

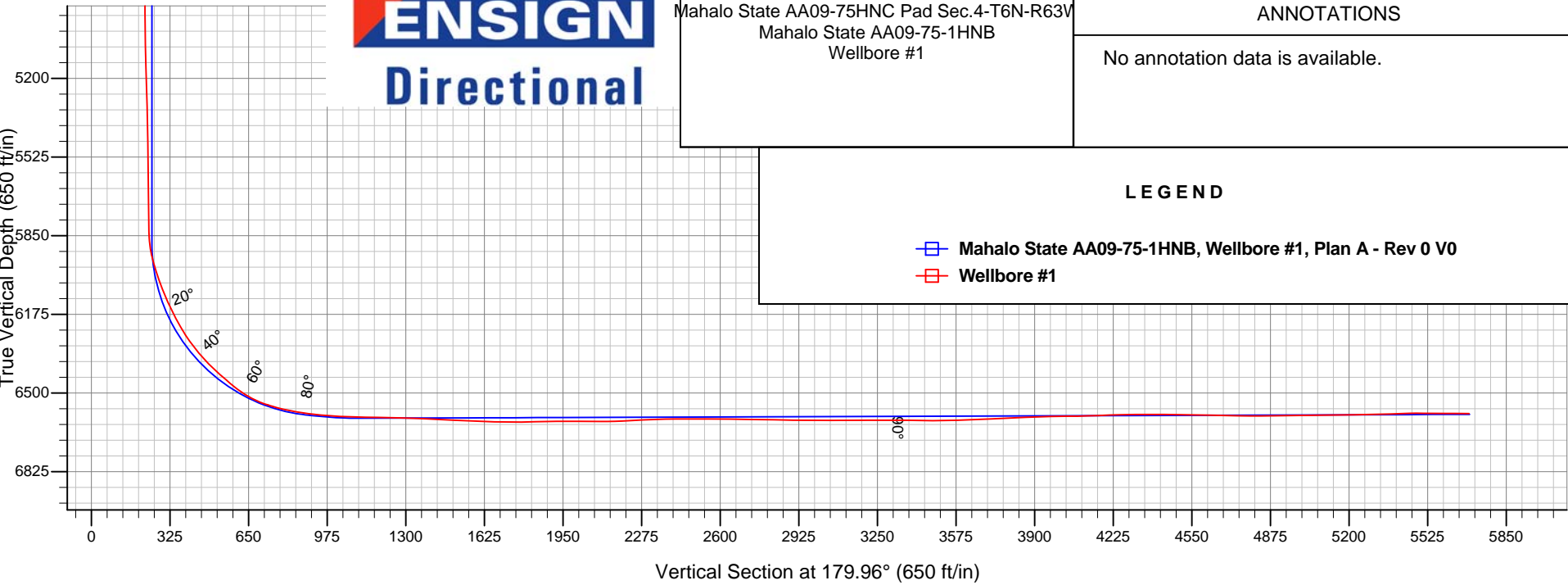
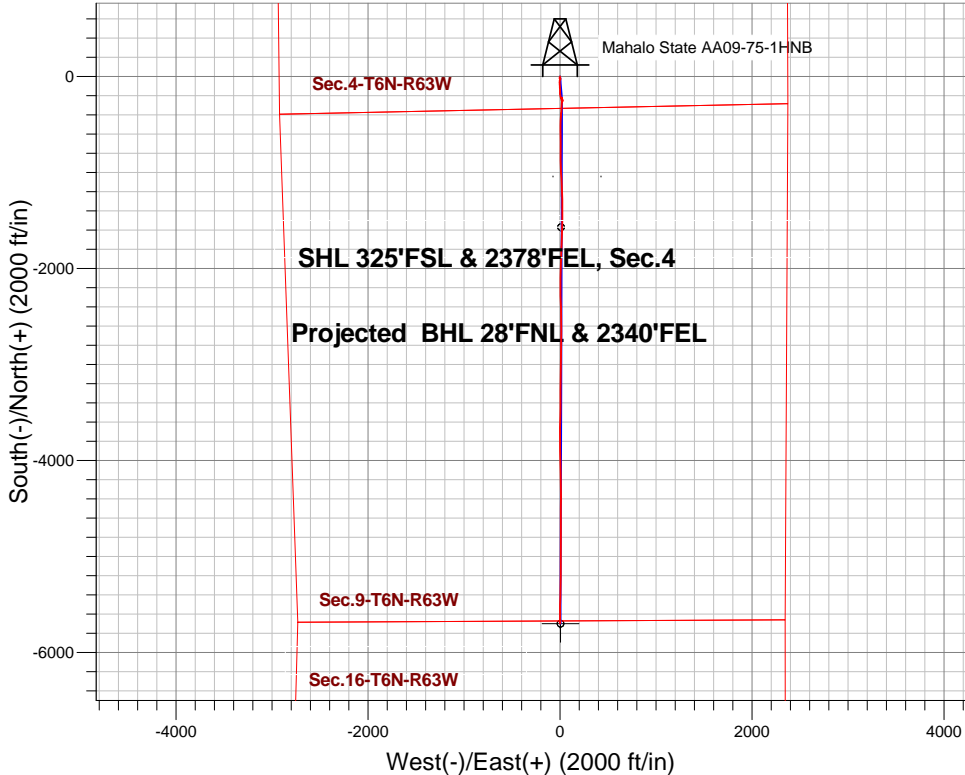
Noble Energy Inc.- Weld County, CO (Grid North)

Well Name: Mahalo State AA09-75-1HNB

Surface Location: Mahalo State AA09-75HNC Pad Sec.4-T6N-R63W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4694.0
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1430206.99 3294536.96 40.509490 -104.440720
PD 829 RKB - 16' WELL @ 4710.0ft (PD 829 RKB - 16')

FINAL SURVEY

Projected Bottom Hole Location
11740'MD 6585'TVD 5696'S & 1'E of SHL 88.6
degree Incl @ 184.9 degree AZM



Mahalo State AA09-75HNC Pad Sec.4-T6N-R63W
Mahalo State AA09-75-1HNB
Wellbore #1

ANNOTATIONS

No annotation data is available.

LEGEND

- Mahalo State AA09-75-1HNB, Wellbore #1, Plan A - Rev 0 V0
- Wellbore #1



Noble Energy Inc.- Weld County, CO (Grid North)

Sec.4-T6N-R63W

Mahalo State AA09-75HNC Pad Sec.4-T6N-R63W

Mahalo State AA09-75-1HNB

Wellbore #1

Design: Wellbore #1

Final Survey

02 February, 2015

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Mahalo State AA09-75-1HNB
Project:	Sec.4-T6N-R63W	TVD Reference:	WELL @ 4710.0ft (PD 829 RKB - 16')
Site:	Mahalo State AA09-75HNC Pad Sec.4-T6N-R63W	MD Reference:	WELL @ 4710.0ft (PD 829 RKB - 16')
Well:	Mahalo State AA09-75-1HNB	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.4-T6N-R63W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Mahalo State AA09-75HNC Pad Sec.4-T6N-R63W				
Site Position:		Northing:	1,430,207.90 ft	Latitude:	40.509490
From:	Lat/Long	Easting:	3,294,612.04 ft	Longitude:	-104.440450
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.68 °

Well	Mahalo State AA09-75-1HNB					
Well Position	+N/-S	0.0 ft	Northing:	1,430,206.99 ft	Latitude:	40.509490
	+E/-W	0.0 ft	Easting:	3,294,536.96 ft	Longitude:	-104.440720
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,694.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/31/2014	8.22	67.07	52,849

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	179.96	

Survey Program	Date	2/2/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
335.0	684.0	Surface (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
876.0	6,651.0	Intermediate/Curve (Wellbore #1)	MWD	MWD - Standard	
6,696.0	11,740.0	Lateral (Wellbore #1)	MWD	MWD - Standard	

Survey								
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	
335.0	0.50	203.06	335.0	-1.3	-0.6	1.3	0.15	
684.0	1.00	187.46	684.0	-5.8	-1.6	5.8	0.15	
876.0	1.20	220.10	875.9	-9.0	-3.1	9.0	0.34	
1,011.0	1.10	225.90	1,010.9	-10.9	-4.9	10.9	0.11	
1,100.0	1.30	222.70	1,099.9	-12.3	-6.2	12.3	0.24	
1,195.0	1.00	185.50	1,194.9	-13.9	-7.0	13.9	0.83	
1,290.0	0.80	190.40	1,289.9	-15.4	-7.2	15.4	0.23	
1,385.0	1.30	136.40	1,384.8	-16.8	-6.6	16.8	1.11	
1,480.0	1.60	140.00	1,479.8	-18.6	-5.0	18.6	0.33	

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Well:	Mahalo State AA09-75-1HNB	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey								
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	
1,575.0	1.40	91.50	1,574.8	-19.7	-3.0	19.7	1.31	
1,670.0	1.90	92.00	1,669.7	-19.7	-0.3	19.7	0.53	
1,765.0	1.30	99.70	1,764.7	-20.0	2.4	20.0	0.67	
1,860.0	2.50	184.80	1,859.7	-22.2	3.3	22.2	2.86	
1,955.0	4.40	199.20	1,954.5	-27.7	1.9	27.7	2.18	
2,037.0	5.90	199.80	2,036.2	-34.7	-0.6	34.7	1.83	
2,126.0	6.80	195.30	2,124.6	-44.1	-3.5	44.0	1.15	
2,216.0	7.60	182.90	2,213.9	-55.1	-5.2	55.1	1.94	
2,306.0	8.20	176.60	2,303.1	-67.5	-5.1	67.5	1.17	
2,395.0	10.20	173.80	2,390.9	-81.7	-3.9	81.7	2.30	
2,485.0	10.70	177.40	2,479.4	-97.9	-2.7	97.9	0.91	
2,574.0	10.80	176.90	2,566.8	-114.5	-1.8	114.5	0.15	
2,664.0	11.30	179.30	2,655.2	-131.7	-1.3	131.7	0.75	
2,753.0	11.00	178.80	2,742.5	-149.0	-1.0	149.0	0.35	
2,843.0	10.70	177.50	2,830.9	-165.9	-0.5	165.9	0.43	
2,933.0	10.60	177.60	2,919.3	-182.5	0.3	182.5	0.11	
3,022.0	9.80	169.20	3,006.9	-198.1	2.0	198.1	1.90	
3,112.0	9.90	161.90	3,095.6	-213.0	5.9	213.0	1.39	
3,202.0	9.50	161.70	3,184.3	-227.4	10.6	227.4	0.45	
3,291.0	7.40	165.80	3,272.4	-239.9	14.3	239.9	2.45	
3,381.0	5.40	158.60	3,361.8	-249.5	17.3	249.5	2.39	
3,471.0	3.50	142.70	3,451.5	-255.6	20.5	255.6	2.50	
3,560.0	1.60	83.80	3,540.4	-257.7	23.4	257.7	3.38	
3,650.0	2.30	12.40	3,630.4	-255.8	25.0	255.8	2.61	
3,739.0	2.50	13.80	3,719.3	-252.1	25.9	252.1	0.23	
3,829.0	2.90	336.30	3,809.2	-248.1	25.4	248.2	1.97	
3,919.0	2.90	333.00	3,899.1	-244.0	23.5	244.0	0.19	
4,008.0	2.80	335.40	3,988.0	-240.0	21.5	240.1	0.17	
4,098.0	2.50	337.60	4,077.9	-236.2	19.9	236.2	0.35	
4,187.0	2.40	346.60	4,166.8	-232.6	18.7	232.6	0.45	
4,277.0	2.50	345.80	4,256.7	-228.9	17.8	228.9	0.12	
4,366.0	2.10	18.70	4,345.7	-225.5	17.8	225.5	1.53	
4,455.0	0.20	250.30	4,434.7	-224.0	18.2	224.0	2.51	
4,544.0	0.70	293.20	4,523.7	-223.8	17.6	223.8	0.64	
4,634.0	0.70	306.50	4,613.6	-223.3	16.6	223.3	0.18	
4,724.0	0.60	305.00	4,703.6	-222.7	15.8	222.7	0.11	
4,814.0	0.40	358.00	4,793.6	-222.1	15.4	222.1	0.53	
4,903.0	0.40	80.10	4,882.6	-221.7	15.7	221.7	0.59	
4,993.0	1.50	96.00	4,972.6	-221.8	17.2	221.8	1.25	
5,083.0	1.60	161.60	5,062.6	-223.1	18.7	223.1	1.87	
5,172.0	1.60	166.60	5,151.6	-225.5	19.4	225.5	0.16	
5,262.0	1.80	165.00	5,241.5	-228.1	20.1	228.1	0.23	
5,351.0	1.30	178.80	5,330.5	-230.4	20.4	230.4	0.70	
5,441.0	1.00	171.20	5,420.5	-232.2	20.6	232.2	0.37	
5,531.0	0.90	159.30	5,510.5	-233.7	21.0	233.7	0.25	

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Well:	Mahalo State AA09-75-1HNB	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey							
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,621.0	0.70	156.20	5,600.5	-234.8	21.4	234.8	0.23
5,710.0	0.80	163.60	5,689.4	-235.9	21.8	235.9	0.16
5,800.0	0.80	153.40	5,779.4	-237.1	22.3	237.1	0.16
5,844.0	0.60	154.90	5,823.4	-237.6	22.5	237.6	0.46
5,889.0	4.50	183.40	5,868.4	-239.5	22.5	239.6	8.85
5,934.0	10.60	186.80	5,913.0	-245.4	21.9	245.4	13.59
5,979.0	15.60	188.10	5,956.8	-255.5	20.6	255.5	11.13
6,023.0	17.90	189.20	5,998.9	-268.1	18.7	268.1	5.28
6,068.0	20.00	182.60	6,041.5	-282.6	17.2	282.6	6.66
6,113.0	22.00	182.30	6,083.5	-298.7	16.5	298.7	4.45
6,158.0	24.50	183.90	6,124.8	-316.4	15.5	316.4	5.73
6,203.0	26.70	185.70	6,165.4	-335.8	13.9	335.8	5.18
6,247.0	28.40	184.60	6,204.4	-356.1	12.1	356.1	4.03
6,292.0	31.50	183.20	6,243.4	-378.5	10.6	378.5	7.06
6,337.0	35.50	183.10	6,280.9	-403.3	9.2	403.3	8.89
6,382.0	37.80	185.30	6,317.0	-430.1	7.2	430.1	5.88
6,427.0	41.40	182.40	6,351.7	-458.7	5.3	458.7	8.99
6,472.0	45.50	181.30	6,384.4	-489.6	4.3	489.6	9.26
6,516.0	48.10	180.20	6,414.5	-521.7	3.9	521.7	6.18
6,561.0	49.20	178.80	6,444.2	-555.4	4.2	555.4	3.38
6,606.0	51.00	178.20	6,473.1	-589.9	5.1	589.9	4.13
6,651.0	56.00	178.60	6,499.8	-626.1	6.1	626.1	11.13
6,696.0	62.80	180.00	6,522.7	-664.8	6.6	664.8	15.35
6,741.0	69.40	181.50	6,540.9	-705.9	6.0	705.9	14.98
6,785.0	73.80	181.70	6,554.8	-747.6	4.9	747.6	10.01
6,830.0	77.40	180.80	6,566.0	-791.2	3.9	791.2	8.23
6,875.0	79.30	179.20	6,575.1	-835.3	3.9	835.3	5.47
6,904.0	79.80	178.90	6,580.4	-863.8	4.4	863.8	2.00
6,978.0	85.60	176.60	6,589.8	-937.1	7.3	937.1	8.42
7,009.0	85.60	176.90	6,592.1	-968.0	9.0	968.0	0.96
7,041.0	85.80	176.60	6,594.5	-999.8	10.9	999.8	1.12
7,072.0	86.30	176.50	6,596.7	-1,030.7	12.7	1,030.7	1.64
7,103.0	88.10	177.10	6,598.2	-1,061.6	14.4	1,061.6	6.12
7,134.0	89.20	177.40	6,598.9	-1,092.6	15.9	1,092.6	3.68
7,226.0	88.80	178.50	6,600.5	-1,184.5	19.2	1,184.5	1.27
7,320.0	88.40	179.20	6,602.8	-1,278.4	21.1	1,278.4	0.86
7,428.0	87.40	179.90	6,606.8	-1,386.4	22.0	1,386.4	1.13
7,488.2	87.40	180.57	6,609.5	-1,446.5	21.7	1,446.5	1.11
Mahalo State AA09-75-1HNB WP							
7,518.0	87.40	180.90	6,610.9	-1,476.3	21.3	1,476.3	1.11
7,608.0	87.30	180.30	6,615.0	-1,566.2	20.4	1,566.2	0.68
7,610.1	87.32	180.32	6,615.1	-1,568.2	20.4	1,568.2	1.27
Mahalo State AA09-75-1HNB Landing Pt.							
7,698.0	88.00	181.20	6,618.7	-1,656.1	19.2	1,656.1	1.27

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey							
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,787.0	91.10	182.30	6,619.4	-1,745.0	16.5	1,745.0	3.70
7,877.0	90.70	183.00	6,618.0	-1,834.9	12.3	1,834.9	0.90
7,967.0	90.40	181.90	6,617.1	-1,924.8	8.5	1,924.8	1.27
8,057.0	89.40	180.70	6,617.3	-2,014.8	6.4	2,014.8	1.74
8,146.0	90.00	180.90	6,617.8	-2,103.8	5.2	2,103.8	0.71
8,236.0	92.70	180.70	6,615.6	-2,193.7	3.9	2,193.7	3.01
8,325.0	93.20	179.10	6,611.1	-2,282.6	4.1	2,282.6	1.88
8,415.0	91.00	178.50	6,607.8	-2,372.5	6.0	2,372.5	2.53
8,505.0	89.90	178.80	6,607.1	-2,462.5	8.1	2,462.5	1.27
8,594.0	89.90	178.00	6,607.2	-2,551.5	10.6	2,551.5	0.90
8,684.0	89.10	179.30	6,608.0	-2,641.4	12.7	2,641.4	1.70
8,774.0	89.20	180.80	6,609.3	-2,731.4	12.6	2,731.4	1.67
8,864.0	89.40	181.70	6,610.4	-2,821.4	10.7	2,821.4	1.02
8,953.0	88.70	181.30	6,611.9	-2,910.4	8.3	2,910.4	0.91
9,043.0	89.60	181.00	6,613.2	-3,000.3	6.5	3,000.3	1.05
9,133.0	90.70	180.80	6,613.0	-3,090.3	5.1	3,090.3	1.24
9,223.0	90.50	179.50	6,612.1	-3,180.3	4.9	3,180.3	1.46
9,312.0	89.70	180.80	6,611.9	-3,269.3	4.6	3,269.3	1.72
9,402.0	89.10	180.00	6,612.9	-3,359.3	4.0	3,359.3	1.11
9,491.0	89.40	181.50	6,614.0	-3,448.3	2.9	3,448.3	1.72
9,581.0	91.80	181.20	6,613.1	-3,538.2	0.7	3,538.2	2.69
9,670.0	91.90	180.60	6,610.2	-3,627.2	-0.7	3,627.2	0.68
9,760.0	92.00	180.30	6,607.1	-3,717.1	-1.4	3,717.1	0.35
9,850.0	92.60	179.50	6,603.5	-3,807.0	-1.2	3,807.0	1.11
9,939.0	93.10	178.10	6,599.1	-3,895.9	0.6	3,895.9	1.67
10,029.0	90.50	178.40	6,596.3	-3,985.8	3.4	3,985.8	2.91
10,119.0	90.70	179.20	6,595.3	-4,075.8	5.3	4,075.8	0.92
10,208.0	92.50	178.60	6,592.8	-4,164.7	7.0	4,164.7	2.13
10,297.0	91.30	179.50	6,589.9	-4,253.7	8.5	4,253.7	1.69
10,387.0	90.00	180.70	6,588.9	-4,343.7	8.3	4,343.7	1.97
10,476.0	90.30	179.50	6,588.6	-4,432.7	8.1	4,432.7	1.39
10,566.0	88.60	180.70	6,589.5	-4,522.7	8.0	4,522.7	2.31
10,656.0	88.70	179.70	6,591.6	-4,612.6	7.7	4,612.6	1.12
10,745.0	88.70	179.50	6,593.6	-4,701.6	8.3	4,701.6	0.22
10,835.0	89.70	180.50	6,594.9	-4,791.6	8.3	4,791.6	1.57
10,925.0	91.20	180.60	6,594.2	-4,881.6	7.4	4,881.6	1.67
11,015.0	90.80	179.30	6,592.6	-4,971.6	7.5	4,971.6	1.51
11,104.0	90.60	180.50	6,591.5	-5,060.6	7.7	5,060.6	1.37
11,194.0	90.50	180.60	6,590.7	-5,150.6	6.8	5,150.6	0.16
11,283.0	90.70	181.00	6,589.7	-5,239.5	5.6	5,239.5	0.50
11,373.0	92.40	182.00	6,587.3	-5,329.5	3.2	5,329.5	2.19
11,463.0	91.50	180.60	6,584.2	-5,419.4	1.2	5,419.4	1.85
11,552.0	89.30	181.00	6,583.6	-5,508.4	-0.1	5,508.4	2.51
11,642.0	89.50	180.00	6,584.6	-5,598.4	-0.9	5,598.4	1.13

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Design:	Wellbore #1	Database:	Landmark

Survey							
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11,678.0	89.90	179.90	6,584.8	-5,634.4	-0.8	5,634.4	1.15
11,740.0	89.90	179.90	6,584.9	-5,696.4	-0.7	5,696.4	0.00
Mahalo State AA09-75-1HNB BHL 30'FNL & 2345'FEL							

Checked By: _____ Approved By: _____ Date: _____