

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

Well Name: **Castor Federal LD15-73-1HN**

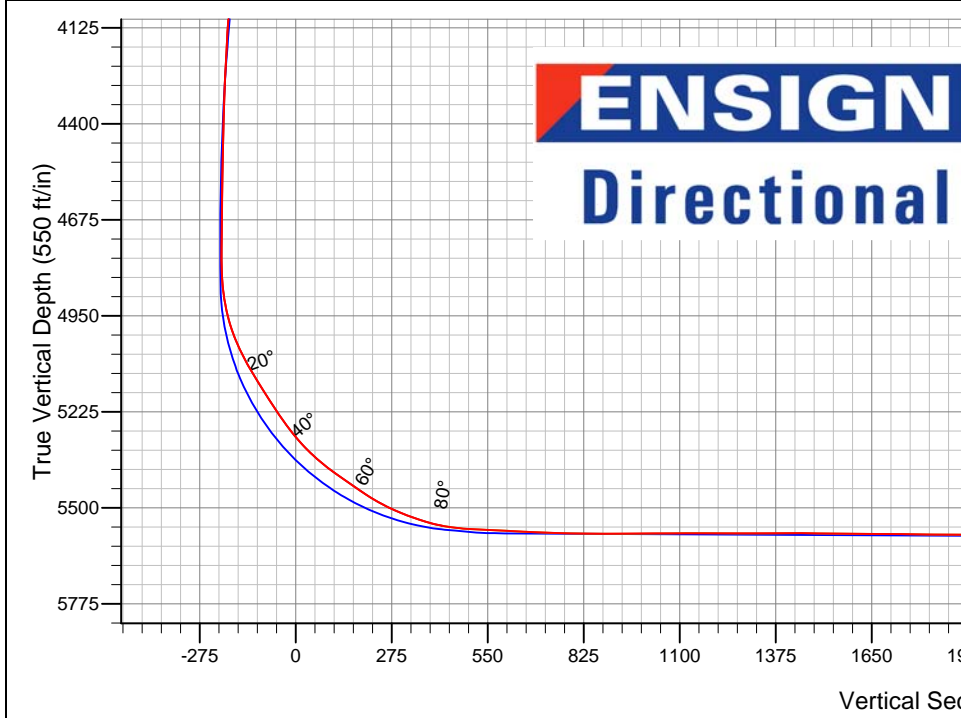
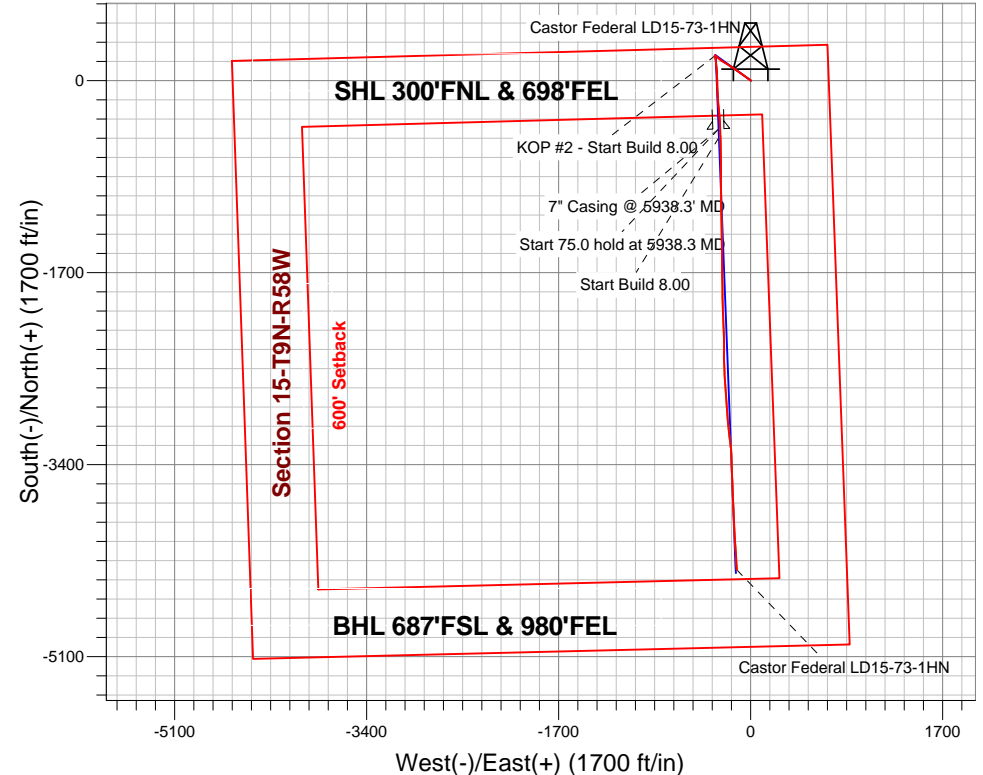
Surface Location: Castor Federal LD15-72HN Pad Sec.15-T9N-R58W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4706.0

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|-------|-------|------------|------------|-----------|-------------|------|
| 0.0 | 0.0 | 1523220.86 | 3458940.12 | 40.757860 | -103.843320 | |

H&P 273 RKB - 24' WELL @ 4730.0ft (H&P 273 RKB - 24')

FINAL SURVEY

Projected Bottom Hole Location
 9807' MD 5588' TVD 4334' S & 122' W of SHL
 91.7 degree Incl @ 176.3 degree AZM

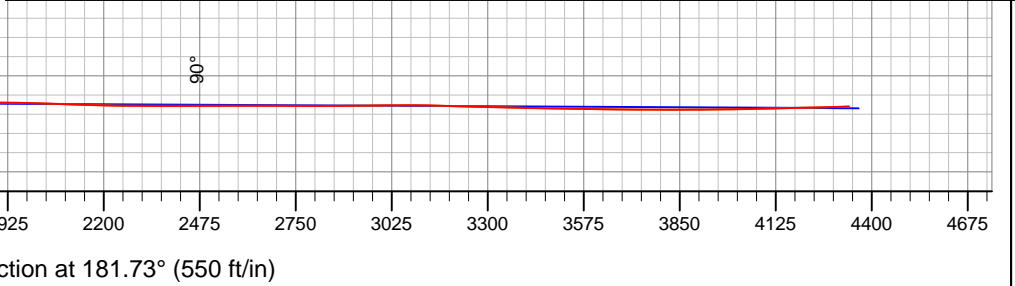


Castor Federal LD15-72HN Pad Sec.15-T9N-R58W
 Castor Federal LD15-73-1HN
 Wellbore #1
 9:59, December 26 2013

ANNOTATIONS
 No annotation data is available.

LEGEND

- ▲ Castor Federal LD15-73-1HN, Wellbore #1, Plan A - Rev 4 V0
- Castor Federal LD15-73-1HN, Wellbore #1, Surface
- Castor Federal LD15-73-1HN, Wellbore #1, Lateral
- Castor Federal LD15-73-1HN, Wellbore #1, Intermediate
- Wellbore #1





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

Sec.15-T9N-R58W

Castor Federal LD15-72HN Pad Sec.15-T9N-R58W

Castor Federal LD15-73-1HN

Wellbore #1

Design: Wellbore #1

Standard Survey Report

26 December, 2013

| | | | |
|------------------|---|-------------------------------------|-------------------------------------|
| Company: | Noble Energy Inc.- Weld County, CO (Grid North) | Local Co-ordinate Reference: | Well Castor Federal LD15-73-1HN |
| Project: | Sec.15-T9N-R58W | TVD Reference: | WELL @ 4730.0ft (H&P 273 RKB - 24') |
| Site: | Castor Federal LD15-72HN Pad Sec.15-T9N-R58W | MD Reference: | WELL @ 4730.0ft (H&P 273 RKB - 24') |
| Well: | Castor Federal LD15-73-1HN | 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 | Castor Federal LD15-72HN Pad Sec.15-T9N-R58W | | | | |
| Site Position: | | Northing: | 1,523,221.59 ft | Latitude: | 40.757860 |
| From: | Lat/Long | Easting: | 3,458,978.90 ft | Longitude: | -103.843180 |
| Position Uncertainty: | 0.0 ft | Slot Radius: | " | Grid Convergence: | 1.07 ° |

| | | | | | | |
|-----------------------------|----------------------------|--------|----------------------------|-----------------|----------------------|-------------|
| Well | Castor Federal LD15-73-1HN | | | | | |
| Well Position | +N/-S | 0.0 ft | Northing: | 1,523,220.86 ft | Latitude: | 40.757860 |
| | +E/-W | 0.0 ft | Easting: | 3,458,940.12 ft | Longitude: | -103.843320 |
| Position Uncertainty | | 0.0 ft | Wellhead Elevation: | ft | Ground Level: | 4,706.0 ft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Wellbore #1 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2010 | 11/11/2013 | 8.06 | 67.40 | 53,158 |

| | | | | | |
|--------------------------|------------------------------|-------------------|-------------------|----------------------|-----|
| 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 | 12/26/2013 | | | |
| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description | |
| 330.0 | 1,086.0 | Surface (Wellbore #1) | Flexi-Shot | VES Flexi-Shot Tool | |
| 1,279.0 | 5,878.0 | Intermediate (Wellbore #1) | MWD | MWD - Standard | |
| 5,971.0 | 9,807.0 | 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 | |
| 330.0 | 0.20 | 209.19 | 330.0 | -0.5 | -0.3 | 0.5 | 0.06 | 0.06 | 0.00 | |
| 802.0 | 0.40 | 70.20 | 802.0 | -0.7 | 0.9 | 0.6 | 0.12 | 0.04 | -29.45 | |
| 1,086.0 | 0.50 | 6.00 | 1,086.0 | 0.9 | 1.9 | -1.0 | 0.17 | 0.04 | -22.61 | |
| 1,279.0 | 0.70 | 281.00 | 1,279.0 | 2.0 | 0.9 | -2.0 | 0.43 | 0.10 | -44.04 | |
| 1,465.0 | 0.80 | 272.20 | 1,465.0 | 2.2 | -1.6 | -2.2 | 0.08 | 0.05 | -4.73 | |
| 1,558.0 | 2.00 | 308.10 | 1,557.9 | 3.3 | -3.5 | -3.2 | 1.54 | 1.29 | 38.60 | |
| 1,650.0 | 2.90 | 311.60 | 1,649.9 | 5.8 | -6.5 | -5.6 | 0.99 | 0.98 | 3.80 | |
| 1,743.0 | 4.00 | 312.10 | 1,742.7 | 9.5 | -10.6 | -9.2 | 1.18 | 1.18 | 0.54 | |

| | | | |
|------------------|---|-------------------------------------|-------------------------------------|
| Company: | Noble Energy Inc.- Weld County, CO (Grid North) | Local Co-ordinate Reference: | Well Castor Federal LD15-73-1HN |
| Project: | Sec.15-T9N-R58W | TVD Reference: | WELL @ 4730.0ft (H&P 273 RKB - 24') |
| Site: | Castor Federal LD15-72HN Pad Sec.15-T9N-R58W | MD Reference: | WELL @ 4730.0ft (H&P 273 RKB - 24') |
| Well: | Castor Federal LD15-73-1HN | 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) | |
| 1,838.0 | 5.50 | 306.50 | 1,837.4 | 14.5 | -16.8 | -13.9 | 1.65 | 1.58 | -5.89 | |
| 1,933.0 | 6.60 | 300.40 | 1,931.8 | 19.9 | -25.1 | -19.2 | 1.34 | 1.16 | -6.42 | |
| 2,028.0 | 8.20 | 308.80 | 2,026.0 | 26.9 | -35.1 | -25.9 | 2.03 | 1.68 | 8.84 | |
| 2,123.0 | 8.40 | 301.60 | 2,120.0 | 34.8 | -46.3 | -33.4 | 1.11 | 0.21 | -7.58 | |
| 2,218.0 | 8.40 | 306.20 | 2,214.0 | 42.6 | -57.8 | -40.8 | 0.71 | 0.00 | 4.84 | |
| 2,312.0 | 7.40 | 306.90 | 2,307.1 | 50.2 | -68.2 | -48.2 | 1.07 | -1.06 | 0.74 | |
| 2,407.0 | 8.90 | 307.70 | 2,401.2 | 58.4 | -78.9 | -56.0 | 1.58 | 1.58 | 0.84 | |
| 2,502.0 | 8.80 | 306.00 | 2,495.0 | 67.2 | -90.6 | -64.4 | 0.29 | -0.11 | -1.79 | |
| 2,597.0 | 8.50 | 306.70 | 2,589.0 | 75.6 | -102.1 | -72.5 | 0.33 | -0.32 | 0.74 | |
| 2,692.0 | 9.50 | 305.80 | 2,682.8 | 84.4 | -114.1 | -80.9 | 1.06 | 1.05 | -0.95 | |
| 2,787.0 | 9.10 | 304.90 | 2,776.5 | 93.3 | -126.6 | -89.4 | 0.45 | -0.42 | -0.95 | |
| 2,881.0 | 8.70 | 301.10 | 2,869.4 | 101.2 | -138.8 | -97.0 | 0.76 | -0.43 | -4.04 | |
| 2,977.0 | 7.90 | 299.30 | 2,964.4 | 108.2 | -150.8 | -103.6 | 0.88 | -0.83 | -1.88 | |
| 3,071.0 | 9.20 | 303.50 | 3,057.4 | 115.5 | -162.7 | -110.6 | 1.53 | 1.38 | 4.47 | |
| 3,166.0 | 9.60 | 303.30 | 3,151.1 | 124.1 | -175.6 | -118.7 | 0.42 | 0.42 | -0.21 | |
| 3,261.0 | 9.30 | 303.00 | 3,244.8 | 132.6 | -188.7 | -126.8 | 0.32 | -0.32 | -0.32 | |
| 3,356.0 | 9.20 | 301.10 | 3,338.6 | 140.7 | -201.6 | -134.5 | 0.34 | -0.11 | -2.00 | |
| 3,451.0 | 9.70 | 303.70 | 3,432.3 | 149.1 | -214.8 | -142.5 | 0.69 | 0.53 | 2.74 | |
| 3,546.0 | 9.50 | 303.50 | 3,525.9 | 157.8 | -228.0 | -150.9 | 0.21 | -0.21 | -0.21 | |
| 3,641.0 | 8.00 | 295.80 | 3,619.8 | 165.0 | -240.5 | -157.7 | 2.00 | -1.58 | -8.11 | |
| 3,735.0 | 7.50 | 308.10 | 3,713.0 | 171.7 | -251.2 | -164.0 | 1.84 | -0.53 | 13.09 | |
| 3,830.0 | 7.40 | 306.90 | 3,807.2 | 179.2 | -261.0 | -171.2 | 0.19 | -0.11 | -1.26 | |
| 3,925.0 | 7.80 | 308.80 | 3,901.3 | 186.9 | -270.9 | -178.6 | 0.50 | 0.42 | 2.00 | |
| 4,020.0 | 6.80 | 309.00 | 3,995.6 | 194.5 | -280.3 | -185.9 | 1.05 | -1.05 | 0.21 | |
| 4,115.0 | 6.10 | 309.90 | 4,090.0 | 201.2 | -288.5 | -192.4 | 0.74 | -0.74 | 0.95 | |
| 4,210.0 | 4.90 | 309.00 | 4,184.5 | 207.0 | -295.5 | -198.0 | 1.27 | -1.26 | -0.95 | |
| 4,305.0 | 4.00 | 310.20 | 4,279.2 | 211.7 | -301.2 | -202.5 | 0.95 | -0.95 | 1.26 | |
| 4,400.0 | 3.40 | 303.90 | 4,374.0 | 215.4 | -306.1 | -206.1 | 0.76 | -0.63 | -6.63 | |
| 4,494.0 | 3.40 | 289.60 | 4,467.9 | 217.9 | -311.0 | -208.4 | 0.90 | 0.00 | -15.21 | |
| 4,589.0 | 1.70 | 294.00 | 4,562.8 | 219.4 | -315.0 | -209.8 | 1.80 | -1.79 | 4.63 | |
| 4,684.0 | 1.30 | 303.20 | 4,657.7 | 220.6 | -317.2 | -210.9 | 0.49 | -0.42 | 9.68 | |
| 4,779.0 | 1.10 | 336.60 | 4,752.7 | 222.0 | -318.4 | -212.3 | 0.75 | -0.21 | 35.16 | |
| 4,871.0 | 3.70 | 159.60 | 4,844.7 | 220.1 | -317.8 | -210.3 | 5.22 | 2.83 | -192.39 | |
| 4,966.0 | 12.90 | 167.60 | 4,938.6 | 206.8 | -314.4 | -197.2 | 9.74 | 9.68 | 8.42 | |
| 5,061.0 | 24.00 | 172.60 | 5,028.6 | 177.2 | -309.6 | -167.7 | 11.79 | 11.68 | 5.26 | |
| 5,156.0 | 31.10 | 174.10 | 5,112.7 | 133.6 | -304.6 | -124.3 | 7.51 | 7.47 | 1.58 | |
| 5,251.0 | 33.10 | 176.40 | 5,193.2 | 83.3 | -300.4 | -74.1 | 2.47 | 2.11 | 2.42 | |
| 5,346.0 | 36.40 | 177.30 | 5,271.3 | 29.2 | -297.5 | -20.2 | 3.52 | 3.47 | 0.95 | |
| 5,441.0 | 46.20 | 179.80 | 5,342.5 | -33.4 | -296.0 | 42.3 | 10.46 | 10.32 | 2.63 | |
| 5,535.0 | 55.10 | 176.30 | 5,402.1 | -105.9 | -293.4 | 114.8 | 9.89 | 9.47 | -3.72 | |
| 5,630.0 | 55.70 | 175.40 | 5,456.0 | -183.9 | -287.8 | 192.5 | 1.00 | 0.63 | -0.95 | |
| 5,725.0 | 65.40 | 175.60 | 5,502.7 | -266.3 | -281.3 | 274.7 | 10.21 | 10.21 | 0.21 | |
| 5,820.0 | 72.30 | 176.10 | 5,537.0 | -354.6 | -274.9 | 362.8 | 7.28 | 7.26 | 0.53 | |
| 5,878.0 | 79.50 | 177.00 | 5,551.1 | -410.7 | -271.5 | 418.8 | 12.50 | 12.41 | 1.55 | |
| 5,971.0 | 87.50 | 178.60 | 5,561.6 | -503.0 | -268.0 | 510.9 | 8.77 | 8.60 | 1.72 | |
| 6,029.8 | 87.44 | 178.60 | 5,564.2 | -561.7 | -266.5 | 569.5 | 0.11 | -0.11 | 0.00 | |
| Castor Federal LD15-73-1HN Landing Pt. | | | | | | | | | | |
| 6,064.0 | 87.40 | 178.60 | 5,565.7 | -595.9 | -265.7 | 603.6 | 0.11 | -0.11 | 0.00 | |
| 6,157.0 | 87.10 | 179.10 | 5,570.2 | -688.7 | -263.8 | 696.4 | 0.63 | -0.32 | 0.54 | |
| 6,249.0 | 89.00 | 179.60 | 5,573.3 | -780.7 | -262.8 | 788.3 | 2.14 | 2.07 | 0.54 | |
| 6,342.0 | 89.70 | 179.40 | 5,574.4 | -873.7 | -262.0 | 881.2 | 0.78 | 0.75 | -0.22 | |
| 6,437.0 | 90.40 | 180.10 | 5,574.3 | -968.7 | -261.6 | 976.1 | 1.04 | 0.74 | 0.74 | |

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|------------------|---|-------------------------------------|-------------------------------------|
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| Well: | Castor Federal LD15-73-1HN | 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) |
|---|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 6,532.0 | 90.90 | 180.30 | 5,573.2 | -1,063.7 | -261.9 | 1,071.1 | 0.57 | 0.53 | 0.21 |
| 6,627.0 | 89.70 | 178.90 | 5,572.7 | -1,158.7 | -261.2 | 1,166.0 | 1.94 | -1.26 | -1.47 |
| 6,722.0 | 89.70 | 179.10 | 5,573.2 | -1,253.6 | -259.6 | 1,260.9 | 0.21 | 0.00 | 0.21 |
| 6,816.0 | 90.40 | 179.10 | 5,573.1 | -1,347.6 | -258.1 | 1,354.8 | 0.74 | 0.74 | 0.00 |
| 6,911.0 | 90.00 | 178.70 | 5,572.8 | -1,442.6 | -256.3 | 1,449.7 | 0.60 | -0.42 | -0.42 |
| 7,006.0 | 88.90 | 178.20 | 5,573.7 | -1,537.6 | -253.7 | 1,544.5 | 1.27 | -1.16 | -0.53 |
| 7,101.0 | 89.50 | 179.90 | 5,575.0 | -1,632.5 | -252.1 | 1,639.4 | 1.90 | 0.63 | 1.79 |
| 7,196.0 | 89.80 | 179.40 | 5,575.6 | -1,727.5 | -251.6 | 1,734.4 | 0.61 | 0.32 | -0.53 |
| 7,290.0 | 89.30 | 179.60 | 5,576.4 | -1,821.5 | -250.7 | 1,828.3 | 0.57 | -0.53 | 0.21 |
| 7,385.0 | 89.70 | 179.40 | 5,577.2 | -1,916.5 | -249.9 | 1,923.2 | 0.47 | 0.42 | -0.21 |
| 7,480.0 | 88.20 | 177.50 | 5,578.9 | -2,011.5 | -247.3 | 2,018.0 | 2.55 | -1.58 | -2.00 |
| 7,575.0 | 88.40 | 177.30 | 5,581.8 | -2,106.3 | -243.0 | 2,112.7 | 0.30 | 0.21 | -0.21 |
| 7,670.0 | 88.30 | 177.10 | 5,584.5 | -2,201.2 | -238.4 | 2,207.4 | 0.24 | -0.11 | -0.21 |
| 7,765.0 | 89.60 | 179.90 | 5,586.2 | -2,296.1 | -235.9 | 2,302.2 | 3.25 | 1.37 | 2.95 |
| 7,860.0 | 90.00 | 180.70 | 5,586.6 | -2,391.1 | -236.4 | 2,397.2 | 0.94 | 0.42 | 0.84 |
| 7,954.0 | 90.00 | 178.00 | 5,586.6 | -2,485.1 | -235.3 | 2,491.1 | 2.87 | 0.00 | -2.87 |
| 8,049.0 | 90.70 | 178.40 | 5,586.0 | -2,580.0 | -232.4 | 2,585.9 | 0.85 | 0.74 | 0.42 |
| 8,144.0 | 89.60 | 175.40 | 5,585.7 | -2,674.9 | -227.2 | 2,680.5 | 3.36 | -1.16 | -3.16 |
| 8,239.0 | 89.80 | 175.60 | 5,586.2 | -2,769.6 | -219.8 | 2,775.0 | 0.30 | 0.21 | 0.21 |
| 8,334.0 | 90.20 | 176.10 | 5,586.2 | -2,864.3 | -212.9 | 2,869.5 | 0.67 | 0.42 | 0.53 |
| 8,429.0 | 90.70 | 176.10 | 5,585.5 | -2,959.1 | -206.4 | 2,964.0 | 0.53 | 0.53 | 0.00 |
| 8,452.2 | 90.70 | 176.00 | 5,585.2 | -2,982.3 | -204.8 | 2,987.1 | 0.42 | 0.00 | -0.42 |
| Bradbury 1 | | | | | | | | | |
| 8,524.0 | 90.70 | 175.70 | 5,584.3 | -3,053.9 | -199.6 | 3,058.5 | 0.42 | 0.00 | -0.42 |
| 8,618.0 | 88.00 | 171.20 | 5,585.4 | -3,147.2 | -188.9 | 3,151.5 | 5.58 | -2.87 | -4.79 |
| 8,713.0 | 88.90 | 174.00 | 5,588.0 | -3,241.4 | -176.7 | 3,245.2 | 3.09 | 0.95 | 2.95 |
| 8,808.0 | 88.20 | 178.00 | 5,590.4 | -3,336.1 | -170.1 | 3,339.7 | 4.27 | -0.74 | 4.21 |
| 8,903.0 | 89.10 | 178.20 | 5,592.6 | -3,431.0 | -166.9 | 3,434.5 | 0.97 | 0.95 | 0.21 |
| 8,998.0 | 89.00 | 177.80 | 5,594.2 | -3,526.0 | -163.6 | 3,529.3 | 0.43 | -0.11 | -0.42 |
| 9,093.0 | 89.30 | 178.00 | 5,595.6 | -3,620.9 | -160.1 | 3,624.1 | 0.38 | 0.32 | 0.21 |
| 9,188.0 | 89.30 | 177.70 | 5,596.7 | -3,715.8 | -156.6 | 3,718.8 | 0.32 | 0.00 | -0.32 |
| 9,282.0 | 89.90 | 177.70 | 5,597.4 | -3,809.7 | -152.8 | 3,812.6 | 0.64 | 0.64 | 0.00 |
| 9,377.0 | 90.50 | 177.30 | 5,597.1 | -3,904.6 | -148.7 | 3,907.3 | 0.76 | 0.63 | -0.42 |
| 9,472.0 | 91.00 | 176.80 | 5,595.8 | -3,999.5 | -143.8 | 4,002.0 | 0.74 | 0.53 | -0.53 |
| 9,567.0 | 91.10 | 176.30 | 5,594.1 | -4,094.3 | -138.0 | 4,096.6 | 0.54 | 0.11 | -0.53 |
| 9,662.0 | 91.50 | 176.10 | 5,591.9 | -4,189.1 | -131.8 | 4,191.1 | 0.47 | 0.42 | -0.21 |
| 9,747.0 | 91.70 | 176.30 | 5,589.6 | -4,273.9 | -126.1 | 4,275.7 | 0.33 | 0.24 | 0.24 |
| 9,807.0 | 91.70 | 176.30 | 5,587.8 | -4,333.7 | -122.3 | 4,335.4 | 0.00 | 0.00 | 0.00 |
| Castor Federal LD15-73-1HN BHL 660'FSL & 990'FEL | | | | | | | | | |

Checked By: _____ Approved By: _____ Date: _____