

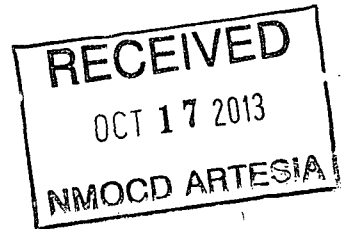
PATRIOT DRILLING, LLC

OPERATOR: COG Operating, LLC
WELL/LEASE: Windmill 32 Fed Com # 4 H
COUNTY: Eddy Co., NM

30015 41286

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
345	1/2	4,131	1/2
950	1	4,442	1 1/2
1,582	1	4,753	3 1/2
2,080	1	4,958	4
3,054	1/2	5,156	3/4
3,500	1	5,250	3/4
3,777	1/2		

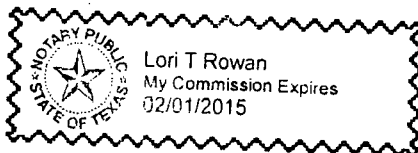


Patriot Drilling, LLC

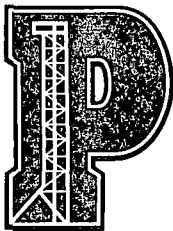
M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 3rd 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



PATRIOT DRILLING, LLC

OPERATOR: COG Operating, LLC
WELL/LEASE: Windmill 32 Fed Com # 4 H
COUNTY: Eddy Co., NM

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
345	1/2	4,131	1/2
950	1	4,442	1 1/2
1,582	1	4,753	3 1/2
2,080	1	4,958	4
3,054	1/2	5,156	3/4
3,500	1	5,250	3/4
3,777	1/2		

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Patriot Drilling, LLC

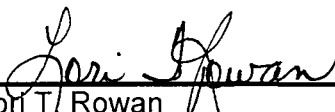


M. Leroy Peterson, Executive Vice-
President

The foregoing instrument was acknowledged before me on this 3rd 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

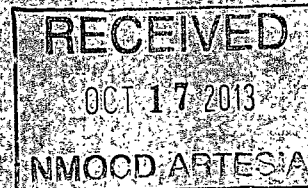


A GYRO TECHNOLOGIES INC. COMPANY

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

May 30, 2013

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



Attn: Kanicia Castillo

RE Windmill 32 Federal Com No. 004H

Please find enclosed a copy of the survey from 0.00' to 5300.00' ran on the above referenced well.

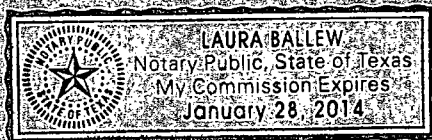
Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §

COUNTY OF NUECES §

This instrument was acknowledged before me on the 30th day of May
A.D. 2013, by Keith Havelka




Laura Ballew
Notary Public, State of Texas

Company: COG Operating, LLC (Concho)
Lease/Well: Windmill 32 Federal Com/ No. 004H



Rig Name: Patriot #6
State/County: New Mexico/Eddy
Latitude: 32.70, Longitude: -104.29
GRID North is 0.02 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB= 17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...32 fed com #4h gyro survey.ut

Minimum Curvature Method

Report Date/Time: 5/30/2013 / 09:55

Vaughn Energy Services

Midland, Texas

432-563-5444

Survey Engineer: Logan Henry

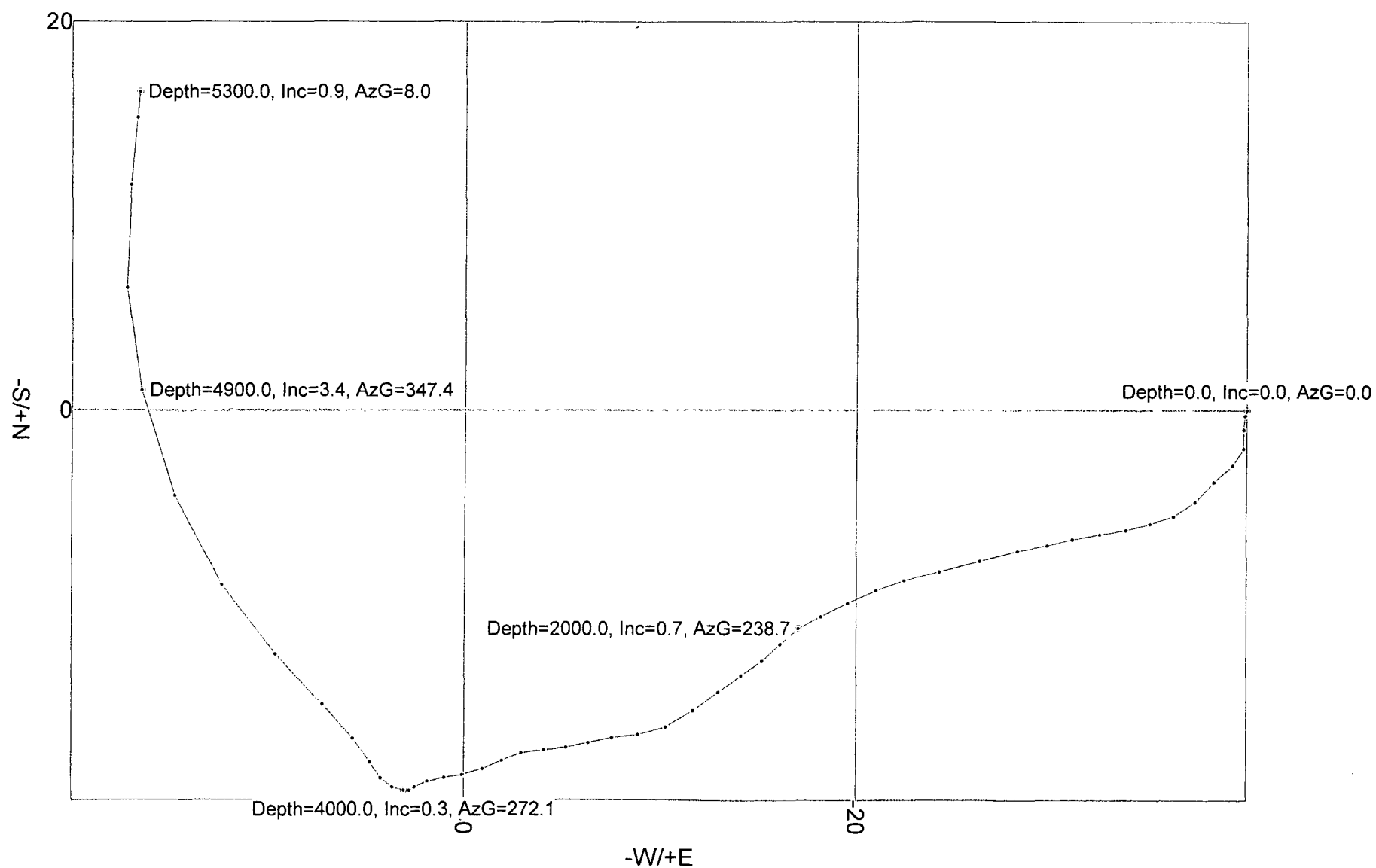
Windmill 32 Federal Com No. 004H / API 30-015-41286

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	0.35	199.54	100.00	-0.29	-0.10	-0.29	0.30	199.54	0.35
200.00	0.51	174.08	200.00	-1.02	-0.16	-1.02	1.03	188.83	0.25
300.00	0.60	185.22	299.99	-1.98	-0.16	-1.98	1.99	184.61	0.14
400.00	0.69	236.10	399.99	-2.84	-0.71	-2.84	2.93	193.97	0.56
500.00	0.81	220.88	499.98	-3.71	-1.67	-3.71	4.07	204.21	0.23
600.00	0.78	223.74	599.97	-4.74	-2.61	-4.74	5.41	208.79	0.05
700.00	0.76	249.32	699.96	-5.47	-3.70	-5.47	6.60	214.05	0.34
800.00	0.70	255.70	799.95	-5.85	-4.91	-5.85	7.64	219.96	0.10
900.00	0.75	254.57	899.94	-6.18	-6.13	-6.18	8.70	224.77	0.05
1000.00	0.81	265.79	999.93	-6.40	-7.47	-6.40	9.84	229.38	0.16
1100.00	0.81	253.56	1099.92	-6.66	-8.85	-6.66	11.07	233.06	0.17
1200.00	0.71	258.82	1199.92	-6.98	-10.14	-6.98	12.31	235.47	0.12
1300.00	1.07	261.00	1299.90	-7.24	-11.68	-7.24	13.74	238.18	0.36
1400.00	1.26	250.61	1399.88	-7.76	-13.64	-7.76	15.69	240.38	0.28
1500.00	1.21	259.47	1499.86	-8.31	-15.72	-8.31	17.78	242.12	0.20
1600.00	0.94	253.28	1599.84	-8.74	-17.53	-8.74	19.59	243.50	0.29
1700.00	0.87	247.35	1699.83	-9.27	-19.02	-9.27	21.15	244.01	0.11
1800.00	0.93	243.69	1799.82	-9.92	-20.44	-9.92	22.72	244.11	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
1900.00	0.84	243.70	1899.80	-10.61	-21.83	-10.61	24.27	244.09	0.09
2000.00	0.66	238.74	1999.80	-11.23	-22.98	-11.23	25.58	243.95	0.20
2100.00	0.76	220.73	2099.79	-12.03	-23.90	-12.03	26.76	243.28	0.25
2200.00	0.71	234.48	2199.78	-12.90	-24.84	-12.90	27.99	242.56	0.18
2300.00	0.78	234.85	2299.77	-13.65	-25.90	-13.65	29.28	242.21	0.07
2400.00	0.88	232.52	2399.76	-14.51	-27.07	-14.51	30.71	241.81	0.10
2500.00	0.94	235.09	2499.75	-15.44	-28.35	-15.44	32.28	241.42	0.08
2600.00	0.92	242.55	2599.74	-16.28	-29.74	-16.28	33.90	241.29	0.12
2700.00	0.80	267.78	2699.72	-16.68	-31.15	-16.68	35.33	241.83	0.39
2800.00	0.72	257.45	2799.72	-16.84	-32.46	-16.84	36.57	242.58	0.16
2900.00	0.69	257.74	2899.71	-17.11	-33.66	-17.11	37.76	243.06	0.03
3000.00	0.65	257.54	2999.70	-17.36	-34.80	-17.36	38.89	243.49	0.04
3100.00	0.65	270.76	3099.70	-17.47	-35.93	-17.47	39.95	244.06	0.15
3200.00	0.70	254.67	3199.69	-17.63	-37.08	-17.63	41.06	244.58	0.19
3300.00	0.55	240.90	3299.68	-18.02	-38.08	-18.02	42.13	244.68	0.21
3400.00	0.67	251.31	3399.68	-18.44	-39.06	-18.44	43.19	244.73	0.17
3500.00	0.57	257.15	3499.67	-18.74	-40.10	-18.74	44.27	244.95	0.12
3600.00	0.47	265.47	3599.67	-18.88	-41.00	-18.88	45.14	245.27	0.13
3700.00	0.51	252.89	3699.66	-19.05	-41.84	-19.05	45.98	245.52	0.12
3800.00	0.32	233.36	3799.66	-19.35	-42.50	-19.35	46.70	245.52	0.23
3900.00	0.04	258.09	3899.66	-19.53	-42.76	-19.53	47.01	245.46	0.29
4000.00	0.30	272.13	3999.66	-19.52	-43.05	-19.52	47.27	245.61	0.26
4100.00	0.41	295.88	4099.66	-19.36	-43.63	-19.36	47.73	246.07	0.18
4200.00	0.46	318.34	4199.65	-18.90	-44.22	-18.90	48.09	246.85	0.18
4300.00	0.66	330.08	4299.65	-18.11	-44.77	-18.11	48.29	247.98	0.23
4400.00	1.06	320.19	4399.64	-16.89	-45.65	-16.89	48.68	249.69	0.43
4500.00	1.63	316.65	4499.61	-15.15	-47.22	-15.15	49.59	252.22	0.58
4600.00	2.41	317.82	4599.55	-12.55	-49.61	-12.55	51.18	255.80	0.78
4700.00	2.78	326.13	4699.44	-8.97	-52.38	-8.97	53.14	260.28	0.53
4800.00	3.17	337.52	4799.31	-4.40	-54.79	-4.40	54.97	265.41	0.70
4900.00	3.36	347.42	4899.15	1.02	-56.49	1.02	56.50	271.03	0.59
5000.00	2.76	357.68	4999.01	6.29	-57.22	6.29	57.57	276.27	0.81
5100.00	3.35	5.77	5098.86	11.60	-57.03	11.60	58.20	281.50	0.72
5200.00	0.63	0.74	5198.79	15.05	-56.73	15.05	58.69	284.86	2.72
5300.00	0.90	7.96	5298.79	16.38	-56.61	16.38	58.93	286.13	0.29



Vaughn Energy Services
Midland, Texas
432-563-5444
Survey Engineer: Logan Henry
Windmill 32 Federal Com No. 004H / API 30-015-41286



VES Survey Date: 05/22/2013

COG Windmill 32 Federal Com #4H Gyro + MWD Tie In - 10430ft Survey **Geodetic Report** (Non-Def Survey)



Report Date: May 28, 2013 - 09:49 AM
Client: COG
Field: NM Eddy County (NAD 27)
Structure / Slot: COG Windmill 32 Federal Com #4H / COG Windmill 32 Federal Com #4H
Well: COG Windmill 32 Federal Com #4H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: COG Windmill 32 Federal Com #4H Gyro + MWD Tie In - 10430ft
Survey Date: May 22, 2013
Tort / AHD / DDI / ERD Ratio: 146.623' / 4798.936 ft / 6.089 / 0.803
Coordinate Reference System: NAD27 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 41' 54.13877", W 104° 17' 33.68973"
Location Grid N/E Y/X: N 617781.100 ftUS, E 512502.300 ftUS
CRS Grid Convergence Angle: 0.0220°
Grid Scale Factor: 0.99990927

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 267.640° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3366.900 ft above MSL
Seabed / Ground Elevation: 3348.900 ft above MSL
Magnetic Declination: 7.830°
Total Gravity Field Strength: 998.5316mgN (9.80665 Based)
Total Magnetic Field Strength: 48613.516 nT
Magnetic Dip Angle: 60.442°
Declination Date: May 22, 2013
Magnetic Declination Model: BGGM 2013
North Reference: Grid North
Grid Convergence Used: 0.0220°
Total Corr Mag North->Grid North: 7.8079°
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	617781.10	512502.30	N 32 41 54.14	W 104 17 33.69
Marker MudLine	18.00	0.06	199.54	18.00	0.00	-0.01	0.00	0.35	617781.09	512502.30	N 32 41 54.14	W 104 17 33.69
	100.00	0.35	199.54	100.00	0.11	-0.29	-0.10	0.35	617780.81	512502.20	N 32 41 54.14	W 104 17 33.69
	200.00	0.51	174.08	200.00	0.20	-1.02	-0.16	0.25	617780.08	512502.14	N 32 41 54.13	W 104 17 33.69
	300.00	0.60	185.22	299.99	0.24	-1.98	-0.16	0.14	617779.12	512502.14	N 32 41 54.12	W 104 17 33.69
	400.00	0.69	236.10	399.99	0.82	-2.84	-0.71	0.56	617778.26	512501.59	N 32 41 54.11	W 104 17 33.70
	500.00	0.81	220.88	499.98	1.82	-3.71	-1.67	0.23	617777.39	512500.63	N 32 41 54.10	W 104 17 33.71
	600.00	0.78	223.74	599.97	2.80	-4.74	-2.60	0.05	617776.36	512499.70	N 32 41 54.09	W 104 17 33.72
	700.00	0.76	249.32	699.96	3.92	-5.46	-3.69	0.34	617775.64	512498.61	N 32 41 54.08	W 104 17 33.73
	800.00	0.70	255.70	799.95	5.14	-5.85	-4.91	0.10	617775.25	512497.39	N 32 41 54.08	W 104 17 33.75
	900.00	0.75	254.57	899.94	6.38	-6.17	-6.13	0.05	617774.93	512496.17	N 32 41 54.08	W 104 17 33.76
	1000.00	0.81	265.79	999.93	7.72	-6.40	-7.47	0.16	617774.70	512494.84	N 32 41 54.08	W 104 17 33.78
	1100.00	0.81	253.56	1099.92	9.11	-6.65	-8.85	0.17	617774.45	512493.45	N 32 41 54.07	W 104 17 33.79
	1200.00	0.71	258.82	1199.92	10.41	-6.97	-10.13	0.12	617774.13	512492.17	N 32 41 54.07	W 104 17 33.81
	1300.00	1.07	261.00	1299.90	11.95	-7.24	-11.66	0.36	617773.86	512490.64	N 32 41 54.07	W 104 17 33.83
	1400.00	1.26	250.61	1399.88	13.93	-7.75	-13.62	0.28	617773.35	512488.68	N 32 41 54.06	W 104 17 33.85
	1500.00	1.21	259.47	1499.86	16.03	-8.31	-15.70	0.20	617772.80	512486.60	N 32 41 54.06	W 104 17 33.87
	1600.00	0.94	253.28	1599.84	17.87	-8.73	-17.52	0.29	617772.37	512484.78	N 32 41 54.05	W 104 17 33.89
	1700.00	0.87	247.35	1699.83	19.37	-9.26	-19.01	0.12	617771.84	512483.29	N 32 41 54.05	W 104 17 33.91
	1800.00	0.93	243.69	1799.82	20.83	-9.91	-20.44	0.08	617771.19	512481.87	N 32 41 54.04	W 104 17 33.93
	1900.00	0.84	243.70	1899.81	22.24	-10.60	-21.82	0.09	617770.50	512480.48	N 32 41 54.03	W 104 17 33.95
	2000.00	0.66	238.74	1999.80	23.41	-11.22	-22.97	0.19	617769.88	512479.33	N 32 41 54.03	W 104 17 33.96
	2100.00	0.76	220.73	2099.79	24.37	-12.02	-23.90	0.24	617769.08	512478.41	N 32 41 54.02	W 104 17 33.97
	2200.00	0.71	234.48	2199.78	25.34	-12.89	-24.83	0.18	617768.21	512477.47	N 32 41 54.01	W 104 17 33.98
	2300.00	0.78	234.85	2299.77	26.43	-13.64	-25.89	0.07	617767.46	512476.41	N 32 41 54.00	W 104 17 33.99
	2400.00	0.88	232.52	2399.76	27.63	-14.50	-27.06	0.11	617766.60	512475.24	N 32 41 54.00	W 104 17 34.01
	2500.00	0.94	235.09	2499.75	28.95	-15.43	-28.34	0.07	617765.67	512473.96	N 32 41 53.99	W 104 17 34.02
	2600.00	0.92	242.55	2599.74	30.37	-16.27	-29.73	0.12	617764.83	512472.58	N 32 41 53.98	W 104 17 34.04
	2700.00	0.80	267.78	2699.73	31.80	-16.67	-31.14	0.39	617764.43	512471.17	N 32 41 53.97	W 104 17 34.05
	2800.00	0.72	257.45	2799.72	33.11	-16.83	-32.45	0.16	617764.27	512469.86	N 32 41 53.97	W 104 17 34.07
	2900.00	0.69	257.74	2899.71	34.32	-17.10	-33.65	0.03	617764.00	512468.65	N 32 41 53.97	W 104 17 34.08
	3000.00	0.65	257.54	2999.70	35.48	-17.35	-34.79	0.04	617763.75	512467.51	N 32 41 53.97	W 104 17 34.10
	3100.00	0.65	270.76	3099.70	36.60	-17.46	-35.91	0.15	617763.64	512466.39	N 32 41 53.97	W 104 17 34.11
	3200.00	0.70	254.67	3199.69	37.76	-17.62	-37.07	0.20	617763.48	512465.23	N 32 41 53.96	W 104 17 34.12
	3300.00	0.55	240.90	3299.68	38.79	-18.01	-38.08	0.21	617763.09	512464.23	N 32 41 53.96	W 104 17 34.14
	3400.00	0.67	251.31	3399.68	39.78	-18.43	-39.05	0.16	617762.67	512463.25	N 32 41 53.96	W 104 17 34.15
	3500.00	0.57	257.15	3499.67	40.83	-18.73	-40.09	0.12	617762.37	512462.21	N 32 41 53.95	W 104 17 34.16
	3600.00	0.47	265.47	3599.67	41.73	-18.88	-40.98	0.13	617762.23	512461.32	N 32 41 53.95	W 104 17 34.17
	3700.00	0.51	252.89	3699.66	42.57	-19.04	-41.82	0.11	617762.06	512460.49	N 32 41 53.95	W 104 17 34.18
	3800.00	0.32	233.36	3799.66	43.23	-19.34	-42.47	0.23	617761.77	512459.84	N 32 41 53.95	W 104 17 34.19
	3900.00	0.04	258.09	3899.66	43.49	-19.51	-42.72	0.28	617761.59	512459.58	N 32 41 53.95	W 104 17 34.19
	4000.00	0.30	272.13	3999.66	43.79	-19.51	-43.02	0.26	617761.59	512459.28	N 32 41 53.95	W 104 17 34.19
	4100.00	0.41	295.88	4099.66	44.36	-19.34	-43.60	0.18	617761.76	512458.70	N 32 41 53.95	W 104 17 34.20
	4200.00	0.46	318.34	4199.66	44.93	-18.89	-44.19	0.18	617762.22	512458.11	N 32 41 53.95	W 104 17 34.21
	4300.00	0.66	330.08	4299.65	45.45	-18.09	-44.75	0.23	617763.02	512457.56	N 32 41 53.96	W 104 17 34.21
	4400.00	1.06	320.19	4399.64	46.28	-16.88	-45.63	0.43	617764.23	512456.68	N 32 41 53.97	W 104 17 34.22
	4500.00	1.63	316.65	4499.61	47.78	-15.13	-47.19	0.58	617765.97	512455.11	N 32 41 53.99	W 104 17 34.24
	4600.00	2.41	317.82	4599.55	50.06	-12.54	-49.58	0.78	617768.56	512452.72	N 32 41 54.01	W 104 17 34.27
	4700.00	2.78	326.13	4699.45	52.67	-8.97	-52.35	0.53	617772.13	512449.96	N 32 41 54.05	W 104 17 34.30
	4800.00	3.17	337.52	4799.31	54.89	-4.40	-54.76	0.71	617776.70	512447.55	N 32 41 54.10	W 104 17 34.33
	4900.00	3.36	347.42	4899.15	56.36	1.02	-56.45	0.59	617782.12	512445.85	N 32 41 54.15	W 104 17 34.35
	5000.00	2.76	357.68	4999.01	56.88	6.28	-57.19	0.81	617787.38	512445.12	N 32 41 54.20	W 104 17 34.36
	5100.00	3.35	5.77	5098.87	56.46	11.59	-56.99	0.73	617792.69	512445.32	N 32 41 54.25	W 104 17 34.36
	5200.00	0.63	0.74	5198.80	56.02	15.05	-56.69	2.72	617796.15	512445.82	N 32 41 54.29	W 104 17 34.35
	5300.00	0.90	7.96	5298.79	55.85	16.38	-56.57	0.29	617797.48	512445.73	N 32 41 54.30	W 104 17 34.35
	5422.00	2.99	291.02	5420.72	58.60	18.47	-59.41	2.39	617799.57	512442.89	N 32 41 54.32	W 104 17 34.38
	5453.00	5.10	278.35	5451.64	60.70	18.96	-61.53	7.35	617800.06	512440.78	N 32 41 54.33	W 104 17 34.41
	5484.00	7.83	271.67	5482.44	64.16	19.22	-65.00	9.12	617800.32	512437.30	N 32 41 54.33	W 104 17 34.45

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 ° ' ")
	5516.00	10.82	269.55	5514.02	69.34	19.26	-70.19	9.40	617800.36	512432.12	N 32 41 54.33	W 104 17 34.51
	5548.00	13.72	268.58	5545.28	76.13	19.14	-76.99	9.09	617800.24	512425.32	N 32 41 54.33	W 104 17 34.59
	5579.00	16.27	267.17	5575.23	84.15	18.84	-85.00	8.31	617799.94	512417.31	N 32 41 54.33	W 104 17 34.68
	5611.00	18.91	266.45	5605.73	93.82	18.30	-94.65	8.28	617799.39	512407.65	N 32 41 54.32	W 104 17 34.80
	5643.00	21.72	264.86	5635.73	104.92	17.44	-105.73	8.95	617798.54	512396.58	N 32 41 54.31	W 104 17 34.93
	5674.00	27.44	265.55	5663.91	117.80	16.38	-118.57	18.47	617797.47	512383.74	N 32 41 54.30	W 104 17 35.08
	5706.00	32.98	267.24	5691.56	133.89	15.38	-134.64	17.51	617796.48	512367.68	N 32 41 54.29	W 104 17 35.27
	5738.00	37.72	271.20	5717.65	152.38	15.17	-153.14	16.45	617796.27	512349.18	N 32 41 54.29	W 104 17 35.48
	5769.00	41.59	271.77	5741.52	172.12	15.68	-172.91	12.54	617796.78	512329.41	N 32 41 54.29	W 104 17 35.71
	5801.00	45.11	270.99	5764.78	194.03	16.21	-194.87	11.13	617797.31	512307.45	N 32 41 54.30	W 104 17 35.97
	5833.00	48.19	269.24	5786.75	217.28	16.25	-218.13	10.41	617797.35	512284.19	N 32 41 54.30	W 104 17 36.24
	5864.00	51.62	267.38	5806.71	240.98	15.54	-241.83	11.98	617796.64	512260.49	N 32 41 54.29	W 104 17 36.52
	5896.00	53.55	266.54	5826.15	266.40	14.19	-267.21	6.38	617795.29	512235.12	N 32 41 54.28	W 104 17 36.82
	5928.00	55.49	265.94	5844.73	292.45	12.48	-293.21	6.25	617793.58	512209.12	N 32 41 54.26	W 104 17 37.12
	5960.00	57.33	265.85	5862.43	319.09	10.57	-319.79	5.75	617791.67	512182.53	N 32 41 54.24	W 104 17 37.43
	5991.00	59.88	266.32	5878.58	345.54	8.76	-346.19	8.33	617789.86	512156.14	N 32 41 54.23	W 104 17 37.74
	6023.00	61.55	266.14	5894.23	373.44	6.93	-374.04	5.24	617788.03	512128.29	N 32 41 54.21	W 104 17 38.07
	6055.00	63.66	266.03	5908.95	401.84	4.99	-402.38	6.60	617786.09	512099.95	N 32 41 54.19	W 104 17 38.40
	6086.00	64.72	265.84	5922.45	429.73	3.01	-430.22	3.46	617784.11	512072.12	N 32 41 54.17	W 104 17 38.72
	6118.00	67.27	266.07	5935.47	458.95	0.95	-459.38	8.00	617782.05	512042.98	N 32 41 54.15	W 104 17 39.07
	6150.00	70.70	266.14	5946.94	488.81	-1.08	-489.18	10.72	617780.02	512013.17	N 32 41 54.13	W 104 17 39.41
	6181.00	74.13	266.70	5956.30	518.35	-2.92	-518.67	11.20	617778.18	511983.68	N 32 41 54.11	W 104 17 39.76
	6213.00	77.82	267.09	5964.06	549.38	-4.60	-549.66	11.59	617776.50	511952.69	N 32 41 54.10	W 104 17 40.12
	6245.00	81.60	267.50	5969.77	580.86	-6.09	-581.11	11.88	617775.01	511921.25	N 32 41 54.08	W 104 17 40.49
	6276.00	85.12	268.58	5973.36	611.65	-7.14	-611.87	11.87	617773.96	511890.48	N 32 41 54.07	W 104 17 40.85
	6308.00	88.11	269.50	5975.25	643.58	-7.68	-643.81	9.77	617773.42	511858.55	N 32 41 54.07	W 104 17 41.22
	6403.00	89.78	270.17	5976.99	738.49	-7.95	-738.79	1.89	617773.15	511763.58	N 32 41 54.06	W 104 17 42.33
	6498.00	91.89	269.27	5975.61	833.41	-8.41	-833.77	2.41	617772.69	511668.61	N 32 41 54.06	W 104 17 43.45
	6593.00	92.24	268.57	5972.19	928.33	-10.20	-928.69	0.82	617770.90	511573.69	N 32 41 54.04	W 104 17 44.56
	6688.00	92.15	268.22	5968.55	1023.25	-12.86	-1023.59	0.38	617768.24	511478.81	N 32 41 54.02	W 104 17 45.67
	6783.00	91.98	268.03	5965.13	1118.18	-15.97	-1118.47	0.27	617765.13	511383.93	N 32 41 53.98	W 104 17 46.78
	6878.00	91.98	267.44	5961.84	1213.12	-19.72	-1213.34	0.62	617761.38	511289.07	N 32 41 53.95	W 104 17 47.89
	6973.00	92.24	267.16	5958.35	1308.06	-24.19	-1308.17	0.40	617756.91	511194.25	N 32 41 53.90	W 104 17 49.00
	7067.00	92.42	267.17	5954.52	1401.98	-28.84	-1401.98	0.19	617752.27	511100.45	N 32 41 53.86	W 104 17 50.10
	7162.00	92.68	267.14	5950.30	1496.88	-33.55	-1496.77	0.28	617747.56	511005.67	N 32 41 53.81	W 104 17 51.20
	7257.00	92.86	265.76	5945.71	1591.75	-39.42	-1591.47	1.46	617741.68	510910.97	N 32 41 53.75	W 104 17 52.31
	7352.00	93.12	265.38	5940.75	1686.55	-46.75	-1686.06	0.48	617734.35	510816.40	N 32 41 53.68	W 104 17 53.42
	7447.00	91.54	266.31	5936.89	1781.43	-53.63	-1780.73	1.93	617727.48	510721.74	N 32 41 53.61	W 104 17 54.53
	7542.00	91.71	266.01	5934.19	1876.36	-59.99	-1875.48	0.36	617721.12	510627.00	N 32 41 53.55	W 104 17 55.64
	7637.00	91.80	265.45	5931.29	1971.26	-67.06	-1970.17	0.60	617714.05	510532.32	N 32 41 53.48	W 104 17 56.74
	7732.00	91.19	264.70	5928.81	2066.13	-75.21	-2064.78	1.02	617705.90	510437.71	N 32 41 53.40	W 104 17 57.85
	7827.00	91.36	264.13	5926.69	2160.95	-84.45	-2159.31	0.63	617696.65	510343.19	N 32 41 53.31	W 104 17 58.96
	7922.00	91.98	265.98	5923.92	2255.81	-92.64	-2253.91	2.05	617688.47	510248.60	N 32 41 53.23	W 104 18 0.06
	8017.00	92.42	267.55	5920.28	2350.73	-98.00	-2348.69	1.72	617683.11	510153.63	N 32 41 53.18	W 104 18 1.17
	8112.00	92.86	267.02	5915.90	2445.63	-102.49	-2443.48	0.72	617678.62	510059.05	N 32 41 53.13	W 104 18 2.28
	8207.00	92.68	267.70	5911.31	2540.51	-106.86	-2538.27	0.74	617674.25	509964.27	N 32 41 53.09	W 104 18 3.39
	8301.00	93.30	268.09	5906.41	2634.38	-110.31	-2632.07	0.78	617670.80	509870.47	N 32 41 53.06	W 104 18 4.49
	8396.00	92.24	267.94	5901.82	2729.27	-113.60	-2726.90	1.13	617667.51	509775.65	N 32 41 53.02	W 104 18 5.60
	8491.00	92.68	268.07	5897.74	2824.18	-116.90	-2821.76	0.48	617664.21	509680.80	N 32 41 52.99	W 104 18 6.71
	8586.00	91.63	267.81	5894.17	2919.11	-120.31	-2916.63	1.14	617660.80	509585.94	N 32 41 52.96	W 104 18 7.82
	8681.00	91.63	266.96	5891.46	3014.07	-124.65	-3011.49	0.89	617656.47	509491.09	N 32 41 52.92	W 104 18 8.93
	8776.00	91.98	266.96	5888.47	3109.02	-129.68	-3106.31	0.37	617651.43	509396.28	N 32 41 52.87	W 104 18 10.04
	8871.00	92.51	266.04	5884.75	3203.92	-135.48	-3201.06	1.12	617645.64	509301.54	N 32 41 52.81	W 104 18 11.15
	8966.00	93.21	265.60	5880.01	3298.76	-142.39	-3295.69	0.87	617638.72	509206.92	N 32 41 52.74	W 104 18 12.25
	9061.00	91.28	267.30	5876.29	3393.65	-148.27	-3390.42	2.71	617632.85	509112.19	N 32 41 52.68	W 104 18 13.36
	9155.00	90.31	268.11	5874.98	3487.64	-152.03	-3484.34	1.34	617629.08	509018.29	N 32 41 52.65	W 104 18 14.46
	9250.00	90.75	267.04	5874.11	3582.64	-156.05	-3579.25	1.22	617625.06	508923.38	N 32 41 52.61	W 104 18 15.57
	9345.00	89.52	268.96	5873.88	3677.63	-159.37	-3674.18	2.40	617621.75	508828.46	N 32 41 52.57	W 104 18 16.68
	9440.00	90.22	268.39	5874.10	3772.61	-161.56	-3769.16	0.95	617619.55	508733.49	N 32 41 52.55	W 104 18 17.80
	9534.00	91.01	268.35	5873.09	3866.60	-164.24	-3863.11	0.84	617616.88	508639.55	N 32 41 52.53	W 104 18 18.89
	9629.00	92.15	268.62	5870.47	3961.55	-166.75	-3958.04	1.23	617614.37	508544.63	N 32 41 52.50	W 104 18 20.01
	9724.00	90.22	268.04	5868.50	4056.52	-169.52	-4052.98	2.12	617611.60	508449.70	N 32 41 52.47	W 104 18 21.12
	9819.00	89.96	267.77	5868.35	4151.52	-172.99	-4147.91	0.39	617608.13	508354.77	N 32 41 52.44	W 104 18 22.23
	9914.00	90.22	267.93	5868.21	4246.52	-176.55	-4242.84	0.32	617604.56	508259.85	N 32 41 52.41	W 104 18 23.34
	10009.00	90.57	266.75	5867.55	4341.51	-180.96	-4337.74	1.30	617600.16	508164.96	N 32 41 52.36	W 104 18 24.45
	10136.00	90.92	267.09	5865.90	4436.49	-187.78	-4464.54	0.38	617593.33	508038.17	N 32 41 52.29	W 104 18 25.93
	10234.00	90.92	266.76	5864.33	4536.47	-193.04	-4562.39	0.34	617588.08	507940.33	N 32 41 52.24	W 104 18 27.08
Final Survey	10352.00	91.63	266.23	5861.70	4634.41	-200.25	-4680.14	0.75	617580.87	507822.60	N 32 41 52.17	W 104 18 28.46
Projection To Bit	10430.00	91.63	266.23	5859.48	4732.36	-205.38	-4757.94	0.00	617575.74	507744.80	N 32 41 52.12	W 104 18 29.37

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				SLB_NSG+MSHOT-Depth Only	Original Borehole / COG Windmill 32 Federal Com #4H Gyro + MWD Tie In - 10430ft
	18.000	5300.000				SLB_NSG+MSHOT	Original Borehole / COG Windmill 32 Federal Com #4H

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 ° ' ")
		5300.000	10352.000		Act Sins	30.000	30.000	SLB_MWD-STD			Original Borehole / COG	
		10352.000	10430.000		Act Sins	30.000	30.000	SLB_BLIND+TREND			Windmill 32 Federal Com #4H	
											Original Borehole / COG	
											Windmill 32 Federal Com #4H	

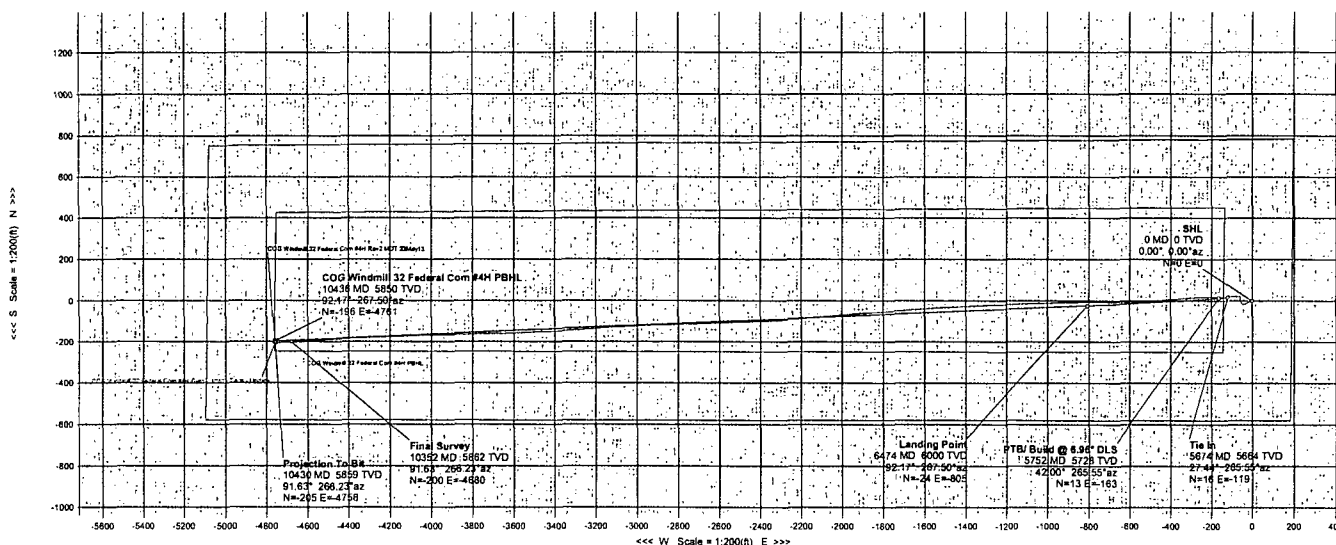
WELL	COG Windmill 32 Federal Com #4H	FIELD	NM Eddy County (NAD 27)	STRUCTURE	Patriot 6
Magnum Parameters	Model: BGCN 2012	Dip: 40.41°	Dir: March 07, 2013	Surface Location	NAD27 New Mexico State Plane, Eastern Zone, US Feet
	Mag Dec: 7.850°	FE: 4821.56T		Lat: N 32 41 54.139	Northing: 61779.19 RUS
				Long: W 104 17 32.680	Easting: 512501.38 RUS
					Scale Fact: 0.99990977
MacParameters	Star: Wadco2 32 Federal Com #4H	TVD Ref: RKB(1356.98 above MSL)			
	Plan: Rev:1 MDT 21 May 13	Srv Date: March 07, 2013			

Legend

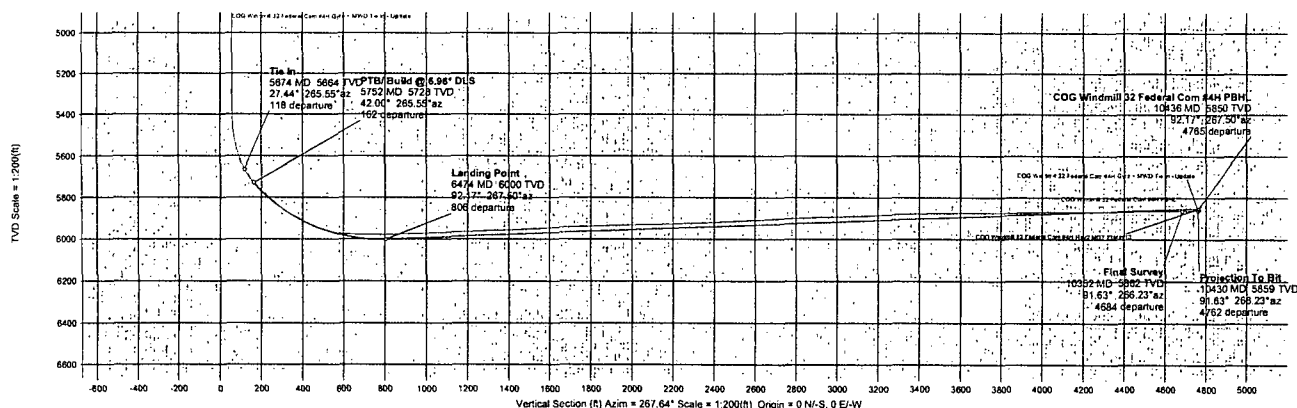
- COG Windmill 32 Federal Com #4H PBHL
- COG Windmill 32 Federal Com #4H PBHL
- COG Windmill 32 Federal Com #4H PBHL
- COG Windmill 32 Federal Com #4H PBHL
- COG Windmill 32 Federal Com #4H PBHL



Grid North
Tot Corr (M->G
7.8279°)
Mag Dec (7.850°)
Grid Conv (0.022°)



Comments	Survey MD(ft)	Inclination(deg)	Azimuth(deg)	TVD(ft)	Sub-Sea TVD	VS(ft)	NS(ft)	EW(ft)	Northing(ftUS)	Easting(ftUS)	Latitude(deg)	Longitude(deg)	DLS(ft/100ft)	Tool Face(deg)
Tie In	5674.00	27.44	265.55	5663.91	2297.01	117.80	16.38	-118.57	617797.47	512383.74	N 32 41 54.301	W 104 17 35.077	18.47	0.00
PTB/ Build @ 6.96° DLS	5752.00	42.00	265.55	5727.85	2360.95	162.08	12.94	-162.75	617794.04	512339.57	N 32 41 54.267	W 104 17 35.594	18.67	2.54
Landing Point	6473.77	92.17	267.50	6000.01	2633.11	805.73	-23.90	-805.43	617757.20	511696.95	N 32 41 53.905	W 104 17 43.115	6.96	0.00
COG Windmill 32 Federal Com #4H PBHL	10435.58	92.17	267.50	5850.00	2483.10	4764.69	-196.42	-4760.64	617584.70	507742.10	N 32 41 52.210	W 104 18 29.397	0.00	



Drawn By: Current User
Data Created: May 23, 2013 11:13:04 PM
Checked By:
Approved By:
Approved Date: