

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

Well Name: **Resolute E25-63HN**

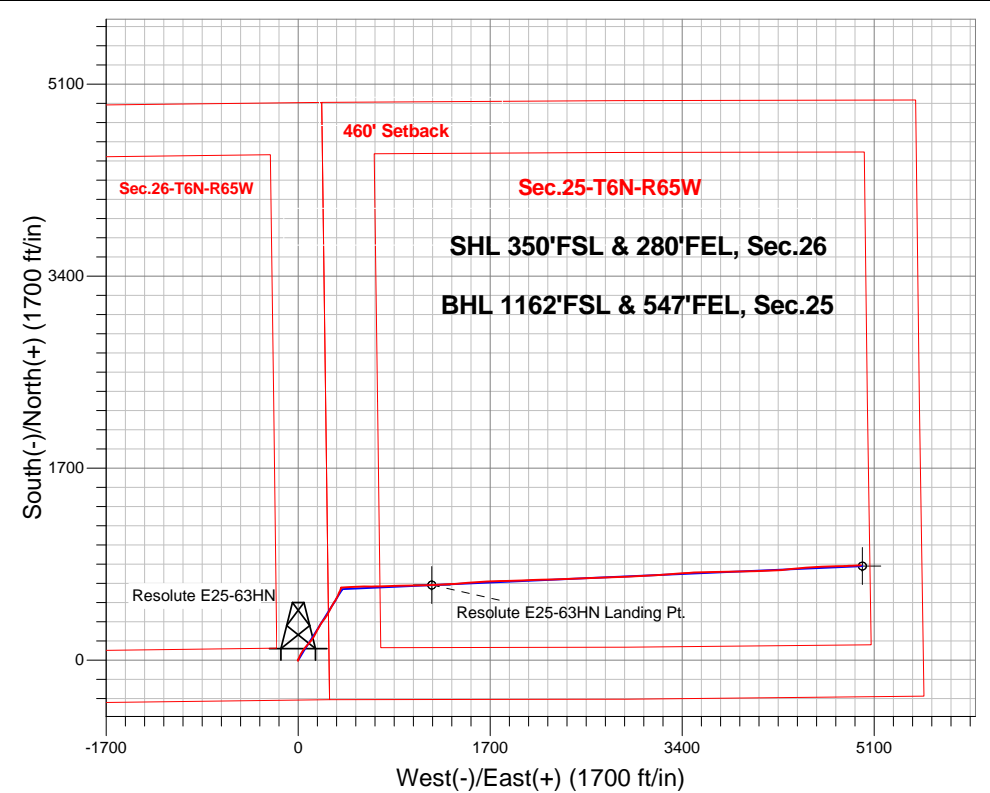
Surface Location: Resolute E25-63-1HN Pad Sec.26-T6N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4676.0

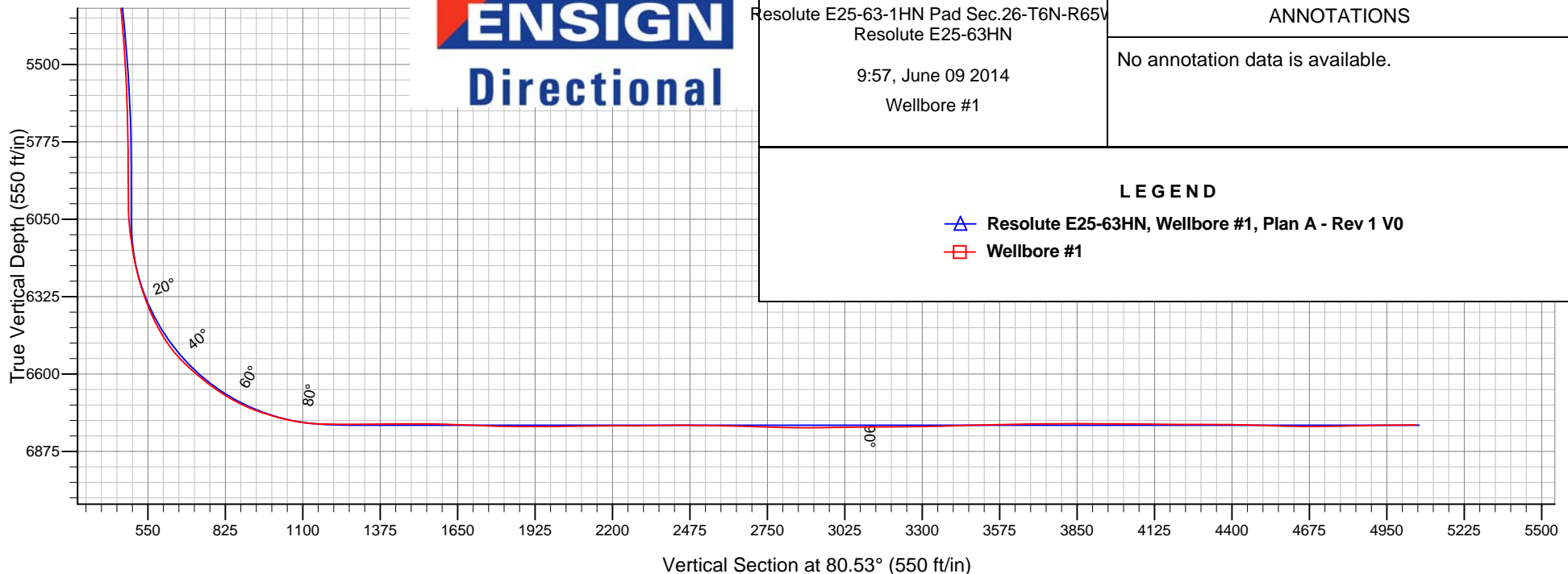
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1408222.49	3244414.98	40.450650	-104.621750	
Precision 828 RKB - 16' WELL @ 4692.0ft (Precision 828 RKB - 16')						

FINAL SURVEY

Projected Bottom Hole Location
11151'MD 6781'TVD 841'N & 4984'E of SHL
90.0 degree Incl @ 86.5 degree AZM



ENSIGN
Directional





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

Sec.26-T6N-R65W

Resolute E25-63-1HN Pad Sec.26-T6N-R65W

Resolute E25-63HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

09 June, 2014

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Resolute E25-63HN
Project:	Sec.26-T6N-R65W	TVD Reference:	WELL @ 4692.0ft (Precision 828 RKB - 16')
Site:	Resolute E25-63-1HN Pad Sec.26-T6N-R65W	MD Reference:	WELL @ 4692.0ft (Precision 828 RKB - 16')
Well:	Resolute E25-63HN	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.26-T6N-R65W, 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		Resolute E25-63-1HN Pad Sec.26-T6N-R65W			
Site Position:		Northing:	1,408,200.65 ft	Latitude:	40.450590
From:	Lat/Long	Easting:	3,244,415.19 ft	Longitude:	-104.621750
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.57 °

Well	Resolute E25-63HN					
Well Position	+N-S	0.0 ft	Northing:	1,408,222.49 ft	Latitude:	40.450650
	+E-W	0.0 ft	Easting:	3,244,414.98 ft	Longitude:	-104.621750
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,676.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/27/2014	8.39	67.01	52,863

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	80.53	

Survey Program		Date	6/9/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
304.0	601.0	Surface (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
704.0	7,182.0	Intermediate (Wellbore #1)	MWD	MWD - Standard	
7,244.0	11,151.0	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)	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
304.0	0.60	241.63	304.0	-0.8	-1.4	-1.5	0.20	0.20	0.00
601.0	0.40	283.63	601.0	-1.3	-3.8	-3.9	0.14	-0.07	14.14
704.0	1.00	144.30	704.0	-1.9	-3.6	-3.9	1.29	0.58	-135.27
794.0	1.20	35.30	794.0	-1.8	-2.6	-2.9	1.99	0.22	-121.11
884.0	1.10	32.80	884.0	-0.3	-1.6	-1.6	0.12	-0.11	-2.78
974.0	1.20	35.70	973.9	1.2	-0.6	-0.4	0.13	0.11	3.22
1,063.0	1.20	25.90	1,062.9	2.8	0.4	0.8	0.23	0.00	-11.01
1,158.0	1.20	215.30	1,157.9	2.9	0.2	0.7	2.52	0.00	-179.58
1,253.0	1.00	188.10	1,252.9	1.3	-0.4	-0.2	0.58	-0.21	-28.63

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Resolute E25-63HN
Project:	Sec.26-T6N-R65W	TVD Reference:	WELL @ 4692.0ft (Precision 828 RKB - 16')
Site:	Resolute E25-63-1HN Pad Sec.26-T6N-R65W	MD Reference:	WELL @ 4692.0ft (Precision 828 RKB - 16')
Well:	Resolute E25-63HN	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)
1,348.0	0.80	212.10	1,347.9	-0.1	-0.9	-0.9	0.44	-0.21	25.26
1,443.0	1.00	204.10	1,442.9	-1.4	-1.6	-1.8	0.25	0.21	-8.42
1,538.0	1.20	52.20	1,537.9	-1.6	-1.2	-1.4	2.25	0.21	-159.90
1,633.0	2.40	29.90	1,632.8	0.8	0.6	0.7	1.44	1.26	-23.47
1,728.0	3.70	17.50	1,727.7	5.4	2.5	3.4	1.53	1.37	-13.05
1,823.0	4.60	14.20	1,822.4	12.0	4.4	6.3	0.98	0.95	-3.47
1,918.0	5.50	24.60	1,917.1	19.9	7.2	10.4	1.35	0.95	10.95
2,013.0	6.10	20.70	2,011.6	28.7	10.9	15.5	0.76	0.63	-4.11
2,105.0	7.30	28.30	2,102.9	38.4	15.4	21.5	1.62	1.30	8.26
2,195.0	8.20	27.30	2,192.1	49.2	21.0	28.9	1.01	1.00	-1.11
2,285.0	8.40	27.80	2,281.2	60.7	27.1	36.7	0.24	0.22	0.56
2,375.0	8.80	33.10	2,370.2	72.3	33.9	45.3	0.99	0.44	5.89
2,464.0	10.20	32.40	2,457.9	84.6	41.8	55.2	1.58	1.57	-0.79
2,554.0	11.50	39.60	2,546.3	98.3	51.8	67.3	2.08	1.44	8.00
2,644.0	12.00	37.50	2,634.5	112.6	63.2	80.9	0.73	0.56	-2.33
2,734.0	13.40	41.30	2,722.3	127.9	75.8	95.8	1.81	1.56	4.22
2,824.0	13.80	42.40	2,809.7	143.6	89.9	112.3	0.53	0.44	1.22
2,914.0	12.30	38.90	2,897.4	159.0	103.2	127.9	1.88	-1.67	-3.89
3,003.0	14.00	37.30	2,984.1	175.0	115.7	142.9	1.95	1.91	-1.80
3,093.0	12.10	34.40	3,071.7	191.4	127.6	157.3	2.23	-2.11	-3.22
3,183.0	11.10	33.10	3,159.9	206.4	137.7	169.7	1.15	-1.11	-1.44
3,273.0	11.50	32.40	3,248.2	221.3	147.2	181.6	0.47	0.44	-0.78
3,363.0	11.80	25.30	3,336.3	237.2	155.9	192.8	1.63	0.33	-7.89
3,453.0	11.90	26.60	3,424.4	253.8	164.0	203.5	0.32	0.11	1.44
3,542.0	12.40	24.90	3,511.4	270.7	172.2	214.3	0.69	0.56	-1.91
3,632.0	12.10	31.00	3,599.3	287.5	181.1	225.9	1.48	-0.33	6.78
3,722.0	12.80	28.70	3,687.2	304.3	190.7	238.2	0.95	0.78	-2.56
3,811.0	13.50	34.20	3,773.9	321.6	201.3	251.5	1.61	0.79	6.18
3,901.0	14.20	33.70	3,861.3	339.5	213.3	266.3	0.79	0.78	-0.56
3,991.0	13.60	37.10	3,948.6	357.1	225.8	281.5	1.13	-0.67	3.78
4,081.0	12.80	37.60	4,036.3	373.4	238.3	296.5	0.90	-0.89	0.56
4,171.0	12.00	34.10	4,124.2	389.1	249.6	310.2	1.22	-0.89	-3.89
4,261.0	10.60	31.20	4,212.4	403.9	259.2	322.1	1.68	-1.56	-3.22
4,350.0	11.30	29.10	4,299.8	418.5	267.6	332.9	0.91	0.79	-2.36
4,440.0	12.70	26.40	4,387.8	435.1	276.3	344.2	1.68	1.56	-3.00
4,530.0	11.50	26.10	4,475.8	452.0	284.7	355.2	1.34	-1.33	-0.33
4,620.0	11.70	26.40	4,564.0	468.2	292.7	365.7	0.23	0.22	0.33
4,710.0	12.70	29.00	4,652.0	485.1	301.5	377.2	1.27	1.11	2.89
4,800.0	12.10	30.70	4,739.9	501.8	311.2	389.5	0.78	-0.67	1.89
4,890.0	11.60	35.40	4,827.9	517.3	321.2	401.9	1.21	-0.56	5.22
4,980.0	13.00	30.00	4,915.9	533.5	331.5	414.8	2.01	1.56	-6.00
5,070.0	12.10	29.40	5,003.7	550.4	341.2	427.1	1.01	-1.00	-0.67
5,159.0	9.80	25.20	5,091.1	565.4	349.0	437.3	2.73	-2.58	-4.72
5,249.0	8.90	19.40	5,179.9	578.9	354.6	445.0	1.45	-1.00	-6.44
5,339.0	7.60	29.00	5,269.0	590.7	359.8	452.1	2.10	-1.44	10.67
5,429.0	8.40	25.10	5,358.1	601.8	365.5	459.5	1.07	0.89	-4.33
5,519.0	7.20	24.60	5,447.3	612.9	370.6	466.4	1.34	-1.33	-0.56
5,608.0	6.00	18.40	5,535.7	622.4	374.4	471.7	1.57	-1.35	-6.97
5,698.0	4.70	15.90	5,625.3	630.4	376.9	475.5	1.47	-1.44	-2.78
5,788.0	2.90	18.50	5,715.1	636.1	378.6	478.1	2.01	-2.00	2.89
5,878.0	1.00	26.00	5,805.0	639.0	379.7	479.6	2.13	-2.11	8.33
5,968.0	0.90	14.20	5,895.0	640.4	380.2	480.4	0.24	-0.11	-13.11
6,058.0	0.90	345.00	5,985.0	641.8	380.2	480.6	0.50	0.00	-32.44
6,102.0	2.20	76.50	6,029.0	642.3	380.9	481.4	5.45	2.95	207.95

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Site:	Resolute E25-63-1HN Pad Sec.26-T6N-R65W	MD Reference:	WELL @ 4692.0ft (Precision 828 RKB - 16')
Well:	Resolute E25-63HN	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)
6,147.0	5.60	83.50	6,073.9	642.7	383.9	484.5	7.62	7.56	15.56
6,192.0	8.00	81.00	6,118.6	643.5	389.2	489.8	5.37	5.33	-5.56
6,237.0	9.80	85.50	6,163.0	644.3	396.1	496.7	4.29	4.00	10.00
6,282.0	11.60	88.10	6,207.2	644.7	404.5	505.0	4.14	4.00	5.78
6,327.0	14.50	88.90	6,251.1	645.0	414.6	515.1	6.46	6.44	1.78
6,372.0	17.90	88.00	6,294.3	645.3	427.2	527.5	7.58	7.56	-2.00
6,417.0	20.60	86.30	6,336.8	646.1	442.0	542.3	6.13	6.00	-3.78
6,462.0	23.00	85.10	6,378.5	647.3	458.6	558.9	5.42	5.33	-2.67
6,507.0	27.00	85.30	6,419.3	648.9	477.6	577.9	8.89	8.89	0.44
6,552.0	30.70	89.00	6,458.7	650.0	499.3	599.4	9.13	8.22	8.22
6,597.0	35.70	89.70	6,496.4	650.2	523.9	623.7	11.14	11.11	1.56
6,642.0	41.20	89.00	6,531.6	650.6	551.9	651.4	12.26	12.22	-1.56
6,687.0	46.50	88.90	6,564.0	651.1	583.0	682.2	11.78	11.78	-0.22
6,732.0	49.10	89.00	6,594.3	651.7	616.4	715.2	5.78	5.78	0.22
6,777.0	51.90	88.40	6,622.9	652.5	651.1	749.6	6.31	6.22	-1.33
6,822.0	55.10	88.90	6,649.6	653.4	687.2	785.4	7.17	7.11	1.11
6,866.0	57.80	88.90	6,674.0	654.1	723.9	821.6	6.14	6.14	0.00
6,911.0	62.10	88.20	6,696.5	655.1	762.8	860.2	9.65	9.56	-1.56
6,956.0	66.40	88.50	6,716.0	656.2	803.3	900.3	9.57	9.56	0.67
7,001.0	70.90	88.60	6,732.4	657.3	845.2	941.8	10.00	10.00	0.22
7,046.0	73.10	88.40	6,746.3	658.4	888.0	984.2	4.91	4.89	-0.44
7,091.0	76.00	89.00	6,758.3	659.4	931.3	1,027.1	6.57	6.44	1.33
7,136.0	79.60	89.40	6,767.8	660.0	975.3	1,070.6	8.05	8.00	0.89
7,182.0	84.00	88.80	6,774.4	660.7	1,020.8	1,115.6	9.65	9.57	-1.30
7,244.0	89.00	88.20	6,778.2	662.4	1,082.7	1,176.9	8.12	8.06	-0.97
7,334.0	90.50	88.60	6,778.5	664.9	1,172.6	1,266.0	1.72	1.67	0.44
7,344.7	90.45	88.40	6,778.5	665.1	1,183.4	1,276.7	1.94	-0.44	-1.89
Resolute E25-63HN Landing Pt.									
7,424.0	90.10	86.90	6,778.1	668.4	1,262.6	1,355.3	1.94	-0.44	-1.89
7,514.0	90.10	87.20	6,777.9	673.0	1,352.4	1,444.7	0.33	0.00	0.33
7,604.0	90.20	85.20	6,777.7	679.0	1,442.2	1,534.3	2.22	0.11	-2.22
7,694.0	88.10	85.00	6,779.0	686.7	1,531.9	1,624.0	2.34	-2.33	-0.22
7,784.0	87.50	86.40	6,782.5	693.4	1,621.6	1,713.6	1.69	-0.67	1.56
7,873.0	88.50	87.50	6,785.6	698.2	1,710.4	1,801.9	1.67	1.12	1.24
7,963.0	89.80	89.00	6,786.9	700.9	1,800.3	1,891.1	2.21	1.44	1.67
8,053.0	90.70	88.00	6,786.5	703.3	1,890.3	1,980.2	1.49	1.00	-1.11
8,143.0	91.00	87.80	6,785.2	706.6	1,980.2	2,069.5	0.40	0.33	-0.22
8,232.0	90.10	87.80	6,784.3	710.0	2,069.2	2,157.8	1.01	-1.01	0.00
8,322.0	89.80	88.50	6,784.4	712.9	2,159.1	2,247.0	0.85	-0.33	0.78
8,412.0	91.30	88.50	6,783.5	715.2	2,249.1	2,336.1	1.67	1.67	0.00
8,502.0	90.40	87.90	6,782.2	718.1	2,339.0	2,425.3	1.20	-1.00	-0.67
8,592.0	88.70	88.50	6,782.9	720.9	2,429.0	2,514.5	2.00	-1.89	0.67
8,682.0	89.60	87.30	6,784.3	724.2	2,518.9	2,603.7	1.67	1.00	-1.33
8,772.0	87.60	88.20	6,786.5	727.7	2,608.8	2,693.0	2.44	-2.22	1.00
8,861.0	88.60	87.60	6,789.4	731.0	2,697.7	2,781.2	1.31	1.12	-0.67
8,951.0	89.50	88.80	6,790.9	733.8	2,787.6	2,870.4	1.67	1.00	1.33
9,041.0	91.50	88.50	6,790.1	735.9	2,877.6	2,959.5	2.25	2.22	-0.33
9,131.0	89.90	85.30	6,789.0	740.8	2,967.4	3,048.9	3.97	-1.78	-3.56
9,221.0	90.50	87.70	6,788.7	746.3	3,057.3	3,138.4	2.75	0.67	2.67
9,311.0	90.90	84.80	6,787.6	752.2	3,147.1	3,227.9	3.25	0.44	-3.22
9,400.0	90.80	86.90	6,786.3	758.6	3,235.8	3,316.5	2.36	-0.11	2.36
9,490.0	92.20	85.80	6,783.9	764.3	3,325.6	3,406.0	1.98	1.56	-1.22
9,580.0	90.80	86.30	6,781.6	770.5	3,415.3	3,495.6	1.65	-1.56	0.56

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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)
9,670.0	91.60	87.40	6,779.7	775.5	3,505.2	3,585.0	1.51	0.89	1.22
9,760.0	90.50	88.90	6,778.0	778.4	3,595.1	3,674.2	2.07	-1.22	1.67
9,850.0	90.30	88.60	6,777.4	780.3	3,685.1	3,763.3	0.40	-0.22	-0.33
9,940.0	90.60	88.70	6,776.7	782.5	3,775.1	3,852.4	0.35	0.33	0.11
10,030.0	89.50	89.30	6,776.6	784.0	3,865.0	3,941.4	1.39	-1.22	0.67
10,119.0	89.00	88.60	6,777.8	785.7	3,954.0	4,029.4	0.97	-0.56	-0.79
10,209.0	89.80	88.80	6,778.7	787.7	4,044.0	4,118.5	0.92	0.89	0.22
10,299.0	89.70	87.20	6,779.1	790.9	4,133.9	4,207.7	1.78	-0.11	-1.78
10,389.0	90.00	87.50	6,779.4	795.0	4,223.8	4,297.1	0.47	0.33	0.33
10,479.0	89.40	84.60	6,779.8	801.2	4,313.6	4,386.7	3.29	-0.67	-3.22
10,569.0	88.20	84.00	6,781.7	810.1	4,403.1	4,476.4	1.49	-1.33	-0.67
10,659.0	87.90	84.80	6,784.8	818.9	4,492.7	4,566.2	0.95	-0.33	0.89
10,748.0	89.80	87.70	6,786.6	824.7	4,581.4	4,654.7	3.89	2.13	3.26
10,838.0	90.80	87.20	6,786.1	828.7	4,671.4	4,744.0	1.24	1.11	-0.56
10,928.0	91.60	88.60	6,784.2	832.0	4,761.3	4,833.3	1.79	0.89	1.56
11,018.0	91.10	88.70	6,782.1	834.2	4,851.2	4,922.4	0.57	-0.56	0.11
11,093.0	90.20	86.80	6,781.2	837.1	4,926.2	4,996.7	2.80	-1.20	-2.53
11,151.0	90.00	86.50	6,781.1	840.5	4,984.1	5,054.4	0.62	-0.34	-0.52
Resolute E25-63HN BHL 1155'FSL & 535'FEL									

Checked By: _____	Approved By: _____	Date: _____
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