

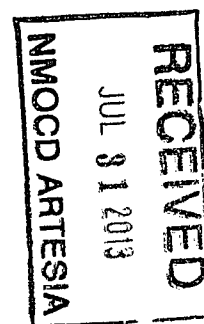
PATRIOT DRILLING, LLC

30-015-41290

OPERATOR: COG Operating, LLC
WELL/LEASE: Buena Vista State Com # 2 H
COUNTY: Eddy Co., New Mexico
Sec. 2, T20S, R30E

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
199	1/2	3,309	1/4
427	1 3/4	3,635	1
694	1 3/4	4,085	1
884	1 1/2	4,431	1
1,195	3 1/2	5,112	1
1,253	3	5,396	1
1,473	2 3/4	5,700	3/4
1,832	1 1/4	5,978	1 1/2
2,200	3/4	6,757	3/4
2,478	3/4	6,955	1
2,731	1/2	7,320	3/4
3,020	1/4	7,605	1/2

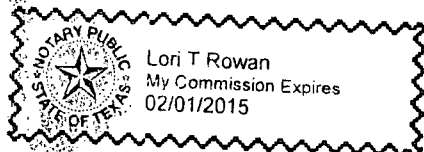


Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-
President

The foregoing instrument was acknowledged before me on this 17th day of June, 2013 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2015



Lori T. Rowan
Notary Public for Ector Co., Texas

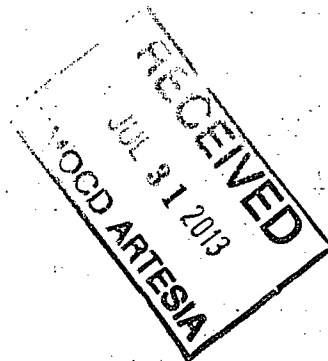


A GYRO TECHNOLOGIES INC. COMPANY

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

June 14, 2013

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



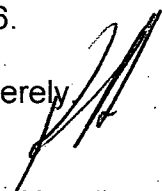
Attn: Kanicia Castillo

Re: Buena Vista 2 State Com No 002H

Please find enclosed a copy of the survey from 0' to 7,930' ran on the above referenced well.

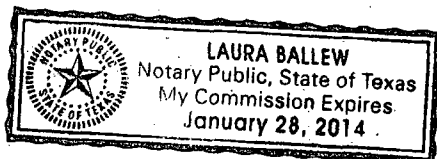
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

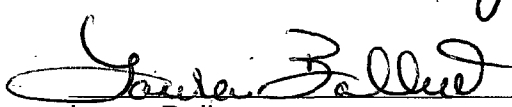
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 14th day of June
A.D., 2013, by Keith Havelka.




Laura Ballew
Notary Public, State of Texas

Company: COG Operating LLC (Concho)
Lease/Well: Buena Vista 2 State Com/No 002H



Rig Name: Patriot 6
State/County: New Mexico/Eddy
Latitude: 32.60, Longitude: -103.94
GRID North is 0.21 Degrees East of True North
VS-Azi: 0.00 Degrees



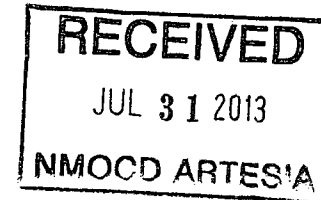
Depth Reference : RKB=20

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: survey.ut
Minimum Curvature Method
Report Date/Time: 6/14/2013 / 13:19

Vaughn Energy Services
432-563-5444
Gardendale, Texas
Surveyor: Kyle Willis

Buena Vista 2 State Com No 002H / API 30-015-41290



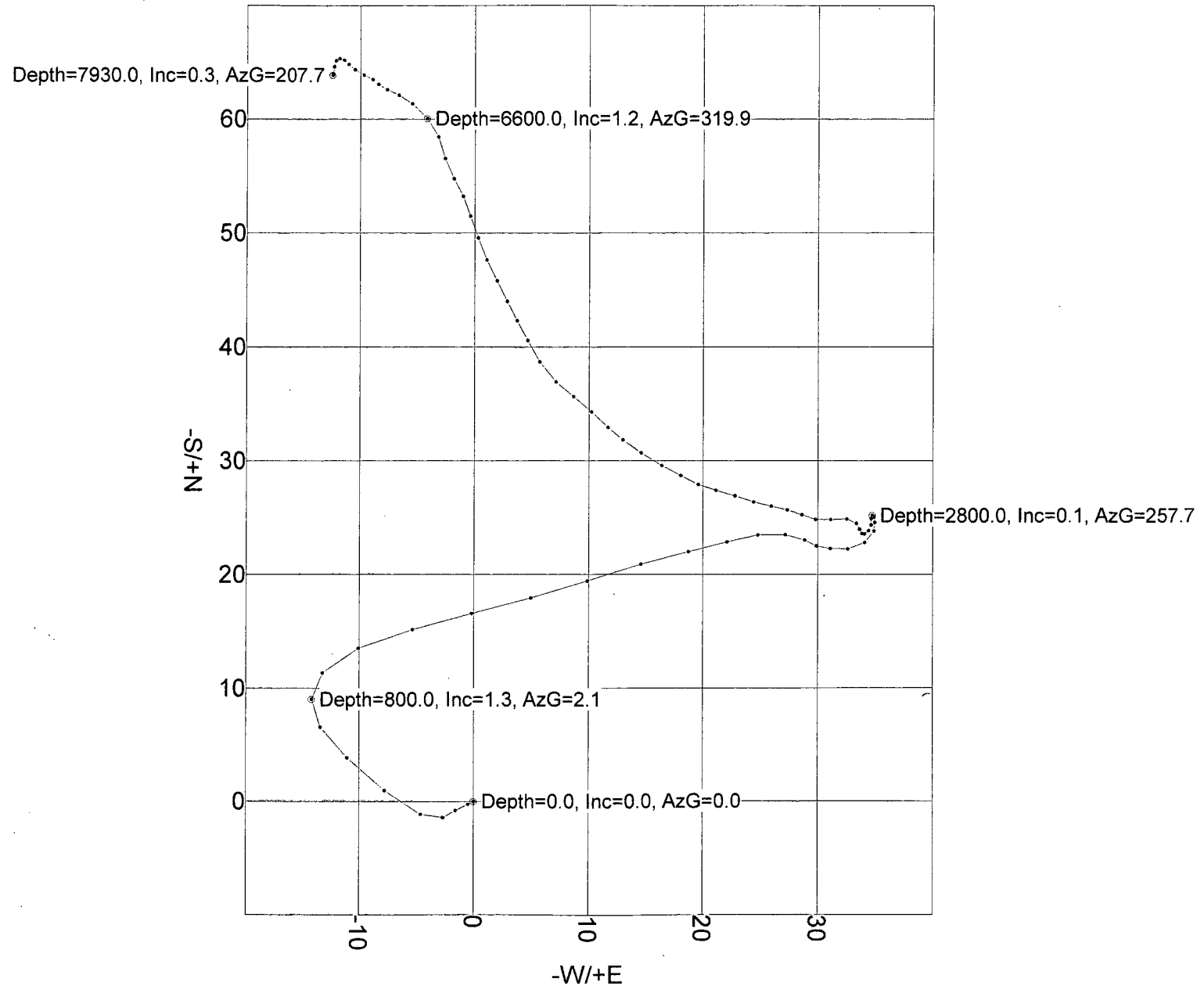
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.62	243.16	100.00	-0.24	-0.48	-0.24	0.54	243.16	0.62
200.00	0.78	243.33	199.99	-0.79	-1.57	-0.79	1.76	243.23	0.16
300.00	0.66	237.55	299.98	-1.41	-2.67	-1.41	3.02	242.17	0.14
400.00	1.81	292.31	399.96	-1.12	-4.62	-1.12	4.75	256.36	1.52
500.00	2.58	311.58	499.89	0.97	-7.76	0.97	7.82	277.14	1.06
600.00	2.43	311.08	599.79	3.86	-11.04	3.86	11.70	289.27	0.15
700.00	1.75	329.50	699.73	6.57	-13.42	6.57	14.94	296.09	0.95
800.00	1.28	2.06	799.69	9.01	-14.15	9.01	16.77	302.48	0.96
900.00	1.74	36.31	899.66	11.35	-13.21	11.35	17.42	310.67	0.99
1000.00	2.79	67.27	999.58	13.51	-10.07	13.51	16.85	323.31	1.57
1100.00	2.99	74.15	1099.46	15.16	-5.32	15.16	16.07	340.67	0.40
1200.00	3.11	74.92	1199.32	16.58	-0.19	16.58	16.58	359.33	0.13
1300.00	2.97	75.57	1299.17	17.93	4.94	17.93	18.60	15.40	0.14
1400.00	2.94	70.89	1399.04	19.42	9.88	19.42	21.79	26.96	0.24
1500.00	2.70	74.35	1498.92	20.90	14.57	20.90	25.48	34.89	0.29
1600.00	2.24	76.23	1598.83	22.00	18.75	22.00	28.90	40.43	0.47
1700.00	1.74	74.88	1698.77	22.86	22.11	22.86	31.81	44.05	0.50
1800.00	1.40	79.96	1798.73	23.47	24.78	23.47	34.13	46.56	0.37

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
1900.00	1.39	99.07	1898.70	23.49	27.18	23.49	35.92	49.16	0.46
2000.00	0.64	119.59	1998.68	23.02	28.86	23.02	36.92	51.42	0.82
2100.00	0.63	114.90	2098.68	22.51	29.85	22.51	37.39	52.97	0.05
2200.00	0.85	90.95	2198.67	22.27	31.09	22.27	38.24	54.38	0.38
2300.00	0.88	91.05	2298.66	22.25	32.59	22.25	39.46	55.69	0.03
2400.00	1.05	51.69	2398.64	22.80	34.08	22.80	41.00	56.22	0.67
2500.00	0.51	11.35	2498.63	23.81	34.89	23.81	42.23	55.69	0.74
2600.00	0.36	354.99	2598.63	24.56	34.95	24.56	42.71	54.90	0.19
2700.00	0.19	351.20	2698.63	25.04	34.89	25.04	42.95	54.34	0.18
2800.00	0.15	257.70	2798.63	25.17	34.74	25.17	42.90	54.08	0.25
2900.00	0.29	175.39	2898.63	24.89	34.63	24.89	42.65	54.30	0.31
3000.00	0.32	186.30	2998.63	24.35	34.62	24.35	42.33	54.88	0.07
3100.00	0.32	217.75	3098.63	23.85	34.42	23.85	41.88	55.28	0.17
3200.00	0.25	249.94	3198.63	23.55	34.05	23.55	41.40	55.32	0.17
3300.00	0.12	354.80	3298.63	23.59	33.83	23.59	41.24	55.11	0.31
3400.00	0.36	325.15	3398.62	23.95	33.64	23.95	41.30	54.55	0.26
3500.00	0.35	333.70	3498.62	24.48	33.33	24.48	41.35	53.70	0.05
3600.00	0.79	280.71	3598.62	24.88	32.52	24.88	40.94	52.58	0.64
3700.00	0.85	255.80	3698.61	24.82	31.12	24.82	39.81	51.42	0.36
3800.00	0.74	286.34	3798.60	24.82	29.78	24.82	38.77	50.18	0.43
3900.00	0.69	293.30	3898.59	25.24	28.61	25.24	38.15	48.57	0.10
4000.00	0.85	284.89	3998.58	25.67	27.34	25.67	37.50	46.81	0.20
4100.00	0.81	281.41	4098.57	26.00	25.93	26.00	36.72	44.93	0.07
4200.00	0.98	284.81	4198.56	26.36	24.42	26.36	35.93	42.81	0.18
4300.00	1.00	291.84	4298.54	26.90	22.79	26.90	35.25	40.27	0.12
4400.00	0.99	281.43	4398.53	27.39	21.13	27.39	34.60	37.64	0.18
4500.00	0.89	295.55	4498.52	27.90	19.58	27.90	34.09	35.06	0.25
4600.00	1.07	298.97	4598.50	28.69	18.06	28.69	33.90	32.20	0.19
4700.00	1.11	296.75	4698.48	29.57	16.38	29.57	33.81	28.99	0.06
4800.00	1.34	305.39	4798.46	30.68	14.57	30.68	33.97	25.40	0.29
4900.00	0.94	306.03	4898.44	31.84	12.96	31.84	34.38	22.14	0.40
5000.00	0.99	313.19	4998.43	32.92	11.66	32.92	34.92	19.51	0.13
5100.00	1.27	314.08	5098.41	34.28	10.24	34.28	35.77	16.63	0.28
5200.00	1.13	306.11	5198.39	35.63	8.65	35.63	36.66	13.64	0.22
5300.00	1.21	313.98	5298.36	36.94	7.10	36.94	37.61	10.87	0.18
5400.00	1.38	326.75	5398.34	38.68	5.68	38.68	39.09	8.35	0.34
5500.00	1.11	336.68	5498.32	40.57	4.64	40.57	40.83	6.52	0.35
5600.00	1.16	326.45	5598.30	42.30	3.70	42.30	42.46	4.99	0.21
5700.00	1.05	340.29	5698.28	44.00	2.83	44.00	44.09	3.68	0.29

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	1.26	329.18	5798.26	45.81	1.96	45.81	45.85	2.45	0.31
5900.00	1.09	338.12	5898.24	47.63	1.04	47.63	47.64	1.25	0.25
6000.00	1.29	339.52	5998.22	49.57	0.29	49.57	49.57	0.34	0.20
6100.00	1.03	341.28	6098.19	51.48	-0.39	51.48	51.49	359.56	0.26
6200.00	1.06	338.93	6198.18	53.20	-1.02	53.20	53.21	358.91	0.05
6300.00	0.98	325.78	6298.16	54.77	-1.83	54.77	54.80	358.09	0.25
6400.00	1.25	345.39	6398.14	56.54	-2.59	56.54	56.60	357.38	0.46
6500.00	1.02	339.51	6498.12	58.43	-3.18	58.43	58.52	356.89	0.26
6600.00	1.17	319.86	6598.11	60.05	-4.15	60.05	60.19	356.05	0.40
6700.00	0.97	307.98	6698.09	61.35	-5.47	61.35	61.59	354.90	0.30
6800.00	0.63	294.67	6798.08	62.10	-6.64	62.10	62.46	353.89	0.39
6900.00	0.68	294.75	6898.07	62.58	-7.68	62.58	63.05	353.00	0.04
7000.00	0.36	319.60	6998.07	63.07	-8.42	63.07	63.62	352.40	0.38
7100.00	0.41	298.49	7098.07	63.48	-8.94	63.48	64.10	351.99	0.15
7200.00	0.56	296.15	7198.06	63.86	-9.69	63.86	64.60	351.37	0.15
7300.00	0.50	307.95	7298.06	64.35	-10.48	64.35	65.20	350.75	0.13
7400.00	0.33	315.15	7398.06	64.82	-11.03	64.82	65.75	350.34	0.18
7500.00	0.30	309.18	7498.05	65.19	-11.43	65.19	66.19	350.05	0.05
7600.00	0.23	265.67	7598.05	65.34	-11.84	65.34	66.40	349.73	0.21
7700.00	0.25	211.21	7698.05	65.14	-12.15	65.14	66.26	349.43	0.22
7800.00	0.39	186.84	7798.05	64.62	-12.30	64.62	65.78	349.22	0.19
7900.00	0.34	188.01	7898.05	63.99	-12.38	63.99	65.18	349.05	0.05
7930.00	0.27	207.74	7928.05	63.84	-12.43	63.84	65.04	348.98	0.41



Vaughn Energy Services
432-563-5444
Gardendale, Texas
Surveyor: Kyle Willis
Buena Vista 2 State Com No 002H / API 30-015-41290



VES Survey Date: 06/08/2013

COG Buena Vista 2 State Com 2H Gyro + MWD Tie in-12781ft Survey Geodetic Report (Non-Def Survey)



Report Date:	June 13, 2013 - 08:50 AM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	COG Operating, LLC	Vertical Section Azimuth:	3.360 ° (Grid North)
Field:	NM Eddy County (NAD 27)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	COG Buena Vista 2 State Com 2H / COG Buena Vista 2 State Com 2H	TVD Reference Datum:	RKB
Well:	COG Buena Vista 2 State Com 2H	TVD Reference Elevation:	3237.100 ft above MSL
Borehole:	Original Borehole	Seabed / Ground Elevation:	3219.100 ft above MSL
UWI / API#:	Patriot 6 / Unknown	Magnetic Declination:	7.652 °
Survey Name:	COG Buena Vista 2 State Com 2H Gyro + MWD Tie in-12781ft	Total Gravity Field Strength:	998.5355mgn (9.80665 Based)
Survey Date:	June 08, 2013	Total Magnetic Field Strength:	48592.211 nT
Tort / AHD / DDI / ERD Ratio:	177.277 ° / 4587.108 ft / 6.085 / 0.536	Magnetic Dip Angle:	60.409 °
Coordinate Reference System:	NAD27 New Mexico State Plane, Eastern Zone, US Feet	Declination Date:	June 08, 2013
Location Lat / Long:	N 32° 35' 46.21410", W 103° 56' 25.21262"	Magnetic Declination Model:	BGGM 2013
Location Grid N/E/Y/X:	N 580822.100 RUS, E 621032.400 RUS	North Reference:	Grid North
CRS Grid Convergence Angle:	0.2117 °	Grid Convergence Used:	0.2117 °
Grid Scale Factor:	0.99992587	Total Corr Mag North->Grid North:	7.4403 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
Tie-in	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	580822.10	621032.40	N 32 35 46.21	W 103 56 25.21
	100.00	0.62	243.16	100.00	-0.27	-0.24	-0.48	0.62	580821.86	621031.92	N 32 35 46.21	W 103 56 25.22
	200.00	0.78	243.33	199.99	-0.88	-0.79	-1.57	0.16	580821.31	621030.83	N 32 35 46.21	W 103 56 25.23
	300.00	0.86	237.55	299.98	-1.56	-1.41	-2.67	0.14	580820.69	621029.73	N 32 35 46.20	W 103 56 25.24
	400.00	1.81	292.31	399.96	-1.39	-1.12	-4.62	1.53	580820.98	621027.79	N 32 35 46.20	W 103 56 25.27
	500.00	2.58	311.58	499.88	0.52	0.98	-7.76	1.06	580823.08	621024.64	N 32 35 46.22	W 103 56 25.30
	600.00	2.43	311.08	599.79	3.21	3.86	-11.04	0.15	580825.96	621021.36	N 32 35 46.25	W 103 56 25.34
	700.00	1.75	329.50	699.73	5.77	6.57	-13.41	0.95	580828.67	621018.99	N 32 35 46.28	W 103 56 25.37
	800.00	1.28	2.06	799.69	8.16	9.00	-14.15	0.96	580831.10	621018.25	N 32 35 46.30	W 103 56 25.38
	900.00	1.74	36.31	899.66	10.55	11.34	-13.21	0.99	580833.44	621019.19	N 32 35 46.33	W 103 56 25.37
	1000.00	2.79	67.27	999.58	12.89	13.51	-10.07	1.58	580835.61	621022.33	N 32 35 46.35	W 103 56 25.33
	1100.00	2.99	74.15	1099.46	14.82	15.16	-5.31	0.40	580837.26	621027.09	N 32 35 46.38	W 103 56 25.27
	1200.00	3.11	74.92	1199.31	16.54	16.58	-0.18	0.13	580838.68	621032.22	N 32 35 46.38	W 103 56 25.21
	1300.00	2.97	75.57	1299.17	18.19	17.93	4.94	0.14	580840.03	621037.34	N 32 35 46.39	W 103 56 25.15
	1400.00	2.94	70.89	1399.04	19.96	19.41	9.88	0.24	580841.51	621042.28	N 32 35 46.41	W 103 56 25.10
	1500.00	2.70	74.35	1498.92	21.71	20.89	14.57	0.29	580842.99	621046.97	N 32 35 46.42	W 103 56 25.04
	1600.00	2.24	76.23	1598.83	23.05	21.99	18.73	0.47	580844.09	621051.13	N 32 35 46.43	W 103 56 24.99
	1700.00	1.74	74.88	1698.77	24.11	22.85	22.10	0.50	580844.95	621054.50	N 32 35 46.44	W 103 56 24.95
	1800.00	1.40	79.96	1798.73	24.87	23.46	24.77	0.37	580845.56	621057.16	N 32 35 46.45	W 103 56 24.92
	1900.00	1.39	99.07	1898.70	25.03	23.48	27.17	0.46	580845.58	621059.56	N 32 35 46.45	W 103 56 24.89
	2000.00	0.84	119.59	1998.58	24.87	23.01	28.85	0.82	580845.11	621061.25	N 32 35 46.44	W 103 56 24.87
	2100.00	0.83	114.90	2098.68	24.22	22.51	29.83	0.05	580844.60	621062.23	N 32 35 46.44	W 103 56 24.86
	2200.00	0.85	90.95	2198.67	24.05	22.26	31.07	0.37	580844.36	621063.47	N 32 35 46.43	W 103 56 24.85
	2300.00	0.88	91.05	2298.66	24.11	22.24	32.58	0.03	580844.33	621064.98	N 32 35 46.43	W 103 56 24.83
	2400.00	1.05	51.69	2398.64	24.75	22.79	34.07	0.67	580844.89	621066.47	N 32 35 46.44	W 103 56 24.81
	2500.00	0.51	11.35	2498.64	25.80	23.79	34.88	0.74	580845.89	621067.27	N 32 35 46.45	W 103 56 24.80
	2600.00	0.36	354.99	2598.63	26.55	24.54	34.94	0.19	580846.64	621067.33	N 32 35 46.46	W 103 56 24.80
	2700.00	0.19	351.20	2698.63	27.02	25.02	34.88	0.17	580847.12	621067.28	N 32 35 46.46	W 103 56 24.80
	2800.00	0.15	257.70	2798.63	27.15	25.16	34.73	0.25	580847.25	621067.13	N 32 35 46.46	W 103 56 24.81
	2900.00	0.29	175.39	2898.63	26.86	24.88	34.62	0.31	580846.97	621067.02	N 32 35 46.46	W 103 56 24.81
	3000.00	0.32	186.30	2998.63	26.33	24.35	34.61	0.07	580846.45	621067.01	N 32 35 46.45	W 103 56 24.81
	3100.00	0.32	217.75	3098.63	25.82	23.85	34.41	0.17	580845.95	621066.81	N 32 35 46.45	W 103 56 24.81
	3200.00	0.25	249.94	3198.63	25.51	23.55	34.04	0.17	580845.65	621066.43	N 32 35 46.45	W 103 56 24.81
	3300.00	0.12	354.80	3298.63	25.52	23.58	33.82	0.30	580845.68	621066.22	N 32 35 46.45	W 103 56 24.82
	3400.00	0.36	325.15	3398.63	25.87	23.94	33.63	0.26	580846.04	621066.03	N 32 35 46.45	W 103 56 24.82
	3500.00	0.35	333.70	3498.62	26.39	24.48	33.32	0.05	580846.57	621065.71	N 32 35 46.46	W 103 56 24.82
	3600.00	0.79	280.71	3598.62	26.74	24.88	32.50	0.64	580846.98	621064.90	N 32 35 46.46	W 103 56 24.83
	3700.00	0.85	255.80	3698.61	26.60	24.82	31.11	0.36	580846.92	621063.51	N 32 35 46.46	W 103 56 24.85
	3800.00	0.74	286.34	3798.60	26.53	24.82	29.77	0.43	580846.92	621062.17	N 32 35 46.46	W 103 56 24.86
	3900.00	0.69	293.30	3898.59	26.88	25.24	28.60	0.10	580847.34	621060.99	N 32 35 46.46	W 103 56 24.88
	4000.00	0.85	284.89	3998.58	27.23	25.67	27.33	0.20	580847.77	621059.72	N 32 35 46.47	W 103 56 24.89
	4100.00	0.81	281.41	4098.57	27.48	26.00	25.92	0.06	580848.10	621058.32	N 32 35 46.47	W 103 56 24.91
	4200.00	0.98	284.81	4198.56	27.75	26.36	24.40	0.18	580848.46	621056.80	N 32 35 46.47	W 103 56 24.93
	4300.00	1.00	291.84	4298.55	28.19	26.90	22.76	0.12	580849.00	621055.16	N 32 35 46.48	W 103 56 24.95
	4400.00	0.99	281.43	4398.53	28.59	27.40	21.10	0.18	580849.50	621053.50	N 32 35 46.48	W 103 56 24.96
	4500.00	0.89	295.55	4498.52	29.00	27.91	19.56	0.25	580850.00	621051.96	N 32 35 46.49	W 103 56 24.98
	4600.00	1.07	298.97	4598.50	29.70	28.69	18.04	0.19	580850.79	621050.44	N 32 35 46.50	W 103 56 25.00
	4700.00	1.11	296.75	4698.48	30.49	29.58	16.36	0.06	580851.68	621048.76	N 32 35 46.51	W 103 56 25.02
	4800.00	1.34	305.39	4798.46	31.49	30.70	14.54	0.29	580852.79	621046.94	N 32 35 46.52	W 103 56 25.04
	4900.00	0.94	306.03	4898.44	32.56	31.85	12.92	0.40	580853.95	621045.32	N 32 35 46.53	W 103 56 25.06
	5000.00	0.99	313.19	4998.43	33.55	32.93	11.63	0.13	580855.03	621044.03	N 32 35 46.54	W 103 56 25.08
	5100.00	1.27	314.08	5098.41	34.83	34.29	10.20	0.28	580856.39	621042.60	N 32 35 46.55	W 103 56 25.09
	5200.00	1.13	306.11	5198.39	36.09	35.64	8.61	0.22	580857.74	621041.01	N 32 35 46.57	W 103 56 25.11
	5300.00	1.21	313.98	5298.37	37.31	36.96	7.05	0.18	580859.05	621039.45	N 32 35 46.58	W 103 56 25.13
	5400.00	1.38	326.75	5398.34	38.96	38.70	5.63	0.33	580860.79	621038.03	N 32 35 46.60	W 103 56 25.15
	5500.00	1.11	336.68	5498.32	40.79	40.59	4.59	0.34	580862.69	621036.99	N 32 35 46.62	W 103 56 25.16
	5600.00	1.16	326.45	5598.30	42.47	42.33	3.65	0.21	580864.42	621036.05	N 32 35 46.63	W 103 56 25.17
	5700.00	1.05	340.29	5698.28	44.12	44.03	2.78	0.29	580866.13	621035.18	N 32 35 46.65	W 103 56 25.18
	5800.00	1.26	329.18	5798.26	45.87	45.84	1.91	0.31	580867.94	621034.31	N 32 35 46.67	W 103 56 25.19
	5900.00	1.09	338.12	5898.24	47.64	47.67	0.99	0.25	580869.76	621033.39	N 32 35 46.69	W 103 56 25.20

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6000.00	1.29	339.52	5998.22	49.53	49.60	0.24	0.20	580871.70	621032.64	N 32 35 46.70	W 103 56 25.21
	6100.00	1.03	341.28	6098.19	51.40	51.51	-0.44	0.26	580873.61	621031.96	N 32 35 46.72	W 103 56 25.22
	6200.00	1.06	338.93	6198.18	53.07	53.22	-1.06	0.05	580875.32	621031.34	N 32 35 46.74	W 103 56 25.22
	6300.00	0.98	325.78	6298.16	54.59	54.79	-1.88	0.25	580876.89	621030.52	N 32 35 46.76	W 103 56 25.23
	6400.00	1.25	345.39	6398.14	56.31	56.56	-2.63	0.46	580878.65	621029.77	N 32 35 46.77	W 103 56 25.24
	6500.00	1.02	339.51	6498.12	58.16	58.45	-3.22	0.26	580880.54	621029.18	N 32 35 46.79	W 103 56 25.25
	6600.00	1.17	319.86	6598.11	59.71	60.06	-4.19	0.40	580882.16	621028.21	N 32 35 46.81	W 103 56 25.26
	6700.00	0.97	307.98	6698.09	60.93	61.36	-5.51	0.30	580883.46	621026.89	N 32 35 46.82	W 103 56 25.27
	6800.00	0.63	294.67	6798.08	61.61	62.11	-6.68	0.39	580884.21	621025.72	N 32 35 46.83	W 103 56 25.29
	6900.00	0.88	294.75	6898.07	62.03	62.59	-7.72	0.05	580884.69	621024.68	N 32 35 46.83	W 103 56 25.30
	7000.00	0.36	319.60	6998.07	62.47	63.08	-8.46	0.38	580885.17	621023.94	N 32 35 46.84	W 103 56 25.31
	7100.00	0.41	298.49	7098.07	62.85	63.49	-8.98	0.15	580885.58	621023.42	N 32 35 46.84	W 103 56 25.31
	7200.00	0.56	296.15	7198.06	63.19	63.87	-9.73	0.15	580885.97	621022.87	N 32 35 46.85	W 103 56 25.32
	7300.00	0.50	307.95	7298.06	63.63	64.36	-10.52	0.12	580886.45	621021.89	N 32 35 46.85	W 103 56 25.33
	7400.00	0.33	315.15	7398.06	64.07	64.83	-11.06	0.18	580886.92	621021.34	N 32 35 46.86	W 103 56 25.34
	7500.00	0.30	309.18	7498.05	64.42	65.20	-11.47	0.04	580887.29	621020.93	N 32 35 46.86	W 103 56 25.34
	7600.00	0.23	285.67	7598.05	64.54	65.35	-11.87	0.21	580887.44	621020.53	N 32 35 46.86	W 103 56 25.35
	7700.00	0.25	211.21	7698.05	64.32	65.15	-12.18	0.22	580887.24	621020.22	N 32 35 46.86	W 103 56 25.35
	7800.00	0.39	186.84	7798.05	63.79	64.62	-12.34	0.19	580886.72	621020.06	N 32 35 46.85	W 103 56 25.35
	7900.00	0.34	188.01	7898.05	63.15	63.99	-12.42	0.05	580886.09	621019.98	N 32 35 46.85	W 103 56 25.36
	7930.00	0.27	207.74	7928.05	63.00	63.84	-12.47	0.42	580885.94	621019.94	N 32 35 46.85	W 103 56 25.36
	7989.00	0.35	58.66	7987.05	62.98	63.81	-12.38	1.01	580885.91	621020.02	N 32 35 46.85	W 103 56 25.35
	8021.00	0.44	65.25	8019.05	63.09	63.91	-12.18	0.31	580886.01	621020.22	N 32 35 46.85	W 103 56 25.35
	8053.00	0.70	48.64	8051.05	63.29	64.09	-11.92	0.95	580886.19	621020.48	N 32 35 46.85	W 103 56 25.35
	8084.00	3.34	15.06	8082.02	64.30	65.09	-11.55	8.98	580887.19	621020.85	N 32 35 46.86	W 103 56 25.34
	8116.00	7.03	10.23	8113.89	67.16	67.92	-10.96	11.60	580890.01	621021.44	N 32 35 46.89	W 103 56 25.34
	8148.00	10.82	7.33	8145.49	72.10	72.83	-10.22	11.92	580894.92	621022.18	N 32 35 46.94	W 103 56 25.33
	8179.00	14.25	5.31	8175.75	78.82	79.51	-9.50	11.15	580901.61	621022.90	N 32 35 47.00	W 103 56 25.32
	8211.00	17.41	5.75	8206.53	87.54	88.20	-8.66	9.88	580910.30	621023.74	N 32 35 47.09	W 103 56 25.31
	8243.00	20.84	6.10	8236.76	98.01	98.63	-7.57	10.72	580920.72	621024.83	N 32 35 47.19	W 103 56 25.30
	8274.00	24.53	6.10	8265.36	109.95	110.51	-6.30	11.90	580932.61	621026.10	N 32 35 47.31	W 103 56 25.28
	8306.00	28.05	5.57	8294.05	124.11	124.61	-4.86	11.02	580946.70	621027.54	N 32 35 47.45	W 103 56 25.26
	8337.00	31.57	6.01	8320.94	139.51	139.94	-3.31	11.38	580962.03	621029.09	N 32 35 47.60	W 103 56 25.25
	8369.00	35.00	6.01	8347.69	157.05	157.40	-1.47	10.72	580979.49	621030.93	N 32 35 47.77	W 103 56 25.22
	8401.00	38.95	6.01	8373.25	176.27	176.54	0.55	12.34	580998.63	621032.95	N 32 35 47.96	W 103 56 25.20
	8432.00	43.53	5.57	8396.55	196.68	196.87	2.60	14.80	581018.95	621035.00	N 32 35 48.16	W 103 56 25.17
	8464.00	47.84	4.61	8418.90	219.56	219.67	4.63	13.64	581041.75	621037.03	N 32 35 48.39	W 103 56 25.15
	8496.00	52.06	2.76	8439.49	244.05	244.11	6.19	13.91	581068.19	621038.59	N 32 35 48.63	W 103 56 25.13
	8527.00	56.89	1.88	8457.50	269.27	269.31	7.20	15.75	581091.39	621039.60	N 32 35 48.88	W 103 56 25.12
	8559.00	61.55	2.93	8473.87	296.75	296.77	8.36	14.83	581118.85	621040.76	N 32 35 49.15	W 103 56 25.10
	8591.00	64.54	3.46	8488.37	325.27	325.24	9.96	9.46	581147.32	621042.35	N 32 35 49.43	W 103 56 25.08
	8622.00	67.44	4.43	8500.98	353.58	353.49	11.91	9.78	581175.56	621044.31	N 32 35 49.71	W 103 56 25.06
	8654.00	71.14	5.57	8512.30	383.49	383.30	14.52	12.03	581205.37	621046.92	N 32 35 50.01	W 103 56 25.03
	8686.00	74.13	5.22	8521.85	414.01	413.71	17.39	9.40	581235.77	621049.79	N 32 35 50.31	W 103 56 24.98
	8717.00	76.41	3.64	8529.73	443.99	443.59	19.70	8.85	581265.66	621052.10	N 32 35 50.60	W 103 56 24.96
	8749.00	79.05	3.64	8536.53	475.25	474.80	21.69	8.25	581296.86	621054.09	N 32 35 50.91	W 103 56 24.94
	8781.00	81.78	4.43	8541.86	506.80	506.27	23.91	8.87	581328.33	621056.31	N 32 35 51.22	W 103 56 24.91
	8812.00	83.71	4.34	8545.77	537.55	536.93	26.26	6.23	581358.99	621058.66	N 32 35 51.53	W 103 56 24.88
	8844.00	86.09	3.99	8548.62	569.41	568.72	28.57	7.52	581390.77	621060.97	N 32 35 51.84	W 103 56 24.85
	8876.00	86.79	3.90	8550.60	601.35	600.58	30.77	2.21	581422.63	621063.17	N 32 35 52.16	W 103 56 24.83
	8907.00	88.64	3.29	8551.84	632.32	631.49	32.71	6.28	581453.54	621065.11	N 32 35 52.46	W 103 56 24.80
	8939.00	90.13	3.55	8552.18	664.32	663.43	34.62	4.73	581485.48	621067.02	N 32 35 52.78	W 103 56 24.78
	9034.00	91.19	3.20	8551.09	759.31	758.26	40.21	1.18	581580.30	621072.61	N 32 35 53.72	W 103 56 24.71
	9129.00	89.87	2.58	8550.21	854.30	853.13	45.00	1.54	581675.17	621077.40	N 32 35 54.65	W 103 56 24.65
	9224.00	90.57	2.06	8549.85	949.29	948.05	48.85	0.92	581770.08	621081.25	N 32 35 55.59	W 103 56 24.60
	9319.00	89.78	3.55	8549.56	1044.28	1042.93	53.50	1.78	581864.96	621085.89	N 32 35 56.53	W 103 56 24.54
	9414.00	91.01	3.02	8548.90	1139.27	1137.77	58.94	1.41	581959.79	621091.34	N 32 35 57.47	W 103 56 24.47
	9508.00	92.15	2.76	8546.31	1233.23	1231.62	63.68	1.24	582053.62	621096.07	N 32 35 58.40	W 103 56 24.42
	9603.00	93.12	1.62	8541.94	1328.11	1326.44	67.31	1.57	582148.44	621099.70	N 32 35 59.34	W 103 56 24.37
	9698.00	92.07	3.29	8537.64	1423.00	1421.26	71.37	2.07	582243.25	621103.77	N 32 36 0.27	W 103 56 24.32
	9793.00	93.30	2.23	8533.19	1517.88	1516.04	75.94	1.71	582338.02	621108.34	N 32 36 1.21	W 103 56 24.26
	9888.00	92.33	4.96	8528.52	1612.76	1610.73	81.89	3.05	582432.70	621114.28	N 32 36 2.15	W 103 56 24.19
	9983.00	94.00	3.90	8523.28	1707.59	1705.29	89.22	2.08	582527.26	621121.61	N 32 36 3.08	W 103 56 24.10
	10078.00	92.68	4.34	8517.74	1802.42	1799.88	96.03	1.46	582621.85	621128.42	N 32 36 4.02	W 103 56 24.01
	10173.00	91.63	5.13	8514.17	1897.32	1894.49	103.87	1.38	582716.45	621136.26	N 32 36 4.96	W 103 56 23.92
	10268.00	93.56	4.78	8509.87	1992.18	1989.03	112.07	2.06	582810.98	621144.46	N 32 36 5.89	W 103 56 23.82
	10363.00	91.54	4.96	8505.64	2087.05	2083.59	120.12	2.13	582905.53	621152.51	N 32 36 6.83	W 103 56 23.72
	10458.00	89.87	4.69	8504.47	2182.01	2178.25	128.11	1.78	583000.18	621160.50	N 32 36 7.76	W 103 56 23.62
	10553.00	91.10	4.52	8503.67	2276.98	2272.93	135.74	1.31	583094.86	621168.13	N 32 36 8.70	W 103 56 23.53
	10648.00	90.13	4.34	8502.65	2371.96	2367.64	143.08	1.04	583189.56	621175.46	N 32 36 9.64	W 103 56 23.44
	10743.00	91.28	4.78	8501.48	2466.93	2462.33	150.63	1.30	583284.25	621183.02	N 32 36 10.57	W 103 56 23.35
	10838.00	92.15	4.34	8498.64	2561.86	2556.99	158.18	1.03	583378.89	621190.57	N 32 36 11.51	W 103 56 23.25
	10932.00	90.04	4.61	8496.84	2655.82	2650.68	165.51	2.26	583472.58	621197.90	N 32 36 12.44	W 103 56 23.16
	11027.00	91.10	3.81	8495.90	2750.81	2745.42	172.48	1.40	583567.31	621204.87	N 32 36 13.37	W 103 56 23.08
	11122.00	92.68	3.64	8492.76	2845.75	2840.16	178.65	1.67	583662.05	621211.04	N 32 36 14.31	W 103 56 23.00
	11217.00	91.45	4.43	8489.34	2940.68	2934.86	185.33	1.54	583756.74	621217.72	N 32 36 15.25	W 103 56 22.92
	11312.00	90.92	4.34	8487.38	3035.64	3029.56	192.59	0.57	583851.43	621224.98	N 32 36 16.18	W 103 56 22.83
	11407.00	89.16	4.17	8487.31	3130.63	3124.30	199.64	1.86	583946.16			

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS ("/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	12261.00	88.99	3.20	8479.15	3984.47	3976.47	253.10	1.91	584798.27	621285.48	N 32 36 25.55	W 103 56 22.08
	12356.00	90.22	2.85	8479.81	4079.46	4071.33	258.11	1.35	584893.12	621290.49	N 32 36 26.49	W 103 56 22.02
	12451.00	87.85	2.93	8481.41	4174.44	4166.19	262.90	2.50	584987.97	621295.28	N 32 36 27.43	W 103 56 21.96
	12546.00	88.90	2.76	8484.10	4269.39	4261.03	267.61	1.12	585082.81	621299.99	N 32 36 28.37	W 103 56 21.90
Final Survey	12641.00	88.29	1.62	8486.43	4364.34	4355.93	271.24	1.36	585177.70	621303.62	N 32 36 29.31	W 103 56 21.85
Projection to Bit	12781.00	88.29	1.62	8490.61	4504.22	4495.82	275.20	0.00	585317.57	621307.58	N 32 36 30.69	W 103 56 21.80

Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	18.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / COG Buena Vista 2 State Com 2H Gyro + MWD Tie in-12781ft
	18.000	7930.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / COG Buena Vista 2 State Com 2H Gyro +
	7930.000	12781.000	Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / COG Buena Vista 2 State Com 2H Gyro +



COG Operating, LLC

Rev3

PATHFINDER
A Schlumberger Company

WELL	FIELD	STRUCTURE
COG Buena Vista 2 State Com 2H	NM Eddy County (NAD 27)	Patriot 6
Magnetic Parameters		
Magnetic Declination	Dipr: 60.377°	Date: June 08, 2013
Magnetic Deviation	Mag Dec: 7.650°	FS: 46772.1mT
Surface Location		
Lat: N 12 15 46.214	Northing: NAD27 New Mexico State Plane, Eastern Zone, UN Feet	Uplift Corr: 0.212"
Long: W 103 56 25.213	Easting: 621037.40 RLTS	Scale Fact: 0.99992587
Miscellaneous		
State: New Mexico	Structure: Buena Vista 2 State Com 2H	TVD Ref: RGN (1277.18 above MSL)
Plan: Rev3.MDT08Jun13	Survey Date: June 09, 2013	

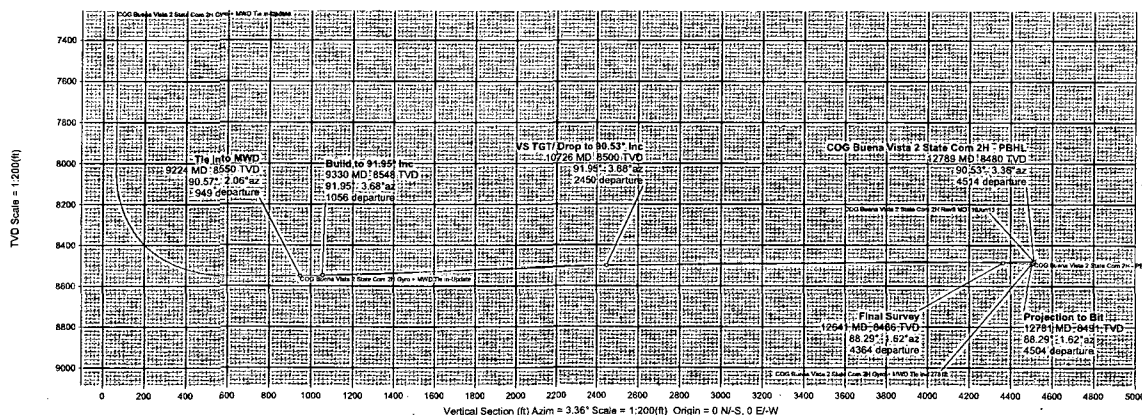
Legend

COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line
COG Buena Vista 2 State Com 2H - 1000' Hard Line

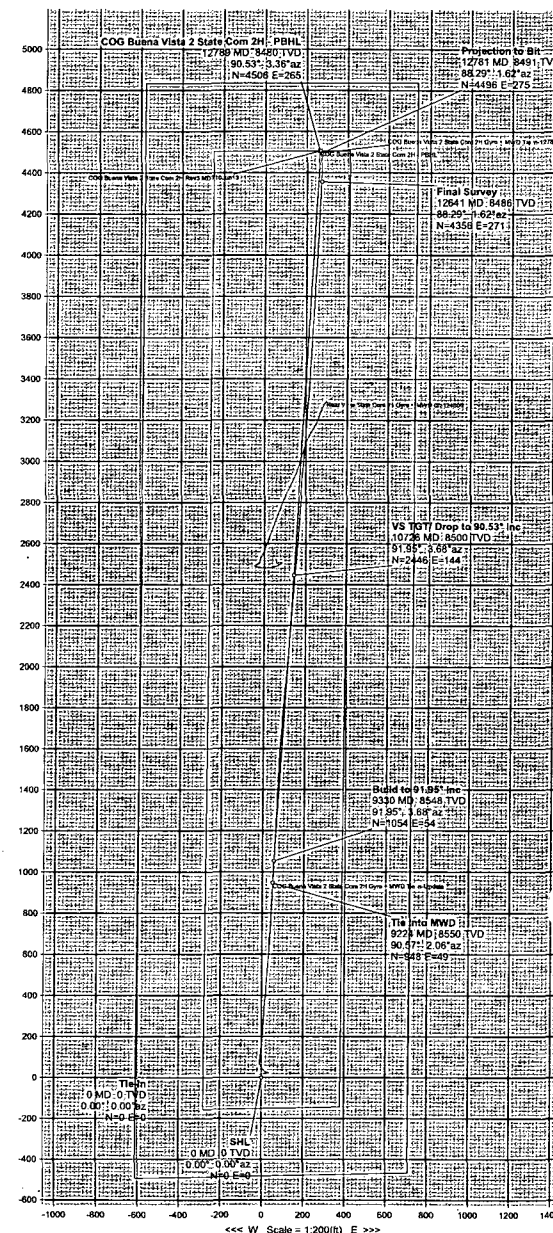


Grid North
Tot Corr (M->G)
7.4388°
Mag Dec (7.650°)
Grid Conv (0.212°)

Comments	Survey MD (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Sub Sea TVD	VS (ft)	NS (ft)	EW (ft)	Northing (ft US)	Easting (ft US)	Latitude (deg)	Longitude (deg)	DLS (ft/100ft)	Tool Face (deg)
Tie Into MWD	9224.00	90.57	2.06	8549.85	5312.75	949.29	948.05	48.85	581770.08	621081.25	N 32 35 55.593	W 103 56 24.601	0.92	49.47
Build to 91.95° Inc	9330.31	91.95	3.68	8547.51	5310.41	1055.56	1054.20	54.17	581876.22	621086.56	N 32 35 56.643	W 103 56 24.534	2.00	0.00
VS TGT/ Drop to 90.53° Inc	10725.58	91.95	3.68	8500.00	5262.90	2450.00	2445.79	143.59	583267.70	621175.98	N 32 36 10.409	W 103 56 23.428	0.00	-167.41
	10798.38	90.53	3.36	8498.42	5261.32	2522.78	2518.43	148.06	583340.34	621180.45	N 32 36 11.128	W 103 56 23.373	2.00	0.00
COG Buena Vista 2 State Com 2H - PBHL	12789.20	90.53	3.36	8480.00	5242.90	4513.51	4505.74	264.72	585327.50	621297.10	N 32 36 30.788	W 103 56 21.923	0.00	



<< S Scale = 1,200(ft) N >>



<< W Scale = 1,200(ft) E >>

Drawn By: Current User
Data Checked: June 15, 2013 10:52:25 AM
Checked By:
Created Date:
Approved By:
Approved Date: