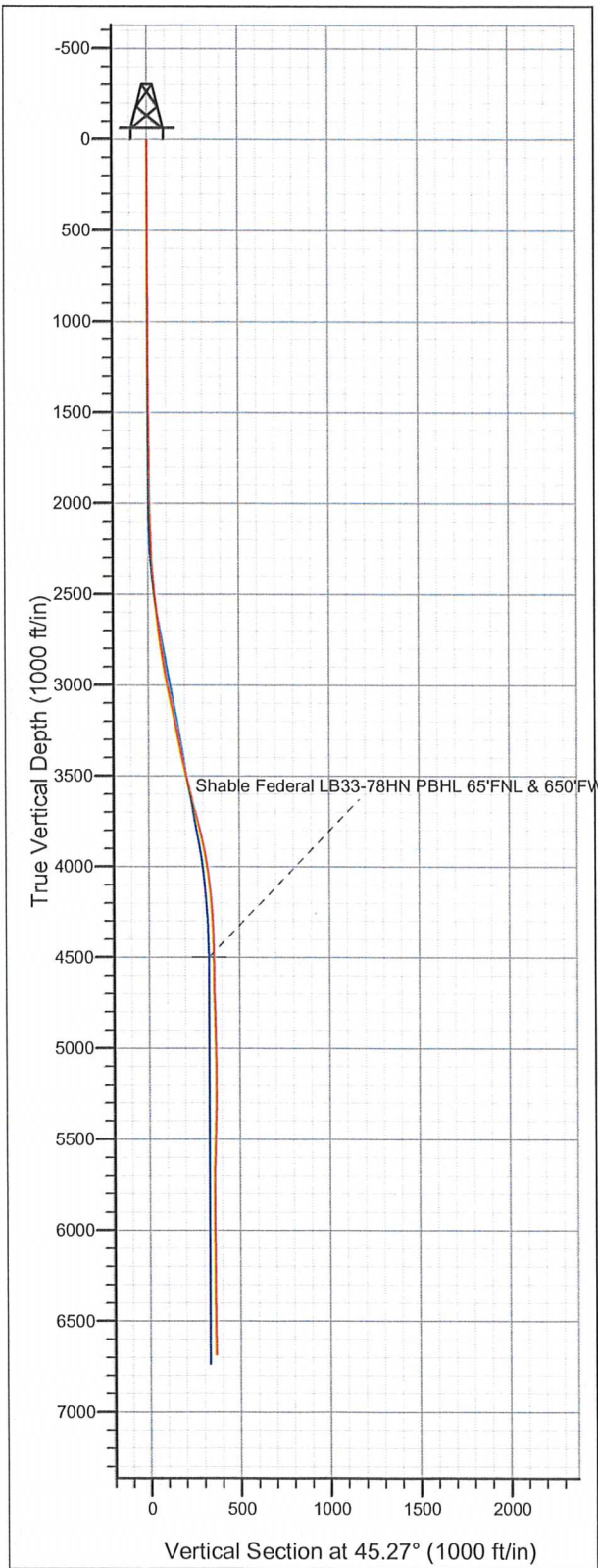
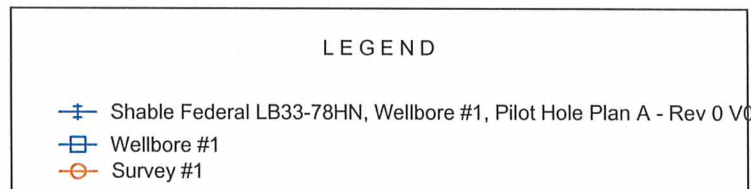
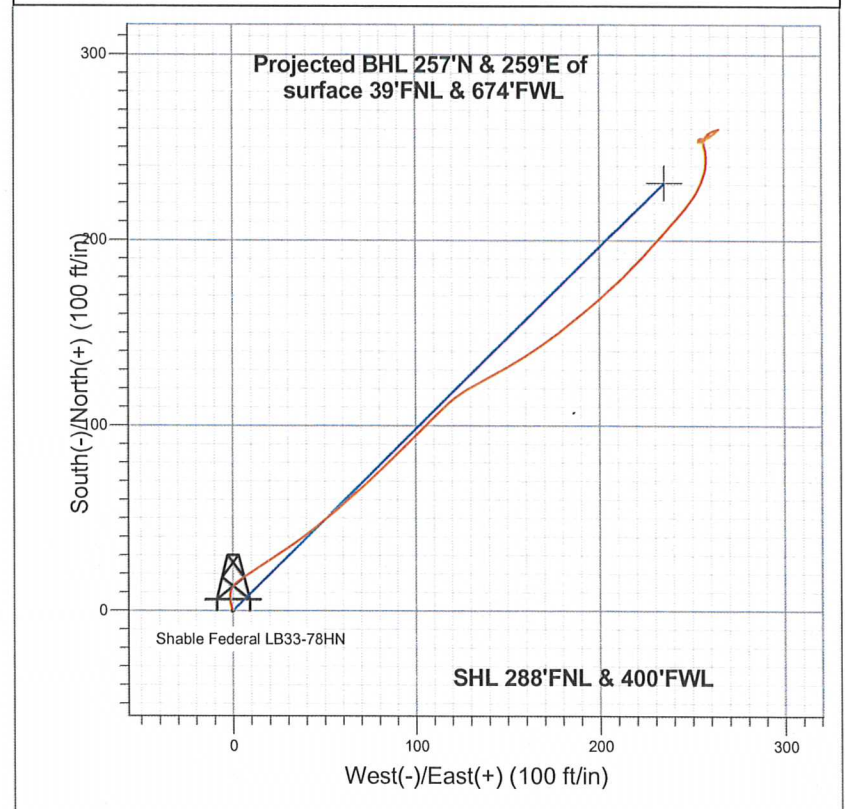




Well Name: Shable Federal LB33-78HN						
Surface Location: Shable Pad Sec.33-T9N-R60W						
North American Datum 1983			US State Plane 1983		Colorado Northern Zone	
Ground Elevation: 4940.0						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1505412.22	3386475.19	40.712408	-104.105867	
Precision 828 RKB - 16' WELL @ 4956.0ft (Precision 828 RKB - 16')						



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



Final Survey Plot

Projected Final Survey -
6716'MD & 6683'TVD @ 365'VS
0.9 deg Inc 40.3 deg AZ

Project: SEC.33-T9N-R60W
Site: Shable Pad Sec.33-T9N-R60W
Well: Shable Federal LB33-78HN
Plan: Wellbore #1



Directional

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

SEC.33-T9N-R60W

Shable Pad Sec.33-T9N-R60W

Shable Federal LB33-78HN

Wellbore #1

Survey: Survey #1

Standard Survey Report

10 April, 2013

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Shable Federal LB33-78HN
Project:	SEC.33-T9N-R60W	TVD Reference:	WELL @ 4956.0ft (Precision 828 RKB - 16')
Site:	Shable Pad Sec.33-T9N-R60W	MD Reference:	WELL @ 4956.0ft (Precision 828 RKB - 16')
Well:	Shable Federal LB33-78HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.33-T9N-R60W, Weld County, CO		
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	Shable Pad Sec.33-T9N-R60W		
Site Position:		Northing:	1,505,412.23 ft
From:	Lat/Long	Easting:	3,386,475.19 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.712408
		Longitude:	-104.105867
		Grid Convergence:	0.90 °

Well	Shable Federal LB33-78HN		
Well Position	+N/-S	0.0 ft	Northing: 1,505,412.22 ft
	+E/-W	0.0 ft	Easting: 3,386,475.19 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.712408
		Longitude:	-104.105867
		Ground Level:	4,940.0 ft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	3/4/2013	8.30
			Dip Angle (°)
			67.35
			Field Strength (nT)
			53,180

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)
	0.0	0.0	0.0
			Direction (°)
			45.27

Survey Program	Date 4/4/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name
642.0	6,716.0	Survey #1 (Wellbore #1)	MWD
			Description
			MWD - Standard

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
642.0	0.00	0.00	642.0	0.0	0.0	0.0	0.00	0.00	0.00	
674.0	0.70	337.70	674.0	0.2	-0.1	0.1	2.19	2.19	0.00	
768.0	0.50	4.60	768.0	1.1	-0.3	0.6	0.36	-0.21	28.62	
863.0	0.40	334.20	863.0	1.8	-0.4	1.0	0.27	-0.11	-32.00	
960.0	0.40	327.70	960.0	2.4	-0.7	1.2	0.05	0.00	-6.70	
1,050.0	0.70	355.60	1,050.0	3.2	-0.9	1.6	0.44	0.33	31.00	
1,140.0	0.60	328.40	1,140.0	4.2	-1.2	2.1	0.36	-0.11	-30.22	
1,230.0	0.80	9.20	1,230.0	5.2	-1.3	2.7	0.58	0.22	45.33	
1,320.0	0.70	12.70	1,320.0	6.4	-1.1	3.7	0.12	-0.11	3.89	
1,410.0	0.60	340.90	1,410.0	7.3	-1.2	4.3	0.41	-0.11	-35.33	
1,500.0	0.80	0.50	1,500.0	8.4	-1.3	5.0	0.34	0.22	21.78	

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Shable Federal LB33-78HN
Project:	SEC.33-T9N-R60W	TVD Reference:	WELL @ 4956.0ft (Precision 828 RKB - 16')
Site:	Shable Pad Sec.33-T9N-R60W	MD Reference:	WELL @ 4956.0ft (Precision 828 RKB - 16')
Well:	Shable Federal LB33-78HN	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)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,590.0	0.50	3.50	1,589.9	9.4	-1.3	5.7	0.34	-0.33	3.33	
1,680.0	0.40	346.80	1,679.9	10.1	-1.3	6.2	0.18	-0.11	-18.56	
1,770.0	0.80	21.30	1,769.9	11.0	-1.2	6.9	0.58	0.44	38.33	
1,860.0	0.50	37.30	1,859.9	11.9	-0.7	7.9	0.39	-0.33	17.78	
1,949.0	1.10	31.50	1,948.9	13.0	0.0	9.1	0.68	0.67	-6.52	
2,039.0	1.10	44.70	2,038.9	14.3	1.0	10.8	0.28	0.00	14.67	
2,129.0	2.00	52.80	2,128.9	15.9	2.9	13.2	1.03	1.00	9.00	
2,219.0	2.50	55.00	2,218.8	18.0	5.8	16.7	0.56	0.56	2.44	
2,309.0	3.70	57.30	2,308.7	20.6	9.8	21.5	1.34	1.33	2.56	
2,398.0	4.40	54.20	2,397.4	24.2	15.0	27.7	0.82	0.79	-3.48	
2,488.0	5.50	58.00	2,487.1	28.5	21.5	35.3	1.27	1.22	4.22	
2,578.0	6.00	56.60	2,576.7	33.4	29.0	44.1	0.58	0.56	-1.56	
2,668.0	7.00	53.60	2,666.1	39.2	37.4	54.2	1.17	1.11	-3.33	
2,757.0	8.00	51.30	2,754.3	46.3	46.6	65.7	1.17	1.12	-2.58	
2,847.0	9.20	50.10	2,843.3	54.8	57.0	79.1	1.35	1.33	-1.33	
2,936.0	10.40	48.00	2,931.0	64.8	68.4	94.2	1.41	1.35	-2.36	
3,026.0	11.30	46.40	3,019.4	76.3	80.8	111.1	1.05	1.00	-1.78	
3,116.0	11.40	46.40	3,107.6	88.5	93.7	128.8	0.11	0.11	0.00	
3,206.0	11.10	44.70	3,195.9	100.8	106.2	146.4	0.50	-0.33	-1.89	
3,296.0	10.20	47.70	3,284.4	112.3	118.2	163.0	1.17	-1.00	3.33	
3,385.0	12.20	62.40	3,371.7	122.0	132.4	179.9	3.90	2.25	16.52	
3,475.0	13.70	60.00	3,459.4	131.7	150.0	199.3	1.77	1.67	-2.67	
3,565.0	14.30	55.40	3,546.7	143.4	168.4	220.5	1.40	0.67	-5.11	
3,655.0	15.10	51.00	3,633.8	157.1	186.7	243.1	1.53	0.89	-4.89	
3,745.0	14.40	48.00	3,720.8	171.9	204.1	266.0	1.15	-0.78	-3.33	
3,835.0	13.10	43.10	3,808.2	186.9	219.4	287.3	1.94	-1.44	-5.44	
3,925.0	11.10	42.20	3,896.2	200.7	232.2	306.2	2.23	-2.22	-1.00	
4,015.0	8.80	39.90	3,984.9	212.4	242.4	321.7	2.59	-2.56	-2.56	
4,105.0	7.00	36.20	4,074.0	222.1	250.0	334.0	2.08	-2.00	-4.11	
4,194.0	6.20	22.70	4,162.4	230.9	255.1	343.8	1.96	-0.90	-15.17	
4,284.0	4.00	8.30	4,252.1	238.5	257.4	350.8	2.81	-2.44	-16.00	
4,374.0	3.00	359.80	4,341.9	244.0	257.9	354.9	1.25	-1.11	-9.44	
4,464.0	2.40	348.90	4,431.8	248.2	257.5	357.6	0.87	-0.67	-12.11	
4,531.8	1.64	344.42	4,499.5	250.5	257.0	358.9	1.14	-1.12	-6.61	
Shable Federal LB33-78HN PBHL 65'FNL & 650'FWL										
4,554.0	1.40	341.90	4,521.7	251.1	256.8	359.2	1.14	-1.10	-11.33	
4,644.0	1.30	0.00	4,611.7	253.2	256.5	360.4	0.48	-0.11	20.11	
4,734.0	1.20	27.60	4,701.7	255.0	256.9	362.0	0.67	-0.11	30.67	
4,823.0	1.40	32.90	4,790.7	256.8	257.9	363.9	0.26	0.22	5.96	
4,913.0	1.20	59.40	4,880.7	258.2	259.3	365.9	0.70	-0.22	29.44	
5,003.0	1.20	68.20	4,970.6	259.0	261.0	367.7	0.20	0.00	9.78	
5,093.0	1.40	68.00	5,060.6	259.8	262.9	369.6	0.22	0.22	-0.22	
5,183.0	0.70	81.80	5,150.6	260.2	264.5	371.0	0.82	-0.78	15.33	
5,273.0	0.10	257.50	5,240.6	260.3	264.9	371.4	0.89	-0.67	195.22	
5,362.0	1.10	224.30	5,329.6	259.7	264.3	370.5	1.14	1.12	-37.30	
5,452.0	1.80	232.00	5,419.6	258.2	262.6	368.2	0.81	0.78	8.56	
5,542.0	1.90	233.60	5,509.5	256.4	260.2	365.3	0.13	0.11	1.78	
5,632.0	2.20	236.80	5,599.5	254.6	257.6	362.2	0.36	0.33	3.56	
5,722.0	1.40	262.10	5,689.4	253.5	255.1	359.6	1.23	-0.89	28.11	
5,811.0	0.40	345.10	5,778.4	253.7	253.9	358.9	1.58	-1.12	93.26	
5,901.0	0.20	30.40	5,868.4	254.1	253.9	359.2	0.33	-0.22	50.33	
5,991.0	0.30	20.20	5,958.4	254.4	254.1	359.6	0.12	0.11	-11.33	
6,081.0	0.30	29.00	6,048.4	254.9	254.3	360.0	0.05	0.00	9.78	

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Shable Federal LB33-78HN
Project:	SEC.33-T9N-R60W	TVD Reference:	WELL @ 4956.0ft (Precision 828 RKB - 16')
Site:	Shable Pad Sec.33-T9N-R60W	MD Reference:	WELL @ 4956.0ft (Precision 828 RKB - 16')
Well:	Shable Federal LB33-78HN	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)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,171.0	0.50	68.90	6,138.4	255.2	254.7	360.6	0.37	0.22	44.33
6,261.0	0.70	108.60	6,228.4	255.2	255.6	361.2	0.50	0.22	44.11
6,350.0	0.60	96.70	6,317.4	255.0	256.6	361.7	0.19	-0.11	-13.37
6,440.0	0.40	99.70	6,407.4	254.9	257.4	362.2	0.22	-0.22	3.33
6,530.0	0.40	55.20	6,497.4	255.0	257.9	362.7	0.34	0.00	-49.44
6,620.0	0.80	24.80	6,587.4	255.7	258.5	363.6	0.55	0.44	-33.78
6,665.0	0.90	40.30	6,632.4	256.3	258.8	364.2	0.55	0.22	34.44
6,716.0	0.90	40.30	6,683.4	256.9	259.3	365.0	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____