

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

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

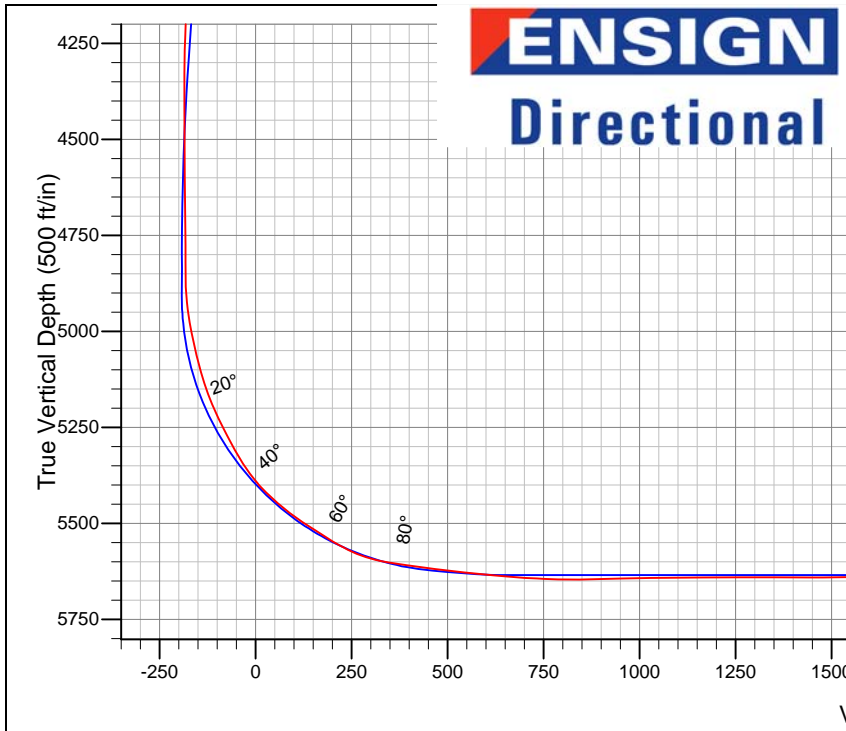
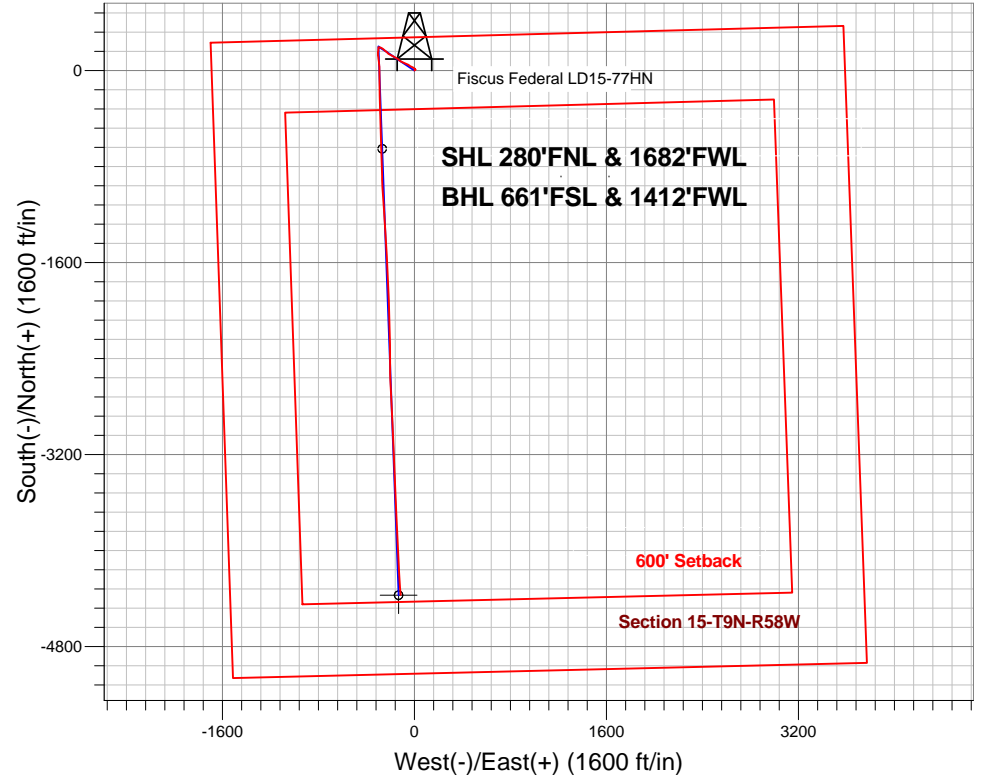
Surface Location: Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4701.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1523163.30	3456045.62	40.757850	-103.853770	

Original Well Elev WELL @ 4717.0ft (Original Well Elev)

FINAL SURVEY

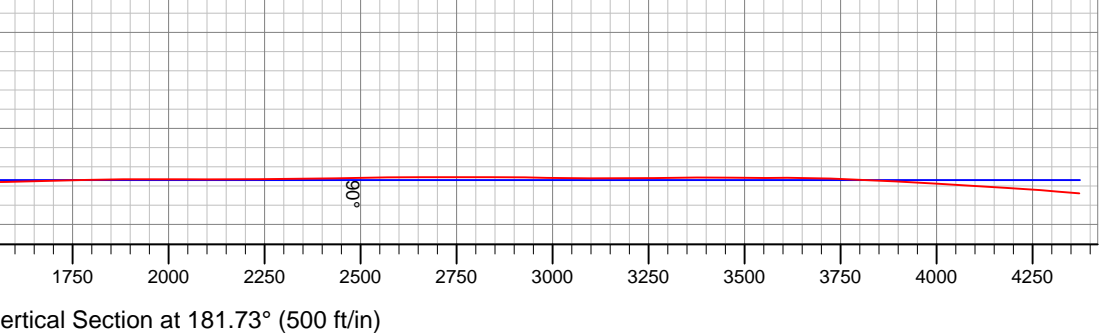
Projected Bottom Hole Location
 9906'MD 5669'TVD 4370'S & 115'W of SHL
 85.4 degree Incl @ 175.9 degree AZM



Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58W
 Fiscus Federal LD15-77HN
 9:07, November 03 2014
 Wellbore #1

ANNOTATIONS
 No annotation data is available.

LEGEND
 ▲ Fiscus Federal LD15-77HN, Wellbore #1, Plan A - Rev 0 V0
 □ Wellbore #1





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

Sec.15-T9N-R58W

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

Fiscus Federal LD15-77HN

Wellbore #1

Design: Wellbore #1

Final Survey

03 November, 2014

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Fiscus Federal LD15-77HN
Project:	Sec.15-T9N-R58W	TVD Reference:	WELL @ 4717.0ft (Original Well Elev)
Site:	Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58	MD Reference:	WELL @ 4717.0ft (Original Well Elev)
Well:	Fiscus Federal LD15-77HN	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:	1,523,163.30 ft	Latitude:	40.757850
From:	Lat/Long	Easting:	3,456,045.62 ft	Longitude:	-103.853770
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	1.06 °

Well	Fiscus Federal LD15-77HN					
Well Position	+N/-S	0.0 ft	Northing:	1,523,163.30 ft	Latitude:	40.757850
	+E/-W	0.0 ft	Easting:	3,456,045.62 ft	Longitude:	-103.853770
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	10/13/2014	7.94	67.36	53,059

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	181.73	

Survey Program	Date	11/3/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
410.0	1,190.0	Surface (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
1,255.0	5,944.0	Intermediate/Curve (Wellbore #1)	MWD	MWD - Standard	
6,037.0	9,906.0	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	0.0	0.00
410.0	0.00	185.68	410.0	0.0	0.0	0.0	0.0	0.00
805.0	1.00	12.48	805.0	3.4	0.7	-3.4	0.25	
1,190.0	1.40	81.08	1,189.9	7.4	6.1	-7.6	0.36	
1,255.0	1.50	101.90	1,254.9	7.3	7.7	-7.6	0.82	
1,349.0	1.10	312.70	1,348.9	7.7	8.3	-7.9	2.67	
1,443.0	2.30	331.30	1,442.8	9.9	6.7	-10.1	1.39	
1,538.0	3.10	320.20	1,537.7	13.6	4.1	-13.7	1.00	
1,631.0	4.70	307.30	1,630.5	17.8	-0.5	-17.8	1.95	
1,726.0	6.10	301.90	1,725.1	22.9	-7.9	-22.6	1.57	

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Site:	Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58	MD Reference:	WELL @ 4717.0ft (Original Well Elev)
Well:	Fiscus Federal LD15-77HN	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)		
1,821.0	8.00	298.60	1,819.4	28.7	-18.0	-28.1	2.04		
1,916.0	7.20	293.50	1,913.5	34.2	-29.2	-33.3	1.10		
2,014.0	8.30	305.80	2,010.6	40.8	-40.6	-39.6	2.02		
2,103.0	8.00	298.30	2,098.8	47.5	-51.3	-45.9	1.24		
2,193.0	7.50	296.60	2,187.9	53.1	-62.0	-51.2	0.61		
2,283.0	7.40	294.30	2,277.2	58.1	-72.6	-55.9	0.35		
2,373.0	7.30	292.90	2,366.4	62.7	-83.1	-60.2	0.23		
2,463.0	6.30	288.40	2,455.8	66.5	-93.1	-63.7	1.26		
2,552.0	7.40	300.10	2,544.2	70.9	-102.7	-67.8	1.99		
2,642.0	7.40	298.50	2,633.4	76.6	-112.8	-73.2	0.23		
2,732.0	7.70	311.00	2,722.6	83.3	-122.4	-79.6	1.85		
2,822.0	7.50	307.80	2,811.9	90.9	-131.6	-86.9	0.52		
2,912.0	7.30	304.00	2,901.1	97.7	-141.0	-93.4	0.59		
3,002.0	7.60	302.00	2,990.3	104.0	-150.8	-99.4	0.44		
3,091.0	7.40	299.40	3,078.6	110.0	-160.8	-105.1	0.44		
3,181.0	7.40	296.40	3,167.8	115.4	-171.0	-110.2	0.43		
3,271.0	7.60	294.60	3,257.1	120.4	-181.6	-114.9	0.34		
3,361.0	7.10	299.40	3,346.3	125.7	-191.9	-119.8	0.88		
3,451.0	7.10	299.10	3,435.6	131.1	-201.6	-124.9	0.04		
3,541.0	7.70	301.10	3,524.9	136.9	-211.6	-130.4	0.73		
3,630.0	8.10	314.60	3,613.0	144.4	-221.2	-137.6	2.13		
3,720.0	7.70	312.30	3,702.2	152.9	-230.1	-145.9	0.57		
3,810.0	7.30	311.00	3,791.4	160.7	-238.9	-153.4	0.48		
3,900.0	7.30	309.20	3,880.7	168.1	-247.7	-160.5	0.25		
3,990.0	7.50	309.70	3,969.9	175.4	-256.6	-167.6	0.23		
4,080.0	7.20	307.20	4,059.2	182.6	-265.6	-174.5	0.49		
4,169.0	7.30	294.40	4,147.5	188.3	-275.2	-179.9	1.81		
4,259.0	6.10	286.10	4,236.9	192.0	-285.0	-183.3	1.71		
4,349.0	3.80	284.80	4,326.5	194.1	-292.5	-185.2	2.56		
4,439.0	2.90	261.30	4,416.4	194.5	-297.6	-185.4	1.80		
4,529.0	0.20	154.90	4,506.4	194.0	-299.8	-184.9	3.29		
4,619.0	0.80	197.70	4,596.3	193.3	-299.9	-184.1	0.74		
4,708.0	0.50	188.60	4,685.3	192.3	-300.2	-183.1	0.36		
4,798.0	0.50	209.10	4,775.3	191.6	-300.4	-182.4	0.20		
4,843.0	0.30	205.10	4,820.3	191.3	-300.6	-182.1	0.45		
4,888.0	0.60	190.50	4,865.3	191.0	-300.7	-181.8	0.71		
4,933.0	4.40	180.00	4,910.3	189.0	-300.7	-179.8	8.47		
4,978.0	8.10	178.30	4,955.0	184.1	-300.6	-174.9	8.23		
5,023.0	11.00	187.60	4,999.4	176.7	-301.1	-167.5	7.28		
5,067.0	13.20	183.00	5,042.4	167.5	-301.9	-158.3	5.46		
5,112.0	14.90	184.70	5,086.1	156.6	-302.7	-147.4	3.89		
5,157.0	16.90	181.30	5,129.3	144.3	-303.3	-135.1	4.90		
5,202.0	21.50	177.00	5,171.8	129.5	-303.0	-120.3	10.69		
5,247.0	25.00	173.10	5,213.2	111.8	-301.4	-102.7	8.49		
5,292.0	27.20	171.70	5,253.6	92.2	-298.8	-83.1	5.08		

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Site:	Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58	MD Reference:	WELL @ 4717.0ft (Original Well Elev)
Well:	Fiscus Federal LD15-77HN	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)
5,337.0	28.40	172.70	5,293.4	71.4	-295.9	-62.4	2.86
5,382.0	31.30	175.90	5,332.4	49.1	-293.7	-40.2	7.35
5,427.0	36.40	178.90	5,369.8	24.1	-292.7	-15.2	11.92
5,472.0	42.40	181.00	5,404.5	-4.4	-292.7	13.3	13.66
5,517.0	47.80	180.10	5,436.3	-36.3	-293.0	45.1	12.08
5,562.0	51.60	177.40	5,465.4	-70.6	-292.2	79.4	9.60
5,607.0	55.60	176.30	5,492.1	-106.8	-290.2	115.5	9.10
5,651.0	57.60	177.80	5,516.3	-143.4	-288.3	152.1	5.36
5,697.0	58.10	179.70	5,540.8	-182.4	-287.5	191.0	3.66
5,741.0	61.70	180.30	5,562.8	-220.4	-287.5	229.0	8.27
5,786.0	68.50	180.30	5,581.8	-261.2	-287.7	269.8	15.11
5,831.0	77.00	178.70	5,595.1	-304.2	-287.3	312.7	19.19
5,876.0	80.70	177.50	5,603.8	-348.3	-285.8	356.8	8.63
5,921.0	82.50	178.00	5,610.4	-392.8	-284.1	401.2	4.15
5,944.0	83.10	178.10	5,613.3	-415.6	-283.3	423.9	2.64
6,037.0	83.00	178.30	5,624.5	-507.8	-280.4	516.1	0.24
6,131.0	84.50	178.10	5,634.8	-601.2	-277.5	609.3	1.61
6,181.7	85.54	178.32	5,639.2	-651.7	-275.9	659.7	2.09
Fiscus Federal LD15-77HN Landing Pt.							
6,224.0	86.40	178.50	5,642.1	-693.9	-274.7	701.9	2.09
6,317.0	88.70	178.80	5,646.1	-786.8	-272.5	794.7	2.49
6,411.0	91.60	178.80	5,645.9	-880.7	-270.6	888.5	3.09
6,504.0	91.70	176.80	5,643.2	-973.6	-267.0	981.3	2.15
6,598.0	90.20	176.10	5,641.6	-1,067.4	-261.2	1,074.8	1.76
6,690.0	90.40	175.90	5,641.1	-1,159.2	-254.7	1,166.4	0.31
6,784.0	90.10	175.50	5,640.7	-1,252.9	-247.7	1,259.9	0.53
6,878.0	90.00	175.90	5,640.7	-1,346.7	-240.6	1,353.3	0.44
6,972.0	89.50	176.90	5,641.1	-1,440.5	-234.7	1,446.9	1.19
7,066.0	91.40	177.70	5,640.3	-1,534.4	-230.3	1,540.6	2.19
7,160.0	91.10	178.10	5,638.3	-1,628.3	-226.9	1,634.4	0.53
7,254.0	91.50	177.90	5,636.1	-1,722.2	-223.6	1,728.2	0.48
7,347.0	91.40	177.40	5,633.8	-1,815.1	-219.8	1,820.9	0.55
7,469.0	89.80	177.60	5,632.5	-1,937.0	-214.5	1,942.6	1.32
7,559.0	90.10	177.70	5,632.6	-2,026.9	-210.8	2,032.3	0.35
7,649.0	89.90	177.30	5,632.6	-2,116.8	-206.8	2,122.1	0.50
7,738.0	90.20	179.90	5,632.5	-2,205.8	-204.7	2,211.0	2.94
7,828.0	90.50	179.80	5,632.0	-2,295.8	-204.4	2,300.9	0.35
7,918.0	90.70	179.80	5,631.0	-2,385.8	-204.1	2,390.9	0.22
8,008.0	91.50	179.30	5,629.3	-2,475.8	-203.4	2,480.8	1.05
8,098.0	90.40	177.90	5,627.8	-2,565.7	-201.2	2,570.6	1.98
8,188.0	90.30	177.40	5,627.3	-2,655.6	-197.5	2,660.4	0.57
8,278.0	89.90	175.70	5,627.1	-2,745.5	-192.1	2,750.0	1.94
8,367.0	89.90	177.30	5,627.3	-2,834.3	-186.7	2,838.6	1.80
8,457.0	89.20	178.10	5,628.0	-2,924.2	-183.1	2,928.4	1.18

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Site:	Fiscus Federal LD15-77HN Pad Sec.15-T9N-R58	MD Reference:	WELL @ 4717.0ft (Original Well Elev)
Well:	Fiscus Federal LD15-77HN	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)
8,547.0	89.20	178.30	5,629.2	-3,014.2	-180.2	3,018.2	0.22
8,637.0	89.70	177.80	5,630.1	-3,104.1	-177.2	3,108.0	0.79
8,727.0	90.20	177.40	5,630.2	-3,194.0	-173.4	3,197.8	0.71
8,817.0	91.20	176.80	5,629.1	-3,283.9	-168.9	3,287.5	1.30
8,906.0	89.70	178.00	5,628.4	-3,372.8	-164.8	3,376.2	2.16
8,996.0	89.60	177.60	5,628.9	-3,462.7	-161.4	3,466.0	0.46
9,086.0	89.90	177.20	5,629.3	-3,552.6	-157.3	3,555.8	0.56
9,176.0	90.00	177.20	5,629.4	-3,642.5	-152.9	3,645.5	0.11
9,266.0	87.80	177.60	5,631.1	-3,732.4	-148.8	3,735.2	2.48
9,356.0	87.20	177.40	5,635.0	-3,822.3	-144.9	3,824.9	0.70
9,446.0	87.20	177.70	5,639.4	-3,912.1	-141.0	3,914.5	0.33
9,536.0	86.70	177.00	5,644.2	-4,001.8	-136.9	4,004.1	0.95
9,625.0	86.40	177.40	5,649.6	-4,090.6	-132.5	4,092.7	0.56
9,715.0	86.40	176.50	5,655.2	-4,180.3	-127.8	4,182.2	1.00
9,805.0	85.80	176.00	5,661.3	-4,269.9	-121.9	4,271.6	0.87
9,848.0	85.40	175.90	5,664.6	-4,312.6	-118.9	4,314.2	0.96
9,903.3	85.40	175.90	5,669.1	-4,367.6	-114.9	4,369.1	0.00
Fiscus Federal LD15-77HN BHL 660'FSL & 1395'FWL							
9,906.0	85.40	175.90	5,669.3	-4,370.3	-114.7	4,371.8	0.00

Checked By: _____ Approved By: _____ Date: _____