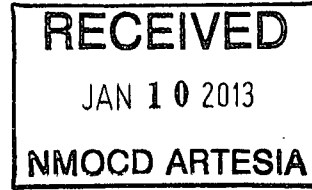




PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288



15-40440

October 3, 2012

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

RE: Cabo Wabo 25 Federal #1H
330' FNL & 660' FWL
Sec. 25, T25S, R29E
Eddy County, New Mexico

Dear Sir,

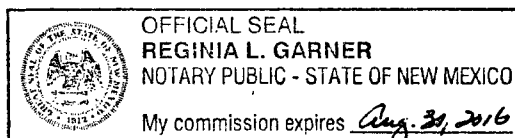
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Eddie LaRue
Operations Manager

State of New Mexico }
County of Eddy }

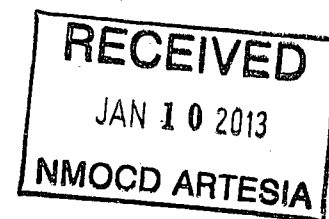
The foregoing was acknowledged before me this 3rd day of October, 2012.

Notary Public

Pason DataHub Deviation Survey

Well Dossier 1346903160 - CABO WABO 25 FED 1H

# Date	Depth	Deviation	Direction	TVD	Horiz
9/6/2012	295	0.00	0.50	0.00	0.00
9/6/2012	605	0.80	0.00	0.00	0.00
9/8/2012	794	1.20	96.40	793.00	1.12
9/8/2012	889	1.40	114.60	888.00	1.76
9/8/2012	985	1.50	112.50	984.00	2.78
9/8/2012	1080	1.60	104.60	1137.00	3.64
9/8/2012	1232	1.50	103.70	1174.82	4.33
9/9/2012	1462	2.55	92.75	1461.00	6.35
9/9/2012	1557	1.10	76.00	1556.00	6.29
9/9/2012	1748	0.40	138.40	1747.00	6.21
9/9/2012	1843	0.60	191.50	1842.00	6.95
9/9/2012	2034	0.60	229.90	2033.00	8.92
9/9/2012	2130	0.40	222.10	2129.00	9.50
9/9/2012	2225	0.40	278.60	22453.00	9.68
9/9/2012	2320	0.40	301.80	2319.00	9.44
9/9/2012	2415	0.50	311.90	2414.00	8.98
9/10/2012	2511	0.80	333.60	2510.00	8.08
9/10/2012	2702	1.40	100.40	2701.00	17.28
9/10/2012	2798	1.10	87.10	2797.00	7.49
9/10/2012	2988	2.00	117.60	2987.00	9.05
9/10/2012	3083	1.40	121.40	3082.00	10.48
9/10/2012	3178	1.10	118.40	3177.00	11.56
9/10/2012	3248	1.10	133.30	3247.00	12.36
9/13/2012	3361	0.90	0.00	0.00	0.00
9/13/2012	3519	0.70	0.00	0.00	0.00
9/13/2012	3824	0.60	0.00	0.00	0.00
9/13/2012	3984	0.40	0.00	0.00	0.00
9/13/2012	4174	0.30	0.00	0.00	0.00
9/13/2012	4365	0.60	0.00	0.00	0.00
9/13/2012	4588	0.30	0.00	0.00	0.00
9/13/2012	4812	0.30	0.00	0.00	0.00
9/14/2012	4987	1.10	0.00	0.00	0.00
9/14/2012	5084	1.40	0.00	0.00	0.00
9/14/2012	5177	1.40	0.00	0.00	0.00
9/14/2012	5271	1.10	0.00	0.00	0.00
9/14/2012	5480	1.80	0.00	0.00	0.00
9/14/2012	5576	2.10	0.00	0.00	0.00
9/14/2012	5672	1.60	0.00	0.00	0.00
9/14/2012	5894	1.60	0.00	0.00	0.00
9/14/2012	6116	0.90	0.00	0.00	0.00
9/15/2012	6290	1.30	0.00	0.00	0.00
9/15/2012	6513	1.30	0.00	0.00	0.00



#	Date	Depth	Deviation	Direction	TVD	Horiz
	9/15/2012	6785	0.90	0.00	0.00	0.00
	9/15/2012	7007	1.50	0.00	0.00	0.00
	9/15/2012	7134	1.20	0.00	0.00	0.00
	9/16/2012	7357	1.30	0.00	0.00	0.00
	9/16/2012	7580	1.20	0.00	0.00	0.00
	9/16/2012	7802	1.00	0.00	0.00	0.00
	9/16/2012	8025	0.10	0.00	0.00	0.00
	9/17/2012	8247	0.50	0.00	0.00	0.00
	9/18/2012	8470	0.90	0.00	0.00	0.00
	9/18/2012	8694	0.90	0.00	0.00	0.00
	9/18/2012	8916	0.30	0.00	0.00	0.00
	9/18/2012	9139	1.10	0.00	0.00	0.00
	9/18/2012	9439	0.90	0.00	0.00	0.00
	9/19/2012	9680	0.80	0.00	0.00	0.00
	9/19/2012	9903	2.30	0.00	0.00	0.00
	9/22/2012	7357	2.50	187.10	7312.79	0.00
	9/22/2012	7440	15.50	181.80	7136.29	0.00
	9/22/2012	7568	31.80	169.50	0.00	0.00
	9/22/2012	7600	36.80	168.10	7580.13	139.69
	9/22/2012	7727	46.30	178.80	7673.94	224.50
	9/22/2012	7823	50.20	182.10	7736.42	297.37
	9/23/2012	7855	51.00	182.70	7756.00	321.80
	9/25/2012	7314	4.60	151.40	7312.00	49.00
	9/25/2012	7346	8.80	134.90	7344.00	0.00
	9/25/2012	7378	11.20	7376.00	0.00	0.00
	9/25/2012	7473	21.50	129.40	0.00	0.00
	9/26/2012	7505	22.70	127.30	7496.00	83.33
	9/26/2012	7600	31.90	138.00	7581.01	115.25
	9/26/2012	7632	35.10	142.60	7607.69	129.10
	9/26/2012	7696	38.90	148.40	7658.00	164.00
	9/26/2012	7791	48.40	148.70	7727.00	222.00
	9/26/2012	7886	60.90	148.20	7782.00	289.00
	9/26/2012	7950	69.80	152.80	7809.00	0.00
	9/27/2012	7981	74.10	155.20	7819.00	365.00
	9/27/2012	8013	77.60	154.50	7827.00	393.00
	9/27/2012	8045	79.70	155.60	7834.34	422.55
	9/27/2012	8140	87.30	157.40	7843.85	509.68
	9/27/2012	8300	87.90	170.20	7847.39	663.36
	9/28/2012	8332	88.70	173.30	8748.00	0.00
	9/28/2012	8554	92.40	1887.10	8844.00	0.00
	9/28/2012	9032	88.80	185.50	7830.00	1388.00
	9/28/2012	9318	89.80	187.90	7830.00	1671.00
	9/28/2012	9509	90.90	186.70	7831.00	1860.00
	9/28/2012	9604	88.60	186.40	7831.46	1954.81
	9/28/2012	9891	87.70	186.20	7840.72	2239.25

#	Date	Depth	Deviation	Direction	TVD	Horiz
	9/28/2012	10081	86.70	186.00	7853.64	2427.19
	9/29/2012	10272	90.40	187.10	7857.24	2616.40
	9/29/2012	10463	89.70	158.10	7875.41	2805.57
	9/29/2012	10654	90.20	184.80	7853.74	2925.32
	9/29/2012	10750	90.80	183.90	7252.00	3090.00
	9/29/2012	10940	90.10	183.40	7849.00	3324.00
	9/29/2012	11036	91.60	181.60	7848.00	3375.00
	9/29/2012	11226	92.20	180.90	7845.11	3565.55
	9/29/2012	11416	93.00	181.10	7834.67	3755.10
	9/29/2012	11607	89.30	182.10	7828.24	3945.74
	9/30/2012	11703	89.30	181.60	7829.41	4041.59
	9/30/2012	11894	90.00	180.40	7830.00	0.00
	9/30/2012	12218	92.10	179.30	7826.00	0.00

EOF

CABO WABO 25 FEDERAL #1H

30-015-40440

Sec 25-T25S-R29E

RECEIVED

JAN 10 2013

NMOCD ARTESIA

<u>Perfs</u>	<u>7 1/2% Acid (Gal)</u>	<u>Sand (#)</u>	<u>Fluid (Gal)</u>
11937-12141'	3847	302038	370477
11633-11838'	2898	300423	331309
11328-11533'	3005	297044	264528
11024-11229'	2993	300904	252214
10720-10926'	3024	301793	238602
10416-10620'	2689	300227	240963
10111-10316'	2707	299414	240402
9807-10012'	2636	300175	240673
9503-9707'	2932	299117	235964
9198-9403'	2987	299220	236118
8894-9099'	2996	295303	245321
8590-8795'	3135	299794	235569
8285-8490'	2943	195700	188681
7981-8186'	2982	408340	230328
Totals	41774	4199492	3551149



A GYRO TECHNOLOGIES INC. COMPANY

PO Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

September 27, 2012

COG Operating LLC (Concho)
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanica Castillo

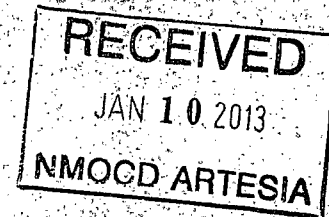
RE: Cabo Wabo 25 Federal No. 001H

Please find enclosed a copy of the survey from 0.00' to 7500.00' ran on the above referenced well.

If I can be of any further service please do not hesitate to call me at 800-606-4976.

Sincerely,

Keith Havelka
Operations



Company: COG Operating LLC (Concho)
Lease/Well: Cabo Wabo 25 Federal No. / 001H



Rig Name: Silver Oak 7
State/County: New Mexico / Eddy
Latitude: 32.11, Longitude: -103.94
GRID North is 0.21 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 18'

DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: cabo wabo 25 fed 1h_ed.ut
Minimum Curvature Method
Report Date/Time: 9/27/2012 / 10:41



Vaughn Energy Services
Gardendale, Texas
432-563-5444

Surveyor: Chris Carroll
Cabo Wabo 25 Federal No. 001H / API 30-015-40440

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W 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	****
100.00	0.38	62.92	100.00	0.15	0.30	0.33	62.92	0.38
200.00	0.26	74.69	200.00	0.36	0.81	0.89	65.87	0.14
300.00	0.51	73.91	300.00	0.55	1.45	1.55	69.42	0.25
400.00	0.72	72.51	399.99	0.86	2.48	2.62	70.92	0.22
500.00	0.79	70.81	499.98	1.27	3.73	3.94	71.15	0.07
600.00	0.67	86.39	599.97	1.54	4.97	5.20	72.80	0.23
700.00	1.22	92.05	699.96	1.54	6.62	6.79	76.93	0.56
800.00	1.46	99.70	799.93	1.28	8.94	9.03	81.82	0.30
900.00	1.45	101.55	899.90	0.82	11.44	11.47	85.92	0.05
1000.00	1.47	115.37	999.87	0.01	13.84	13.84	89.94	0.35
1100.00	1.51	102.30	1099.83	-0.82	16.28	16.30	92.87	0.34
1200.00	1.53	112.61	1199.80	-1.61	18.80	18.87	94.89	0.27
1300.00	2.03	103.12	1299.75	-2.52	21.75	21.90	96.61	0.58
1400.00	2.21	106.46	1399.68	-3.47	25.32	25.56	97.80	0.22
1500.00	2.14	108.32	1499.61	-4.60	28.94	29.30	99.03	0.10
1600.00	1.24	122.59	1599.57	-5.77	31.62	32.14	100.34	0.99
1700.00	0.56	130.17	1699.55	-6.67	32.90	33.57	101.46	0.68
1800.00	0.27	175.65	1799.55	-7.22	33.30	34.07	102.23	0.42

Measured Depth FT	Incl. Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.33	196.89	1899.55	-7.72	33.23	34.12	103.09	0.13
2000.00	0.77	219.84	1999.54	-8.52	32.72	33.81	104.59	0.49
2100.00	0.44	216.85	2099.54	-9.34	32.05	33.39	106.25	0.34
2200.00	0.61	260.42	2199.53	-9.74	31.29	32.78	107.29	0.42
2300.00	0.41	314.85	2299.53	-9.58	30.51	31.98	107.43	0.50
2400.00	0.40	319.14	2399.53	-9.06	30.03	31.37	106.79	0.03
2500.00	0.35	321.84	2499.53	-8.56	29.61	30.83	106.12	0.05
2600.00	0.22	102.79	2599.53	-8.36	29.61	30.77	105.77	0.54
2700.00	0.93	100.72	2699.52	-8.55	30.59	31.77	105.62	0.71
2800.00	0.97	101.90	2799.51	-8.88	32.21	33.41	105.41	0.05
2900.00	1.40	105.97	2899.49	-9.39	34.21	35.48	105.34	0.44
3000.00	1.85	118.28	2999.45	-10.49	36.81	38.27	105.90	0.57
3100.00	1.54	118.84	3099.40	-11.90	39.40	41.16	106.80	0.31
3200.00	0.94	133.64	3199.38	-13.11	41.17	43.21	107.67	0.67
3300.00	0.55	130.43	3299.37	-13.99	42.14	44.40	108.37	0.39
3400.00	0.81	148.07	3399.36	-14.91	42.88	45.39	109.17	0.33
3500.00	0.30	164.93	3499.36	-15.75	43.32	46.09	109.98	0.53
3600.00	0.46	129.88	3599.36	-16.26	43.69	46.62	110.41	0.27
3700.00	0.35	156.94	3699.35	-16.80	44.12	47.21	110.84	0.22
3800.00	0.25	65.90	3799.35	-16.99	44.44	47.57	110.93	0.44
3900.00	0.35	86.47	3899.35	-16.88	44.94	48.01	110.59	0.15
4000.00	0.13	60.46	3999.35	-16.81	45.35	48.36	110.33	0.24
4100.00	0.41	110.92	4099.35	-16.88	45.79	48.80	110.23	0.34
4200.00	0.08	121.24	4199.35	-17.04	46.18	49.23	110.26	0.33
4300.00	0.20	280.80	4299.35	-17.05	46.08	49.13	110.30	0.28
4400.00	0.19	101.85	4399.35	-17.05	46.07	49.12	110.31	0.38
4500.00	0.10	120.42	4499.35	-17.13	46.30	49.37	110.30	0.10
4600.00	0.17	169.31	4599.35	-17.32	46.41	49.53	110.47	0.13
4700.00	0.24	237.42	4699.35	-17.58	46.25	49.48	110.81	0.24
4800.00	0.57	234.48	4799.34	-17.98	45.67	49.08	111.49	0.33
4900.00	0.51	252.85	4899.34	-18.41	44.84	48.47	112.32	0.18
5000.00	0.82	252.18	4999.33	-18.76	43.73	47.58	113.21	0.31
5100.00	1.06	256.00	5099.32	-19.20	42.15	46.32	114.49	0.25
5200.00	0.95	262.36	5199.30	-19.53	40.43	44.90	115.79	0.16
5300.00	0.99	248.60	5299.29	-19.96	38.80	43.63	117.23	0.24
5400.00	1.18	239.79	5399.27	-20.79	37.10	42.53	119.27	0.25
5500.00	1.71	240.45	5499.24	-22.04	34.92	41.30	122.26	0.53
5600.00	1.51	234.24	5599.20	-23.55	32.56	40.18	125.88	0.26
5700.00	1.77	238.72	5699.16	-25.12	30.17	39.25	129.78	0.30

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	1.54	233.47	5799.12	-26.72	27.76	38.53	133.91	0.28
5900.00	1.54	242.39	5899.08	-28.15	25.49	37.97	137.83	0.24
6000.00	1.50	231.75	5999.05	-29.58	23.27	37.64	141.82	0.29
6100.00	1.10	219.85	6099.02	-31.13	21.62	37.90	145.22	0.48
6200.00	1.16	243.28	6199.00	-32.32	20.10	38.06	148.13	0.46
6300.00	1.13	227.89	6298.98	-33.44	18.46	38.20	151.09	0.31
6400.00	0.92	216.85	6398.97	-34.74	17.25	38.79	153.59	0.28
6500.00	0.75	227.94	6498.95	-35.83	16.28	39.35	155.56	0.23
6600.00	0.83	229.41	6598.94	-36.74	15.25	39.77	157.46	0.08
6700.00	0.85	237.02	6698.93	-37.61	14.07	40.16	159.49	0.11
6800.00	0.87	220.73	6798.92	-38.59	12.95	40.71	161.45	0.24
6900.00	0.97	217.91	6898.91	-39.83	11.94	41.58	163.32	0.11
7000.00	1.05	197.56	6998.89	-41.37	11.14	42.85	164.93	0.37
7100.00	1.45	184.99	7098.87	-43.51	10.76	44.82	166.11	0.48
7200.00	1.70	150.21	7198.84	-46.05	11.38	47.44	166.11	0.97
7300.00	1.35	142.85	7298.80	-48.29	12.84	49.96	165.11	0.40
7400.00	1.47	116.12	7398.77	-49.79	14.70	51.92	163.55	0.66
7500.00	1.71	105.87	7498.73	-50.77	17.29	53.63	161.19	0.37



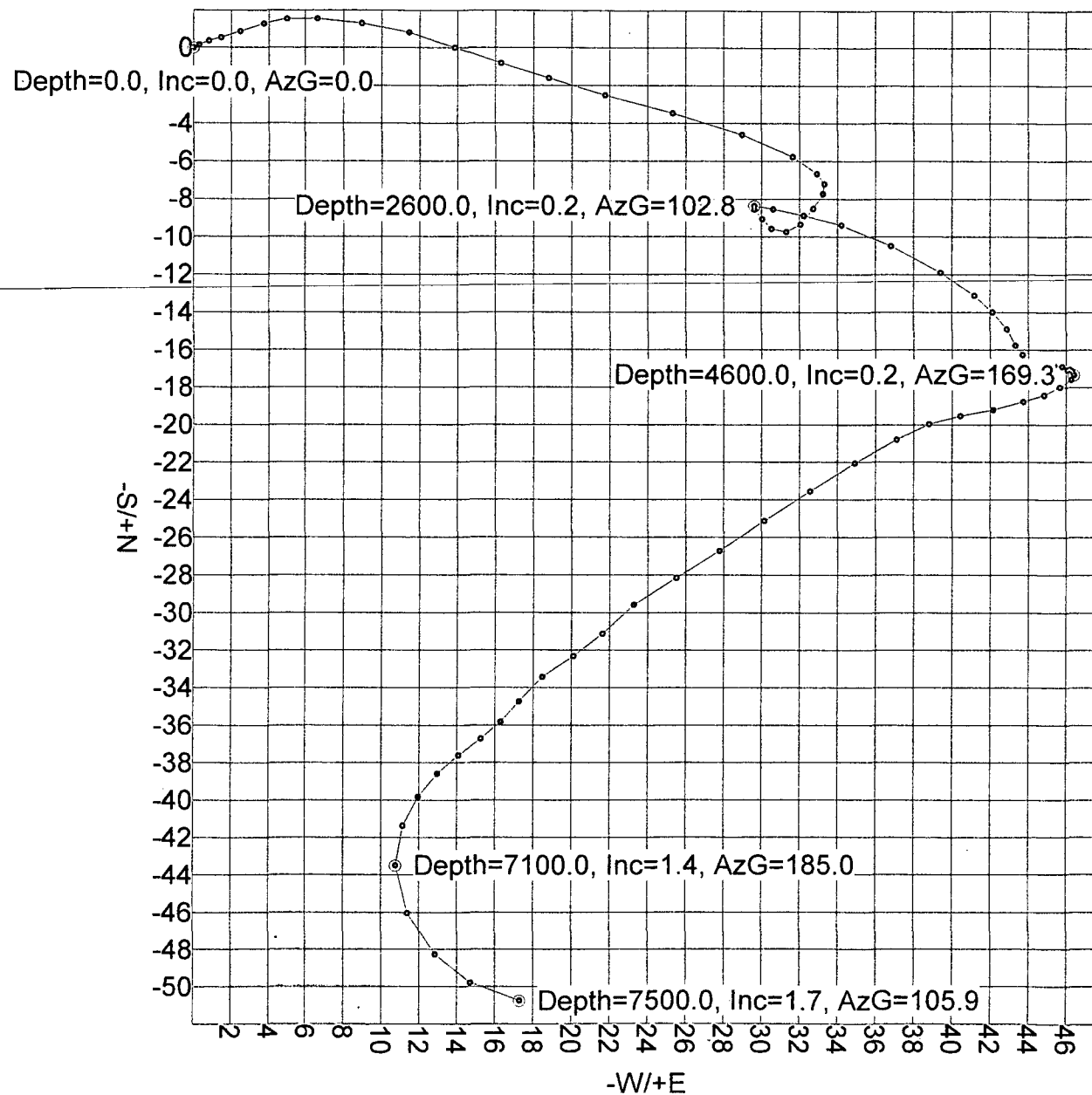
Vaughn Energy Services

Gardendale, Texas

432-563-5444

Surveyor: Chris Carroll

Cabo Wabo 25 Federal No. 001H / API 30-015-40440



VES Survey Date: 09/19/2012



COG Operating LLC

Eddy County, NM

Cabo Wabo 25 Federal 1H

#1H

ST1

Design: ST1

Standard Survey Report

01 October, 2012



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17' KB)
Site:	Cabo Wabo 25 Federal 1H	MD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17' KB)
Well:	#1H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	Houston R5000 Database

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

Site	Cabo Wabo 25 Federal 1H		
Site Position:		Northing:	402,913.09 usft
From:	Map	Easting:	620,504.66 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 6' 25.655 N
		Longitude:	103° 56' 38.940 W
		Grid Convergence:	0.21 °

Well	#1H					
Well Position	+N/-S	0.0 usft	Northing:	402,913.09 usft	Latitude:	32° 6' 25.655 N
	+E/-W	0.0 usft	Easting:	620,504.66 usft	Longitude:	103° 56' 38.940 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,080.0 usft

Wellbore	ST1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/26/2012	7.59	59.98	48,379

Design	ST1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	7,200.0
Vertical Section:	Depth From (TVD)		+N/-S	+E/-W	Direction
	(usft)		(usft)	(usft)	(°)
			0.0	0.0	0.0
					178.69

Survey Program	Date	10/1/2012		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.0	7,200.0	Gyro (OH)	CB-GYRO-MS	Camera based gyro multishot
7,314.0	12,218.0	MWD2 (ST1)	MWD	MWD - Standard
12,262.0	12,262.0	PTB (ST1)	MWD	MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.38	62.92	100.0	0.2	0.3	-0.1	0.38	0.38	0.00	
200.0	0.26	74.69	200.0	0.4	0.8	-0.3	0.14	-0.12	11.77	
300.0	0.51	73.91	300.0	0.5	1.5	-0.5	0.25	0.25	-0.78	
400.0	0.72	72.51	400.0	0.9	2.5	-0.8	0.21	0.21	-1.40	
500.0	0.79	70.81	500.0	1.3	3.7	-1.2	0.07	0.07	-1.70	
600.0	0.67	86.39	600.0	1.5	5.0	-1.4	0.23	-0.12	15.58	
700.0	1.22	92.05	700.0	1.5	6.6	-1.4	0.56	0.55	5.66	
800.0	1.46	99.70	799.9	1.3	8.9	-1.1	0.30	0.24	7.65	

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17" KB)
Site:	Cabo Wabo 25 Federal 1H	MD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17" KB)
Well:	#1H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	Houston R5000 Database

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
900.0	1.45	101.55	899.9	0.8	11.4	-0.6	0.05	-0.01	1.85	
1,000.0	1.47	115.37	999.9	0.0	13.8	0.3	0.35	0.02	13.82	
1,100.0	1.51	102.30	1,099.8	-0.8	16.3	1.2	0.34	0.04	-13.07	
1,200.0	1.53	112.61	1,199.8	-1.6	18.8	2.0	0.27	0.02	10.31	
1,300.0	2.03	103.12	1,299.8	-2.5	21.8	3.0	0.58	0.50	-9.49	
1,400.0	2.21	106.46	1,399.7	-3.5	25.3	4.1	0.22	0.18	3.34	
1,500.0	2.14	108.32	1,499.6	-4.6	28.9	5.3	0.10	-0.07	1.86	
1,600.0	1.24	122.59	1,599.6	-5.8	31.6	6.5	0.99	-0.90	14.27	
1,700.0	0.56	130.17	1,699.6	-6.7	32.9	7.4	0.69	-0.68	7.58	
1,800.0	0.27	175.65	1,799.6	-7.2	33.3	8.0	0.42	-0.29	45.48	
1,900.0	0.33	196.89	1,899.5	-7.7	33.2	8.5	0.13	0.06	21.24	
2,000.0	0.77	219.84	1,999.5	-8.5	32.7	9.3	0.48	0.44	22.95	
2,100.0	0.44	216.85	2,099.5	-9.4	32.1	10.1	0.33	-0.33	-2.99	
2,200.0	0.61	260.42	2,199.5	-9.7	31.3	10.5	0.42	0.17	43.57	
2,300.0	0.41	314.85	2,299.5	-9.6	30.5	10.3	0.50	-0.20	54.43	
2,400.0	0.40	319.14	2,399.5	-9.1	30.1	9.8	0.03	-0.01	4.29	
2,500.0	0.35	321.84	2,499.5	-8.6	29.6	9.2	0.05	-0.05	2.70	
2,600.0	0.22	102.79	2,599.5	-8.4	29.6	9.0	0.54	-0.13	140.95	
2,700.0	0.93	100.72	2,699.5	-8.6	30.6	9.3	0.71	0.71	-2.07	
2,800.0	0.97	101.90	2,799.5	-8.9	32.2	9.6	0.04	0.04	1.18	
2,900.0	1.40	105.97	2,899.5	-9.4	34.2	10.2	0.44	0.43	4.07	
3,000.0	1.85	118.28	2,999.4	-10.5	36.8	11.3	0.57	0.45	12.31	
3,100.0	1.54	118.84	3,099.4	-11.9	39.4	12.8	0.31	-0.31	0.56	
3,200.0	0.94	133.64	3,199.4	-13.1	41.2	14.1	0.68	-0.60	14.80	
3,300.0	0.55	130.43	3,299.4	-14.0	42.2	15.0	0.39	-0.39	-3.21	
3,400.0	0.81	148.07	3,399.4	-14.9	42.9	15.9	0.33	0.26	17.64	
3,500.0	0.30	164.93	3,499.4	-15.8	43.4	16.8	0.53	-0.51	16.86	
3,600.0	0.46	129.88	3,599.4	-16.3	43.7	17.3	0.28	0.16	-35.05	
3,700.0	0.35	156.94	3,699.4	-16.8	44.2	17.8	0.22	-0.11	27.06	
3,800.0	0.25	65.90	3,799.4	-17.0	44.5	18.0	0.43	-0.10	-91.04	
3,900.0	0.35	86.47	3,899.3	-16.9	45.0	17.9	0.15	0.10	20.57	
4,000.0	0.13	60.46	3,999.3	-16.8	45.4	17.9	0.24	-0.22	-26.01	
4,100.0	0.41	110.92	4,099.3	-16.9	45.8	17.9	0.34	0.28	50.46	
4,200.0	0.08	121.24	4,199.3	-17.1	46.2	18.1	0.33	-0.33	10.32	
4,300.0	0.20	280.80	4,299.3	-17.1	46.1	18.1	0.28	0.12	159.56	
4,400.0	0.19	101.85	4,399.3	-17.1	46.1	18.1	0.39	-0.01	-178.95	
4,500.0	0.10	120.42	4,499.3	-17.1	46.3	18.2	0.10	-0.09	18.57	
4,600.0	0.17	169.31	4,599.3	-17.3	46.4	18.4	0.13	0.07	48.89	
4,700.0	0.24	237.42	4,699.3	-17.6	46.3	18.6	0.24	0.07	68.11	
4,800.0	0.57	234.48	4,799.3	-18.0	45.7	19.0	0.33	0.33	-2.94	
4,900.0	0.51	252.85	4,899.3	-18.4	44.9	19.4	0.18	-0.06	18.37	
5,000.0	0.82	252.18	4,999.3	-18.8	43.8	19.8	0.31	0.31	-0.67	
5,100.0	1.06	256.00	5,099.3	-19.2	42.2	20.2	0.25	0.24	3.82	

Company:	COG-Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17' KB)
Site:	Cabo Wabo 25 Federal 1H	MD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17' KB)
Well:	#1H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	Houston R5000 Database

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,200.0	0.95	262.36	5,199.3	-19.5	40.5	20.5	0.16	-0.11	6.36
5,300.0	0.99	248.60	5,299.3	-20.0	38.8	20.8	0.24	0.04	-13.76
5,400.0	1.18	239.79	5,399.3	-20.8	37.1	21.6	0.25	0.19	-8.81
5,500.0	1.71	240.45	5,499.2	-22.1	35.0	22.8	0.53	0.53	0.66
5,600.0	1.51	234.24	5,599.2	-23.6	32.6	24.3	0.27	-0.20	-6.21
5,700.0	1.77	238.72	5,699.2	-25.1	30.2	25.8	0.29	0.26	4.48
5,800.0	1.54	233.47	5,799.1	-26.7	27.8	27.4	0.28	-0.23	-5.25
5,900.0	1.54	242.39	5,899.1	-28.2	25.5	28.7	0.24	0.00	8.92
6,000.0	1.50	231.75	5,999.0	-29.6	23.3	30.1	0.28	-0.04	-10.64
6,100.0	1.10	219.85	6,099.0	-31.1	21.7	31.6	0.48	-0.40	-11.90
6,200.0	1.16	243.28	6,199.0	-32.3	20.1	32.8	0.46	0.06	23.43
6,300.0	1.13	227.89	6,299.0	-33.4	18.5	33.9	0.31	-0.03	-15.39
6,400.0	0.92	216.85	6,399.0	-34.7	17.3	35.1	0.29	-0.21	-11.04
6,500.0	0.75	227.94	6,499.0	-35.8	16.3	36.2	0.23	-0.17	11.09
6,600.0	0.83	229.41	6,598.9	-36.7	15.3	37.1	0.08	0.08	1.47
6,700.0	0.85	237.02	6,698.9	-37.6	14.1	37.9	0.11	0.02	7.61
6,800.0	0.87	220.73	6,798.9	-38.6	13.0	38.9	0.24	0.02	-16.29
6,900.0	0.97	217.91	6,898.9	-39.8	12.0	40.1	0.11	0.10	-2.82
7,000.0	1.05	197.56	6,998.9	-41.4	11.2	41.6	0.37	0.08	-20.35
7,100.0	1.45	184.99	7,098.9	-43.5	10.8	43.7	0.48	0.40	-12.57
7,200.0	1.70	150.21	7,198.8	-46.1	11.4	46.3	0.97	0.25	-34.78
Tie into OH / KOP @ 7200' MD									
7,314.0	4.60	151.40	7,312.7	-51.5	14.5	51.9	2.54	2.54	1.04
7,346.0	8.20	134.90	7,344.4	-54.3	16.7	54.6	12.52	11.25	-51.56
7,378.0	11.50	142.40	7,376.0	-58.4	20.3	58.9	11.04	10.31	23.44
7,409.0	15.20	135.20	7,406.1	-63.8	25.0	64.3	13.06	11.94	-23.23
7,441.0	18.00	134.70	7,436.8	-70.2	31.5	70.9	8.76	8.75	-1.56
7,473.0	21.50	129.40	7,466.9	-77.4	39.5	78.3	12.28	10.94	-16.56
7,505.0	22.70	127.30	7,496.6	-84.9	49.0	86.0	4.49	3.75	-6.56
7,537.0	25.10	135.40	7,525.8	-93.5	58.7	94.8	12.69	7.50	25.31
7,568.0	29.50	138.90	7,553.4	-103.9	68.3	105.4	15.10	14.19	11.29
7,600.0	31.90	138.00	7,580.9	-116.1	79.1	117.9	7.64	7.50	-2.81
7,632.0	35.10	142.60	7,607.6	-129.7	90.4	131.7	12.76	10.00	14.38
7,664.0	37.30	147.90	7,633.4	-145.2	101.1	147.5	11.95	6.88	16.56
7,696.0	38.90	148.40	7,658.6	-162.0	111.5	164.5	5.09	5.00	1.56
7,728.0	41.90	147.30	7,682.9	-179.6	122.6	182.3	9.64	9.38	-3.44
7,759.0	44.90	149.50	7,705.5	-197.7	133.7	200.7	10.84	9.68	7.10
7,791.0	48.40	148.70	7,727.4	-217.7	145.7	220.9	11.09	10.94	-2.50
7,823.0	51.90	149.40	7,747.9	-238.7	158.3	242.3	11.07	10.94	2.19
7,854.0	56.00	148.60	7,766.2	-260.2	171.2	264.1	13.39	13.23	-2.58
7,886.0	60.90	148.20	7,782.9	-283.4	185.5	287.6	15.35	15.31	-1.25
7,918.0	65.20	149.80	7,797.4	-307.9	200.2	312.4	14.16	13.44	5.00
7,950.0	69.80	152.80	7,809.6	-333.8	214.4	338.6	16.78	14.38	9.38
7,981.0	74.10	155.20	7,819.3	-360.3	227.3	365.4	15.70	13.87	7.74

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17' KB)
Site:	Cabo Wabo 25 Federal 1H	MD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17' KB)
Well:	#1H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	Houston R5000 Database

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,013.0	77.60	154.50	7,827.1	-388.4	240.5	393.8	11.14	10.94	-2.19
8,045.0	79.70	155.60	7,833.4	-416.8	253.7	422.5	7.38	6.56	3.44
8,077.0	82.70	155.40	7,838.3	-445.6	266.8	451.6	9.40	9.38	-0.63
8,108.0	84.80	156.50	7,841.6	-473.7	279.4	480.0	7.64	6.77	3.55
8,140.0	87.30	157.40	7,843.8	-503.1	291.9	509.6	8.30	7.81	2.81
8,172.0	89.60	158.80	7,844.7	-532.8	303.8	539.6	8.41	7.19	4.38
8,197.5	90.00	160.63	7,844.8	-556.7	312.6	563.7	7.36	1.56	7.19
EOC - 8197.5' MD, 7844.8' TVD, 90.00° INC, 160.63° AZI, 563.7' VS									
8,204.0	90.10	161.10	7,844.8	-562.8	314.8	569.9	7.36	1.56	7.19
8,236.0	88.60	164.40	7,845.2	-593.4	324.3	600.7	11.33	-4.69	10.31
8,268.0	87.70	167.20	7,846.2	-624.4	332.1	631.8	9.19	-2.81	8.75
8,300.0	87.90	170.20	7,847.4	-655.7	338.4	663.3	9.39	0.63	9.38
8,332.0	88.70	173.30	7,848.4	-687.4	343.0	695.1	10.00	2.50	9.69
8,363.0	89.30	176.20	7,848.9	-718.3	345.8	726.0	9.55	1.94	9.35
8,395.0	89.90	179.00	7,849.1	-750.2	347.1	758.0	8.95	1.88	8.75
8,427.0	90.80	182.50	7,848.9	-782.2	346.7	789.9	11.29	2.81	10.94
8,459.0	91.70	184.90	7,848.2	-814.1	344.6	821.8	8.01	2.81	7.50
8,554.0	92.40	187.10	7,844.8	-908.6	334.7	916.0	2.43	0.74	2.32
8,650.0	91.50	187.10	7,841.6	-1,003.8	322.9	1,010.9	0.94	-0.94	0.00
8,745.0	91.90	187.60	7,838.8	-1,097.9	310.7	1,104.8	0.67	0.42	0.53
8,841.0	92.20	187.20	7,835.3	-1,193.1	298.4	1,199.6	0.52	0.31	-0.42
8,937.0	92.20	186.70	7,831.6	-1,288.3	286.8	1,294.5	0.52	0.00	-0.52
9,032.0	88.80	185.50	7,830.8	-1,382.7	276.7	1,388.7	3.80	-3.58	-1.26
9,128.0	89.00	186.50	7,832.7	-1,478.2	266.6	1,483.9	1.06	0.21	1.04
9,223.0	91.90	187.40	7,831.9	-1,572.5	255.1	1,577.9	3.20	3.05	0.95
9,318.0	89.80	187.90	7,830.5	-1,666.6	242.5	1,671.7	2.27	-2.21	0.53
9,413.0	89.30	187.10	7,831.2	-1,760.8	230.1	1,765.6	0.99	-0.53	-0.84
9,509.0	90.90	186.70	7,831.1	-1,856.1	218.6	1,860.6	1.72	1.67	-0.42
9,604.0	88.60	186.40	7,831.5	-1,950.5	207.7	1,954.7	2.44	-2.42	-0.32
9,700.0	87.90	185.80	7,834.4	-2,045.9	197.5	2,049.9	0.96	-0.73	-0.63
9,795.0	87.10	186.00	7,838.6	-2,140.3	187.8	2,144.0	0.87	-0.84	0.21
9,891.0	87.70	186.20	7,842.9	-2,235.7	177.6	2,239.1	0.66	0.63	0.21
9,986.0	85.00	186.20	7,849.0	-2,329.9	167.3	2,333.1	2.84	-2.84	0.00
10,081.0	86.70	186.00	7,855.8	-2,424.1	157.3	2,427.1	1.80	1.79	-0.21
10,177.0	89.30	186.20	7,859.2	-2,519.5	147.1	2,522.2	2.72	2.71	0.21
10,272.0	90.40	187.10	7,859.4	-2,613.9	136.1	2,616.3	1.50	1.16	0.95
10,368.0	89.80	187.10	7,859.3	-2,709.1	124.2	2,711.3	0.63	-0.63	0.00
10,463.0	89.70	185.10	7,859.7	-2,803.6	114.1	2,805.5	2.11	-0.11	-2.11
10,559.0	92.30	185.30	7,858.0	-2,899.2	105.4	2,900.8	2.72	2.71	0.21
10,654.0	90.20	184.80	7,855.9	-2,993.8	97.1	2,995.2	2.27	-2.21	-0.53
10,750.0	90.80	183.90	7,855.1	-3,089.5	89.8	3,090.7	1.13	0.63	-0.94
10,845.0	91.10	183.40	7,853.5	-3,184.3	83.7	3,185.4	0.61	0.32	-0.53
10,940.0	90.10	183.40	7,852.5	-3,279.1	78.1	3,280.0	1.05	-1.05	0.00

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #1H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17" KB)
Site:	Cabo Wabo 25 Federal 1H	MD Reference:	WELL @ 3097.0usft (Silver Oak #7 - 17" KB)
Well:	#1H	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	ST1	Database:	Houston R5000 Database

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
11,036.0	91.60	181.60	7,851.1	-3,375.0	73.9	3,375.8	2.44	1.56	-1.88	
11,131.0	91.70	181.40	7,848.4	-3,469.9	71.4	3,470.7	0.24	0.11	-0.21	
11,226.0	92.20	180.90	7,845.1	-3,564.9	69.5	3,565.5	0.74	0.53	-0.53	
11,321.0	93.70	181.10	7,840.3	-3,659.7	67.9	3,660.3	1.59	1.58	0.21	
11,416.0	93.00	181.10	7,834.7	-3,754.5	66.0	3,755.1	0.74	-0.74	0.00	
11,512.0	92.70	181.10	7,829.9	-3,850.4	64.2	3,850.9	0.31	-0.31	0.00	
11,607.0	89.30	182.10	7,828.3	-3,945.3	61.5	3,945.7	3.73	-3.58	1.05	
11,703.0	89.30	181.60	7,829.4	-4,041.3	58.5	4,041.5	0.52	0.00	-0.52	
11,798.0	89.70	180.70	7,830.3	-4,136.2	56.5	4,136.5	1.04	0.42	-0.95	
11,894.0	90.00	180.40	7,830.5	-4,232.2	55.6	4,232.4	0.44	0.31	-0.31	
11,989.0	90.00	179.70	7,830.5	-4,327.2	55.5	4,327.4	0.74	0.00	-0.74	
12,085.0	90.70	180.20	7,829.9	-4,423.2	55.6	4,423.4	0.90	0.73	0.52	
12,218.0	92.10	179.30	7,826.7	-4,556.2	56.2	4,556.3	1.25	1.05	-0.68	
12,262.0	92.10	179.30	7,825.1	-4,600.2	56.7	4,600.3	0.00	0.00	0.00	
BHL - 12262.0' MD, 7825.1' TVD, 92.10° INC, 179.30° AZI, -4600.2' N, 56.7' E, 4600.3' VS										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment	
7,200.0	7,198.8	-46.1	11.4	Tie into OH / KOP @ 7200' MD	
8,197.5	7,844.8	-556.7	312.6	EOC - 8197.5' MD, 7844.8' TVD, 90.00° INC, 160.63° AZI, 563.7' VS	
12,262.0	7,825.1	-4,600.2	56.7	BHL - 12262.0' MD, 7825.1' TVD, 92.10° INC, 179.30° AZI, -4600.2' N, 56.7' E	

Checked By: _____	Approved By: _____	Date: _____
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COG Operating LLC
 Project: Eddy County, NM
 Site: Cabo Wabo 25 Federal 1H
 Well: #1H
 Wellbore: OH
 Plan: Plan #2 (#1H/OH)



Azimuths to Grid North
 True North: -0.21°
 Magnetic North: 7.41°

Magnetic Field
 Strength: 48400.3snT
 Dip Angle: 59.99°
 Date: 7/9/2012
 Model: IGRF2010

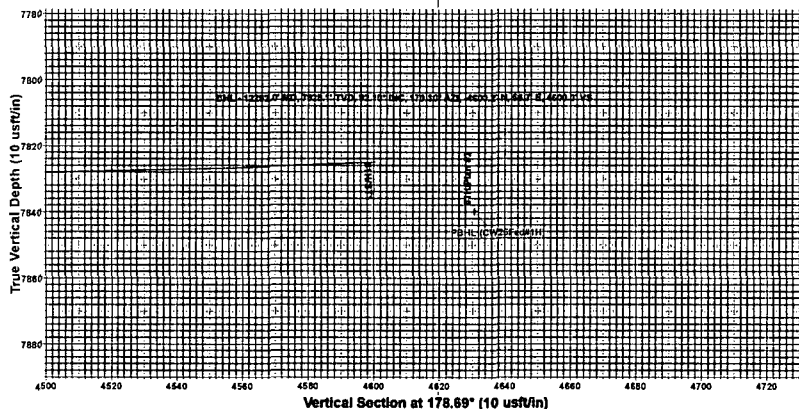
WELL DETAILS: #1H

Ground Elevation: 3080.0
 RKB Elevation: WELL @ 3097.0usft (Silver Oak #7 - 17' KB)
 Rig Name: Silver Oak #7 - 17' KB

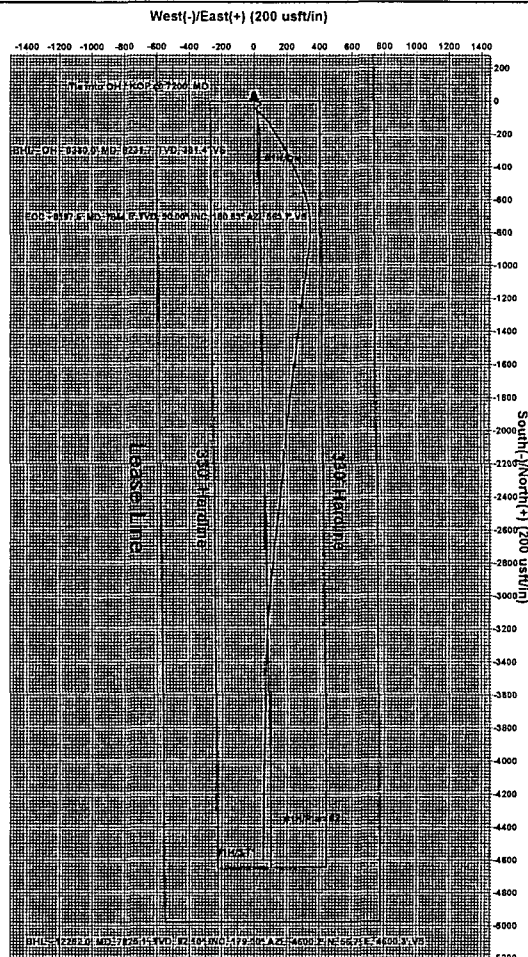
Surface Hole Location
 Northing: 402913.09 Easting: 620504.66 Latitude: 32° 6' 25.555 N Longitude: 103° 56' 38.940 W

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	7370.5	1.40	123.45	7369.3	-49.4	14.1	0.00	0.00	49.7	
2	8113.8	90.00	178.97	7840.0	-526.6	32.2	12.00	55.53	527.2	
3	12217.5	90.00	178.97	7840.0	-4629.6	106.0	0.00	0.00	4630.8	PBHL (CW25Fed#1H)



Vertical Section at 178.69° (10 usft/in)



PROJECT DETAILS: Eddy County, NM
 Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level
 Local North: Grid



Crescent Directional Drilling
 7715 West Industrial Ave. Midland, TX 79706
 Phone: 432-618-1135

Plan: Plan #2 (#1H/OH)
 Created By: Matt Higgins Date: 9:30, October 01 2012