



# Cimarex Energy Co.

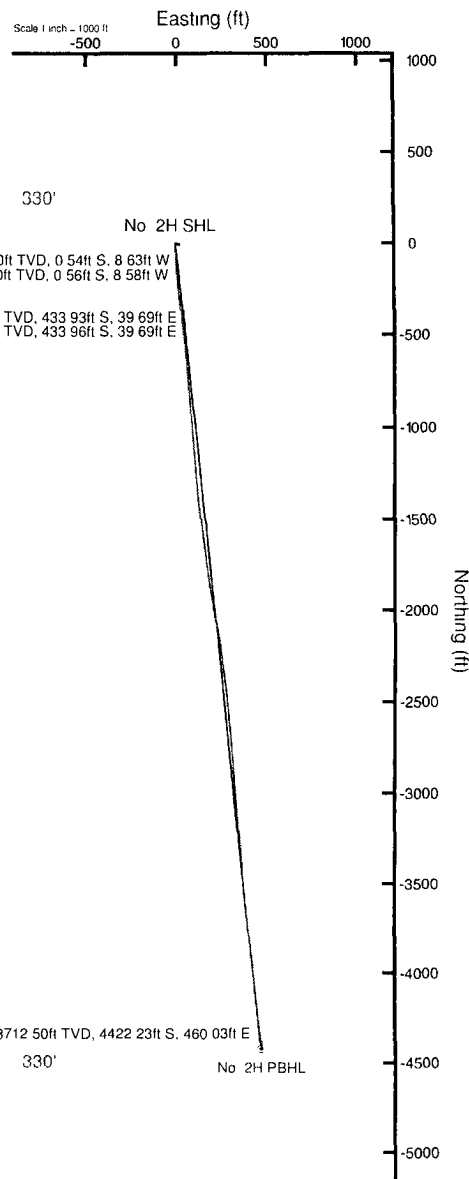
Location Eddy County, NM  
Field (Crescent) Sec 11 & 12, T19S, R30E  
Facility Crescent Hale 12 Federal

Slot No 2H SHL  
Well No 2H  
Wellbore No 2H PWB



30-015-40054

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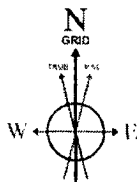


Well Profile Data

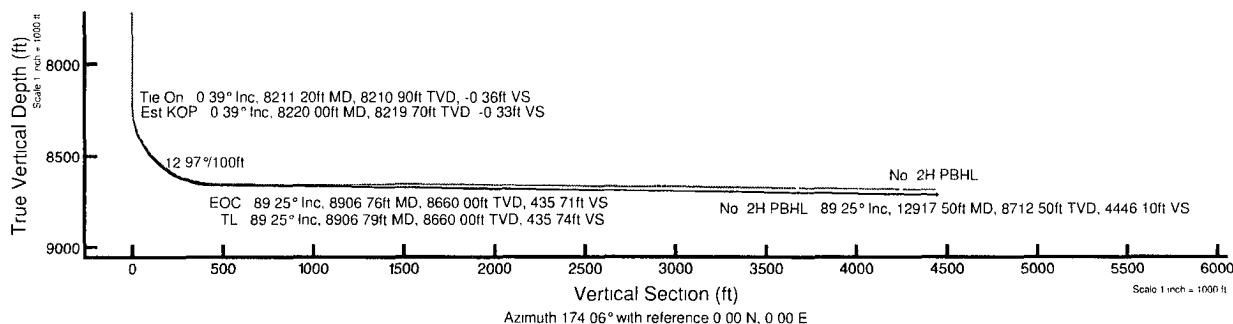
| Design Comment | MD (ft)  | Inc (°) | Az (°)  | TVD (ft) | Local N (ft) | Local E (ft) | DLS (°/100ft) | VS (ft) |
|----------------|----------|---------|---------|----------|--------------|--------------|---------------|---------|
| Tie On         | 8211 20  | 0 390   | 113 450 | 8210 90  | -0 54        | -8 63        | 0 00          | -0 36   |
| Est KOP        | 8220 00  | 0 390   | 113 450 | 8219 70  | -0 56        | -8 58        | 0 00          | -0 33   |
| EOC            | 8906 76  | 89 250  | 173 983 | 8660 00  | -433 93      | 39 69        | 12 97         | 435 71  |
| TL             | 8906 79  | 89 250  | 173 984 | 8660 00  | -433 96      | 39 69        | 2 00          | 435 74  |
| No 2H PWB      | 12917 50 | 89 250  | 173 984 | 8712 50  | -4422 23     | 460 03       | 0 00          | 4446 10 |

Plot reference well/path is Rev-B.0

|                                                        |                                                                   |
|--------------------------------------------------------|-------------------------------------------------------------------|
| True vertical depths are referenced to Patriot #4 (KB) | Grid System NAD83 / TM New Mexico SP Eastern Zone (3001), US feet |
| Measured depths are referenced to Patriot #4 (KB)      | North Reference Grid north                                        |
| Patriot #4 (KB) to Mean Sea Level 3477 feet            | Scale True distance                                               |
| Mean Sea Level to Mud line (At Slot No 2H SHL) 0 feet  | Depths are in feet                                                |
| Coordinates are in feet referenced to Slot             | Created by harkot on 4/26/2012                                    |



BGGM (1945 0 to 2012 0) Dip 60 54° Field 49805 5 nT  
Magnetic North is 7 77 degrees East of True North (at 11/29/2011)  
Grid North is 0 22 degrees East of True North  
To correct azimuth from True to Grid subtract 0 22 degrees  
To correct azimuth from Magnetic to Grid add 7 56 degrees  
For example if the Magnetic North Azimuth = 90 dogs then the Grid North Azimuth = 90 + 7 56 = 97 56



Azimuth 174 06° with reference 0 00 N, 0 00 E



# Actual Wellpath Report

No. 2H AWP  
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## REFERENCE WELLPATH IDENTIFICATION

|          |                                    |          |            |
|----------|------------------------------------|----------|------------|
| Operator | Cimarex Energy Co.                 | Slot     | No. 2H SHL |
| Area     | Eddy County, NM                    | Well     | No. 2H     |
| Field    | (Crescent) Sec 11 & 12, T19S, R30E | Wellbore | No. 2H AWB |
| Facility | Crescent Hale 12 Federal           |          |            |

## REPORT SETUP INFORMATION

|                     |                                                        |                      |                           |
|---------------------|--------------------------------------------------------|----------------------|---------------------------|
| Projection System   | NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet | Software System      | WellArchitect® 3.0.0      |
| North Reference     | Grid                                                   | User                 | Harrkol                   |
| Scale               | 0.999927                                               | Report Generated     | 5/8/2012 at 8:52:01 AM    |
| Convergence at slot | 0.22° East                                             | Database/Source file | WA Midland/No. 2H_AWB.xml |

## WELLPATH LOCATION

|                       | Local coordinates |          | Grid coordinates |                 | Geographic coordinates |                 |
|-----------------------|-------------------|----------|------------------|-----------------|------------------------|-----------------|
|                       | North[ft]         | East[ft] | Easting[US ft]   | Northing[US ft] | Latitude               | Longitude       |
| Slot Location         | -35.30            | 1004.98  | 665714.70        | 611592.30       | 32°40'50.377"N         | 103°55'44.716"W |
| Facility Reference Pt |                   |          | 664709.80        | 611627.60       | 32°40'50.764"N         | 103°55'56.472"W |
| Field Reference Pt    |                   |          | 663634.20        | 611763.80       | 32°40'52.152"N         | 103°56'09.051"W |

## WELLPATH DATUM

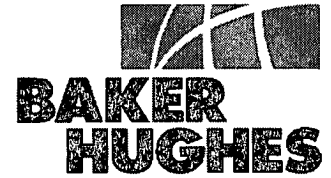
|                          |                   |                                                  |                   |
|--------------------------|-------------------|--------------------------------------------------|-------------------|
| Calculation method       | Minimum curvature | Patriot #4 (KB) to GL                            | 3477.00ft         |
| Horizontal Reference Pt  | Slot              | Patriot #4 (KB) to Mean Sea Level                | 3477.00ft         |
| Vertical Reference Pt    | Patriot #4 (KB)   | Patriot #4 (KB) to Mud Line at Slot (No. 2H SHL) | 3477.00ft         |
| MD Reference Pt          | Patriot #4 (KB)   | Section Origin                                   | N 0.00, E 0.00 ft |
| Field Vertical Reference | Mean Sea Level    | Section Azimuth                                  | 174.06°           |



# Actual Wellpath Report

No. 2H AWP

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## REFERENCE WELLPATH IDENTIFICATION

|          |                                    |          |            |
|----------|------------------------------------|----------|------------|
| Operator | Cimarex Energy Co.                 | Slot     | No. 2H SHL |
| Area     | Eddy County, NM                    | Well     | No. 2H     |
| Field    | (Crescent) Sec 11 & 12, T19S, R30E | Wellbore | No. 2H AWB |
| Facility | Crescent Hale 12 Federal           |          |            |

## WELLPATH DATA (177 stations)

| MD<br>[ft] | Inclination<br>[°] | Azimuth<br>[°] | TVD<br>[ft] | Vert Sect<br>[ft] | North<br>[ft] | East<br>[ft] | Grid East<br>[US ft] | Grid North<br>[US ft] | Latitude       | Longitude       | DLS<br>[°/100ft] | Comments |
|------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------------|-----------------------|----------------|-----------------|------------------|----------|
| 0.00       | 0.000              | 233.540        | 0.00        | 0.00              | 0.00          | 0.00         | 665714.70            | 611592.30             | 32°40'50.377"N | 103°55'44.716"W | 0.00             |          |
| 100.00     | 0.270              | 233.540        | 100.00      | 0.12              | -0.14         | -0.19        | 665714.51            | 611592.16             | 32°40'50.376"N | 103°55'44.718"W | 0.27             |          |
| 200.00     | 0.350              | 237.010        | 200.00      | 0.38              | -0.45         | -0.64        | 665714.06            | 611591.85             | 32°40'50.373"N | 103°55'44.723"W | 0.08             |          |
| 300.00     | 0.240              | 230.080        | 300.00      | 0.63              | -0.75         | -1.05        | 665713.65            | 611591.55             | 32°40'50.370"N | 103°55'44.728"W | 0.12             |          |
| 400.00     | 0.180              | 251.910        | 400.00      | 0.78              | -0.93         | -1.36        | 665713.34            | 611591.37             | 32°40'50.368"N | 103°55'44.732"W | 0.10             |          |
| 500.00     | 0.100              | 186.200        | 500.00      | 0.90              | -1.07         | -1.52        | 665713.18            | 611591.23             | 32°40'50.367"N | 103°55'44.733"W | 0.17             |          |
| 526.80     | 0.070              | 133.550        | 526.80      | 0.94              | -1.10         | -1.51        | 665713.19            | 611591.20             | 32°40'50.366"N | 103°55'44.733"W | 0.30             |          |
| 621.60     | 0.200              | 117.120        | 621.60      | 1.07              | -1.22         | -1.32        | 665713.38            | 611591.08             | 32°40'50.365"N | 103°55'44.731"W | 0.14             |          |
| 716.50     | 0.260              | 117.610        | 716.49      | 1.28              | -1.39         | -0.98        | 665713.72            | 611590.91             | 32°40'50.364"N | 103°55'44.727"W | 0.06             |          |
| 811.40     | 0.260              | 111.500        | 811.39      | 1.50              | -1.57         | -0.59        | 665714.11            | 611590.73             | 32°40'50.362"N | 103°55'44.723"W | 0.03             |          |
| 906.30     | 0.270              | 93.070         | 906.29      | 1.63              | -1.66         | -0.17        | 665714.53            | 611590.64             | 32°40'50.361"N | 103°55'44.718"W | 0.09             |          |
| 1001.10    | 0.290              | 87.970         | 1001.09     | 1.69              | -1.66         | 0.29         | 665714.99            | 611590.64             | 32°40'50.361"N | 103°55'44.712"W | 0.03             |          |
| 1096.00    | 0.380              | 82.690         | 1095.99     | 1.69              | -1.62         | 0.85         | 665715.55            | 611590.68             | 32°40'50.361"N | 103°55'44.706"W | 0.10             |          |
| 1190.90    | 0.470              | 79.500         | 1190.89     | 1.66              | -1.50         | 1.54         | 665716.24            | 611590.80             | 32°40'50.362"N | 103°55'44.698"W | 0.10             |          |
| 1285.70    | 0.370              | 82.750         | 1285.68     | 1.62              | -1.39         | 2.23         | 665716.93            | 611590.91             | 32°40'50.363"N | 103°55'44.690"W | 0.11             |          |
| 1380.60    | 0.550              | 87.220         | 1380.58     | 1.64              | -1.33         | 2.99         | 665717.69            | 611590.97             | 32°40'50.364"N | 103°55'44.681"W | 0.19             |          |
| 1475.50    | 0.970              | 88.750         | 1475.47     | 1.73              | -1.29         | 4.24         | 665718.94            | 611591.01             | 32°40'50.364"N | 103°55'44.666"W | 0.44             |          |
| 1570.30    | 0.880              | 92.190         | 1570.26     | 1.90              | -1.30         | 5.77         | 665720.47            | 611591.00             | 32°40'50.364"N | 103°55'44.648"W | 0.11             |          |
| 1665.20    | 0.930              | 95.560         | 1665.15     | 2.15              | -1.41         | 7.27         | 665721.97            | 611590.89             | 32°40'50.363"N | 103°55'44.631"W | 0.08             |          |
| 1760.10    | 0.960              | 92.740         | 1760.04     | 2.43              | -1.52         | 8.83         | 665723.53            | 611590.78             | 32°40'50.362"N | 103°55'44.612"W | 0.06             |          |
| 1855.00    | 0.890              | 88.560         | 1854.92     | 2.60              | -1.54         | 10.36        | 665725.06            | 611590.76             | 32°40'50.362"N | 103°55'44.594"W | 0.10             |          |
| 1949.80    | 0.830              | 88.080         | 1949.71     | 2.71              | -1.50         | 11.78        | 665726.48            | 611590.80             | 32°40'50.362"N | 103°55'44.578"W | 0.06             |          |
| 2044.70    | 0.530              | 91.520         | 2044.61     | 2.81              | -1.49         | 12.91        | 665727.61            | 611590.81             | 32°40'50.362"N | 103°55'44.565"W | 0.32             |          |
| 2139.60    | 0.480              | 81.740         | 2139.50     | 2.86              | -1.44         | 13.74        | 665728.44            | 611590.86             | 32°40'50.362"N | 103°55'44.555"W | 0.10             |          |
| 2234.40    | 0.390              | 70.170         | 2234.30     | 2.76              | -1.27         | 14.44        | 665729.14            | 611591.03             | 32°40'50.364"N | 103°55'44.547"W | 0.13             |          |
| 2329.30    | 0.290              | 61.740         | 2329.20     | 2.59              | -1.05         | 14.95        | 665729.65            | 611591.25             | 32°40'50.366"N | 103°55'44.541"W | 0.12             |          |
| 2424.20    | 0.220              | 83.080         | 2424.10     | 2.50              | -0.92         | 15.34        | 665730.04            | 611591.38             | 32°40'50.368"N | 103°55'44.536"W | 0.12             |          |
| 2519.00    | 0.210              | 89.210         | 2518.90     | 2.51              | -0.89         | 15.70        | 665730.40            | 611591.41             | 32°40'50.368"N | 103°55'44.532"W | 0.03             |          |
| 2613.90    | 0.230              | 110.600        | 2613.80     | 2.61              | -0.96         | 16.05        | 665730.75            | 611591.34             | 32°40'50.367"N | 103°55'44.528"W | 0.09             |          |
| 2708.80    | 0.150              | 128.630        | 2708.70     | 2.78              | -1.10         | 16.33        | 665731.02            | 611591.20             | 32°40'50.366"N | 103°55'44.525"W | 0.10             |          |
| 2803.70    | 0.150              | 125.900        | 2803.60     | 2.95              | -1.25         | 16.52        | 665731.22            | 611591.05             | 32°40'50.364"N | 103°55'44.522"W | 0.01             |          |
| 2898.50    | 0.150              | 130.510        | 2898.39     | 3.13              | -1.40         | 16.72        | 665731.42            | 611590.90             | 32°40'50.363"N | 103°55'44.520"W | 0.01             |          |
| 2993.40    | 0.130              | 167.460        | 2993.29     | 3.32              | -1.59         | 16.84        | 665731.53            | 611590.71             | 32°40'50.361"N | 103°55'44.519"W | 0.10             |          |
| 3088.30    | 0.190              | 197.170        | 3088.19     | 3.58              | -1.85         | 16.81        | 665731.51            | 611590.45             | 32°40'50.358"N | 103°55'44.519"W | 0.11             |          |
| 3183.10    | 0.200              | 205.950        | 3182.99     | 3.86              | -2.14         | 16.69        | 665731.39            | 611590.16             | 32°40'50.355"N | 103°55'44.520"W | 0.03             |          |
| 3278.00    | 0.280              | 207.690        | 3277.89     | 4.19              | -2.50         | 16.51        | 665731.21            | 611589.80             | 32°40'50.352"N | 103°55'44.523"W | 0.08             |          |
| 3372.90    | 0.330              | 226.590        | 3372.79     | 4.55              | -2.89         | 16.21        | 665730.91            | 611589.41             | 32°40'50.348"N | 103°55'44.526"W | 0.12             |          |
| 3467.70    | 0.330              | 223.160        | 3467.59     | 4.90              | -3.28         | 15.82        | 665730.52            | 611589.02             | 32°40'50.344"N | 103°55'44.531"W | 0.02             |          |
| 3562.60    | 0.300              | 221.650        | 3562.49     | 5.24              | -3.66         | 15.47        | 665730.17            | 611588.64             | 32°40'50.340"N | 103°55'44.535"W | 0.03             |          |
| 3657.50    | 0.300              | 217.530        | 3657.39     | 5.59              | -4.05         | 15.15        | 665729.85            | 611588.25             | 32°40'50.337"N | 103°55'44.538"W | 0.02             |          |
| 3752.30    | 0.290              | 220.270        | 3752.19     | 5.94              | -4.43         | 14.85        | 665729.55            | 611587.87             | 32°40'50.333"N | 103°55'44.542"W | 0.02             |          |
| 3847.20    | 0.280              | 247.690        | 3847.08     | 6.17              | -4.70         | 14.48        | 665729.18            | 611587.60             | 32°40'50.330"N | 103°55'44.546"W | 0.14             |          |
| 3942.10    | 0.170              | 296.160        | 3941.98     | 6.16              | -4.72         | 14.14        | 665728.84            | 611587.58             | 32°40'50.330"N | 103°55'44.550"W | 0.22             |          |
| 4037.00    | 0.220              | 38.990         | 4036.88     | 5.96              | -4.52         | 14.13        | 665728.82            | 611587.78             | 32°40'50.332"N | 103°55'44.551"W | 0.32             |          |
| 4131.80    | 0.190              | 12.270         | 4131.68     | 5.68              | -4.22         | 14.27        | 665728.97            | 611588.08             | 32°40'50.335"N | 103°55'44.549"W | 0.10             |          |



# Actual Wellpath Report

No. 2H AWP

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## REFERENCE WELLPATH IDENTIFICATION

|          |                                    |          |            |
|----------|------------------------------------|----------|------------|
| Operator | Cimarex Energy Co.                 | Slot     | No. 2H SHL |
| Area     | Eddy County, NM                    | Well     | No. 2H     |
| Field    | (Crescent) Sec 11 & 12, T19S, R30E | Wellbore | No. 2H AWB |
| Facility | Crescent Hale 12 Federal           |          |            |

## WELLPATH DATA (177 stations)

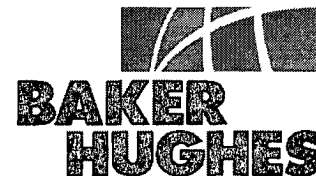
| MD<br>[ft] | Inclination<br>[°] | Azimuth<br>[°] | TVD<br>[ft] | Vert Sect<br>[ft] | North<br>[ft] | East<br>[ft] | Grid East<br>[US ft] | Grid North<br>[US ft] | Latitude       | Longitude       | DLS<br>[°/100ft] | Comments |
|------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------------|-----------------------|----------------|-----------------|------------------|----------|
| 4226.70    | 0.020              | 175.320        | 4226.58     | 5.55              | -4.09         | 14.31        | 665729.01            | 611588.21             | 32°40'50.336"N | 103°55'44.548"W | 0.22             |          |
| 4321.60    | 0.230              | 188.950        | 4321.48     | 5.75              | -4.29         | 14.28        | 665728.98            | 611588.01             | 32°40'50.334"N | 103°55'44.549"W | 0.22             |          |
| 4416.40    | 0.360              | 179.720        | 4416.28     | 6.23              | -4.78         | 14.25        | 665728.95            | 611587.52             | 32°40'50.329"N | 103°55'44.549"W | 0.15             |          |
| 4511.30    | 0.470              | 193.030        | 4511.18     | 6.89              | -5.46         | 14.17        | 665728.86            | 611586.85             | 32°40'50.323"N | 103°55'44.550"W | 0.15             |          |
| 4606.20    | 0.650              | 201.390        | 4606.07     | 7.74              | -6.34         | 13.88        | 665728.58            | 611585.96             | 32°40'50.314"N | 103°55'44.553"W | 0.21             |          |
| 4701.10    | 0.710              | 207.840        | 4700.97     | 8.70              | -7.36         | 13.41        | 665728.11            | 611584.94             | 32°40'50.304"N | 103°55'44.559"W | 0.10             |          |
| 4795.90    | 0.610              | 217.380        | 4795.76     | 9.56              | -8.28         | 12.83        | 665727.53            | 611584.02             | 32°40'50.295"N | 103°55'44.566"W | 0.16             |          |
| 4890.80    | 0.550              | 218.710        | 4890.66     | 10.25             | -9.03         | 12.24        | 665726.94            | 611583.27             | 32°40'50.287"N | 103°55'44.573"W | 0.06             |          |
| 4985.70    | 0.480              | 218.460        | 4985.55     | 10.86             | -9.70         | 11.71        | 665726.41            | 611582.60             | 32°40'50.281"N | 103°55'44.579"W | 0.07             |          |
| 5080.50    | 0.370              | 221.100        | 5080.35     | 11.35             | -10.24        | 11.26        | 665725.96            | 611582.06             | 32°40'50.276"N | 103°55'44.584"W | 0.12             |          |
| 5175.40    | 0.290              | 222.450        | 5175.25     | 11.72             | -10.65        | 10.89        | 665725.59            | 611581.65             | 32°40'50.271"N | 103°55'44.589"W | 0.08             |          |
| 5270.30    | 0.150              | 242.880        | 5270.15     | 11.92             | -10.88        | 10.62        | 665725.32            | 611581.42             | 32°40'50.269"N | 103°55'44.592"W | 0.17             |          |
| 5365.10    | 0.140              | 300.200        | 5364.95     | 11.90             | -10.88        | 10.41        | 665725.11            | 611581.42             | 32°40'50.269"N | 103°55'44.594"W | 0.15             |          |
| 5460.00    | 0.180              | 319.440        | 5459.85     | 11.71             | -10.71        | 10.21        | 665724.91            | 611581.59             | 32°40'50.271"N | 103°55'44.597"W | 0.07             |          |
| 5554.90    | 0.240              | 330.130        | 5554.75     | 11.41             | -10.43        | 10.02        | 665724.72            | 611581.88             | 32°40'50.274"N | 103°55'44.599"W | 0.08             |          |
| 5649.80    | 0.310              | 324.120        | 5649.65     | 11.00             | -10.04        | 9.77         | 665724.47            | 611582.26             | 32°40'50.278"N | 103°55'44.602"W | 0.08             |          |
| 5744.60    | 0.370              | 300.880        | 5744.44     | 10.60             | -9.68         | 9.36         | 665724.06            | 611582.62             | 32°40'50.281"N | 103°55'44.607"W | 0.16             |          |
| 5839.50    | 0.400              | 293.870        | 5839.34     | 10.25             | -9.39         | 8.79         | 665723.49            | 611582.91             | 32°40'50.284"N | 103°55'44.613"W | 0.06             |          |
| 5934.40    | 0.370              | 297.310        | 5934.24     | 9.92              | -9.11         | 8.21         | 665722.91            | 611583.19             | 32°40'50.287"N | 103°55'44.620"W | 0.04             |          |
| 6029.20    | 0.390              | 293.570        | 6029.04     | 9.59              | -8.84         | 7.65         | 665722.35            | 611583.46             | 32°40'50.289"N | 103°55'44.627"W | 0.03             |          |
| 6124.10    | 0.530              | 297.660        | 6123.93     | 9.19              | -8.51         | 6.96         | 665721.66            | 611583.79             | 32°40'50.293"N | 103°55'44.635"W | 0.15             |          |
| 6219.00    | 0.560              | 298.860        | 6218.83     | 8.68              | -8.08         | 6.17         | 665720.87            | 611584.22             | 32°40'50.297"N | 103°55'44.644"W | 0.03             |          |
| 6313.80    | 0.610              | 309.380        | 6313.63     | 8.06              | -7.54         | 5.37         | 665720.07            | 611584.76             | 32°40'50.302"N | 103°55'44.653"W | 0.12             |          |
| 6408.70    | 0.610              | 299.350        | 6408.52     | 7.40              | -6.97         | 4.54         | 665719.24            | 611585.33             | 32°40'50.308"N | 103°55'44.663"W | 0.11             |          |
| 6503.60    | 0.670              | 302.520        | 6503.41     | 6.77              | -6.43         | 3.63         | 665718.33            | 611585.87             | 32°40'50.314"N | 103°55'44.673"W | 0.07             |          |
| 6598.40    | 0.840              | 311.050        | 6598.21     | 5.91              | -5.67         | 2.64         | 665717.34            | 611586.63             | 32°40'50.321"N | 103°55'44.685"W | 0.21             |          |
| 6693.30    | 0.600              | 314.500        | 6693.10     | 5.02              | -4.87         | 1.76         | 665716.46            | 611587.43             | 32°40'50.329"N | 103°55'44.695"W | 0.26             |          |
| 6788.20    | 0.540              | 309.030        | 6787.99     | 4.32              | -4.24         | 1.06         | 665715.76            | 611588.06             | 32°40'50.335"N | 103°55'44.703"W | 0.09             |          |
| 6883.10    | 0.600              | 297.310        | 6882.89     | 3.74              | -3.73         | 0.27         | 665714.97            | 611588.57             | 32°40'50.340"N | 103°55'44.713"W | 0.14             |          |
| 6977.90    | 0.950              | 298.620        | 6977.68     | 3.02              | -3.12         | -0.86        | 665713.84            | 611589.18             | 32°40'50.346"N | 103°55'44.726"W | 0.37             |          |
| 7072.80    | 0.910              | 315.900        | 7072.57     | 1.98              | -2.21         | -2.07        | 665712.63            | 611590.09             | 32°40'50.356"N | 103°55'44.740"W | 0.30             |          |
| 7167.70    | 0.920              | 317.090        | 7167.46     | 0.78              | -1.11         | -3.12        | 665711.58            | 611591.19             | 32°40'50.366"N | 103°55'44.752"W | 0.02             |          |
| 7262.50    | 0.960              | 304.720        | 7262.24     | -0.35             | -0.10         | -4.29        | 665710.41            | 611592.20             | 32°40'50.376"N | 103°55'44.766"W | 0.22             |          |
| 7357.40    | 0.780              | 280.840        | 7357.13     | -1.05             | 0.48          | -5.58        | 665709.12            | 611592.78             | 32°40'50.382"N | 103°55'44.781"W | 0.42             |          |
| 7452.30    | 0.880              | 239.770        | 7452.02     | -0.94             | 0.23          | -6.84        | 665707.86            | 611592.53             | 32°40'50.380"N | 103°55'44.796"W | 0.62             |          |
| 7547.10    | 0.820              | 242.960        | 7546.81     | -0.40             | -0.44         | -8.07        | 665706.63            | 611591.86             | 32°40'50.373"N | 103°55'44.810"W | 0.08             |          |
| 7642.00    | 0.640              | 238.600        | 7641.70     | 0.08              | -1.03         | -9.13        | 665705.57            | 611591.27             | 32°40'50.367"N | 103°55'44.822"W | 0.20             |          |
| 7736.90    | 0.300              | 247.950        | 7736.60     | 0.37              | -1.40         | -9.81        | 665704.89            | 611590.90             | 32°40'50.364"N | 103°55'44.830"W | 0.37             |          |
| 7831.80    | 0.110              | 322.900        | 7831.50     | 0.36              | -1.42         | -10.10       | 665704.60            | 611590.88             | 32°40'50.364"N | 103°55'44.834"W | 0.31             |          |
| 7926.60    | 0.180              | 55.330         | 7926.30     | 0.22              | -1.26         | -10.03       | 665704.67            | 611591.04             | 32°40'50.365"N | 103°55'44.833"W | 0.23             |          |
| 8021.50    | 0.280              | 68.490         | 8021.20     | 0.08              | -1.09         | -9.69        | 665705.01            | 611591.21             | 32°40'50.367"N | 103°55'44.829"W | 0.12             |          |
| 8116.40    | 0.460              | 41.700         | 8116.10     | -0.24             | -0.72         | -9.22        | 665705.48            | 611591.58             | 32°40'50.370"N | 103°55'44.824"W | 0.26             |          |
| 8211.20    | 0.390              | 113.450        | 8210.90     | -0.34             | -0.56         | -8.67        | 665706.03            | 611591.74             | 32°40'50.372"N | 103°55'44.817"W | 0.53             |          |
| 8222.00    | 2.000              | 155.700        | 8221.69     | -0.14             | -0.75         | -8.56        | 665706.14            | 611591.55             | 32°40'50.370"N | 103°55'44.816"W | 16.03            |          |
| 8254.00    | 5.300              | 174.800        | 8253.63     | -1.87             | -2.73         | -8.20        | 665706.50            | 611589.57             | 32°40'50.351"N | 103°55'44.812"W | 10.85            |          |



# Actual Wellpath Report

No. 2H AWP

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## REFERENCE WELLPATH IDENTIFICATION

|          |                                    |          |            |
|----------|------------------------------------|----------|------------|
| Operator | Cimarex Energy Co.                 | Slot     | No. 2H SHL |
| Area     | Eddy County, NM                    | Well     | No. 2H     |
| Field    | (Crescent) Sec 11 & 12, T19S, R30E | Wellbore | No. 2H AWP |
| Facility | Crescent Hale 12 Federal           |          |            |

## WELLPATH DATA (177 stations)

| MD<br>[ft] | Inclination<br>[°] | Azimuth<br>[°] | TVD<br>[ft] | Vert Sect<br>[ft] | North<br>[ft] | East<br>[ft] | Grid East<br>[US ft] | Grid North<br>[US ft] | Latitude       | Longitude       | DLS<br>[°/100ft] | Comments |
|------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------------|-----------------------|----------------|-----------------|------------------|----------|
| 8285.00    | 9.700              | 181.000        | 8284.35     | 5.90              | -6.77         | -8.12        | 665706.59            | 611585.53             | 32°40'50.311"N | 103°55'44.811"W | 14.41            |          |
| 8317.00    | 14.300             | 180.000        | 8315.65     | 12.51             | -13.42        | -8.16        | 665706.54            | 611578.88             | 32°40'50.245"N | 103°55'44.812"W | 14.39            |          |
| 8349.00    | 18.400             | 178.100        | 8346.34     | 21.48             | -22.43        | -7.99        | 665706.71            | 611569.88             | 32°40'50.156"N | 103°55'44.810"W | 12.92            |          |
| 8380.00    | 22.600             | 176.400        | 8375.38     | 32.32             | -33.27        | -7.46        | 665707.24            | 611559.04             | 32°40'50.048"N | 103°55'44.804"W | 13.68            |          |
| 8412.00    | 27.000             | 176.800        | 8404.42     | 45.72             | -46.66        | -6.67        | 665708.03            | 611545.64             | 32°40'49.916"N | 103°55'44.796"W | 13.76            |          |
| 8443.00    | 31.400             | 178.200        | 8431.47     | 60.81             | -61.77        | -6.02        | 665708.68            | 611530.54             | 32°40'49.766"N | 103°55'44.789"W | 14.36            |          |
| 8475.00    | 35.700             | 177.700        | 8458.13     | 78.45             | -79.44        | -5.38        | 665709.32            | 611512.87             | 32°40'49.591"N | 103°55'44.782"W | 13.47            |          |
| 8507.00    | 40.300             | 176.800        | 8483.34     | 98.12             | -99.11        | -4.43        | 665710.27            | 611493.20             | 32°40'49.397"N | 103°55'44.772"W | 14.48            |          |
| 8538.00    | 44.800             | 175.400        | 8506.18     | 119.06            | -120.02       | -2.99        | 665711.71            | 611472.29             | 32°40'49.190"N | 103°55'44.756"W | 14.83            |          |
| 8570.00    | 48.300             | 174.400        | 8528.18     | 142.29            | -143.15       | -0.92        | 665713.78            | 611449.16             | 32°40'48.961"N | 103°55'44.733"W | 11.17            |          |
| 8602.00    | 50.800             | 174.400        | 8548.94     | 166.64            | -167.38       | 1.45         | 665716.15            | 611424.93             | 32°40'48.721"N | 103°55'44.706"W | 7.81             |          |
| 8633.00    | 53.300             | 174.300        | 8568.00     | 191.08            | -191.71       | 3.86         | 665718.56            | 611400.61             | 32°40'48.480"N | 103°55'44.679"W | 8.07             |          |
| 8665.00    | 57.300             | 174.800        | 8586.22     | 217.38            | -217.89       | 6.36         | 665721.05            | 611374.42             | 32°40'48.221"N | 103°55'44.651"W | 12.57            |          |
| 8696.00    | 61.600             | 175.200        | 8601.97     | 244.07            | -244.48       | 8.68         | 665723.38            | 611347.84             | 32°40'47.958"N | 103°55'44.625"W | 13.92            |          |
| 8728.00    | 66.100             | 175.300        | 8616.07     | 272.78            | -273.10       | 11.06        | 665725.76            | 611319.22             | 32°40'47.675"N | 103°55'44.598"W | 14.07            |          |
| 8760.00    | 70.800             | 174.500        | 8627.82     | 302.53            | -302.74       | 13.71        | 665728.40            | 611289.59             | 32°40'47.381"N | 103°55'44.569"W | 14.87            |          |
| 8791.00    | 75.200             | 173.700        | 8636.88     | 332.17            | -332.22       | 16.75        | 665731.45            | 611260.11             | 32°40'47.090"N | 103°55'44.534"W | 14.41            |          |
| 8823.00    | 79.200             | 172.800        | 8643.97     | 363.36            | -363.20       | 20.42        | 665735.12            | 611229.13             | 32°40'46.783"N | 103°55'44.493"W | 12.80            |          |
| 8855.00    | 81.900             | 172.500        | 8649.22     | 394.92            | -394.50       | 24.46        | 665739.16            | 611197.83             | 32°40'46.473"N | 103°55'44.447"W | 8.49             |          |
| 8886.00    | 85.300             | 173.000        | 8652.68     | 425.71            | -425.06       | 28.35        | 665743.05            | 611167.27             | 32°40'46.171"N | 103°55'44.403"W | 11.08            |          |
| 8917.00    | 89.100             | 173.900        | 8654.19     | 456.67            | -455.81       | 31.88        | 665746.58            | 611136.52             | 32°40'45.866"N | 103°55'44.363"W | 12.60            |          |
| 8948.00    | 89.900             | 173.800        | 8654.46     | 487.66            | -486.63       | 35.20        | 665749.90            | 611105.70             | 32°40'45.561"N | 103°55'44.325"W | 2.60             |          |
| 8980.00    | 89.900             | 173.700        | 8654.52     | 519.66            | -518.44       | 38.68        | 665753.38            | 611073.90             | 32°40'45.246"N | 103°55'44.286"W | 0.31             |          |
| 9011.00    | 89.700             | 174.200        | 8654.63     | 550.66            | -549.27       | 41.95        | 665756.65            | 611043.07             | 32°40'44.941"N | 103°55'44.249"W | 1.74             |          |
| 9043.00    | 89.900             | 174.300        | 8654.74     | 582.66            | -581.11       | 45.16        | 665759.85            | 611011.23             | 32°40'44.626"N | 103°55'44.213"W | 0.70             |          |
| 9075.00    | 89.900             | 174.500        | 8654.79     | 614.66            | -612.96       | 48.28        | 665762.98            | 610979.39             | 32°40'44.311"N | 103°55'44.178"W | 0.62             |          |
| 9138.00    | 89.500             | 174.600        | 8655.12     | 677.66            | -675.67       | 54.26        | 665768.96            | 610916.68             | 32°40'43.690"N | 103°55'44.111"W | 0.65             |          |
| 9201.00    | 89.400             | 174.900        | 8655.73     | 740.65            | -738.40       | 60.03        | 665774.72            | 610853.95             | 32°40'43.069"N | 103°55'44.046"W | 0.50             |          |
| 9264.00    | 89.500             | 175.700        | 8656.33     | 803.63            | -801.19       | 65.19        | 665779.88            | 610791.17             | 32°40'42.448"N | 103°55'43.989"W | 1.28             |          |
| 9327.00    | 89.300             | 175.500        | 8656.99     | 866.61            | -864.00       | 70.02        | 665784.72            | 610728.37             | 32°40'41.826"N | 103°55'43.935"W | 0.45             |          |
| 9390.00    | 89.100             | 175.700        | 8657.87     | 929.58            | -926.81       | 74.86        | 665789.55            | 610665.56             | 32°40'41.204"N | 103°55'43.881"W | 0.45             |          |
| 9454.00    | 90.100             | 175.900        | 8658.32     | 993.55            | -990.63       | 79.54        | 665794.24            | 610601.74             | 32°40'40.573"N | 103°55'43.829"W | 1.59             |          |
| 9517.00    | 90.000             | 175.400        | 8658.26     | 1056.52           | -1053.45      | 84.32        | 665799.01            | 610538.93             | 32°40'39.951"N | 103°55'43.776"W | 0.81             |          |
| 9580.00    | 90.400             | 175.200        | 8658.04     | 1119.51           | -1116.24      | 89.48        | 665804.18            | 610476.15             | 32°40'39.329"N | 103°55'43.718"W | 0.71             |          |
| 9643.00    | 90.600             | 175.100        | 8657.49     | 1182.49           | -1179.01      | 94.81        | 665809.50            | 610413.38             | 32°40'38.708"N | 103°55'43.659"W | 0.35             |          |
| 9706.00    | 90.500             | 174.600        | 8656.89     | 1245.48           | -1241.75      | 100.46       | 665815.16            | 610350.64             | 32°40'38.087"N | 103°55'43.596"W | 0.81             |          |
| 9770.00    | 90.300             | 173.800        | 8656.44     | 1309.48           | -1305.42      | 106.93       | 665821.62            | 610286.98             | 32°40'37.457"N | 103°55'43.523"W | 1.29             |          |
| 9833.00    | 91.200             | 174.900        | 8655.62     | 1372.47           | -1368.11      | 113.13       | 665827.82            | 610224.29             | 32°40'36.836"N | 103°55'43.453"W | 2.26             |          |
| 9896.00    | 90.500             | 173.600        | 8654.68     | 1435.46           | -1430.78      | 119.44       | 665834.14            | 610161.62             | 32°40'36.216"N | 103°55'43.382"W | 2.34             |          |
| 9960.00    | 89.800             | 172.400        | 8654.52     | 1499.45           | -1494.31      | 127.24       | 665841.93            | 610098.11             | 32°40'35.587"N | 103°55'43.294"W | 2.17             |          |
| 10023.00   | 89.700             | 172.100        | 8654.79     | 1562.42           | -1556.73      | 135.74       | 665850.43            | 610035.69             | 32°40'34.969"N | 103°55'43.197"W | 0.50             |          |
| 10086.00   | 89.500             | 172.700        | 8655.23     | 1625.39           | -1619.17      | 144.07       | 665858.76            | 609973.25             | 32°40'34.351"N | 103°55'43.102"W | 1.00             |          |
| 10149.00   | 89.800             | 172.500        | 8655.62     | 1688.37           | -1681.65      | 152.18       | 665866.87            | 609910.78             | 32°40'33.733"N | 103°55'43.010"W | 0.57             |          |
| 10212.00   | 90.000             | 171.900        | 8655.73     | 1751.34           | -1744.06      | 160.73       | 665875.42            | 609848.37             | 32°40'33.115"N | 103°55'42.913"W | 1.00             |          |
| 10276.00   | 89.000             | 172.400        | 8656.28     | 1815.30           | -1807.46      | 169.48       | 665884.16            | 609784.97             | 32°40'32.487"N | 103°55'42.814"W | 1.75             |          |





# Actual Wellpath Report

No. 2H AWP

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## REFERENCE WELLPATH IDENTIFICATION

|          |                                    |          |            |
|----------|------------------------------------|----------|------------|
| Operator | Cimarex Energy Co.                 | Slot     | No. 2H SHL |
| Area     | Eddy County, NM                    | Well     | No. 2H     |
| Field    | (Crescent) Sec 11 & 12, T19S, R30E | Wellbore | No. 2H AWB |
| Facility | Crescent Hale 12 Federal           |          |            |

## WELLPATH DATA (177 stations)

| MD<br>[ft] | Inclination<br>[°] | Azimuth<br>[°] | TVD<br>[ft] | Vert Sect<br>[ft] | North<br>[ft] | East<br>[ft] | Grid East<br>[US ft] | Grid North<br>[US ft] | Latitude       | Longitude       | DLS<br>[°/100ft] | Comments          |
|------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------------|-----------------------|----------------|-----------------|------------------|-------------------|
| 10339.00   | 88.900             | 171.300        | 8657.44     | 1878.24           | -1869.81      | 178.41       | 665893.09            | 609722.63             | 32°40'31.870"N | 103°55'42.712"W | 1.75             |                   |
| 10402.00   | 88.800             | 171.000        | 8658.70     | 1941.14           | -1932.05      | 188.10       | 665902.78            | 609660.39             | 32°40'31.254"N | 103°55'42.601"W | 0.50             |                   |
| 10466.00   | 88.000             | 169.200        | 8660.49     | 2004.96           | -1995.07      | 199.09       | 665913.78            | 609597.38             | 32°40'30.630"N | 103°55'42.475"W | 3.08             |                   |
| 10529.00   | 88.500             | 169.200        | 8662.41     | 2067.71           | -2056.93      | 210.89       | 665925.58            | 609535.53             | 32°40'30.017"N | 103°55'42.340"W | 0.79             |                   |
| 10592.00   | 89.500             | 170.500        | 8663.51     | 2130.52           | -2118.93      | 221.99       | 665936.68            | 609473.53             | 32°40'29.403"N | 103°55'42.213"W | 2.60             |                   |
| 10655.00   | 89.700             | 170.700        | 8663.95     | 2193.41           | -2181.08      | 232.28       | 665946.97            | 609411.38             | 32°40'28.788"N | 103°55'42.095"W | 0.45             |                   |
| 10719.00   | 89.900             | 172.300        | 8664.18     | 2257.34           | -2244.38      | 241.74       | 665956.42            | 609348.09             | 32°40'28.161"N | 103°55'41.988"W | 2.52             |                   |
| 10782.00   | 90.300             | 172.600        | 8664.07     | 2320.32           | -2306.83      | 250.02       | 665964.70            | 609285.64             | 32°40'27.543"N | 103°55'41.894"W | 0.79             |                   |
| 10845.00   | 88.900             | 171.900        | 8664.51     | 2383.28           | -2369.25      | 258.51       | 665973.20            | 609223.23             | 32°40'26.925"N | 103°55'41.797"W | 2.48             |                   |
| 10909.00   | 88.500             | 173.100        | 8665.96     | 2447.24           | -2432.68      | 266.87       | 665981.55            | 609159.80             | 32°40'26.297"N | 103°55'41.702"W | 1.98             |                   |
| 10972.00   | 88.700             | 173.500        | 8667.50     | 2510.22           | -2495.24      | 274.21       | 665988.89            | 609097.25             | 32°40'25.678"N | 103°55'41.619"W | 0.71             |                   |
| 11035.00   | 89.000             | 173.800        | 8668.76     | 2573.20           | -2557.84      | 281.18       | 665995.86            | 609034.66             | 32°40'25.059"N | 103°55'41.540"W | 0.67             |                   |
| 11099.00   | 89.400             | 174.800        | 8669.66     | 2637.19           | -2621.51      | 287.54       | 666002.22            | 608970.98             | 32°40'24.428"N | 103°55'41.469"W | 1.68             |                   |
| 11162.00   | 89.500             | 174.700        | 8670.26     | 2700.19           | -2684.25      | 293.30       | 666007.98            | 608908.26             | 32°40'23.807"N | 103°55'41.404"W | 0.22             |                   |
| 11225.00   | 89.900             | 174.900        | 8670.59     | 2763.18           | -2746.99      | 299.01       | 666013.69            | 608845.52             | 32°40'23.186"N | 103°55'41.340"W | 0.71             |                   |
| 11288.00   | 90.300             | 174.900        | 8670.48     | 2826.17           | -2809.74      | 304.61       | 666019.29            | 608782.78             | 32°40'22.565"N | 103°55'41.277"W | 0.63             |                   |
| 11352.00   | 90.700             | 175.100        | 8669.92     | 2890.16           | -2873.49      | 310.19       | 666024.87            | 608719.03             | 32°40'21.934"N | 103°55'41.215"W | 0.70             |                   |
| 11415.00   | 90.400             | 175.400        | 8669.32     | 2953.14           | -2936.27      | 315.41       | 666030.08            | 608656.25             | 32°40'21.313"N | 103°55'41.157"W | 0.67             |                   |
| 11478.00   | 89.400             | 175.000        | 8669.43     | 3016.13           | -2999.05      | 320.68       | 666035.35            | 608593.48             | 32°40'20.692"N | 103°55'41.098"W | 1.71             |                   |
| 11542.00   | 89.100             | 174.600        | 8670.26     | 3080.12           | -3062.78      | 326.48       | 666041.15            | 608529.75             | 32°40'20.061"N | 103°55'41.033"W | 0.78             |                   |
| 11605.00   | 88.900             | 175.200        | 8671.36     | 3143.10           | -3125.52      | 332.08       | 666046.75            | 608467.02             | 32°40'19.440"N | 103°55'40.970"W | 1.00             |                   |
| 11668.00   | 89.500             | 174.700        | 8672.24     | 3206.09           | -3188.27      | 337.62       | 666052.30            | 608404.27             | 32°40'18.819"N | 103°55'40.908"W | 1.24             |                   |
| 11731.00   | 89.900             | 175.000        | 8672.57     | 3269.08           | -3251.01      | 343.28       | 666057.95            | 608341.53             | 32°40'18.198"N | 103°55'40.845"W | 0.79             |                   |
| 11794.00   | 89.300             | 175.300        | 8673.01     | 3332.07           | -3313.79      | 348.60       | 666063.28            | 608278.76             | 32°40'17.576"N | 103°55'40.785"W | 1.06             |                   |
| 11858.00   | 89.500             | 175.400        | 8673.68     | 3396.05           | -3377.57      | 353.79       | 666068.46            | 608214.98             | 32°40'16.945"N | 103°55'40.727"W | 0.35             |                   |
| 11921.00   | 89.800             | 175.500        | 8674.07     | 3459.03           | -3440.37      | 358.79       | 666073.46            | 608152.19             | 32°40'16.323"N | 103°55'40.672"W | 0.50             |                   |
| 11984.00   | 88.900             | 175.400        | 8674.78     | 3522.01           | -3503.17      | 363.79       | 666078.46            | 608089.39             | 32°40'15.702"N | 103°55'40.616"W | 1.44             |                   |
| 12047.00   | 89.200             | 174.400        | 8675.83     | 3584.99           | -3565.91      | 369.39       | 666084.06            | 608026.66             | 32°40'15.081"N | 103°55'40.553"W | 1.66             |                   |
| 12110.00   | 89.500             | 174.100        | 8676.54     | 3647.99           | -3628.59      | 375.70       | 666090.37            | 607963.98             | 32°40'14.461"N | 103°55'40.482"W | 0.67             |                   |
| 12173.00   | 90.000             | 173.800        | 8676.82     | 3710.98           | -3691.24      | 382.34       | 666097.01            | 607901.34             | 32°40'13.840"N | 103°55'40.407"W | 0.93             |                   |
| 12237.00   | 89.200             | 173.600        | 8677.26     | 3774.98           | -3754.85      | 389.36       | 666104.03            | 607837.73             | 32°40'13.211"N | 103°55'40.328"W | 1.29             |                   |
| 12300.00   | 89.900             | 173.800        | 8677.76     | 3837.98           | -3817.47      | 396.27       | 666110.94            | 607775.12             | 32°40'12.591"N | 103°55'40.250"W | 1.16             |                   |
| 12363.00   | 89.100             | 174.700        | 8678.31     | 3900.97           | -3880.14      | 402.58       | 666117.25            | 607712.45             | 32°40'11.971"N | 103°55'40.179"W | 1.91             |                   |
| 12427.00   | 89.300             | 174.100        | 8679.20     | 3964.97           | -3943.83      | 408.83       | 666123.50            | 607648.76             | 32°40'11.340"N | 103°55'40.109"W | 0.99             |                   |
| 12490.00   | 89.400             | 174.100        | 8679.92     | 4027.96           | -4006.50      | 415.30       | 666129.97            | 607586.11             | 32°40'10.720"N | 103°55'40.036"W | 0.16             |                   |
| 12553.00   | 89.600             | 173.400        | 8680.47     | 4090.96           | -4069.12      | 422.16       | 666136.83            | 607523.49             | 32°40'10.100"N | 103°55'39.958"W | 1.16             |                   |
| 12616.00   | 89.900             | 173.300        | 8680.74     | 4153.95           | -4131.69      | 429.46       | 666144.13            | 607460.92             | 32°40'09.481"N | 103°55'39.876"W | 0.50             |                   |
| 12680.00   | 88.600             | 173.100        | 8681.58     | 4217.94           | -4195.24      | 437.04       | 666151.70            | 607397.38             | 32°40'08.852"N | 103°55'39.790"W | 2.06             |                   |
| 12743.00   | 88.600             | 172.900        | 8683.12     | 4280.91           | -4257.75      | 444.71       | 666159.38            | 607334.87             | 32°40'08.233"N | 103°55'39.703"W | 0.32             |                   |
| 12806.00   | 89.000             | 172.600        | 8684.44     | 4343.88           | -4320.23      | 452.66       | 666167.33            | 607272.39             | 32°40'07.614"N | 103°55'39.613"W | 0.79             |                   |
| 12853.00   | 89.200             | 172.000        | 8685.18     | 4390.85           | -4366.80      | 458.96       | 666173.62            | 607225.83             | 32°40'07.153"N | 103°55'39.541"W | 1.35             |                   |
| 12899.00   | 89.200             | 172.000        | 8685.82     | 4436.82           | -4412.35      | 465.36       | 666180.02            | 607180.28             | 32°40'06.702"N | 103°55'39.469"W | 0.00             | Projection to bit |

## TARGETS

| Name | MD<br>[ft] | TVD<br>[ft] | North<br>[ft] | East<br>[ft] | Grid East<br>[US ft] | Grid North<br>[US ft] | Latitude       | Longitude       | Shape |
|------|------------|-------------|---------------|--------------|----------------------|-----------------------|----------------|-----------------|-------|
|      |            | 8712.50     | -4422.23      | 460.03       | 666174.70            | 607170.40             | 32°40'06.605"N | 103°55'39.531"W | point |

No. 2H PBHL

| WELLPATH COMPOSITION - Ref Wellbore: No. 2H AWB - Ref Wellpath: No. 2H AWP |                |                                       |                                                     |            |
|----------------------------------------------------------------------------|----------------|---------------------------------------|-----------------------------------------------------|------------|
| Start MD<br>[ft]                                                           | End MD<br>[ft] | Positional Uncertainty Model          | Log Name/Comment                                    | Wellbore   |
| 0.00                                                                       | 8211.20        | Generic gyro - northscking (Standard) | Gyrodatta / Gyro <100-8843.7>                       | No. 2H AWB |
| 8211.20                                                                    | 12853.00       | NaviTrak (Standard)                   | BHI / Navitrak MWD 7-7/8" <8222-12853> (PTB 12899') | No. 2H AWB |
| 12853.00                                                                   | 12899.00       | Blind Drilling (std)                  | Projection to bit                                   | No. 2H AWB |