



Job Number: SVMO-141467
 Company: OXY USA, Inc.
 Lease/Well: Federal 23 13H
 Location: Eddy County, NM
 Rig Name: H&P #620
 RKB: 25'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 6.99°
 Grid: East To Grid North
 File name: Y:\WINSER-112014SU-11OXY\MO\FEDERAL\2313H.SVY
 Date/Time: 03-Nov-14 / 13:25
 Curve Name: Surface - 875' M.D. (Rate Gyro) (API 30-015-41636)

MS Survey

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane .00
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
 Surface MD to 875' MD is, to the best of
 our knowledge a true and accurate account of the
 well bore.

Shawn Cooper 11/3/14
 MS Energy Services Date

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
147.00	.54	240.92	147.00	-.34	-.61	-.34	.69	240.92	.37
238.00	1.07	226.55	237.99	-1.13	-1.60	-1.13	1.96	234.73	.62
329.00	.99	218.80	328.97	-2.33	-2.71	-2.33	3.57	229.32	.18
420.00	1.00	210.14	419.96	-3.63	-3.60	-3.63	5.11	224.78	.17
511.00	1.02	208.21	510.95	-5.03	-4.38	-5.03	6.67	221.07	.04
602.00	1.02	201.33	601.93	-6.49	-5.06	-6.49	8.23	217.91	.13
693.00	.98	200.37	692.92	-7.98	-5.62	-7.98	9.76	215.17	.05
784.00	.95	201.50	783.90	-9.41	-6.17	-9.41	11.25	213.25	.04
Last Survey Depth Recorded									
875.00	.93	194.40	874.89	-10.83	-6.63	-10.83	12.70	211.48	.13

30-015-41636

OXY

Eddy County, NM (NAD 27 NME)

Federal 23

Federal 23 #13H

Wellbore #1

Design: Wellbore #1

Standard Survey Report

20 November, 2014

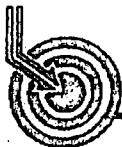
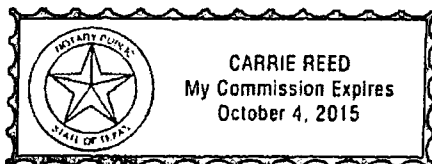
This survey is correct to the best of my knowledge and is supported by actual field data.

Fluharty

Notarized this date 4th of March, 2015.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling

www.scientificdrilling.com

Survey Report

Company:	OXY	Local Co-ordinate Reference:	Well Federal 23 #13H
Project:	Eddy County, NM (NAD 27, NME)	TVD Reference:	KB @ 3593.90usft
Site:	Federal 23	MD Reference:	KB @ 3593.90usft
Well:	Federal 23 #13H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Midland District

Project:	Eddy County, NM (NAD 27, NME), 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:		Federal 23			
Site Position:		Northings:	498,060.10 usft	Latitude:	32° 22' 4.547 N
From:	Map	Eastings:	680,324.70 usft	Longitude:	103° 44' 57.447 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.31 °

Well:	Federal 23 #13H					
Well Position	+N/-S	0.00 usft	Northings:	498,060.10 usft	Latitude:	32° 22' 4.547 N
	+E/-W	0.00 usft	Eastings:	680,324.70 usft	Longitude:	103° 44' 57.447 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,568.80 usft

Wellbore:	Wellbore #1				
Magnetics:	Model Name	Sample Date	Declination (n)	Dip Angle (n)	Field Strength (nT)
	BGGM2014	10/20/2014	7.43	60.20	48,305

Design:		Wellbore #1			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(bearing)	
	0.00	0.00	0.00	356.61	

Survey Program		Date: 11/20/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
147.00	875.00	MS Gyro (Wellbore #1)	Generic Gyro	Generic Gyro
973.00	13,301.00	SDI MWD (Wellbore #1)	SDI MWD	SDI MWD - Standard ver 1.0.1

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.00	0.54	240.92	147.00	-0.34	-0.61	-0.30	0.37	0.37	0.00
238.00	1.07	226.55	237.99	-1.13	-1.60	-1.03	0.62	0.58	-15.79
329.00	0.99	218.80	328.97	-2.33	-2.71	-2.16	0.18	-0.09	-8.52
420.00	1.00	210.14	419.96	-3.63	-3.60	-3.41	0.17	0.01	-9.52
511.00	1.02	208.21	510.95	-5.03	-4.38	-4.76	0.04	0.02	-2.12
602.00	1.02	201.33	601.93	-6.49	-5.06	-6.18	0.13	0.00	-7.56
693.00	0.98	200.37	692.82	-7.98	-5.62	-7.63	0.05	-0.04	-1.05
784.00	0.95	201.50	783.90	-9.41	-6.17	-9.03	0.04	-0.03	1.24
875.00	0.93	194.40	874.89	-10.83	-6.63	-10.42	0.13	-0.02	-7.80

Survey Report

Company:	OXY	Local Co-ordinate Reference:	(Well Federal 23 #13H)
Project:	(Eddy County, NM (NAD 27, NME))	TVD Reference:	KB @ 3593.80usft
Site:	Federal 23	MD Reference:	KB @ 3593.90usft
Well:	Federal 23 #13H	North Reference:	IGrd
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Midland District

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	N-S (usft)	E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
973.00	0.76	187.27	972.88	-12.24	-6.91	-11.81	0.20	-0.17	-7.28
1,067.00	0.83	188.31	1,066.87	-13.51	-7.20	-13.06	0.18	0.07	11.74
1,162.00	0.44	186.07	1,161.87	-14.52	-7.46	-14.06	0.43	-0.41	-12.88
1,257.00	0.42	181.97	1,256.86	-15.23	-7.57	-14.75	0.05	-0.02	6.21
1,353.00	0.12	188.22	1,352.85	-15.67	-7.66	-15.19	0.31	-0.31	-3.91
1,448.00	0.30	190.99	1,447.85	-16.01	-7.72	-15.53	0.19	0.18	2.92
1,543.00	0.22	170.62	1,542.86	-16.44	-7.73	-15.95	0.13	-0.08	-21.44
1,638.00	0.26	244.39	1,637.86	-16.71	-7.90	-16.21	0.31	0.04	77.65
1,733.00	0.27	219.76	1,732.86	-16.98	-8.24	-16.46	0.12	0.01	-25.93
1,829.00	0.03	0.53	1,828.86	-17.12	-8.38	-16.60	0.31	-0.25	146.64
1,924.00	0.20	130.91	1,923.86	-17.21	-8.26	-16.69	0.23	0.18	137.24
2,019.00	0.07	33.63	2,018.86	-17.27	-8.10	-16.76	0.23	-0.14	-102.40
2,113.00	0.14	200.10	2,112.86	-17.33	-8.11	-16.82	0.22	0.07	177.10
2,209.00	0.07	52.84	2,208.86	-17.40	-8.10	-16.89	0.21	-0.07	-153.40
2,304.00	0.09	101.82	2,303.86	-17.38	-7.98	-16.88	0.07	0.02	51.56
2,400.00	0.08	349.32	2,399.86	-17.33	-7.92	-16.83	0.15	-0.01	-117.19
2,495.00	0.17	87.98	2,494.86	-17.26	-7.79	-16.77	0.21	0.09	103.83
2,591.00	0.10	132.19	2,590.86	-17.31	-7.59	-16.84	0.13	-0.07	46.07
2,686.00	0.24	274.70	2,685.86	-17.35	-7.72	-16.87	0.34	0.15	150.01
2,781.00	0.27	260.55	2,780.86	-17.37	-8.14	-16.86	0.07	0.03	-14.89
2,877.00	0.20	300.95	2,876.86	-17.32	-8.51	-16.79	0.16	-0.07	42.08
2,972.00	0.10	270.43	2,971.86	-17.24	-8.73	-16.69	0.13	-0.11	-32.13
3,068.00	0.31	340.57	3,067.86	-16.99	-8.90	-16.44	0.30	0.22	73.06
3,163.00	0.26	358.95	3,162.85	-16.53	-8.99	-15.97	0.11	-0.05	19.35
3,258.00	0.05	199.65	3,257.85	-16.38	-9.01	-15.80	0.32	-0.22	-167.68
3,353.00	0.20	273.38	3,352.85	-16.39	-9.19	-15.82	0.20	0.16	77.61
3,448.00	0.24	292.15	3,447.85	-16.30	-9.54	-15.71	0.09	0.04	19.76
3,543.00	0.29	107.04	3,542.85	-16.30	-9.50	-15.71	0.56	0.05	184.09
3,638.00	0.70	121.78	3,637.85	-16.67	-8.77	-16.13	0.45	0.43	15.52
3,733.00	1.06	110.77	3,732.84	-17.29	-7.46	-16.82	0.42	0.38	-11.59
3,828.00	1.05	101.69	3,827.82	-17.78	-5.78	-17.41	0.18	-0.01	-9.56
3,924.00	0.84	94.18	3,923.81	-18.01	-4.22	-17.73	0.25	-0.22	-7.82
4,019.00	0.92	112.47	4,018.80	-18.35	-2.82	-18.15	0.31	0.08	19.25
4,114.00	1.03	120.23	4,113.78	-19.07	-1.38	-18.96	0.18	0.12	8.17
4,209.00	1.03	113.19	4,208.77	-19.64	0.14	-19.81	0.13	0.00	-7.41
4,304.00	0.94	103.30	4,303.76	-20.35	1.69	-20.42	0.20	-0.09	-10.41
4,416.00	0.81	102.96	4,415.74	-20.74	3.35	-20.91	0.12	-0.12	-0.30
4,497.00	0.77	112.90	4,496.73	-21.08	4.41	-21.31	0.18	-0.05	12.27
4,593.00	0.81	112.98	4,592.73	-21.60	5.63	-21.89	0.04	0.04	0.08
4,688.00	0.74	132.88	4,687.72	-22.28	6.70	-22.64	0.29	-0.07	20.95
4,783.00	0.71	135.62	4,782.71	-23.12	7.56	-23.52	0.05	-0.03	2.88
4,879.00	0.74	132.62	4,878.70	-23.96	8.43	-24.42	0.05	0.03	-3.13
4,974.00	0.76	116.67	4,973.69	-24.68	9.45	-25.18	0.22	0.02	-16.79

Survey Report

Company:	OXY	Local Co-ordinate Reference:	Well Federal 23 #13H
Project:	Eddy County, NM (NAD 27, NME)	TVD Reference:	KB @ 3593.90ush
Site:	Federal 23	MD Reference:	KB @ 3593.90ush
Well:	Federal 23 #13H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Midland District

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	N-S (usft)	E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,069.00	0.66	121.62	5,068.69	-25.23	10.48	-25.80	0.12	-0.11	5.21
5,163.00	0.71	126.57	5,162.68	-25.86	11.40	-26.49	0.08	0.05	5.27
5,258.00	0.68	135.88	5,257.67	-26.62	12.27	-27.29	0.12	-0.03	9.80
5,354.00	0.74	142.93	5,353.66	-27.52	13.04	-28.24	0.11	0.06	7.34
5,449.00	0.59	34.59	5,448.66	-27.61	13.69	-28.37	1.14	-0.16	-114.04
5,544.00	0.81	25.86	5,543.65	-28.60	14.26	-27.40	0.26	0.23	-9.18
5,639.00	0.84	30.02	5,638.64	-25.39	14.90	-26.23	0.07	0.03	4.38
5,734.00	0.97	33.61	5,733.63	-24.12	15.69	-25.00	0.15	0.14	3.78
5,830.00	1.01	30.01	5,829.62	-22.71	16.57	-23.65	0.08	0.04	-3.75
5,925.00	1.00	29.84	5,924.60	-21.27	17.40	-22.26	0.01	-0.01	-0.18
6,020.00	1.06	33.43	6,019.59	-19.81	18.29	-20.86	0.09	0.08	3.78
6,115.00	1.08	40.30	6,114.57	-18.40	19.36	-19.51	0.14	0.02	7.23
6,211.00	1.16	38.58	6,210.55	-18.95	20.55	-18.13	0.09	0.08	-1.79
6,306.00	1.25	43.72	6,305.53	-15.45	21.86	-16.71	0.15	0.09	5.41
6,401.00	1.42	46.21	6,400.51	-13.88	23.43	-15.24	0.19	0.18	2.62
6,495.00	2.34	11.86	6,494.46	-11.20	24.67	-12.64	1.51	0.98	-36.54
6,590.00	3.84	357.71	6,589.32	-8.12	24.94	-7.59	1.76	1.58	-14.89
6,685.00	5.78	350.72	6,683.88	1.78	24.04	0.35	2.13	2.04	-7.36
6,781.00	6.95	353.01	6,779.39	12.31	22.55	10.96	1.25	1.22	2.39
6,876.00	8.83	353.55	6,873.48	25.27	21.03	23.98	1.98	1.98	0.57
6,971.00	10.74	354.55	6,967.10	41.32	19.37	40.11	2.02	2.01	1.05
7,066.00	12.36	353.62	7,060.17	60.24	17.40	59.11	1.72	1.71	-0.98
7,161.00	14.84	354.98	7,152.50	82.47	15.21	81.43	2.63	2.61	1.43
7,257.00	16.63	352.37	7,244.90	108.33	12.31	107.42	2.00	1.86	-2.72
7,352.00	18.31	352.16	7,336.00	135.02	8.68	134.27	0.34	-0.34	-0.22
7,447.00	18.39	350.95	7,427.16	161.47	4.76	160.91	0.37	0.08	-1.27
7,542.00	17.09	350.18	7,518.13	188.46	0.27	188.12	0.77	0.74	-0.81
7,637.00	17.15	349.21	7,608.92	215.98	-4.74	215.88	0.31	0.06	-1.02
7,701.00	17.45	348.77	7,670.03	234.66	-8.37	234.74	0.51	0.47	-0.69
7,732.00	17.58	348.65	7,699.59	243.81	-10.20	243.98	0.44	0.42	-0.39
7,764.00	18.50	350.53	7,730.02	253.55	-11.99	253.82	3.40	2.88	5.88
7,796.00	19.32	352.74	7,760.29	263.81	-13.49	264.15	3.40	2.56	6.91
7,827.00	20.06	353.71	7,789.48	274.19	-14.72	274.58	2.61	2.39	3.13
7,859.00	21.23	354.39	7,819.42	285.41	-15.89	285.85	3.73	3.66	2.13
7,891.00	23.79	354.91	7,848.98	297.60	-17.03	298.09	8.02	8.00	1.63
7,923.00	28.95	354.50	7,877.89	311.25	-18.29	311.79	9.89	9.88	-1.28
7,954.00	30.14	354.71	7,905.12	326.00	-19.69	326.59	10.30	10.29	0.68
7,986.00	33.24	355.62	7,932.35	342.75	-21.10	343.40	9.80	9.69	2.84
8,018.00	38.41	356.00	7,958.61	360.97	-22.43	361.67	9.93	9.91	1.19
8,049.00	39.00	356.29	7,983.14	376.88	-23.70	380.62	8.37	8.35	0.94
8,080.00	41.68	356.11	8,006.77	399.90	-25.03	400.68	8.59	8.58	-0.58
8,112.00	44.14	354.75	8,030.21	421.61	-26.77	422.46	8.27	7.75	-4.25
8,144.00	45.89	353.35	8,052.83	444.12	-29.12	445.07	6.28	5.47	-4.38

Survey Report

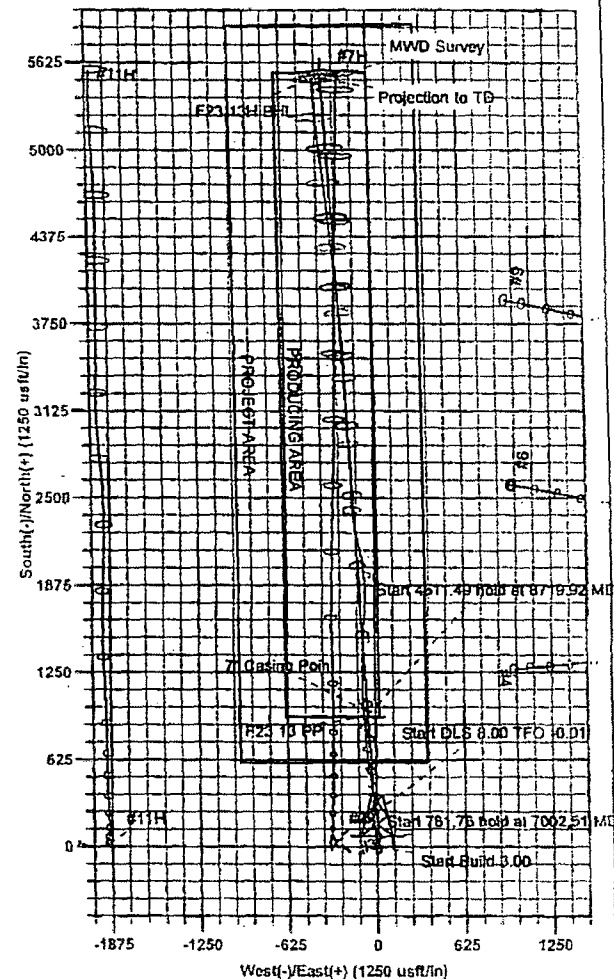
Company:	OXY	Local Co-ordinate Reference:	Well Federal 23 #13H
Project:	Eddy County, NM (NAD 27 NME)	TVD Reference:	KB @ 3593.90ush
Site:	Federal 23	MD Reference:	KB @ 3593.90ush
Well:	Federal 23 #13H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Midland District

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	H-U-S (usft)	E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Built Rate (°/100usft)	Turn Rate (°/100usft)
8,176.00	47.90	352.72	8,074.69	467.31	-31.96	468.38	6.44	6.28	-1.97
8,207.00	50.51	352.34	8,094.95	490.58	-35.01	491.79	8.47	8.42	-1.23
8,238.00	53.74	352.33	8,113.98	514.83	-38.28	516.19	10.42	10.42	-0.03
8,270.00	55.96	352.04	8,132.40	540.75	-41.83	542.27	6.98	6.94	-0.91
8,302.00	57.85	351.77	8,149.87	567.29	-45.61	568.99	5.95	5.91	-0.84
8,334.00	59.81	351.99	8,166.43	594.39	-49.48	598.28	6.15	6.13	0.69
8,365.00	62.05	352.59	8,181.49	621.24	-53.11	623.29	7.42	7.23	1.94
8,397.00	64.53	353.48	8,195.88	649.61	-56.57	651.82	8.14	7.75	2.78
8,429.00	66.11	354.70	8,209.24	678.53	-59.56	680.87	6.03	4.94	3.81
8,460.00	67.77	354.55	8,221.38	706.93	-62.24	709.37	5.37	5.35	-0.48
8,492.00	70.37	354.57	8,232.81	736.68	-65.07	739.24	8.13	8.13	0.06
8,524.00	75.12	354.68	8,242.30	767.10	-67.93	769.77	14.85	14.84	0.34
8,556.00	77.99	355.89	8,249.74	798.11	-70.49	800.88	9.69	8.97	3.78
8,587.00	78.97	356.64	8,255.93	828.42	-72.47	831.28	3.95	3.16	2.42
8,619.00	80.68	357.08	8,261.53	859.88	-74.19	862.76	6.06	5.91	1.38
8,651.00	82.83	357.29	8,266.07	891.52	-75.75	894.43	6.19	6.16	0.66
8,682.00	84.41	357.09	8,269.52	922.29	-77.26	925.24	5.14	5.10	-0.65
8,699.25	85.05	357.10	8,271.10	939.44	-78.13	942.41	3.69	3.69	0.03
F23.13 PP									
8,714.00	85.59	357.10	8,272.31	954.12	-78.87	957.11	3.69	3.69	0.03
8,729.00	85.86	357.01	8,273.42	969.06	-79.64	972.07	1.90	1.80	-0.60
8,808.00	90.10	356.57	8,276.21	1,047.87	-84.08	1,051.00	5.40	5.37	-0.56
8,871.00	92.99	357.10	8,274.51	1,110.74	-87.54	1,113.97	4.66	4.59	0.84
8,965.00	92.69	359.86	8,269.85	1,204.59	-90.03	1,207.80	2.95	-0.32	2.94
9,059.00	89.43	1.81	8,268.11	1,298.54	-88.66	1,301.51	4.04	-3.47	2.07
9,153.00	92.39	2.84	8,266.62	1,392.44	-84.85	1,395.02	3.33	3.15	1.10
9,246.00	89.02	2.14	8,265.47	1,485.33	-80.81	1,487.51	3.70	-3.62	-0.75
9,340.00	90.13	3.90	8,266.17	1,579.19	-75.85	1,580.82	2.21	1.18	1.87
9,434.00	88.52	2.24	8,267.28	1,673.05	-70.82	1,674.31	2.46	-1.71	-1.77
9,528.00	87.61	0.32	8,270.45	1,766.98	-68.72	1,767.94	2.28	-0.97	-2.04
9,622.00	84.37	358.99	8,277.03	1,860.72	-69.28	1,861.56	3.72	-3.45	-1.41
9,716.00	84.61	355.37	8,288.06	1,954.15	-73.89	1,955.11	3.84	0.26	-3.85
9,811.00	87.25	350.98	8,292.60	2,048.21	-85.15	2,049.66	5.38	2.78	-4.62
9,906.00	91.28	349.13	8,294.02	2,141.75	-101.55	2,144.01	4.67	4.24	-1.95
10,000.00	92.96	347.97	8,290.54	2,233.81	-120.20	2,237.01	2.17	1.79	-1.23
10,094.00	95.16	349.09	8,283.89	2,325.70	-138.84	2,329.84	2.62	2.34	1.19
10,186.00	96.30	354.48	8,274.50	2,418.23	-152.22	2,423.00	5.81	1.21	5.71
10,282.00	94.55	359.34	8,265.60	2,511.84	-157.28	2,516.54	5.49	-1.86	5.19
10,377.00	91.21	0.79	8,260.83	2,606.50	-157.17	2,611.24	3.83	-3.52	1.53
10,470.00	87.92	358.45	8,261.54	2,699.48	-157.78	2,704.09	4.34	-3.54	2.62
10,565.00	89.09	354.42	8,264.02	2,794.24	-163.69	2,799.03	4.42	1.23	-4.24
10,659.00	93.43	353.25	8,261.95	2,887.65	-173.78	2,892.87	4.78	4.62	-1.24
10,759.00	93.46	358.97	8,255.94	2,987.09	-182.28	2,992.64	3.71	0.03	3.72
10,853.00	90.30	358.76	8,252.85	3,080.96	-185.78	3,086.55	3.86	-3.36	1.90

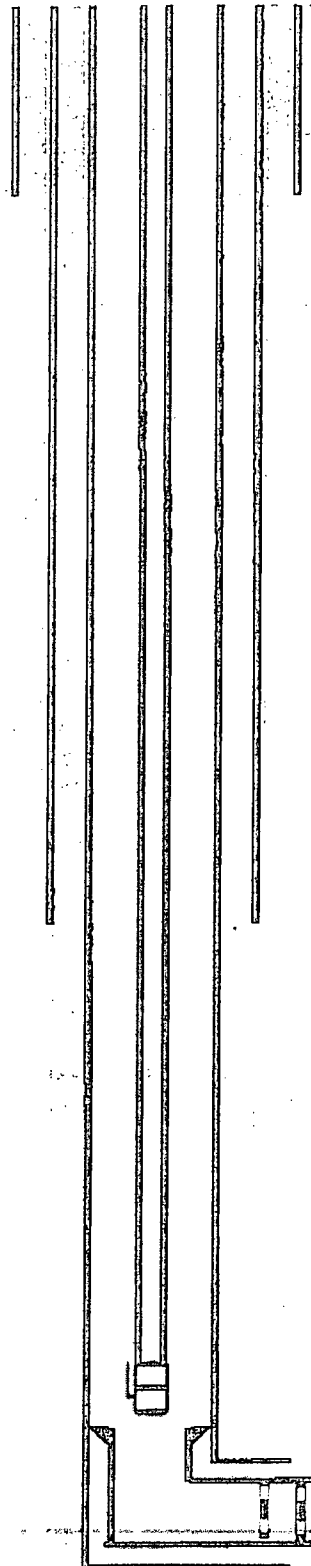
Survey Report

Company:	OXY	Local Co-ordinate Reference:	Well Federal 23 #13H
Project:	Eddy County, NM (NAD 27, NME)	TVD Reference:	KB @ 3593.90ush
Site:	Federal 23	MD Reference:	KB @ 3593.90ush
Well:	Federal 23 #13H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Midland District

Measured Depth (ush)	Inclination (°)	Azimuth (bearing)	Vertical Depth (ush)	+N-S (ush)	+E-W (ush)	Vertical Section (ush)	Dogleg Rate (°/100ush)	Build Rate (°/100ush)	Turn Rate (°/100ush)
10,947.00	90.24	359.60	8,252.41	3,174.85	-187.13	3,180.46	0.90	-0.06	0.89
11,041.00	89.33	358.83	8,252.76	3,268.94	-188.42	3,274.36	1.27	-0.87	-0.82
11,136.00	89.63	358.46	8,253.63	3,363.91	-190.66	3,369.29	0.50	0.32	-0.39
11,230.00	87.95	356.54	8,255.61	3,457.79	-194.76	3,463.25	2.71	-1.79	-2.04
11,324.00	89.43	355.42	8,257.76	3,551.53	-201.35	3,557.22	1.97	1.57	-1.19
11,419.00	88.42	355.88	8,259.54	3,646.24	-208.55	3,652.19	1.17	-1.06	0.48
11,513.00	90.50	355.87	8,260.43	3,739.98	-215.31	3,746.17	2.21	2.21	-0.01
11,607.00	90.74	355.54	8,259.41	3,833.71	-222.35	3,840.15	0.43	0.26	-0.35
11,701.00	89.06	354.65	8,259.58	3,927.36	-230.39	3,934.12	2.02	-1.79	-0.95
11,795.00	89.93	354.33	8,260.40	4,020.93	-239.42	4,028.05	0.99	0.93	-0.34
11,889.00	90.00	354.08	8,260.46	4,114.44	-248.01	4,121.96	0.28	0.07	-0.27
11,984.00	91.65	354.04	8,259.09	4,208.92	-258.74	4,216.86	1.74	1.74	-0.04
12,078.00	89.56	352.69	8,258.10	4,302.28	-269.60	4,310.69	2.65	-2.22	-1.44
12,172.00	90.77	355.12	8,257.83	4,395.74	-279.58	4,404.58	2.89	1.29	2.59
12,267.00	90.97	354.93	8,258.39	4,490.37	-287.81	4,499.53	0.29	0.21	-0.20
12,362.00	89.97	353.80	8,255.61	4,584.91	-297.14	4,594.45	1.59	-1.05	-1.19
12,456.00	91.01	354.05	8,254.81	4,678.37	-307.09	4,688.34	1.14	1.11	0.27
12,550.00	91.51	353.33	8,252.74	4,771.78	-317.42	4,782.20	0.83	0.53	-0.77
12,646.00	91.48	352.83	8,250.23	4,867.05	-328.98	4,877.98	0.52	-0.03	-0.52
12,740.00	90.61	354.28	8,248.52	4,960.44	-339.52	4,971.83	1.61	-0.93	1.55
12,834.00	88.59	352.98	8,249.18	5,053.85	-349.94	5,065.69	2.56	-2.15	-1.39
12,928.00	88.82	354.07	8,251.30	5,147.22	-360.54	5,159.53	1.18	0.24	1.16
13,022.00	89.60	355.38	8,252.60	5,240.81	-369.18	5,253.47	1.62	0.83	1.39
13,117.00	90.44	358.78	8,252.56	5,335.59	-375.67	5,348.46	1.72	0.88	1.47
13,211.00	88.52	355.61	8,253.42	5,429.37	-381.91	5,442.45	2.39	-2.04	-1.24
13,248.00	87.88	355.55	8,254.58	5,466.24	-384.76	5,479.42	1.74	-1.73	-0.16
MWD Survey									
13,301.00	87.88	355.55	8,256.54	5,519.05	-388.87	5,532.38	0.00	0.00	0.00
Projection to TD: F23 13H BHL									



OXY USA INC.
Federal 23 #13H
API No. 30-015-41636



16" hole @ 905'
13-3/8" csg @ 900'
w/ 660sx-TOC-Surf-Circ

12-1/4" hole @ 4477'
9-5/8" csg @ 4467'
w/ 2060sx-TOC-Surf-Circ

8-3/4" hole @ 8778'
7" csg @ 8735'
w/ 740sx-TOC-Surf-Circ

6-1/8" hole @ 13301'
4-1/2" cpl liner @ 7645-13296'

2-7/8" tbg w/ ESP @ 7581'

Sliding Sleeves @ 8866-13242'

TD-13301'M 8256'V

WEATHERFORD SLS

COMPANY: OXY USA INC.

WELL: FEDERAL 23 13H

LOCATION: 810' FWL 2277' FWL SEC. 28, T22S, R31E

COUNTY: EDDY STATE: NM

GL: 3569 KB: 3593

Start Date 11/02/14 End Date 11/21/14

Start Depth 900' End Depth 13301'

API NO: 30-015-41636

FILE: OXY-FEDERAL-23-13H.mhw

LOGGERS: DAN M. ALLE RYAN JENNINGS

GEOLOGIST: SASWATI CHAKRABORTY

Sand	Dolo	Lime	Chert	Anhydrite
Shale	Carb Sh	Salt	Granite	Siltstone
Coal	Bentonite	Granite Wash	Quartz Wash	
Carb Wash	Conglomerate	Cement		

ACCESSORIES

GLAUC'C	PYRITE	FOSSILS	OOLITES	FRACTURES

HW ----- 1 to 10000

C1 _____

C2 _____

C3 -----

IC4 _____

NC4 _____

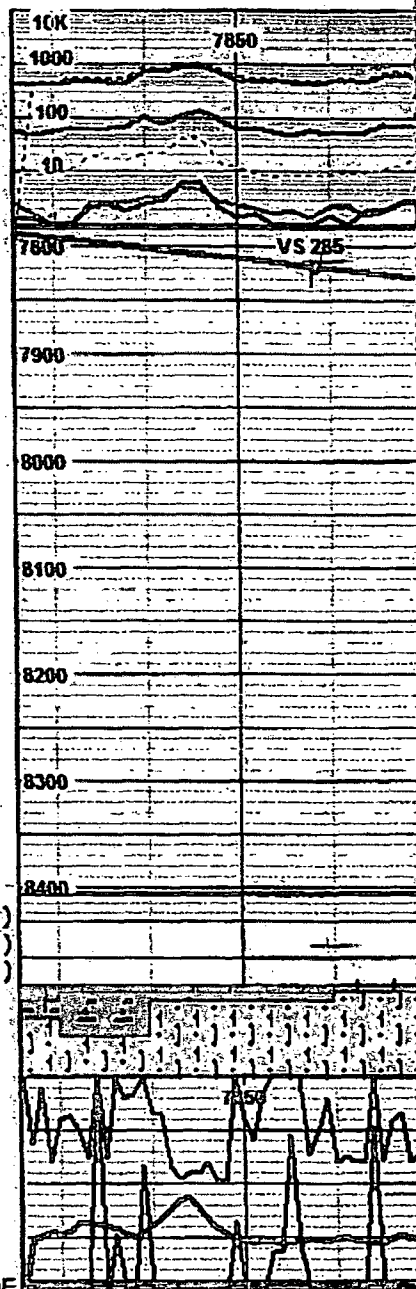
Horz _____

Rop _____ 1 to 2.5

Gamma _____ 1 to 150

CUT (PFG)
FLU 0-100% (PFG)
POR (PFG)

SLIDE





Weatherford®

Surface Logging Systems

P.O. Box 80531
Midland, Texas 79708
432.687.1823 Main
432.687.1689 Fax

COMPANY: OXY USA INC.
WELL: FEDERAL 23 13H
FIELD: LIVINGSTON RIDGE DELAWARE
COUNTY: EDDY STATE: NM
LOCATION: 610' FNL, 2277' FWL, SEC. 26, T22S, R31E

Spud Date: 10/31/14

Logging Personnel:

DAN M. ALLE
RYAN JENNINGS

Started: 11/02/14 At: 900'
Ended: 11/21/14 At: 13301'

Api No.: 30-016-41636

Unit No.: 065

G.L.: 3569'

Rig: H&P 620

K.B.: 3593'

Filename: OXY-FEDERAL-23-13H.mlw

Geologist: SASWATI CHAKRABORTY

Abbreviations:

NB...New Bit	DST...Drill Stem Test
CO...Circ Out	DS...Directional Survey
NR...No Returns	CG...Connection gas
TG...Trip Gas	LAT...Logged After Trip
WOB...Wt on Bit	PP...Pump Pressure
RPM...Rev/Min	SPM...Strokes/Min
SG...Survey Gas	DTG...Down Time Gas

Mud Data

Lithology Symbols:

	Anhydrite		Salt		Granite
	Siltstone		Chert		Sandstone
	Dolomite		Conglomerate		Limestone
	Coal		Shale		Bentonite
	Carb Shale		Granite Wash		Quartz Wash
	Red Sh		Org Sh		Green Sh
	Cust Sh1		Cust Sh2		Cust Sh3
	Cust Sh4		Cust Sh5		Cust Sh6

Gas Chromatograph Analysis:

HW	
C1	_____
C2	_____
C3	
IC4	_____
NC4	_____
IC5	_____

Accessories