

NM OIL CONSERVATION

ARTESIA DISTRICT

JAN 13 2015



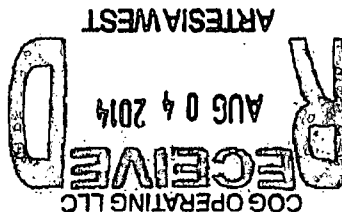
RECEIVED

PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

3001542125

July 21, 2014

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701



RE: El Jimador Federal #3H
190' FNL & 1650' FWL
Sec. 23, T25S, R29E
Lea County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

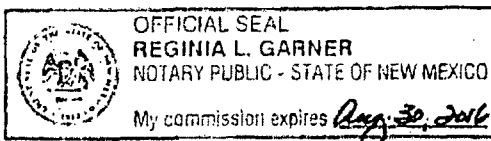
Very truly yours,

Eddie LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 21st day of July, 2014.

Notary Public



El Jimador Federal #3H

Date	Depth	Deviation	Direction	TVD	Horiz Disp
6/27/2014	231	0.20	0.00	0.00	0.00
6/28/2014	503	0.90	0.00	0.00	0.00
6/28/2014	683	0.80	0.00	0.00	0.00
6/30/2014	1062	1.50	0.00	0.00	0.00
6/30/2014	1367	1.30	0.00	0.00	0.00
7/1/2014	1673	0.70	0.00	0.00	0.00
7/1/2014	1948	0.70	0.00	0.00	0.00
7/1/2014	2229	0.50	0.00	0.00	0.00
7/1/2014	2545	0.60	0.00	0.00	0.00
7/4/2014	2782	1.00	0.00	0.00	0.00
7/4/2014	2968	0.70	0.00	0.00	0.00
7/5/2014	3126	0.30	0.00	0.00	0.00
7/6/2014	3308	1.00	0.00	0.00	0.00
7/7/2014	3434	0.50	0.00	0.00	0.00
7/7/2014	3654	0.50	0.00	0.00	0.00
7/7/2014	3875	0.20	0.00	0.00	0.00
7/7/2014	4348	0.30	0.00	0.00	0.00
7/7/2014	4600	0.80	0.00	0.00	0.00
7/7/2014	4917	1.10	0.00	0.00	0.00
7/8/2014	5139	1.00	0.00	0.00	0.00
7/8/2014	5389	1.20	0.00	0.00	0.00
7/8/2014	5641	1.00	0.00	0.00	0.00
7/8/2014	5894	0.80	0.00	0.00	0.00
7/8/2014	6147	0.50	0.00	0.00	0.00
7/9/2014	6547	16.10	9.10	6544.87	21.53
7/9/2014	6641	26.40	7.40	6623.33	55.36
7/9/2014	6736	36.10	9.50	6713.07	104.83
7/10/2014	6768	38.50	11.30	6738.53	123.95
7/10/2014	6862	48.00	9.10	6807.51	186.63
7/10/2014	6894	80.50	8.30	6828.39	210.64
7/10/2014	6957	56.80	8.20	6865.81	260.84
7/10/2014	7051	65.50	6.70	6910.44	342.81
7/10/2014	7083	68.80	6.50	6922.86	372.15
7/10/2014	7114	72.50	6.30	6933.13	401.25
7/10/2014	7146	77.00	6.50	6941.55	431.97
7/10/2014	7177	82.00	6.50	6947.20	462.30
7/11/2014	7262	89.30	4.30	6953.00	546.00
7/11/2014	7364	92.20	4.00	6952.00	648.53
7/11/2014	7553	89.50	358.80	6946.63	837.34
7/11/2014	7648	89.60	358.80	6947.37	932.28
7/11/2014	7742	91.00	359.00	6946.88	1026.72
7/12/2014	7837	89.80	358.50	6946.22	1121.16
7/12/2014	7932	87.10	358.20	6948.79	1216.02

Date	Depth	Deviation	Direction	TVD	Horiz Disp
7/12/2014	8027	90.20	357.90	6951.00	1310.00
7/12/2014	8021	90.30	358.50	0.00	0.00
7/13/2014	8216	88.70	359.60	6951.44	1499.72
7/13/2014	8406	91.60	358.80	6951.36	1689.63
7/13/2014	8501	92.10	359.50	6948.29	1784.54
7/13/2014	8596	92.30	1.10	6945.00	1879.00
7/13/2014	8690	90.50	1.20	6942.00	1973.00
7/13/2014	8784	87.80	0.90	6944.37	2067.37
7/13/2014	8972	88.90	1.10	6948.00	2255.33
7/14/2014	9066	88.80	1.10	6949.95	2349.31
7/14/2014	9161	90.10	1.20	6950.87	2444.30
7/14/2014	9255	90.80	0.80	6950.13	2538.30
7/14/2014	9350	89.90	0.60	6949.00	2633.00
7/14/2014	9444	89.30	0.20	6950.00	2727.00
7/14/2014	9539	90.10	1.20	6950.00	2822.00
7/14/2014	9632	88.60	2.40	6951.76	2915.26
7/14/2014	9727	91.80	2.20	6951.43	3010.22
7/15/2014	9817	89.70	2.80	6950.25	3100.17
7/15/2014	9911	89.80	2.90	6950.66	3194.11
7/15/2014	10005	90.40	2.40	6950.49	3288.00
7/16/2014	10099	89.50	1.40	6950.58	3382.04
7/16/2014	10193	89.50	1.20	6951.40	3476.04
7/16/2014	10288	90.60	0.70	6951.31	3571.03
7/16/2014	10383	89.90	1.30	6950.00	3666.00
7/16/2014	10477	90.70	0.80	6950.00	3760.00
7/16/2014	10572	90.30	1.50	6949.00	3855.00
7/16/2014	10666	88.90	1.90	6950.23	3949.00
7/16/2014	10760	89.00	2.00	6951.96	4042.97
7/16/2014	10855	90.40	2.00	6952.45	4137.95
7/17/2014	10949	89.20	0.70	6952.78	4231.94
7/17/2014	11137	89.40	359.80	6953.93	4419.92
7/17/2014	11232	89.80	359.30	6954.59	4514.90
7/17/2014	11327	90.50	358.50	6954.00	4609.00
7/17/2014	11422	90.70	358.50	6953.00	4704.00



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 13 2015

RECEIVED

July 22, 2014

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

RE: El Jimador Federal No. 003H

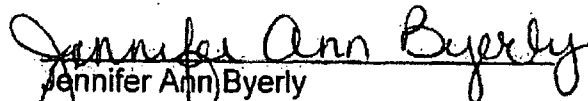
Please find enclosed a copy of the survey from 0.00' to 6348.00' ran on the
above referenced well.

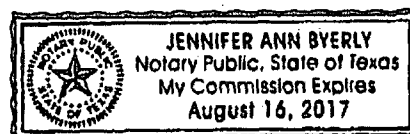
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 22 day of July,
A.D., 2014, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG OPERATING, LLC (CONCHO)
Lease/Well: EL JIMADOR FEDERAL/NO. 003H

Rig Name: SILVER OAK #7
State/County: NEW MEXICO/EDDY
Latitude: 32.11, Longitude: -103.96
GRID North Is 0.20 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : 18 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 7/22/2014 / 12:54

VES Survey International
West Texas
(432) 563-5444
Surveyor: Neil Bates
El Jimador Federal No. 003H / API 30-015-42125

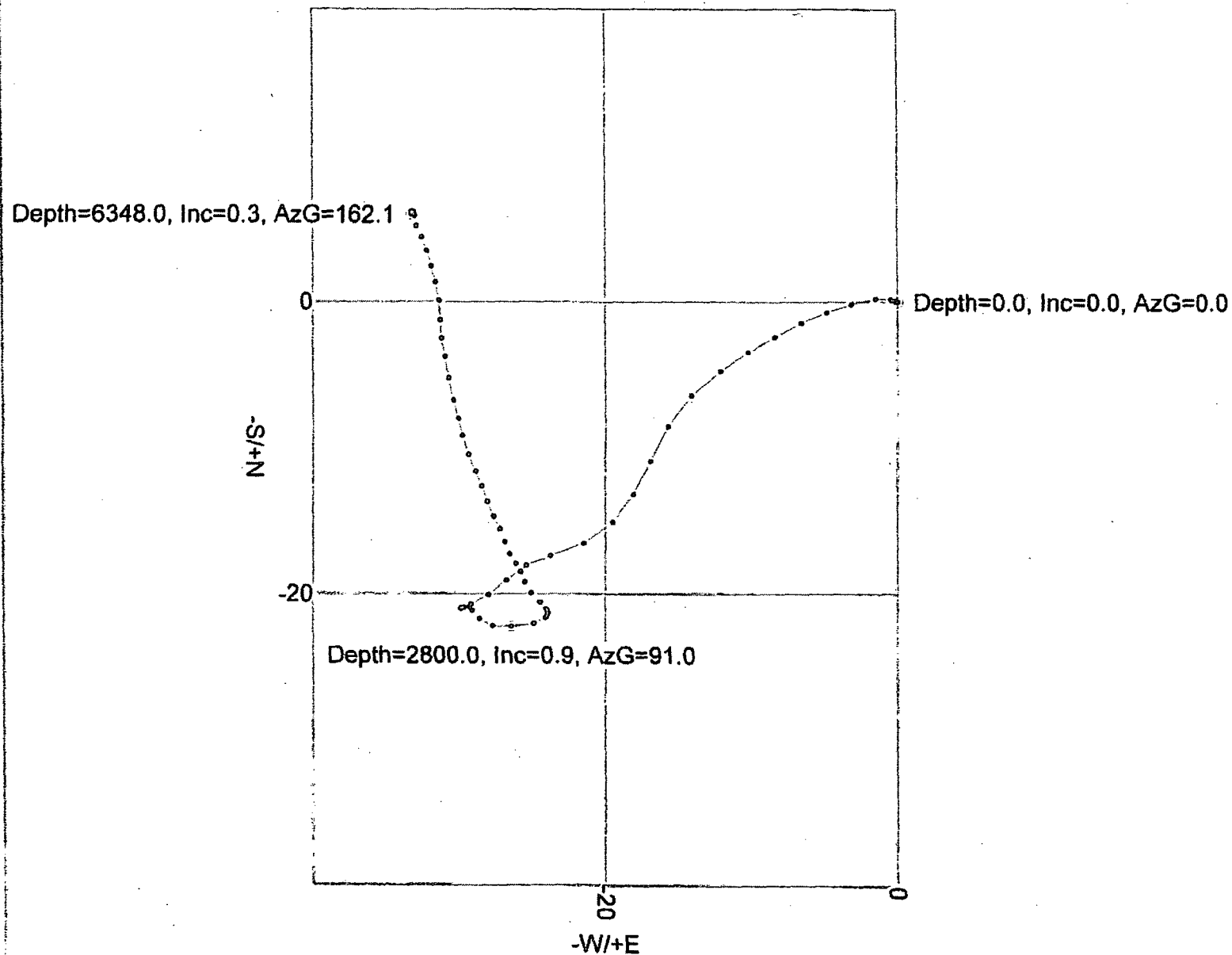
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.12	298.15	100.00	0.05	-0.09	0.05	0.11	298.15	0.12
200.00	0.30	290.63	200.00	0.19	-0.44	0.19	0.48	294.00	0.18
300.00	0.94	265.02	299.99	0.22	-1.50	0.22	1.51	278.22	0.68
400.00	1.01	250.46	399.98	-0.15	-3.14	-0.15	3.14	267.28	0.26
500.00	1.01	252.59	499.96	-0.71	-4.81	-0.71	4.86	261.64	0.04
600.00	1.17	242.77	599.95	-1.44	-6.56	-1.44	6.71	257.63	0.25
700.00	1.17	239.65	699.92	-2.42	-8.35	-2.42	8.69	253.82	0.06
800.00	1.24	241.05	799.90	-3.46	-10.17	-3.46	10.75	251.21	0.08
900.00	1.41	231.66	899.88	-4.75	-12.09	-4.75	12.99	248.55	0.28
1000.00	1.58	228.31	999.84	-6.43	-14.09	-6.43	15.49	245.45	0.19
1100.00	1.52	206.65	1099.81	-8.54	-15.72	-8.54	17.89	241.48	0.59
1200.00	1.54	204.20	1199.77	-10.95	-16.86	-10.95	20.11	237.00	0.07
1300.00	1.42	211.98	1299.74	-13.23	-18.07	-13.23	22.39	233.80	0.23
1400.00	1.28	222.81	1399.71	-15.10	-19.48	-15.10	24.65	232.23	0.29
1500.00	1.61	241.84	1499.68	-16.58	-21.48	-16.58	27.14	232.34	0.58
1600.00	1.19	260.36	1599.65	-17.42	-23.75	-17.42	29.46	233.74	0.62
1700.00	0.91	233.25	1699.63	-18.07	-25.41	-18.07	31.18	234.58	0.56
1800.00	0.99	231.92	1799.62	-19.08	-26.73	-19.08	32.84	234.48	0.08

Depth FT	Angle Deg	Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.82	231.77	1899.61	-20.06	-27.97	-20.06	34.42	234.36	0.17
2000.00	0.73	252.71	1999.60	-20.69	-29.14	-20.69	35.74	234.63	0.29
2100.00	0.12	219.74	2099.59	-20.96	-29.82	-20.96	36.45	234.90	0.63
2200.00	0.04	40.27	2199.59	-21.01	-29.86	-21.01	36.52	234.87	0.16
2300.00	0.26	71.61	2299.59	-20.92	-29.63	-20.92	36.28	234.78	0.22
2400.00	0.18	107.64	2399.59	-20.90	-29.27	-20.90	35.97	234.48	0.15
2500.00	0.21	170.77	2499.59	-21.13	-29.09	-21.13	35.95	234.02	0.21
2600.00	0.73	131.22	2599.59	-21.73	-28.58	-21.73	35.90	232.76	0.59
2700.00	0.51	94.72	2699.58	-22.18	-27.66	-22.18	35.46	231.28	0.44
2800.00	0.93	91.02	2799.57	-22.23	-26.41	-22.23	34.52	229.91	0.43
2900.00	0.85	73.44	2899.56	-22.04	-24.89	-22.04	33.25	228.48	0.28
3000.00	0.28	22.41	2999.56	-21.60	-24.09	-21.60	32.36	228.12	0.71
3100.00	0.05	69.47	3099.56	-21.36	-23.96	-21.36	32.10	228.29	0.24
3200.00	0.06	336.49	3199.56	-21.28	-23.94	-21.28	32.04	228.36	0.08
3300.00	0.28	335.31	3299.56	-21.02	-24.06	-21.02	31.95	228.87	0.22
3400.00	0.46	310.84	3399.55	-20.54	-24.47	-20.54	31.94	229.99	0.24
3500.00	0.62	319.92	3499.55	-19.93	-25.06	-19.93	32.02	231.51	0.10
3600.00	0.48	341.41	3599.55	-19.19	-25.49	-19.19	31.90	233.03	0.19
3700.00	0.38	332.17	3699.54	-18.50	-25.77	-18.50	31.73	234.33	0.12
3800.00	0.39	326.26	3799.54	-17.92	-26.12	-17.92	31.68	235.54	0.04
3900.00	0.45	330.26	3899.54	-17.30	-26.50	-17.30	31.65	236.86	0.06
4000.00	0.58	341.43	3999.54	-16.49	-26.85	-16.49	31.51	238.45	0.17
4100.00	0.52	339.31	4099.53	-15.59	-27.17	-15.59	31.33	240.16	0.07
4200.00	0.61	327.85	4199.53	-14.71	-27.62	-14.71	31.29	241.95	0.15
4300.00	0.63	347.22	4299.52	-13.73	-28.02	-13.73	31.20	243.90	0.21
4400.00	0.65	333.71	4399.51	-12.68	-28.40	-12.68	31.10	245.94	0.15
4500.00	0.61	340.22	4499.51	-11.67	-28.83	-11.67	31.10	247.96	0.08
4600.00	0.83	337.48	4599.50	-10.50	-29.29	-10.50	31.11	250.28	0.22
4700.00	0.77	345.12	4699.49	-9.18	-29.74	-9.18	31.12	252.85	0.12
4800.00	0.60	348.63	4799.48	-8.01	-30.01	-8.01	31.08	255.06	0.17
4900.00	0.87	342.41	4899.47	-6.77	-30.35	-6.77	31.09	257.42	0.28
5000.00	0.92	351.92	4999.46	-5.25	-30.69	-5.25	31.13	260.29	0.16
5100.00	0.80	349.23	5099.45	-3.77	-30.93	-3.77	31.16	263.06	0.13
5200.00	0.66	349.95	5199.44	-2.51	-31.16	-2.51	31.26	265.39	0.14
5300.00	0.79	0.72	5299.44	-1.26	-31.25	-1.26	31.28	267.69	0.19
5400.00	0.77	351.80	5399.43	0.10	-31.34	0.10	31.34	270.18	0.12
5500.00	0.69	345.86	5499.42	1.35	-31.58	1.35	31.61	272.44	0.11
5600.00	0.59	345.62	5599.41	2.43	-31.86	2.43	31.95	274.36	0.10
5700.00	0.68	342.77	5699.41	3.49	-32.16	3.49	32.35	276.19	0.08

measured Depth FT	incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.47	330.93	5799.40	4.41	-32.53	4.41	32.83	277.72	0.23
5900.00	0.51	341.16	5899.40	5.19	-32.88	5.19	33.28	278.97	0.09
6000.00	0.32	8.27	5999.39	5.88	-32.98	5.88	33.50	280.11	0.27
6100.00	0.18	270.41	6099.39	6.15	-33.09	6.15	33.66	280.53	0.38
6200.00	0.05	68.43	6199.39	6.17	-33.21	6.17	33.77	280.53	0.22
6300.00	0.12	221.15	6299.39	6.11	-33.23	6.11	33.79	280.42	0.17
6348.00	0.28	162.11	6347.39	5.96	-33.23	5.96	33.76	280.17	0.50



VES Survey International
West Texas
(432) 563-5444
Surveyor: Neil Bates
El Jimador Federal No. 003H / API 30-015-42125



V.E.S. Survey Date: 07/08/2014

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 13 2015

RECEIVED

COG Operating, LLC.

Eddy County, N.M.

Section 23 T25-S R29-E, El Jimador Federal #3H

El Jimador Federal #3H

Original Hole

Design: Original Hole

Survey Report - Geographic

18 July, 2014

Stryker Directional Survey Report - Geographic

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well El Jimador Federal #3H
Project:	Eddy County, N.M.	TVD Reference:	GL 3073.7+18 @ 3091.7usft (Silver Oak 7)
Site:	Section 23 T25-S R29-E, El Jimador Federal #3H	MD Reference:	GL 3073.7+18 @ 3091.7usft (Silver Oak 7)
Well:	El Jimador Federal #3H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker_EDM

Project:	Eddy County, N.M.		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Ground Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Section 23 T25-S R29-E, El Jimador Federal #3H		
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Site Position:		Northing:	403,421.50 usft	Latitude:	32° 6' 30.835 N
From:	Map	Easting:	616,253.50 usft	Longitude:	103° 57' 28.345 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well:	El Jimador Federal #3H					
Well Position	+N/-S	0.0 usft	Northing:	403,421.50 usft	Latitude:	32° 6' 30.835 N
	+E/-W	0.0 usft	Easting:	616,253.50 usft	Longitude:	103° 57' 28.345 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	0.0 usft	Ground Level:	3,073.7 usft

Wellbore:	Original Hole				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/17/2014	7.39	59.94	48,207

Design:	Original Hole				
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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	0.84

Survey Program		Date:	7/18/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	6,348.0	VES Gyro Survey (Original Hole)	SRG-GYRO-MS	surface readout gyro multishot	
6,388.0	11,468.0	Stryker MWD Survey (Original Hole)	MWD	MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	403,421.50	616,253.50	32° 6' 30.835 N	103° 57' 28.345 W
100.0	0.12	298.15	100.0	0.0	-0.1	403,421.55	616,253.41	32° 6' 30.836 N	103° 57' 28.346 W
200.0	0.30	290.63	200.0	0.2	-0.4	403,421.69	616,253.07	32° 6' 30.837 N	103° 57' 28.350 W
300.0	0.94	265.02	300.0	0.2	-1.5	403,421.71	616,252.01	32° 6' 30.837 N	103° 57' 28.363 W
400.0	1.01	250.46	400.0	-0.2	-3.1	403,421.35	616,250.36	32° 6' 30.834 N	103° 57' 28.382 W
500.0	1.01	252.59	500.0	-0.7	-4.8	403,420.79	616,248.69	32° 6' 30.828 N	103° 57' 28.401 W
600.0	1.17	242.77	599.9	-1.4	-6.6	403,420.06	616,246.94	32° 6' 30.821 N	103° 57' 28.422 W
700.0	1.17	239.65	699.9	-2.4	-8.3	403,419.07	616,245.15	32° 6' 30.812 N	103° 57' 28.443 W
800.0	1.24	241.05	799.9	-3.5	-10.2	403,418.03	616,243.33	32° 6' 30.801 N	103° 57' 28.464 W
900.0	1.41	231.66	899.9	-4.8	-12.1	403,416.75	616,241.42	32° 6' 30.789 N	103° 57' 28.486 W

Stryker Directional

Survey Report - Geographic

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well El Jimador Federal #3H
Project:	Eddy County, N.M.	TVD Reference:	GL 3073.7+18 @ 3091.7usft (Silver Oak 7)
Site:	Section 23 T25-S R29-E, El Jimador Federal #3H	MD Reference:	GL 3073.7+18 @ 3091.7usft (Silver Oak 7)
Well:	El Jimador Federal #3H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

Survey									
Measured			Vertical			Map	Map		
Depth	Inclination	Azimuth	Depth	+N-S	+E-W	Northing	Easting	Latitude	Longitude
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
1,000.0	1.58	228.31	999.8	-6.4	-14.1	403,415.07	616,239.42	32° 6' 30.772 N	103° 57' 28.509 W
1,100.0	1.52	206.65	1,099.8	-8.5	-15.7	403,412.96	616,237.80	32° 6' 30.751 N	103° 57' 28.528 W
1,200.0	1.54	204.20	1,199.8	-10.9	-16.9	403,410.55	616,236.65	32° 6' 30.728 N	103° 57' 28.542 W
1,300.0	1.42	211.98	1,299.7	-13.2	-18.1	403,408.28	616,235.44	32° 6' 30.705 N	103° 57' 28.556 W
1,400.0	1.28	222.81	1,399.7	-15.1	-19.5	403,406.41	616,234.03	32° 6' 30.687 N	103° 57' 28.572 W
1,500.0	1.61	241.84	1,499.7	-16.6	-21.5	403,404.92	616,232.03	32° 6' 30.672 N	103° 57' 28.596 W
1,600.0	1.19	260.36	1,599.6	-17.4	-23.7	403,404.09	616,229.77	32° 6' 30.664 N	103° 57' 28.622 W
1,700.0	0.91	233.25	1,699.6	-18.1	-25.4	403,403.44	616,228.11	32° 6' 30.657 N	103° 57' 28.641 W
1,800.0	0.99	231.92	1,799.6	-19.1	-26.7	403,402.43	616,226.79	32° 6' 30.647 N	103° 57' 28.657 W
1,900.0	0.82	231.77	1,899.6	-20.0	-28.0	403,401.45	616,225.55	32° 6' 30.638 N	103° 57' 28.671 W
2,000.0	0.73	252.71	1,999.6	-20.7	-29.1	403,400.82	616,224.38	32° 6' 30.632 N	103° 57' 28.685 W
2,100.0	0.12	219.74	2,099.6	-20.9	-29.8	403,400.55	616,223.70	32° 6' 30.629 N	103° 57' 28.693 W
2,200.0	0.04	40.27	2,199.6	-21.0	-29.8	403,400.50	616,223.66	32° 6' 30.628 N	103° 57' 28.693 W
2,300.0	0.25	71.51	2,299.6	-20.9	-29.6	403,400.59	616,223.89	32° 6' 30.629 N	103° 57' 28.691 W
2,400.0	0.18	107.64	2,399.6	-20.9	-29.3	403,400.62	616,224.25	32° 6' 30.630 N	103° 57' 28.686 W
2,500.0	0.21	170.77	2,499.6	-21.1	-29.1	403,400.39	616,224.43	32° 6' 30.627 N	103° 57' 28.684 W
2,600.0	0.73	131.22	2,599.6	-21.7	-28.6	403,399.79	616,224.93	32° 6' 30.621 N	103° 57' 28.678 W
2,700.0	0.51	94.72	2,699.6	-22.2	-27.6	403,399.33	616,225.86	32° 6' 30.617 N	103° 57' 28.668 W
2,800.0	0.93	91.02	2,799.6	-22.2	-26.4	403,399.28	616,227.11	32° 6' 30.616 N	103° 57' 28.653 W
2,900.0	0.85	73.44	2,899.6	-22.0	-24.9	403,399.48	616,228.63	32° 6' 30.618 N	103° 57' 28.635 W
3,000.0	0.28	22.41	2,999.6	-21.6	-24.1	403,399.91	616,229.44	32° 6' 30.622 N	103° 57' 28.626 W
3,100.0	0.05	59.47	3,099.6	-21.3	-23.9	403,400.16	616,229.57	32° 6' 30.625 N	103° 57' 28.625 W
3,200.0	0.06	335.49	3,199.6	-21.3	-23.9	403,400.23	616,229.58	32° 6' 30.626 N	103° 57' 28.624 W
3,300.0	0.28	335.31	3,299.6	-21.0	-24.0	403,400.50	616,229.46	32° 6' 30.628 N	103° 57' 28.626 W
3,400.0	0.46	310.84	3,399.6	-20.5	-24.4	403,400.98	616,229.06	32° 6' 30.633 N	103° 57' 28.630 W
3,500.0	0.52	319.92	3,499.6	-19.9	-25.0	403,401.59	616,228.46	32° 6' 30.639 N	103° 57' 28.637 W
3,600.0	0.48	341.41	3,599.5	-19.2	-25.5	403,402.34	616,228.03	32° 6' 30.647 N	103° 57' 28.642 W
3,700.0	0.38	332.17	3,699.5	-18.5	-25.8	403,403.03	616,227.75	32° 6' 30.653 N	103° 57' 28.646 W
3,800.0	0.39	326.26	3,799.5	-17.9	-26.1	403,403.61	616,227.40	32° 6' 30.659 N	103° 57' 28.650 W
3,900.0	0.45	330.26	3,899.5	-17.3	-26.5	403,404.23	616,227.02	32° 6' 30.665 N	103° 57' 28.654 W
4,000.0	0.58	341.43	3,999.5	-16.4	-26.8	403,405.05	616,226.66	32° 6' 30.673 N	103° 57' 28.658 W
4,100.0	0.52	339.31	4,099.5	-15.5	-27.2	403,405.95	616,226.34	32° 6' 30.682 N	103° 57' 28.662 W
4,200.0	0.61	327.85	4,199.5	-14.7	-27.6	403,406.83	616,225.90	32° 6' 30.691 N	103° 57' 28.667 W
4,300.0	0.63	347.22	4,299.5	-13.7	-28.0	403,407.82	616,225.49	32° 6' 30.701 N	103° 57' 28.672 W
4,400.0	0.65	333.71	4,399.5	-12.6	-28.4	403,408.86	616,225.12	32° 6' 30.711 N	103° 57' 28.676 W
4,500.0	0.61	340.22	4,499.5	-11.6	-28.8	403,409.87	616,224.69	32° 6' 30.721 N	103° 57' 28.681 W
4,600.0	0.83	337.48	4,599.5	-10.5	-29.3	403,411.04	616,224.23	32° 6' 30.733 N	103° 57' 28.686 W
4,700.0	0.77	345.12	4,699.5	-9.1	-29.7	403,412.36	616,223.78	32° 6' 30.746 N	103° 57' 28.691 W
4,800.0	0.60	348.63	4,799.5	-8.0	-30.0	403,413.52	616,223.50	32° 6' 30.757 N	103° 57' 28.695 W
4,900.0	0.87	342.41	4,899.5	-6.7	-30.3	403,414.76	616,223.17	32° 6' 30.770 N	103° 57' 28.698 W
5,000.0	0.92	351.92	4,999.5	-5.2	-30.7	403,416.28	616,222.83	32° 6' 30.785 N	103° 57' 28.702 W
5,100.0	0.80	349.23	5,099.5	-3.7	-30.9	403,417.76	616,222.59	32° 6' 30.799 N	103° 57' 28.705 W
5,200.0	0.66	349.95	5,199.4	-2.5	-31.1	403,419.01	616,222.35	32° 6' 30.812 N	103° 57' 28.708 W
5,300.0	0.79	0.72	5,299.4	-1.2	-31.2	403,420.27	616,222.26	32° 6' 30.824 N	103° 57' 28.709 W
5,400.0	0.77	351.90	5,399.4	0.1	-31.3	403,421.62	616,222.18	32° 6' 30.838 N	103° 57' 28.710 W
5,500.0	0.69	345.86	5,499.4	1.4	-31.6	403,422.87	616,221.94	32° 6' 30.850 N	103° 57' 28.712 W
5,600.0	0.59	345.62	5,599.4	2.5	-31.8	403,423.95	616,221.66	32° 6' 30.861 N	103° 57' 28.716 W
5,700.0	0.68	342.77	5,699.4	3.5	-32.1	403,425.02	616,221.36	32° 6' 30.871 N	103° 57' 28.719 W
5,800.0	0.47	330.93	5,799.4	4.4	-32.5	403,425.94	616,220.98	32° 6' 30.880 N	103° 57' 28.723 W
5,900.0	0.51	341.16	5,899.4	5.2	-32.9	403,426.72	616,220.64	32° 6' 30.888 N	103° 57' 28.727 W
6,000.0	0.32	8.27	5,999.4	5.9	-33.0	403,427.42	616,220.54	32° 6' 30.895 N	103° 57' 28.728 W
6,100.0	0.18	270.41	6,099.4	6.2	-33.1	403,427.70	616,220.42	32° 6' 30.898 N	103° 57' 28.730 W
6,200.0	0.05	68.43	6,199.4	6.2	-33.2	403,427.72	616,220.30	32° 6' 30.898 N	103° 57' 28.731 W
6,300.0	0.12	221.15	6,299.4	6.2	-33.2	403,427.65	616,220.27	32° 6' 30.897 N	103° 57' 28.732 W

Stryker Directional Survey Report - Geographic

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well El Jimador Federal #3H
Project:	Eddy County, N.M.	TVD Reference:	GL 3073.7+18 @ 3091.7usft (Silver Oak 7)
Site:	Section 23 T25-S R29-E, El Jimador Federal #3H	MD Reference:	GL 3073.7+18 @ 3091.7usft (Silver Oak 7)
Well:	El Jimador Federal #3H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,348.0	0.28	162.11	6,347.4	6.0	-33.2	403,427.50	616,220.28	32° 6' 30.896 N	103° 57' 28.731 W
6348 VES Gyro Survey									
6,389.0	0.30	191.50	6,388.4	5.8	-33.2	403,427.30	616,220.29	32° 6' 30.894 N	103° 57' 28.731 W
6,421.0	0.10	337.90	6,420.4	5.7	-33.2	403,427.25	616,220.26	32° 6' 30.893 N	103° 57' 28.732 W
6,452.0	3.10	11.50	6,451.4	6.6	-33.1	403,428.09	616,220.42	32° 6' 30.902 N	103° 57' 28.730 W
6,484.0	7.30	11.10	6,483.2	9.4	-32.5	403,430.94	616,220.98	32° 6' 30.930 N	103° 57' 28.723 W
6,515.0	11.60	8.70	6,513.8	14.5	-31.7	403,435.95	616,221.83	32° 6' 30.979 N	103° 57' 28.713 W
6,547.0	16.10	9.10	6,544.9	22.0	-30.5	403,443.52	616,223.02	32° 6' 31.054 N	103° 57' 28.699 W
6,578.0	19.80	9.00	6,574.4	31.5	-29.0	403,452.95	616,224.52	32° 6' 31.148 N	103° 57' 28.681 W
6,610.0	22.90	8.00	6,604.2	43.0	-27.3	403,464.47	616,226.24	32° 6' 31.261 N	103° 57' 28.661 W
6,641.0	26.40	7.40	6,632.3	55.8	-25.5	403,477.29	616,227.96	32° 6' 31.388 N	103° 57' 28.640 W
6,673.0	30.40	6.90	6,660.5	70.9	-23.7	403,492.38	616,229.85	32° 6' 31.538 N	103° 57' 28.618 W
6,705.0	33.50	7.90	6,687.6	87.7	-21.5	403,509.17	616,232.04	32° 6' 31.704 N	103° 57' 28.591 W
6,736.0	36.10	9.50	6,713.1	105.2	-18.8	403,526.66	616,234.72	32° 6' 31.877 N	103° 57' 28.559 W
6,768.0	38.50	11.30	6,738.5	124.2	-15.3	403,545.73	616,238.23	32° 6' 32.065 N	103° 57' 28.518 W
6,800.0	40.70	12.10	6,763.2	144.2	-11.1	403,565.70	616,242.37	32° 6' 32.263 N	103° 57' 28.469 W
6,831.0	44.30	10.80	6,786.0	164.7	-7.0	403,586.22	616,246.52	32° 6' 32.466 N	103° 57' 28.420 W
6,862.0	48.00	9.10	6,807.5	186.7	-3.1	403,608.24	616,250.37	32° 6' 32.683 N	103° 57' 28.374 W
6,894.0	50.50	8.30	6,828.4	210.7	0.5	403,632.20	616,254.04	32° 6' 32.920 N	103° 57' 28.331 W
6,925.0	53.40	8.70	6,847.5	234.8	4.1	403,656.34	616,257.64	32° 6' 33.159 N	103° 57' 28.288 W
6,957.0	56.80	8.20	6,865.8	260.8	8.0	403,682.30	616,261.50	32° 6' 33.416 N	103° 57' 28.242 W
6,988.0	60.10	8.60	6,882.0	286.9	11.9	403,708.43	616,265.36	32° 6' 33.674 N	103° 57' 28.196 W
7,020.0	63.60	7.90	6,897.1	314.8	15.9	403,736.35	616,269.40	32° 6' 33.951 N	103° 57' 28.148 W
7,051.0	65.50	6.70	6,910.4	342.6	19.5	403,764.11	616,272.96	32° 6' 34.225 N	103° 57' 28.105 W
7,083.0	68.80	6.50	6,922.9	371.9	22.8	403,793.40	616,276.35	32° 6' 34.515 N	103° 57' 28.065 W
7,114.0	72.50	6.30	6,933.1	401.0	26.1	403,822.46	616,279.61	32° 6' 34.802 N	103° 57' 28.026 W
7,146.0	77.00	6.50	6,941.6	431.6	29.5	403,853.13	616,283.05	32° 6' 35.106 N	103° 57' 27.984 W
7,177.0	82.00	6.50	6,947.2	461.9	33.0	403,883.41	616,286.50	32° 6' 35.405 N	103° 57' 27.943 W
7,269.0	89.30	4.30	6,954.2	553.2	41.6	403,974.67	616,295.11	32° 6' 36.308 N	103° 57' 27.839 W
7,364.0	92.20	4.00	6,952.9	647.9	48.5	404,069.40	616,301.99	32° 6' 37.245 N	103° 57' 27.755 W
7,458.0	92.60	1.70	6,949.0	741.7	53.2	404,163.20	616,306.66	32° 6' 38.174 N	103° 57' 27.697 W
7,553.0	89.50	358.80	6,947.3	836.7	53.6	404,258.16	616,307.07	32° 6' 39.113 N	103° 57' 27.689 W
7,648.0	89.60	358.80	6,948.0	931.6	51.6	404,353.13	616,305.08	32° 6' 40.053 N	103° 57' 27.708 W
7,742.0	91.00	359.00	6,947.5	1,025.6	49.8	404,447.11	616,303.28	32° 6' 40.983 N	103° 57' 27.725 W
7,837.0	89.80	358.50	6,946.8	1,120.6	47.7	404,542.09	616,301.20	32° 6' 41.923 N	103° 57' 27.745 W
7,932.0	87.10	358.20	6,949.4	1,215.5	45.0	404,637.00	616,298.47	32° 6' 42.863 N	103° 57' 27.773 W
8,027.0	90.20	357.90	6,951.6	1,310.4	41.7	404,731.91	616,295.24	32° 6' 43.802 N	103° 57' 27.807 W
8,121.0	90.30	358.50	6,951.2	1,404.4	38.8	404,825.86	616,292.29	32° 6' 44.732 N	103° 57' 27.838 W
8,216.0	88.70	359.60	6,952.1	1,499.3	37.2	404,920.84	616,290.71	32° 6' 45.672 N	103° 57' 27.852 W
8,311.0	89.90	359.50	6,953.2	1,594.3	36.5	405,015.83	616,289.97	32° 6' 46.612 N	103° 57' 27.857 W
8,406.0	91.60	358.80	6,952.0	1,689.3	35.1	405,110.81	616,288.56	32° 6' 47.552 N	103° 57' 27.869 W
8,501.0	92.10	359.50	6,948.9	1,784.2	33.6	405,205.75	616,287.15	32° 6' 48.492 N	103° 57' 27.882 W
8,596.0	92.30	1.10	6,945.3	1,879.2	34.1	405,300.67	616,287.64	32° 6' 49.431 N	103° 57' 27.872 W
8,690.0	90.50	1.20	6,943.0	1,973.1	36.0	405,394.62	616,289.53	32° 6' 50.361 N	103° 57' 27.847 W
8,784.0	87.80	0.90	6,944.4	2,067.1	37.7	405,488.59	616,291.25	32° 6' 51.291 N	103° 57' 27.823 W
8,879.0	89.40	0.70	6,946.7	2,162.0	39.1	405,583.54	616,292.58	32° 6' 52.230 N	103° 57' 27.804 W
8,972.0	88.90	1.10	6,948.1	2,255.0	40.5	405,676.52	616,294.04	32° 6' 53.150 N	103° 57' 27.783 W
9,068.0	88.80	1.10	6,950.0	2,349.0	42.3	405,770.49	616,295.84	32° 6' 54.080 N	103° 57' 27.758 W
9,161.0	90.10	1.20	6,950.9	2,444.0	44.2	405,865.46	616,297.75	32° 6' 55.020 N	103° 57' 27.732 W
9,255.0	90.80	0.80	6,950.1	2,537.9	45.9	405,959.44	616,299.39	32° 6' 55.950 N	103° 57' 27.709 W
9,350.0	89.90	0.60	6,949.6	2,632.9	47.0	406,054.43	616,300.55	32° 6' 56.890 N	103° 57' 27.692 W
9,444.0	89.30	0.20	6,950.2	2,726.9	47.7	406,148.43	616,301.21	32° 6' 57.820 N	103° 57' 27.680 W
9,539.0	90.10	1.20	6,950.7	2,821.9	48.9	406,243.42	616,302.37	32° 6' 58.760 N	103° 57' 27.663 W
9,632.0	88.60	2.40	6,951.8	2,914.9	51.8	406,336.36	616,305.29	32° 6' 59.680 N	103° 57' 27.625 W

Stryker Directional Survey Report - Geographic

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well El Jimador Federal #3H
Project:	Eddy County, N.M.	TVD Reference:	GL 3073.7+18 @ 3091.7usft (Silver Oak 7)
Site:	Section 23-T25-S R29-E, El Jimador Federal #3H	MD Reference:	GL 3073.7+18 @ 3091.7usft (Silver Oak 7)
Well:	El Jimador Federal #3H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Stryker EDM

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,727.0	91.80	2.20	6,951.4	3,009.8	55.6	406,431.27	616,309.10	32° 7' 0.619 N	103° 57' 27.577 W
9,817.0	89.70	2.80	6,950.2	3,099.7	59.5	406,521.17	616,313.03	32° 7' 1.509 N	103° 57' 27.528 W
9,911.0	89.80	2.90	6,950.7	3,193.6	64.2	406,615.06	616,317.70	32° 7' 2.438 N	103° 57' 27.470 W
10,005.0	90.40	2.40	6,950.5	3,287.5	68.5	406,708.95	616,322.05	32° 7' 3.367 N	103° 57' 27.415 W
10,099.0	89.50	1.40	6,950.6	3,381.4	71.7	406,802.90	616,325.16	32° 7' 4.296 N	103° 57' 27.375 W
10,193.0	89.50	1.20	6,951.4	3,475.4	73.8	406,896.87	616,327.29	32° 7' 5.226 N	103° 57' 27.347 W
10,288.0	90.60	0.70	6,951.3	3,570.4	75.4	406,991.86	616,328.87	32° 7' 6.166 N	103° 57' 27.324 W
10,383.0	89.90	1.30	6,950.9	3,665.3	77.0	407,086.84	616,330.53	32° 7' 7.106 N	103° 57' 27.301 W
10,477.0	90.70	0.80	6,950.4	3,759.3	78.7	407,180.82	616,332.25	32° 7' 8.036 N	103° 57' 27.277 W
10,572.0	90.30	1.50	6,949.6	3,854.3	80.7	407,275.80	616,334.16	32° 7' 8.976 N	103° 57' 27.251 W
10,666.0	88.90	1.90	6,950.2	3,948.3	83.4	407,369.75	616,336.95	32° 7' 9.906 N	103° 57' 27.215 W
10,760.0	89.00	2.00	6,952.0	4,042.2	86.6	407,463.68	616,340.14	32° 7' 10.835 N	103° 57' 27.174 W
10,855.0	90.40	2.00	6,952.5	4,137.1	90.0	407,558.62	616,343.46	32° 7' 11.775 N	103° 57' 27.132 W
10,949.0	89.20	0.70	6,952.8	4,231.1	92.2	407,652.59	616,345.67	32° 7' 12.704 N	103° 57' 27.102 W
11,043.0	90.00	0.10	6,953.4	4,325.1	92.8	407,746.59	616,346.33	32° 7' 13.635 N	103° 57' 27.091 W
11,137.0	89.40	359.80	6,953.9	4,419.1	92.7	407,840.58	616,346.25	32° 7' 14.565 N	103° 57' 27.088 W
11,232.0	89.80	359.00	6,954.6	4,514.1	91.7	407,935.57	616,345.25	32° 7' 15.505 N	103° 57' 27.096 W
11,327.0	90.50	358.50	6,954.3	4,609.1	89.7	408,030.55	616,343.18	32° 7' 16.445 N	103° 57' 27.116 W
11,422.0	90.70	358.50	6,953.4	4,704.0	87.2	408,125.51	616,340.69	32° 7' 17.385 N	103° 57' 27.141 W
11,468.0	91.00	358.50	6,952.7	4,750.0	86.0	408,171.49	616,339.49	32° 7' 17.840 N	103° 57' 27.153 W

11468' MD Projected to Bit

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,348.0	6,347.4	6.0	-33.2	6348' VES Gyro Survey
11,468.0	6,952.7	4,750.0	86.0	11468' MD Projected to Bit