

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

Well Name: **Timbro LC13-76HN**

Surface Location: Timbro LC13-75HN Pad Sec.24-T9N-R59W

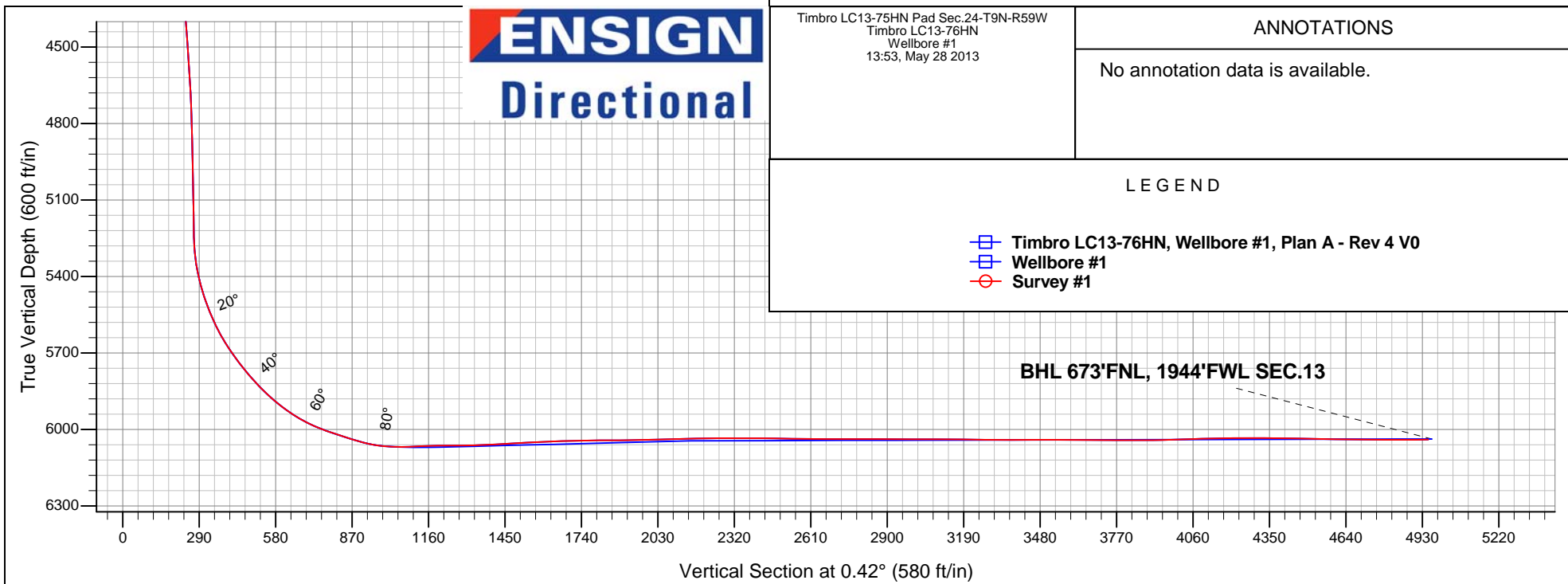
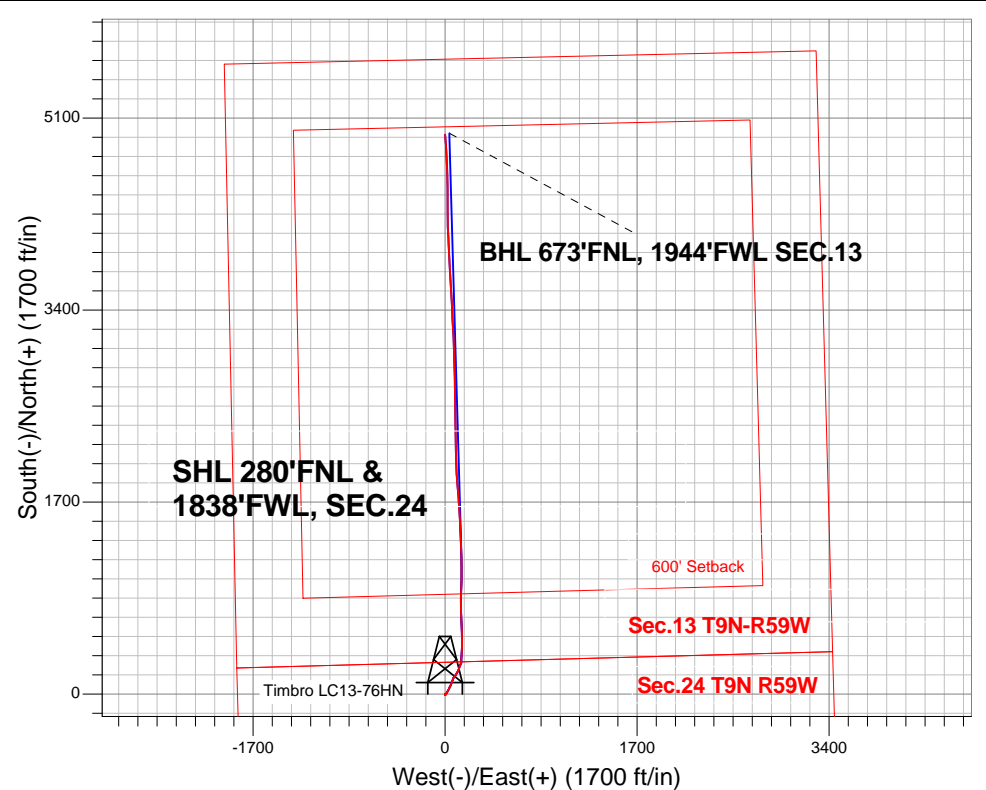
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4860.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1517323.14	3435253.94	40.742858	-103.929181	
H&P 273 RKB - 24' WELL @ 4884.0ft (H&P 273 RKB - 24')						

FINAL SURVEY

Projected Bottom Hole Location
10420'MD 6039'TVD 4952'N & 1'E
of SHL 90.50 degree Incl @
356.10 degree AZM





Directional

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

SEC.24-T9N-59W

Timbro LC13-75HN Pad Sec.24-T9N-R59W

Timbro LC13-76HN

Wellbore #1

Survey: Survey #1

Standard Survey Report

28 May, 2013

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Timbro LC13-76HN
Project:	SEC.24-T9N-59W	TVD Reference:	WELL @ 4884.0ft (H&P 273 RKB - 24')
Site:	Timbro LC13-75HN Pad Sec.24-T9N-R59W	MD Reference:	WELL @ 4884.0ft (H&P 273 RKB - 24')
Well:	Timbro LC13-76HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.24-T9N-59W, 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		Timbro LC13-75HN Pad Sec.24-T9N-R59W			
Site Position:		Northing:	1,517,321.57 ft	Latitude:	40.742850
From:	Lat/Long	Easting:	3,435,329.07 ft	Longitude:	-103.928910
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	1.02 °

Well	Timbro LC13-76HN					
Well Position	+N/-S	0.0 ft	Northing:	1,517,323.14 ft	Latitude:	40.742858
	+E/-W	0.0 ft	Easting:	3,435,253.94 ft	Longitude:	-103.929181
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,860.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/22/2013	8.17	67.39	53,191

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	0.42	

Survey Program		Date		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
724.0	10,420.0	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
	724.0	0.40	141.50	724.0	-2.0	1.6	-2.0	0.06	0.06	0.00
	1,003.0	0.30	154.30	1,003.0	-3.4	2.5	-3.4	0.05	-0.04	4.59
	1,282.0	0.40	205.80	1,282.0	-4.9	2.4	-4.9	0.11	0.04	18.46
	1,563.0	0.60	222.30	1,563.0	-6.9	1.0	-6.9	0.09	0.07	5.87
	1,848.0	0.90	20.40	1,848.0	-5.9	0.7	-5.9	0.52	0.11	55.47
	2,037.0	0.50	189.30	2,037.0	-5.3	1.1	-5.3	0.74	-0.21	89.37
	2,132.0	1.90	55.50	2,131.9	-4.8	2.4	-4.8	2.39	1.47	-140.84
	2,227.0	5.10	36.90	2,226.8	-0.6	6.2	-0.5	3.53	3.37	-19.58
	2,322.0	6.90	34.90	2,321.2	7.5	12.0	7.6	1.91	1.89	-2.11
	2,417.0	6.30	32.80	2,415.6	16.5	18.1	16.7	0.68	-0.63	-2.21
	2,512.0	7.90	30.00	2,509.9	26.6	24.2	26.8	1.72	1.68	-2.95

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Timbro LC13-76HN
Project:	SEC.24-T9N-59W	TVD Reference:	WELL @ 4884.0ft (H&P 273 RKB - 24')
Site:	Timbro LC13-75HN Pad Sec.24-T9N-R59W	MD Reference:	WELL @ 4884.0ft (H&P 273 RKB - 24')
Well:	Timbro LC13-76HN	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)
2,607.0	8.00	24.40	2,604.0	38.2	30.2	38.5	0.82	0.11	-5.89
2,702.0	7.60	18.80	2,698.1	50.2	34.9	50.5	0.90	-0.42	-5.89
2,796.0	9.80	27.70	2,791.0	63.2	40.6	63.5	2.74	2.34	9.47
2,891.0	9.00	25.40	2,884.7	77.1	47.6	77.4	0.93	-0.84	-2.42
2,986.0	8.30	23.30	2,978.6	90.1	53.5	90.5	0.81	-0.74	-2.21
3,081.0	6.70	14.00	3,072.8	101.7	57.5	102.2	2.11	-1.68	-9.79
3,176.0	7.00	26.10	3,167.2	112.3	61.4	112.8	1.55	0.32	12.74
3,271.0	6.50	21.20	3,261.5	122.5	65.9	123.0	0.80	-0.53	-5.16
3,366.0	7.30	18.20	3,355.8	133.3	69.8	133.8	0.92	0.84	-3.16
3,460.0	7.70	35.60	3,449.0	144.1	75.3	144.6	2.44	0.43	18.51
3,555.0	7.70	35.80	3,543.2	154.4	82.7	155.0	0.03	0.00	0.21
3,650.0	8.10	36.00	3,637.3	165.0	90.4	165.7	0.42	0.42	0.21
3,745.0	7.90	34.10	3,731.3	175.8	98.0	176.5	0.35	-0.21	-2.00
3,840.0	7.50	32.80	3,825.5	186.4	105.0	187.2	0.46	-0.42	-1.37
3,935.0	6.90	29.70	3,919.7	196.6	111.2	197.4	0.75	-0.63	-3.26
4,030.0	6.30	19.80	4,014.1	206.5	115.8	207.3	1.35	-0.63	-10.42
4,125.0	5.60	18.60	4,108.6	215.8	119.0	216.6	0.75	-0.74	-1.26
4,220.0	4.90	15.80	4,203.2	224.1	121.6	224.9	0.78	-0.74	-2.95
4,315.0	4.00	11.40	4,297.9	231.2	123.4	232.1	1.01	-0.95	-4.63
4,410.0	4.90	31.80	4,392.6	237.9	126.1	238.8	1.90	0.95	21.47
4,505.0	3.80	22.80	4,487.3	244.3	129.5	245.2	1.36	-1.16	-9.47
4,599.0	4.20	23.90	4,581.1	250.3	132.1	251.2	0.43	0.43	1.17
4,694.0	2.90	6.10	4,675.9	255.8	133.8	256.8	1.78	-1.37	-18.74
4,789.0	1.80	351.20	4,770.9	259.7	133.8	260.7	1.32	-1.16	-15.68
4,884.0	1.30	26.00	4,865.8	262.1	134.0	263.1	1.10	-0.53	36.63
4,979.0	1.50	38.80	4,960.8	264.1	135.3	265.1	0.39	0.21	13.47
5,074.0	1.60	50.90	5,055.8	265.9	137.1	266.9	0.36	0.11	12.74
5,169.0	1.30	58.30	5,150.7	267.3	139.0	268.3	0.37	-0.32	7.79
5,264.0	1.50	35.50	5,245.7	268.9	140.7	269.9	0.62	0.21	-24.00
5,358.0	7.50	4.20	5,339.4	276.0	141.9	277.0	6.67	6.38	-33.30
5,453.0	14.80	3.80	5,432.5	294.3	143.1	295.4	7.68	7.68	-0.42
5,548.0	20.30	3.10	5,523.1	322.9	144.8	324.0	5.79	5.79	-0.74
5,643.0	26.60	2.20	5,610.2	360.6	146.5	361.7	6.64	6.63	-0.95
5,738.0	33.40	0.70	5,692.4	408.1	147.7	409.2	7.20	7.16	-1.58
5,832.0	38.50	1.40	5,768.5	463.3	148.7	464.3	5.44	5.43	0.74
5,927.0	43.60	358.40	5,840.1	525.6	148.5	526.7	5.75	5.37	-3.16
6,022.0	50.70	357.70	5,904.7	595.2	146.1	596.2	7.49	7.47	-0.74
6,117.0	59.60	357.70	5,958.9	673.0	143.0	674.0	9.37	9.37	0.00
6,164.0	64.10	358.40	5,981.1	714.4	141.6	715.4	9.66	9.57	1.49
6,211.0	68.60	359.20	5,999.9	757.4	140.7	758.4	9.70	9.57	1.70
6,258.0	71.60	359.10	6,015.9	801.6	140.0	802.6	6.39	6.38	-0.21
6,306.0	71.80	0.30	6,031.0	847.2	139.8	848.2	2.41	0.42	2.50
6,354.0	72.30	1.40	6,045.8	892.8	140.5	893.9	2.42	1.04	2.29
6,401.0	78.10	2.10	6,057.8	938.2	141.8	939.3	12.42	12.34	1.49
6,432.0	83.10	2.60	6,062.8	968.8	143.1	969.8	16.21	16.13	1.61
6,532.9	91.09	0.12	6,067.9	1,069.4	145.5	1,070.5	8.30	7.92	-2.46
Timbro LC13-76HN Landing Pt.									
6,562.0	93.40	359.40	6,066.8	1,098.5	145.4	1,099.6	8.30	7.92	-2.46
6,656.0	90.70	358.50	6,063.4	1,192.4	143.6	1,193.5	3.03	-2.87	-0.96
6,751.0	90.20	357.70	6,062.7	1,287.4	140.5	1,288.4	0.99	-0.53	-0.84
6,846.0	93.20	358.00	6,059.9	1,382.3	136.9	1,383.2	3.17	3.16	0.32
6,941.0	93.10	357.30	6,054.7	1,477.0	133.0	1,478.0	0.74	-0.11	-0.74
7,036.0	93.10	357.10	6,049.5	1,571.8	128.4	1,572.7	0.21	0.00	-0.21

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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)
7,130.0	91.70	356.80	6,045.6	1,665.6	123.4	1,666.4	1.52	-1.49	-0.32
7,225.0	91.10	354.90	6,043.3	1,760.3	116.5	1,761.1	2.10	-0.63	-2.00
7,320.0	90.00	354.90	6,042.3	1,854.9	108.1	1,855.6	1.16	-1.16	0.00
7,415.0	91.20	357.10	6,041.4	1,949.7	101.5	1,950.3	2.64	1.26	2.32
7,510.0	91.60	358.00	6,039.0	2,044.5	97.4	2,045.2	1.04	0.42	0.95
7,605.0	91.80	358.90	6,036.2	2,139.5	94.8	2,140.1	0.97	0.21	0.95
7,700.0	90.70	0.10	6,034.1	2,234.4	94.0	2,235.1	1.71	-1.16	1.26
7,795.0	89.50	359.10	6,034.0	2,329.4	93.3	2,330.0	1.64	-1.26	-1.05
7,890.0	90.10	358.40	6,034.3	2,424.4	91.3	2,425.0	0.97	0.63	-0.74
7,984.0	88.50	359.20	6,035.5	2,518.4	89.3	2,519.0	1.90	-1.70	0.85
8,079.0	89.30	359.40	6,037.3	2,613.3	88.1	2,613.9	0.87	0.84	0.21
8,174.0	90.00	358.90	6,037.9	2,708.3	86.7	2,708.9	0.91	0.74	-0.53
8,269.0	90.50	358.90	6,037.4	2,803.3	84.9	2,803.9	0.53	0.53	0.00
8,363.0	89.30	357.70	6,037.6	2,897.3	82.1	2,897.8	1.81	-1.28	-1.28
8,458.0	89.90	359.40	6,038.3	2,992.2	79.7	2,992.7	1.90	0.63	1.79
8,553.0	90.00	358.20	6,038.4	3,087.2	77.7	3,087.7	1.27	0.11	-1.26
8,648.0	89.40	356.60	6,038.9	3,182.1	73.4	3,182.6	1.80	-0.63	-1.68
8,743.0	89.30	356.60	6,039.9	3,276.9	67.8	3,277.3	0.11	-0.11	0.00
8,837.0	90.00	357.70	6,040.5	3,370.8	63.1	3,371.2	1.39	0.74	1.17
8,932.0	90.00	357.50	6,040.5	3,465.7	59.1	3,466.1	0.21	0.00	-0.21
9,027.0	90.20	356.30	6,040.3	3,560.6	54.0	3,560.9	1.28	0.21	-1.26
9,122.0	89.20	356.30	6,040.8	3,655.4	47.9	3,655.6	1.05	-1.05	0.00
9,217.0	89.40	357.10	6,042.0	3,750.2	42.4	3,750.4	0.87	0.21	0.84
9,312.0	90.20	356.40	6,042.3	3,845.1	37.0	3,845.2	1.12	0.84	-0.74
9,407.0	91.40	358.20	6,041.0	3,939.9	32.5	3,940.1	2.28	1.26	1.89
9,501.0	91.80	357.10	6,038.4	4,033.8	28.7	4,033.9	1.24	0.43	-1.17
9,596.0	91.80	357.80	6,035.4	4,128.7	24.5	4,128.8	0.74	0.00	0.74
9,691.0	90.30	359.80	6,033.7	4,223.6	22.5	4,223.7	2.63	-1.58	2.11
9,786.0	89.60	359.60	6,033.7	4,318.6	22.0	4,318.7	0.77	-0.74	-0.21
9,880.0	89.00	359.60	6,034.9	4,412.6	21.3	4,412.7	0.64	-0.64	0.00
9,975.0	88.90	359.40	6,036.6	4,507.6	20.5	4,507.6	0.24	-0.11	-0.21
10,070.0	89.00	358.50	6,038.4	4,602.6	18.7	4,602.6	0.95	0.11	-0.95
10,165.0	89.40	357.30	6,039.7	4,697.5	15.3	4,697.5	1.33	0.42	-1.26
10,260.0	89.90	357.10	6,040.3	4,792.4	10.6	4,792.3	0.57	0.53	-0.21
10,370.0	90.50	356.10	6,039.9	4,902.2	4.1	4,902.1	1.06	0.55	-0.91
10,420.0	90.50	356.10	6,039.5	4,952.1	0.7	4,951.9	0.00	0.00	0.00
Timbro LC13-76HN BHL 660'FNL & 1980'FWL									

Checked By: _____ Approved By: _____ Date: _____