

Noble Energy Inc.

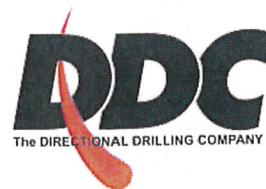
**Weld County, CO
Sec. 24, T3N, R65W
Sarchet H13-75HN**

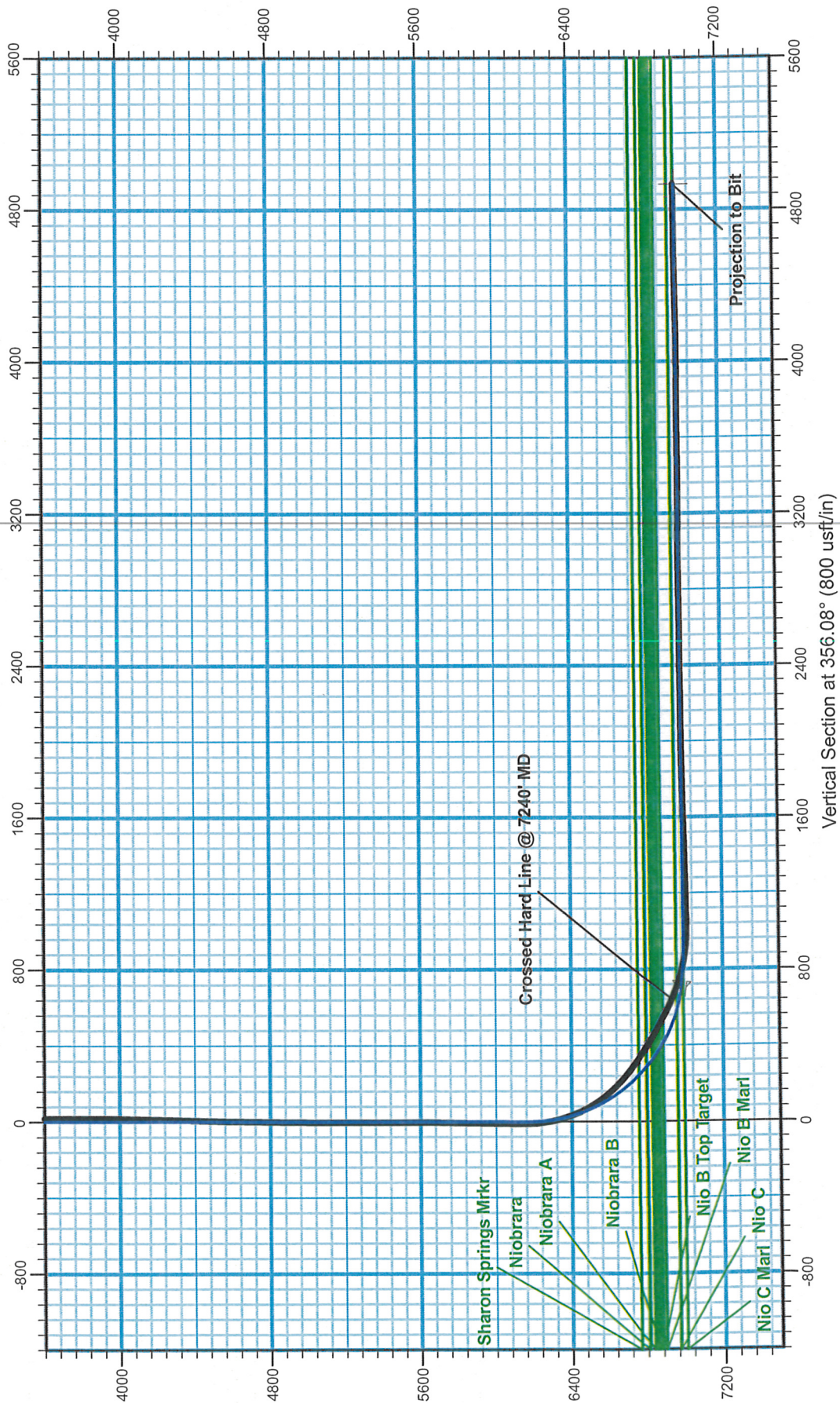
Wellbore #1

Survey: DDC MWD

DDC Survey Report

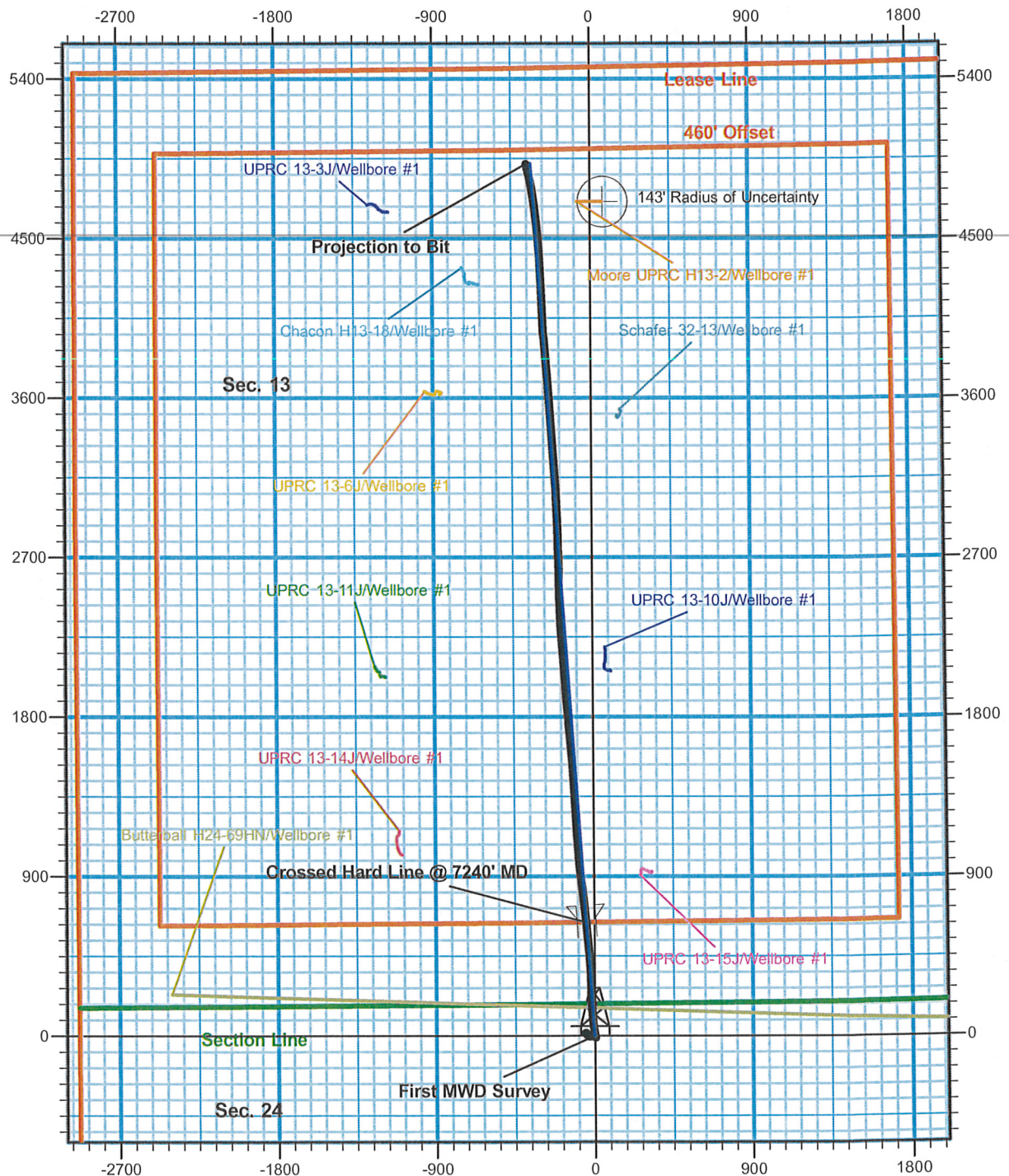
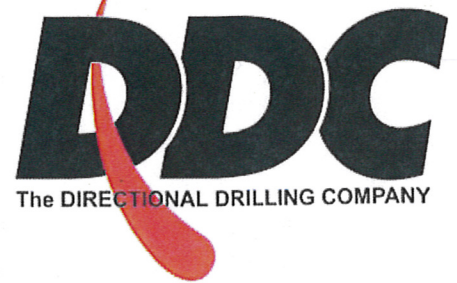
13 October, 2011







Weld County, CO
Sarchet H13-75HN
RM-11561



Company:	Noble Energy Inc.	Local Co-ordinate Reference:	Well Sarchet H13-75HN
Project:	Weld County, CO	TVD Reference:	WELL @ 4857.0usft (H&P #323)
Site:	Sec. 24, T3N, R65W	MD Reference:	WELL @ 4857.0usft (H&P #323)
Well:	Sarchet H13-75HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Sec. 24, T3N, R65W				
Site Position:		Northing:	1,323,305.01 usft	Latitude:	40° 13' 2.820 N
From:	Lat/Long	Easting:	3,248,392.29 usft	Longitude:	104° 36' 37.872 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.57 °

Well	Sarchet H13-75HN					
Well Position	+N/-S	0.0 usft	Northing:	1,323,305.00 usft	Latitude:	40° 13' 2.820 N
	+E/-W	0.0 usft	Easting:	3,248,392.29 usft	Longitude:	104° 36' 37.872 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,833.0 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/27/2011	8.73	66.92	53,022

Design	Wellbore #1				
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	356.08	

Survey Program		Date	10/13/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
868.0	11,546.0	DDC MWD (Wellbore #1)	MWD default	MWD - Standard	

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)
828.0	0.00	0.00	828.0	0.0	0.0	0.0	0.00	0.00	0.00
First MWD Survey									
868.0	2.30	276.00	868.0	0.1	-0.8	0.1	5.75	5.75	0.00
1,149.0	2.30	277.30	1,148.8	1.4	-12.0	2.2	0.02	0.00	0.46
1,432.0	1.80	265.00	1,431.6	1.7	-22.1	3.2	0.23	-0.18	-4.35
1,716.0	1.70	271.30	1,715.4	1.4	-30.7	3.5	0.08	-0.04	2.22
2,000.0	1.10	252.10	1,999.4	0.7	-37.5	3.2	0.27	-0.21	-6.76
2,287.0	1.50	323.70	2,286.3	2.9	-42.4	5.8	0.54	0.14	24.95
2,572.0	1.40	312.60	2,571.2	8.2	-47.1	11.4	0.10	-0.04	-3.89
2,857.0	1.10	289.80	2,856.2	11.5	-52.3	15.1	0.20	-0.11	-8.00
3,141.0	0.30	105.00	3,140.1	12.2	-54.1	15.9	0.49	-0.28	61.69

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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Sarchet H13-75HN
TVD Reference: WELL @ 4857.0usft (H&P #323)
MD Reference: WELL @ 4857.0usft (H&P #323)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

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)
3,426.0	1.10	285.20	3,425.1	12.8	-56.0	16.6	0.49	0.28	-63.09
3,712.0	1.70	81.40	3,711.1	14.1	-54.5	17.8	0.96	0.21	54.62
3,997.0	0.80	126.30	3,996.0	13.6	-48.7	16.9	0.44	-0.32	15.75
4,281.0	1.90	147.20	4,279.9	8.4	-44.6	11.5	0.42	0.39	7.36
4,566.0	2.10	153.50	4,564.8	-0.2	-39.7	2.5	0.10	0.07	2.21
4,851.0	2.50	85.50	4,849.6	-4.4	-31.1	-2.2	0.91	0.14	-23.86
5,136.0	2.30	97.40	5,134.3	-4.6	-19.3	-3.3	0.19	-0.07	4.18
5,421.0	1.60	64.20	5,419.2	-3.6	-10.0	-2.9	0.46	-0.25	-11.65
5,706.0	2.10	113.60	5,704.0	-4.0	-1.7	-3.9	0.57	0.18	17.33
5,991.0	1.30	148.40	5,988.9	-8.8	4.8	-9.1	0.45	-0.28	12.21
6,074.0	0.90	164.40	6,071.9	-10.3	5.5	-10.6	0.60	-0.48	19.28
6,124.0	0.50	168.30	6,121.9	-10.9	5.6	-11.2	0.81	-0.80	7.80
6,188.0	1.70	330.00	6,185.9	-10.3	5.2	-10.6	3.41	1.88	252.66
6,220.0	4.80	338.30	6,217.8	-8.7	4.5	-8.9	9.77	9.69	25.94
6,251.0	7.70	341.10	6,248.7	-5.5	3.3	-5.7	9.40	9.35	9.03
6,283.0	10.40	349.70	6,280.3	-0.6	2.1	-0.8	9.41	8.44	26.88
6,315.0	12.80	349.90	6,311.6	5.7	1.0	5.6	7.50	7.50	0.63
6,346.0	15.80	349.20	6,341.6	13.2	-0.4	13.2	9.69	9.68	-2.26
6,378.0	18.50	349.00	6,372.2	22.5	-2.2	22.6	8.44	8.44	-0.63
6,410.0	20.50	350.20	6,402.4	33.0	-4.1	33.2	6.37	6.25	3.75
6,441.0	22.80	352.00	6,431.2	44.3	-5.9	44.6	7.72	7.42	5.81
6,473.0	25.60	351.30	6,460.4	57.3	-7.8	57.7	8.80	8.75	-2.19
6,505.0	28.80	352.00	6,488.8	71.8	-9.9	72.3	10.05	10.00	2.19
6,536.0	31.60	354.30	6,515.6	87.2	-11.7	87.8	9.77	9.03	7.42
6,568.0	34.20	356.20	6,542.5	104.6	-13.2	105.2	8.74	8.13	5.94
6,599.0	36.80	355.50	6,567.7	122.5	-14.5	123.2	8.49	8.39	-2.26
6,631.0	39.10	354.40	6,593.0	142.1	-16.2	142.9	7.49	7.19	-3.44
6,663.0	41.70	355.00	6,617.3	162.8	-18.1	163.6	8.22	8.13	1.88
6,694.0	44.10	357.10	6,640.0	183.8	-19.6	184.7	9.01	7.74	6.77
6,726.0	46.40	359.90	6,662.6	206.5	-20.2	207.4	9.50	7.19	8.75
6,758.0	48.90	0.20	6,684.1	230.2	-20.1	231.0	7.84	7.81	0.94
6,790.0	51.20	0.10	6,704.7	254.7	-20.1	255.5	7.19	7.19	-0.31
6,821.0	53.50	359.50	6,723.6	279.2	-20.2	280.0	7.58	7.42	-1.94
6,853.0	55.40	358.70	6,742.2	305.3	-20.6	306.0	6.28	5.94	-2.50
6,885.0	55.20	358.10	6,760.4	331.6	-21.3	332.3	1.66	-0.63	-1.88
6,916.0	57.00	358.00	6,777.7	357.3	-22.2	358.0	5.81	5.81	-0.32
6,948.0	58.70	356.50	6,794.7	384.3	-23.5	385.1	6.63	5.31	-4.69
6,980.0	59.30	355.70	6,811.2	411.7	-25.4	412.5	2.85	1.88	-2.50
7,011.0	59.80	355.00	6,826.9	438.3	-27.5	439.2	2.53	1.61	-2.26
7,043.0	60.30	354.80	6,842.9	466.0	-30.0	466.9	1.65	1.56	-0.63
7,075.0	60.70	354.40	6,858.7	493.7	-32.6	494.8	1.66	1.25	-1.25
7,106.0	61.50	354.30	6,873.6	520.7	-35.3	521.9	2.60	2.58	-0.32
7,138.0	62.30	353.70	6,888.7	548.8	-38.2	550.1	3.00	2.50	-1.88

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Database: EDM 5000.1 Single User Db

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)
7,170.0	63.80	353.40	6,903.2	577.1	-41.4	578.6	4.76	4.69	-0.94
7,201.0	65.60	354.60	6,916.5	605.0	-44.4	606.6	6.78	5.81	3.87
7,233.0	67.00	354.80	6,929.3	634.2	-47.1	635.9	4.41	4.38	0.63
Crossed Hard Line @ 7240' MD									
7,240.0	67.17	354.76	6,932.0	640.6	-47.7	642.3	2.57	2.50	-0.63
7,265.0	67.80	354.60	6,941.6	663.6	-49.8	665.4	2.57	2.50	-0.62
7,296.0	69.10	354.30	6,953.0	692.3	-52.6	694.3	4.29	4.19	-0.97
7,328.0	71.90	354.60	6,963.7	722.3	-55.5	724.4	8.79	8.75	0.94
7,360.0	72.60	354.30	6,973.4	752.6	-58.4	754.9	2.36	2.19	-0.94
7,391.0	75.40	354.10	6,982.0	782.3	-61.5	784.6	9.05	9.03	-0.65
7,400.0	76.50	354.10	6,984.2	791.0	-62.4	793.4	12.22	12.22	0.00
7,484.0	81.40	352.10	7,000.3	872.8	-72.3	875.7	6.28	5.83	-2.38
7,516.0	82.40	352.90	7,004.8	904.2	-76.4	907.3	3.99	3.13	2.50
7,547.0	85.10	354.30	7,008.2	934.8	-79.8	938.1	9.80	8.71	4.52
7,579.0	87.10	355.30	7,010.3	966.6	-82.7	970.0	6.98	6.25	3.13
7,611.0	88.90	356.00	7,011.4	998.5	-85.2	1,002.0	6.03	5.63	2.19
7,642.0	91.20	356.00	7,011.4	1,029.4	-87.3	1,033.0	7.42	7.42	0.00
7,674.0	91.40	355.70	7,010.7	1,061.3	-89.6	1,065.0	1.13	0.63	-0.94
7,706.0	91.40	355.50	7,009.9	1,093.2	-92.1	1,096.9	0.62	0.00	-0.63
7,737.0	91.10	356.50	7,009.2	1,124.1	-94.2	1,127.9	3.37	-0.97	3.23
7,769.0	90.70	357.10	7,008.7	1,156.1	-96.0	1,159.9	2.25	-1.25	1.88
7,801.0	90.50	356.70	7,008.4	1,188.0	-97.8	1,191.9	1.40	-0.63	-1.25
7,832.0	90.40	356.50	7,008.2	1,219.0	-99.6	1,222.9	0.72	-0.32	-0.65
7,864.0	90.90	356.70	7,007.8	1,250.9	-101.5	1,254.9	1.68	1.56	0.63
7,896.0	91.60	357.10	7,007.1	1,282.9	-103.2	1,286.9	2.52	2.19	1.25
7,927.0	91.70	357.30	7,006.2	1,313.8	-104.7	1,317.9	0.72	0.32	0.65
7,959.0	91.60	356.90	7,005.3	1,345.7	-106.4	1,349.9	1.29	-0.31	-1.25
8,022.0	91.40	356.50	7,003.6	1,408.6	-110.0	1,412.8	0.71	-0.32	-0.63
8,086.0	91.70	356.40	7,001.9	1,472.5	-114.0	1,476.8	0.49	0.47	-0.16
8,117.0	92.00	356.40	7,000.9	1,503.4	-115.9	1,507.8	0.97	0.97	0.00
8,181.0	91.40	355.10	6,999.0	1,567.2	-120.6	1,571.8	2.24	-0.94	-2.03
8,213.0	91.50	355.00	6,998.2	1,599.1	-123.4	1,603.8	0.44	0.31	-0.31
8,276.0	91.80	355.00	6,996.4	1,661.8	-128.9	1,666.7	0.48	0.48	0.00
8,308.0	91.70	354.40	6,995.4	1,693.6	-131.8	1,698.7	1.90	-0.31	-1.88
8,371.0	91.50	355.00	6,993.6	1,756.4	-137.7	1,761.7	1.00	-0.32	0.95
8,403.0	91.40	355.10	6,992.8	1,788.2	-140.4	1,793.6	0.44	-0.31	0.31
8,498.0	90.40	355.70	6,991.3	1,882.9	-148.0	1,888.6	1.23	-1.05	0.63
8,593.0	90.00	355.00	6,991.0	1,977.6	-155.7	1,983.6	0.85	-0.42	-0.74
8,688.0	90.80	356.40	6,990.3	2,072.3	-162.9	2,078.6	1.70	0.84	1.47
8,783.0	90.50	355.30	6,989.3	2,167.1	-169.7	2,173.6	1.20	-0.32	-1.16
8,878.0	90.80	356.20	6,988.2	2,261.8	-176.8	2,268.6	1.00	0.32	0.95
8,973.0	90.00	357.30	6,987.5	2,356.6	-182.2	2,363.6	1.43	-0.84	1.16
9,068.0	89.80	357.80	6,987.7	2,451.5	-186.2	2,458.5	0.57	-0.21	0.53

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9,163.0	91.00	359.50	6,987.0	2,546.5	-188.5	2,553.4	2.19	1.26	1.79
9,258.0	90.80	359.00	6,985.5	2,641.5	-189.7	2,648.3	0.57	-0.21	-0.53
9,353.0	90.60	358.50	6,984.4	2,736.5	-191.8	2,743.2	0.57	-0.21	-0.53
9,448.0	90.50	358.70	6,983.5	2,831.4	-194.1	2,838.1	0.24	-0.11	0.21
9,543.0	90.40	357.80	6,982.7	2,926.4	-197.0	2,933.0	0.95	-0.11	-0.95
9,638.0	90.00	357.40	6,982.4	3,021.3	-201.0	3,028.0	0.60	-0.42	-0.42
9,733.0	89.70	356.20	6,982.6	3,116.1	-206.3	3,123.0	1.30	-0.32	-1.26
9,828.0	89.30	355.90	6,983.5	3,210.9	-212.8	3,218.0	0.53	-0.42	-0.32
9,923.0	90.00	355.90	6,984.0	3,305.7	-219.6	3,313.0	0.74	0.74	0.00
10,018.0	90.60	356.70	6,983.5	3,400.5	-225.7	3,407.9	1.05	0.63	0.84
10,112.0	89.70	355.70	6,983.3	3,494.3	-232.0	3,501.9	1.43	-0.96	-1.06
10,207.0	91.50	356.70	6,982.3	3,589.0	-238.3	3,596.9	2.17	1.89	1.05
10,302.0	90.00	355.10	6,981.1	3,683.8	-245.1	3,691.9	2.31	-1.58	-1.68
10,398.0	90.50	355.50	6,980.6	3,779.5	-252.9	3,787.9	0.67	0.52	0.42
10,493.0	88.60	354.30	6,981.4	3,874.1	-261.4	3,882.9	2.37	-2.00	-1.26
10,556.0	89.60	356.00	6,982.4	3,936.8	-266.7	3,945.9	3.13	1.59	2.70
10,587.0	90.40	357.30	6,982.4	3,967.8	-268.5	3,976.9	4.92	2.58	4.19
10,682.0	90.60	357.60	6,981.5	4,062.7	-272.7	4,071.8	0.38	0.21	0.32
10,745.0	90.60	357.40	6,980.9	4,125.6	-275.5	4,134.8	0.32	0.00	-0.32
10,777.0	90.60	357.10	6,980.6	4,157.6	-277.0	4,166.8	0.94	0.00	-0.94
10,840.0	92.00	357.30	6,979.1	4,220.5	-280.1	4,229.8	2.24	2.22	0.32
10,872.0	91.90	357.60	6,978.0	4,252.4	-281.5	4,261.7	0.99	-0.31	0.94
10,967.0	91.10	356.20	6,975.5	4,347.3	-286.7	4,356.7	1.70	-0.84	-1.47
11,062.0	90.60	355.50	6,974.1	4,442.0	-293.5	4,451.7	0.91	-0.53	-0.74
11,157.0	90.50	355.00	6,973.2	4,536.7	-301.4	4,546.7	0.54	-0.11	-0.53
11,252.0	91.10	354.60	6,971.9	4,631.3	-310.0	4,641.6	0.76	0.63	-0.42
11,347.0	90.20	350.90	6,970.8	4,725.5	-322.0	4,736.4	4.01	-0.95	-3.89
11,442.0	90.40	348.30	6,970.3	4,818.9	-339.1	4,830.8	2.74	0.21	-2.74
11,489.0	90.50	346.90	6,970.0	4,864.8	-349.2	4,877.3	2.99	0.21	-2.98
Projection to Bit									
11,546.0	90.50	346.90	6,969.5	4,920.3	-362.1	4,933.6	0.00	0.00	0.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
868.0	868.0	0.1	-0.8	First MWD Survey
7,240.0	6,932.0	640.6	-47.7	Crossed Hard Line @ 7240' MD
11,546.0	6,969.5	4,920.3	-362.1	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____