

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

Well Name: **Crow Creek AA01-724**

Surface Location: Crow Creek AA01-734 Pad Sec.1-T6N-R63W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

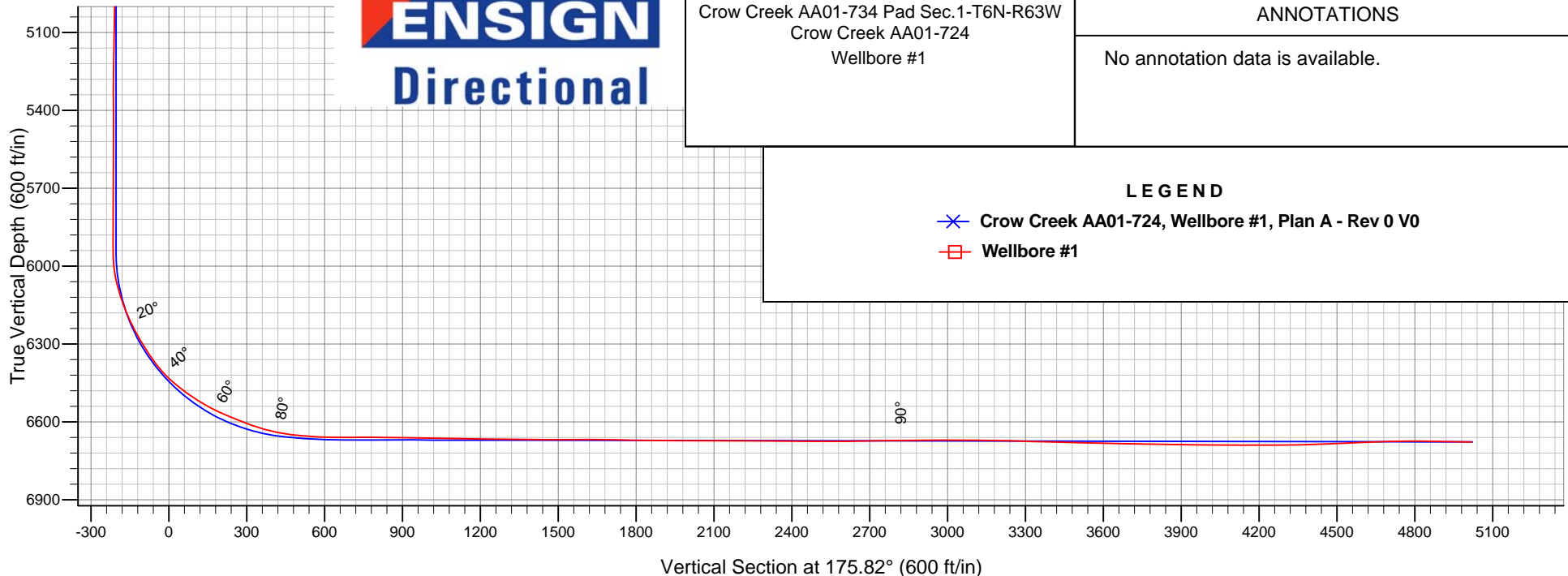
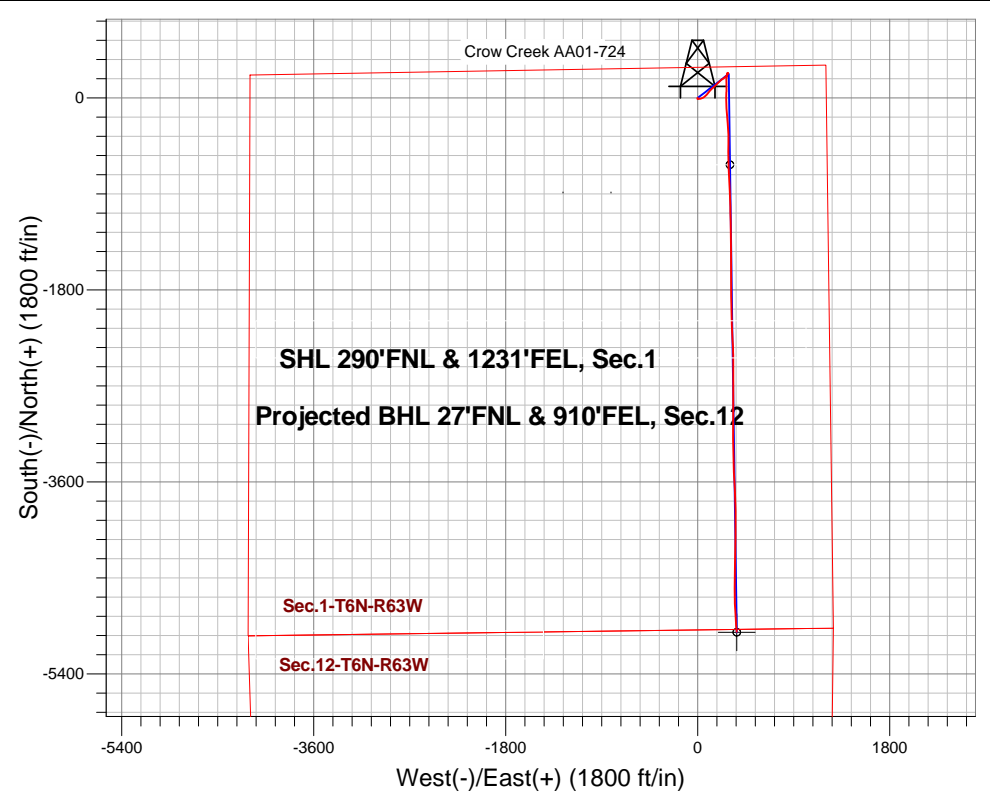
Ground Elevation: 4857.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1435003.52	3311583.99	40.522080	-104.379200	

PD 829 RKB - 16' WELL @ 4873.0ft (PD 829 RKB - 16')

FINAL SURVEY

Projected Bottom Hole Location
11500'MD 6693'TVD 4993'S & 1236'E of SHL
89.7 degree Incl @ 178.7 degree AZM



Crow Creek AA01-734 Pad Sec.1-T6N-R63W
Crow Creek AA01-724
Wellbore #1

ANNOTATIONS

No annotation data is available.

LEGEND

- ✕ Crow Creek AA01-724, Wellbore #1, Plan A - Rev 0 V0
- Wellbore #1



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

Sec.1-T6N-R63W

Crow Creek AA01-734 Pad Sec.1-T6N-R63W

Crow Creek AA01-724

Wellbore #1

Design: Wellbore #1

Final Survey

22 December, 2014

Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Crow Creek AA01-724
Project:	Sec.1-T6N-R63W	TVD Reference:	WELL @ 4873.0ft (PD 829 RKB - 16')
Site:	Crow Creek AA01-734 Pad Sec.1-T6N-R63W	MD Reference:	WELL @ 4873.0ft (PD 829 RKB - 16')
Well:	Crow Creek AA01-724	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.1-T6N-R63W, 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	Crow Creek AA01-734 Pad Sec.1-T6N-R63W				
Site Position:		Northing:	1,435,003.08 ft	Latitude:	40.522080
From:	Lat/Long	Easting:	3,311,547.85 ft	Longitude:	-104.379330
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.72 °

Well	Crow Creek AA01-724					
Well Position	+N/-S	0.0 ft	Northing:	1,435,003.52 ft	Latitude:	40.522080
	+E/-W	0.0 ft	Easting:	3,311,583.99 ft	Longitude:	-104.379200
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,857.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/12/2014	8.19	67.09	52,866

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	175.82	

Survey Program	Date	12/22/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
303.0	655.0	Surface (Wellbore #1)	Flexi-Shot	VES Flexi-Shot Tool	
788.0	7,019.0	Intermediate/Curve (Wellbore #1)	MWD	MWD - Standard	
7,078.0	11,598.0	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	
303.0	0.00	87.03	303.0	0.0	0.0	0.0	0.00	
655.0	0.00	87.03	655.0	0.0	0.0	0.0	0.00	
788.0	0.30	194.00	788.0	-0.3	-0.1	0.3	0.23	
877.0	0.30	177.80	877.0	-0.8	-0.1	0.8	0.09	
967.0	0.40	181.40	967.0	-1.3	-0.1	1.3	0.11	
1,056.0	0.50	218.50	1,056.0	-2.0	-0.4	1.9	0.34	
1,164.0	0.40	188.30	1,164.0	-2.7	-0.7	2.6	0.23	
1,259.0	0.60	183.20	1,259.0	-3.5	-0.8	3.5	0.22	
1,354.0	0.90	211.00	1,354.0	-4.7	-1.2	4.6	0.49	

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Site:	Crow Creek AA01-734 Pad Sec.1-T6N-R63W	MD Reference:	WELL @ 4873.0ft (PD 829 RKB - 16')
Well:	Crow Creek AA01-724	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)
1,449.0	0.80	210.10	1,449.0	-5.9	-1.9	5.7	0.11
1,544.0	0.40	239.30	1,544.0	-6.6	-2.5	6.4	0.52
1,639.0	1.80	116.70	1,638.9	-7.5	-1.5	7.3	2.15
1,734.0	4.10	85.30	1,733.8	-7.9	3.2	8.1	2.87
1,829.0	4.70	93.20	1,828.5	-7.8	10.5	8.5	0.90
1,924.0	6.00	82.30	1,923.1	-7.3	19.3	8.7	1.73
2,037.0	7.50	72.20	2,035.3	-4.3	32.2	6.6	1.69
2,127.0	9.30	69.60	2,124.4	0.0	44.6	3.2	2.04
2,217.0	9.40	56.30	2,213.2	6.6	57.5	-2.4	2.40
2,306.0	9.80	46.70	2,301.0	15.9	69.1	-10.8	1.85
2,396.0	9.70	44.10	2,389.7	26.6	79.9	-20.7	0.50
2,485.0	9.10	42.30	2,477.5	37.2	89.9	-30.5	0.75
2,575.0	8.90	40.50	2,566.3	47.7	99.2	-40.4	0.38
2,664.0	8.60	39.90	2,654.3	58.1	107.9	-50.0	0.35
2,754.0	8.40	40.40	2,743.3	68.2	116.5	-59.5	0.24
2,844.0	8.60	39.80	2,832.3	78.4	125.1	-69.1	0.24
2,933.0	6.90	47.20	2,920.5	87.2	133.3	-77.2	2.21
3,023.0	7.40	50.50	3,009.8	94.5	141.7	-83.9	0.72
3,112.0	7.30	47.70	3,098.1	102.0	150.3	-90.7	0.42
3,202.0	7.20	47.30	3,187.4	109.6	158.7	-97.8	0.12
3,292.0	7.00	45.20	3,276.7	117.3	166.7	-104.8	0.36
3,381.0	6.70	43.20	3,365.0	124.9	174.1	-111.9	0.43
3,470.0	6.70	49.90	3,453.4	132.1	181.6	-118.5	0.88
3,560.0	6.10	46.30	3,542.9	138.7	189.1	-124.6	0.80
3,650.0	5.80	45.80	3,632.4	145.2	195.8	-130.5	0.34
3,739.0	5.80	44.80	3,720.9	151.5	202.2	-136.4	0.11
3,829.0	5.60	46.00	3,810.5	157.8	208.6	-142.2	0.26
3,919.0	5.50	48.10	3,900.1	163.8	215.0	-147.6	0.25
4,008.0	7.40	55.10	3,988.5	169.9	222.8	-153.2	2.31
4,098.0	7.20	54.70	4,077.8	176.5	232.2	-159.0	0.23
4,188.0	7.10	55.00	4,167.1	182.9	241.3	-164.8	0.12
4,277.0	6.90	52.50	4,255.4	189.3	250.1	-170.6	0.41
4,367.0	6.60	49.40	4,344.8	196.0	258.3	-176.6	0.52
4,456.0	6.00	45.20	4,433.3	202.6	265.5	-182.7	0.85
4,546.0	5.10	38.50	4,522.8	209.0	271.3	-188.7	1.23
4,636.0	3.80	30.20	4,612.6	214.7	275.3	-194.1	1.61
4,725.0	4.00	25.50	4,701.4	220.1	278.1	-199.2	0.42
4,815.0	2.80	33.20	4,791.2	224.8	280.7	-203.7	1.42
4,904.0	3.20	53.10	4,880.1	228.1	283.9	-206.7	1.25
4,994.0	0.70	358.90	4,970.0	230.1	285.9	-208.7	3.16
5,084.0	0.80	12.70	5,060.0	231.3	286.0	-209.8	0.23
5,173.0	1.10	355.60	5,149.0	232.7	286.1	-211.3	0.46
5,263.0	0.80	343.60	5,239.0	234.2	285.8	-212.7	0.40
5,353.0	0.10	169.30	5,329.0	234.7	285.7	-213.3	1.00
5,442.0	0.50	243.00	5,418.0	234.5	285.3	-213.0	0.54

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Well:	Crow Creek AA01-724	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)
5,532.0	0.50	287.00	5,508.0	234.4	284.6	-213.0	0.42
5,621.0	0.30	282.60	5,597.0	234.6	284.0	-213.2	0.23
5,711.0	0.40	310.00	5,687.0	234.8	283.5	-213.5	0.21
5,801.0	0.40	294.00	5,777.0	235.2	283.0	-213.9	0.12
5,891.0	0.40	324.60	5,867.0	235.6	282.5	-214.3	0.23
5,935.0	0.50	286.90	5,911.0	235.7	282.3	-214.5	0.69
5,980.0	2.30	236.10	5,956.0	235.3	281.3	-214.1	4.49
6,025.0	6.90	209.60	6,000.8	232.4	279.2	-211.4	11.00
6,070.0	11.70	194.30	6,045.2	225.7	276.8	-204.9	11.91
6,115.0	16.30	190.30	6,088.9	215.0	274.5	-194.4	10.44
6,160.0	19.60	189.20	6,131.7	201.3	272.2	-180.9	7.37
6,205.0	22.50	185.80	6,173.7	185.3	270.1	-165.1	6.99
6,249.0	25.30	181.70	6,213.9	167.5	269.0	-147.5	7.40
6,294.0	28.40	176.70	6,254.0	147.2	269.3	-127.2	8.52
6,339.0	30.70	177.50	6,293.2	125.1	270.4	-105.0	5.19
6,384.0	33.50	179.20	6,331.3	101.2	271.1	-81.1	6.54
6,429.0	36.30	182.40	6,368.2	75.4	270.7	-55.5	7.43
6,473.0	41.10	181.30	6,402.5	48.0	269.8	-28.1	11.02
6,518.0	47.40	179.80	6,434.7	16.6	269.6	3.1	14.19
6,563.0	51.70	181.20	6,463.9	-17.7	269.2	37.3	9.84
6,608.0	54.20	181.00	6,491.0	-53.6	268.6	73.0	5.57
6,653.0	57.70	177.80	6,516.2	-90.8	269.0	110.2	9.76
6,698.0	61.50	174.10	6,539.0	-129.5	271.7	149.0	11.03
6,742.0	64.70	174.20	6,558.9	-168.6	275.7	188.2	7.28
6,787.0	67.20	174.80	6,577.3	-209.5	279.7	229.3	5.69
6,832.0	68.10	175.00	6,594.4	-250.9	283.4	270.9	2.04
6,877.0	69.90	175.60	6,610.5	-292.8	286.8	312.9	4.19
6,922.0	73.70	178.30	6,624.5	-335.5	289.1	355.7	10.19
6,967.0	76.70	181.60	6,636.0	-379.0	289.1	399.0	9.73
7,019.0	81.60	180.70	6,645.8	-430.0	288.1	449.9	9.58
7,078.0	84.80	179.10	6,652.8	-488.6	288.2	508.3	6.06
7,171.0	87.90	179.10	6,658.7	-581.4	289.6	600.9	3.33
7,215.6	89.42	179.10	6,659.8	-626.0	290.3	645.5	3.40
Crow Creek AA01-724 Landing Pt.							
7,265.0	91.10	179.10	6,659.6	-675.3	291.1	694.8	3.40
7,358.0	89.10	176.70	6,659.4	-768.3	294.5	787.7	3.36
7,479.0	89.60	176.40	6,660.8	-889.0	301.8	908.7	0.48
7,569.0	88.60	178.40	6,662.2	-978.9	305.9	998.6	2.48
7,659.0	89.10	179.70	6,664.0	-1,068.9	307.4	1,088.5	1.55
7,748.0	89.40	179.10	6,665.2	-1,157.9	308.3	1,177.3	0.75
7,838.0	89.50	178.70	6,666.0	-1,247.9	310.0	1,267.1	0.46
7,926.0	89.00	180.10	6,667.2	-1,335.8	311.0	1,355.0	1.69
8,015.0	89.60	179.30	6,668.3	-1,424.8	311.4	1,443.8	1.12
8,105.0	90.40	179.10	6,668.3	-1,514.8	312.7	1,533.6	0.92

Company: Noble Energy Inc.- Weld County, CO (Grid North)
Project: Sec.1-T6N-R63W
Site: Crow Creek AA01-734 Pad Sec.1-T6N-R63W
Well: Crow Creek AA01-724
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Crow Creek AA01-724
TVD Reference: WELL @ 4873.0ft (PD 829 RKB - 16')
MD Reference: WELL @ 4873.0ft (PD 829 RKB - 16')
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)
8,195.0	90.10	179.40	6,667.9	-1,604.8	313.9	1,623.4	0.47
8,284.0	88.50	179.80	6,668.9	-1,693.8	314.5	1,712.2	1.85
8,374.0	88.90	179.80	6,671.0	-1,783.8	314.8	1,802.0	0.44
8,463.0	89.40	180.10	6,672.3	-1,872.8	314.9	1,890.7	0.66
8,553.0	90.30	179.20	6,672.5	-1,962.8	315.4	1,980.5	1.41
8,642.0	90.20	178.60	6,672.2	-2,051.7	317.1	2,069.4	0.68
8,732.0	89.40	177.00	6,672.5	-2,141.7	320.6	2,159.4	1.99
8,822.0	89.50	177.50	6,673.3	-2,231.6	324.9	2,249.3	0.57
8,912.0	89.80	176.30	6,673.9	-2,321.4	329.8	2,339.3	1.37
9,001.0	89.50	178.80	6,674.4	-2,410.3	333.6	2,428.3	2.83
9,091.0	89.70	180.20	6,675.1	-2,500.3	334.4	2,518.1	1.57
9,181.0	90.60	179.80	6,674.8	-2,590.3	334.4	2,607.8	1.09
9,270.0	91.40	179.80	6,673.3	-2,679.3	334.7	2,696.6	0.90
9,360.0	90.50	180.30	6,671.8	-2,769.3	334.6	2,786.3	1.14
9,450.0	91.10	180.30	6,670.5	-2,859.3	334.1	2,876.0	0.67
9,539.0	89.90	180.40	6,669.7	-2,948.3	333.6	2,964.8	1.35
9,629.0	89.20	180.50	6,670.5	-3,038.3	332.9	3,054.5	0.79
9,719.0	89.80	180.20	6,671.2	-3,128.3	332.3	3,144.2	0.75
9,808.0	88.30	179.50	6,672.7	-3,217.3	332.6	3,232.9	1.86
9,898.0	88.40	178.70	6,675.3	-3,307.2	334.0	3,322.8	0.90
9,987.0	88.70	178.30	6,677.6	-3,396.1	336.3	3,411.6	0.56
10,077.0	88.50	177.80	6,679.8	-3,486.1	339.4	3,501.5	0.60
10,167.0	88.70	177.60	6,682.0	-3,576.0	343.0	3,591.5	0.31
10,257.0	89.20	176.60	6,683.6	-3,665.8	347.5	3,681.4	1.24
10,346.0	89.20	177.70	6,684.8	-3,754.7	351.9	3,770.4	1.24
10,436.0	88.80	179.40	6,686.4	-3,844.7	354.2	3,860.3	1.94
10,526.0	89.00	179.20	6,688.1	-3,934.6	355.3	3,950.1	0.31
10,615.0	89.70	180.90	6,689.2	-4,023.6	355.2	4,038.8	2.07
10,705.0	90.20	181.00	6,689.2	-4,113.6	353.8	4,128.5	0.57
10,795.0	89.70	180.30	6,689.3	-4,203.6	352.7	4,218.2	0.96
10,884.0	90.90	181.10	6,688.8	-4,292.6	351.6	4,306.8	1.62
10,974.0	91.60	180.80	6,686.9	-4,382.6	350.2	4,396.4	0.85
11,064.0	92.10	180.80	6,684.0	-4,472.5	348.9	4,486.1	0.56
11,153.0	92.80	180.50	6,680.2	-4,561.4	347.9	4,574.7	0.86
11,243.0	92.00	180.50	6,676.4	-4,651.3	347.1	4,664.3	0.89
11,333.0	90.90	177.40	6,674.1	-4,741.3	348.8	4,754.1	3.65
11,423.0	88.90	176.40	6,674.3	-4,831.2	353.6	4,844.1	2.48
11,536.0	89.10	175.60	6,676.3	-4,943.9	361.5	4,957.1	0.73
11,598.0	89.10	175.60	6,677.2	-5,005.7	366.3	5,019.1	0.00

Crow Creek AA01-724 BHL 30'FNL & 910'FEL, Sec.12

Checked By: _____ Approved By: _____ Date: _____