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OCCIDENTAL PERMIAN LTD.

Red Tank

Lea County, NM (Grid North)

Red Tank 33 Federal #1H

DH - Job #320914-MPH-1129

Survey: MWD

Regulatory Survey Report (Grid Nort

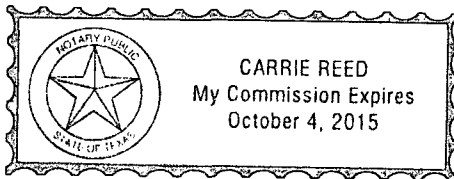
This survey is correct to the best of my knowledge and is supported by actual field data.

Ami Hawthorn

Notarized this date 13th of November, 2014.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Regulatory Survey Report (Grid North)

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well Red Tank 33 Federal #1H
Project:	Red Tank	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
Well:	Red Tank 33 Federal #1H	North Reference:	Grid
Wellbore:	DH - Job #320914-MPH-1129	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320914-MPH-1129	Database:	MID_Regulatory

Project	Red Tank		
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	Lea County, NM (Grid North)				
Site Position:		Northing:	495,362.79 usft	Latitude:	32° 21' 36.000 N
From:	Lat/Long	Easting:	711,926.41 usft	Longitude:	103° 38' 49.200 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.37 °

Well	Red Tank 33 Federal #1H, Horizontal					
Well Position	+N/-S	0.0 usft	Northing:	488,642.82 usft	Latitude:	32° 20' 29.975 N
	+E/-W	0.0 usft	Easting:	704,350.06 usft	Longitude:	103° 40' 18.010 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	0.0 usft	

Wellbore	DH - Job #320914-MPH-1129				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/18/2014	7.24	60.20	48,376

Design:	DH - Job #320914-MPH-1129				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	11.62	

Survey Program		Date 11/20/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
197.0	13,004.0	MWD (DH - Job #320914-MPH-1129)	MWD	MWD

MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
197.0	0.30	5.42	197.0	0.5	0.0	5.42	0.5
383.0	0.31	25.19	383.0	1.5	0.3	12.00	1.5
565.0	0.38	30.83	565.0	2.4	0.8	18.90	2.6
748.0	0.32	92.15	748.0	2.9	1.6	29.47	3.4
840.0	0.24	29.10	840.0	3.1	2.0	33.01	3.7
931.0	0.83	9.03	931.0	3.9	2.2	29.41	4.5
1,021.0	1.19	21.93	1,021.0	5.4	2.6	26.09	6.0
1,143.0	0.91	25.84	1,142.9	7.5	3.5	25.42	8.3
1,238.0	1.34	29.76	1,237.9	9.1	4.4	25.93	10.1
1,332.0	1.31	15.23	1,331.9	11.1	5.3	25.34	12.3
1,426.0	1.14	35.89	1,425.9	12.9	6.1	25.27	14.2

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Design:	DH - Job #320914-MPH-1129	Database:	MID_Regulatory

Survey								
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,521.0	0.74	4.08	1,520.9	14.3	6.7	25.10	15.7	
1,615.0	1.19	15.59	1,614.9	15.8	7.0	23.84	17.3	
1,709.0	0.41	328.73	1,708.8	17.0	7.1	22.55	18.4	
1,803.0	0.83	19.95	1,802.8	18.0	7.1	21.65	19.3	
1,898.0	0.74	355.00	1,897.8	19.2	7.3	20.83	20.6	
1,992.0	0.40	80.48	1,991.8	19.9	7.6	20.88	21.3	
2,086.0	0.34	270.99	2,085.8	19.9	7.6	20.93	21.3	
2,180.0	0.44	288.14	2,179.8	20.1	7.0	19.25	21.2	
2,274.0	0.53	39.51	2,273.8	20.5	6.9	18.70	21.6	
2,369.0	0.57	299.97	2,368.8	21.1	6.8	17.90	22.1	
2,463.0	0.47	253.74	2,462.8	21.2	6.0	15.88	22.0	
2,557.0	0.28	136.30	2,556.8	20.9	5.8	15.55	21.7	
2,651.0	0.44	225.71	2,650.8	20.5	5.7	15.59	21.3	
2,745.0	0.38	239.65	2,744.8	20.1	5.2	14.49	20.8	
2,840.0	0.68	354.05	2,839.8	20.5	4.9	13.35	21.1	
2,934.0	0.36	255.94	2,933.8	21.0	4.5	12.16	21.5	
3,029.0	0.36	260.71	3,028.8	20.9	3.9	10.68	21.2	
3,123.0	0.56	25.69	3,122.8	21.2	3.8	10.26	21.6	
3,217.0	0.24	250.91	3,216.8	21.6	3.9	10.13	21.9	
3,312.0	0.21	256.09	3,311.8	21.5	3.5	9.26	21.8	
3,406.0	0.57	324.38	3,405.8	21.8	3.1	7.99	22.0	
3,500.0	0.55	335.07	3,499.8	22.6	2.6	6.56	22.7	
3,594.0	0.74	285.88	3,593.8	23.2	1.8	4.50	23.2	
3,688.0	0.50	319.06	3,687.8	23.7	1.0	2.35	23.7	
3,782.0	0.94	264.54	3,781.8	23.9	-0.1	359.84	23.9	
3,876.0	0.46	188.27	3,875.8	23.4	-0.9	357.83	23.5	
3,970.0	0.97	135.55	3,969.8	22.5	-0.4	359.02	22.5	
4,064.0	1.55	130.93	4,063.7	21.1	1.1	3.08	21.1	
4,159.0	1.55	128.83	4,158.7	19.5	3.1	9.07	19.7	
4,253.0	1.83	122.11	4,252.7	17.9	5.4	16.73	18.6	
4,347.0	2.01	135.04	4,346.6	15.9	7.8	26.15	17.7	
4,441.0	2.12	125.20	4,440.6	13.7	10.4	37.13	17.2	
4,536.0	2.02	117.11	4,535.5	11.9	13.3	48.10	17.9	
4,630.0	2.52	108.84	4,629.4	10.5	16.7	57.85	19.8	
4,722.0	1.88	105.26	4,721.3	9.5	20.1	64.78	22.2	
4,816.0	1.69	110.07	4,815.3	8.6	22.9	69.43	24.5	
4,910.0	1.00	145.14	4,909.3	7.4	24.7	73.21	25.8	
5,004.0	0.71	265.28	5,003.3	6.7	24.6	74.69	25.5	
5,099.0	0.71	275.91	5,098.3	6.7	23.4	73.93	24.3	
5,193.0	1.10	266.83	5,192.3	6.7	21.9	72.89	22.9	
5,287.0	1.00	278.51	5,286.2	6.8	20.2	71.35	21.3	
5,382.0	1.08	255.18	5,381.2	6.7	18.5	70.07	19.7	
5,476.0	1.17	262.47	5,475.2	6.4	16.7	69.16	17.9	
5,570.0	0.94	275.39	5,569.2	6.3	15.0	67.18	16.3	

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Design:	DH - Job #320914-MPH-1129	Database:	MID_Regulatory

Survey								
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
5,665.0	1.11	277.49	5,664.2	6.5	13.3	63.96	14.8	
5,758.0	1.15	273.75	5,758.2	6.7	11.5	59.75	13.3	
5,853.0	1.14	280.92	5,852.1	6.9	9.6	54.21	11.8	
5,948.0	1.36	278.88	5,947.1	7.3	7.6	46.09	10.5	
6,042.0	1.07	268.84	6,041.1	7.4	5.6	36.90	9.3	
6,136.0	1.04	282.50	6,135.1	7.6	3.9	26.97	8.5	
6,231.0	0.81	276.75	6,230.1	7.9	2.4	16.69	8.2	
6,325.0	0.77	295.05	6,324.0	8.2	1.1	7.80	8.3	
6,419.0	0.78	283.20	6,418.0	8.6	-0.1	359.53	8.6	
6,514.0	0.70	287.95	6,513.0	8.9	-1.3	352.03	9.0	
6,608.0	0.60	268.44	6,607.0	9.1	-2.3	345.88	9.4	
6,702.0	0.47	311.30	6,701.0	9.3	-3.1	341.80	9.8	
6,796.0	0.52	315.80	6,795.0	9.9	-3.7	339.73	10.6	
6,891.0	0.08	332.53	6,890.0	10.3	-4.0	338.78	11.0	
6,985.0	0.41	105.73	6,984.0	10.2	-3.7	340.15	10.9	
7,079.0	0.56	98.57	7,078.0	10.1	-2.9	343.85	10.5	
7,173.0	0.83	89.52	7,172.0	10.0	-1.8	349.90	10.2	
7,268.0	1.04	97.64	7,267.0	9.9	-0.2	358.60	9.9	
7,362.0	1.02	61.85	7,361.0	10.2	1.3	7.50	10.3	
7,456.0	0.92	78.26	7,455.0	10.7	2.8	14.70	11.1	
7,551.0	1.04	84.14	7,550.0	11.0	4.4	21.93	11.8	
7,645.0	0.57	88.84	7,643.9	11.1	5.7	27.38	12.5	
7,747.0	0.64	118.56	7,745.9	10.8	6.7	31.94	12.8	
7,785.0	0.30	36.16	7,783.9	10.8	7.0	32.92	12.9	
7,816.0	1.51	343.06	7,814.9	11.3	6.9	31.58	13.2	
7,847.0	4.11	349.76	7,845.9	12.7	6.6	27.40	14.3	
7,879.0	7.14	345.84	7,877.7	15.8	5.9	20.52	16.9	
7,911.0	9.54	342.07	7,909.4	20.2	4.6	12.83	20.8	
7,942.0	11.76	343.49	7,939.9	25.7	2.9	6.48	25.9	
7,973.0	15.25	346.60	7,970.0	32.7	1.1	1.89	32.7	
8,005.0	18.30	348.09	8,000.6	41.7	-0.9	358.72	41.7	
8,036.0	21.18	353.36	8,029.8	52.1	-2.6	357.15	52.1	
8,068.0	24.25	357.01	8,059.3	64.4	-3.6	356.80	64.5	
8,099.0	26.44	357.16	8,087.3	77.6	-4.3	356.85	77.7	
8,130.0	28.25	356.61	8,114.9	91.8	-5.0	356.85	92.0	
8,162.0	31.61	355.54	8,142.6	107.8	-6.1	356.73	107.9	
8,193.0	35.48	356.38	8,168.4	124.8	-7.3	356.63	125.1	
8,224.0	39.04	355.52	8,193.1	143.6	-8.7	356.54	143.8	
8,256.0	40.96	354.59	8,217.6	164.1	-10.5	356.35	164.4	
8,287.0	43.60	353.07	8,240.5	184.8	-12.7	356.07	185.2	
8,319.0	46.38	351.25	8,263.2	207.2	-15.8	355.64	207.8	
8,350.0	48.83	351.08	8,284.1	229.8	-19.3	355.20	230.6	
8,381.0	50.83	351.45	8,304.1	253.2	-22.9	354.83	254.3	
8,413.0	52.05	350.58	8,324.0	277.9	-26.8	354.49	279.2	

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Survey								
MD (usft)	Inc (°)	Azi (grid_north_azim)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
8,445.0	54.95	350.74	8,343.1	303.3	-31.0	354.17	304.9	
8,476.0	58.23	351.27	8,360.1	328.9	-35.0	353.92	330.7	
8,507.0	62.38	351.60	8,375.5	355.5	-39.0	353.73	357.6	
8,539.0	65.67	352.84	8,389.5	384.0	-42.9	353.62	386.4	
8,570.0	68.12	354.91	8,401.7	412.3	-46.0	353.64	414.9	
8,602.0	70.10	355.97	8,413.1	442.1	-48.3	353.76	444.8	
8,633.0	72.64	356.66	8,423.0	471.5	-50.2	353.92	474.1	
8,664.0	76.29	356.72	8,431.3	501.3	-52.0	354.08	504.0	
8,696.0	79.48	357.35	8,438.0	532.5	-53.6	354.25	535.2	
8,714.0	80.61	358.16	8,441.1	550.2	-54.3	354.37	552.9	
8,746.0	82.20	358.62	8,445.9	581.9	-55.2	354.58	584.5	
8,756.7	82.40	358.77	8,447.3	592.5	-55.4	354.66	595.0	
8,777.0	82.77	359.05	8,449.9	612.6	-55.8	354.80	615.1	
8,809.0	85.71	358.40	8,453.1	644.4	-56.5	354.99	646.9	
8,840.0	88.52	359.10	8,454.7	675.4	-57.2	355.16	677.8	
8,871.0	90.37	359.04	8,455.0	706.3	-57.7	355.33	708.7	
8,966.0	89.33	355.70	8,455.2	801.2	-62.0	355.57	803.6	
9,060.0	91.98	356.02	8,454.2	895.0	-68.8	355.60	897.6	
9,154.0	92.36	356.31	8,450.6	988.7	-75.1	355.66	991.5	
9,248.0	91.85	356.52	8,447.2	1,082.4	-81.0	355.72	1,085.5	
9,342.0	91.01	356.32	8,444.8	1,176.2	-86.8	355.78	1,179.4	
9,436.0	90.57	354.42	8,443.5	1,269.9	-94.4	355.75	1,273.4	
9,531.0	90.13	353.88	8,442.9	1,364.4	-104.1	355.64	1,368.4	
9,626.0	90.71	354.54	8,442.2	1,458.9	-113.7	355.54	1,463.4	
9,720.0	89.53	354.09	8,442.0	1,552.5	-123.0	355.47	1,557.3	
9,814.0	91.95	355.19	8,440.8	1,646.0	-131.8	355.42	1,651.3	
9,909.0	90.71	354.11	8,438.6	1,740.6	-140.6	355.38	1,746.3	
10,004.0	89.87	353.83	8,438.1	1,835.1	-150.6	355.31	1,841.2	
10,098.0	89.80	353.93	8,438.4	1,928.5	-160.6	355.24	1,935.2	
10,192.0	88.09	352.30	8,440.1	2,021.8	-171.9	355.14	2,029.1	
10,286.0	88.39	352.52	8,443.0	2,115.0	-184.3	355.02	2,123.0	
10,380.0	89.29	352.88	8,444.9	2,208.2	-196.3	354.92	2,216.9	
10,474.0	90.37	351.79	8,445.2	2,301.3	-208.8	354.82	2,310.8	
10,568.0	91.11	351.64	8,444.0	2,394.3	-222.3	354.69	2,404.6	
10,662.0	89.23	351.88	8,443.7	2,487.4	-235.8	354.58	2,498.5	
10,757.0	91.81	353.35	8,442.9	2,581.6	-248.0	354.51	2,593.5	
10,851.0	89.19	353.12	8,442.0	2,674.9	-259.1	354.47	2,687.4	
10,946.0	88.93	354.42	8,443.6	2,769.3	-269.4	354.44	2,782.4	
11,041.0	89.90	354.38	8,444.6	2,863.9	-278.7	354.44	2,877.4	
11,135.0	89.36	355.09	8,445.2	2,957.5	-287.3	354.45	2,971.4	
11,230.0	91.34	356.30	8,444.6	3,052.2	-294.4	354.49	3,066.4	
11,324.0	89.00	356.12	8,444.3	3,146.0	-300.6	354.54	3,160.3	
11,418.0	90.34	356.16	8,444.9	3,239.8	-307.0	354.59	3,254.3	
11,512.0	91.81	356.69	8,443.1	3,333.6	-312.8	354.64	3,348.2	
11,607.0	91.95	356.74	8,440.0	3,428.3	-318.3	354.70	3,443.1	

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11,701.0	88.22	355.90	8,439.8	3,522.1	-324.3	354.74	3,537.0	
11,795.0	91.08	357.21	8,440.4	3,616.0	-329.9	354.79	3,631.0	
11,889.0	90.87	356.93	8,438.8	3,709.8	-334.7	354.84	3,724.9	
11,984.0	89.63	356.34	8,438.4	3,804.6	-340.3	354.89	3,819.8	
12,078.0	90.60	356.87	8,438.2	3,898.5	-345.9	354.93	3,913.8	
12,173.0	89.09	355.52	8,438.5	3,993.3	-352.2	354.96	4,008.8	
12,267.0	90.40	355.17	8,438.9	4,087.0	-359.8	354.97	4,102.8	
12,361.0	92.12	355.14	8,436.8	4,180.6	-367.8	354.97	4,196.7	
12,456.0	91.92	355.14	8,433.5	4,275.2	-375.8	354.98	4,291.7	
12,550.0	89.93	354.00	8,432.0	4,368.8	-384.7	354.97	4,385.7	
12,644.0	89.06	353.37	8,432.8	4,462.2	-395.0	354.94	4,479.6	
12,739.0	89.80	353.41	8,433.7	4,556.5	-406.0	354.91	4,574.6	
12,786.7	90.28	353.57	8,433.7	4,603.9	-411.4	354.89	4,622.3	
12,833.0	90.74	353.72	8,433.3	4,649.9	-416.5	354.88	4,668.6	
12,928.0	90.34	352.88	8,432.4	4,744.3	-427.6	354.85	4,763.5	
12,947.2	90.85	353.17	8,432.2	4,763.3	-429.9	354.84	4,782.7	
12,962.0	91.24	353.39	8,431.9	4,778.0	-431.6	354.84	4,797.5	
13,004.0	91.24	353.39	8,431.0	4,819.8	-436.5	354.83	4,839.5	

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
12,962.0	8,431.9	4,778.1	-431.7	Last MWD Survey	
13,004.0	8,431.0	4,819.8	-436.5	Projection to Bit	



Red Tank 33 Federal 1H
Lea County, New Mexico
Northing: 488642.80
Easting: 704350.00
Plan #2



To convert Magnetic North to Grid, Add 7.05°
To convert True North to Grid, Subtract 0.35°

Azimuths to Grid North
True North: -0.35°
Magnetic North: 7.05°

Magnetic Field
Strength: 48313.6snT
Dip Angle: 60.19°
Date: 9/3/2014
Model: BGGM2014

