



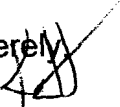
November 18, 2016

Concho Resources, Inc.  
One Concho Center  
600 W. Illinois Avenue  
Midland, Texas 79701

Attn: Kanicia Castillo

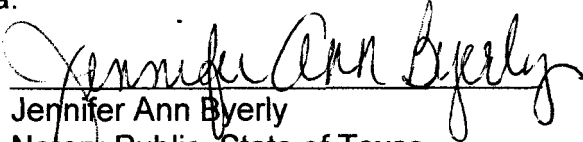
RE: **Copperhead 31 Federal Com 3H** 15-43924

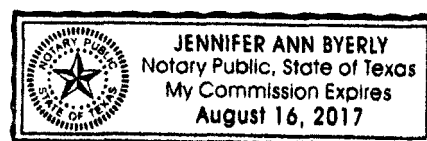
Please find enclosed a copy of the survey from 0' to 9900' ran on the above referenced well.

Sincerely,  
  
Keith Havelka  
Operations

STATE OF TEXAS     §  
                                  §  
COUNTY OF NUECES §

This instrument was acknowledged before me on the 18th day of November, A.D., 2016, by Keith Havelka.

  
Jennifer Ann Byerly  
Notary Public, State of Texas





**VES** SURVEY

Company: COG Operating  
Lease/Well: Copperhead 31 Federal Com/3H  
  
Rig Name: Latshaw 44  
State/County: New Mexico/Eddy  
VS-Azi: 179.14 Degrees  
Latitude: 32.01979, Longitude: -104.01721  
Grid North = True North -0.17 degs (NAD 27)  
Grid Correction Applied = -0.17 degs

Depth Reference : RKB = 25 Foot  
  
DRILLOG HA GYRO SURVEY CALCULATIONS  
Filename: gyro survey-de\_01.ut  
Minimum Curvature Method  
Report Date/Time: 11/17/2016 / 09:20  
  
VES Survey International  
Midland Tx  
(432) 563-5444  
Surveyor: Gene Heiss  
Copperhead 31 Federal Com 3H / API 30-015-43924

NM OIL CONSERVATION  
ARTESIA DISTRICT

MAR 23 2017

RECEIVED

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 0.00                    | 0.00                 | 0.00                      | 0.00      | 0.00        | 0.00        | 0.00                      | 0.00                      | 0.00                        | ****                          |
| 100.00                  | 0.77                 | 82.42                     | 100.00    | 0.09        | 0.67        | -0.08                     | 0.67                      | 82.42                       | 0.77                          |
| 200.00                  | 1.48                 | 60.21                     | 199.98    | 0.82        | 2.46        | -0.78                     | 2.59                      | 71.54                       | 0.82                          |
| 300.00                  | 1.97                 | 57.35                     | 299.93    | 2.39        | 5.03        | -2.32                     | 5.57                      | 64.57                       | 0.50                          |
| 400.00                  | 2.04                 | 51.34                     | 399.87    | 4.43        | 7.87        | -4.31                     | 9.03                      | 60.61                       | 0.22                          |
| 500.00                  | 2.20                 | 52.07                     | 499.80    | 6.72        | 10.77       | -6.56                     | 12.70                     | 58.03                       | 0.17                          |
| 600.00                  | 1.94                 | 70.59                     | 599.74    | 8.47        | 13.88       | -8.26                     | 16.26                     | 58.62                       | 0.72                          |
| 700.00                  | 1.08                 | 99.53                     | 699.70    | 8.87        | 16.41       | -8.63                     | 18.65                     | 61.59                       | 1.12                          |
| 800.00                  | 1.45                 | 123.70                    | 799.68    | 8.02        | 18.39       | -7.74                     | 20.06                     | 66.45                       | 0.64                          |
| 900.00                  | 0.81                 | 155.38                    | 899.66    | 6.67        | 19.74       | -6.37                     | 20.84                     | 71.34                       | 0.87                          |
| 1000.00                 | 0.96                 | 170.14                    | 999.65    | 5.20        | 20.18       | -4.89                     | 20.84                     | 75.56                       | 0.27                          |
| 1100.00                 | 1.49                 | 175.07                    | 1099.63   | 3.07        | 20.44       | -2.76                     | 20.67                     | 81.45                       | 0.54                          |
| 1200.00                 | 1.16                 | 180.63                    | 1199.60   | 0.77        | 20.54       | -0.46                     | 20.55                     | 87.87                       | 0.36                          |
| 1300.00                 | 1.14                 | 180.47                    | 1299.58   | -1.24       | 20.52       | 1.54                      | 20.56                     | 93.45                       | 0.02                          |
| 1400.00                 | 0.91                 | 245.43                    | 1399.57   | -2.56       | 19.79       | 2.86                      | 19.95                     | 97.37                       | 1.12                          |
| 1500.00                 | 0.49                 | 262.01                    | 1499.56   | -2.95       | 18.64       | 3.23                      | 18.87                     | 98.99                       | 0.46                          |
| 1600.00                 | 0.67                 | 355.18                    | 1599.55   | -2.43       | 18.17       | 2.70                      | 18.33                     | 97.61                       | 0.85                          |

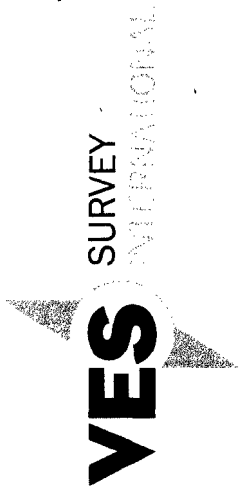
| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 1700.00                 | 0.56                 | 328.32                    | 1699.55   | -1.43       | 17.86       | 1.70                      | 17.92                     | 94.58                       | 0.31                          |
| 1800.00                 | 0.48                 | 333.11                    | 1799.54   | -0.64       | 17.42       | 0.90                      | 17.43                     | 92.11                       | 0.08                          |
| 1900.00                 | 0.78                 | 308.62                    | 1899.54   | 0.16        | 16.70       | 0.10                      | 16.70                     | 89.47                       | 0.39                          |
| 2000.00                 | 0.72                 | 280.59                    | 1999.53   | 0.69        | 15.55       | -0.46                     | 15.57                     | 87.45                       | 0.37                          |
| 2100.00                 | 0.31                 | 102.02                    | 2099.53   | 0.75        | 15.20       | -0.52                     | 15.22                     | 87.17                       | 1.03                          |
| 2200.00                 | 1.01                 | 86.15                     | 2199.52   | 0.76        | 16.34       | -0.51                     | 16.36                     | 87.35                       | 0.72                          |
| 2300.00                 | 0.85                 | 186.38                    | 2299.51   | 0.08        | 17.14       | 0.18                      | 17.14                     | 89.74                       | 1.43                          |
| 2400.00                 | 0.98                 | 141.63                    | 2399.50   | -1.33       | 17.59       | 1.59                      | 17.64                     | 94.32                       | 0.71                          |
| 2500.00                 | 2.10                 | 108.33                    | 2499.47   | -2.58       | 19.86       | 2.88                      | 20.03                     | 97.40                       | 1.38                          |
| 2600.00                 | 1.88                 | 109.15                    | 2599.41   | -3.69       | 23.15       | 4.04                      | 23.44                     | 99.06                       | 0.22                          |
| 2700.00                 | 1.06                 | 111.76                    | 2699.37   | -4.57       | 25.55       | 4.95                      | 25.95                     | 100.14                      | 0.82                          |
| 2800.00                 | 0.80                 | 124.58                    | 2799.36   | -5.31       | 26.98       | 5.71                      | 27.50                     | 101.13                      | 0.33                          |
| 2900.00                 | 0.79                 | 124.29                    | 2899.35   | -6.09       | 28.12       | 6.51                      | 28.77                     | 102.22                      | 0.01                          |
| 3000.00                 | 1.41                 | 58.03                     | 2999.33   | -5.83       | 29.73       | 6.27                      | 30.30                     | 101.09                      | 1.31                          |
| 3100.00                 | 1.39                 | 47.26                     | 3099.30   | -4.35       | 31.67       | 4.83                      | 31.97                     | 97.82                       | 0.26                          |
| 3200.00                 | 1.31                 | 36.06                     | 3199.28   | -2.60       | 33.24       | 3.10                      | 33.34                     | 94.48                       | 0.28                          |
| 3300.00                 | 1.22                 | 29.43                     | 3299.25   | -0.75       | 34.43       | 1.27                      | 34.44                     | 91.25                       | 0.17                          |
| 3400.00                 | 1.15                 | 16.59                     | 3399.23   | 1.14        | 35.24       | -0.61                     | 35.26                     | 88.15                       | 0.27                          |
| 3500.00                 | 1.20                 | 13.82                     | 3499.21   | 3.12        | 35.78       | -2.58                     | 35.91                     | 85.02                       | 0.07                          |
| 3600.00                 | 1.08                 | 355.43                    | 3599.19   | 5.07        | 35.95       | -4.53                     | 36.31                     | 81.97                       | 0.38                          |
| 3700.00                 | 1.11                 | 348.08                    | 3699.17   | 6.96        | 35.68       | -6.42                     | 36.35                     | 78.96                       | 0.14                          |
| 3800.00                 | 1.23                 | 347.46                    | 3799.15   | 8.96        | 35.24       | -8.43                     | 36.36                     | 75.73                       | 0.13                          |
| 3900.00                 | 1.21                 | 346.33                    | 3899.13   | 11.04       | 34.76       | -10.51                    | 36.47                     | 72.38                       | 0.04                          |
| 4000.00                 | 1.08                 | 340.74                    | 3999.11   | 12.95       | 34.20       | -12.44                    | 36.57                     | 69.26                       | 0.17                          |
| 4100.00                 | 0.98                 | 354.89                    | 4099.09   | 14.70       | 33.81       | -14.19                    | 36.87                     | 66.51                       | 0.27                          |
| 4200.00                 | 0.93                 | 345.89                    | 4199.08   | 16.34       | 33.54       | -15.84                    | 37.31                     | 64.02                       | 0.16                          |
| 4300.00                 | 0.77                 | 339.54                    | 4299.07   | 17.76       | 33.10       | -17.26                    | 37.57                     | 61.78                       | 0.19                          |
| 4400.00                 | 0.89                 | 329.23                    | 4399.06   | 19.06       | 32.47       | -18.57                    | 37.65                     | 59.59                       | 0.19                          |
| 4500.00                 | 0.79                 | 315.24                    | 4499.05   | 20.21       | 31.59       | -19.74                    | 37.50                     | 57.39                       | 0.23                          |
| 4600.00                 | 0.59                 | 309.04                    | 4599.04   | 21.02       | 30.71       | -20.56                    | 37.22                     | 55.61                       | 0.21                          |
| 4700.00                 | 0.66                 | 296.50                    | 4699.03   | 21.60       | 29.80       | -21.15                    | 36.80                     | 54.06                       | 0.15                          |
| 4800.00                 | 0.61                 | 280.45                    | 4799.03   | 21.96       | 28.76       | -21.52                    | 36.18                     | 52.64                       | 0.18                          |
| 4900.00                 | 0.72                 | 296.33                    | 4899.02   | 22.33       | 27.67       | -21.91                    | 35.56                     | 51.10                       | 0.22                          |
| 5000.00                 | 0.28                 | 246.23                    | 4999.02   | 22.51       | 26.89       | -22.11                    | 35.07                     | 50.06                       | 0.58                          |
| 5100.00                 | 0.29                 | 231.07                    | 5099.02   | 22.26       | 26.47       | -21.86                    | 34.58                     | 49.94                       | 0.08                          |
| 5200.00                 | 0.69                 | 234.95                    | 5199.01   | 21.75       | 25.78       | -21.36                    | 33.73                     | 49.84                       | 0.40                          |
| 5300.00                 | 0.75                 | 237.89                    | 5299.00   | 21.06       | 24.73       | -20.69                    | 32.49                     | 49.59                       | 0.07                          |
| 5400.00                 | 0.91                 | 211.46                    | 5398.99   | 20.03       | 23.77       | -19.67                    | 31.08                     | 49.87                       | 0.41                          |
| 5500.00                 | 0.98                 | 214.10                    | 5498.98   | 18.64       | 22.87       | -18.30                    | 29.50                     | 50.81                       | 0.08                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 5600.00                 | 1.05                 | 212.83                    | 5598.96   | 17.16       | 21.89       | -16.83                    | 27.81                     | 51.91                       | 0.07                          |
| 5700.00                 | 0.92                 | 198.91                    | 5698.95   | 15.62       | 21.13       | -15.31                    | 26.28                     | 53.52                       | 0.27                          |
| 5800.00                 | 1.02                 | 216.13                    | 5798.94   | 14.14       | 20.34       | -13.84                    | 24.78                     | 55.19                       | 0.31                          |
| 5900.00                 | 1.03                 | 214.79                    | 5898.92   | 12.68       | 19.30       | -12.39                    | 23.10                     | 56.69                       | 0.03                          |
| 6000.00                 | 1.10                 | 208.67                    | 5998.90   | 11.10       | 18.33       | -10.83                    | 21.43                     | 58.79                       | 0.13                          |
| 6100.00                 | 1.07                 | 209.19                    | 6098.88   | 9.45        | 17.42       | -9.19                     | 19.81                     | 61.51                       | 0.03                          |
| 6200.00                 | 0.89                 | 202.15                    | 6198.87   | 7.92        | 16.67       | -7.67                     | 18.46                     | 64.58                       | 0.21                          |
| 6300.00                 | 0.60                 | 195.94                    | 6298.86   | 6.70        | 16.23       | -6.45                     | 17.56                     | 67.58                       | 0.30                          |
| 6400.00                 | 0.64                 | 219.50                    | 6398.86   | 5.76        | 15.73       | -5.52                     | 16.75                     | 69.89                       | 0.26                          |
| 6500.00                 | 0.80                 | 208.28                    | 6498.85   | 4.72        | 15.05       | -4.49                     | 15.77                     | 72.60                       | 0.21                          |
| 6600.00                 | 0.90                 | 128.83                    | 6598.84   | 3.61        | 15.33       | -3.38                     | 15.75                     | 76.74                       | 1.09                          |
| 6700.00                 | 1.22                 | 106.72                    | 6698.82   | 2.81        | 16.96       | -2.56                     | 17.19                     | 80.58                       | 0.52                          |
| 6800.00                 | 1.94                 | 97.89                     | 6798.78   | 2.27        | 19.66       | -1.98                     | 19.79                     | 83.40                       | 0.76                          |
| 6900.00                 | 1.79                 | 99.61                     | 6898.73   | 1.78        | 22.88       | -1.44                     | 22.95                     | 86.55                       | 0.16                          |
| 7000.00                 | 1.51                 | 98.96                     | 6998.69   | 1.31        | 25.72       | -0.93                     | 25.76                     | 87.08                       | 0.29                          |
| 7100.00                 | 0.93                 | 100.56                    | 7098.67   | 0.96        | 27.82       | -0.54                     | 27.83                     | 88.02                       | 0.58                          |
| 7200.00                 | 0.04                 | 90.47                     | 7198.66   | 0.81        | 28.65       | -0.38                     | 28.66                     | 88.38                       | 0.89                          |
| 7300.00                 | 0.16                 | 51.44                     | 7298.66   | 0.90        | 28.79       | -0.47                     | 28.81                     | 88.21                       | 0.13                          |
| 7400.00                 | 1.29                 | 331.85                    | 7398.65   | 1.98        | 28.37       | -1.55                     | 28.44                     | 86.01                       | 1.27                          |
| 7500.00                 | 1.27                 | 331.72                    | 7498.63   | 3.95        | 27.32       | -3.54                     | 27.60                     | 81.78                       | 0.02                          |
| 7600.00                 | 1.45                 | 319.77                    | 7598.60   | 5.88        | 25.98       | -5.49                     | 26.63                     | 77.24                       | 0.33                          |
| 7700.00                 | 1.71                 | 294.28                    | 7698.56   | 7.46        | 23.80       | -7.10                     | 24.94                     | 72.60                       | 0.74                          |
| 7800.00                 | 1.64                 | 291.18                    | 7798.52   | 8.59        | 21.11       | -8.27                     | 22.79                     | 67.86                       | 0.11                          |
| 7900.00                 | 1.41                 | 253.16                    | 7898.49   | 8.75        | 18.60       | -8.47                     | 20.55                     | 64.80                       | 1.02                          |
| 8000.00                 | 1.63                 | 257.06                    | 7998.45   | 8.07        | 16.03       | -7.83                     | 17.95                     | 63.26                       | 0.25                          |
| 8100.00                 | 1.74                 | 256.20                    | 8098.41   | 7.39        | 13.16       | -7.19                     | 15.10                     | 60.68                       | 0.11                          |
| 8200.00                 | 0.33                 | 43.65                     | 8198.39   | 7.24        | 11.88       | -7.06                     | 13.91                     | 58.65                       | 2.03                          |
| 8300.00                 | 0.47                 | 90.16                     | 8298.39   | 7.44        | 12.49       | -7.26                     | 14.54                     | 59.21                       | 0.34                          |
| 8400.00                 | 0.37                 | 74.99                     | 8398.39   | 7.53        | 13.21       | -7.33                     | 15.21                     | 60.34                       | 0.15                          |
| 8500.00                 | 0.16                 | 71.68                     | 8498.39   | 7.65        | 13.66       | -7.45                     | 15.66                     | 60.74                       | 0.20                          |
| 8600.00                 | 0.76                 | 33.25                     | 8598.39   | 8.25        | 14.16       | -8.04                     | 16.39                     | 59.76                       | 0.64                          |
| 8700.00                 | 1.47                 | 14.48                     | 8698.37   | 10.05       | 14.84       | -9.83                     | 17.92                     | 55.90                       | 0.79                          |
| 8800.00                 | 0.82                 | 10.68                     | 8798.35   | 12.00       | 15.30       | -11.76                    | 19.44                     | 51.89                       | 0.66                          |
| 8900.00                 | 0.19                 | 357.14                    | 8898.34   | 12.86       | 15.42       | -12.63                    | 20.08                     | 50.16                       | 0.63                          |
| 9000.00                 | 0.49                 | 229.12                    | 8998.34   | 12.75       | 15.08       | -12.52                    | 19.75                     | 49.79                       | 0.63                          |
| 9100.00                 | 0.78                 | 216.93                    | 9098.33   | 11.93       | 14.35       | -11.71                    | 18.66                     | 50.27                       | 0.31                          |
| 9200.00                 | 0.86                 | 217.37                    | 9198.32   | 10.79       | 13.49       | -10.59                    | 17.27                     | 51.34                       | 0.08                          |
| 9300.00                 | 0.90                 | 218.74                    | 9298.31   | 9.58        | 12.54       | -9.39                     | 15.79                     | 52.62                       | 0.04                          |
| 9400.00                 | 1.03                 | 211.64                    | 9398.30   | 8.21        | 11.58       | -8.03                     | 14.20                     | 54.68                       | 0.18                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 9500.00                 | 1.00                 | 202.77                    | 9498.28   | 6.64        | 10.77       | -6.47                     | 12.65                     | 58.36                       | 0.16                          |
| 9600.00                 | 1.21                 | 192.10                    | 9598.26   | 4.80        | 10.21       | -4.64                     | 11.28                     | 64.84                       | 0.30                          |
| 9700.00                 | 1.37                 | 197.43                    | 9698.24   | 2.62        | 9.63        | -2.47                     | 9.98                      | 74.79                       | 0.20                          |
| 9800.00                 | 1.31                 | 192.22                    | 9798.21   | 0.36        | 9.03        | -0.22                     | 9.04                      | 87.73                       | 0.14                          |
| 9900.00                 | 1.16                 | 200.10                    | 9898.19   | -1.71       | 8.44        | 1.84                      | 8.61                      | 101.45                      | 0.22                          |



VES Survey International  
Midland Tx  
(432) 563-5444  
Surveyor: Gene Heiss  
Copperhead 31 Federal Com 3H / API 30-015-43924

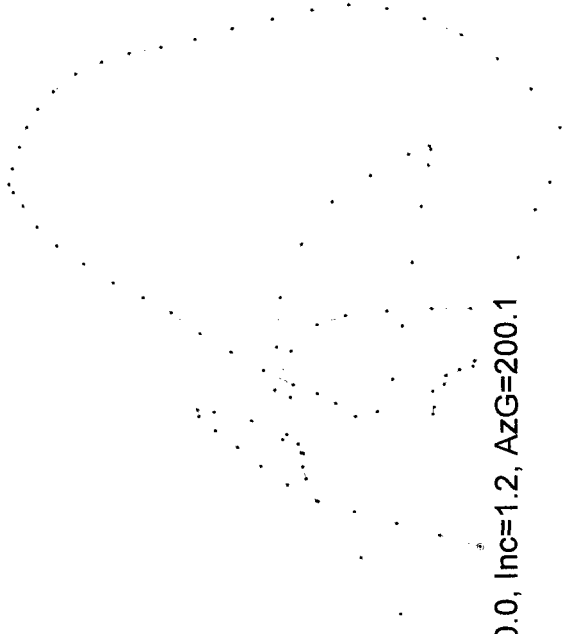


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-S/+N

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Depth=9900.0, Inc=1.2, AzG=200.1

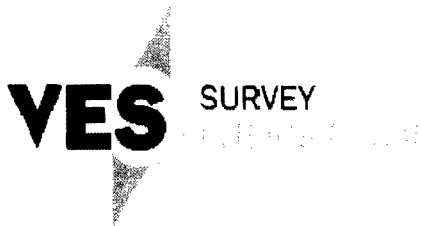


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-W/+E

VES Survey Date: 11/12/216

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I Gene Heiss certify that I am employed by VES Survey International. That I did on the day(s) of 11/12/16 through 11/12/16 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 9,900.00 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of COG Operating for the Copperhead 31 Federal Com Well # 3H API # 30-015-43924 in Eddy County / Parish New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by VES Survey International.

A handwritten signature in black ink, appearing to read "Gene Heiss", written over a horizontal line.

Gene Heiss  
Service Technician  
VES Survey International