

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

Well Name: **Jessica LC27-785**

Surface Location: Jessica LC34-04-A Pad Sec.34-T9N-R59W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

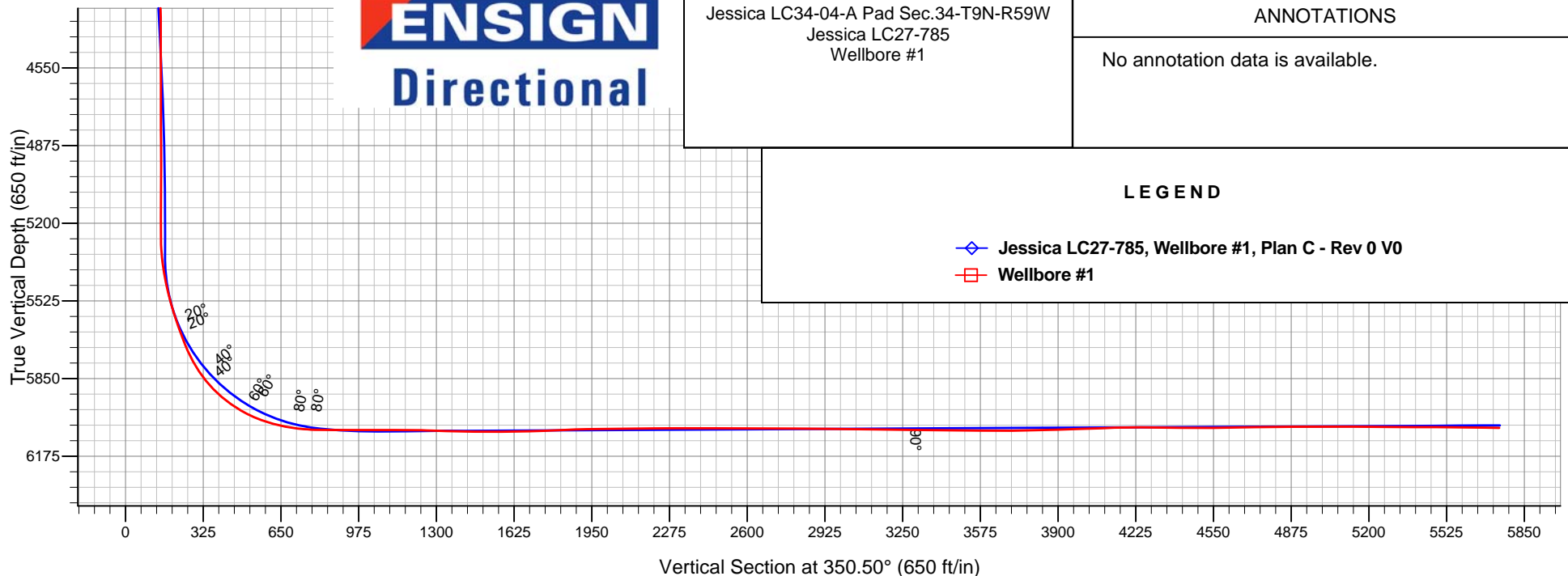
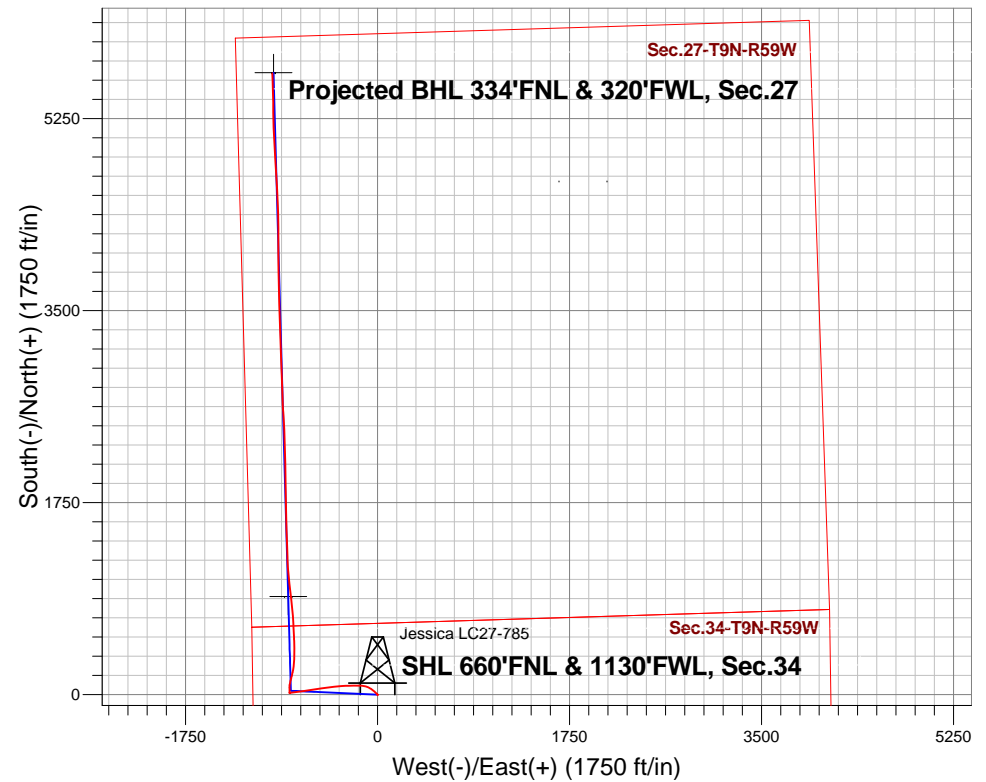
Ground Elevation: 4829.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1506019.70	3424366.42	40.712360	-103.969170	
H&P 326 RKB -30' WELL @ 4859.0ft (H&P 326 RKB -30')						

FINAL SURVEY

Projected Bottom Hole Location
11520'MD 6057'TVD 5664'N & 959'W of SHL
89.0 degree Incl @ 358.1 degree AZM

05-123-40642





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

SEC.34-T9N-R59W

Jessica LC34-04-A Pad Sec.34-T9N-R59W

Jessica LC27-785

Wellbore #1

Design: Wellbore #1

Final Survey

10 April, 2015

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Jessica LC27-785
Project:	SEC.34-T9N-R59W	TVD Reference:	WELL @ 4859.0ft (H&P 326 RKB -30')
Site:	Jessica LC34-04-A Pad Sec.34-T9N-R59W	MD Reference:	WELL @ 4859.0ft (H&P 326 RKB -30')
Well:	Jessica LC27-785	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	landmark

Project	SEC.34-T9N-R59W, 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	Jessica LC34-04-A Pad Sec.34-T9N-R59W				
Site Position:		Northing:	1,506,020.39ft	Latitude:	40.712360
From:	Lat/Long	Easting:	3,424,405.22ft	Longitude:	-103.969030
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.99 °

Well	Jessica LC27-785					
Well Position	+N/-S	0.0 ft	Northing:	1,506,019.70 ft	Latitude:	40.712360
	+E/-W	0.0 ft	Easting:	3,424,366.42 ft	Longitude:	-103.969170
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,829.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/24/2015	7.94	67.29	52,976

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	350.50	

Survey Program	Date	4/10/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
267.0	600.0	Surface (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
730.0	6,478.0	Intermediate (Wellbore #1)	MWD	MWD - Standard	
6,554.0	11,520.0	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	
267.0	0.60	184.95	267.0	-1.4	-0.1	-1.4	0.22	
600.0	0.00	106.15	600.0	-3.1	-0.3	-3.0	0.18	
730.0	0.30	220.30	730.0	-3.4	-0.5	-3.3	0.23	
914.0	0.10	95.50	914.0	-3.8	-0.6	-3.6	0.20	
1,100.0	1.00	65.80	1,100.0	-3.1	1.0	-3.2	0.49	
1,299.0	6.70	318.40	1,298.5	6.3	-5.1	7.0	3.55	
1,483.0	13.80	308.20	1,479.5	27.9	-29.5	32.4	3.97	
1,575.0	15.20	310.80	1,568.6	42.6	-47.3	49.8	1.68	
1,667.0	15.90	301.30	1,657.2	57.0	-67.2	67.3	2.87	

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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Jessica LC27-785
TVD Reference: WELL @ 4859.0ft (H&P 326 RKB -30')
MD Reference: WELL @ 4859.0ft (H&P 326 RKB -30')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: landmark

Survey							
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
1,761.0	16.00	293.50	1,747.6	68.9	-90.1	82.8	2.28
1,853.0	16.00	283.80	1,836.1	76.9	-114.0	94.7	2.90
1,946.0	16.50	277.90	1,925.3	81.8	-139.6	103.7	1.85
2,038.0	16.40	268.30	2,013.6	83.2	-165.5	109.4	2.95
2,131.0	15.90	269.10	2,102.9	82.6	-191.3	113.1	0.59
2,223.0	15.70	270.00	2,191.4	82.4	-216.4	117.0	0.34
2,316.0	15.40	269.30	2,281.0	82.3	-241.3	121.0	0.38
2,409.0	15.00	267.20	2,370.8	81.6	-265.7	124.3	0.73
2,502.0	14.60	266.80	2,460.7	80.3	-289.4	127.0	0.44
2,595.0	14.50	265.90	2,550.7	78.8	-312.7	129.4	0.27
2,687.0	14.50	264.80	2,639.8	77.0	-335.7	131.3	0.30
2,779.0	14.30	264.30	2,728.9	74.8	-358.5	132.9	0.26
2,874.0	13.80	264.00	2,821.1	72.4	-381.4	134.4	0.53
2,968.0	13.30	263.50	2,912.4	70.0	-403.3	135.7	0.55
3,063.0	14.40	265.40	3,004.7	67.9	-425.9	137.2	1.25
3,158.0	13.20	262.20	3,096.9	65.4	-448.5	138.6	1.50
3,252.0	14.00	263.90	3,188.3	62.8	-470.4	139.6	0.95
3,347.0	13.60	263.90	3,280.6	60.4	-492.9	140.9	0.42
3,441.0	13.50	261.70	3,371.9	57.6	-514.8	141.8	0.56
3,536.0	13.50	261.70	3,464.3	54.4	-536.7	142.3	0.00
3,631.0	13.50	261.70	3,556.7	51.2	-558.7	142.7	0.00
3,725.0	13.90	260.80	3,648.0	47.8	-580.7	143.0	0.48
3,820.0	13.50	259.90	3,740.3	44.0	-602.8	143.0	0.48
3,914.0	13.10	258.30	3,831.8	40.0	-624.1	142.5	0.58
4,009.0	13.90	261.20	3,924.2	36.0	-645.9	142.2	1.10
4,103.0	13.10	263.30	4,015.6	33.1	-667.6	142.8	1.00
4,197.0	12.40	263.90	4,107.3	30.7	-688.3	144.0	0.76
4,292.0	12.00	263.70	4,200.1	28.6	-708.2	145.1	0.42
4,387.0	11.90	263.90	4,293.1	26.5	-727.8	146.2	0.11
4,482.0	10.50	261.10	4,386.2	24.1	-746.1	146.9	1.58
4,576.0	8.00	260.20	4,479.0	21.6	-761.0	147.0	2.66
4,671.0	7.70	263.90	4,573.1	19.8	-773.8	147.3	0.62
4,765.0	5.90	255.80	4,666.5	18.0	-784.8	147.3	2.17
4,859.0	4.10	267.50	4,760.1	16.6	-792.8	147.3	2.19
4,953.0	2.20	272.30	4,854.0	16.6	-798.0	148.1	2.04
5,048.0	0.50	270.90	4,948.9	16.6	-800.2	148.5	1.79
5,143.0	0.40	215.50	5,043.9	16.4	-800.8	148.4	0.45
5,237.0	0.60	211.60	5,137.9	15.7	-801.3	147.8	0.22
5,332.0	0.30	144.40	5,232.9	15.1	-801.4	147.2	0.59
5,426.0	4.60	0.40	5,326.8	18.6	-801.2	150.7	5.16
5,520.0	10.50	0.20	5,420.0	31.0	-801.1	162.8	6.28
5,615.0	14.90	355.80	5,512.6	51.8	-802.0	183.5	4.74
5,709.0	19.00	3.70	5,602.5	79.2	-801.9	210.5	4.99
5,804.0	22.50	13.40	5,691.4	112.3	-796.7	242.3	5.15
5,899.0	30.60	15.10	5,776.3	153.4	-786.2	281.1	8.56

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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Jessica LC27-785
TVD Reference: WELL @ 4859.0ft (H&P 326 RKB -30')
MD Reference: WELL @ 4859.0ft (H&P 326 RKB -30')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: landmark

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,993.0	39.90	11.50	5,853.0	206.2	-773.9	331.1	10.13
6,088.0	49.80	6.70	5,920.3	272.2	-763.6	394.6	11.01
6,182.0	58.30	1.40	5,975.4	348.0	-758.4	468.5	10.12
6,276.0	68.70	358.80	6,017.3	432.0	-758.3	551.3	11.34
6,371.0	77.00	357.40	6,045.3	522.7	-761.3	641.2	8.85
6,478.0	85.40	357.30	6,061.7	628.2	-766.2	746.1	7.85
6,554.0	89.70	355.30	6,064.9	704.0	-771.1	821.6	6.24
6,647.0	89.90	354.30	6,065.2	796.6	-779.6	914.4	1.10
6,739.0	89.80	353.50	6,065.5	888.1	-789.3	1,006.2	0.88
6,749.2	89.80	353.54	6,065.5	898.2	-790.5	1,016.3	0.43
Jessica LC27-785 Landing Pt.							
6,832.0	89.80	353.90	6,065.8	980.5	-799.5	1,099.1	0.43
6,925.0	90.10	353.90	6,065.9	1,073.0	-809.4	1,191.9	0.32
7,017.0	87.90	356.00	6,067.5	1,164.6	-817.5	1,283.6	3.31
7,110.0	88.10	359.00	6,070.7	1,257.4	-821.6	1,375.8	3.23
7,203.0	90.00	358.50	6,072.3	1,350.4	-823.6	1,467.9	2.11
7,296.0	89.80	357.40	6,072.4	1,443.3	-826.9	1,560.1	1.20
7,389.0	91.20	358.10	6,071.6	1,536.3	-830.6	1,652.3	1.68
7,482.0	92.20	358.70	6,068.9	1,629.2	-833.2	1,744.4	1.25
7,574.0	92.90	359.40	6,064.8	1,721.1	-834.7	1,835.3	1.08
7,668.0	90.90	359.40	6,061.7	1,815.0	-835.7	1,928.1	2.13
7,763.0	90.20	358.10	6,060.7	1,910.0	-837.8	2,022.1	1.55
7,952.0	91.00	359.60	6,058.8	2,098.9	-841.6	2,209.1	0.90
8,046.0	90.40	359.10	6,057.6	2,192.9	-842.6	2,301.9	0.83
8,141.0	89.60	358.00	6,057.6	2,287.9	-845.0	2,396.0	1.43
8,235.0	89.80	357.40	6,058.1	2,381.8	-848.8	2,489.3	0.67
8,330.0	89.70	356.80	6,058.5	2,476.7	-853.6	2,583.6	0.64
8,424.0	89.60	356.10	6,059.1	2,570.5	-859.4	2,677.1	0.75
8,519.0	90.20	357.50	6,059.3	2,665.3	-864.7	2,771.5	1.60
8,614.0	89.40	358.80	6,059.6	2,760.3	-867.8	2,865.7	1.61
8,708.0	89.10	358.20	6,060.8	2,854.3	-870.3	2,958.8	0.71
8,803.0	89.50	358.20	6,062.0	2,949.2	-873.2	3,052.9	0.42
8,897.0	89.40	357.20	6,062.9	3,043.1	-877.0	3,146.2	1.07
8,992.0	89.00	356.30	6,064.2	3,138.0	-882.4	3,240.6	1.04
9,086.0	89.10	357.90	6,065.8	3,231.8	-887.1	3,333.9	1.71
9,180.0	89.80	358.80	6,066.7	3,325.8	-889.9	3,427.1	1.21
9,275.0	89.80	359.30	6,067.0	3,420.8	-891.4	3,521.0	0.53
9,369.0	88.90	358.40	6,068.1	3,514.7	-893.3	3,614.0	1.35
9,464.0	90.90	358.20	6,068.2	3,609.7	-896.1	3,708.1	2.12
9,558.0	91.60	358.70	6,066.2	3,703.6	-898.7	3,801.2	0.92
9,653.0	91.70	357.70	6,063.5	3,798.5	-901.7	3,895.3	1.06
9,747.0	91.50	359.10	6,060.8	3,892.5	-904.3	3,988.3	1.50
9,841.0	92.30	359.60	6,057.7	3,986.4	-905.3	4,081.2	1.00
9,935.0	91.40	0.90	6,054.7	4,080.4	-904.9	4,173.8	1.68

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Jessica LC27-785
Project:	SEC.34-T9N-R59W	TVD Reference:	WELL @ 4859.0ft (H&P 326 RKB -30')
Site:	Jessica LC34-04-A Pad Sec.34-T9N-R59W	MD Reference:	WELL @ 4859.0ft (H&P 326 RKB -30')
Well:	Jessica LC27-785	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)
10,029.0	89.50	0.00	6,053.9	4,174.3	-904.2	4,266.3	2.24
10,124.0	89.10	359.30	6,055.1	4,269.3	-904.8	4,360.1	0.85
10,219.0	89.10	358.70	6,056.6	4,364.3	-906.4	4,454.1	0.63
10,313.0	91.10	358.50	6,056.4	4,458.3	-908.7	4,547.1	2.14
10,407.0	90.90	357.20	6,054.8	4,552.2	-912.3	4,640.3	1.40
10,502.0	90.60	356.10	6,053.5	4,647.0	-917.8	4,734.8	1.20
10,596.0	90.50	355.90	6,052.6	4,740.8	-924.4	4,828.3	0.24
10,690.0	91.30	356.80	6,051.2	4,834.6	-930.3	4,921.8	1.28
10,784.0	89.50	356.70	6,050.5	4,928.4	-935.7	5,015.3	1.92
10,879.0	89.50	357.40	6,051.3	5,023.3	-940.6	5,109.6	0.74
10,973.0	89.40	357.20	6,052.2	5,117.2	-945.0	5,203.0	0.24
11,067.0	89.70	359.20	6,053.0	5,211.1	-947.9	5,296.1	2.15
11,162.0	89.90	359.10	6,053.3	5,306.1	-949.4	5,390.0	0.24
11,256.0	90.00	359.00	6,053.4	5,400.1	-950.9	5,483.0	0.15
11,350.0	89.40	358.30	6,053.9	5,494.1	-953.1	5,576.0	0.98
11,460.0	89.00	358.10	6,055.4	5,604.0	-956.6	5,685.0	0.41
11,520.0	89.00	358.10	6,056.5	5,664.0	-958.6	5,744.5	0.00
Jessica LC27-785 BHL 330'FNL & 330'FWL							

Checked By: _____	Approved By: _____	Date: _____
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