

NM OIL CONSERVATION

ARTESIA DISTRICT

MAR 05 2015

RECEIVED

1542683

OCCIDENTAL PERMIAN LTD.

Corral Draw

Eddy County, NM

Cedar Canyon 16 State #12H

DH - Job #321114-MPH-1279

Survey: MWD

Regulatory Report (Grid North)

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

K. L. Hartman

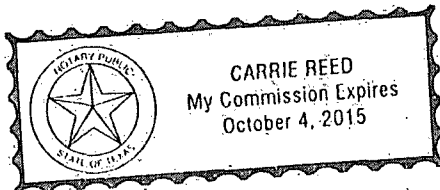
Notarized this date 3rd of March, 2015.

Carrie Reed

Notary Signature

County of Midland

State of Texas



Regulatory Report (Grid North)

Company: OCCIDENTAL PERMIAN LTD.
 Project: Corral Draw
 Site: Eddy County, NM
 Well: Cedar Canyon 16 State #12H
 Wellbore: DH - Job #321114-MPH-1279
 Design: DH - Job #321114-MPH-1279

Local Co-ordinate Reference: Well Cedar Canyon 16 State #12H
 TVD Reference: RKB-25 @ 2951.40usft (TBD)
 MD Reference: RKB-25 @ 2951.40usft (TBD)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: MID_Regulatory

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

Site: Eddy County, NM
 Site Position: Northing: 436,202.96 usft Latitude: 32° 11' 55.644 N
 From: Lat/Long Easting: 604,237.30 usft Longitude: 103° 59' 46.860 W
 Position Uncertainty: 0.0 usft Slot Radius: 13-3/16" Grid Convergence: 0.18 °

Well: Cedar Canyon 16 State #12H, Horizontal
 Well Position: +N-S 0.0 usft Northing: 441,256.03 usft Latitude: 32° 12' 45.466 N
 +E-W 0.0 usft Easting: 610,017.85 usft Longitude: 103° 58' 39.391 W
 Position Uncertainty: 0.0 usft Wellhead Elevation: 0.0 usft Ground Level: 0.0 usft

Wellbore: DH - Job #321114-MPH-1279

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/8/2014	7.53	60.01	48,203

Design: DH - Job #321114-MPH-1279

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	270.12

Survey Program: Date: 1/26/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
494.0	14,422.0	MWD (DH - Job #321114-MPH-1279)	MWD	MWD

Survey

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
494.0	0.20	358.09	494.0	0.9	0.0	358.09	0.9
583.0	0.20	4.77	583.0	1.2	0.0	358.97	1.2
675.0	0.24	14.81	675.0	1.5	0.0	1.57	1.5
765.0	0.14	350.56	765.0	1.8	0.1	2.27	1.8
855.0	0.12	354.77	855.0	2.0	0.0	1.29	2.0
947.0	0.18	282.76	947.0	2.1	-0.1	357.20	2.1
1,041.0	0.41	282.34	1,041.0	2.2	-0.6	345.57	2.3
1,136.0	0.50	263.11	1,136.0	2.3	-1.3	329.77	2.6
1,230.0	0.56	276.87	1,230.0	2.3	-2.2	316.13	3.2
1,325.0	0.56	252.61	1,325.0	2.2	-3.1	305.33	3.8
1,419.0	0.76	253.07	1,419.0	1.9	-4.1	294.40	4.5

Regulatory Report (Grid North)

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 Site: Eddy County, NM
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 Design: DH - Job #321114-MPH-1279

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 MD Reference: RKB-25' @ 2951.40usft (TBD)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: MID:Regulatory

Survey

MD (usft)	Inc (°)	Azi (grid north azimuth)	TVD (usft)	N/S (usft)	EW (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,514.0	0.80	254.83	1,514.0	1.5	-5.4	285.75	5.6
1,608.0	0.66	247.39	1,608.0	1.1	-6.5	279.89	6.6
1,703.0	0.46	254.45	1,703.0	0.8	-7.4	276.35	7.4
1,797.0	0.43	277.43	1,797.0	0.8	-8.1	275.41	8.1
1,892.0	0.44	257.63	1,891.9	0.7	-8.8	274.76	8.8
2,081.0	0.32	294.18	2,080.9	0.8	-10.0	274.54	10.0
2,270.0	0.26	102.68	2,269.9	0.9	-10.0	275.21	10.1
2,459.0	1.11	112.07	2,458.9	0.1	-7.9	270.97	7.9
2,648.0	1.78	143.00	2,647.9	-2.9	-4.5	237.04	5.3
2,837.0	1.16	156.07	2,836.8	-7.0	-1.9	195.41	7.3
3,030.0	0.50	151.93	3,029.8	-9.5	-0.7	184.43	9.5
3,219.0	0.30	138.79	3,218.8	-10.6	0.0	180.13	10.6
3,408.0	0.41	121.71	3,407.8	-11.3	0.9	175.58	11.4
3,597.0	0.41	113.20	3,596.8	-12.0	2.1	170.17	12.1
3,786.0	0.24	127.46	3,785.8	-12.5	3.0	166.44	12.8
3,974.0	0.23	141.87	3,973.8	-13.0	3.6	164.72	13.5
4,163.0	0.26	135.82	4,162.8	-13.6	4.1	163.29	14.2
4,352.0	0.08	100.57	4,351.8	-14.0	4.5	162.06	14.7
4,541.0	0.21	204.95	4,540.8	-14.3	4.5	162.52	15.0
4,730.0	0.30	199.87	4,729.8	-15.1	4.2	164.47	15.6
4,919.0	0.78	279.01	4,918.7	-15.3	2.7	169.84	15.6
5,108.0	0.71	263.24	5,107.7	-15.3	0.3	178.82	15.3
5,297.0	0.35	330.26	5,296.7	-14.9	-1.1	184.36	14.9
5,486.0	0.31	259.78	5,485.7	-14.5	-1.9	187.57	14.6
5,675.0	1.11	293.37	5,674.7	-13.9	-4.1	196.51	14.5
5,864.0	1.07	286.36	5,863.7	-12.6	-7.5	210.63	14.7
6,053.0	0.87	281.15	6,052.6	-11.9	-10.6	221.74	15.9
6,242.0	0.81	271.34	6,241.6	-11.6	-13.3	229.08	17.6
6,431.0	0.40	296.37	6,430.6	-11.2	-15.3	233.64	18.9
6,620.0	0.38	260.77	6,619.6	-11.0	-16.5	236.16	19.8
6,809.0	0.98	273.84	6,808.6	-11.0	-18.7	239.46	21.7
6,998.0	1.05	259.85	6,997.6	-11.2	-22.0	242.98	24.7
7,187.0	0.32	290.78	7,186.6	-11.3	-24.2	244.90	26.7
7,376.0	1.01	163.30	7,375.5	-12.8	-24.2	242.24	27.4
7,565.0	0.92	208.54	7,564.5	-15.7	-24.5	237.35	29.1
7,754.0	0.27	33.94	7,753.5	-16.6	-24.9	236.29	30.0
7,849.0	0.73	49.33	7,848.5	-16.1	-24.4	236.60	29.2
7,960.0	1.24	53.08	7,959.5	-14.9	-22.9	236.94	27.3
8,055.0	1.58	353.95	8,054.5	-13.0	-22.2	239.70	25.7
8,150.0	6.87	289.52	8,149.2	-9.8	-27.7	250.58	29.4
8,244.0	17.97	281.81	8,240.9	-4.9	-47.2	264.08	47.5
8,338.0	25.88	281.19	8,328.0	2.1	-81.6	271.45	81.6
8,433.0	32.93	271.67	8,410.7	6.8	-127.8	273.07	128.0
8,528.0	38.97	269.75	8,487.6	7.5	-183.6	272.33	183.7

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Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well Cedar Canyon 16 State #12H
Project:	Corral Draw	TVD Reference:	RKB-25' @ 2951.40usft (TBD)
Site:	Eddy County, NM	MD Reference:	RKB-25' @ 2951.40usft (TBD)
Well:	Cedar Canyon 16 State #12H	North Reference:	Grid
Wellbore:	DH - Job #321114-MPH-1279	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #321114-MPH-1279	Database:	MID_Regulatory

Survey								
MD (usft)	Inc (°)	Azi (grid north azim)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
8,622.0	45.55	270.49	8,557.2	7.6	-246.8	271.77	246.9	
8,716.0	55.35	272.12	8,616.9	9.4	-319.1	271.68	319.3	
8,811.0	69.56	273.51	8,660.8	13.5	-403.0	271.92	403.3	
8,905.0	82.59	277.43	8,683.3	22.3	-493.6	272.59	494.1	
9,000.0	89.43	276.92	8,689.9	34.1	-587.6	273.32	588.6	
9,095.0	89.87	273.81	8,690.5	43.0	-682.2	273.61	683.5	
9,189.0	89.53	269.40	8,691.0	45.6	-776.1	273.37	777.5	
9,284.0	89.26	269.03	8,692.0	44.3	-871.1	272.91	872.2	
9,378.0	89.23	268.83	8,693.3	42.6	-965.1	272.53	966.0	
9,473.0	90.34	269.79	8,693.6	41.4	-1,060.1	272.24	1,060.9	
9,567.0	90.54	269.37	8,692.9	40.8	-1,154.1	272.02	1,154.8	
9,607.7	90.77	269.24	8,692.4	40.3	-1,194.8	271.93	1,195.4	
9,661.0	91.07	269.08	8,691.6	39.5	-1,248.0	271.81	1,248.7	
9,756.0	89.87	268.07	8,690.8	37.1	-1,343.0	271.58	1,343.5	
9,851.0	90.27	267.60	8,690.7	33.5	-1,437.9	271.34	1,438.3	
9,945.0	89.83	268.81	8,690.6	30.6	-1,531.9	271.14	1,532.2	
10,039.0	89.73	268.46	8,691.0	28.4	-1,625.9	271.00	1,626.1	
10,134.0	88.93	269.87	8,692.1	27.0	-1,720.8	270.90	1,721.0	
10,229.0	89.09	271.42	8,693.7	28.0	-1,815.8	270.88	1,816.0	
10,323.0	90.97	272.10	8,693.7	30.9	-1,909.8	270.93	1,910.0	
10,417.0	91.88	271.59	8,691.3	33.9	-2,003.7	270.97	2,004.0	
10,512.0	91.41	272.25	8,688.6	37.1	-2,098.6	271.01	2,098.9	
10,606.0	90.03	270.11	8,687.4	39.1	-2,192.6	271.02	2,192.9	
10,701.0	91.04	269.07	8,686.5	38.4	-2,287.5	270.96	2,287.9	
10,795.0	91.04	268.65	8,684.8	36.5	-2,381.5	270.88	2,381.8	
10,890.0	90.77	269.49	8,683.3	35.0	-2,476.5	270.81	2,476.7	
10,984.0	90.70	268.20	8,682.1	33.1	-2,570.5	270.74	2,570.7	
11,079.0	90.94	267.15	8,680.8	29.2	-2,665.4	270.63	2,665.5	
11,173.0	91.54	268.18	8,678.7	25.4	-2,759.3	270.53	2,759.4	
11,268.0	89.66	268.72	8,677.7	22.8	-2,854.2	270.46	2,854.3	
11,362.0	91.07	271.86	8,677.1	23.3	-2,948.2	270.45	2,948.3	
11,457.0	91.48	271.16	8,675.0	25.8	-3,043.1	270.49	3,043.3	
11,551.0	91.27	270.45	8,672.8	27.1	-3,137.1	270.50	3,137.2	
11,646.0	92.82	269.65	8,669.4	27.2	-3,232.0	270.48	3,232.2	
11,740.0	90.20	268.51	8,666.9	25.7	-3,326.0	270.44	3,326.1	
11,835.0	89.97	268.11	8,666.8	22.9	-3,420.9	270.38	3,421.0	
11,929.0	89.53	268.79	8,667.2	20.4	-3,514.9	270.33	3,515.0	
12,000.0	89.83	268.94	8,667.6	18.9	-3,585.9	270.30	3,585.9	
12,094.0	91.18	269.05	8,666.7	17.3	-3,679.9	270.27	3,679.9	
12,189.0	91.24	269.31	8,664.7	15.9	-3,774.8	270.24	3,774.9	
12,283.0	91.31	270.75	8,662.6	16.0	-3,868.8	270.24	3,868.9	
12,378.0	91.85	272.46	8,660.0	18.6	-3,963.7	270.27	3,963.8	
12,472.0	91.04	272.20	8,657.6	22.5	-4,057.6	270.32	4,057.7	
12,567.0	90.17	270.32	8,656.6	24.6	-4,152.6	270.34	4,152.7	

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Site:	Eddy County, NM	MD Reference:	RKB-25' @ 2951.40usft (TBD)
Well:	Cedar Canyon 16 State #12H	North Reference:	Grid
Wellbore:	DH - Job #321114-MPH-1279	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #321114-MPH-1279	Database:	MID_Regulatory

MD (usft)	Inc (°)	Azi (Grid North Azim)	TVD (usft)	N/S (usft)	EW (usft)	Closure Azimuth (°)	Closure Distance (usft)
12,661.0	91.45	268.96	8,655.3	24.0	-4,246.6	270.32	4,246.7
12,756.0	92.52	270.15	8,652.0	23.2	-4,341.5	270.31	4,341.6
12,850.0	91.51	269.60	8,648.7	23.0	-4,435.5	270.30	4,435.5
12,945.0	91.21	270.42	8,646.5	23.0	-4,530.4	270.29	4,530.5
13,039.0	90.71	271.05	8,644.9	24.2	-4,624.4	270.30	4,624.5
13,134.0	90.00	270.11	8,644.3	25.2	-4,719.4	270.31	4,719.5
13,228.0	89.90	269.18	8,644.4	24.6	-4,813.4	270.29	4,813.5
13,322.0	91.11	268.65	8,643.5	22.8	-4,907.4	270.27	4,907.4
13,417.0	90.50	269.38	8,642.2	21.2	-5,002.4	270.24	5,002.4
13,512.0	89.93	269.40	8,641.9	20.2	-5,097.3	270.23	5,097.4
13,606.0	89.63	269.39	8,642.2	19.2	-5,191.3	270.21	5,191.4
13,701.0	89.43	269.34	8,643.0	18.2	-5,286.3	270.20	5,286.4
13,795.0	91.31	269.23	8,642.4	17.0	-5,380.3	270.18	5,380.3
13,890.0	90.54	269.30	8,640.9	15.8	-5,475.3	270.16	5,475.3
13,984.0	91.24	266.91	8,639.4	12.7	-5,569.2	270.13	5,569.2
14,078.0	90.10	268.09	8,638.3	8.6	-5,663.1	270.09	5,663.1
14,173.0	91.35	269.47	8,637.1	6.5	-5,758.1	270.07	5,758.1
14,226.8	91.95	269.09	8,635.5	5.9	-5,811.9	270.06	5,811.9
14,267.0	92.39	268.81	8,634.0	5.1	-5,852.0	270.05	5,852.0
14,362.0	93.90	268.44	8,628.8	2.8	-5,946.9	270.03	5,946.9
Last MWD Survey							
14,422.0	93.90	268.44	8,624.7	1.2	-6,006.7	270.01	6,006.7
Projection to Bit							

Survey Annotations:				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
14,362.0	8,628.8	2.8	-5,946.9	Last MWD Survey
14,422.0	8,624.7	1.2	-6,006.7	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____



Cedar Canyon 16 State 12H
Eddy County, NM (NAD 27 NME)
Northing: 441256.00
Easting: 610017.82
Plan #3.

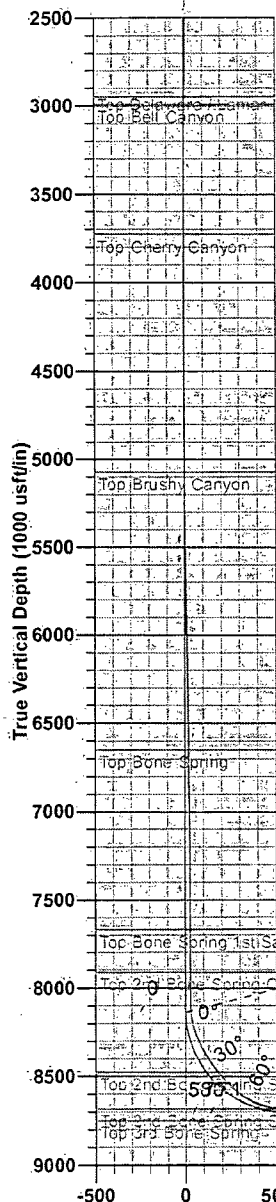
KB=25' @ 2951.4usft (TBD)
Gr @ 2926.4



Azimuths to Grid North
True North: -0.19°
Magnetic North: 7.35°

Magnetic Field
Strength: 48203.0usT
Dip Angle: 60.02°
Date: 9/4/2014
Model: BGGM2014

To convert Magnetic North to Grid, Add 7.35°
To convert True North to Grid, Subtract 0.19°

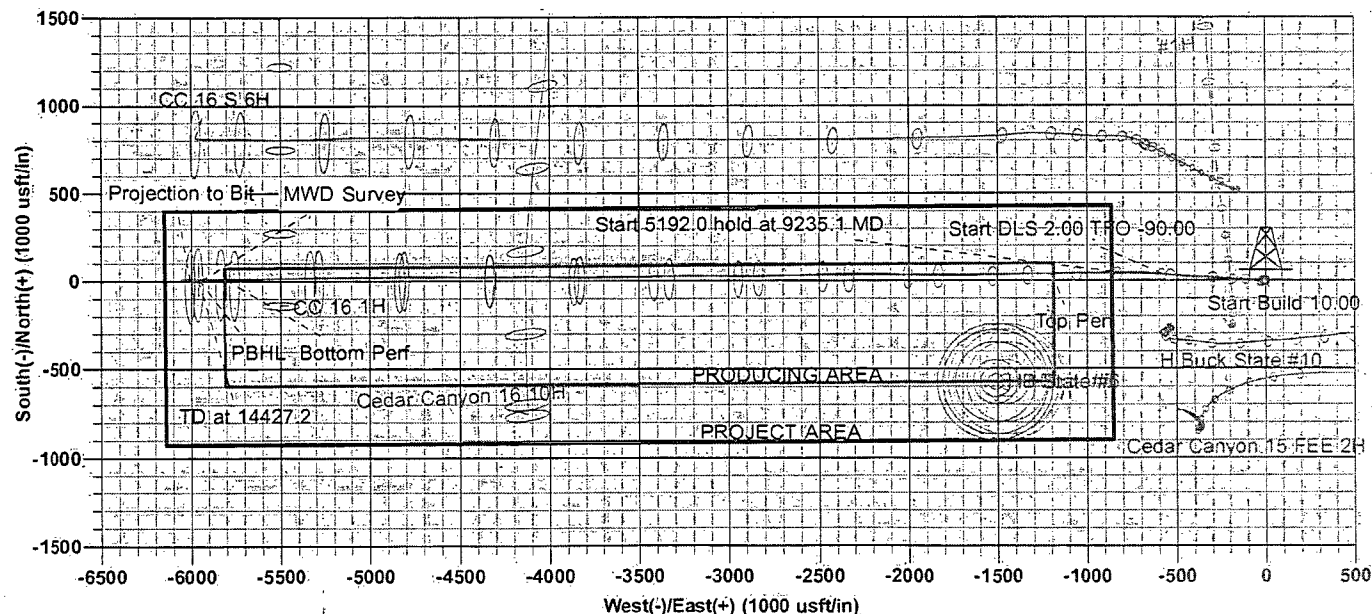


WELL DETAILS #12H					
Ground Level: 2926.4					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	441256.00	610017.82	32° 12' 45.466"N	103° 58' 39.391"W

SECTION DETAILS							
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dip	TFace
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8136.3	0.0	0.0	8136.3	0.0	0.0	0.0	0.0
9044.6	90.83	273.50	8709.2	35.5	-580.2	10.00	273.50
9235.1	90.83	269.69	8706.4	40.8	-770.6	2.00	-90.00
14427.2	90.83	269.69	8631.4	12.6	-5962.0	0.00	-0.00

DESIGN TARGET DETAILS					
Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL (CC 16S 12H)	8631.4	12.6	-5962.0	441268.60	604055.82
Bottom Perf (CC 16S 12H)	8633.7	13.4	-5812.0	441269.40	604205.82
Top Perf (CC 16S 12H)	8709.4	38.6	-1195.0	441294.60	608622.85

PROJECT DETAILS:		SITE DETAILS:	
Eddy County, NM (NAD 27 NME)		Cedar Canyon 16 State 12H	
Geodetic System: US State Plane 1927 (Exact solution)		Site Centre Northing: 441256.00	
Datum: NAD 1927 (NADCON CONUS)		Easting: 610017.82	
Ellipsoid: Clarke 1866		Positional Uncertainty: 0.0	
Zone: New Mexico East 3001		Convergence: 0.19	
System Datum: Mean Sea Level		Local North: Grid	



Start Build 10.00

Start DLS 2.00 TFO -90.00 Start 5192.0 hold at 9235.1 MD

TD at 14427.2

MWD Survey Projection to Bit

Bottom Perf PBHL

Vertical Section at 270.12° (1000 usft/in)

OXY USA INC.
Cedar Canyon 16 State 12H
API No. 30-015-42683

NM OIL CONSERVATION

ARTESIA DISTRICT

MAR 05 2015

RECEIVED

14-3/4" hole @ 445'
11-3/4" csg @ 445'
w/ 680sx-TOC-Surf-Circ.

10-5/8" hole @ 2965'
8-5/8" csg @ 2965'
w/ 850sx-TOC-Surf-Circ.

7-7/8" hole @ 14421'
5-1/2" csg @ 14417'
w/ 1570sx-TOC @ 600'

2-7/8" tbg & pkr @ 8059'

Perfs @ 9704-14214'

TD- 14422'M 8624'V