

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

Well Name: **Fiscus Federal LD15-77-1HN**

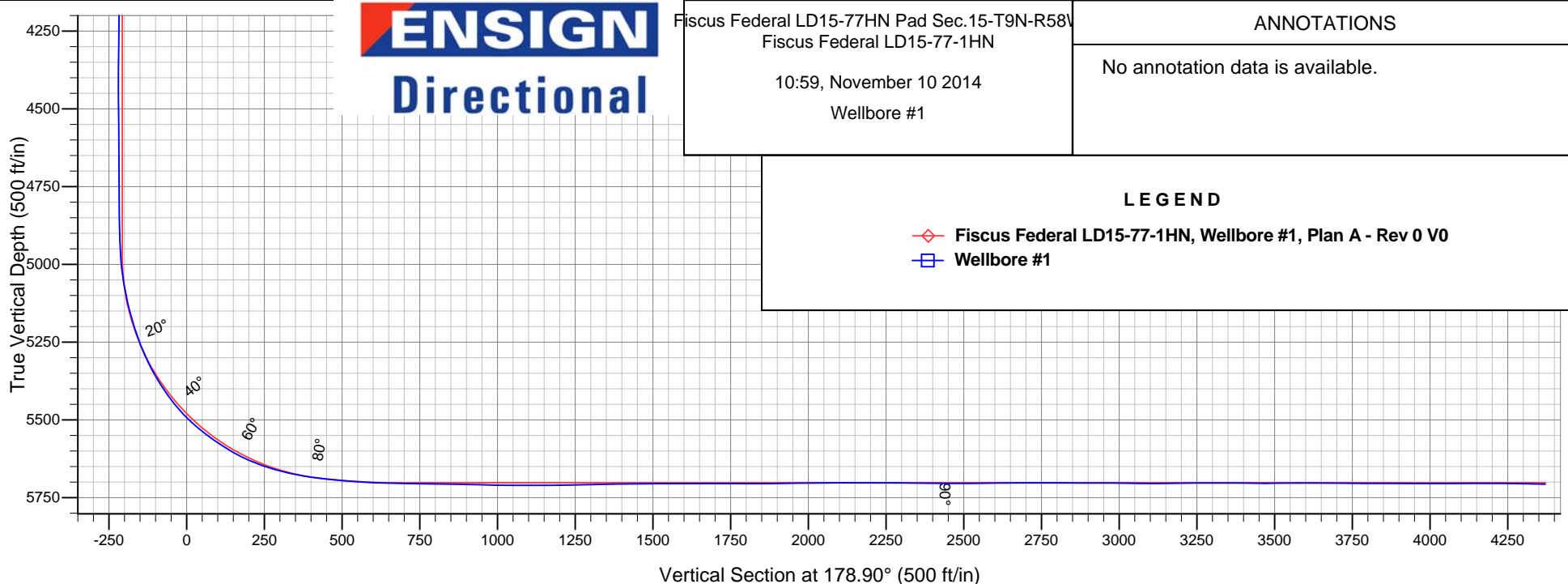
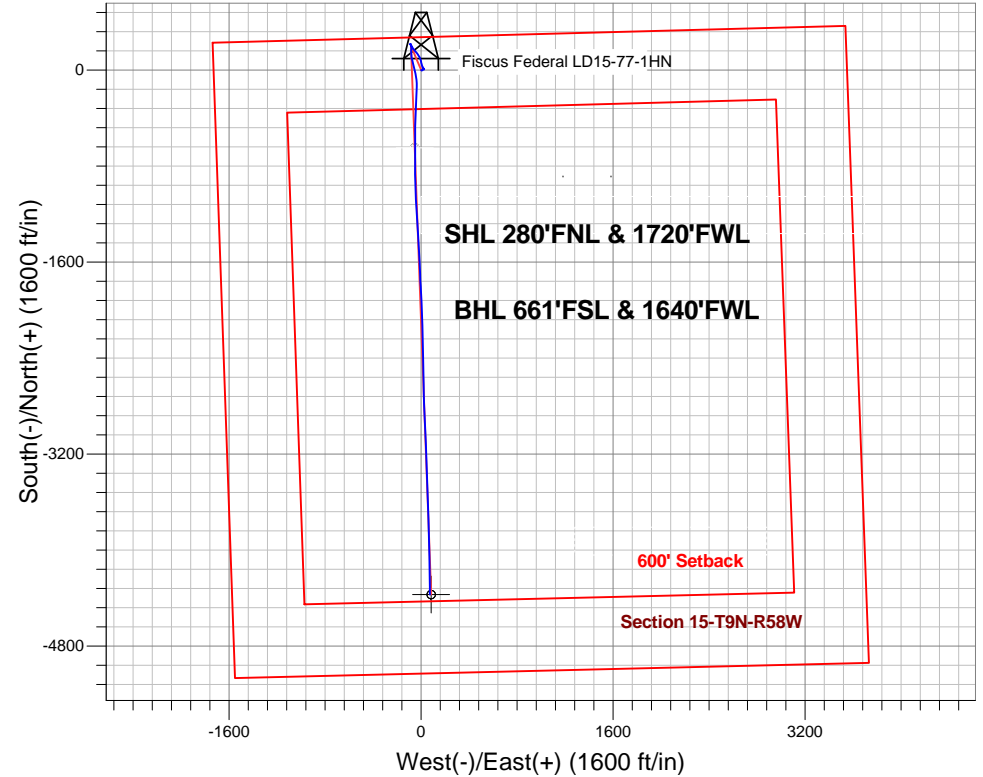
Surface Location: Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4701.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1523167.66	3456084.33	40.757860	-103.853630	
Precision 828 RKB - 16' WELL @ 4717.0ft (Precision 828 RKB - 16')						

FINAL SURVEY

Projected Bottom Hole Location
9990'MD 5707'TVD 4370'S & 74'E of SHL 88.7
degree Incl @ 179.3 degree AZM





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

Sec.15-T9N-R58W

Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58W

Fiscus Federal LD15-77-1HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

10 November, 2014

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Fiscus Federal LD15-77-1HN
Project:	Sec.15-T9N-R58W	TVD Reference:	WELL @ 4717.0ft (Precision 828 RKB - 16')
Site:	Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58W	MD Reference:	WELL @ 4717.0ft (Precision 828 RKB - 16')
Well:	Fiscus Federal LD15-77-1HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.15-T9N-R58W, 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		Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58W			
Site Position:		Northing:	1,523,163.30ft	Latitude:	40.757850
From:	Lat/Long	Easting:	3,456,045.62ft	Longitude:	-103.853770
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	1.06 °

Well	Fiscus Federal LD15-77-1HN					
Well Position	+N-S	0.0 ft	Northing:	1,523,167.66 ft	Latitude:	40.757860
	+E-W	0.0 ft	Easting:	3,456,084.33 ft	Longitude:	-103.853630
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,701.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/31/2014	7.93	67.36	53,054

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	178.90	

Survey Program	Date	11/10/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	917.0	Survey #1 (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
1,224.0	6,016.0	Survey #2 (Wellbore #1)	MWD	MWD - Standard	
6,100.0	9,990.0	Survey #3 (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	
300.0	0.00	240.27	300.0	0.0	0.0	0.0	0.00	0.00	0.00	
600.0	1.60	144.67	600.0	-3.4	2.4	3.5	0.53	0.53	0.00	
917.0	1.60	38.27	916.9	-3.6	7.7	3.7	0.81	0.00	-33.56	
1,224.0	2.90	68.10	1,223.7	2.7	17.6	-2.4	0.56	0.42	9.72	
1,318.0	1.60	62.70	1,317.6	4.2	21.0	-3.8	1.40	-1.38	-5.74	
1,413.0	1.60	67.20	1,412.5	5.3	23.4	-4.9	0.13	0.00	4.74	
1,507.0	1.20	23.80	1,506.5	6.7	25.0	-6.2	1.17	-0.43	-46.17	
1,600.0	1.80	323.80	1,599.5	8.8	24.5	-8.3	1.71	0.65	-64.52	

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Project:	Sec.15-T9N-R58W	TVD Reference:	WELL @ 4717.0ft (Precision 828 RKB - 16')
Site:	Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58W	MD Reference:	WELL @ 4717.0ft (Precision 828 RKB - 16')
Well:	Fiscus Federal LD15-77-1HN	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)
1,695.0	1.70	329.20	1,694.4	11.2	22.9	-10.8	0.20	-0.11	5.68
1,790.0	1.40	312.10	1,789.4	13.2	21.3	-12.8	0.58	-0.32	-18.00
1,885.0	1.50	295.70	1,884.4	14.5	19.3	-14.1	0.45	0.11	-17.26
1,980.0	0.70	292.30	1,979.4	15.3	17.7	-14.9	0.84	-0.84	-3.58
2,059.0	1.70	314.60	2,058.3	16.3	16.4	-16.0	1.37	1.27	28.23
2,149.0	2.10	329.90	2,148.3	18.6	14.6	-18.4	0.71	0.44	17.00
2,239.0	3.30	351.40	2,238.2	22.6	13.4	-22.4	1.72	1.33	23.89
2,329.0	4.80	338.60	2,328.0	28.7	11.6	-28.5	1.94	1.67	-14.22
2,419.0	6.50	342.20	2,417.5	37.1	8.7	-36.9	1.93	1.89	4.00
2,509.0	8.30	346.30	2,506.8	48.2	5.6	-48.1	2.08	2.00	4.56
2,598.0	9.70	347.00	2,594.7	61.8	2.4	-61.7	1.58	1.57	0.79
2,688.0	10.20	343.60	2,683.3	76.8	-1.6	-76.8	0.86	0.56	-3.78
2,778.0	10.10	338.10	2,771.9	91.8	-6.7	-91.9	1.08	-0.11	-6.11
2,868.0	9.70	331.50	2,860.6	105.8	-13.3	-106.0	1.34	-0.44	-7.33
2,958.0	9.40	327.50	2,949.3	118.6	-20.9	-119.0	0.81	-0.33	-4.44
3,048.0	9.10	326.80	3,038.2	130.8	-28.7	-131.3	0.36	-0.33	-0.78
3,137.0	9.30	322.30	3,126.0	142.4	-37.0	-143.0	0.84	0.22	-5.06
3,227.0	9.80	321.70	3,214.8	154.1	-46.2	-155.0	0.57	0.56	-0.67
3,317.0	9.10	317.60	3,303.6	165.4	-55.7	-166.4	1.08	-0.78	-4.56
3,407.0	8.40	320.70	3,392.5	175.7	-64.7	-176.9	0.94	-0.78	3.44
3,497.0	7.60	328.70	3,481.6	185.9	-71.9	-187.2	1.52	-0.89	8.89
3,587.0	5.80	329.10	3,571.0	194.9	-77.4	-196.3	2.00	-2.00	0.44
3,676.0	4.10	333.50	3,659.7	201.6	-81.1	-203.1	1.96	-1.91	4.94
3,766.0	3.30	327.20	3,749.5	206.7	-83.9	-208.2	1.00	-0.89	-7.00
3,856.0	2.20	326.30	3,839.4	210.3	-86.3	-211.9	1.22	-1.22	-1.00
3,946.0	0.80	341.10	3,929.4	212.3	-87.5	-213.9	1.60	-1.56	16.44
4,036.0	1.50	347.50	4,019.3	214.0	-87.9	-215.7	0.79	0.78	7.11
4,126.0	0.20	56.00	4,109.3	215.3	-88.0	-216.9	1.60	-1.44	76.11
4,215.0	0.70	314.10	4,198.3	215.7	-88.3	-217.4	0.86	0.56	-114.49
4,305.0	0.90	329.10	4,288.3	216.7	-89.1	-218.4	0.32	0.22	16.67
4,395.0	0.30	32.30	4,378.3	217.5	-89.3	-219.2	0.90	-0.67	70.22
4,485.0	0.50	179.70	4,468.3	217.3	-89.2	-219.0	0.86	0.22	163.78
4,575.0	0.50	213.70	4,558.3	216.6	-89.4	-218.3	0.32	0.00	37.78
4,664.0	0.40	190.50	4,647.3	216.0	-89.7	-217.7	0.23	-0.11	-26.07
4,754.0	0.40	97.30	4,737.3	215.6	-89.4	-217.3	0.65	0.00	-103.56
4,844.0	1.10	145.00	4,827.3	214.9	-88.6	-216.6	0.98	0.78	53.00
4,889.0	1.30	153.30	4,872.3	214.1	-88.1	-215.7	0.59	0.44	18.44
4,934.0	1.70	145.90	4,917.3	213.1	-87.5	-214.7	0.99	0.89	-16.44
4,979.0	3.80	149.80	4,962.2	211.2	-86.4	-212.9	4.68	4.67	8.67
5,024.0	6.00	162.50	5,007.0	207.7	-84.9	-209.3	5.42	4.89	28.22
5,069.0	9.30	166.50	5,051.6	201.9	-83.4	-203.5	7.42	7.33	8.89
5,114.0	11.50	173.50	5,095.9	193.9	-82.0	-195.5	5.63	4.89	15.56
5,158.0	13.80	180.30	5,138.8	184.3	-81.5	-185.9	6.22	5.23	15.45
5,203.0	16.40	183.40	5,182.3	172.6	-82.0	-174.2	6.05	5.78	6.89
5,248.0	18.90	182.60	5,225.2	159.0	-82.7	-160.5	5.58	5.56	-1.78
5,293.0	22.20	177.80	5,267.3	143.2	-82.7	-144.8	8.23	7.33	-10.67
5,338.0	25.10	174.90	5,308.5	125.2	-81.5	-126.7	6.94	6.44	-6.44
5,383.0	29.50	171.20	5,348.5	104.7	-78.9	-106.2	10.48	9.78	-8.22
5,428.0	32.90	167.30	5,387.0	81.9	-74.6	-83.3	8.79	7.56	-8.67
5,473.0	37.00	163.40	5,423.9	56.9	-68.0	-58.2	10.37	9.11	-8.67
5,518.0	40.80	166.10	5,458.9	29.7	-60.6	-30.8	9.25	8.44	6.00
5,562.0	45.50	167.40	5,491.0	0.4	-53.7	-1.4	10.87	10.68	2.95

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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)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,607.0	49.80	168.00	5,521.3	-32.1	-46.6	31.2	9.61	9.56	1.33
5,652.0	53.30	172.30	5,549.3	-66.8	-40.6	66.0	10.79	7.78	9.56
5,697.0	56.30	177.40	5,575.2	-103.4	-37.4	102.7	11.41	6.67	11.33
5,742.0	59.30	182.60	5,599.2	-141.5	-37.4	140.7	11.83	6.67	11.56
5,787.0	64.00	181.80	5,620.6	-181.0	-38.9	180.2	10.56	10.44	-1.78
5,832.0	68.50	181.50	5,638.7	-222.2	-40.1	221.4	10.02	10.00	-0.67
5,877.0	72.50	181.80	5,653.7	-264.6	-41.3	263.7	8.91	8.89	0.67
5,921.0	75.80	182.20	5,665.7	-306.9	-42.8	306.0	7.55	7.50	0.91
5,966.0	78.80	183.00	5,675.6	-350.7	-44.8	349.8	6.89	6.67	1.78
6,016.0	81.90	182.20	5,684.0	-399.9	-47.0	399.0	6.40	6.20	-1.60
6,100.0	84.90	181.20	5,693.6	-483.3	-49.5	482.3	3.76	3.57	-1.19
6,194.0	86.40	179.50	5,700.8	-577.1	-50.1	576.0	2.41	1.60	-1.81
6,264.7	88.45	180.11	5,703.9	-647.7	-49.8	646.6	3.03	2.90	0.86
Fiscus Federal LD15-77-1HN Landing Pt.									
6,287.0	89.10	180.30	5,704.4	-670.0	-49.9	668.9	3.03	2.90	0.86
6,380.0	89.60	180.00	5,705.5	-763.0	-50.2	761.9	0.63	0.54	-0.32
6,474.0	88.60	179.10	5,707.0	-857.0	-49.4	855.9	1.43	-1.06	-0.96
6,567.0	88.40	178.40	5,709.4	-949.9	-47.4	948.8	0.78	-0.22	-0.75
6,659.0	89.90	177.90	5,710.8	-1,041.8	-44.4	1,040.8	1.72	1.63	-0.54
6,753.0	90.00	177.60	5,710.8	-1,135.8	-40.7	1,134.8	0.34	0.11	-0.32
6,847.0	91.40	176.00	5,709.7	-1,229.6	-35.5	1,228.7	2.26	1.49	-1.70
6,942.0	91.00	175.30	5,707.7	-1,324.3	-28.3	1,323.5	0.85	-0.42	-0.74
7,036.0	90.90	177.00	5,706.1	-1,418.1	-22.0	1,417.4	1.81	-0.11	1.81
7,130.0	89.90	176.80	5,705.5	-1,511.9	-16.9	1,511.3	1.08	-1.06	-0.21
7,224.0	90.50	177.90	5,705.2	-1,605.8	-12.5	1,605.3	1.33	0.64	1.17
7,317.0	90.10	177.40	5,704.7	-1,698.8	-8.7	1,698.3	0.69	-0.43	-0.54
7,425.0	89.50	176.20	5,705.0	-1,806.6	-2.7	1,806.2	1.24	-0.56	-1.11
7,515.0	91.10	178.30	5,704.6	-1,896.5	1.6	1,896.2	2.93	1.78	2.33
7,605.0	90.40	177.70	5,703.4	-1,986.4	4.8	1,986.1	1.02	-0.78	-0.67
7,695.0	90.50	177.80	5,702.7	-2,076.3	8.3	2,076.1	0.16	0.11	0.11
7,784.0	89.60	177.40	5,702.6	-2,165.3	12.0	2,165.1	1.11	-1.01	-0.45
7,874.0	90.10	179.50	5,702.8	-2,255.2	14.5	2,255.1	2.40	0.56	2.33
7,964.0	89.00	179.60	5,703.6	-2,345.2	15.2	2,345.1	1.23	-1.22	0.11
8,054.0	89.80	178.10	5,704.5	-2,435.2	17.0	2,435.1	1.89	0.89	-1.67
8,144.0	90.70	178.90	5,704.1	-2,525.2	19.3	2,525.1	1.34	1.00	0.89
8,234.0	90.50	179.20	5,703.2	-2,615.1	20.8	2,615.1	0.40	-0.22	0.33
8,324.0	89.80	178.50	5,702.9	-2,705.1	22.6	2,705.1	1.10	-0.78	-0.78
8,414.0	90.20	177.80	5,702.9	-2,795.1	25.5	2,795.1	0.90	0.44	-0.78
8,504.0	89.70	177.50	5,703.0	-2,885.0	29.2	2,885.0	0.65	-0.56	-0.33
8,594.0	89.70	177.90	5,703.5	-2,974.9	32.8	2,975.0	0.44	0.00	0.44
8,683.0	89.30	177.60	5,704.3	-3,063.9	36.3	3,064.0	0.56	-0.45	-0.34
8,773.0	90.80	177.40	5,704.2	-3,153.8	40.2	3,154.0	1.68	1.67	-0.22
8,863.0	90.20	177.50	5,703.4	-3,243.7	44.3	3,243.9	0.68	-0.67	0.11
8,953.0	90.10	177.90	5,703.2	-3,333.6	47.9	3,333.9	0.46	-0.11	0.44
9,043.0	89.10	177.80	5,703.8	-3,423.5	51.2	3,423.9	1.12	-1.11	-0.11
9,132.0	90.80	178.10	5,703.9	-3,512.5	54.4	3,512.9	1.94	1.91	0.34
9,222.0	89.90	178.40	5,703.3	-3,602.4	57.2	3,602.9	1.05	-1.00	0.33
9,312.0	89.30	178.50	5,703.9	-3,692.4	59.6	3,692.9	0.68	-0.67	0.11
9,402.0	90.10	178.60	5,704.4	-3,782.4	61.9	3,782.9	0.90	0.89	0.11
9,492.0	90.00	178.80	5,704.3	-3,872.3	63.9	3,872.9	0.25	-0.11	0.22
9,581.0	89.60	178.60	5,704.6	-3,961.3	65.9	3,961.8	0.50	-0.45	-0.22
9,671.0	90.50	178.70	5,704.6	-4,051.3	68.1	4,051.8	1.01	1.00	0.11

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Design:	Wellbore #1	Database:	Landmark

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9,761.0	90.10	178.60	5,704.1	-4,141.3	70.2	4,141.8	0.46	-0.44	-0.11
9,851.0	89.50	179.10	5,704.4	-4,231.2	72.0	4,231.8	0.87	-0.67	0.56
9,932.0	88.70	179.30	5,705.7	-4,312.2	73.1	4,312.8	1.02	-0.99	0.25
9,990.0	88.70	179.30	5,707.0	-4,370.2	73.8	4,370.8	0.00	0.00	0.00
Fiscus Federal LD15-77-1HN BHL 660'FSL & 1650'FWL									

Checked By: _____	Approved By: _____	Date: _____
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