OXY Permian

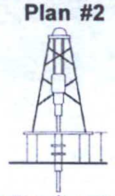
Scientific Drilling

Azimuths to Grid North
True North: -0.35°
Magnetic North: 7.16°

Magnetic Field
Strength: 48468.4snT
Dip Angle: 60.22°
Date: 06/04/2013
Model: BGGM2013

To convert Magnetic North to Grid, Add 7.16°
To convert True North to Grid, Subtract 0.35°

Red Tank 33 Fed #3H
Lea County, New Mexico
Northing: (Y) 488325.30
Easting: (X) 701615.20
Plan #2



WELL DETAILS:

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	488325.30	701615.20	32° 20' 26.999 N	103° 40' 49.909 W

Ground Level: 3597.6

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
7711.8	0.00	0.00	7711.8	0.0	0.0	0.00	0.00	0.0	
8836.8	90.00	356.88	8428.0	715.1	-39.0	8.00	356.88	716.2	
13184.4	90.00	356.88	8428.0	5056.3	-275.9	0.00	0.00	5063.8	PBHL 3H

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL 3H	8428.0	5056.3	-275.9	493381.60	701339.30
PP 3H	8428.0	289.8	-15.8	488615.10	701599.40

SITE DETAILS: Red Tank 33 Federal
Site Centre Northing: 493061.51
Easting: 702487.10

Positional Uncertainity: 0.0
Convergence: 0.35
Local North: Grid

PROJECT DETAILS: Lea County, New Mexico
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

System Datum: Mean Sea Level

LEGEND
- Plan #2

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

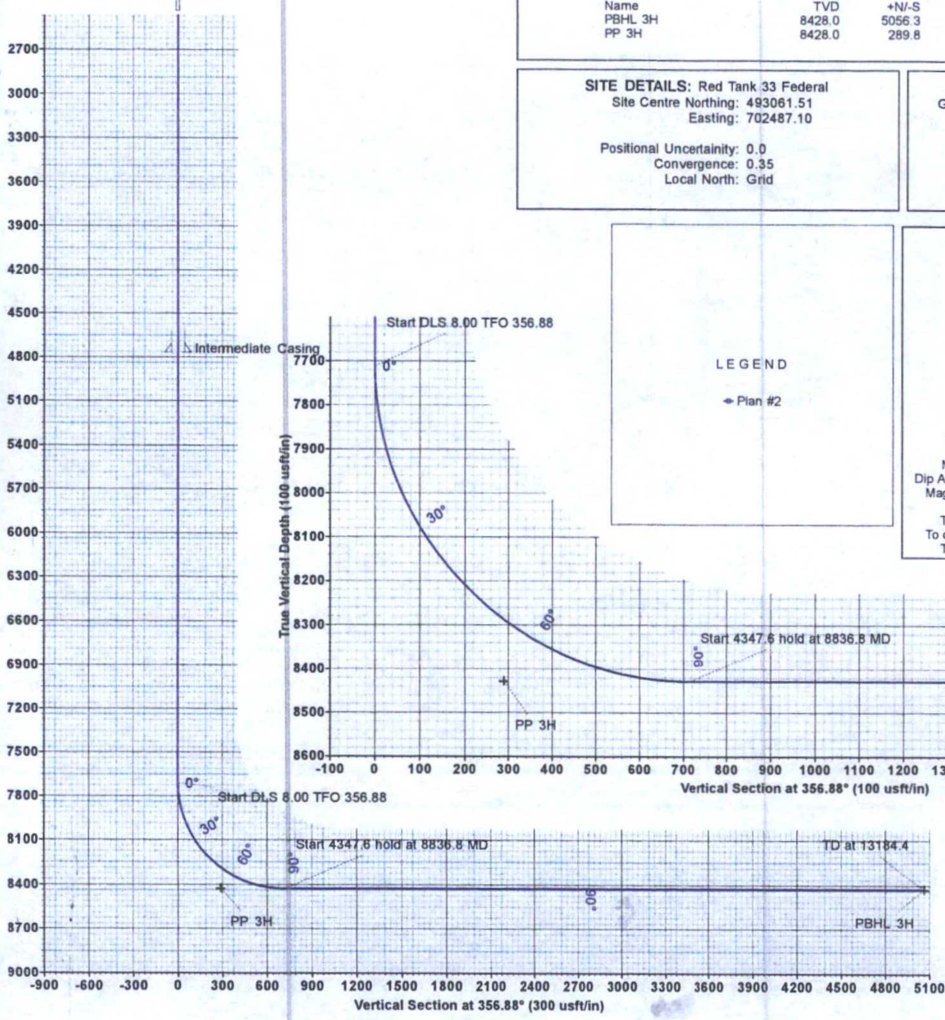
Local Origin: Well Red Tank 33 Fed #3H, Grid North

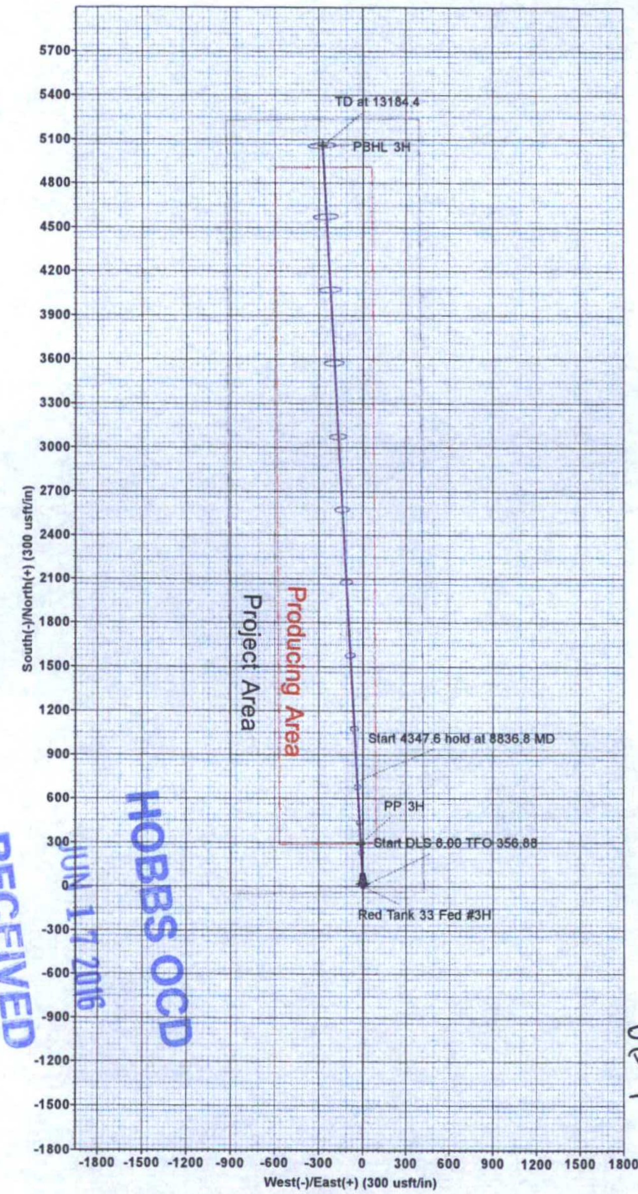
Latitude: 32° 20' 26.999 N
Longitude: 103° 40' 49.909 W

Grid East: 701615.20
Grid North: 488325.30
Scale Factor: 1.000

Geomagnetic Model: BGGM2013
Sample Date: 04-Jun-13
Magnetic Declination: 7.51°
Dip Angle from Horizontal: 60.22°
Magnetic Field Strength: 48468

To convert Magnetic North to Grid, Add 7.16°
To convert Magnetic North to True, Add 7.51° East
To convert True North to Grid, Subtract 0.35°





DD-1

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Red Tank 33 Fed #3H
Company:	OXY	**TVD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Site:	Red Tank 33 Federal	**North Reference:**	Grid
Well:	Red Tank 33 Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #2		

Project Lea County, New Mexico

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Red Tank 33 Federal

Site Position:		**Northing:**	493,061.51 usft	**Latitude:**	32° 21' 13.813 N
From:	Map	**Easting:**	702,487.09 usft	**Longitude:**	103° 40' 39.409 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.35 °

Well Red Tank 33 Fed #3H

Well Position	**+N/-S**	-4,736.2 usft	**Northing:**	488,325.30 usft	**Latitude:**	32° 20' 26.999 N
	+E/-W	-871.9 usft	**Easting:**	701,615.20 usft	**Longitude:**	103° 40' 49.909 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,597.6 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	06/04/13	7.51	60.22	48,468

Design Plan #2

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	356.88

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
7,711.8	0.00	0.00	7,711.8	0.0	0.0	0.00	0.00	0.00	0.00	
8,836.8	90.00	356.88	8,428.0	715.1	-39.0	8.00	8.00	-0.28	356.88	
13,184.4	90.00	356.88	8,428.0	5,056.3	-275.9	0.00	0.00	0.00	0.00	PBHL 3H

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Red Tank 33 Fed #3H
Company:	OXY	**TVD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Site:	Red Tank 33 Federal	**North Reference:**	Grid
Well:	Red Tank 33 Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,050.0	0.00	0.00	1,050.0	0.0	0.0	0.0	0.00	0.00	0.00
Surface Casing									
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,770.0	0.00	0.00	4,770.0	0.0	0.0	0.0	0.00	0.00	0.00
Intermediate Casing									
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Red Tank 33 Fed #3H
Company:	OXY	**TVD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Site:	Red Tank 33 Federal	**North Reference:**	Grid
Well:	Red Tank 33 Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,711.8	0.00	0.00	7,711.8	0.0	0.0	0.0	0.00	0.00	0.00
7,750.0	3.06	356.88	7,750.0	1.0	-0.1	1.0	8.00	8.00	0.00
7,800.0	7.06	356.88	7,799.8	5.4	-0.3	5.4	8.00	8.00	0.00
7,850.0	11.06	356.88	7,849.1	13.3	-0.7	13.3	8.00	8.00	0.00
7,900.0	15.06	356.88	7,897.8	24.5	-1.3	24.6	8.00	8.00	0.00
7,950.0	19.06	356.88	7,945.6	39.2	-2.1	39.2	8.00	8.00	0.00
8,000.0	23.06	356.88	7,992.3	57.1	-3.1	57.2	8.00	8.00	0.00
8,050.0	27.06	356.88	8,037.6	78.3	-4.3	78.4	8.00	8.00	0.00
8,100.0	31.06	356.88	8,081.3	102.5	-5.6	102.7	8.00	8.00	0.00
8,150.0	35.06	356.88	8,123.2	129.7	-7.1	129.9	8.00	8.00	0.00
8,200.0	39.06	356.88	8,163.1	159.8	-8.7	160.0	8.00	8.00	0.00
8,250.0	43.06	356.88	8,200.8	192.6	-10.5	192.9	8.00	8.00	0.00
8,300.0	47.06	356.88	8,236.1	227.9	-12.4	228.3	8.00	8.00	0.00
8,350.0	51.06	356.88	8,268.8	265.6	-14.5	266.0	8.00	8.00	0.00
8,400.0	55.06	356.88	8,298.9	305.5	-16.7	306.0	8.00	8.00	0.00
8,450.0	59.06	356.88	8,326.1	347.4	-19.0	347.9	8.00	8.00	0.00
8,500.0	63.06	356.88	8,350.3	391.1	-21.3	391.7	8.00	8.00	0.00
8,550.0	67.06	356.88	8,371.3	436.4	-23.8	437.0	8.00	8.00	0.00
8,600.0	71.06	356.88	8,389.2	483.0	-26.4	483.7	8.00	8.00	0.00
8,650.0	75.06	356.88	8,403.8	530.7	-29.0	531.5	8.00	8.00	0.00
8,700.0	79.06	356.88	8,415.0	579.4	-31.6	580.2	8.00	8.00	0.00
8,750.0	83.06	356.88	8,422.7	628.7	-34.3	629.6	8.00	8.00	0.00
8,800.0	87.06	356.88	8,427.1	678.4	-37.0	679.4	8.00	8.00	0.00
8,836.8	90.00	356.88	8,428.0	715.1	-39.0	716.2	8.00	8.00	0.00
8,900.0	90.00	356.88	8,428.0	778.2	-42.5	779.4	0.00	0.00	0.00
9,000.0	90.00	356.88	8,428.0	878.1	-47.9	879.4	0.00	0.00	0.00

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Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Site:	Red Tank 33 Federal	**North Reference:**	Grid
Well:	Red Tank 33 Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,100.0	90.00	356.88	8,428.0	977.9	-53.4	979.4	0.00	0.00	0.00
9,200.0	90.00	356.88	8,428.0	1,077.8	-58.8	1,079.4	0.00	0.00	0.00
9,300.0	90.00	356.88	8,428.0	1,177.6	-64.3	1,179.4	0.00	0.00	0.00
9,400.0	90.00	356.88	8,428.0	1,277.5	-69.7	1,279.4	0.00	0.00	0.00
9,500.0	90.00	356.88	8,428.0	1,377.3	-75.2	1,379.4	0.00	0.00	0.00
9,600.0	90.00	356.88	8,428.0	1,477.2	-80.6	1,479.4	0.00	0.00	0.00
9,700.0	90.00	356.88	8,428.0	1,577.1	-86.1	1,579.4	0.00	0.00	0.00
9,800.0	90.00	356.88	8,428.0	1,676.9	-91.5	1,679.4	0.00	0.00	0.00
9,900.0	90.00	356.88	8,428.0	1,776.8	-96.9	1,779.4	0.00	0.00	0.00
10,000.0	90.00	356.88	8,428.0	1,876.6	-102.4	1,879.4	0.00	0.00	0.00
10,100.0	90.00	356.88	8,428.0	1,976.5	-107.8	1,979.4	0.00	0.00	0.00
10,200.0	90.00	356.88	8,428.0	2,076.3	-113.3	2,079.4	0.00	0.00	0.00
10,300.0	90.00	356.88	8,428.0	2,176.2	-118.7	2,179.4	0.00	0.00	0.00
10,400.0	90.00	356.88	8,428.0	2,276.0	-124.2	2,279.4	0.00	0.00	0.00
10,500.0	90.00	356.88	8,428.0	2,375.9	-129.6	2,379.4	0.00	0.00	0.00
10,600.0	90.00	356.88	8,428.0	2,475.7	-135.1	2,479.4	0.00	0.00	0.00
10,700.0	90.00	356.88	8,428.0	2,575.6	-140.5	2,579.4	0.00	0.00	0.00
10,800.0	90.00	356.88	8,428.0	2,675.4	-146.0	2,679.4	0.00	0.00	0.00
10,900.0	90.00	356.88	8,428.0	2,775.3	-151.4	2,779.4	0.00	0.00	0.00
11,000.0	90.00	356.88	8,428.0	2,875.1	-156.9	2,879.4	0.00	0.00	0.00
11,100.0	90.00	356.88	8,428.0	2,975.0	-162.3	2,979.4	0.00	0.00	0.00
11,200.0	90.00	356.88	8,428.0	3,074.8	-167.8	3,079.4	0.00	0.00	0.00
11,300.0	90.00	356.88	8,428.0	3,174.7	-173.2	3,179.4	0.00	0.00	0.00
11,400.0	90.00	356.88	8,428.0	3,274.5	-178.7	3,279.4	0.00	0.00	0.00
11,500.0	90.00	356.88	8,428.0	3,374.4	-184.1	3,379.4	0.00	0.00	0.00
11,600.0	90.00	356.88	8,428.0	3,474.2	-189.6	3,479.4	0.00	0.00	0.00
11,700.0	90.00	356.88	8,428.0	3,574.1	-195.0	3,579.4	0.00	0.00	0.00
11,800.0	90.00	356.88	8,428.0	3,673.9	-200.5	3,679.4	0.00	0.00	0.00
11,900.0	90.00	356.88	8,428.0	3,773.8	-205.9	3,779.4	0.00	0.00	0.00
12,000.0	90.00	356.88	8,428.0	3,873.6	-211.4	3,879.4	0.00	0.00	0.00
12,100.0	90.00	356.88	8,428.0	3,973.5	-216.8	3,979.4	0.00	0.00	0.00
12,200.0	90.00	356.88	8,428.0	4,073.3	-222.3	4,079.4	0.00	0.00	0.00
12,300.0	90.00	356.88	8,428.0	4,173.2	-227.7	4,179.4	0.00	0.00	0.00
12,400.0	90.00	356.88	8,428.0	4,273.0	-233.2	4,279.4	0.00	0.00	0.00
12,500.0	90.00	356.88	8,428.0	4,372.9	-238.6	4,379.4	0.00	0.00	0.00
12,600.0	90.00	356.88	8,428.0	4,472.7	-244.1	4,479.4	0.00	0.00	0.00
12,700.0	90.00	356.88	8,428.0	4,572.6	-249.5	4,579.4	0.00	0.00	0.00
12,800.0	90.00	356.88	8,428.0	4,672.4	-255.0	4,679.4	0.00	0.00	0.00
12,900.0	90.00	356.88	8,428.0	4,772.3	-260.4	4,779.4	0.00	0.00	0.00
13,000.0	90.00	356.88	8,428.0	4,872.1	-265.9	4,879.4	0.00	0.00	0.00
13,100.0	90.00	356.88	8,428.0	4,972.0	-271.3	4,979.4	0.00	0.00	0.00
13,184.4	90.00	356.88	8,428.0	5,056.3	-275.9	5,063.8	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Red Tank 33 Fed #3H
Company:	OXY	**TVD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Project:	Lea County, New Mexico	**MD Reference:**	WELL @ 3622.6usft (H&P Flex 3)
Site:	Red Tank 33 Federal	**North Reference:**	Grid
Well:	Red Tank 33 Fed #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Wellpath		
Design:	Plan #2		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL 3H - plan hits target center - Point	0.00	0.00	8,428.0	5,056.3	-275.9	493,381.60	701,339.30	32° 21' 17.050 N	103° 40' 52.766 W
PP 3H - plan misses target center by 117.1usft at 8450.0usft MD (8326.1 TVD, 347.4 N, -19.0 E) - Point	0.00	0.00	8,428.0	289.8	-15.8	488,615.10	701,599.40	32° 20' 29.867 N	103° 40' 50.073 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,050.0	1,050.0	Surface Casing		
4,770.0	4,770.0	Intermediate Casing		

H2S-3

Permian Drilling
Hydrogen Sulfide Drilling Operations Plan
New Mexico

Scope

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

Objective

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

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

3. Provide proper evacuation procedures to cope with emergencies.

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

H2S-4

Discussion

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

H2S-5

Hydrogen Sulfide Training

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

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

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

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

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

Service company and visiting personnel

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

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

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

H2S-6

Emergency Equipment Requirements

1. Well control equipment

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

Special control equipment:

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

2. Protective equipment for personnel

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

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

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

- Rig floor and trailers.
- Vehicle.

3. Hydrogen sulfide sensors and alarms

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

4. Visual Warning Systems

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

Caution – potential poison gas
Hydrogen sulfide
No admittance without authorization

Wind sock – wind streamers:

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

Condition flags

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

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

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

5. Mud Program

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

Mud inspection devices:

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

6. Metallurgy

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

7. Well Testing

No drill stem test will be performed on this well.

8. Evacuation plan

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

9. Designated area

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

Emergency procedures

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

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

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

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

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

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

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

B. If uncontrollable conditions occur:

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

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

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

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

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

C. Responsibility:

1. Designated personnel.

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

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

		rotating DP.
	2.	Check monitor for point of release.
	3.	Report to nearest upwind designated safe briefing / muster area.
	4.	Check status of personnel (in an attempt to rescue, use the buddy system).
	5.	Assigns least essential person to notify Drill Site Manager and tool pusher by quickest means in case of their absence.
	6.	Assumes the responsibilities of the Drill Site Manager and tool pusher until they arrive should they be absent.
Derrick man 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.

H2S-11

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.**

H2S-12

Status check list

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

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

Checked by:_____ Date:_____

Procedural check list during H2S events

Perform each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to ensure that it in proper working order.
3. Make sure all the H2S detection system is operative.

Perform each week:

1. Check each piece of breathing equipment to make sure that demand or forced air regulator is working. This requires that the bottle be opened and the mask assembly be put on tight enough so that when you inhale, you receive air or feel air flow.
2. BOP skills (well control drills).
3. Check supply pressure on BOP accumulator stand by source.
4. Check breathing equipment mask assembly to see that straps are loosened and turned back, ready to put on.
5. Check pressure on breathing equipment air bottles to make sure they are charged to full volume. (Air quality checked for proper air grade "D" before bringing to location)
6. Confirm pressure on all supply air bottles.
7. Perform breathing equipment drills with on-site personnel.
8. Check the following supplies for availability.
   A. Emergency telephone list.
   B. Hand operated H2S detectors and tubes.