



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-1\2014SU-1\OXY\MO\FEDERAL\2313H.SVY
 Date/Time: 03-Nov-14 / 13:25
 Curve Name: Surface - 875' M.D. (Rate Gyro) (API 30-015-41636)

3001541636

NM OIL CONSERVATION
 ARTESIA DISTRICT
 MAR 16 2015
 RECEIVED

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		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.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
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OXY

Eddy County, NM (NAD 27 NME)

Federal 23

Federal 23 #13H

Wellbore #1

Design: Wellbore #1

Standard Survey Report

20 November, 2014

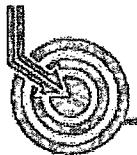
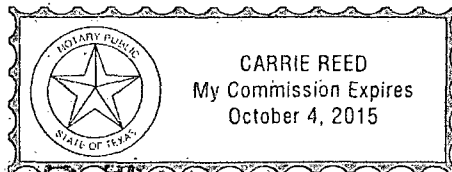
This survey is correct to the best of my knowledge and is supported by actual field data.

Luharto

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:		Northing:	498,060.10 usft	Latitude:	32° 22' 4.547 N
From:	Map	Easting:	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	Northing:	498,060.10 usft	Latitude:	32° 22' 4.547 N
	+E-W	0.00 usft	Easting:	680,324.70 usft	Longitude:	103° 44' 57.447 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,568.90 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	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

Survey	Measured Depth	Inclination	Azimuth	Vertical Depth	+N-S	+E-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
	(usft)	(°)	(bearing)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/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	692.92	-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 @ 3593.90usft
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

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	198.31	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	191.97	1,256.86	-15.23	-7.57	-14.75	0.05	-0.02	6.21
1,353.00	0.12	188.22	1,352.86	-15.67	-7.66	-15.19	0.31	-0.31	-3.91
1,448.00	0.30	190.99	1,447.86	-16.01	-7.72	-15.53	0.19	0.19	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	87.96	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	0.18	-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	-16.36	-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	-19.84	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	-24.66	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 @ 3593.90usft
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

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	-26.60	14.26	-27.40	0.26	0.23	-9.19
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	0.06	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	-16.95	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	-6.12	24.94	-7.59	1.76	1.58	-14.89
6,685.00	5.78	350.72	6,683.98	-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	16.31	352.16	7,336.00	135.02	8.68	134.27	0.34	-0.34	-0.22
7,447.00	16.39	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	26.95	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	36.41	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	379.89	-23.70	380.62	8.37	8.35	0.94
8,080.00	41.66	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 @ 3593.90usft
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

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)
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	596.28	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	831.26	3.95	3.16	2.42
8,619.00	80.86	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	-84.06	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	1,580.92	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	1,766.96	-68.72	1,767.94	2.26	-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	8,286.06	1,954.15	-73.89	1,955.11	3.84	0.26	-3.85
9,811.00	87.25	350.98	8,292.80	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
10,188.00	96.30	354.46	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	2,511.64	-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	-2.52
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	356.97	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 @ 3593.90usft
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

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)
10,947.00	90.24	359.60	8,252.41	3,174.95	-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	-0.97	-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	-248.91	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	8,256.39	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	0.93	-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	354.29	8,248.52	4,960.44	-339.52	4,971.83	1.81	-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	356.78	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									



Federal 23 #13H
Eddy County, NM (NAD 27 NME)
Northing: 498060.10
Easting: 680324.70
Plan #4



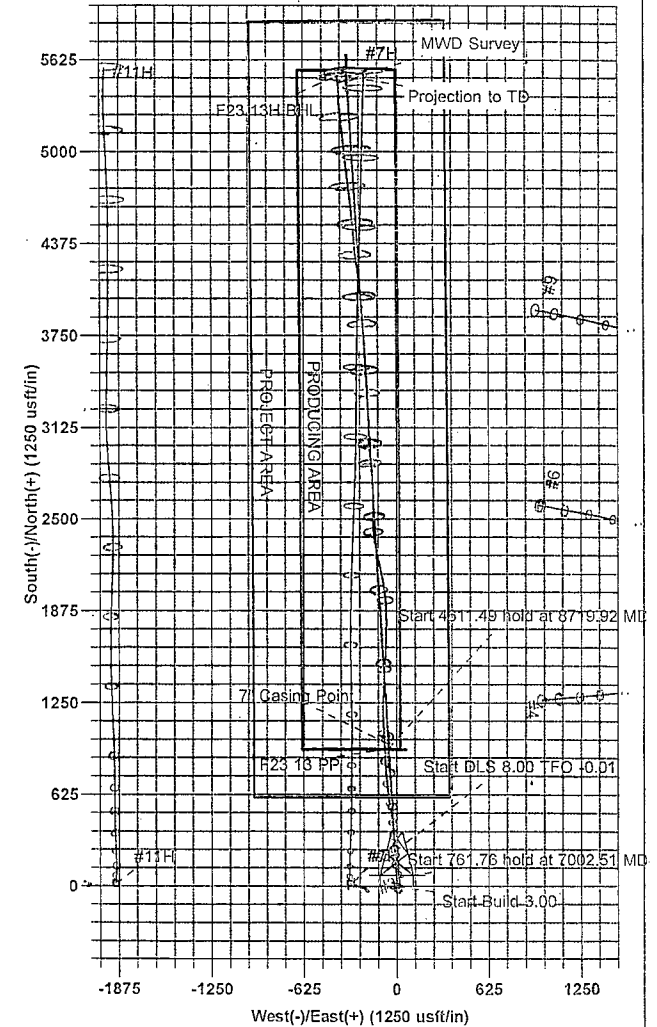
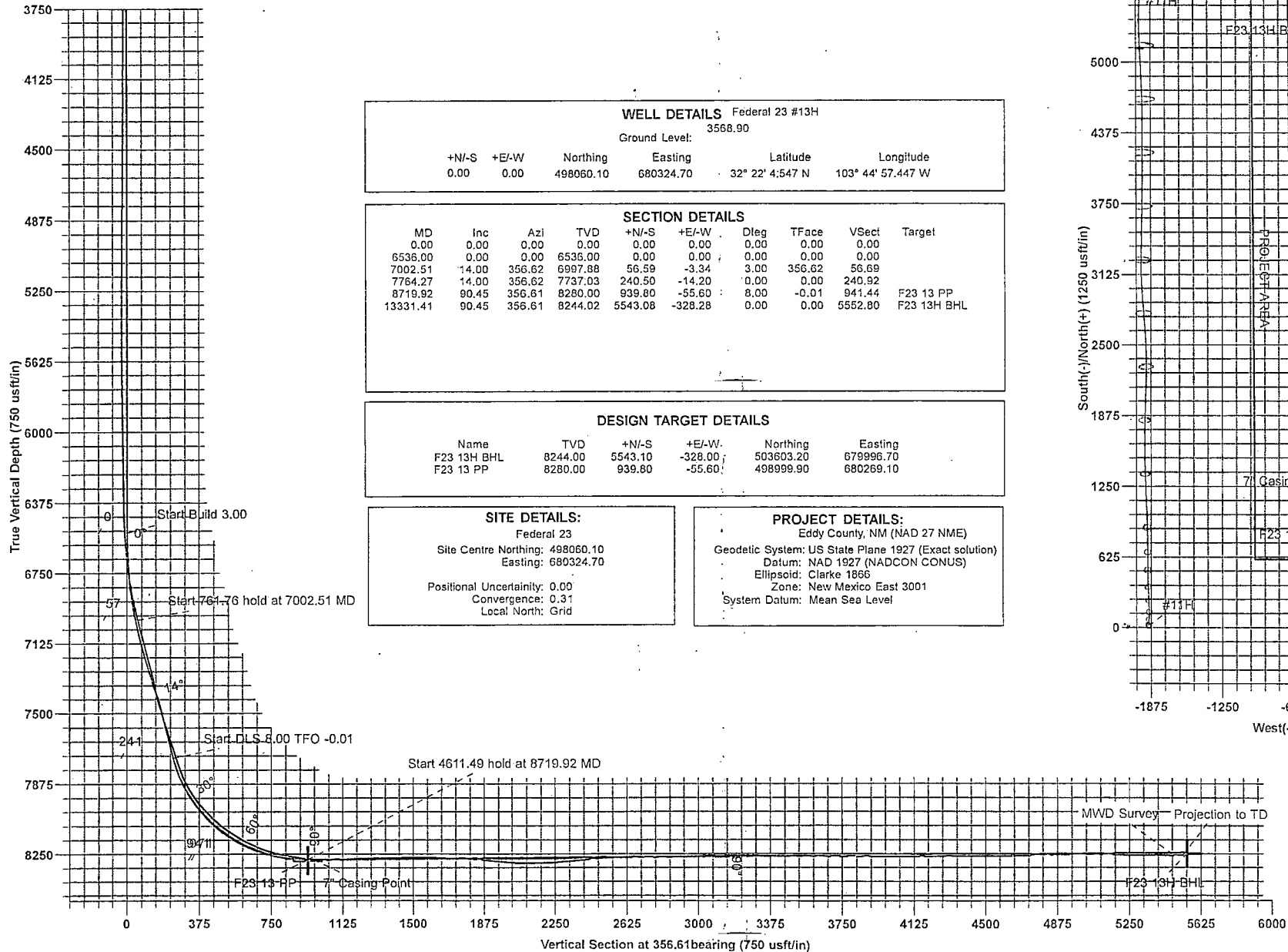
To convert Magnetic North to Grid, Add 7.12°
To convert True North to Grid, Subtract 0.31°

Azimuths to Grid North
True North: -0.31°
Magnetic North: 7.12°

Magnetic Field
Strength: 48304.6snT
Dip Angle: 60.20°
Date: 10/20/2014
Model: BGGM2014



KB @ 3593.90usft
Gr @ 3568.90



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

