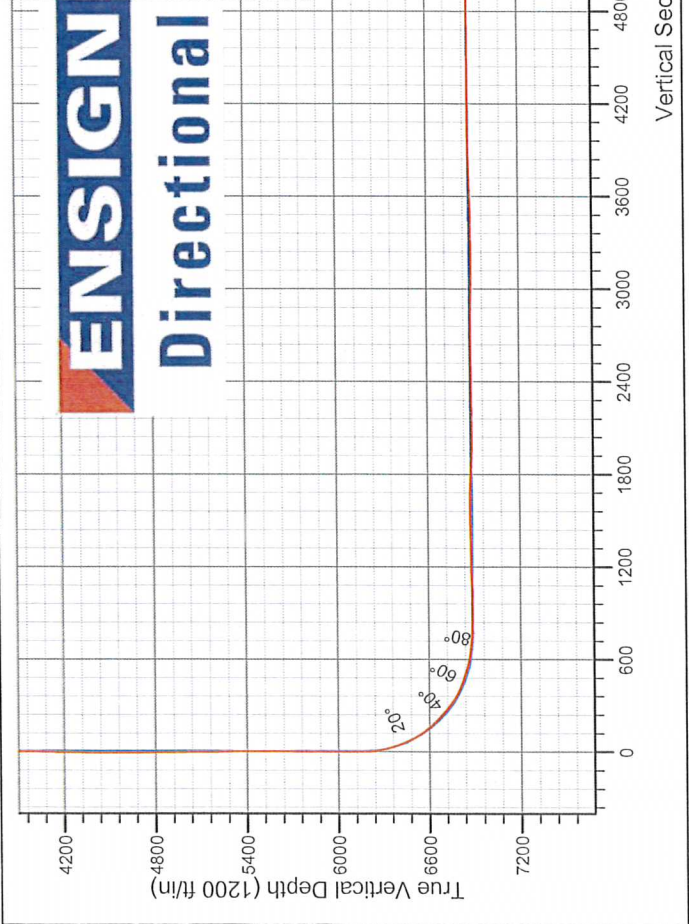
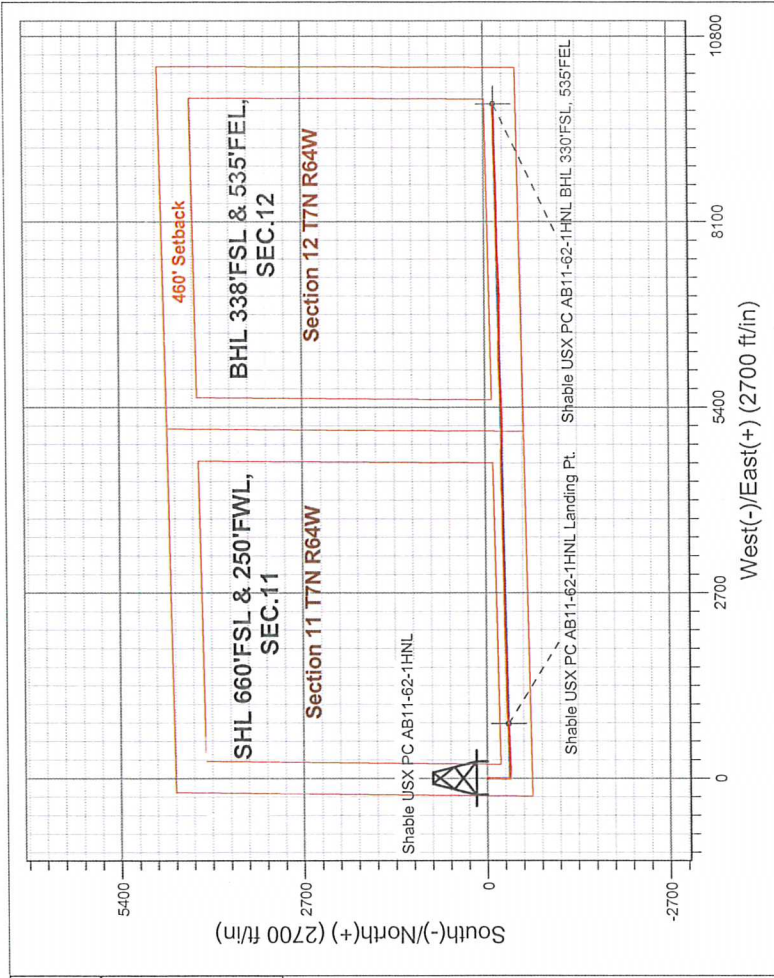


Noble Energy Inc.- Weld County, CO (Grid North)

Well Name: Shable USX PC AB11-62-1HNIL			
Surface Location: Shable AB11 Pad Sec.11-T7N-R64W			
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone			
	Ground Elevation: 4818.0	Longitude	Slot
+N/-S	+E/-W	Northing	Easting
0.0	0.0	1456443.18	3270759.35
		Latitude	-104.525190
Precision 828 RKB - 16' WELL @ 4834.0ft (Precision 828 RKB - 16')			

FINAL SURVEY

Projected Bottom Hole Location  
16406' MD 6857' TVD 134' S & 9813' E of SHL  
91.9 degree Incl @ 87.9 degree AZM



Shable AB11 Pad Sec.11-T7N-R64W Shable USX PC AB11-62-1HNIL Wellbore #1 7:52, May 20 2013	ANNOTATIONS  No annotation data is available.
LEGEND  -▲- Shable USX PC AB11-62-1HNIL, Wellbore #1, Plan A - Rev 1 V0 -□- Wellbore #1 -○- Survey #1	



## **Directional**

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

Sec.11-T7N-R64W

Shable AB11 Pad Sec.11-T7N-R64W

Shable USX PC AB11-62-1HNL

Wellbore #1

Survey: Survey #1

### **Standard Survey Report**

20 May, 2013



Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Shable USX PC AB11-62-1HNL
Project:	Sec.11-T7N-R64W	TVD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Site:	Shable AB11 Pad Sec.11-T7N-R64W	MD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Well:	Shable USX PC AB11-62-1HNL	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.11-T7N-R64W, 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 AB11 Pad Sec.11-T7N-R64W			
Site Position:		Northing:	1,456,443.19ft	Latitude:	40.582250
From:	Lat/Long	Easting:	3,270,759.35ft	Longitude:	-104.525190
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.63 °

Well		Shable USX PC AB11-62-1HNL				
Well Position	+N/-S	0.0 ft	Northing:	1,456,443.18 ft	Latitude:	40.582250
	+E/-W	0.0 ft	Easting:	3,270,759.35 ft	Longitude:	-104.525190
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,818.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/22/2013	8.50	67.17	53,056

Design	Wellbore #1			
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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	90.78

Survey Program	Date 5/14/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
805.0	16,406.0	Survey #1 (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)	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	
805.0	0.00	0.00	805.0	0.0	0.0	0.0	0.00	0.00	0.00	
838.0	0.30	190.90	838.0	-0.1	0.0	0.0	0.91	0.91	0.00	
928.0	0.60	170.80	928.0	-0.8	0.0	0.0	0.37	0.33	-22.33	
1,018.0	0.40	192.30	1,018.0	-1.6	0.0	0.0	0.30	-0.22	23.89	
1,126.0	0.20	145.30	1,126.0	-2.1	0.0	0.1	0.28	-0.19	-43.52	
1,221.0	0.20	257.50	1,221.0	-2.2	0.0	0.0	0.35	0.00	118.11	
1,316.0	0.30	133.40	1,316.0	-2.5	0.0	0.0	0.47	0.11	-130.63	
1,411.0	0.40	329.20	1,411.0	-2.3	0.0	0.0	0.73	0.11	-172.84	
1,506.0	0.40	6.10	1,506.0	-1.7	-0.1	-0.1	0.27	0.00	38.84	
1,601.0	0.40	24.70	1,601.0	-1.1	0.1	0.1	0.14	0.00	19.58	
1,696.0	1.20	189.60	1,696.0	-1.8	0.0	0.0	1.67	0.84	173.58	



Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Shable USX PC AB11-62-1HNL
Project:	Sec.11-T7N-R64W	TVD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Site:	Shable AB11 Pad Sec.11-T7N-R64W	MD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Well:	Shable USX PC AB11-62-1HNL	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)
1,790.0	1.70	166.80	1,790.0	-4.1	0.2	0.2	0.80	0.53	-24.26
1,885.0	2.50	162.40	1,884.9	-7.5	1.1	1.2	0.86	0.84	-4.63
1,997.0	3.30	173.30	1,996.7	-13.0	2.2	2.4	0.86	0.71	9.73
2,087.0	4.00	186.30	2,086.6	-18.7	2.2	2.5	1.20	0.78	14.44
2,177.0	5.70	188.60	2,176.2	-26.2	1.2	1.5	1.90	1.89	2.56
2,266.0	6.20	183.10	2,264.8	-35.4	0.3	0.7	0.85	0.56	-6.18
2,356.0	6.10	177.90	2,354.2	-45.0	0.2	0.8	0.63	-0.11	-5.78
2,446.0	6.20	186.10	2,443.7	-54.6	-0.2	0.6	0.98	0.11	9.11
2,536.0	6.00	178.60	2,533.2	-64.2	-0.6	0.3	0.91	-0.22	-8.33
2,626.0	6.10	176.80	2,622.7	-73.6	-0.2	0.8	0.24	0.11	-2.00
2,716.0	6.50	178.60	2,712.2	-83.5	0.2	1.3	0.50	0.44	2.00
2,806.0	6.20	172.00	2,801.6	-93.4	1.0	2.3	0.88	-0.33	-7.33
2,895.0	6.20	171.00	2,890.1	-102.9	2.4	3.8	0.12	0.00	-1.12
2,985.0	5.20	174.70	2,979.7	-111.8	3.6	5.1	1.18	-1.11	4.11
3,075.0	6.30	193.50	3,069.2	-120.6	2.8	4.4	2.41	1.22	20.89
3,165.0	6.00	190.20	3,158.7	-130.1	0.8	2.6	0.52	-0.33	-3.67
3,255.0	5.80	185.10	3,248.2	-139.2	-0.4	1.5	0.62	-0.22	-5.67
3,345.0	6.10	182.20	3,337.7	-148.5	-1.0	1.0	0.47	0.33	-3.22
3,435.0	5.10	175.00	3,427.3	-157.3	-0.9	1.3	1.36	-1.11	-8.00
3,524.0	6.00	172.80	3,515.9	-165.9	0.1	2.3	1.04	1.01	-2.47
3,614.0	5.80	170.60	3,605.4	-175.0	1.4	3.8	0.34	-0.22	-2.44
3,704.0	6.20	177.70	3,694.9	-184.4	2.3	4.9	0.94	0.44	7.89
3,794.0	6.40	188.00	3,784.4	-194.2	1.8	4.5	1.27	0.22	11.44
3,884.0	6.60	191.70	3,873.8	-204.2	0.1	2.9	0.52	0.22	4.11
3,974.0	6.20	191.60	3,963.2	-214.0	-1.9	1.0	0.44	-0.44	-0.11
4,064.0	6.60	185.60	4,052.7	-223.9	-3.4	-0.4	0.87	0.44	-6.67
4,153.0	6.60	184.40	4,141.1	-234.1	-4.3	-1.1	0.15	0.00	-1.35
4,243.0	6.20	184.40	4,230.5	-244.1	-5.1	-1.7	0.44	-0.44	0.00
4,333.0	6.10	184.20	4,320.0	-253.8	-5.8	-2.3	0.11	-0.11	-0.22
4,423.0	5.50	181.50	4,409.5	-262.8	-6.3	-2.7	0.73	-0.67	-3.00
4,513.0	6.20	185.20	4,499.1	-272.0	-6.8	-3.1	0.88	0.78	4.11
4,602.0	6.10	188.70	4,587.6	-281.4	-8.0	-4.1	0.44	-0.11	3.93
4,692.0	6.50	183.10	4,677.0	-291.3	-9.0	-5.0	0.81	0.44	-6.22
4,782.0	6.30	171.00	4,766.5	-301.2	-8.5	-4.4	1.51	-0.22	-13.44
4,872.0	5.10	168.50	4,856.0	-310.0	-6.9	-2.7	1.36	-1.33	-2.78
4,962.0	3.90	169.10	4,945.7	-316.9	-5.5	-1.2	1.33	-1.33	0.67
5,052.0	2.80	172.20	5,035.6	-322.1	-4.6	-0.2	1.24	-1.22	3.44
5,142.0	1.80	166.60	5,125.5	-325.7	-4.0	0.4	1.14	-1.11	-6.22
5,232.0	0.90	118.40	5,215.5	-327.4	-3.1	1.4	1.53	-1.00	-53.56
5,321.0	0.50	122.10	5,304.5	-327.9	-2.1	2.4	0.45	-0.45	4.16
5,411.0	0.50	152.50	5,394.5	-328.5	-1.6	2.9	0.29	0.00	33.78
5,501.0	0.40	136.90	5,484.5	-329.1	-1.2	3.3	0.17	-0.11	-17.33
5,591.0	0.40	163.40	5,574.5	-329.6	-0.9	3.6	0.20	0.00	29.44
5,681.0	0.60	206.50	5,664.5	-330.3	-1.0	3.5	0.46	0.22	47.89
5,771.0	0.40	198.90	5,754.5	-331.0	-1.3	3.2	0.23	-0.22	-8.44
5,860.0	0.60	235.70	5,843.5	-331.6	-1.8	2.7	0.41	0.22	41.35
5,950.0	0.60	220.20	5,933.5	-332.2	-2.5	2.0	0.18	0.00	-17.22
6,040.0	1.10	239.90	6,023.4	-333.0	-3.6	1.0	0.64	0.56	21.89
6,130.0	0.80	220.70	6,113.4	-333.9	-4.7	-0.2	0.48	-0.33	-21.33
6,220.0	3.90	98.20	6,203.4	-334.8	-2.1	2.5	4.87	3.44	-136.11
6,265.0	8.30	88.90	6,248.1	-335.0	2.7	7.2	9.99	9.78	-20.67
6,310.0	12.10	91.40	6,292.4	-335.0	10.6	15.2	8.50	8.44	5.56
6,355.0	14.60	88.60	6,336.2	-335.0	21.0	25.6	5.74	5.56	-6.22



Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Shale USX PC AB11-62-1HNL
Project:	Sec.11-T7N-R64W	TVD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Site:	Shale AB11 Pad Sec.11-T7N-R64W	MD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Well:	Shale USX PC AB11-62-1HNL	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)
6,400.0	17.50	87.70	6,379.4	-334.6	33.4	38.0	6.47	6.44	-2.00
6,445.0	21.20	88.70	6,421.9	-334.2	48.3	52.9	8.25	8.22	2.22
6,490.0	25.10	91.90	6,463.2	-334.3	66.0	70.6	9.10	8.67	7.11
6,535.0	29.20	93.10	6,503.3	-335.2	86.5	91.1	9.19	9.11	2.67
6,579.0	33.00	92.20	6,540.9	-336.2	109.2	113.8	8.70	8.64	-2.05
6,624.0	36.50	91.90	6,577.9	-337.2	134.9	139.4	7.79	7.78	-0.67
6,669.0	40.00	90.00	6,613.2	-337.6	162.7	167.3	8.20	7.78	-4.22
6,714.0	43.60	87.10	6,646.8	-336.8	192.7	197.3	9.08	8.00	-6.44
6,759.0	46.80	88.00	6,678.5	-335.5	224.6	229.1	7.25	7.11	2.00
6,804.0	49.90	90.00	6,708.4	-334.9	258.2	262.7	7.65	6.89	4.44
6,849.0	52.40	88.20	6,736.6	-334.3	293.2	297.8	6.37	5.56	-4.00
6,894.0	56.00	86.80	6,762.9	-332.7	329.7	334.2	8.39	8.00	-3.11
6,939.0	61.20	87.70	6,786.4	-330.9	368.0	372.5	11.68	11.56	2.00
6,984.0	66.00	88.60	6,806.4	-329.6	408.3	412.8	10.82	10.67	2.00
7,029.0	68.80	88.60	6,823.7	-328.6	449.8	454.3	6.22	6.22	0.00
7,074.0	71.40	87.90	6,839.0	-327.3	492.1	496.5	5.96	5.78	-1.56
7,118.0	73.20	87.70	6,852.4	-325.7	534.0	538.4	4.11	4.09	-0.45
7,163.0	77.40	86.30	6,863.8	-323.4	577.5	581.8	9.81	9.33	-3.11
7,217.0	81.50	87.30	6,873.7	-320.4	630.5	634.8	7.81	7.59	1.85
7,293.0	84.40	85.70	6,883.0	-315.8	705.7	710.0	4.35	3.82	-2.11
7,380.7	89.37	86.09	6,887.8	-309.6	793.0	797.2	5.68	5.67	0.44
Shale USX PC AB11-62-1HNL Landing Pt.									
7,383.0	89.50	86.10	6,887.8	-309.4	795.3	799.5	5.68	5.67	0.44
7,473.0	89.20	87.10	6,888.8	-304.1	885.2	889.2	1.16	-0.33	1.11
7,563.0	90.70	88.20	6,888.9	-300.4	975.1	979.1	2.07	1.67	1.22
7,653.0	91.90	89.30	6,886.8	-298.4	1,065.0	1,069.0	1.81	1.33	1.22
7,743.0	91.80	89.80	6,883.9	-297.7	1,155.0	1,159.0	0.57	-0.11	0.56
7,832.0	89.70	89.30	6,882.8	-297.0	1,244.0	1,247.9	2.43	-2.36	-0.56
7,922.0	91.50	89.30	6,881.8	-295.9	1,334.0	1,337.9	2.00	2.00	0.00
8,012.0	90.00	90.10	6,880.6	-295.4	1,424.0	1,427.9	1.89	-1.67	0.89
8,102.0	91.30	89.60	6,879.6	-295.2	1,513.9	1,517.8	1.55	1.44	-0.56
8,192.0	90.00	90.10	6,878.6	-295.0	1,603.9	1,607.8	1.55	-1.44	0.56
8,282.0	87.90	89.10	6,880.2	-294.3	1,693.9	1,697.8	2.58	-2.33	-1.11
8,372.0	87.10	89.10	6,884.2	-292.9	1,783.8	1,787.7	0.89	-0.89	0.00
8,462.0	87.80	87.90	6,888.2	-290.6	1,873.7	1,877.5	1.54	0.78	-1.33
8,551.0	88.70	86.60	6,890.9	-286.3	1,962.5	1,966.3	1.78	1.01	-1.46
8,641.0	90.30	87.00	6,891.7	-281.3	2,052.4	2,056.1	1.83	1.78	0.44
8,731.0	90.10	87.30	6,891.4	-276.8	2,142.3	2,145.9	0.40	-0.22	0.33
8,821.0	90.80	89.30	6,890.7	-274.1	2,232.2	2,235.8	2.35	0.78	2.22
8,911.0	90.30	89.40	6,889.8	-273.1	2,322.2	2,325.7	0.57	-0.56	0.11
9,001.0	90.80	89.30	6,888.9	-272.1	2,412.2	2,415.7	0.57	0.56	-0.11
9,090.0	89.90	89.30	6,888.4	-271.0	2,501.2	2,504.7	1.01	-1.01	0.00
9,180.0	90.70	89.40	6,887.9	-270.0	2,591.2	2,594.6	0.90	0.89	0.11
9,270.0	91.00	90.00	6,886.6	-269.5	2,681.2	2,684.6	0.75	0.33	0.67
9,360.0	88.90	90.70	6,886.7	-270.1	2,771.2	2,774.6	2.46	-2.33	0.78
9,450.0	88.70	89.60	6,888.5	-270.3	2,861.2	2,864.6	1.24	-0.22	-1.22
9,540.0	88.10	87.90	6,891.1	-268.3	2,951.1	2,954.5	2.00	-0.67	-1.89
9,630.0	89.30	87.70	6,893.1	-264.9	3,041.0	3,044.3	1.35	1.33	-0.22
9,720.0	90.60	89.30	6,893.2	-262.5	3,131.0	3,134.3	2.29	1.44	1.78
9,810.0	90.50	88.00	6,892.3	-260.4	3,220.9	3,224.2	1.45	-0.11	-1.44
9,899.0	90.30	87.70	6,891.7	-257.1	3,309.9	3,313.1	0.41	-0.22	-0.34
9,989.0	90.60	87.90	6,891.0	-253.6	3,399.8	3,403.0	0.40	0.33	0.22
10,079.0	89.90	87.50	6,890.6	-250.0	3,489.7	3,492.8	0.90	-0.78	-0.44



Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Shable USX PC AB11-62-1HNL
Project:	Sec.11-T7N-R64W	TVD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Site:	Shable AB11 Pad Sec.11-T7N-R64W	MD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Well:	Shable USX PC AB11-62-1HNL	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)
10,169.0	92.10	90.00	6,889.0	-248.0	3,579.7	3,582.7	3.70	2.44	2.78
10,259.0	91.90	89.60	6,885.9	-247.7	3,669.6	3,672.7	0.50	-0.22	-0.44
10,350.0	92.60	90.00	6,882.3	-247.4	3,760.6	3,763.6	0.89	0.77	0.44
10,442.0	91.30	89.80	6,879.2	-247.2	3,852.5	3,855.5	1.43	-1.41	-0.22
10,535.0	90.30	89.30	6,877.9	-246.5	3,945.5	3,948.5	1.20	-1.08	-0.54
10,627.0	89.30	87.90	6,878.2	-244.3	4,037.5	4,040.4	1.87	-1.09	-1.52
10,721.0	89.90	88.60	6,878.9	-241.4	4,131.4	4,134.3	0.98	0.64	0.74
10,815.0	91.10	87.50	6,878.0	-238.2	4,225.4	4,228.2	1.73	1.28	-1.17
10,910.0	91.10	88.60	6,876.2	-235.0	4,320.3	4,323.1	1.16	0.00	1.16
11,004.0	90.00	89.30	6,875.3	-233.2	4,414.3	4,417.0	1.39	-1.17	0.74
11,098.0	89.70	89.60	6,875.6	-232.3	4,508.3	4,511.0	0.45	-0.32	0.32
11,193.0	89.70	89.30	6,876.1	-231.4	4,603.2	4,606.0	0.32	0.00	-0.32
11,287.0	90.00	91.40	6,876.3	-232.0	4,697.2	4,700.0	2.26	0.32	2.23
11,381.0	90.50	92.10	6,875.9	-234.9	4,791.2	4,794.0	0.92	0.53	0.74
11,476.0	90.60	91.70	6,875.0	-238.0	4,886.1	4,888.9	0.43	0.11	-0.42
11,570.0	90.70	90.80	6,873.9	-240.1	4,980.1	4,982.9	0.96	0.11	-0.96
11,664.0	91.00	90.50	6,872.5	-241.1	5,074.1	5,076.9	0.45	0.32	-0.32
11,759.0	90.30	88.90	6,871.4	-240.6	5,169.1	5,171.9	1.84	-0.74	-1.68
11,853.0	90.30	88.40	6,870.9	-238.4	5,263.1	5,265.8	0.53	0.00	-0.53
11,943.0	90.30	87.50	6,870.5	-235.2	5,353.0	5,355.7	1.00	0.00	-1.00
12,033.0	90.10	86.80	6,870.2	-230.7	5,442.9	5,445.5	0.81	-0.22	-0.78
12,122.0	89.30	87.10	6,870.6	-226.0	5,531.8	5,534.3	0.96	-0.90	0.34
12,212.0	88.90	89.10	6,872.0	-223.0	5,621.7	5,624.2	2.27	-0.44	2.22
12,302.0	89.40	87.70	6,873.4	-220.5	5,711.6	5,714.1	1.65	0.56	-1.56
12,392.0	90.00	88.90	6,873.8	-217.8	5,801.6	5,804.0	1.49	0.67	1.33
12,482.0	89.30	86.60	6,874.4	-214.3	5,891.5	5,893.9	2.67	-0.78	-2.56
12,572.0	90.60	85.90	6,874.5	-208.4	5,981.3	5,983.6	1.64	1.44	-0.78
12,662.0	91.00	88.20	6,873.2	-203.8	6,071.2	6,073.4	2.59	0.44	2.56
12,752.0	89.50	90.80	6,872.8	-203.0	6,161.2	6,163.4	3.34	-1.67	2.89
12,841.0	89.30	90.30	6,873.8	-203.9	6,250.2	6,252.4	0.61	-0.22	-0.56
12,931.0	89.70	91.50	6,874.5	-205.3	6,340.1	6,342.4	1.41	0.44	1.33
13,021.0	88.80	90.50	6,875.7	-206.8	6,430.1	6,432.4	1.49	-1.00	-1.11
13,111.0	90.10	90.80	6,876.6	-207.9	6,520.1	6,522.3	1.48	1.44	0.33
13,201.0	89.80	90.10	6,876.7	-208.6	6,610.1	6,612.3	0.85	-0.33	-0.78
13,291.0	90.80	90.00	6,876.2	-208.6	6,700.1	6,702.3	1.12	1.11	-0.11
13,381.0	92.80	91.20	6,873.4	-209.6	6,790.1	6,792.3	2.59	2.22	1.33
13,471.0	92.00	91.20	6,869.6	-211.5	6,880.0	6,882.2	0.89	-0.89	0.00
13,561.0	89.30	89.40	6,868.6	-211.9	6,969.9	6,972.2	3.61	-3.00	-2.00
13,650.0	88.50	87.90	6,870.3	-209.8	7,058.9	7,061.1	1.91	-0.90	-1.69
13,740.0	89.10	86.60	6,872.2	-205.5	7,148.8	7,150.9	1.59	0.67	-1.44
13,830.0	90.60	87.30	6,872.4	-200.7	7,238.6	7,240.7	1.84	1.67	0.78
13,920.0	91.50	86.80	6,870.8	-196.1	7,328.5	7,330.5	1.14	1.00	-0.56
14,010.0	90.00	87.30	6,869.6	-191.5	7,418.4	7,420.3	1.76	-1.67	0.56
14,100.0	89.80	87.10	6,869.7	-187.1	7,508.3	7,510.1	0.31	-0.22	-0.22
14,189.0	89.80	88.70	6,870.0	-183.8	7,597.2	7,599.0	1.80	0.00	1.80
14,279.0	90.40	87.30	6,869.9	-180.7	7,687.1	7,688.9	1.69	0.67	-1.56
14,369.0	90.40	88.90	6,869.3	-177.7	7,777.1	7,778.8	1.78	0.00	1.78
14,459.0	89.80	90.30	6,869.1	-177.1	7,867.1	7,868.8	1.69	-0.67	1.56
14,549.0	90.90	89.40	6,868.6	-176.8	7,957.1	7,958.7	1.58	1.22	-1.00
14,639.0	91.20	88.20	6,866.9	-174.9	8,047.0	8,048.7	1.37	0.33	-1.33
14,729.0	90.70	90.50	6,865.4	-173.9	8,137.0	8,138.6	2.61	-0.56	2.56
14,819.0	92.00	89.30	6,863.3	-173.8	8,227.0	8,228.6	1.97	1.44	-1.33
14,909.0	89.80	91.20	6,861.9	-174.2	8,317.0	8,318.6	3.23	-2.44	2.11

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Shable USX PC AB11-62-1HNL
Project:	Sec.11-T7N-R64W	TVD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Site:	Shable AB11 Pad Sec.11-T7N-R64W	MD Reference:	WELL @ 4834.0ft (Precision 828 RKB - 16')
Well:	Shable USX PC AB11-62-1HNL	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)
14,998.0	89.60	89.80	6,862.3	-174.9	8,406.0	8,407.6	1.59	-0.22	-1.57
15,088.0	88.60	89.80	6,863.8	-174.6	8,495.9	8,497.5	1.11	-1.11	0.00
15,178.0	90.00	88.40	6,864.9	-173.2	8,585.9	8,587.5	2.20	1.56	-1.56
15,268.0	91.30	86.40	6,863.8	-169.1	8,675.8	8,677.3	2.65	1.44	-2.22
15,358.0	89.30	87.90	6,863.4	-164.7	8,765.7	8,767.1	2.78	-2.22	1.67
15,446.0	90.10	88.60	6,863.8	-162.0	8,853.7	8,855.0	1.21	0.91	0.80
15,536.0	88.20	85.90	6,865.2	-157.6	8,943.5	8,944.8	3.67	-2.11	-3.00
15,626.0	90.30	88.00	6,866.3	-152.9	9,033.4	9,034.6	3.30	2.33	2.33
15,716.0	90.70	88.70	6,865.6	-150.3	9,123.3	9,124.5	0.90	0.44	0.78
15,805.0	90.50	90.00	6,864.6	-149.3	9,212.3	9,213.5	1.48	-0.22	1.46
15,895.0	90.20	88.70	6,864.1	-148.2	9,302.3	9,303.5	1.48	-0.33	-1.44
15,985.0	90.40	89.40	6,863.6	-146.7	9,392.3	9,393.4	0.81	0.22	0.78
16,075.0	90.30	89.10	6,863.1	-145.6	9,482.3	9,483.4	0.35	-0.11	-0.33
16,165.0	90.90	88.60	6,862.1	-143.8	9,572.3	9,573.3	0.87	0.67	-0.56
16,254.0	90.50	87.00	6,861.0	-140.3	9,661.2	9,662.2	1.85	-0.45	-1.80
16,353.0	91.90	87.90	6,859.0	-135.9	9,760.1	9,761.0	1.68	1.41	0.91
16,405.8	91.90	87.90	6,857.2	-134.0	9,812.8	9,813.7	0.00	0.00	0.00
Shable USX PC AB11-62-1HNL BHL 330°FSL, 535°FEL									
16,406.0	91.90	87.90	6,857.2	-134.0	9,813.0	9,813.9	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Shable USX PC AB11	0.00	0.00	6,857.7	-141.6	9,813.1	1,456,301.63	3,280,572.14	40.581560	-104.489870
- survey misses target center by 7.6ft at 16405.8ft MD (6857.2 TVD, -134.0 N, 9812.8 E)									
- Circle (radius 35.0)									
Shable USX PC AB11	0.00	0.00	6,889.2	-314.8	793.3	1,456,128.39	3,271,552.62	40.581362	-104.522347
- survey misses target center by 5.4ft at 7380.7ft MD (6887.8 TVD, -309.6 N, 793.0 E)									
- Circle (radius 35.0)									

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_