

51-01340



## **Chief Oil & Gas - AP**

**Marshall County, WV (NAD 27)**

**Bryan**

**Bryan #1H**

**Wellbore #1**

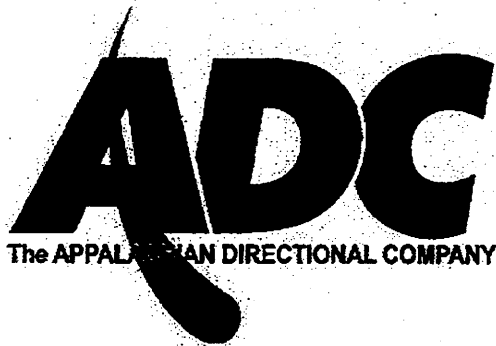
**Survey: CERT REPORT Survey**

## **DDC Survey Report**

**29 March, 2010**



05/13/2011



---

I **Larry Wright**, certify that I am employed by **The Appalachian Directional Company (ADC)**. That I did on the day(s) of **3/19/10** thru **3/29/10** conduct or supervise the taking of a **MWD Survey(s)** from a depth of **Surface** feet to a depth of **10651** feet, that the data is true, correct, complete and within the limitations of the tool as set forth by **The Appalachian Directional Company (ADC)**.; that I am authorized and qualified to make this report; that this survey was conducted at the request of **Chief Oil & Gas** for the **Bryan #1H Well** in **Marshall County, WV**; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by **The Appalachian Directional Company (ADC)**.

Larry Wright

Digitally signed by Larry  
Wright  
DN: cn=Larry Wright, o, ou,  
email=larryw@directionaldrille  
rs.com, c=US  
Date: 2010.04.01 09:55:20  
-05'00'

---

• 1200 Heavy Haul Road • Morgan Town, WV 26501 •  
• PH 304-777-2310 • FAX 304-777-2317 •

05/13/2011



DDC  
Survey Report



Company: Chief Oil & Gas - AP  
 Project: Marshall County, WV (NAD 27)  
 Site: Bryan  
 Well: Bryan #1H  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well Bryan #1H  
 TVD Reference: WELL @ 1217.00ft (Union #43)  
 MD Reference: WELL @ 1217.00ft (Union #43)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: EDM 5000:1 Single User Db

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project     | Marshall County, WV (NAD 27)         |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | West Virginia North 4701             |               |                |

|                       |         |              |                   |                   |                  |
|-----------------------|---------|--------------|-------------------|-------------------|------------------|
| Site                  | Bryan   |              |                   |                   |                  |
| Site Position:        | Map     | Northing:    | 467,136.6790 ft   | Latitude:         | 39° 46' 31.978 N |
| From:                 |         | Easting:     | 1,641,142.5710 ft | Longitude:        | 80° 46' 36.517 W |
| Position Uncertainty: | 0.00 ft | Slot Radius: | 13.200 in         | Grid Convergence: | -0.81 °          |

|                      |           |         |                     |                   |               |                  |
|----------------------|-----------|---------|---------------------|-------------------|---------------|------------------|
| Well                 | Bryan #1H |         |                     |                   |               |                  |
| Well Position        | +N/-S     | 0.00 ft | Northing:           | 467,136.6790 ft   | Latitude:     | 39° 46' 31.978 N |
|                      | +E/-W     | 0.00 ft | Easting:            | 1,641,142.5710 ft | Longitude:    | 80° 46' 36.517 W |
| Position Uncertainty |           | 0.00 ft | Wellhead Elevation: | ft                | Ground Level: | 1,199.00 ft      |

Wellbore: Wellbore #1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (mT) |
|-----------|------------|-------------|-----------------|---------------|---------------------|
|           | IGRF2010   | 3/18/2010   | -8.42           | 67.59         | 53,058              |

Design: Wellbore #1

Audit Notes:  
 Version: 1.0      Phase: ACTUAL      Tie On Depth: 5,800.01

| Vertical Section | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|------------------|-----------------------|------------|------------|---------------|
|                  | 0.00                  | 0.00       | 0.00       | 328.000       |

Survey Program      Date: 3/29/2010

| From (ft) | To (ft)   | Survey (Wellbore)            | Tool Name   | Description    |
|-----------|-----------|------------------------------|-------------|----------------|
| 200.00    | 5,800.01  | Pilot Hole Gyro (Pilot Hole) | Good_gyro   | Good Gyro      |
| 5,966.00  | 10,851.00 | Survey #2 (Wellbore #1)      | MWD default | 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) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 0.00                | 0.00            | 0.000       | 0.00                | 0.00       | 0.00       | 0.00                  | 0.000                 | 0.000                | 0.000               |
| First Survey        |                 |             |                     |            |            |                       |                       |                      |                     |
| 200.00              | 0.25            | 274.340     | 200.00              | 0.03       | -0.44      | 0.26                  | 0.125                 | 0.125                | 0.000               |
| 400.00              | 0.50            | 255.310     | 400.00              | -0.16      | -1.71      | 0.78                  | 0.138                 | 0.125                | -9.515              |
| 600.00              | 0.75            | 249.300     | 599.98              | -0.84      | -3.78      | 1.29                  | 0.129                 | 0.125                | -3.005              |
| 800.00              | 1.25            | 251.290     | 799.95              | -2.00      | -7.07      | 2.05                  | 0.251                 | 0.250                | 0.995               |
| 1,000.00            | 1.00            | 248.280     | 999.91              | -3.35      | -10.76     | 2.86                  | 0.128                 | -0.125               | -1.505              |
| 1,200.00            | 0.75            | 270.270     | 1,199.89            | -3.99      | -13.69     | 3.87                  | 0.207                 | -0.125               | 10.995              |
| 1,400.00            | 0.50            | 249.260     | 1,399.88            | -4.29      | -15.82     | 4.74                  | 0.168                 | -0.125               | -10.505             |
| 1,600.00            | 0.50            | 225.250     | 1,599.87            | -5.21      | -17.25     | 4.72                  | 0.104                 | 0.000                | -12.005             |



DDC  
Survey Report



|           |                              |                              |                              |
|-----------|------------------------------|------------------------------|------------------------------|
| Company:  | Chief Oil & Gas - AP         | Local Co-ordinate Reference: | Well Bryan #1H               |
| Project:  | Marshall County, WV (NAD 27) | TVD Reference:               | WELL @ 1217.00ft (Union #43) |
| Site:     | Bryan                        | MD Reference:                | WELL @ 1217.00ft (Union #43) |
| Well:     | Bryan #1H                    | North Reference:             | Grid                         |
| Wellbore: | Wellbore #1                  | Survey Calculation Method:   | Minimum Curvature            |
| Design:   | Wellbore #1                  | Database:                    | EDM 5000.1 Single User Db    |

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/S (ft) | +E/W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Burlo Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|-----------|-----------|-----------------------|-----------------------|----------------------|---------------------|
| 1,800.00            | 0.75            | 238.240     | 1,799.86            | -6.52     | -18.99    | 4.53                  | 0.143                 | 0.125                | 6.495               |
| 2,000.00            | 0.25            | 203.230     | 1,999.85            | -7.61     | -20.27    | 4.29                  | 0.282                 | -0.250               | -17.505             |
| 2,200.00            | 0.25            | 331.220     | 2,199.85            | -7.63     | -20.65    | 4.48                  | 0.225                 | 0.000                | 63.995              |
| 2,400.00            | 0.25            | 305.210     | 2,399.85            | -6.99     | -21.22    | 5.32                  | 0.056                 | 0.000                | -13.005             |
| 2,600.00            | 1.00            | 316.200     | 2,599.84            | -5.48     | -22.78    | 7.43                  | 0.378                 | 0.375                | 5.495               |
| 2,800.00            | 1.25            | 317.190     | 2,799.80            | -2.62     | -25.47    | 11.28                 | 0.125                 | 0.125                | 0.495               |
| 3,000.00            | 1.00            | 307.130     | 2,999.76            | 0.03      | -28.35    | 15.06                 | 0.159                 | -0.125               | -5.030              |
| 3,200.00            | 0.75            | 298.120     | 3,199.73            | 1.70      | -30.89    | 17.82                 | 0.142                 | -0.125               | -4.505              |
| 3,400.00            | 0.50            | 321.110     | 3,399.72            | 3.00      | -32.60    | 19.82                 | 0.175                 | -0.125               | 11.495              |
| 3,600.00            | 0.50            | 335.100     | 3,599.72            | 4.47      | -33.51    | 21.55                 | 0.061                 | 0.000                | 6.995               |
| 3,800.00            | 0.25            | 283.090     | 3,799.71            | 5.36      | -34.30    | 22.73                 | 0.199                 | -0.125               | -26.005             |
| 4,000.00            | 0.25            | 217.070     | 3,999.71            | 5.11      | -34.99    | 22.88                 | 0.136                 | 0.000                | -33.010             |
| 4,200.00            | 0.25            | 256.060     | 4,199.71            | 4.66      | -35.68    | 22.86                 | 0.083                 | 0.000                | 19.495              |
| 4,400.00            | 0.75            | 234.050     | 4,399.70            | 3.79      | -37.16    | 22.90                 | 0.263                 | 0.250                | -11.005             |
| 4,600.00            | 0.50            | 288.030     | 4,599.69            | 3.29      | -39.05    | 23.48                 | 0.305                 | -0.125               | 26.990              |
| 4,899.00            | 0.75            | 274.020     | 4,898.67            | 3.83      | -42.24    | 25.63                 | 0.097                 | 0.084                | -4.686              |
| 5,000.00            | 1.00            | 277.000     | 4,999.66            | 3.98      | -43.78    | 26.58                 | 0.252                 | 0.248                | 2.950               |
| 5,200.00            | 0.50            | 255.980     | 5,199.64            | 3.98      | -46.36    | 27.94                 | 0.281                 | -0.250               | -10.510             |
| 5,400.00            | 0.50            | 268.970     | 5,399.63            | 3.76      | -48.08    | 28.66                 | 0.057                 | 0.000                | 6.495               |
| 5,600.00            | 0.25            | 293.960     | 5,599.63            | 3.92      | -49.35    | 29.47                 | 0.147                 | -0.125               | 12.495              |
| 5,800.00            | 0.25            | 266.950     | 5,799.63            | 4.07      | -50.18    | 30.04                 | 0.058                 | 0.000                | -13.505             |
| 5,966.00            | 0.00            | 194.200     | 5,965.63            | 4.05      | -50.54    | 30.22                 | 0.151                 | -0.151               | 0.000               |
| 5,998.00            | 0.90            | 285.100     | 5,997.63            | 4.12      | -50.79    | 30.40                 | 2.812                 | 2.812                | 0.000               |
| 6,030.00            | 1.90            | 301.900     | 6,029.62            | 4.46      | -51.48    | 31.06                 | 3.345                 | 3.125                | 52.500              |
| 6,062.00            | 4.10            | 300.400     | 6,061.57            | 5.32      | -52.92    | 32.56                 | 6.879                 | 6.875                | -4.687              |
| 6,093.00            | 6.80            | 308.400     | 6,092.43            | 7.02      | -55.31    | 35.27                 | 9.027                 | 8.710                | 25.806              |
| 6,125.00            | 9.10            | 316.600     | 6,124.12            | 10.04     | -58.53    | 39.53                 | 7.996                 | 7.187                | 25.625              |
| 6,157.00            | 10.90           | 321.900     | 6,155.63            | 14.26     | -62.14    | 45.02                 | 6.312                 | 5.625                | 16.562              |
| 6,188.00            | 12.70           | 320.600     | 6,185.98            | 19.20     | -66.11    | 51.32                 | 5.869                 | 5.806                | -4.194              |
| 6,220.00            | 16.10           | 318.600     | 6,216.97            | 25.25     | -71.28    | 59.18                 | 10.737                | 10.625               | -6.250              |
| 6,252.00            | 20.20           | 318.200     | 6,247.37            | 32.70     | -77.90    | 69.01                 | 12.818                | 12.812               | -1.250              |
| 6,284.00            | 23.40           | 316.900     | 6,277.08            | 41.46     | -85.93    | 80.69                 | 10.113                | 10.000               | -4.062              |
| 6,315.00            | 26.20           | 320.400     | 6,305.22            | 51.23     | -94.50    | 93.52                 | 10.195                | 9.032                | 11.290              |
| 6,347.00            | 29.50           | 319.200     | 6,333.51            | 62.64     | -104.15   | 108.31                | 10.460                | 10.312               | -3.750              |
| 6,379.00            | 34.60           | 320.400     | 6,360.62            | 75.61     | -115.10   | 125.12                | 16.061                | 15.937               | 3.750               |
| 6,411.00            | 39.40           | 321.700     | 6,386.17            | 90.59     | -127.19   | 144.23                | 15.197                | 15.000               | 4.062               |
| 6,442.00            | 45.30           | 323.400     | 6,409.07            | 107.17    | -139.87   | 165.01                | 19.386                | 19.032               | 5.484               |
| 6,474.00            | 51.70           | 325.900     | 6,430.27            | 126.72    | -153.70   | 188.92                | 20.835                | 20.000               | 7.812               |
| 6,506.00            | 58.40           | 327.300     | 6,448.59            | 148.61    | -168.12   | 215.12                | 21.242                | 20.937               | 4.375               |
| 6,537.00            | 65.40           | 328.900     | 6,463.18            | 171.82    | -182.55   | 242.45                | 23.034                | 22.581               | 5.161               |
| 6,569.00            | 72.40           | 329.800     | 6,474.69            | 197.49    | -197.76   | 272.28                | 22.032                | 21.875               | 2.812               |
| 6,600.00            | 78.70           | 331.500     | 6,482.43            | 223.65    | -212.46   | 302.25                | 21.004                | 20.323               | 5.484               |
| 6,632.00            | 83.20           | 332.400     | 6,487.46            | 251.53    | -227.31   | 333.77                | 14.334                | 14.062               | 2.812               |



DDC  
Survey Report



Company: Chief Oil & Gas - AP  
 Project: Marshall County, WV (NAD 27)  
 Site: Bryan  
 Well: Bryan #1H  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well Bryan #1H  
 TVD Reference: WELL @ 1217.00ft (Union #43)  
 MD Reference: WELL @ 1217.00ft (Union #43)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: EDM 5000.1 Single User Db

Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/S (ft) | +E/W (ft) | Vertical Section (ft) | Dogleg Rate (°/100R) | Build Rate (°/100R) | Turn Rate (°/100R) |
|---------------------|-----------------|-------------|---------------------|-----------|-----------|-----------------------|----------------------|---------------------|--------------------|
| 6,664.00            | 86.00           | 332.300     | 6,490.47            | 279.75    | -242.10   | 365.53                | 8.756                | 8.750               | -0.312             |
| 6,695.00            | 88.60           | 331.700     | 6,491.93            | 307.08    | -256.63   | 396.42                | 8.607                | 8.387               | -1.935             |
| 6,759.00            | 91.00           | 332.300     | 6,492.15            | 363.59    | -286.68   | 460.26                | 3.865                | 3.750               | 0.937              |
| 6,822.00            | 91.00           | 331.500     | 6,491.05            | 419.15    | -316.35   | 523.10                | 1.270                | 0.000               | -1.270             |
| 6,887.00            | 91.30           | 330.800     | 6,489.75            | 476.07    | -347.70   | 587.99                | 1.171                | 0.462               | -1.077             |
| 6,949.00            | 90.50           | 330.900     | 6,488.77            | 530.21    | -377.90   | 649.90                | 1.300                | -1.290              | 0.161              |
| 7,013.00            | 89.50           | 330.200     | 6,488.77            | 585.94    | -409.36   | 713.84                | 1.907                | -1.562              | -1.094             |
| 7,076.00            | 89.90           | 330.600     | 6,489.10            | 640.72    | -440.48   | 776.78                | 0.898                | 0.635               | 0.635              |
| 7,140.00            | 89.50           | 330.000     | 6,489.44            | 696.31    | -472.19   | 840.73                | 1.127                | -0.625              | -0.937             |
| 7,203.00            | 90.20           | 330.200     | 6,489.60            | 750.93    | -503.60   | 903.69                | 1.156                | 1.111               | 0.317              |
| 7,267.00            | 91.30           | 329.500     | 6,488.77            | 806.26    | -535.74   | 967.65                | 2.037                | 1.719               | -1.094             |
| 7,330.00            | 90.50           | 328.000     | 6,487.78            | 860.11    | -568.41   | 1,030.63              | 2.698                | -1.270              | -2.381             |
| 7,394.00            | 90.10           | 327.500     | 6,487.44            | 914.24    | -602.57   | 1,094.63              | 1.000                | -0.625              | -0.781             |
| 7,457.00            | 90.60           | 328.000     | 6,487.06            | 967.52    | -636.18   | 1,157.63              | 1.122                | 0.794               | 0.794              |
| 7,521.00            | 90.60           | 327.400     | 6,486.39            | 1,021.61  | -670.38   | 1,221.62              | 0.937                | 0.000               | -0.937             |
| 7,584.00            | 90.20           | 326.900     | 6,485.95            | 1,074.54  | -704.55   | 1,284.61              | 1.016                | -0.635              | -0.794             |
| 7,647.00            | 90.50           | 326.800     | 6,485.56            | 1,127.28  | -739.00   | 1,347.60              | 0.502                | 0.476               | -0.159             |
| 7,711.00            | 90.30           | 326.700     | 6,485.12            | 1,180.80  | -774.09   | 1,411.58              | 0.349                | -0.312              | -0.156             |
| 7,774.00            | 90.20           | 326.900     | 6,484.84            | 1,233.52  | -808.59   | 1,474.57              | 0.355                | -0.159              | 0.317              |
| 7,838.00            | 90.40           | 327.400     | 6,484.51            | 1,287.28  | -843.30   | 1,538.56              | 0.841                | 0.312               | 0.781              |
| 7,901.00            | 90.90           | 327.600     | 6,483.79            | 1,340.41  | -877.15   | 1,601.55              | 0.855                | 0.794               | 0.317              |
| 7,965.00            | 91.20           | 328.000     | 6,482.62            | 1,394.56  | -911.25   | 1,665.54              | 0.781                | 0.469               | 0.625              |
| 8,028.00            | 90.20           | 327.400     | 6,481.85            | 1,447.81  | -944.91   | 1,728.54              | 1.851                | -1.587              | -0.952             |
| 8,091.00            | 89.40           | 327.800     | 6,482.07            | 1,501.00  | -978.67   | 1,791.53              | 1.420                | -1.270              | 0.635              |
| 8,154.00            | 90.10           | 327.600     | 6,482.34            | 1,554.25  | -1,012.33 | 1,854.53              | 1.156                | 1.111               | -0.317             |
| 8,218.00            | 90.40           | 328.000     | 6,482.06            | 1,608.40  | -1,046.43 | 1,918.53              | 0.781                | 0.469               | 0.625              |
| 8,281.00            | 90.50           | 327.900     | 6,481.57            | 1,661.80  | -1,079.86 | 1,981.53              | 0.224                | 0.159               | -0.159             |
| 8,343.00            | 90.80           | 328.100     | 6,480.87            | 1,714.38  | -1,112.72 | 2,043.52              | 0.582                | 0.484               | 0.323              |
| 8,407.00            | 90.50           | 328.600     | 6,480.14            | 1,768.85  | -1,146.30 | 2,107.52              | 0.911                | -0.469              | 0.781              |
| 8,470.00            | 90.30           | 328.200     | 6,479.70            | 1,822.51  | -1,179.31 | 2,170.51              | 0.710                | -0.317              | -0.635             |
| 8,533.00            | 90.60           | 327.600     | 6,479.20            | 1,875.88  | -1,212.78 | 2,233.51              | 1.065                | 0.476               | -0.952             |
| 8,597.00            | 90.50           | 326.300     | 6,478.59            | 1,929.52  | -1,247.69 | 2,297.50              | 2.037                | -0.156              | -2.031             |
| 8,660.00            | 90.00           | 327.500     | 6,478.32            | 1,982.29  | -1,282.09 | 2,360.48              | 2.063                | -0.794              | 1.905              |
| 8,724.00            | 89.80           | 326.700     | 6,478.43            | 2,036.03  | -1,316.85 | 2,424.48              | 1.288                | -0.312              | -1.250             |
| 8,787.00            | 90.90           | 327.300     | 6,478.04            | 2,088.86  | -1,351.16 | 2,487.46              | 1.989                | 1.746               | 0.952              |
| 8,851.00            | 90.50           | 327.200     | 6,477.26            | 2,142.68  | -1,385.78 | 2,551.45              | 0.644                | -0.625              | -0.156             |
| 8,914.00            | 91.20           | 327.400     | 6,476.33            | 2,195.69  | -1,419.81 | 2,614.44              | 1.156                | 1.111               | 0.317              |
| 8,978.00            | 91.30           | 327.800     | 6,474.93            | 2,249.72  | -1,454.10 | 2,678.42              | 0.644                | 0.156               | 0.625              |
| 9,040.00            | 90.80           | 328.000     | 6,473.79            | 2,302.23  | -1,487.04 | 2,740.41              | 0.869                | -0.806              | 0.323              |
| 9,103.00            | 90.90           | 327.600     | 6,472.86            | 2,355.53  | -1,520.61 | 2,803.41              | 0.654                | 0.159               | -0.635             |
| 9,167.00            | 90.90           | 327.500     | 6,471.85            | 2,409.53  | -1,554.94 | 2,867.40              | 0.156                | 0.000               | -0.156             |
| 9,230.00            | 91.20           | 328.700     | 6,470.70            | 2,463.01  | -1,588.23 | 2,930.38              | 1.963                | 0.476               | 1.905              |
| 9,294.00            | 91.10           | 329.100     | 6,469.41            | 2,517.80  | -1,621.28 | 2,994.36              | 0.644                | -0.156              | 0.625              |



DDC  
Survey Report



Company: Chief Oil & Gas - AP  
 Project: Marshall County, WV (NAD 27)  
 Site: Bryan  
 Well: Bryan #1H  
 Wellbore: Wellbore #1  
 Design: Wellbore #1

Local Co-ordinate Reference: Well Bryan #1H  
 TVD Reference: WELL @ 1217.00ft (Union #43)  
 MD Reference: WELL @ 1217.00ft (Union #43)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: EDM 5000.1 Single User Db

| 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) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 9,357.00            | 91.20           | 329.000     | 6,468.15            | 2,571.82   | -1,653.67  | 3,057.34              | 0.224                 | 0.159                | -0.159              |
| 9,421.00            | 91.30           | 328.000     | 6,466.75            | 2,626.37   | -1,687.11  | 3,121.32              | 1.570                 | 0.156                | -1.562              |
| 9,485.00            | 90.90           | 328.800     | 6,465.53            | 2,680.87   | -1,720.63  | 3,185.31              | 1.397                 | -0.625               | 1.250               |
| 9,548.00            | 90.20           | 329.500     | 6,464.92            | 2,734.96   | -1,752.94  | 3,248.29              | 1.571                 | -1.111               | 1.111               |
| 9,611.00            | 90.90           | 329.600     | 6,464.32            | 2,789.27   | -1,784.86  | 3,311.26              | 1.122                 | 1.111                | 0.159               |
| 9,675.00            | 90.60           | 329.300     | 6,463.48            | 2,844.38   | -1,817.39  | 3,375.24              | 0.663                 | -0.469               | -0.469              |
| 9,738.00            | 90.50           | 329.500     | 6,462.87            | 2,898.60   | -1,849.46  | 3,438.22              | 0.355                 | -0.159               | 0.317               |
| 9,802.00            | 90.40           | 329.200     | 6,462.37            | 2,953.66   | -1,882.08  | 3,502.20              | 0.494                 | -0.156               | -0.469              |
| 9,865.00            | 90.90           | 328.800     | 6,461.66            | 3,007.66   | -1,914.53  | 3,565.18              | 1.016                 | 0.794                | -0.635              |
| 9,929.00            | 90.90           | 329.200     | 6,460.65            | 3,062.51   | -1,947.49  | 3,629.17              | 0.625                 | 0.000                | 0.625               |
| 9,993.00            | 91.30           | 327.000     | 6,459.42            | 3,116.83   | -1,981.30  | 3,693.15              | 3.493                 | 0.625                | -3.437              |
| 10,056.00           | 91.30           | 327.300     | 6,457.99            | 3,169.74   | -2,015.46  | 3,756.13              | 0.476                 | 0.000                | 0.476               |
| 10,119.00           | 91.30           | 327.100     | 6,456.56            | 3,222.68   | -2,049.58  | 3,819.10              | 0.317                 | 0.000                | -0.317              |
| 10,183.00           | 91.30           | 326.600     | 6,455.11            | 3,276.25   | -2,084.57  | 3,883.07              | 0.781                 | 0.000                | -0.781              |
| 10,246.00           | 91.20           | 326.800     | 6,453.74            | 3,328.90   | -2,119.15  | 3,946.04              | 0.355                 | -0.159               | 0.317               |
| 10,310.00           | 91.00           | 326.800     | 6,452.51            | 3,382.44   | -2,154.19  | 4,010.02              | 0.312                 | -0.312               | 0.000               |
| 10,374.00           | 90.40           | 326.100     | 6,451.73            | 3,435.77   | -2,189.56  | 4,073.99              | 1.440                 | -0.937               | -1.094              |
| 10,437.00           | 90.40           | 326.200     | 6,451.29            | 3,488.09   | -2,224.65  | 4,136.95              | 0.159                 | 0.000                | 0.159               |
| 10,500.00           | 90.50           | 326.300     | 6,450.79            | 3,540.47   | -2,259.65  | 4,199.92              | 0.224                 | 0.159                | 0.159               |
| 10,562.00           | 90.50           | 326.200     | 6,450.25            | 3,592.02   | -2,294.09  | 4,261.89              | 0.161                 | 0.000                | -0.161              |
| 10,601.00           | 90.60           | 326.100     | 6,449.88            | 3,624.41   | -2,315.82  | 4,300.87              | 0.363                 | 0.256                | -0.256              |
| Bit Projection      |                 |             |                     |            |            |                       |                       |                      |                     |
| 10,651.00           | 90.60           | 326.100     | 6,449.35            | 3,665.91   | -2,343.70  | 4,350.84              | 0.000                 | 0.000                | 0.000               |

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates |            | Comment        |
|---------------------|---------------------|-------------------|------------|----------------|
|                     |                     | +N/-S (ft)        | +E/-W (ft) |                |
| 200.00              | 200.00              | 0.03              | -0.44      | First Survey   |
| 10,651.00           | 6,449.35            | 3,665.91          | -2,343.70  | Bit Projection |

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