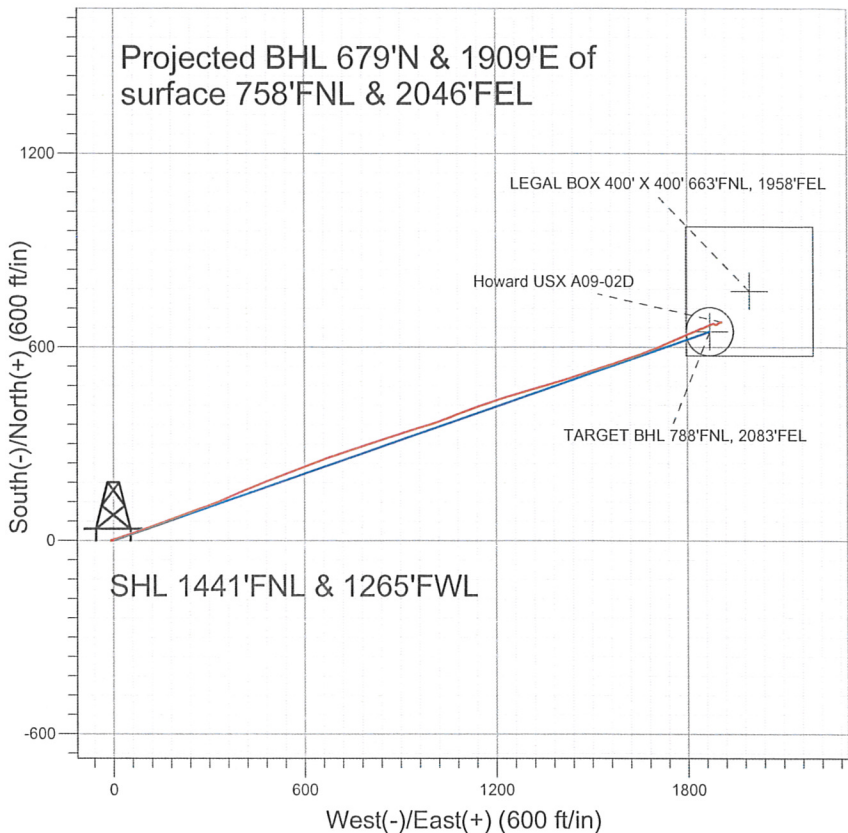


## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- Howard USX A09-02D, Wellbore #1, Noble Howard USX A09-02D Plan #1 (4-11-11) V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7670'MD & 7230'TVD @ 2026'VS  
0.9 deg Inc 66.5 deg AZ

Project: SEC.9-T6N-R64W  
Site: Howard USX A09-12D Pad Sec.9-T6N-R64W  
Well: Howard USX A09-02D  
Plan: Wellbore #1



**Directional**

**NOBLE ENERGY INC WELD  
COUNTY CO**

**SEC.9-T6N-R64W**

**Howard USX A09-12D Pad Sec.9-T6N-R64W**

**Howard USX A09-02D**

**Wellbore #1**

**Survey: Survey #1**

**Standard Survey Report**

**06 July, 2011**



**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T6N-R64W  
**Site:** Howard USX A09-12D Pad Sec.9-T6N-R64W  
**Well:** Howard USX A09-02D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Howard USX A09-02D  
**TVD Reference:** WELL @ 4881.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4881.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Landmark

|                    |                                       |                      |                             |
|--------------------|---------------------------------------|----------------------|-----------------------------|
| <b>Project</b>     | SEC.9-T6N-R64W, Weld County, Colorado |                      |                             |
| <b>Map System:</b> | US State Plane 1983                   | <b>System Datum:</b> | Mean Sea Level              |
| <b>Geo Datum:</b>  | North American Datum 1983             |                      | Using Well Reference Point  |
| <b>Map Zone:</b>   | Colorado Northern Zone                |                      | Using geodetic scale factor |

**Site** Howard USX A09-12D Pad Sec.9-T6N-R64W

|                              |          |                     |                 |                          |             |
|------------------------------|----------|---------------------|-----------------|--------------------------|-------------|
| <b>Site Position:</b>        |          | <b>Northing:</b>    | 1,427,836.92 ft | <b>Latitude:</b>         | 40.504010   |
| <b>From:</b>                 | Lat/Long | <b>Easting:</b>     | 3,261,401.52 ft | <b>Longitude:</b>        | -104.559970 |
| <b>Position Uncertainty:</b> | 0.0 ft   | <b>Slot Radius:</b> | "               | <b>Grid Convergence:</b> | 0.61 °      |

|                             |                    |        |                            |                 |                                 |
|-----------------------------|--------------------|--------|----------------------------|-----------------|---------------------------------|
| <b>Well</b>                 | Howard USX A09-02D |        |                            |                 |                                 |
| <b>Well Position</b>        | <b>+N/-S</b>       | 0.0 ft | <b>Northing:</b>           | 1,427,837.41 ft | <b>Latitude:</b> 40.504010      |
|                             | <b>+E/-W</b>       | 0.0 ft | <b>Easting:</b>            | 3,261,448.79 ft | <b>Longitude:</b> -104.559800   |
| <b>Position Uncertainty</b> | 0.0 ft             |        | <b>Wellhead Elevation:</b> | ft              | <b>Ground Level:</b> 4,868.0 ft |

**Wellbore** Wellbore #1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|------------|-------------|-----------------|---------------|---------------------|
|           | IGRF2010   | 4/11/2011   | 8.79            | 67.18         | 53,226              |

**Design** Wellbore #1

**Audit Notes:**

**Version:** 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.0

| Vertical Section: | Depth From (TVD)<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Direction<br>(°) |
|-------------------|--------------------------|---------------|---------------|------------------|
|                   | 0.0                      | 0.0           | 0.0           | 70.89            |

**Survey Program** Date 7/6/2011

| From<br>(ft) | To<br>(ft) | Survey (Wellbore)       | Tool Name | Description    |
|--------------|------------|-------------------------|-----------|----------------|
| 748.0        | 7,670.0    | Survey #1 (Wellbore #1) | MWD       | MWD - Standard |

**Survey**

| Measured<br>Depth<br>(ft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Vertical<br>Section<br>(ft) | Dogleg<br>Rate<br>(°/100ft) | Build<br>Rate<br>(°/100ft) | Turn<br>Rate<br>(°/100ft) |
|---------------------------|--------------------|----------------|---------------------------|---------------|---------------|-----------------------------|-----------------------------|----------------------------|---------------------------|
| 0.0                       | 0.00               | 0.00           | 0.0                       | 0.0           | 0.0           | 0.0                         | 0.00                        | 0.00                       | 0.00                      |
| 748.0                     | 1.00               | 277.50         | 748.0                     | 0.9           | -6.5          | -5.8                        | 0.13                        | 0.13                       | 0.00                      |
| 829.0                     | 0.60               | 269.30         | 829.0                     | 0.9           | -7.6          | -6.9                        | 0.51                        | -0.49                      | -10.12                    |
| 911.0                     | 1.70               | 66.50          | 910.9                     | 1.4           | -6.9          | -6.1                        | 2.76                        | 1.34                       | 191.71                    |
| 993.0                     | 3.20               | 64.50          | 992.9                     | 2.9           | -3.7          | -2.6                        | 1.83                        | 1.83                       | -2.44                     |
| 1,074.0                   | 5.50               | 71.30          | 1,073.6                   | 5.1           | 2.0           | 3.6                         | 2.91                        | 2.84                       | 8.40                      |
| 1,156.0                   | 7.50               | 75.40          | 1,155.1                   | 7.7           | 10.9          | 12.8                        | 2.50                        | 2.44                       | 5.00                      |
| 1,238.0                   | 9.40               | 72.90          | 1,236.2                   | 11.0          | 22.5          | 24.8                        | 2.36                        | 2.32                       | -3.05                     |
| 1,319.0                   | 11.30              | 71.60          | 1,315.9                   | 15.5          | 36.3          | 39.4                        | 2.36                        | 2.35                       | -1.60                     |
| 1,401.0                   | 12.50              | 72.40          | 1,396.1                   | 20.7          | 52.4          | 56.3                        | 1.48                        | 1.46                       | 0.98                      |
| 1,483.0                   | 14.60              | 69.70          | 1,475.8                   | 27.0          | 70.6          | 75.5                        | 2.67                        | 2.56                       | -3.29                     |
| 1,564.0                   | 15.80              | 68.50          | 1,554.0                   | 34.6          | 90.4          | 96.7                        | 1.53                        | 1.48                       | -1.48                     |
| 1,646.0                   | 16.70              | 70.80          | 1,632.7                   | 42.5          | 111.9         | 119.7                       | 1.35                        | 1.10                       | 2.80                      |



**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T6N-R64W  
**Site:** Howard USX A09-12D Pad Sec.9-T6N-R64W  
**Well:** Howard USX A09-02D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Howard USX A09-02D  
**TVD Reference:** WELL @ 4881.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4881.0ft (Original Well Elev)  
**North Reference:** True  
**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) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 1,728.0             | 18.50           | 70.70       | 1,710.9             | 50.7       | 135.3      | 144.5                 | 2.20                  | 2.20                 | -0.12               |
| 1,809.0             | 19.80           | 70.40       | 1,787.4             | 59.5       | 160.4      | 171.0                 | 1.61                  | 1.60                 | -0.37               |
| 1,891.0             | 20.90           | 70.00       | 1,864.3             | 69.2       | 187.2      | 199.5                 | 1.35                  | 1.34                 | -0.49               |
| 1,973.0             | 22.20           | 69.60       | 1,940.5             | 79.6       | 215.5      | 229.7                 | 1.60                  | 1.59                 | -0.49               |
| 2,054.0             | 23.90           | 69.80       | 2,015.1             | 90.6       | 245.2      | 261.4                 | 2.10                  | 2.10                 | 0.25                |
| 2,136.0             | 25.00           | 71.20       | 2,089.7             | 101.9      | 277.2      | 295.3                 | 1.52                  | 1.34                 | 1.71                |
| 2,218.0             | 25.90           | 69.50       | 2,163.8             | 113.8      | 310.4      | 330.5                 | 1.41                  | 1.10                 | -2.07               |
| 2,299.0             | 26.90           | 67.00       | 2,236.3             | 127.1      | 343.8      | 366.5                 | 1.85                  | 1.23                 | -3.09               |
| 2,381.0             | 27.70           | 66.90       | 2,309.2             | 141.9      | 378.4      | 404.0                 | 0.98                  | 0.98                 | -0.12               |
| 2,463.0             | 29.00           | 66.90       | 2,381.3             | 157.1      | 414.2      | 442.9                 | 1.59                  | 1.59                 | 0.00                |
| 2,545.0             | 29.30           | 67.10       | 2,453.0             | 172.8      | 451.0      | 482.7                 | 0.38                  | 0.37                 | 0.24                |
| 2,626.0             | 28.40           | 69.70       | 2,523.9             | 187.2      | 487.3      | 521.7                 | 1.91                  | -1.11                | 3.21                |
| 2,708.0             | 29.20           | 68.50       | 2,595.8             | 201.2      | 524.2      | 561.2                 | 1.20                  | 0.98                 | -1.46               |
| 2,790.0             | 28.90           | 70.60       | 2,667.5             | 215.2      | 561.5      | 601.0                 | 1.30                  | -0.37                | 2.56                |
| 2,871.0             | 28.50           | 69.30       | 2,738.5             | 228.5      | 598.1      | 639.9                 | 0.92                  | -0.49                | -1.60               |
| 2,953.0             | 28.90           | 68.30       | 2,810.4             | 242.7      | 634.8      | 679.3                 | 0.76                  | 0.49                 | -1.22               |
| 3,035.0             | 28.00           | 70.50       | 2,882.5             | 256.5      | 671.3      | 718.3                 | 1.68                  | -1.10                | 2.68                |
| 3,116.0             | 27.30           | 72.10       | 2,954.3             | 268.5      | 706.9      | 755.9                 | 1.26                  | -0.86                | 1.98                |
| 3,198.0             | 28.20           | 71.60       | 3,026.8             | 280.4      | 743.2      | 794.1                 | 1.13                  | 1.10                 | -0.61               |
| 3,280.0             | 26.90           | 72.80       | 3,099.5             | 292.0      | 779.3      | 832.0                 | 1.72                  | -1.59                | 1.46                |
| 3,361.0             | 28.00           | 70.10       | 3,171.4             | 303.9      | 814.7      | 869.3                 | 2.05                  | 1.36                 | -3.33               |
| 3,443.0             | 27.60           | 71.50       | 3,244.0             | 316.5      | 850.8      | 907.6                 | 0.93                  | -0.49                | 1.71                |
| 3,525.0             | 27.20           | 73.30       | 3,316.8             | 327.9      | 886.8      | 945.3                 | 1.12                  | -0.49                | 2.20                |
| 3,606.0             | 26.70           | 73.00       | 3,389.0             | 338.6      | 921.9      | 982.0                 | 0.64                  | -0.62                | -0.37               |
| 3,688.0             | 25.30           | 72.50       | 3,462.7             | 349.2      | 956.3      | 1,017.9               | 1.73                  | -1.71                | -0.61               |
| 3,770.0             | 25.50           | 72.50       | 3,536.7             | 359.8      | 989.8      | 1,053.0               | 0.24                  | 0.24                 | 0.00                |
| 3,851.0             | 24.60           | 71.90       | 3,610.1             | 370.3      | 1,022.5    | 1,087.3               | 1.15                  | -1.11                | -0.74               |
| 3,933.0             | 25.50           | 67.50       | 3,684.4             | 382.3      | 1,055.0    | 1,122.0               | 2.52                  | 1.10                 | -5.37               |
| 4,015.0             | 24.60           | 69.00       | 3,758.7             | 395.2      | 1,087.2    | 1,156.7               | 1.34                  | -1.10                | 1.83                |
| 4,096.0             | 26.50           | 71.40       | 3,831.8             | 407.0      | 1,120.1    | 1,191.6               | 2.67                  | 2.35                 | 2.96                |
| 4,178.0             | 29.80           | 69.40       | 3,904.1             | 420.0      | 1,156.5    | 1,230.3               | 4.19                  | 4.02                 | -2.44               |
| 4,260.0             | 29.60           | 71.00       | 3,975.3             | 433.8      | 1,194.7    | 1,270.9               | 1.00                  | -0.24                | 1.95                |
| 4,341.0             | 31.30           | 73.10       | 4,045.1             | 446.4      | 1,233.8    | 1,312.0               | 2.48                  | 2.10                 | 2.59                |
| 4,423.0             | 31.60           | 74.30       | 4,115.1             | 458.4      | 1,274.9    | 1,354.7               | 0.85                  | 0.37                 | 1.46                |
| 4,505.0             | 31.10           | 74.00       | 4,185.1             | 470.1      | 1,315.9    | 1,397.3               | 0.64                  | -0.61                | -0.37               |
| 4,587.0             | 30.00           | 73.70       | 4,255.7             | 481.7      | 1,355.9    | 1,438.9               | 1.35                  | -1.34                | -0.37               |
| 4,668.0             | 29.10           | 71.90       | 4,326.2             | 493.5      | 1,394.1    | 1,478.8               | 1.56                  | -1.11                | -2.22               |
| 4,750.0             | 28.40           | 73.40       | 4,398.1             | 505.2      | 1,431.7    | 1,518.2               | 1.23                  | -0.85                | 1.83                |
| 4,832.0             | 28.30           | 73.80       | 4,470.3             | 516.2      | 1,469.1    | 1,557.1               | 0.26                  | -0.12                | 0.49                |
| 4,913.0             | 27.20           | 71.10       | 4,541.9             | 527.6      | 1,505.0    | 1,594.8               | 2.06                  | -1.36                | -3.33               |
| 4,995.0             | 26.70           | 71.40       | 4,615.0             | 539.5      | 1,540.2    | 1,632.0               | 0.63                  | -0.61                | 0.37                |
| 5,077.0             | 25.80           | 70.40       | 4,688.6             | 551.4      | 1,574.5    | 1,668.3               | 1.22                  | -1.10                | -1.22               |
| 5,158.0             | 23.60           | 71.70       | 4,762.2             | 562.4      | 1,606.5    | 1,702.1               | 2.80                  | -2.72                | 1.60                |
| 5,240.0             | 21.90           | 70.80       | 4,837.8             | 572.6      | 1,636.5    | 1,733.8               | 2.12                  | -2.07                | -1.10               |
| 5,322.0             | 20.20           | 70.40       | 4,914.3             | 582.4      | 1,664.3    | 1,763.3               | 2.08                  | -2.07                | -0.49               |
| 5,403.0             | 19.80           | 68.00       | 4,990.4             | 592.2      | 1,690.2    | 1,790.9               | 1.13                  | -0.49                | -2.96               |
| 5,485.0             | 18.80           | 65.80       | 5,067.8             | 602.8      | 1,715.1    | 1,818.0               | 1.51                  | -1.22                | -2.68               |
| 5,567.0             | 19.00           | 68.00       | 5,145.4             | 613.2      | 1,739.6    | 1,844.5               | 0.90                  | 0.24                 | 2.68                |
| 5,648.0             | 19.20           | 67.90       | 5,221.9             | 623.2      | 1,764.1    | 1,870.9               | 0.25                  | 0.25                 | -0.12               |
| 5,730.0             | 16.70           | 65.70       | 5,299.9             | 633.1      | 1,787.4    | 1,896.1               | 3.16                  | -3.05                | -2.68               |
| 5,812.0             | 14.70           | 66.50       | 5,378.9             | 642.1      | 1,807.7    | 1,918.2               | 2.45                  | -2.44                | 0.98                |
| 5,893.0             | 12.20           | 66.90       | 5,457.6             | 649.6      | 1,825.0    | 1,937.0               | 3.09                  | -3.09                | 0.49                |
| 5,975.0             | 10.40           | 67.50       | 5,538.1             | 655.8      | 1,839.8    | 1,953.1               | 2.20                  | -2.20                | 0.73                |
| 6,057.0             | 8.90            | 69.00       | 5,618.9             | 660.9      | 1,852.5    | 1,966.8               | 1.85                  | -1.83                | 1.83                |

**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.9-T6N-R64W  
**Site:** Howard USX A09-12D Pad Sec.9-T6N-R64W  
**Well:** Howard USX A09-02D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well Howard USX A09-02D  
**TVD Reference:** WELL @ 4881.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4881.0ft (Original Well Elev)  
**North Reference:** True  
**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) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 6,138.0                                 | 7.20            | 65.20       | 5,699.1             | 665.3      | 1,863.0    | 1,978.1               | 2.20                  | -2.10                | -4.69               |
| 6,220.0                                 | 5.20            | 66.00       | 5,780.6             | 668.9      | 1,871.0    | 1,986.9               | 2.44                  | -2.44                | 0.98                |
| 6,302.0                                 | 4.40            | 66.10       | 5,862.3             | 671.7      | 1,877.3    | 1,993.8               | 0.98                  | -0.98                | 0.12                |
| 6,383.0                                 | 3.50            | 85.70       | 5,943.1             | 673.2      | 1,882.6    | 1,999.3               | 1.99                  | -1.11                | 24.20               |
| 6,465.0                                 | 2.20            | 114.40      | 6,025.0             | 672.7      | 1,886.5    | 2,002.8               | 2.31                  | -1.59                | 35.00               |
| 6,539.9                                 | 1.38            | 123.80      | 6,099.9             | 671.6      | 1,888.6    | 2,004.4               | 1.17                  | -1.10                | 12.55               |
| TARGET BHL 788'FNL, 2083'FEL            |                 |             |                     |            |            |                       |                       |                      |                     |
| 6,547.0                                 | 1.30            | 125.30      | 6,107.0             | 671.5      | 1,888.7    | 2,004.5               | 1.17                  | -1.06                | 21.14               |
| 6,629.0                                 | 0.70            | 127.10      | 6,189.0             | 670.7      | 1,889.9    | 2,005.3               | 0.73                  | -0.73                | 2.20                |
| 6,710.0                                 | 0.70            | 88.70       | 6,270.0             | 670.4      | 1,890.8    | 2,006.1               | 0.57                  | 0.00                 | -47.41              |
| 6,792.0                                 | 0.80            | 101.30      | 6,352.0             | 670.3      | 1,891.9    | 2,007.0               | 0.23                  | 0.12                 | 15.37               |
| 6,874.0                                 | 1.30            | 61.40       | 6,434.0             | 670.6      | 1,893.2    | 2,008.4               | 1.04                  | 0.61                 | -48.66              |
| 6,955.0                                 | 1.10            | 65.70       | 6,514.9             | 671.4      | 1,894.7    | 2,010.1               | 0.27                  | -0.25                | 5.31                |
| 7,037.0                                 | 1.60            | 44.00       | 6,596.9             | 672.5      | 1,896.3    | 2,011.9               | 0.86                  | 0.61                 | -26.46              |
| 7,119.0                                 | 1.50            | 54.40       | 6,678.9             | 674.0      | 1,897.9    | 2,014.0               | 0.36                  | -0.12                | 12.68               |
| 7,200.0                                 | 1.50            | 55.80       | 6,759.9             | 675.2      | 1,899.7    | 2,016.0               | 0.05                  | 0.00                 | 1.73                |
| 7,200.2                                 | 1.50            | 55.80       | 6,760.0             | 675.2      | 1,899.7    | 2,016.0               | 0.00                  | 0.00                 | 0.00                |
| TARGET CIRCLE 788'FNL, 2083'FEL         |                 |             |                     |            |            |                       |                       |                      |                     |
| 7,204.5                                 | 1.49            | 56.05       | 6,764.4             | 675.3      | 1,899.8    | 2,016.1               | 0.20                  | -0.13                | 5.72                |
| LEGAL BOX 400' X 400' 663'FNL, 1958'FEL |                 |             |                     |            |            |                       |                       |                      |                     |
| 7,282.0                                 | 1.40            | 60.80       | 6,841.8             | 676.3      | 1,901.4    | 2,018.0               | 0.20                  | -0.12                | 6.13                |
| 7,364.0                                 | 1.20            | 82.30       | 6,923.8             | 676.9      | 1,903.2    | 2,019.9               | 0.64                  | -0.24                | 26.22               |
| 7,445.0                                 | 1.10            | 59.10       | 7,004.8             | 677.4      | 1,904.7    | 2,021.5               | 0.58                  | -0.12                | -28.64              |
| 7,527.0                                 | 1.30            | 84.80       | 7,086.8             | 677.9      | 1,906.3    | 2,023.1               | 0.69                  | 0.24                 | 31.34               |
| 7,619.0                                 | 0.90            | 70.70       | 7,178.8             | 678.2      | 1,908.0    | 2,024.9               | 0.52                  | -0.43                | -15.33              |
| 7,670.0                                 | 0.90            | 66.50       | 7,229.7             | 678.5      | 1,908.7    | 2,025.7               | 0.13                  | 0.00                 | -8.24               |

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_