071.36	7,260.65	1,175.09	7,346.36	0.00	0.00	0.00
18,100.00	90.23	359.72	10,070.96	7,360.65	1,174.61	7,445.69	0.00	0.00	0.00
18,200.00	90.23	359.72	10,070.56	7,460.64	1,174.12	7,545.01	0.00	0.00	0.00
18,300.00	90.23	359.72	10,070.16	7,560.64	1,173.64	7,644.33	0.00	0.00	0.00
18,400.00	90.23	359.72	10,069.76	7,660.64	1,173.16	7,743.65	0.00	0.00	0.00
18,500.00	90.23	359.72	10,069.36	7,760.64	1,172.68	7,842.97	0.00	0.00	0.00
18,600.00	90.23	359.72	10,068.96	7,860.64	1,172.19	7,942.29	0.00	0.00	0.00
18,700.00	90.23	359.72	10,068.56	7,960.63	1,171.71	8,041.62	0.00	0.00	0.00
18,800.00	90.23	359.72	10,068.16	8,060.63	1,171.23	8,140.94	0.00	0.00	0.00
18,900.00	90.23	359.72	10,067.76	8,160.63	1,170.75	8,240.26	0.00	0.00	0.00
19,000.00	90.23	359.72	10,067.36	8,260.63	1,170.27	8,339.58	0.00	0.00	0.00
19,100.00	90.23	359.72	10,066.96	8,360.63	1,169.78	8,438.90	0.00	0.00	0.00
19,200.00	90.23	359.72	10,066.56	8,460.63	1,169.30	8,538.23	0.00	0.00	0.00
19,300.00	90.23	359.72	10,066.16	8,560.62	1,168.82	8,637.55	0.00	0.00	0.00
19,400.00	90.23	359.72	10,065.76	8,660.62	1,168.34	8,736.87	0.00	0.00	0.00
19,500.00	90.23	359.72	10,065.36	8,760.62	1,167.85	8,836.19	0.00	0.00	0.00
19,600.00	90.23	359.72	10,064.96	8,860.62	1,167.37	8,935.51	0.00	0.00	0.00
19,700.00	90.23	359.72	10,064.56	8,960.62	1,166.89	9,034.83	0.00	0.00	0.00
19,800.00	90.23	359.72	10,064.16	9,060.61	1,166.41	9,134.16	0.00	0.00	0.00
19,900.00	90.23	359.72	10,063.76	9,160.61	1,165.92	9,233.48	0.00	0.00	0.00
20,000.00	90.23	359.72	10,063.36	9,260.61	1,165.44	9,332.80	0.00	0.00	0.00
20,100.00	90.23	359.72	10,062.96	9,360.61	1,164.96	9,432.12	0.00	0.00	0.00
20,200.00	90.23	359.72	10,062.56	9,460.61	1,164.48	9,531.44	0.00	0.00	0.00
20,300.00	90.23	359.72	10,062.16	9,560.60	1,164.00	9,630.76	0.00	0.00	0.00
20,400.00	90.23	359.72	10,061.76	9,660.60	1,163.51	9,730.09	0.00	0.00	0.00
20,500.00	90.23	359.72	10,061.36	9,760.60	1,163.03	9,829.41	0.00	0.00	0.00
20,600.00	90.23	359.72	10,060.96	9,860.60	1,162.55	9,928.73	0.00	0.00	0.00
20,700.00	90.23	359.72	10,060.55	9,960.60	1,162.07	10,028.05	0.00	0.00	0.00
20,800.00	90.23	359.72	10,060.15	10,060.59	1,161.58	10,127.37	0.00	0.00	0.00
20,900.00	90.23	359.72	10,059.75	10,160.59	1,161.10	10,226.70	0.00	0.00	0.00
21,000.00	90.23	359.72	10,059.35	10,260.59	1,160.62	10,326.02	0.00	0.00	0.00
21,088.34	90.23	359.72	10,059.00	10,348.93	1,160.19	10,413.76	0.00	0.00	0.00



## OXY Planning Report

<b>Database:</b>	HOPSPP	<b>Local Co-ordinate Reference:</b>	Well Heads CC 9_4 Federal Com 33H
<b>Company:</b>	ENGINEERING DESIGNS	<b>TVD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Project:</b>	PRD NM DIRECTIONAL PLANS (NAD 1983)	<b>MD Reference:</b>	RKB=26.5' @ 2953.40ft
<b>Site:</b>	Heads CC 9_4	<b>North Reference:</b>	Grid
<b>Well:</b>	Heads CC 9_4 Federal Com 33H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Permitting Plan		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL (Heads CC 9_4 - plan hits target center - Point	0.00	0.00	10,059.00	10,348.93	1,160.19	456,299.00	647,130.00	32.253978	-103.991108
FTP (Heads CC 9_4 - plan hits target center - Point	0.00	0.00	10,101.00	-143.01	1,210.80	445,807.90	647,180.60	32.225139	-103.991053

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
131.00	131.00	RUSTLER				
640.00	640.00	SALADO				
1,312.00	1,312.00	CASTILE				
2,883.00	2,883.00	LAMAR				
2,943.00	2,943.00	BELL CANYON				
3,785.05	3,785.00	CHERRY CANYON				
5,049.40	5,033.00	BRUSHY CANYON				
6,677.75	6,613.00	BONE SPRING				
7,717.63	7,622.00	BONE SPRING 1ST				
8,559.63	8,439.00	BONE SPRING 2ND				
9,703.05	9,549.00	BONE SPRING 3RD				
10,123.01	9,922.00	WOLFCAMP				
10,352.59	10,052.00	WOLFCAMP A				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
3,565.00	3,565.00	0.00	0.00	Build 1°/100'	
4,964.77	4,950.88	-93.73	141.99	Hold 14° Tangent	
9,616.81	9,464.79	-713.66	1,081.07	KOP, Build & Turn 10°/100'	
10,596.19	10,101.00	-143.01	1,210.80	Landing Point	
21,088.34	10,059.00	10,348.93	1,160.19	TD at 21088.34' MD	



Project: PRD NM DIRECTIONAL PLANS (NAD 1983)  
 Site: Heads CC 9\_4  
 Well: Heads CC 9\_4 Federal Com 33H  
 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

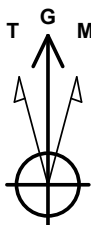
System Datum: Mean Sea Level

WELL DETAILS: Heads CC 9\_4 Federal Com 33H

+N/-S	+E/-W	Northing	Ground Level:	2926.90	Latitude	Longitude
0.00	0.00	445950.90	Easting	645969.90	32.225542	-103.994966

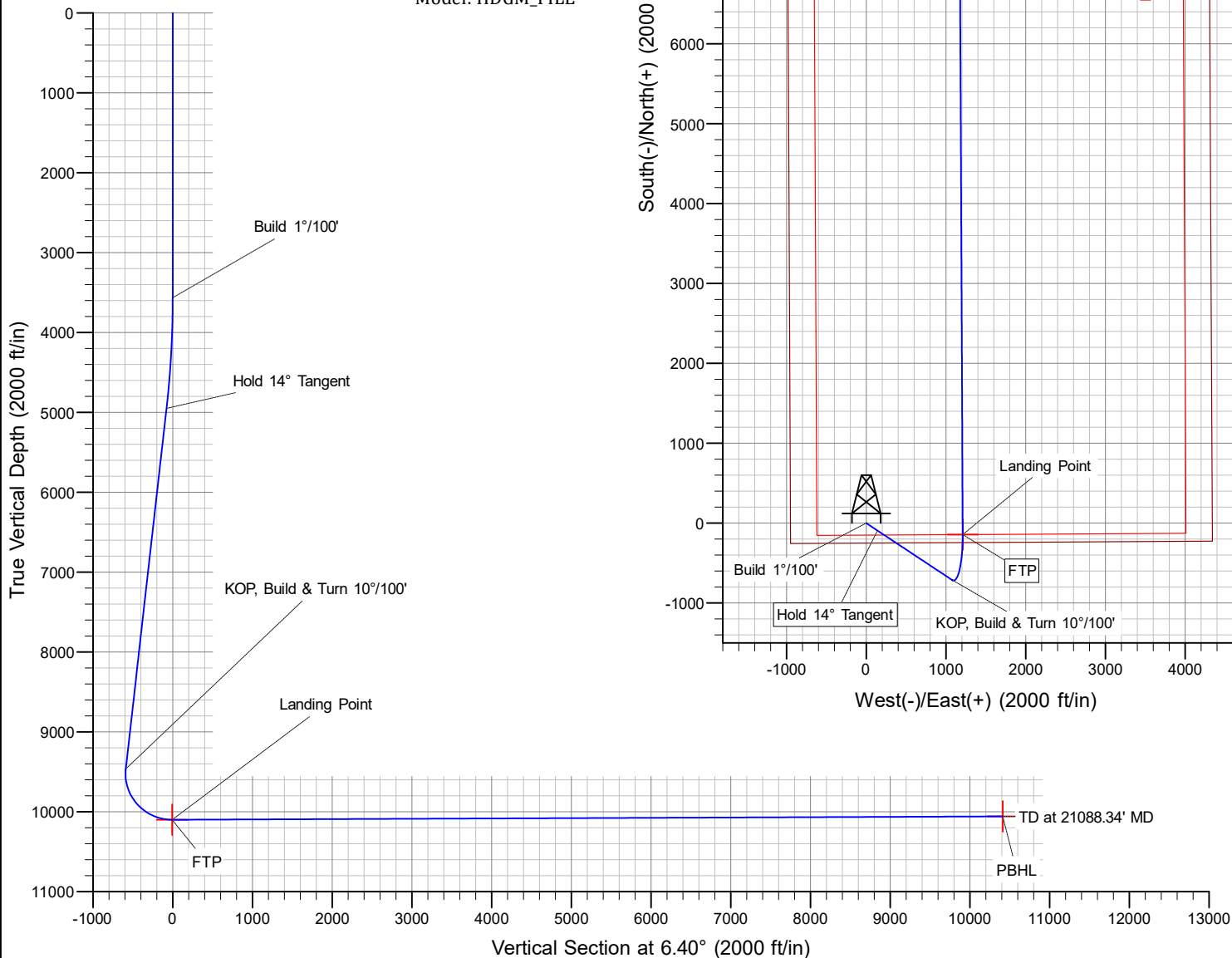
SECTION DETAILS

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	
3565.00	0.00	0.00	3565.00	0.00	0.00	0.00	0.00	0.00	Build 1°/100'
4964.77	14.00	123.43	4950.88	-93.73	141.99	1.00	123.43	-77.33	Hold 14° Tangent
9616.81	14.00	123.43	9464.78	-713.66	1081.07	0.00	0.00	-588.78	KOP, Build & Turn 10°/100'
10596.19	90.23	359.72	10101.00	-143.01	1210.80	10.00	-122.87	-7.23	Landing Point
21088.34	90.23	359.72	10059.00	10348.93	1160.19	0.00	0.00	10413.76	TD at 21088.34' MD



Azimuths to Grid North  
 True North: -0.18°  
 Magnetic North: 6.59°

Magnetic Field  
 Strength: 47732.8nT  
 Dip Angle: 59.90°  
 Date: 2/17/2021  
 Model: HDGM\_FILE



# Oxy USA Inc. - Heads CC 9\_4 Federal Com 33H

## Drill Plan

### 1. Geologic Formations

TVD of Target (ft):	9869	Pilot Hole Depth (ft):	
Total Measured Depth (ft):	20391	Deepest Expected Fresh Water (ft):	123

### Delaware Basin

Formation	MD-RKB (ft)	TVD-RKB (ft)	Expected Fluids
Rustler	123	123	
Salado	620	620	Salt
Castile	1292	1292	Salt
Delaware	2867	2867	Oil/Gas/Brine
Bell Canyon	2932	2932	Oil/Gas/Brine
Cherry Canyon	3776	3776	Oil/Gas/Brine
Brushy Canyon	5023	5023	Losses
Bone Spring	6592	6591	Oil/Gas
Bone Spring 1st	7622	7608	Oil/Gas
Bone Spring 2nd	8454	8427	Oil/Gas
Bone Spring 3rd	9593	9543	Oil/Gas
Wolfcamp			Oil/Gas
Penn			Oil/Gas
Strawn			Oil/Gas

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

### 2. Casing Program

Section	Hole Size (in)	MD		TVD		Csg. OD (in)	Csg. Wt. (ppf)	Grade	Conn.
		From (ft)	To (ft)	From (ft)	To (ft)				
Surface	17.5	0	183	0	183	13.375	54.5	J-55	BTC
Intermediate	12.25	0	9160	0	9122	9.625	40	L-80 HC	BTC
Production	8.5	0	9710	0	9546	7	32	P-110	DQX
Production	8.5	9710	20391	9546	9869	5.5	20	P-110	DQX

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

\*Oxy requests the option to run production casing with DQX, TORQ DQW, Wedge 425, Wedge 461, and/or Wedge 441 connections to accommodate hole conditions or drilling operations.

All Casing SF Values will meet or exceed those below			
SF Collapse	SF Burst	Body SF Tension	Joint SF Tension
1.125	1.2	1.4	1.4

### 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?	

### 3. Cementing Program

Section	Stage	Slurry:	Capacities	ft <sup>3</sup> /ft	Excess:	From	To	Sacks	Volume (ft <sup>3</sup> )	Placement
Surface	1	Surface - Tail	OH x Csg	0.6946	100%	183	-	191	254	Circulate
Int.	1	Intermediate 1S - Tail	OH x Csg	0.3132	5%	9,160	5,273	775	1278	Circulate
Int.	2	Intermediate 2S - Tail BH	OH x Csg	0.3132	25%	5,273	183	1038	1993	Bradenhead
Int.	2	Intermediate 2S - Tail BH	Csg x Csg	0.3627	0%	183	-	35	66	Bradenhead
Prod.	1	Production - Tail	OH x Csg2	0.2291	20%	20,391	9,710	2128	2936	Circulate
Prod.	1	Production - Tail	OH x Csg1	0.1268	20%	9,710	9,160	61	84	Circulate
Prod.	1	Production - Tail	Csg x Csg	0.1585	0%	9,160	8,660	57	79	Circulate

Description	Density (lb/gal)	Yield (ft <sup>3</sup> /sk)	Water (gal/sk)	500psi Time (hh:mm)	Cmt. Class	Accelerator	Retarder	Dispersant	Salt
Surface - Tail	14.8	1.33	6.365	5:26	C	x			
Intermediate 1S - Tail	13.2	1.65	8.64	11:54	H	x	x	x	x
Intermediate 2S - Tail BH	12.9	1.92	10.41	23:10	C	x			
Production - Tail	13.2	1.38	6.686	3:39	H		x	x	x

## Offline Cementing

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

The summarized operational sequence will be as follows:

Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment (float collar and shoe).

Land casing.

Fill pipe with kill weight fluid, and confirm well is static.

If well 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.
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

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



### 4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:	Deepest TVD Depth (ft) per Section:
12.25" Hole	13-5/8"	3M	Annular	✓	70% of working pressure	9122
		3M	Blind Ram	✓	250 psi / 3000 psi	
			Pipe Ram			
			Double Ram	✓		
			Other*			
8.5" Hole	13-5/8"	5M	Annular	✓	70% of working pressure	9869
		5M	Blind Ram	✓	250 psi / 5000 psi	
			Pipe Ram			
			Double Ram	✓		
			Other*			

\*Specify if additional ram is utilized

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

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke

	<p>Formation integrity test will be performed per Onshore Order #2.</p> <p>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.</p>
	<p>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.</p>
Y	Are anchors required by manufacturer?
	<p>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.</p> <p>See attached schematics.</p>

**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.

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.

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

### 5. Mud Program

Section	Depth - MD		Depth - TVD		Type	Weight (ppg)	Viscosity	Water Loss
	From (ft)	To (ft)	From (ft)	To (ft)				
Surface	0	183	0	183	Water-Based Mud	8.6 - 8.8	40-60	N/C
Intermediate	183	9160	183	9122	Saturated Brine-Based or Oil-Based Mud	8.0 - 10.0	35-45	N/C
Production	9160	20391	9122	9869	Water-Based or Oil-Based Mud	9.5 - 12.5	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	Bone Spring – TD
No	PEX	

### 7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6415 psi
Abnormal Temperature	No
BH Temperature at deepest TVD	159°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

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. We plan to drill the 3 well pad in batch by section: all surface sections, intermediate sections and production sections. The wellhead will be secured with a night cap whenever the rig is not over the well.	Yes
Will more than one drilling rig be used for drilling operations? If yes, describe. 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.	Yes

**Total Estimated Cuttings Volume:** 1402 bbls

**Attachments**

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

### 9. Company Personnel

Name	Title	Office Phone	Mobile Phone
Garrett Granier	Drilling Engineer	713-513-6633	832-265-0581
Filip Krneta	Drilling Engineer Supervisor	713-350-4751	832-244-4980
Simon Benavides	Drilling Superintendent	713-522-8652	281-684-6897
Diego Tellez	Drilling Manager	713-350-4602	713-303-4932



# TenarisHydril Wedge 461®



Coupling	Pipe Body
Grade: P110-CY	Grade: P110-CY
Body: White	1st Band: White
1st Band: Grey	2nd Band: Grey
2nd Band: -	3rd Band: -
3rd Band: -	4th Band: -
	5th Band: -
	6th Band: -

Outside Diameter	7.000 in.	Wall Thickness	0.453 in.	Grade	P110-CY
Min. Wall Thickness	87.50 %	Pipe Body Drift	API Standard	Type	Casing
Connection OD Option	REGULAR				

### Pipe Body Data

Geometry				Performance	
Nominal OD	7.000 in.	Wall Thickness	0.453 in.	Body Yield Strength	1025 x1000 lb
Nominal Weight	32 lb/ft	Plain End Weight	31.70 lb/ft	Min. Internal Yield Pressure	12,460 psi
Drift	5.969 in.	OD Tolerance	API	SMYS	110,000 psi
Nominal ID	6.094 in.			Collapse Pressure	10,780 psi

### Connection Data

Geometry		Performance		Make-Up Torques	
Connection OD	7.750 in.	Tension Efficiency	100 %	Minimum	20,000 ft-lb
Coupling Length	8.914 in.	Joint Yield Strength	1025 x1000 lb	Optimum	21,000 ft-lb
Connection ID	6.094 in.	Internal Pressure Capacity	12,460 psi	Maximum	25,200 ft-lb
Make-up Loss	4.375 in.	Compression Efficiency	100 %		
Threads per inch	3.40	Compression Strength	1025 x1000 lb	Operation Limit Torques	
Connection OD Option	Regular	Max. Allowable Bending	72 °/100 ft	Operating Torque	61,000 ft-lb
		External Pressure Capacity	10,780 psi	Yield Torque	72,000 ft-lb
		Coupling Face Load	269,000 lb	Buck-On	
				Minimum	25,200 ft-lb
				Maximum	26,700 ft-lb

### Notes

This connection is fully interchangeable with:  
 Wedge 461® - 7 in. - 0.317 / 0.362 / 0.408 in.  
 Connections with Dopeless® Technology are fully compatible with the same connection in its Standard version  
 In October 2019, TenarisHydril Wedge XP® 2.0 was renamed TenarisHydril Wedge 461™. Product dimensions and properties remain identical and both connections are fully interchangeable

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# TenarisHydril Wedge 425<sup>®</sup>



Coupling	Pipe Body
Grade: P110-CY	Grade: P110-CY
Body: White	1st Band: White
1st Band: Grey	2nd Band: Grey
2nd Band: -	3rd Band: -
3rd Band: -	4th Band: -
	5th Band: -
	6th Band: -

Outside Diameter	5.500 in.	Wall Thickness	0.361 in.	Grade	P110-CY
Min. Wall Thickness	87.50 %	Pipe Body Drift	API Standard	Type	Casing
Connection OD Option	REGULAR				

### Pipe Body Data

Geometry		Performance	
Nominal OD	5.500 in.	Wall Thickness	0.361 in.
Nominal Weight	20 lb/ft	Plain End Weight	19.83 lb/ft
Drift	4.653 in.	OD Tolerance	API
Nominal ID	4.778 in.		
		Body Yield Strength	641 x1000 lb
		Min. Internal Yield Pressure	12,640 psi
		SMYS	110,000 psi
		Collapse Pressure	11,100 psi

### Connection Data

Geometry		Performance		Make-Up Torques	
Connection OD	5.777 in.	Tension Efficiency	90 %	Minimum	15,700 ft-lb
Connection ID	4.734 in.	Joint Yield Strength	577 x1000 lb	Optimum	19,600 ft-lb
Make-up Loss	5.823 in.	Internal Pressure Capacity	12,640 psi	Maximum	21,600 ft-lb
Threads per inch	3.77	Compression Efficiency	90 %		
Connection OD Option	Regular	Compression Strength	577 x1000 lb		
		Max. Allowable Bending	82 °/100 ft		
		External Pressure Capacity	11,100 psi		
				Operation Limit Torques	
				Operating Torque	29,000 ft-lb
				Yield Torque	36,000 ft-lb

### Notes

This connection is fully interchangeable with:  
 TORQ® SFW™ - 5.5 in. - 0.361 in.  
 Connections with Dopeless® Technology are fully compatible with the same connection in its Standard version

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# TenarisHydril Wedge 441®



Coupling	Pipe Body
Grade: P110-CY	Grade: P110-CY
Body: White	1st Band: White
1st Band: Grey	2nd Band: Grey
2nd Band: -	3rd Band: -
3rd Band: -	4th Band: -
	5th Band: -
	6th Band: -

Outside Diameter	5.500 in.	Wall Thickness	0.361 in.	Grade	P110-CY
Min. Wall Thickness	87.50 %	Drift	API Standard	Type	Casing
Connection OD Option	REGULAR				

### Pipe Body Data

Geometry		Performance	
Nominal OD	5.500 in.	Wall Thickness	0.361 in.
Nominal Weight	20 lb/ft	Plain End Weight	19.83 lb/ft
Drift	4.653 in.	OD Tolerance	API
Nominal ID	4.778 in.		
		Body Yield Strength	641 x1000 lb
		Min. Internal Yield Pressure	12,640 psi
		SMYS	110,000 psi
		Collapse Pressure	11,100 psi

### Connection Data

Geometry		Performance		Make-Up Torques	
Connection OD	5.852 in.	Tension Efficiency	81.50 %	Minimum	15,000 ft-lb
Coupling Length	8.714 in.	Joint Yield Strength	522 x1000 lb	Optimum	16,000 ft-lb
Connection ID	4.778 in.	Internal Pressure Capacity	12,640 psi	Maximum	19,200 ft-lb
Make-up Loss	3.780 in.	Compression Efficiency	81.50 %		
Threads per inch	3.40	Compression Strength	522 x1000 lb	<b>Operation Limit Torques</b>	
Connection OD Option	Regular	Max. Allowable Bending	71 °/100 ft	Operating Torque	32,000 ft-lb
		External Pressure Capacity	11,100 psi	Yield Torque	38,000 ft-lb
				<b>Buck-On</b>	
				Minimum	19,200 ft-lb
				Maximum	20,700 ft-lb

### Notes

This connection is fully interchangeable with:  
 Wedge 441® - 5.5 in. - 0.304 in.  
 Connections with Dopeless® Technology are fully compatible with the same connection in its Standard version

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# TenarisHydril Wedge 461®



Coupling	Pipe Body
Grade: P110-CY	Grade: P110-CY
Body: White	1st Band: White
1st Band: Grey	2nd Band: Grey
2nd Band: -	3rd Band: -
3rd Band: -	4th Band: -
	5th Band: -
	6th Band: -

Outside Diameter	5.500 in.	Wall Thickness	0.361 in.	Grade	P110-CY
Min. Wall Thickness	87.50 %	Drift	API Standard	Type	Casing
Connection OD Option	REGULAR				

### Pipe Body Data

Geometry		Performance	
Nominal OD	5.500 in.	Wall Thickness	0.361 in.
Nominal Weight	20 lb/ft	Plain End Weight	19.83 lb/ft
Drift	4.653 in.	OD Tolerance	API
Nominal ID	4.778 in.		
		Body Yield Strength	641 x1000 lb
		Min. Internal Yield Pressure	12,640 psi
		SMYS	110,000 psi
		Collapse Pressure	11,100 psi

### Connection Data

Geometry		Performance		Make-Up Torques	
Connection OD	6.300 in.	Tension Efficiency	100 %	Minimum	17,000 ft-lb
Coupling Length	7.714 in.	Joint Yield Strength	641 x1000 lb	Optimum	18,000 ft-lb
Connection ID	4.778 in.	Internal Pressure Capacity	12,640 psi	Maximum	21,600 ft-lb
Make-up Loss	3.775 in.	Compression Efficiency	100 %		
Threads per inch	3.40	Compression Strength	641 x1000 lb	Operation Limit Torques	
Connection OD Option	Regular	Max. Allowable Bending	92 °/100 ft	Operating Torque	39,000 ft-lb
		External Pressure Capacity	11,100 psi	Yield Torque	46,000 ft-lb
		Coupling Face Load	290,000 lb	Buck-On	
				Minimum	21,600 ft-lb
				Maximum	23,100 ft-lb

### Notes

This connection is fully interchangeable with:  
 Wedge 461® - 5.5 in. - 0.304 / 0.415 / 0.476 in.  
 Connections with Dopeless® Technology are fully compatible with the same connection in its Standard version  
 In October 2019, TenarisHydril Wedge XP® 2.0 was renamed TenarisHydril Wedge 461™. Product dimensions and properties remain identical and both connections are fully interchangeable

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## PERFORMANCE DATA

TMK UP TORQ™ DQW  
Technical Data Sheet

5.500 in

20.00 lbs/ft

P110 CY

### Tubular Parameters

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

### Connection Parameters

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

### Make-Up Torques

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

Printed on: March-05-2019

#### NOTE:

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# PERFORMANCE DATA

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

**5.500 in**

**20.00 lbs/ft**

**P-110**

## Tubular Parameters

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

## Connection Parameters

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

## Make-Up Torques

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



Printed on: July-29-2014

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**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 122309

**CONDITIONS**

Operator: OXY USA INC P.O. Box 4294 Houston, TX 772104294	OGRID: 16696
	Action Number: 122309
	Action Type: [C-103] NOI Change of Plans (C-103A)

**CONDITIONS**

Created By	Condition	Condition Date
kpickford	Adhere to previous NMOCD Conditions of Approval	7/1/2022