

RECEIVED

JAN 17 2013

NMOCD ARTESIA

WELL NAME AND NUMBER Hogan State Com No. 4H

LOCATION Section 2, T17S, R29E, Lot P, 330 FSL, 330 FEL, Eddy County

OPERATOR COG Operating LLC

DRILLING CONTRACTOR United Drilling, Inc.

30-015-40415

The undersigned hereby certifies that he is an authorized representative of the drilling contractor who drilled the above described well and had conducted deviation test and obtained the following results:

Degrees @ Depth	Degrees @ Depth	Degrees @ Depth
1.8° @ 450'		
1.5° @ 695'		
1.6° @ 941'		
.3° @ 1729'		
.6° @ 2171'		
.2° @ 2615'		
.2° @ 3059'		
.4° @ 3504'		
.4° @ 3979'		
.6° @ 4423'		

Drilling Contractor- UNITED DRILLING, INC.

By: Luisa Noriega
(Luisa Noriega)

Title: Asst. Office Manager

Subscribed and sworn to before me this 31th day of October, 2012.

Carlen Martinez
Notary Public
Chaves New Mexico
County State

My Commission Expires:

10/8/16

Company: COG Operating, LLC (Concho)

Lease/Well: Hogan State Com / No. 004H



Rig Name: UDI 40

State/County: New Mexico / Eddy

Latitude: 32.86, Longitude: -104.04

GRID North is 0.16 Degrees East of True North

VS-Azi: 0.00 Degrees



Depth Reference : RKB = 15'

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: hoganstatecom4h_ed.ut

Minimum Curvature Method

Report Date/Time: 10/25/2012 / 16:35

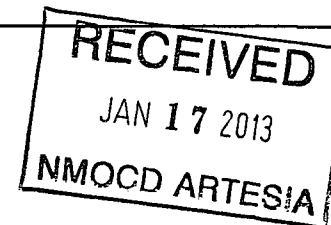
Vaughn Energy Services

Fort Worth, Texas

817-741-3610

Surveyor: Jay Carroll

Hogan State Com No. 004H / API 30-015-40415



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	0.11	255.43	100.00	-0.02	-0.09	0.09	255.43	0.11
200.00	0.72	33.43	200.00	0.47	0.16	0.50	19.04	0.80
300.00	1.26	52.71	299.98	1.66	1.38	2.16	39.78	0.63
400.00	1.58	90.87	399.95	2.31	3.64	4.31	57.61	0.98
500.00	1.56	105.27	499.92	1.93	6.33	6.62	73.04	0.39
600.00	1.44	109.50	599.88	1.15	8.83	8.90	82.55	0.16
700.00	1.55	112.33	699.85	0.22	11.26	11.26	88.87	0.13
800.00	1.60	76.06	799.81	0.05	13.86	13.86	89.81	0.98
900.00	1.49	64.34	899.78	0.94	16.39	16.41	86.70	0.33
1000.00	1.47	66.25	999.74	2.02	18.73	18.84	83.83	0.05
1100.00	0.93	68.70	1099.72	2.83	20.66	20.85	82.19	0.54
1200.00	0.73	74.34	1199.71	3.30	22.03	22.27	81.48	0.22
1300.00	0.51	76.54	1299.71	3.57	23.07	23.34	81.19	0.22
1400.00	0.26	83.05	1399.70	3.70	23.72	24.01	81.12	0.25
1500.00	0.05	87.23	1499.70	3.73	23.98	24.27	81.15	0.21
1600.00	0.11	307.92	1599.70	3.80	23.95	24.24	80.99	0.15
1700.00	0.21	299.28	1699.70	3.95	23.71	24.03	80.55	0.10
1800.00	0.30	279.63	1799.70	4.08	23.29	23.64	80.06	0.13

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	0.43	276.80	1899.70	4.17	22.66	23.04	79.57	0.13
2000.00	0.38	287.70	1999.70	4.31	21.97	22.39	78.89	0.09
2100.00	0.38	282.42	2099.69	4.49	21.33	21.79	78.12	0.04
2200.00	0.44	275.34	2199.69	4.59	20.62	21.13	77.44	0.07
2300.00	0.74	283.20	2299.69	4.78	19.61	20.19	76.31	0.32
2400.00	0.78	289.81	2399.68	5.16	18.34	19.05	74.29	0.10
2500.00	0.80	292.85	2499.67	5.66	17.05	17.97	71.64	0.05
2600.00	0.58	285.38	2599.66	6.07	15.92	17.04	69.14	0.24
2700.00	0.76	279.50	2699.65	6.31	14.78	16.07	66.88	0.19
2800.00	0.23	270.76	2799.65	6.42	13.93	15.34	65.25	0.53
2900.00	0.20	301.82	2899.65	6.51	13.58	15.07	64.38	0.12
3000.00	0.27	13.76	2999.65	6.84	13.50	15.13	63.14	0.28
3100.00	0.10	36.02	3099.65	7.14	13.61	15.37	62.30	0.18
3200.00	0.01	109.78	3199.65	7.21	13.67	15.45	62.17	0.10
3300.00	0.09	116.46	3299.65	7.18	13.74	15.50	62.42	0.08
3400.00	0.07	118.07	3399.65	7.11	13.87	15.58	62.84	0.02
3500.00	0.20	121.65	3499.65	6.99	14.07	15.71	63.57	0.13
3600.00	0.23	137.63	3599.65	6.75	14.36	15.86	64.81	0.07
3700.00	0.16	127.60	3699.65	6.51	14.61	15.99	65.97	0.08
3800.00	0.16	124.41	3799.65	6.35	14.84	16.14	66.84	0.01
3900.00	0.03	115.44	3899.65	6.26	14.98	16.23	67.33	0.13
4000.00	0.09	306.88	3999.65	6.29	14.93	16.21	67.15	0.12
4100.00	0.22	180.18	4099.65	6.15	14.87	16.09	67.54	0.29
4200.00	0.13	201.48	4199.64	5.85	14.83	15.94	68.48	0.11
4300.00	0.23	279.95	4299.64	5.77	14.59	15.69	68.40	0.24
4400.00	0.26	276.99	4399.64	5.84	14.16	15.32	67.60	0.03
4500.00	0.44	228.21	4499.64	5.61	13.65	14.76	67.66	0.33
4540.00	0.14	282.52	4539.64	5.52	13.49	14.58	67.75	0.94



COG Operating LLC

Eddy County, NM
Hogan State Com
#4H

OH

Design: OH

Standard Survey Report

29 October, 2012





Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3675.0usft (UDI #40 - 14' KB)
Site:	Hogan State Com	MD Reference:	WELL @ 3675.0usft (UDI #40 - 14' KB)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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		Hogan:State Com			
Site Position:		Northing:	675,652.30 usft	Latitude:	32° 51' 25.567 N
From: Map		Easting:	590,870.40 usft	Longitude:	104° 2' 14.686 W
Position Uncertainty: 2.0 usft		Slot Radius:	8-3/4 "	Grid Convergence:	0.16 °

Well	#4H					
Well Position	+N/-S	0.0 usft	Northing:	675,652.30 usft	Latitude:	32° 51' 25.567 N
	+E/-W	0.0 usft	Easting:	590,870.40 usft	Longitude:	104° 2' 14.686 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,661.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/3/2012	7.69	60.66	48,814

Design:		OH			
Audit Notes:					
Version:		1.0	Phase:		ACTUAL
			Tie On Depth:		0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	270.71	

Survey Program	Date	10/29/2012		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	4,540.0	Survey #1 - VES1 (OH)	CB-GYRO-MS	Camera based gyro multishot
4,610.0	9,521.0	Survey #2 - Crescent1 (OH)	MWD	MWD - Standard
9,576.0	9,576.0	Survey #3 - PTB (OH)	MWD	MWD - Standard

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.11	255.43	100.0	0.0	-0.1	0.1	0.11	0.11	0.00
200.0	0.72	33.43	200.0	0.5	0.2	-0.2	0.81	0.61	138.00
300.0	1.26	52.71	300.0	1.7	1.4	-1.4	0.63	0.54	19.28
400.0	1.58	90.87	400.0	2.3	3.6	-3.6	0.98	0.32	38.16
500.0	1.56	105.27	499.9	1.9	6.3	-6.3	0.39	-0.02	14.40
600.0	1.44	109.50	599.9	1.2	8.8	-8.8	0.16	-0.12	4.23
700.0	1.55	112.33	699.8	0.2	11.3	-11.3	0.13	0.11	2.83
800.0	1.60	76.06	799.8	0.0	13.9	-13.9	0.98	0.05	-36.27



Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County NM	TVD Reference:	WELL @ 3675.0usft (UDI #40- 14' KB)
Site:	Hogan State Com	MD Reference:	WELL @ 3675.0usft (UDI #40- 14' KB)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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)
900.0	1.49	64.34	899.8	0.9	16.4	-16.4	0.33	-0.11	-11.72
1,000.0	1.47	66.25	999.7	2.0	18.7	-18.7	0.05	-0.02	1.91
1,100.0	0.93	68.70	1,099.7	2.8	20.7	-20.6	0.54	-0.54	2.45
1,200.0	0.73	74.34	1,199.7	3.3	22.0	-22.0	0.22	-0.20	5.64
1,300.0	0.51	76.54	1,299.7	3.6	23.1	-23.0	0.22	-0.22	2.20
1,400.0	0.26	83.05	1,399.7	3.7	23.7	-23.7	0.25	-0.25	6.51
1,500.0	0.05	87.23	1,499.7	3.7	24.0	-24.0	0.21	-0.21	4.18
1,600.0	0.11	307.92	1,599.7	3.8	24.0	-23.9	0.15	0.06	-139.31
1,700.0	0.21	299.28	1,699.7	3.9	23.7	-23.7	0.10	0.10	-8.64
1,800.0	0.30	279.63	1,799.7	4.1	23.3	-23.3	0.12	0.09	-19.65
1,900.0	0.43	276.80	1,899.7	4.2	22.7	-22.6	0.13	0.13	-2.83
2,000.0	0.38	287.70	1,999.7	4.3	22.0	-22.0	0.09	-0.05	10.90
2,100.0	0.38	282.42	2,099.7	4.5	21.4	-21.3	0.04	0.00	-5.28
2,200.0	0.44	275.34	2,199.7	4.6	20.7	-20.6	0.08	0.06	-7.08
2,300.0	0.74	283.20	2,299.7	4.8	19.6	-19.6	0.31	0.30	7.86
2,400.0	0.78	289.81	2,399.7	5.2	18.4	-18.3	0.10	0.04	6.61
2,500.0	0.80	292.85	2,499.7	5.7	17.1	-17.0	0.05	0.02	3.04
2,600.0	0.58	285.38	2,599.7	6.1	16.0	-15.9	0.24	-0.22	-7.47
2,700.0	0.76	279.50	2,699.7	6.3	14.8	-14.7	0.19	0.18	-5.88
2,800.0	0.23	270.76	2,799.6	6.4	14.0	-13.9	0.53	-0.53	-8.74
2,900.0	0.20	301.82	2,899.6	6.5	13.6	-13.5	0.12	-0.03	31.06
3,000.0	0.27	13.76	2,999.6	6.8	13.5	-13.4	0.28	0.07	71.94
3,100.0	0.10	36.02	3,099.6	7.1	13.6	-13.5	0.18	-0.17	22.26
3,200.0	0.01	109.78	3,199.6	7.2	13.7	-13.6	0.10	-0.09	73.76
3,300.0	0.09	116.46	3,299.6	7.2	13.8	-13.7	0.08	0.08	6.68
3,400.0	0.07	118.07	3,399.6	7.1	13.9	-13.8	0.02	-0.02	1.61
3,500.0	0.20	121.65	3,499.6	7.0	14.1	-14.0	0.13	0.13	3.58
3,600.0	0.23	137.63	3,599.6	6.7	14.4	-14.3	0.07	0.03	15.98
3,700.0	0.16	127.60	3,699.6	6.5	14.6	-14.5	0.08	-0.07	-10.03
3,800.0	0.16	124.41	3,799.6	6.3	14.9	-14.8	0.01	0.00	-3.19
3,900.0	0.03	115.44	3,899.6	6.2	15.0	-14.9	0.13	-0.13	-8.97
4,000.0	0.09	306.88	3,999.6	6.3	15.0	-14.9	0.12	0.06	-168.56
4,100.0	0.22	180.18	4,099.6	6.1	14.9	-14.8	0.28	0.13	-126.70
4,200.0	0.13	201.48	4,199.6	5.8	14.8	-14.8	0.11	-0.09	21.30
4,300.0	0.23	279.95	4,299.6	5.8	14.6	-14.5	0.24	0.10	78.47
4,400.0	0.26	276.99	4,399.6	5.8	14.2	-14.1	0.03	0.03	-2.96
4,500.0	0.44	228.21	4,499.6	5.6	13.7	-13.6	0.33	0.18	-48.78
4,540.0	0.14	282.52	4,539.6	5.5	13.5	-13.4	0.94	-0.75	135.78
Tie into Gyro @ 4540' MD									
4,610.0	0.40	290.40	4,609.6	5.6	13.2	-13.1	0.37	0.37	11.26
4,642.0	2.20	272.10	4,641.6	5.7	12.5	-12.4	5.70	5.63	-57.19
KOP: 4642.0' MD 4641.6' TVD: 2.20° INC: 272.10° AZI: 12.4° VS									
4,674.0	5.70	270.70	4,673.5	5.7	10.3	-10.2	10.94	10.94	-4.38

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Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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)
4,705.0	9.10	273.80	4,704.3	5.9	6.3	-6.2	11.04	10.97	10.00
4,737.0	12.60	276.20	4,735.7	6.4	0.3	-0.2	11.03	10.94	7.50
4,739.0	12.82	276.18	4,737.7	6.5	-0.1	0.2	11.25	11.25	-1.18
PP: 4739.0 MD: 4737.7 TVD: 12.82° INC: 0.2° VS:									
4,769.0	16.20	275.90	4,766.7	7.3	-7.6	7.7	11.25	11.25	-0.92
4,800.0	19.80	276.30	4,796.2	8.3	-17.1	17.2	11.62	11.61	1.29
4,832.0	23.10	275.40	4,826.0	9.5	-28.8	28.9	10.36	10.31	-2.81
4,864.0	26.60	274.40	4,855.0	10.6	-42.2	42.3	11.02	10.94	-3.13
4,895.0	29.50	273.00	4,882.3	11.6	-56.7	56.9	9.59	9.35	-4.52
4,927.0	32.90	271.60	4,909.7	12.2	-73.3	73.4	10.86	10.63	-4.38
4,958.0	35.40	271.90	4,935.4	12.8	-90.7	90.8	8.08	8.06	0.97
4,990.0	37.60	273.10	4,961.1	13.6	-109.7	109.9	7.23	6.88	3.75
5,022.0	39.60	273.50	4,986.1	14.7	-129.6	129.8	6.30	6.25	1.25
5,053.0	41.90	273.30	5,009.6	15.9	-149.8	150.0	7.43	7.42	-0.65
5,085.0	45.50	272.80	5,032.7	17.1	-171.9	172.1	11.30	11.25	-1.56
5,117.0	49.20	272.40	5,054.4	18.2	-195.4	195.6	11.60	11.56	-1.25
5,149.0	52.50	273.10	5,074.6	19.4	-220.2	220.4	10.45	10.31	2.19
5,180.0	55.80	274.50	5,092.7	21.0	-245.3	245.5	11.26	10.65	4.52
5,212.0	58.70	275.90	5,110.1	23.5	-272.0	272.3	9.78	9.06	4.38
5,244.0	61.90	277.00	5,125.9	26.6	-299.7	300.0	10.44	10.00	3.44
5,276.0	65.50	277.00	5,140.1	30.1	-328.1	328.5	11.25	11.25	0.00
5,307.0	68.90	276.30	5,152.1	33.4	-356.5	356.9	11.16	10.97	-2.26
5,339.0	71.90	275.20	5,162.8	36.4	-386.5	386.9	9.92	9.38	-3.44
5,371.0	75.00	274.50	5,171.9	39.0	-417.1	417.5	9.91	9.69	-2.19
5,402.0	78.30	274.00	5,179.1	41.3	-447.1	447.6	10.76	10.65	-1.61
5,434.0	81.00	273.30	5,184.8	43.3	-478.6	479.1	8.71	8.44	-2.19
5,466.0	83.00	272.80	5,189.3	44.9	-510.2	510.7	6.44	6.25	-1.56
5,498.0	85.50	272.30	5,192.5	46.4	-542.0	542.5	7.97	7.81	-1.56
5,529.0	87.40	269.30	5,194.4	46.8	-572.9	573.5	11.44	6.13	-9.68
5,561.0	88.40	269.20	5,195.6	46.4	-604.9	605.4	3.14	3.13	-0.31
5,592.0	88.60	269.20	5,196.4	45.9	-635.9	636.4	0.65	0.65	0.00
5,688.0	90.00	269.70	5,197.6	45.0	-731.9	732.4	1.55	1.46	0.52
5,784.0	90.40	270.90	5,197.2	45.5	-827.9	828.4	1.32	0.42	1.25
5,855.0	91.00	270.90	5,196.4	46.6	-898.9	899.4	0.84	0.84	0.00
EOC: 5855.0 MD: 5196.4 TVD: 91.00° INC: 270.90° AZI: 899.4° VS:									
5,879.0	91.20	270.90	5,195.9	47.0	-922.9	923.4	0.84	0.84	0.00
5,974.0	92.00	270.80	5,193.3	48.4	-1,017.8	1,018.3	0.85	0.84	-0.11
6,069.0	91.60	271.60	5,190.3	50.4	-1,112.7	1,113.3	0.94	-0.42	0.84
6,164.0	90.80	271.60	5,188.3	53.1	-1,207.7	1,208.2	0.84	-0.84	0.00
6,259.0	91.40	271.40	5,186.5	55.5	-1,302.6	1,303.2	0.67	0.63	-0.21
6,355.0	90.80	270.80	5,184.6	57.4	-1,398.6	1,399.2	0.88	-0.63	-0.63
6,450.0	91.70	270.00	5,182.6	58.1	-1,493.6	1,494.2	1.27	0.95	-0.84
6,545.0	91.10	270.60	5,180.2	58.6	-1,588.5	1,589.1	0.89	-0.63	0.63
6,640.0	90.00	270.90	5,179.3	59.8	-1,683.5	1,684.1	1.20	-1.16	0.32

Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well #4H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3675.0usft (UDI #40 - 14' KB)
Site:	Hogan State Com	MD Reference:	WELL @ 3675.0usft (UDI #40 - 14' KB)
Well:	#4H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	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)
6,735.0	90.80	270.90	5,178.7	61.3	-1,778.5	1,779.1	0.84	0.84	0.00
6,831.0	91.60	270.90	5,176.6	62.8	-1,874.5	1,875.1	0.83	0.83	0.00
6,926.0	90.20	269.90	5,175.2	63.5	-1,969.5	1,970.1	1.81	-1.47	-1.05
7,021.0	90.70	269.60	5,174.4	63.0	-2,064.5	2,065.1	0.61	0.53	-0.32
7,116.0	91.60	269.70	5,172.5	62.5	-2,159.4	2,160.0	0.95	0.95	0.11
7,211.0	90.70	269.70	5,170.6	62.0	-2,254.4	2,255.0	0.95	-0.95	0.00
7,306.0	91.50	269.80	5,168.8	61.6	-2,349.4	2,350.0	0.85	0.84	0.11
7,402.0	90.70	269.40	5,166.9	60.9	-2,445.4	2,445.9	0.93	-0.83	-0.42
7,497.0	91.40	269.50	5,165.2	60.0	-2,540.3	2,540.9	0.74	0.74	0.11
7,592.0	90.40	269.90	5,163.7	59.5	-2,635.3	2,635.9	1.13	-1.05	0.42
7,687.0	91.20	270.20	5,162.4	59.6	-2,730.3	2,730.8	0.90	0.84	0.32
7,782.0	92.00	270.30	5,159.7	60.0	-2,825.3	2,825.8	0.85	0.84	0.11
7,877.0	91.00	270.10	5,157.2	60.3	-2,920.2	2,920.8	1.07	-1.05	-0.21
7,972.0	91.50	270.00	5,155.2	60.4	-3,015.2	3,015.7	0.54	0.53	-0.11
8,067.0	90.30	269.40	5,153.7	59.9	-3,110.2	3,110.7	1.41	-1.26	-0.63
8,162.0	90.70	269.00	5,152.8	58.6	-3,205.2	3,205.7	0.60	0.42	-0.42
8,258.0	91.70	269.20	5,150.8	57.1	-3,301.2	3,301.6	1.06	1.04	0.21
8,353.0	91.50	269.90	5,148.2	56.3	-3,396.1	3,396.6	0.77	-0.21	0.74
8,448.0	90.60	269.70	5,146.4	56.0	-3,491.1	3,491.5	0.97	-0.95	-0.21
8,543.0	91.40	269.60	5,144.8	55.4	-3,586.1	3,586.5	0.85	0.84	-0.11
8,638.0	90.70	270.20	5,143.0	55.2	-3,681.1	3,681.5	0.97	-0.74	0.63
8,733.0	90.80	269.90	5,141.8	55.3	-3,776.1	3,776.5	0.33	0.11	-0.32
8,829.0	91.10	269.40	5,140.2	54.7	-3,872.0	3,872.4	0.61	0.31	-0.52
8,923.0	91.00	270.10	5,138.5	54.3	-3,966.0	3,966.4	0.75	-0.11	0.74
9,019.0	91.80	270.40	5,136.1	54.7	-4,062.0	4,062.4	0.89	0.83	0.31
9,114.0	90.70	270.70	5,134.1	55.6	-4,157.0	4,157.3	1.20	-1.16	0.32
9,209.0	91.40	270.50	5,132.3	56.6	-4,251.9	4,252.3	0.77	0.74	-0.21
9,304.0	90.30	271.00	5,130.9	57.9	-4,346.9	4,347.3	1.27	-1.16	0.53
9,399.0	91.10	270.90	5,129.7	59.5	-4,441.9	4,442.3	0.85	0.84	-0.11
9,495.0	91.90	270.90	5,127.2	61.0	-4,537.9	4,538.3	0.83	0.83	0.00
9,521.0	92.20	270.90	5,126.3	61.4	-4,563.8	4,564.3	1.15	1.15	0.00
9,576.0	92.20	270.90	5,124.2	62.2	-4,618.8	4,619.2	0.00	0.00	0.00
BHL - 9576.0' MD, 5124.2' TVD, 92.20° INC, 270.90° AZI, 62.2° N, -4618.8' E, 4619.2' VS									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,540.0	4,539.6	5.5	13.5	Tie into Gyro @ 4540' MD
4,642.0	4,641.6	5.7	12.5	KOP - 4642.0' MD, 4641.6' TVD, 2.20° INC, 272.10° AZI, -12.4' VS
4,739.0	4,737.7	6.5	-0.1	PP - 4739.0' MD, 4737.7' TVD, 12.82° INC, 0.2' VS
5,855.0	5,196.4	46.6	-898.9	EOC - 5855.0' MD, 5196.4' TVD, 91.00° INC, 270.90° AZI, 899.4' VS
9,576.0	5,124.2	62.2	-4,618.8	BHL - 9576.0' MD, 5124.2' TVD, 92.20° INC, 270.90° AZI, 62.2° N, -4618.8' E, 4619.2' VS