

BLUE THUNDER 5 FEDERAL #7H

30-015-40874

Sec 5-T19S-R31E

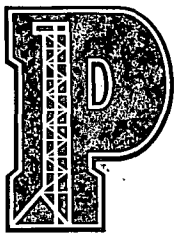
15-40874

RECEIVED

APR 15 2013

NMOCD ARTESIA

<u>Perfs</u>	<u>7 1/2% Acid (Gal)</u>	<u>Sand (#)</u>	<u>Fluid (Gal)</u>
12856-13249	3008	299771	307486
12547-12797'	3027	303650	281446
11748-12050'	2971	309634	281735
11748-12050'	2877	303565	257199
11348-11650'	3021	300109	237513
10948-11250'	3043	300693	227196
10548-10850'	3082	298818	226494
10149-10450'	3091	301090	225525
9749-10051'	2808	299468	225123
9349-9651'	2933	302643	225999
8949-9251'	2982	308508	225330
Totals	32843	3327949	2721046

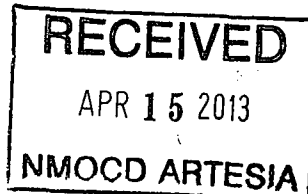


PATRIOT DRILLING, LLC

OPERATOR: COG Operating, LLC
WELL/LEASE: Blue Thunder 5 Federal # 7 H
COUNTY: Eddy Co., New Mexico
Sec. 5, T19S, R31E

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
322	3/4	3,234	1 1/2
717	1/4	3,629	3/4
969	1/4	4,568	1 1/4
1,289	1/2	5,000	1 1/4
1,609	3/4	5,488	1
1,938	1	5,988	1 1/2
2,213	3	6,487	1 1/2
2,305	2 3/4	7,000	1 1/2
2,624	2 1/2	7,460	1/2
2,770	2	7,724	2



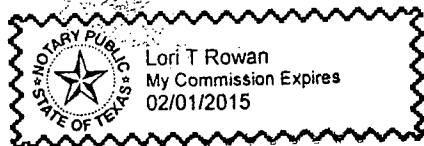
Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 29th day of January, 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



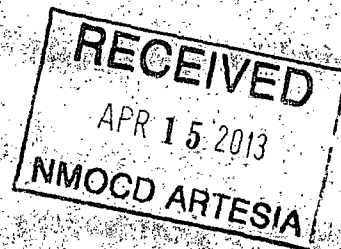


A GYRO TECHNOLOGIES INC. COMPANY

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

January 21, 2013

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



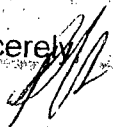
Attn: Kanicia Castillo

Re: **Blue Thunder 5 Federal No 007H**

Please find enclosed a copy of the survey from 0' to 8,100' ran on the above referenced well.

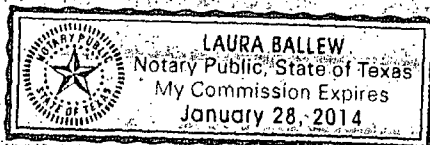
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 21st day of January, A.D., 2013, by Keith Havelka.




Laura Ballew
Notary Public, State of Texas



Company: COG Operating LLC, (Concho)
Lease/Well: Blue Thunder 5 Federal/No 007H
Location: S5 T19s R31e
Rig Name: Patriot #6
State/County: New Mexico/Eddy
Latitude: 32.68, Longitude: -103.89
GRID North is 0.24 Degrees East of True North
VS-Azi: 0.00 Degrees



RKB : 17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...5.federal #7h.gyro.survey.ut

Minimum Curvature Method

Report Date/Time: 1/21/2013 / 12:27

Vaughn Energy Services

(432) 563-5444

Gardendale, TX

Surveyor: Dustin Wedel

Blue Thunder 5 Federal No 007H / API 30-015-40874

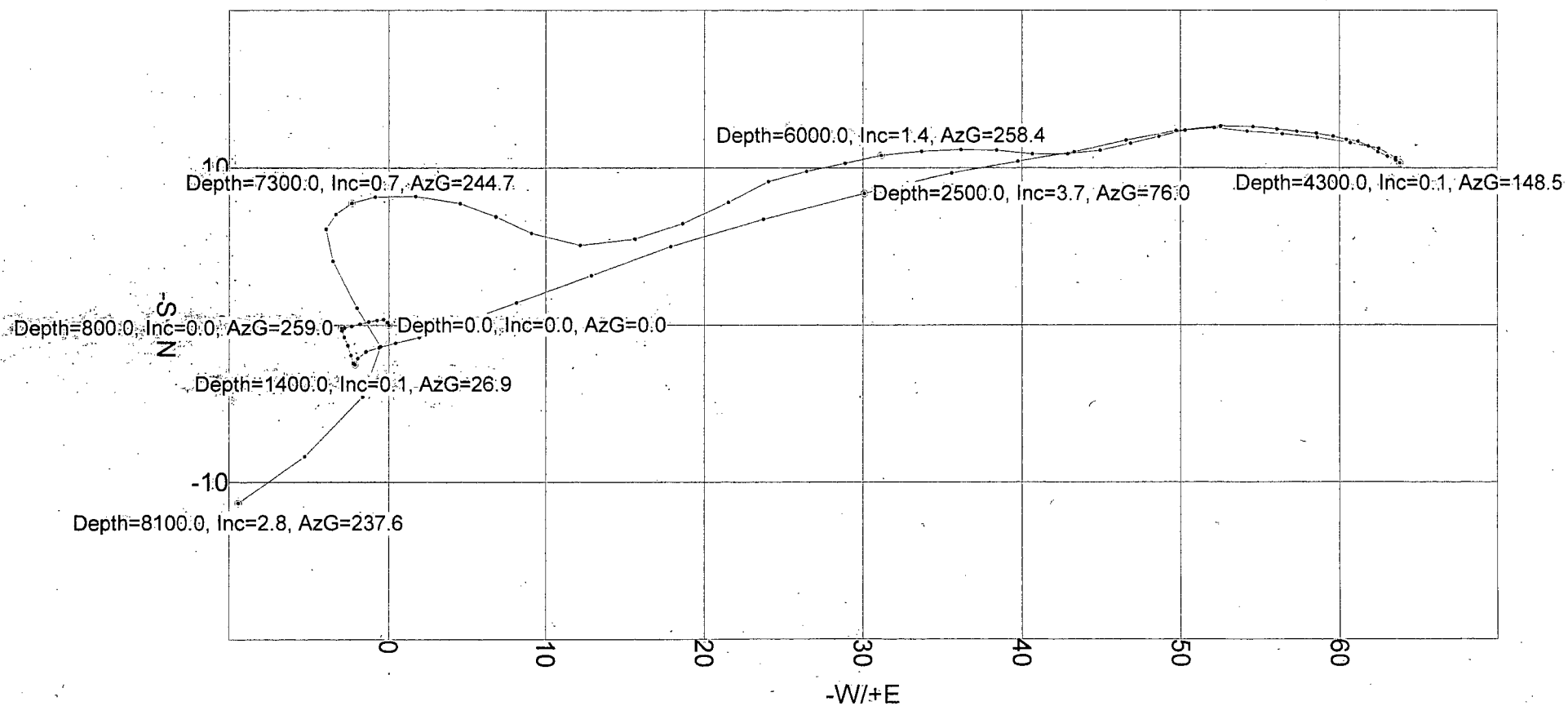
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.25	334.46	100.00	0.20	-0.09	0.22	334.46	0.25
200.00	0.17	265.53	200.00	0.38	-0.34	0.51	318.36	0.25
300.00	0.31	260.24	300.00	0.32	-0.75	0.82	293.21	0.14
400.00	0.33	258.17	400.00	0.22	-1.29	1.31	279.58	0.02
500.00	0.32	255.12	500.00	0.09	-1.84	1.84	272.77	0.02
600.00	0.32	253.33	599.99	-0.06	-2.37	2.37	268.50	0.01
700.00	0.21	264.40	699.99	-0.16	-2.82	2.83	266.75	0.12
800.00	0.02	259.00	799.99	-0.18	-3.02	3.02	266.57	0.19
900.00	0.20	165.57	899.99	-0.36	-2.99	3.01	263.22	0.20
1000.00	0.30	154.93	999.99	-0.77	-2.83	2.93	254.83	0.11
1100.00	0.36	158.04	1099.99	-1.30	-2.60	2.91	243.45	0.06
1200.00	0.40	168.27	1199.99	-1.94	-2.41	3.09	231.26	0.08
1300.00	0.20	152.04	1299.99	-2.44	-2.26	3.32	222.84	0.22
1400.00	0.09	26.89	1399.99	-2.52	-2.14	3.31	220.33	0.26
1500.00	0.40	23.07	1499.98	-2.13	-1.97	2.90	222.75	0.32
1600.00	0.46	73.96	1599.98	-1.70	-1.45	2.23	220.45	0.38
1700.00	0.54	71.07	1699.98	-1.43	-0.61	1.56	203.14	0.09
1800.00	0.69	77.81	1799.97	-1.15	0.43	1.23	159.57	0.17

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	1.07	75.70	1899.96	-0.79	1.92	2.08	112.38	0.37
2000.00	1.85	67.53	1999.93	-0.06	4.32	4.32	89.27	0.81
2100.00	2.82	72.06	2099.84	1.43	8.15	8.28	80.04	0.99
2200.00	2.94	67.84	2199.72	3.16	12.87	13.26	76.22	0.24
2300.00	3.18	71.37	2299.57	5.01	17.88	18.57	74.34	0.31
2400.00	3.81	75.35	2399.39	6.74	23.73	24.67	74.14	0.67
2500.00	3.71	75.97	2499.17	8.37	30.08	31.23	74.46	0.11
2600.00	2.74	77.72	2599.01	9.66	35.56	36.85	74.80	0.98
2700.00	2.14	82.86	2698.92	10.40	39.75	41.08	75.34	0.63
2800.00	2.01	77.43	2798.86	11.01	43.31	44.69	75.73	0.24
2900.00	1.85	77.20	2898.80	11.75	46.60	48.06	75.84	0.16
3000.00	1.81	81.29	2998.75	12.35	49.74	51.25	76.06	0.14
3100.00	1.40	87.66	3098.71	12.64	52.52	54.02	76.47	0.45
3200.00	0.97	95.93	3198.69	12.60	54.57	56.01	77.00	0.46
3300.00	0.76	94.71	3298.68	12.46	56.08	57.44	77.47	0.20
3400.00	0.68	99.93	3398.67	12.30	57.33	58.63	77.89	0.10
3500.00	0.73	92.12	3498.66	12.18	58.55	59.80	78.25	0.10
3600.00	0.52	110.81	3598.65	11.99	59.61	60.80	78.63	0.28
3700.00	0.46	96.12	3698.65	11.79	60.43	61.57	78.96	0.14
3800.00	0.40	103.08	3798.65	11.66	61.17	62.27	79.20	0.08
3900.00	0.45	125.08	3898.65	11.36	61.83	62.87	79.59	0.17
4000.00	0.37	117.69	3998.64	10.99	62.44	63.40	80.02	0.09
4100.00	0.37	110.82	4098.64	10.72	63.02	63.93	80.35	0.04
4200.00	0.31	117.73	4198.64	10.48	63.56	64.42	80.64	0.07
4300.00	0.08	148.54	4298.64	10.29	63.84	64.66	80.84	0.24
4400.00	0.56	321.08	4398.64	10.61	63.57	64.45	80.52	0.64
4500.00	0.93	286.26	4498.63	11.22	62.49	63.49	79.82	0.56
4600.00	1.18	277.31	4598.61	11.58	60.69	61.78	79.20	0.30
4700.00	1.23	281.18	4698.59	11.92	58.61	59.81	78.51	0.09
4800.00	1.31	271.54	4798.57	12.16	56.42	57.71	77.84	0.23
4900.00	1.25	276.65	4898.54	12.31	54.20	55.58	77.20	0.13
5000.00	1.15	276.01	4998.52	12.54	52.12	53.61	76.47	0.10
5100.00	1.01	252.17	5098.50	12.38	50.28	51.79	76.17	0.47
5200.00	0.92	260.80	5198.49	11.98	48.66	50.11	76.17	0.17
5300.00	1.17	252.48	5298.47	11.55	46.89	48.29	76.17	0.30
5400.00	1.11	261.92	5398.45	11.10	44.96	46.31	76.13	0.20
5500.00	1.27	265.11	5498.43	10.87	42.89	44.25	75.78	0.17
5600.00	1.30	274.76	5598.40	10.87	40.66	42.09	75.03	0.22
5700.00	1.30	276.63	5698.38	11.10	38.40	39.97	73.88	0.04

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	1.29	265.90	5798.35	11.15	36.15	37.83	72.87	0.24
5900.00	1.57	268.78	5898.32	11.04	33.67	35.43	71.85	0.29
6000.00	1.36	258.45	5998.29	10.77	31.14	32.95	70.92	0.34
6100.00	1.32	257.54	6098.26	10.28	28.86	30.64	70.38	0.04
6200.00	1.50	258.38	6198.23	9.77	26.45	28.19	69.72	0.18
6300.00	1.34	250.63	6298.20	9.12	24.05	25.72	69.24	0.25
6400.00	1.93	236.81	6398.16	7.81	21.54	22.91	70.08	0.71
6500.00	1.77	254.40	6498.11	6.47	18.63	19.72	70.87	0.59
6600.00	1.86	249.61	6598.06	5.49	15.63	16.56	70.66	0.17
6700.00	2.22	275.21	6698.00	5.10	12.18	13.20	67.29	0.97
6800.00	1.49	296.35	6797.94	5.85	9.09	10.81	57.22	0.99
6900.00	1.35	293.76	6897.91	6.90	6.84	9.72	44.77	0.15
7000.00	1.45	285.96	6997.88	7.72	4.55	8.96	30.51	0.22
7100.00	1.88	273.97	7097.84	8.18	1.70	8.36	11.71	0.55
7200.00	1.08	261.28	7197.81	8.15	-0.87	8.20	353.91	0.86
7300.00	0.70	244.68	7297.80	7.75	-2.35	8.10	343.11	0.45
7400.00	0.75	227.86	7397.79	7.05	-3.39	7.82	334.32	0.22
7500.00	0.58	192.69	7497.78	6.12	-3.98	7.30	326.94	0.43
7600.00	1.86	161.28	7597.76	4.09	-3.57	5.43	318.88	1.40
7700.00	2.03	144.44	7697.70	1.12	-2.03	2.31	298.91	0.59
7800.00	1.33	155.72	7797.66	-1.38	-0.52	1.47	200.64	0.77
7900.00	3.08	217.02	7897.59	-4.58	-1.66	4.88	199.91	2.71
8000.00	3.00	231.25	7997.45	-8.37	-5.32	9.91	212.44	0.76
8100.00	2.83	237.58	8097.32	-11.33	-9.44	14.74	219.80	0.36



Vaughn Energy Services
(432) 563-5444
Gardendale, TX
Surveyor: Dustin Wedel
Blue Thunder 5 Federal No 007H / API 30-015-40874





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COG Operating LLC

Eddy County(NAD83)

Blue Thunder 5 Federal

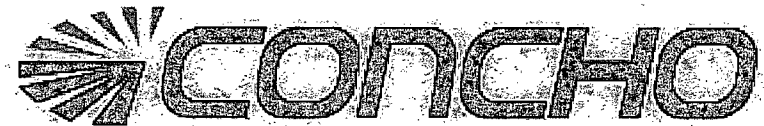
#7H

OH

Design: OH

Pathfinder X&Y Report

25 January, 2013





A Schlumberger Company

Pathfinder

Pathfinder X&Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County(NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MDI Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey/Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM:5000.1:Single User.Db

Project	Eddy County(NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Blue Thunder 5 Federal		
Site Position:		Northing:	612,684.890 usft
From:	Map	Easting:	679,399.520 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32.683512
		Longitude:	-103.884596
		Grid Convergence:	0.24 °

Well		#7H				
Well Position	+N/-S	0.0 usft	Northing:	616,817.120 usft	Latitude:	32.694867
	+E/-W	0.0 usft	Easting:	679,665.800 usft	Longitude:	-103.883674
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,583.3 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	7/13/2012	7.62	60.57	48,797

Design	OH			
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	269.66



A Schlumberger Company

Pathfinder

Pathfinder X&Y Report



Company:	COG Operating LLC	Local Co-ordinate/Reference:	Well #7H
Project:	Eddy County (NAD83)	TVD/Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD/Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North/Reference:	Grid
Wellbore:	OH	Survey/Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM:5000.1 Single User Db

Survey Program		Date: 1/25/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,100.0	Gyro #1' (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
8,197.0	13,331.0	MWD #2 (OH)	MWD	MWD - Standard

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	D Leg (%/100usft)	Northing (usft)	Easting (usft)
0.0	0.00	0.00	0.0	-3,600.3	0.0	0.0	0.0	0.00	616,817.12	679,665.80
100.0	0.25	334.46	100.0	-3,500.3	0.2	-0.1	0.1	0.25	616,817.32	679,665.71
200.0	0.17	265.53	200.0	-3,400.3	0.4	-0.3	0.3	0.25	616,817.50	679,665.46
300.0	0.31	260.24	300.0	-3,300.3	0.3	-0.8	0.7	0.14	616,817.44	679,665.05
400.0	0.33	258.17	400.0	-3,200.3	0.2	-1.3	1.3	0.02	616,817.34	679,664.50
500.0	0.32	255.12	500.0	-3,100.3	0.1	-1.9	1.9	0.02	616,817.21	679,663.95
600.0	0.32	253.33	600.0	-3,000.3	-0.1	-2.4	2.4	0.01	616,817.06	679,663.41
700.0	0.21	264.40	700.0	-2,900.3	-0.2	-2.8	2.8	0.12	616,816.96	679,662.96
800.0	0.02	259.00	800.0	-2,800.3	-0.2	-3.0	3.0	0.19	616,816.94	679,662.76
900.0	0.20	165.57	900.0	-2,700.3	-0.4	-3.0	3.0	0.20	616,816.77	679,662.79
1,000.0	0.30	154.93	1,000.0	-2,600.3	-0.8	-2.9	2.9	0.11	616,816.36	679,662.94
1,100.0	0.36	158.04	1,100.0	-2,500.3	-1.3	-2.6	2.6	0.06	616,815.83	679,663.17
1,200.0	0.40	168.27	1,200.0	-2,400.3	-1.9	-2.4	2.5	0.08	616,815.20	679,663.36
1,300.0	0.20	152.04	1,300.0	-2,300.3	-2.4	-2.3	2.3	0.22	616,814.70	679,663.51
1,400.0	-0.09	26.89	1,400.0	-2,200.3	-2.5	-2.2	2.2	0.26	616,814.62	679,663.63
1,500.0	0.40	23.07	1,500.0	-2,100.3	-2.1	-2.0	2.0	0.31	616,815.01	679,663.80
1,600.0	0.46	73.96	1,600.0	-2,000.3	-1.7	-1.5	1.5	0.37	616,815.44	679,664.33
1,700.0	0.54	71.07	1,700.0	-1,900.3	-1.4	-0.6	0.7	0.08	616,815.70	679,665.16
1,800.0	0.69	77.81	1,800.0	-1,800.3	-1.1	0.4	-0.4	0.17	616,815.98	679,666.19
1,900.0	1.07	75.70	1,900.0	-1,700.3	-0.8	1.9	-1.9	0.38	616,816.34	679,667.68
2,000.0	1.85	67.53	1,999.9	-1,600.4	0.1	4.3	-4.3	0.81	616,817.19	679,670.08



A Schlumberger Company

Pathfinder

Pathfinder X&Y Report



Company:	COG Operating LLC	Local/Co-ordinate/Reference:	Well #7H:
Project:	Eddy County(NAD83)	TVD/Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 51 Federal	MD/Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey/Calculation/Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V-Sec (usft)	DLeg (%/100usft)	Northing (usft)	Easting (usft)	
2,100.0	2.82	72.06	2,099.8	-1,500.5	1.4	8.1	-8.1	0.99	616,818.56	679,673.91	
2,200.0	2.94	67.84	2,199.7	-1,400.6	3.2	12.8	-12.8	0.24	616,820.29	679,678.63	
2,300.0	3.18	71.37	2,299.6	-1,300.7	5.0	17.8	-17.9	0.31	616,822.14	679,683.63	
2,400.0	3.81	75.35	2,399.4	-1,200.9	6.7	23.7	-23.7	0.67	616,823.87	679,689.47	
2,500.0	3.71	75.97	2,499.2	-1,101.1	8.4	30.0	-30.1	0.11	616,825.49	679,695.83	
2,600.0	2.74	77.72	2,599.0	-1,001.3	9.7	35.5	-35.6	0.97	616,826.79	679,701.30	
2,700.0	2.14	82.86	2,698.9	-901.4	10.4	39.7	-39.8	0.64	616,827.53	679,705.49	
2,800.0	2.01	77.43	2,798.9	-801.4	11.0	43.3	-43.3	0.24	616,828.14	679,709.05	
2,900.0	1.85	77.20	2,898.8	-701.5	11.8	46.5	-46.6	0.16	616,828.88	679,712.34	
3,000.0	1.81	81.29	2,998.7	-601.6	12.4	49.7	-49.7	0.14	616,829.48	679,715.48	
3,100.0	1.40	87.66	3,098.7	-501.6	12.6	52.5	-52.5	0.45	616,829.77	679,718.26	
3,200.0	0.97	95.93	3,198.7	-401.6	12.6	54.5	-54.6	0.46	616,829.73	679,720.32	
3,300.0	0.76	94.71	3,298.7	-301.6	12.5	56.0	-56.1	0.21	616,829.59	679,721.82	
3,400.0	0.68	99.93	3,398.7	-201.6	12.3	57.3	-57.3	0.10	616,829.43	679,723.07	
3,500.0	0.73	92.12	3,498.7	-101.6	12.2	58.5	-58.6	0.11	616,829.30	679,724.29	
3,600.0	0.52	110.81	3,598.7	-1.6	12.0	59.5	-59.6	0.29	616,829.12	679,725.35	
3,700.0	0.46	96.12	3,698.7	98.4	11.8	60.4	-60.4	0.14	616,828.92	679,726.17	
3,800.0	0.40	103.08	3,798.6	198.3	11.7	61.1	-61.2	0.08	616,828.79	679,726.91	
3,900.0	0.45	125.08	3,898.6	298.3	11.4	61.8	-61.8	0.17	616,828.49	679,727.57	
4,000.0	0.37	117.69	3,998.6	398.3	11.0	62.4	-62.4	0.10	616,828.11	679,728.18	
4,100.0	0.37	110.82	4,098.6	498.3	10.7	63.0	-63.0	0.04	616,827.85	679,728.77	
4,200.0	0.31	117.73	4,198.6	598.3	10.5	63.5	-63.6	0.07	616,827.61	679,729.31	
4,300.0	0.08	148.54	4,298.6	698.3	10.3	63.8	-63.8	0.24	616,827.42	679,729.59	
4,400.0	0.56	321.08	4,398.6	798.3	10.6	63.5	-63.6	0.64	616,827.74	679,729.31	
4,500.0	0.93	286.26	4,498.6	898.3	11.2	62.4	-62.5	0.57	616,828.35	679,728.23	
4,600.0	1.18	277.31	4,598.6	998.3	11.6	60.6	-60.7	0.30	616,828.71	679,726.43	
4,700.0	1.23	281.18	4,698.6	1,098.3	11.9	58.6	-58.6	0.10	616,829.05	679,724.35	



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Pathfinder X&Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County (NAD83)	TVD Reference:	KB = -17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = -17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey/Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V-Sec (usft)	D Leg (%/100usft)	Northing (usft)	Easting (usft)	
4,800.0	1.31	271.54	4,798.6	1,198.3	12.2	56.4	-56.4	0.23	616,829.29	679,722.16	
4,900.0	1.25	276.65	4,898.5	1,298.2	12.3	54.1	-54.2	0.13	616,829.44	679,719.93	
5,000.0	1.15	276.01	4,998.5	1,398.2	12.6	52.1	-52.1	0.10	616,829.67	679,717.85	
5,100.0	1.01	252.17	5,098.5	1,498.2	12.4	50.2	-50.3	0.47	616,829.51	679,716.01	
5,200.0	0.92	260.80	5,198.5	1,598.2	12.0	48.6	-48.7	0.17	616,829.11	679,714.38	
5,300.0	1.17	252.48	5,298.5	1,698.2	11.6	46.8	-46.9	0.29	616,828.68	679,712.62	
5,400.0	1.11	261.92	5,398.5	1,798.2	11.1	44.9	-44.9	0.20	616,828.23	679,710.68	
5,500.0	1.27	265.11	5,498.4	1,898.1	10.9	42.8	-42.9	0.17	616,828.00	679,708.62	
5,600.0	1.30	274.76	5,598.4	1,998.1	10.9	40.6	-40.7	0.22	616,828.00	679,706.39	
5,700.0	1.30	276.63	5,698.4	2,098.1	11.1	38.3	-38.4	0.04	616,828.23	679,704.13	
5,800.0	1.29	265.90	5,798.4	2,198.1	11.2	36.1	-36.1	0.24	616,828.28	679,701.88	
5,900.0	1.57	268.78	5,898.3	2,298.0	11.0	33.6	-33.7	0.29	616,828.17	679,699.39	
6,000.0	1.36	258.45	5,998.3	2,398.0	10.8	31.1	-31.1	0.34	616,827.90	679,696.85	
6,100.0	1.32	257.54	6,098.3	2,498.0	10.3	28.8	-28.8	0.05	616,827.41	679,694.57	
6,200.0	1.50	258.38	6,198.2	2,597.9	9.8	26.4	-26.4	0.18	616,826.90	679,692.16	
6,300.0	1.34	250.63	6,298.2	2,697.9	9.1	24.0	-24.0	0.25	616,826.25	679,689.78	
6,400.0	1.93	236.81	6,398.2	2,797.9	7.8	21.5	-21.5	0.71	616,824.94	679,687.26	
6,500.0	1.77	254.40	6,498.1	2,897.8	6.5	18.6	-18.6	0.59	616,823.60	679,684.37	
6,600.0	1.86	249.61	6,598.1	2,997.8	5.5	15.6	-15.6	0.18	616,822.62	679,681.36	
6,700.0	2.22	275.21	6,698.0	3,097.7	5.1	12.1	-12.1	0.97	616,822.23	679,677.91	
6,800.0	1.49	296.35	6,797.9	3,197.6	5.9	9.0	-9.0	0.99	616,822.99	679,674.81	
6,900.0	1.35	293.76	6,897.9	3,297.6	6.9	6.8	-6.8	0.15	616,824.04	679,672.57	
7,000.0	1.45	285.96	6,997.9	3,397.6	7.7	4.5	-4.5	0.21	616,824.86	679,670.28	
7,100.0	1.88	273.97	7,097.8	3,497.5	8.2	1.6	-1.7	0.55	616,825.32	679,667.42	
7,200.0	1.08	261.28	7,197.8	3,597.5	8.2	-0.9	0.9	0.86	616,825.29	679,664.86	
7,300.0	0.70	244.68	7,297.8	3,697.5	7.8	-2.4	2.4	0.46	616,824.89	679,663.37	
7,400.0	0.75	227.86	7,397.8	3,797.5	7.1	-3.5	3.4	0.22	616,824.19	679,662.33	



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Pathfinder X&Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County (NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (%/100usft)	Northing (usft)	Easting (usft)	
7,500.0	0.58	192.69	7,497.8	3,897.5	6.1	-4.1	4.0	0.43	616,823.26	679,661.74	
7,600.0	1.86	161.28	7,597.8	3,997.5	4.1	-3.7	3.6	1.40	616,821.23	679,662.15	
7,700.0	2.03	144.44	7,697.7	4,097.4	1.1	-2.1	2.1	0.59	616,818.25	679,663.70	
7,800.0	1.33	155.72	7,797.7	4,197.4	-1.4	-0.6	0.6	0.77	616,815.75	679,665.21	
7,900.0	3.08	217.02	7,897.6	4,297.3	-4.6	-1.7	1.8	2.71	616,812.55	679,664.06	
8,000.0	3.00	231.25	7,997.5	4,397.2	-8.4	-5.4	5.4	0.76	616,808.76	679,660.41	
8,100.0	2.83	237.58	8,097.3	4,497.0	-11.3	-9.5	9.6	0.36	616,805.80	679,656.28	
8,197.0	2.46	220.56	8,194.2	4,593.9	-14.2	-12.9	13.0	0.89	616,802.94	679,652.91	
8,229.0	2.46	213.00	8,226.2	4,625.9	-15.3	-13.7	13.8	1.01	616,801.84	679,652.09	
8,260.0	2.99	218.98	8,257.2	4,656.9	-16.5	-14.6	14.7	1.94	616,800.65	679,651.22	
KOP: 8260.0, MD: 8257.2, TVD: 16.5, N: 14.6, E:											
8,292.0	4.92	246.31	8,289.1	4,688.8	-17.7	-16.4	16.5	8.27	616,799.45	679,649.43	
8,324.0	4.84	268.11	8,321.0	4,720.7	-18.3	-19.0	19.1	5.77	616,798.85	679,646.83	
8,355.0	6.07	264.77	8,351.8	4,751.5	-18.5	-21.9	22.0	4.10	616,798.66	679,643.89	
8,387.0	9.58	256.77	8,383.5	4,783.2	-19.2	-26.2	26.3	11.46	616,797.90	679,639.61	
8,419.0	13.19	254.88	8,414.9	4,814.6	-20.8	-32.3	32.4	11.34	616,796.34	679,633.49	
8,450.0	16.88	256.63	8,444.8	4,844.5	-22.7	-40.1	40.2	11.99	616,794.37	679,625.69	
8,482.0	20.75	258.30	8,475.1	4,874.8	-25.0	-50.2	50.3	12.21	616,792.15	679,615.62	
8,514.0	24.62	259.62	8,504.6	4,904.3	-27.3	-62.3	62.5	12.20	616,789.80	679,603.51	
8,545.0	28.05	258.74	8,532.4	4,932.1	-29.9	-75.8	76.0	11.14	616,787.21	679,590.00	
8,577.0	32.01	259.10	8,560.1	4,959.8	-33.0	-91.5	91.7	12.39	616,784.13	679,574.29	
8,609.0	34.56	258.74	8,586.9	4,986.6	-36.4	-108.7	109.0	7.99	616,780.76	679,557.06	
8,640.0	36.84	260.41	8,612.0	5,011.7	-39.6	-126.5	126.8	8.00	616,777.49	679,539.27	
8,672.0	40.27	263.23	8,637.1	5,036.8	-42.4	-146.3	146.5	12.04	616,774.67	679,519.53	
8,703.0	43.97	265.86	8,660.0	5,059.7	-44.4	-167.0	167.2	13.22	616,772.72	679,498.84	
8,735.0	47.13	265.95	8,682.4	5,082.1	-46.0	-189.7	190.0	9.88	616,771.08	679,476.06	
8,767.0	50.65	265.86	8,703.5	5,103.2	-47.8	-213.8	214.1	11.00	616,769.36	679,452.01	



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Pathfinder X&Y Report



Company:	COG Operating LLC	Local/Co-ordinate Reference:	Well #7H
Project:	Eddy County (NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Gnd
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
8,798.0	54.52	266.65	8,722.3	5,122.0	-49.4	-238.4	238.6	12.65	616,767.76	679,427.45	
8,830.0	58.56	266.48	8,740.0	5,139.7	-51.0	-265.0	265.3	12.63	616,766.16	679,400.80	
8,862.0	63.14	266.30	8,755.5	5,155.2	-52.7	-292.9	293.2	14.32	616,764.40	679,372.92	
8,893.0	67.36	267.09	8,768.5	5,168.2	-54.3	-321.0	321.3	13.81	616,762.78	679,344.82	
8,925.0	71.93	267.44	8,779.6	5,179.3	-55.8	-350.9	351.3	14.32	616,761.35	679,314.86	
8,949.0	74.20	267.46	8,786.6	5,186.3	-56.8	-373.9	374.2	9.46	616,760.33	679,291.93	
8,981.0	77.21	268.33	8,794.5	5,194.2	-57.9	-404.9	405.2	9.77	616,759.19	679,260.94	
9,012.0	80.81	269.40	8,800.4	5,200.1	-58.5	-435.3	435.6	12.10	616,758.59	679,230.52	
9,044.0	84.33	270.21	8,804.6	5,204.3	-58.6	-467.0	467.3	11.28	616,758.48	679,198.80	
9,075.0	87.93	270.65	8,806.7	5,206.4	-58.4	-497.9	498.3	11.70	616,758.72	679,167.87	
9,170.0	90.92	270.82	8,807.6	5,207.3	-57.2	-592.9	593.2	3.15	616,759.93	679,072.90	
LP 9170.0 MD 8807.6 TVD -57.2 N -592.9 E											
9,265.0	90.40	269.89	8,806.5	5,206.2	-56.6	-687.9	688.2	1.12	616,760.52	678,977.91	
9,360.0	90.84	268.95	8,805.5	5,205.2	-57.6	-782.9	783.2	1.09	616,759.56	678,882.92	
9,455.0	90.57	269.38	8,804.3	5,204.0	-58.9	-877.9	878.2	0.53	616,758.18	678,787.94	
9,550.0	90.04	267.74	8,803.8	5,203.5	-61.3	-972.8	973.2	1.81	616,755.79	678,692.97	
9,645.0	87.67	268.84	8,805.7	5,205.4	-64.2	-1,067.8	1,068.1	2.75	616,752.95	678,598.04	
9,740.0	88.90	269.40	8,808.6	5,208.3	-65.6	-1,162.7	1,163.1	1.42	616,751.50	678,503.10	
9,835.0	91.10	270.52	8,808.6	5,208.3	-65.7	-1,257.7	1,258.1	2.60	616,751.43	678,408.10	
9,930.0	90.48	270.00	8,807.3	5,207.0	-65.3	-1,352.7	1,353.1	0.85	616,751.86	678,313.11	
10,025.0	90.22	269.84	8,806.7	5,206.4	-65.4	-1,447.7	1,448.1	0.32	616,751.73	678,218.12	
10,120.0	90.75	272.15	8,805.9	5,205.6	-63.7	-1,542.7	1,543.0	2.49	616,753.38	678,123.14	
10,215.0	90.40	271.57	8,804.9	5,204.6	-60.7	-1,637.6	1,637.9	0.71	616,756.46	678,028.20	
10,310.0	90.13	271.03	8,804.5	5,204.2	-58.5	-1,732.6	1,732.9	0.64	616,758.62	677,933.22	
10,404.0	89.69	270.60	8,804.6	5,204.3	-57.2	-1,826.6	1,826.9	0.65	616,759.95	677,839.23	
10,499.0	89.08	269.62	8,805.7	5,205.4	-57.0	-1,921.6	1,921.9	1.22	616,760.14	677,744.24	
10,594.0	88.72	270.53	8,807.5	5,207.2	-56.9	-2,016.5	2,016.8	1.03	616,760.26	677,649.26	



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Pathfinder X&Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County (NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V:Sec (usft)	DLeg (%/100usft)	Northing (usft)	Easting (usft)
10,689.0	89.60	270.49	8,808.9	5,208.6	-56.0	-2,111.5	2,111.8	0.93	616,761.11	677,554.27
10,784.0	89.34	269.78	8,809.7	5,209.4	-55.8	-2,206.5	2,206.8	0.80	616,761.33	677,459.28
10,879.0	90.22	270.52	8,810.1	5,209.8	-55.5	-2,301.5	2,301.8	1.21	616,761.58	677,364.28
10,974.0	90.40	269.18	8,809.6	5,209.3	-55.8	-2,396.5	2,396.8	1.42	616,761.33	677,269.28
11,069.0	90.66	268.90	8,808.7	5,208.4	-57.4	-2,491.5	2,491.8	0.40	616,759.74	677,174.30
11,164.0	89.34	267.64	8,808.7	5,208.4	-60.2	-2,586.5	2,586.8	1.92	616,756.87	677,079.35
11,259.0	89.43	268.07	8,809.7	5,209.4	-63.8	-2,681.4	2,681.7	0.46	616,753.31	676,984.42
11,354.0	90.40	265.50	8,809.9	5,209.6	-69.1	-2,776.2	2,776.6	2.89	616,747.99	676,889.58
11,449.0	90.13	263.40	8,809.4	5,209.1	-78.3	-2,870.8	2,871.2	2.23	616,738.80	676,795.03
11,544.0	90.75	265.35	8,808.7	5,208.4	-87.6	-2,965.3	2,965.8	2.15	616,729.49	676,700.50
11,638.0	91.80	267.34	8,806.6	5,206.3	-93.6	-3,059.1	3,059.6	2.39	616,723.50	676,606.72
11,733.0	91.28	265.95	8,804.1	5,203.8	-99.2	-3,153.9	3,154.4	1.56	616,717.94	676,511.92
11,828.0	91.63	266.87	8,801.7	5,201.4	-105.1	-3,248.7	3,249.2	1.04	616,711.99	676,417.14
11,923.0	90.13	272.69	8,800.2	5,199.9	-105.5	-3,343.6	3,344.2	6.33	616,711.63	676,322.19
12,019.0	89.08	274.43	8,800.9	5,200.6	-99.5	-3,439.4	3,440.0	2.12	616,717.59	676,226.38
12,114.0	89.25	273.11	8,802.2	5,201.9	-93.3	-3,534.2	3,534.7	1.40	616,723.84	676,131.60
12,240.0	88.29	271.57	8,804.9	5,204.6	-88.1	-3,660.1	3,660.5	1.44	616,728.98	676,005.74
12,303.0	88.02	271.57	8,807.0	5,206.7	-86.4	-3,723.0	3,723.5	0.43	616,730.71	675,942.80
12,398.0	89.16	271.31	8,809.3	5,209.0	-84.0	-3,817.9	3,818.4	1.23	616,733.09	675,847.86
12,493.0	89.25	271.14	8,810.6	5,210.3	-82.0	-3,912.9	3,913.3	0.20	616,735.12	675,752.89
12,588.0	89.60	270.35	8,811.6	5,211.3	-80.8	-4,007.9	4,008.3	0.91	616,736.36	675,657.90
12,683.0	89.16	269.29	8,812.6	5,212.3	-81.1	-4,102.9	4,103.3	1.21	616,736.06	675,562.91
12,778.0	89.78	268.85	8,813.5	5,213.2	-82.6	-4,197.9	4,198.3	0.80	616,734.52	675,467.93
12,873.0	89.69	268.15	8,813.9	5,213.6	-85.1	-4,292.8	4,293.3	0.74	616,732.03	675,372.96
12,968.0	89.96	266.92	8,814.2	5,213.9	-89.2	-4,387.7	4,388.2	1.33	616,727.94	675,278.05
13,063.0	90.40	265.51	8,813.9	5,213.6	-95.4	-4,482.5	4,483.0	1.55	616,721.67	675,183.26
13,158.0	90.48	264.72	8,813.2	5,212.9	-103.5	-4,577.2	4,577.7	0.84	616,713.58	675,088.61



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Pathfinder

Pathfinder X&Y Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #7H
Project:	Eddy County (NAD83)	TVD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Site:	Blue Thunder 5 Federal	MD Reference:	KB = 17' @ 3600.3usft (Original Well Elev)
Well:	#7H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	D Leg (°/100usft)	Northing (usft)	Easting (usft)	
13,254.0	90.31	264.02	8,812.5	5,212.2	-113.0	-4,672.7	4,673.3	0.75	616,704.17	674,993.08	
13,322.4	90.31	264.02	8,812.2	5,211.9	-120.1	-4,740.8	4,741.4	0.00	616,697.04	674,925.05	
PBHL (BT 5/F #7H)											
13,331.0	90.31	264.02	8,812.1	5,211.8	-121.0	-4,749.3	4,749.9	0.00	616,696.14	674,916.50	
PROJECTED BHL - 13331.0 MD, 8812.1 TVD, -121.0 N, -4749.3 E											

Design/Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,260.0	8,257.2	-16.5	-14.6	KOP - 8260.0 MD, 8257.2 TVD, -16.5 N, -14.6 E
9,170.0	8,807.6	-57.2	-592.9	LP - 9170.0 MD, 8807.6 TVD, -57.2 N, -592.9 E
13,331.0	8,812.1	-121.0	-4,749.3	PROJECTED BHL - 13331.0 MD, 8812.1 TVD, -121.0 N, -4749.3 E

Checked By: _____ Approved By: _____ Date: _____



Project: Eddy County(NAD83)
 Site: Blue Thunder 5 Federal
 Well: #7H
 Wellbore: OH
 Plan: Post Gyro Plan #2 (#7H/OH)



Azimuths to Grid North
 True North: -0.24°
 Magnetic North: 7.38°

Magnetic Field
 Strength: 48796.6snT
 Dip Angle: 60.57°
 Date: 7/13/2012
 Model: IGRF200510



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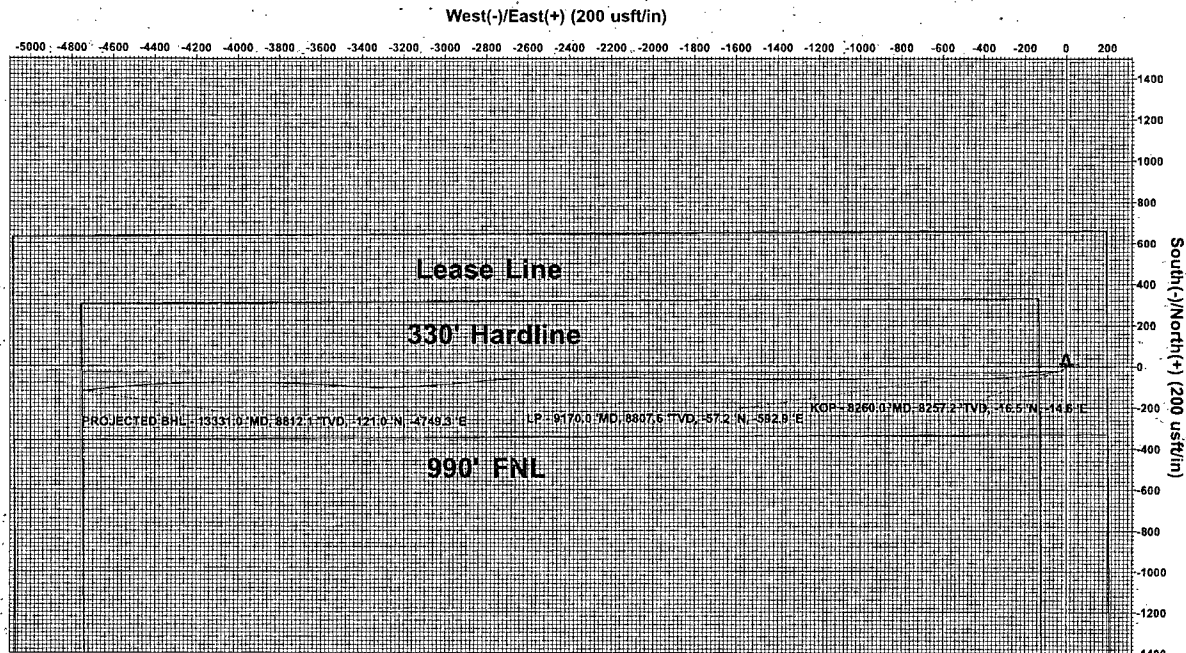
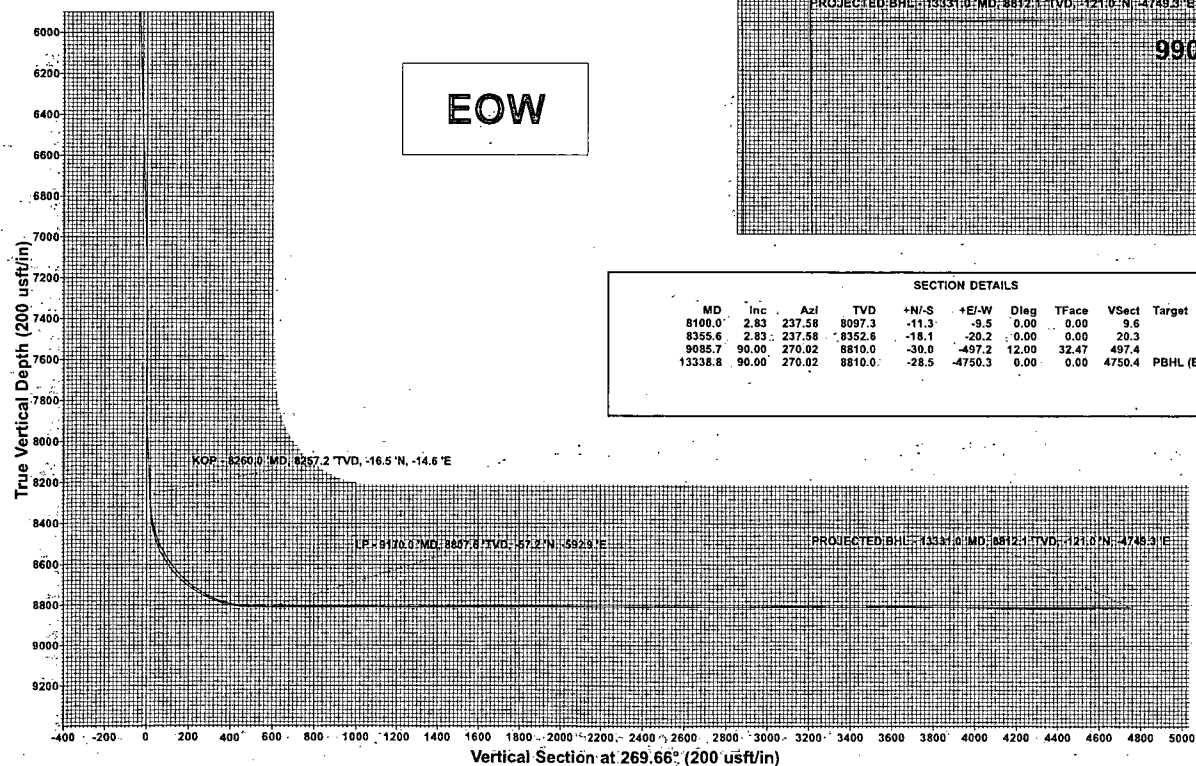
WELL DETAILS: #7H

Ground Elevation: 3583.3
 RKB Elevation: KB = 17' @ 3600.3usft (Original Well Elev)
 Rig Name: Original Well Elev

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	616817.120	679865.800	32.694867	-103.883674	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL (BT 5 F #7H)	8810.0	-28.5	-4750.3	616788.600	674915.470	Point



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
8100.0	2.83	237.58	8097.3	-11.3	-9.5	0.00	0.00	9.6	
8355.6	2.83	237.58	8352.6	-18.1	-20.2	0.00	0.00	20.3	
9085.7	90.00	270.02	8810.0	-30.0	-497.2	12.00	32.47	497.4	
13338.8	90.00	270.02	8810.0	-28.5	-4750.3	0.00	0.00	4750.4	PBHL (BT 5 F #7H)

PROJECT DETAILS: Eddy County(NAD83)
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS:1980
 Zone: New Mexico Eastern Zone
 System Datum: Mean Sea Level
 Local North: Grid

Plan: Post Gyro Plan #2 (#7H/OH)

Created By: Michael Trout Date: 16:36, January 25 2013
 Checked: Date:

CON Drilling LLC
 Eddy County(NAD83)
 Blue Thunder 5 Federal
 #7H
 Original Well Elev
 OH
 Post Gyro Plan #2