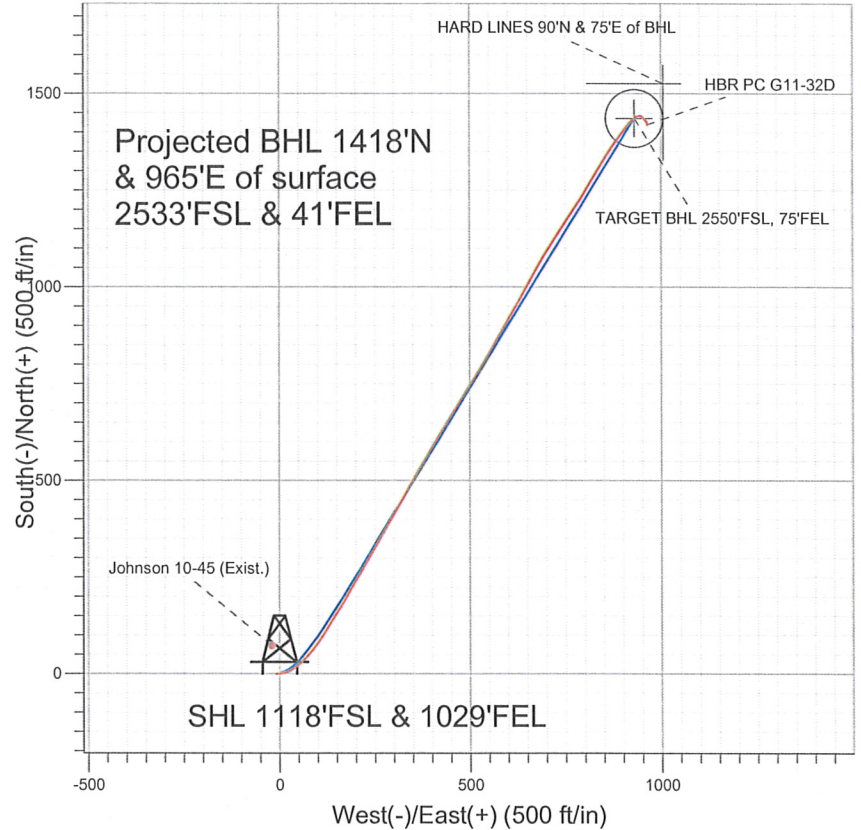


## NOBLE ENERGY INC WELD COUNTY CO



### LEGEND

- HBR PC G11-32D, Wellbore #1, Noble HBR PC G11-32D Plan #5 (8-18-11) V0
- Johnson 10-45 (Exist.), Wellbore #1, Design #1 V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
8003'MD & 7667'TVD @ 1714'VS  
1.2 deg Inc 178.2 deg AZ

Project: SEC.10-T4N-R65W  
Site: Erickson PC G15-27D Pad Sec.10-T4N-R65W  
Well: HBR PC G11-32D  
Plan: Wellbore #1



**Directional**

## **NOBLE ENERGY INC WELD COUNTY CO**

**SEC.10-T4N-R65W**

**Erickson PC G15-27D Pad Sec.10-T4N-R65W**

**HBR PC G11-32D**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**29 August, 2011**



**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.10-T4N-R65W  
**Site:** Erickson PC G15-27D Pad Sec.10-T4N-R65W  
**Well:** HBR PC G11-32D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well HBR PC G11-32D  
**TVD Reference:** WELL @ 4693.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4693.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Landmark

|                    |  |                      |                             |
|--------------------|--|----------------------|-----------------------------|
| <b>Project</b>     | SEC.10-T4N-R65W, 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** Erickson PC G15-27D Pad Sec.10-T4N-R65W

|                              |          |                     |                 |                          |             |
|------------------------------|----------|---------------------|-----------------|--------------------------|-------------|
| <b>Site Position:</b>        |          | <b>Northing:</b>    | 1,361,572.51 ft | <b>Latitude:</b>         | 40.322750   |
| <b>From:</b>                 | Lat/Long | <b>Easting:</b>     | 3,238,862.41 ft | <b>Longitude:</b>        | -104.643320 |
| <b>Position Uncertainty:</b> | 0.0 ft   | <b>Slot Radius:</b> | "               | <b>Grid Convergence:</b> | 0.55 °      |

|                             |                |        |                            |                 |                                 |
|-----------------------------|----------------|--------|----------------------------|-----------------|---------------------------------|
| <b>Well</b>                 | HBR PC G11-32D |        |                            |                 |                                 |
| <b>Well Position</b>        | <b>+N/-S</b>   | 0.0 ft | <b>Northing:</b>           | 1,361,597.94 ft | <b>Latitude:</b> 40.322820      |
|                             | <b>+E/-W</b>   | 0.0 ft | <b>Easting:</b>            | 3,238,856.59 ft | <b>Longitude:</b> -104.643340   |
| <b>Position Uncertainty</b> | 0.0 ft         |        | <b>Wellhead Elevation:</b> | ft              | <b>Ground Level:</b> 4,680.0 ft |

**Wellbore** Wellbore #1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|------------|-------------|-----------------|---------------|---------------------|
|           | IGRF2010   | 8/18/2011   | 8.77            | 67.00         | 53,087              |

**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           | 32.97            |

**Survey Program** Date 8/29/2011

| From (ft) | To (ft) | Survey (Wellbore)       | Tool Name | Description    |
|-----------|---------|-------------------------|-----------|----------------|
| 776.0     | 8,003.0 | Survey #1 (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                |
| 776.0               | 1.10            | 263.70      | 776.0               | -0.8       | -7.4       | -4.7                  | 0.14                  | 0.14                 | 0.00                |
| 861.0               | 0.70            | 72.00       | 860.9               | -0.7       | -7.7       | -4.8                  | 2.11                  | -0.47                | 198.00              |
| 947.0               | 2.50            | 90.10       | 946.9               | -0.6       | -5.3       | -3.4                  | 2.15                  | 2.09                 | 21.05               |
| 1,033.0             | 4.60            | 83.10       | 1,032.7             | -0.2       | 0.0        | -0.2                  | 2.49                  | 2.44                 | -8.14               |
| 1,118.0             | 6.40            | 82.10       | 1,117.3             | 0.9        | 8.0        | 5.1                   | 2.12                  | 2.12                 | -1.18               |
| 1,204.0             | 8.00            | 72.90       | 1,202.7             | 3.3        | 18.5       | 12.8                  | 2.29                  | 1.86                 | -10.70              |
| 1,289.0             | 9.20            | 61.50       | 1,286.7             | 8.3        | 30.1       | 23.3                  | 2.45                  | 1.41                 | -13.41              |
| 1,375.0             | 10.80           | 54.10       | 1,371.4             | 16.3       | 42.7       | 36.9                  | 2.38                  | 1.86                 | -8.60               |
| 1,460.0             | 11.90           | 46.00       | 1,454.8             | 27.0       | 55.5       | 52.9                  | 2.28                  | 1.29                 | -9.53               |
| 1,546.0             | 11.20           | 43.70       | 1,539.0             | 39.2       | 67.6       | 69.7                  | 0.97                  | -0.81                | -2.67               |
| 1,631.0             | 12.70           | 42.10       | 1,622.2             | 52.1       | 79.6       | 87.1                  | 1.81                  | 1.76                 | -1.88               |
| 1,717.0             | 14.00           | 38.30       | 1,705.8             | 67.3       | 92.4       | 106.7                 | 1.82                  | 1.51                 | -4.42               |



**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.10-T4N-R65W  
**Site:** Erickson PC G15-27D Pad Sec.10-T4N-R65W  
**Well:** HBR PC G11-32D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well HBR PC G11-32D  
**TVD Reference:** WELL @ 4693.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4693.0ft (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) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 1,802.0             | 15.40           | 33.80       | 1,788.1             | 84.8       | 105.0      | 128.3                 | 2.12                  | 1.65                 | -5.29               |
| 1,888.0             | 17.30           | 31.40       | 1,870.6             | 105.2      | 118.0      | 152.5                 | 2.34                  | 2.21                 | -2.79               |
| 1,973.0             | 19.00           | 31.80       | 1,951.3             | 127.7      | 131.9      | 178.9                 | 2.01                  | 2.00                 | 0.47                |
| 2,059.0             | 20.00           | 32.30       | 2,032.4             | 152.1      | 147.1      | 207.6                 | 1.18                  | 1.16                 | 0.58                |
| 2,144.0             | 21.90           | 32.80       | 2,111.8             | 177.7      | 163.5      | 238.0                 | 2.25                  | 2.24                 | 0.59                |
| 2,230.0             | 23.30           | 31.20       | 2,191.2             | 205.7      | 181.0      | 271.1                 | 1.78                  | 1.63                 | -1.86               |
| 2,315.0             | 23.70           | 29.50       | 2,269.1             | 235.0      | 198.1      | 304.9                 | 0.93                  | 0.47                 | -2.00               |
| 2,401.0             | 24.40           | 29.80       | 2,347.7             | 265.4      | 215.5      | 339.9                 | 0.83                  | 0.81                 | 0.35                |
| 2,486.0             | 25.10           | 30.20       | 2,424.9             | 296.2      | 233.2      | 375.5                 | 0.85                  | 0.82                 | 0.47                |
| 2,572.0             | 25.50           | 30.00       | 2,502.6             | 328.0      | 251.7      | 412.2                 | 0.48                  | 0.47                 | -0.23               |
| 2,657.0             | 26.50           | 30.90       | 2,579.0             | 360.1      | 270.6      | 449.4                 | 1.26                  | 1.18                 | 1.06                |
| 2,743.0             | 26.70           | 30.70       | 2,655.9             | 393.2      | 290.3      | 487.9                 | 0.25                  | 0.23                 | -0.23               |
| 2,828.0             | 26.50           | 29.90       | 2,731.9             | 426.1      | 309.5      | 525.9                 | 0.48                  | -0.24                | -0.94               |
| 2,914.0             | 26.20           | 29.50       | 2,809.0             | 459.2      | 328.4      | 564.0                 | 0.41                  | -0.35                | -0.47               |
| 2,999.0             | 24.80           | 29.30       | 2,885.7             | 491.1      | 346.4      | 600.5                 | 1.65                  | -1.65                | -0.24               |
| 3,085.0             | 26.40           | 31.20       | 2,963.3             | 523.2      | 365.1      | 637.6                 | 2.09                  | 1.86                 | 2.21                |
| 3,171.0             | 26.80           | 30.90       | 3,040.1             | 556.2      | 385.0      | 676.1                 | 0.49                  | 0.47                 | -0.35               |
| 3,256.0             | 26.10           | 30.10       | 3,116.3             | 588.8      | 404.2      | 713.9                 | 0.92                  | -0.82                | -0.94               |
| 3,342.0             | 24.80           | 31.20       | 3,193.9             | 620.6      | 423.0      | 750.9                 | 1.61                  | -1.51                | 1.28                |
| 3,427.0             | 24.00           | 30.90       | 3,271.3             | 650.7      | 441.1      | 786.0                 | 0.95                  | -0.94                | -0.35               |
| 3,513.0             | 24.10           | 32.90       | 3,349.8             | 680.4      | 459.6      | 821.0                 | 0.95                  | 0.12                 | 2.33                |
| 3,598.0             | 24.50           | 33.80       | 3,427.3             | 709.7      | 478.9      | 856.0                 | 0.64                  | 0.47                 | 1.06                |
| 3,684.0             | 23.80           | 32.60       | 3,505.8             | 739.1      | 498.1      | 891.2                 | 0.99                  | -0.81                | -1.40               |
| 3,769.0             | 23.80           | 30.90       | 3,583.6             | 768.3      | 516.2      | 925.4                 | 0.81                  | 0.00                 | -2.00               |
| 3,855.0             | 25.80           | 30.90       | 3,661.6             | 799.2      | 534.7      | 961.5                 | 2.33                  | 2.33                 | 0.00                |
| 3,940.0             | 26.10           | 30.20       | 3,738.1             | 831.2      | 553.6      | 998.6                 | 0.50                  | 0.35                 | -0.82               |
| 4,026.0             | 26.20           | 29.80       | 3,815.3             | 864.1      | 572.6      | 1,036.5               | 0.24                  | 0.12                 | -0.47               |
| 4,111.0             | 25.50           | 29.20       | 3,891.7             | 896.3      | 590.8      | 1,073.5               | 0.88                  | -0.82                | -0.71               |
| 4,197.0             | 25.00           | 30.30       | 3,969.5             | 928.2      | 609.0      | 1,110.1               | 0.80                  | -0.58                | 1.28                |
| 4,282.0             | 24.10           | 29.80       | 4,046.8             | 958.7      | 626.7      | 1,145.4               | 1.09                  | -1.06                | -0.59               |
| 4,368.0             | 25.40           | 28.00       | 4,124.9             | 990.3      | 644.1      | 1,181.3               | 1.75                  | 1.51                 | -2.09               |
| 4,453.0             | 25.30           | 28.20       | 4,201.8             | 1,022.4    | 661.2      | 1,217.6               | 0.15                  | -0.12                | 0.24                |
| 4,539.0             | 24.60           | 30.90       | 4,279.7             | 1,053.9    | 679.1      | 1,253.8               | 1.55                  | -0.81                | 3.14                |
| 4,624.0             | 25.10           | 30.90       | 4,356.9             | 1,084.6    | 697.4      | 1,289.5               | 0.59                  | 0.59                 | 0.00                |
| 4,710.0             | 26.00           | 32.30       | 4,434.5             | 1,116.2    | 716.9      | 1,326.5               | 1.26                  | 1.05                 | 1.63                |
| 4,795.0             | 25.30           | 33.70       | 4,511.1             | 1,147.0    | 736.9      | 1,363.3               | 1.09                  | -0.82                | 1.65                |
| 4,881.0             | 23.70           | 34.00       | 4,589.3             | 1,176.6    | 756.8      | 1,399.0               | 1.87                  | -1.86                | 0.35                |
| 4,966.0             | 22.30           | 32.70       | 4,667.6             | 1,204.4    | 775.1      | 1,432.2               | 1.75                  | -1.65                | -1.53               |
| 5,052.0             | 21.20           | 31.80       | 4,747.5             | 1,231.3    | 792.1      | 1,464.1               | 1.34                  | -1.28                | -1.05               |
| 5,137.0             | 19.70           | 32.30       | 4,827.1             | 1,256.5    | 807.8      | 1,493.8               | 1.78                  | -1.76                | 0.59                |
| 5,223.0             | 18.20           | 30.60       | 4,908.4             | 1,280.3    | 822.4      | 1,521.7               | 1.86                  | -1.74                | -1.98               |
| 5,309.0             | 17.50           | 30.70       | 4,990.3             | 1,303.0    | 835.8      | 1,548.0               | 0.81                  | -0.81                | 0.12                |
| 5,394.0             | 15.70           | 32.80       | 5,071.7             | 1,323.6    | 848.6      | 1,572.3               | 2.23                  | -2.12                | 2.47                |
| 5,480.0             | 13.90           | 31.80       | 5,154.9             | 1,342.2    | 860.3      | 1,594.2               | 2.11                  | -2.09                | -1.16               |
| 5,565.0             | 12.60           | 32.60       | 5,237.6             | 1,358.7    | 870.7      | 1,613.7               | 1.54                  | -1.53                | 0.94                |
| 5,651.0             | 11.90           | 34.70       | 5,321.7             | 1,373.9    | 880.8      | 1,632.0               | 0.96                  | -0.81                | 2.44                |
| 5,736.0             | 10.10           | 36.80       | 5,405.1             | 1,387.1    | 890.3      | 1,648.2               | 2.17                  | -2.12                | 2.47                |
| 5,822.0             | 9.30            | 38.40       | 5,489.9             | 1,398.5    | 899.1      | 1,662.6               | 0.98                  | -0.93                | 1.86                |
| 5,907.0             | 8.30            | 37.80       | 5,573.9             | 1,408.8    | 907.1      | 1,675.6               | 1.18                  | -1.18                | -0.71               |
| 5,993.0             | 7.30            | 39.60       | 5,659.1             | 1,417.9    | 914.4      | 1,687.2               | 1.20                  | -1.16                | 2.09                |
| 6,078.0             | 5.60            | 43.60       | 5,743.5             | 1,425.0    | 920.7      | 1,696.6               | 2.07                  | -2.00                | 4.71                |
| 6,164.0             | 4.20            | 46.00       | 5,829.2             | 1,430.3    | 925.9      | 1,703.8               | 1.64                  | -1.63                | 2.79                |
| 6,249.0             | 2.80            | 41.80       | 5,914.1             | 1,434.0    | 929.5      | 1,708.9               | 1.67                  | -1.65                | -4.94               |
| 6,335.0             | 1.10            | 26.51       | 6,000.0             | 1,436.3    | 931.3      | 1,711.8               | 2.05                  | -1.98                | -17.78              |

**Company:** NOBLE ENERGY INC WELD COUNTY CO  
**Project:** SEC.10-T4N-R65W  
**Site:** Erickson PC G15-27D Pad Sec.10-T4N-R65W  
**Well:** HBR PC G11-32D  
**Wellbore:** Wellbore #1  
**Design:** Wellbore #1

**Local Co-ordinate Reference:** Well HBR PC G11-32D  
**TVD Reference:** WELL @ 4693.0ft (Original Well Elev)  
**MD Reference:** WELL @ 4693.0ft (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) |
|--|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| <b>TARGET BHL 2550'FSL, 75'FEL</b>         |                 |             |                     |            |            |                       |                       |                      |                     |
| 6,420.0                                    | 0.50            | 37.20       | 6,085.0             | 1,437.3    | 931.9      | 1,713.0               | 0.72                  | -0.71                | 12.57               |
| 6,506.0                                    | 0.60            | 52.00       | 6,171.0             | 1,437.9    | 932.4      | 1,713.8               | 0.20                  | 0.12                 | 17.21               |
| 6,591.0                                    | 0.70            | 61.60       | 6,256.0             | 1,438.4    | 933.3      | 1,714.6               | 0.17                  | 0.12                 | 11.29               |
| 6,677.0                                    | 1.00            | 58.90       | 6,342.0             | 1,439.1    | 934.4      | 1,715.8               | 0.35                  | 0.35                 | -3.14               |
| 6,762.0                                    | 1.00            | 71.00       | 6,427.0             | 1,439.7    | 935.7      | 1,717.0               | 0.25                  | 0.00                 | 14.24               |
| 6,848.0                                    | 1.00            | 86.70       | 6,513.0             | 1,440.0    | 937.2      | 1,718.1               | 0.32                  | 0.00                 | 18.26               |
| 6,933.0                                    | 1.10            | 74.10       | 6,597.9             | 1,440.2    | 938.7      | 1,719.1               | 0.30                  | 0.12                 | -14.82              |
| 7,019.0                                    | 1.30            | 77.10       | 6,683.9             | 1,440.7    | 940.4      | 1,720.4               | 0.24                  | 0.23                 | 3.49                |
| 7,047.8                                    | 1.44            | 77.94       | 6,712.7             | 1,440.8    | 941.1      | 1,720.9               | 0.47                  | 0.47                 | 2.93                |
| <b>TARGET CIRCLE 2550'FNL &amp; 75'FWL</b> |                 |             |                     |            |            |                       |                       |                      |                     |
| 7,104.0                                    | 1.70            | 79.20       | 6,768.9             | 1,441.1    | 942.6      | 1,722.0               | 0.47                  | 0.47                 | 2.24                |
| 7,190.0                                    | 1.80            | 85.90       | 6,854.8             | 1,441.5    | 945.2      | 1,723.7               | 0.26                  | 0.12                 | 7.79                |
| 7,275.0                                    | 2.00            | 103.30      | 6,939.8             | 1,441.2    | 948.0      | 1,725.0               | 0.71                  | 0.24                 | 20.47               |
| 7,361.0                                    | 3.00            | 127.60      | 7,025.7             | 1,439.5    | 951.2      | 1,725.3               | 1.67                  | 1.16                 | 28.26               |
| 7,447.0                                    | 4.10            | 135.60      | 7,111.6             | 1,435.9    | 955.2      | 1,724.5               | 1.40                  | 1.28                 | 9.30                |
| 7,532.0                                    | 4.60            | 141.90      | 7,196.3             | 1,431.1    | 959.4      | 1,722.7               | 0.81                  | 0.59                 | 7.41                |
| 7,618.0                                    | 2.10            | 141.80      | 7,282.2             | 1,427.1    | 962.5      | 1,721.1               | 2.91                  | -2.91                | -0.12               |
| 7,703.0                                    | 1.50            | 153.80      | 7,367.1             | 1,424.9    | 963.9      | 1,720.0               | 0.83                  | -0.71                | 14.12               |
| 7,789.0                                    | 1.30            | 170.10      | 7,453.1             | 1,422.9    | 964.6      | 1,718.7               | 0.52                  | -0.23                | 18.95               |
| 7,874.0                                    | 1.30            | 176.40      | 7,538.1             | 1,421.0    | 964.8      | 1,717.2               | 0.17                  | 0.00                 | 7.41                |
| 7,960.0                                    | 1.20            | 178.20      | 7,624.0             | 1,419.1    | 964.9      | 1,715.7               | 0.12                  | -0.12                | 2.09                |
| 8,003.0                                    | 1.20            | 178.20      | 7,667.0             | 1,418.2    | 964.9      | 1,715.0               | 0.00                  | 0.00                 | 0.00                |
| <b>HARD LINES 90°N &amp; 75°E of BHL</b>   |                 |             |                     |            |            |                       |                       |                      |                     |

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