



January 6, 2017

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

Attn: Kanicia Castillo

RE: Rojo AE 7811 JV-P Federal No. 001H

Please find enclosed a copy of the survey from 0' to 8700' ran on the above referenced well.

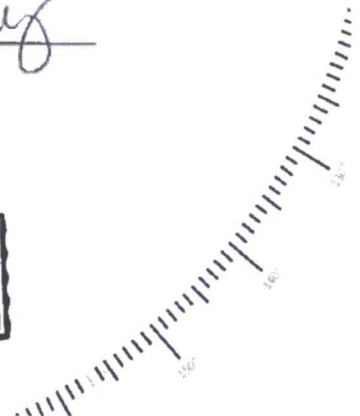
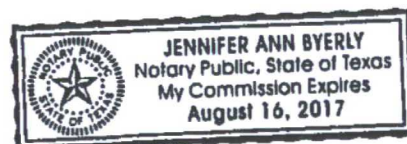
Sincerely,  
  
Keith Havelka  
Operations

STATE OF TEXAS     §  
                                 §  
COUNTY OF NUECES §

This instrument was acknowledged before me on the 16th day of January, A.D., 2016, by Keith Havelka.

  
Jennifer Ann Byerly  
Notary Public, State of Texas

VES Survey International  
P.O. Box 261021, Corpus Christi, Texas 78426  
T (361) 767-0602 F (361) 767-0612  
www.vessurvey.com





Company: COG OPERATING  
Lease/Well: ROJO AE 7811 JV-P FEDERAL No. /001H

Rig Name: SCAN DRILL FREEDOM  
State/County: NEW MEXICO/LEA  
VS-Azi: 184.06 Degrees  
Latitude: 32.10814, Longitude: -103.56493  
Grid North = True North -0.41 degs (NAD 27)  
Grid Correction Applied = -0.41 degs



Depth Reference : RKB=27 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: e-line gyro-de\_01.ut  
Minimum Curvature Method  
Report Date/Time: 1/6/2017 / 08:31

VES Survey International  
Midland, Texas  
432-563-5444

Surveyor: Michael Cook  
Rojo AE 7811 JV-P Federal No. 001H / API 30-025-43476

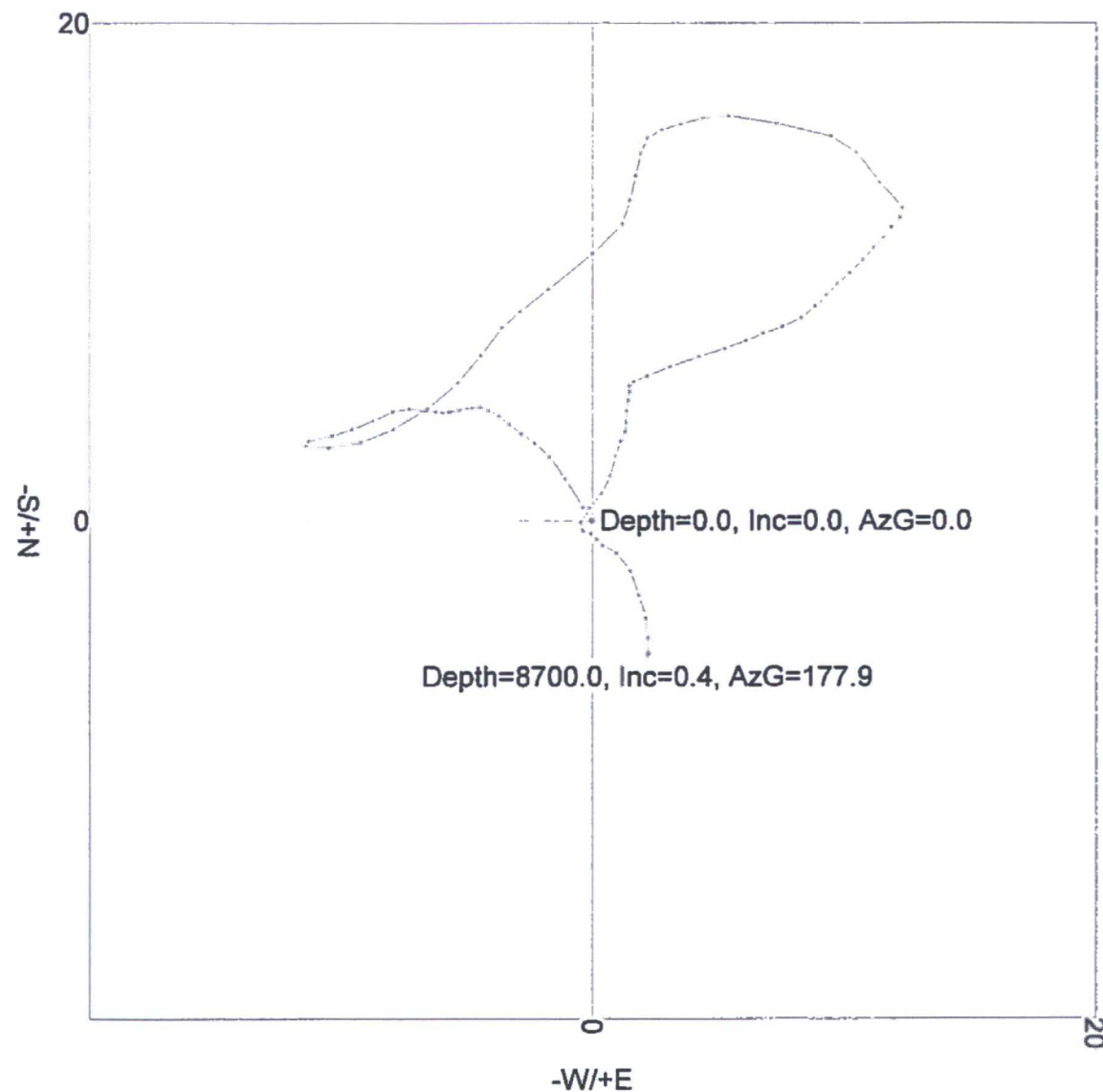
| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 0.00                    | 0.00                 | 0.00                      | 0.00      | 0.00        | 0.00        | 0.00                      | 0.00                      | 0.00                        | ****                          |
| 100.00                  | 0.77                 | 325.45                    | 100.00    | 0.55        | -0.38       | -0.52                     | 0.67                      | 325.45                      | 0.77                          |
| 200.00                  | 0.75                 | 331.07                    | 199.99    | 1.67        | -1.07       | -1.59                     | 1.99                      | 327.29                      | 0.08                          |
| 300.00                  | 0.53                 | 318.04                    | 299.98    | 2.58        | -1.70       | -2.46                     | 3.09                      | 326.72                      | 0.26                          |
| 400.00                  | 0.40                 | 305.76                    | 399.98    | 3.13        | -2.29       | -2.96                     | 3.88                      | 323.85                      | 0.16                          |
| 500.00                  | 0.36                 | 307.55                    | 499.98    | 3.53        | -2.82       | -3.32                     | 4.52                      | 321.35                      | 0.04                          |
| 600.00                  | 0.30                 | 308.72                    | 599.97    | 3.88        | -3.28       | -3.84                     | 5.08                      | 319.85                      | 0.07                          |
| 700.00                  | 0.31                 | 308.54                    | 699.97    | 4.21        | -3.69       | -3.94                     | 5.60                      | 318.80                      | 0.01                          |
| 800.00                  | 0.25                 | 288.20                    | 799.97    | 4.45        | -4.11       | -4.15                     | 6.06                      | 317.28                      | 0.11                          |
| 900.00                  | 0.14                 | 296.97                    | 899.97    | 4.57        | -4.42       | -4.25                     | 6.36                      | 315.94                      | 0.12                          |
| 1000.00                 | 0.26                 | 256.20                    | 999.97    | 4.57        | -4.75       | -4.22                     | 6.60                      | 313.88                      | 0.18                          |
| 1100.00                 | 0.30                 | 259.44                    | 1099.97   | 4.47        | -5.24       | -4.09                     | 6.89                      | 310.46                      | 0.04                          |
| 1200.00                 | 0.08                 | 257.13                    | 1199.97   | 4.40        | -5.57       | -4.00                     | 7.10                      | 308.32                      | 0.22                          |
| 1300.00                 | 0.05                 | 268.60                    | 1299.97   | 4.39        | -5.68       | -3.97                     | 7.18                      | 307.66                      | 0.04                          |
| 1400.00                 | 0.22                 | 262.59                    | 1399.97   | 4.36        | -5.91       | -3.93                     | 7.34                      | 306.42                      | 0.17                          |
| 1500.00                 | 0.12                 | 297.33                    | 1499.97   | 4.39        | -6.19       | -3.94                     | 7.59                      | 305.30                      | 0.13                          |
| 1600.00                 | 0.36                 | 270.07                    | 1599.97   | 4.43        | -6.81       | -3.96                     | 7.96                      | 303.88                      | 0.26                          |

| 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                 | 0.38                 | 283.59                    | 1899.97   | 4.51        | -7.24       | -3.99                     | 8.53                      | 301.92                      | 0.09                          |
| 1800.00                 | 0.44                 | 240.19                    | 1799.96   | 4.40        | -7.90       | -3.83                     | 9.04                      | 299.12                      | 0.31                          |
| 1900.00                 | 0.58                 | 248.41                    | 1899.96   | 4.02        | -8.70       | -3.40                     | 9.58                      | 294.82                      | 0.15                          |
| 2000.00                 | 0.42                 | 246.53                    | 1999.96   | 3.69        | -9.50       | -3.01                     | 10.20                     | 291.24                      | 0.15                          |
| 2100.00                 | 0.54                 | 257.23                    | 2099.95   | 3.44        | -10.30      | -2.70                     | 10.86                     | 288.47                      | 0.15                          |
| 2200.00                 | 0.54                 | 255.34                    | 2199.95   | 3.22        | -11.22      | -2.42                     | 11.67                     | 286.00                      | 0.02                          |
| 2300.00                 | 0.37                 | 103.52                    | 2299.95   | 3.02        | -11.36      | -2.21                     | 11.76                     | 284.89                      | 0.88                          |
| 2400.00                 | 0.73                 | 89.78                     | 2399.94   | 2.95        | -10.41      | -2.20                     | 10.82                     | 285.81                      | 0.38                          |
| 2500.00                 | 0.73                 | 71.12                     | 2499.93   | 3.16        | -9.17       | -2.50                     | 9.70                      | 288.99                      | 0.24                          |
| 2600.00                 | 0.90                 | 64.91                     | 2599.92   | 3.69        | -7.87       | -3.13                     | 8.69                      | 295.16                      | 0.19                          |
| 2700.00                 | 0.96                 | 52.14                     | 2699.91   | 4.54        | -6.49       | -4.07                     | 7.92                      | 304.97                      | 0.22                          |
| 2800.00                 | 0.82                 | 45.34                     | 2799.90   | 5.56        | -5.32       | -5.17                     | 7.70                      | 316.24                      | 0.18                          |
| 2900.00                 | 0.83                 | 34.32                     | 2899.89   | 6.66        | -4.41       | -6.33                     | 7.98                      | 326.47                      | 0.16                          |
| 3000.00                 | 0.76                 | 39.37                     | 2999.88   | 7.76        | -3.58       | -7.49                     | 8.55                      | 335.21                      | 0.10                          |
| 3100.00                 | 0.40                 | 63.43                     | 3099.87   | 8.43        | -2.86       | -8.20                     | 8.90                      | 341.27                      | 0.43                          |
| 3200.00                 | 1.22                 | 47.77                     | 3199.86   | 9.30        | -1.76       | -9.15                     | 9.46                      | 349.28                      | 0.84                          |
| 3300.00                 | 1.40                 | 53.15                     | 3299.84   | 10.74       | 0.01        | -10.72                    | 10.74                     | 0.03                        | 0.22                          |
| 3400.00                 | 0.60                 | 23.94                     | 3399.82   | 11.96       | 1.20        | -12.01                    | 12.01                     | 5.72                        | 0.93                          |
| 3500.00                 | 0.53                 | 10.18                     | 3499.82   | 12.89       | 1.49        | -12.96                    | 12.98                     | 6.60                        | 0.15                          |
| 3600.00                 | 0.62                 | 16.07                     | 3599.81   | 13.87       | 1.72        | -13.96                    | 13.98                     | 7.09                        | 0.10                          |
| 3700.00                 | 0.42                 | 6.65                      | 3699.81   | 14.75       | 1.92        | -14.85                    | 14.88                     | 7.40                        | 0.22                          |
| 3800.00                 | 0.40                 | 41.72                     | 3799.80   | 15.38       | 2.19        | -15.49                    | 15.53                     | 8.11                        | 0.25                          |
| 3900.00                 | 0.42                 | 77.10                     | 3899.80   | 15.72       | 2.78        | -15.87                    | 15.96                     | 10.02                       | 0.25                          |
| 4000.00                 | 0.47                 | 72.27                     | 3999.80   | 15.92       | 3.52        | -16.13                    | 16.31                     | 12.48                       | 0.06                          |
| 4100.00                 | 0.58                 | 75.10                     | 4099.80   | 16.18       | 4.39        | -16.45                    | 16.76                     | 15.19                       | 0.11                          |
| 4200.00                 | 0.65                 | 93.24                     | 4199.79   | 16.27       | 5.44        | -16.62                    | 17.16                     | 18.49                       | 0.20                          |
| 4300.00                 | 1.55                 | 102.12                    | 4299.77   | 15.96       | 7.33        | -16.44                    | 17.56                     | 24.68                       | 0.92                          |
| 4400.00                 | 0.98                 | 105.00                    | 4399.75   | 15.45       | 9.48        | -16.08                    | 18.13                     | 31.54                       | 0.58                          |
| 4500.00                 | 0.53                 | 156.27                    | 4499.74   | 14.81       | 10.49       | -15.51                    | 18.15                     | 35.32                       | 0.77                          |
| 4600.00                 | 1.23                 | 135.41                    | 4599.73   | 13.62       | 11.43       | -14.40                    | 17.78                     | 40.01                       | 0.76                          |
| 4700.00                 | 0.33                 | 152.90                    | 4699.71   | 12.60       | 12.32       | -13.44                    | 17.62                     | 44.36                       | 0.92                          |
| 4800.00                 | 0.31                 | 235.04                    | 4799.71   | 12.19       | 12.23       | -13.03                    | 17.27                     | 45.10                       | 0.42                          |
| 4900.00                 | 0.28                 | 210.99                    | 4899.71   | 11.83       | 11.89       | -12.64                    | 16.77                     | 45.14                       | 0.13                          |
| 5000.00                 | 0.32                 | 219.15                    | 4999.71   | 11.40       | 11.58       | -12.19                    | 16.26                     | 45.45                       | 0.06                          |
| 5100.00                 | 0.33                 | 228.17                    | 5099.71   | 10.99       | 11.19       | -11.76                    | 15.69                     | 45.52                       | 0.05                          |
| 5200.00                 | 0.42                 | 215.98                    | 5199.71   | 10.51       | 10.77       | -11.25                    | 15.05                     | 45.69                       | 0.12                          |
| 5300.00                 | 0.43                 | 231.50                    | 5299.70   | 9.98        | 10.26       | -10.68                    | 14.31                     | 45.79                       | 0.12                          |
| 5400.00                 | 0.37                 | 223.13                    | 5399.70   | 9.51        | 9.75        | -10.18                    | 13.62                     | 45.69                       | 0.08                          |
| 5500.00                 | 0.33                 | 226.65                    | 5499.70   | 9.08        | 9.32        | -9.72                     | 13.01                     | 45.74                       | 0.05                          |

| 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                 | 0.38                 | 220.57                    | 5599.70   | 8.63        | 8.89        | -9.24                     | 12.39                     | 45.85                       | 0.07                          |
| 5700.00                 | 0.48                 | 239.07                    | 5699.70   | 8.16        | 8.32        | -8.73                     | 11.65                     | 45.54                       | 0.17                          |
| 5800.00                 | 0.48                 | 249.89                    | 5799.69   | 7.80        | 7.57        | -8.32                     | 10.87                     | 44.12                       | 0.09                          |
| 5900.00                 | 0.43                 | 250.57                    | 5899.69   | 7.54        | 6.82        | -8.00                     | 10.16                     | 42.15                       | 0.05                          |
| 6000.00                 | 0.44                 | 244.97                    | 5999.69   | 7.25        | 6.12        | -7.67                     | 9.49                      | 40.18                       | 0.04                          |
| 6100.00                 | 0.59                 | 251.89                    | 6099.68   | 6.93        | 5.29        | -7.29                     | 8.72                      | 37.35                       | 0.17                          |
| 6200.00                 | 0.66                 | 253.26                    | 6199.68   | 6.60        | 4.25        | -6.89                     | 7.85                      | 32.75                       | 0.07                          |
| 6300.00                 | 0.75                 | 247.58                    | 6299.67   | 6.19        | 3.10        | -6.39                     | 6.92                      | 26.57                       | 0.11                          |
| 6400.00                 | 0.39                 | 249.69                    | 6399.66   | 5.82        | 2.18        | -5.96                     | 6.22                      | 20.50                       | 0.36                          |
| 6500.00                 | 0.27                 | 244.20                    | 6499.66   | 5.60        | 1.65        | -5.71                     | 5.84                      | 16.41                       | 0.12                          |
| 6600.00                 | 0.08                 | 154.09                    | 6599.66   | 5.44        | 1.47        | -5.53                     | 5.64                      | 15.10                       | 0.28                          |
| 6700.00                 | 0.19                 | 181.29                    | 6699.66   | 5.21        | 1.49        | -5.30                     | 5.42                      | 15.99                       | 0.13                          |
| 6800.00                 | 0.22                 | 196.10                    | 6799.66   | 4.86        | 1.44        | -4.95                     | 5.07                      | 16.47                       | 0.06                          |
| 6900.00                 | 0.27                 | 180.24                    | 6899.66   | 4.44        | 1.38        | -4.53                     | 4.65                      | 17.31                       | 0.09                          |
| 7000.00                 | 0.25                 | 185.65                    | 6999.66   | 3.98        | 1.36        | -4.07                     | 4.21                      | 18.88                       | 0.03                          |
| 7100.00                 | 0.18                 | 192.07                    | 7099.66   | 3.61        | 1.31        | -3.70                     | 3.84                      | 19.90                       | 0.08                          |
| 7200.00                 | 0.32                 | 210.37                    | 7199.66   | 3.22        | 1.14        | -3.30                     | 3.42                      | 19.41                       | 0.16                          |
| 7300.00                 | 0.44                 | 192.42                    | 7299.65   | 2.61        | 0.91        | -2.67                     | 2.77                      | 19.30                       | 0.17                          |
| 7400.00                 | 0.50                 | 196.33                    | 7399.65   | 1.82        | 0.71        | -1.86                     | 1.95                      | 21.31                       | 0.07                          |
| 7500.00                 | 0.43                 | 216.34                    | 7499.65   | 1.10        | 0.36        | -1.12                     | 1.16                      | 18.40                       | 0.18                          |
| 7600.00                 | 0.45                 | 222.85                    | 7599.65   | 0.51        | -0.12       | -0.50                     | 0.53                      | 348.72                      | 0.05                          |
| 7700.00                 | 0.33                 | 193.27                    | 7699.64   | -0.06       | -0.45       | 0.09                      | 0.46                      | 263.06                      | 0.23                          |
| 7800.00                 | 0.17                 | 113.43                    | 7799.64   | -0.40       | -0.38       | 0.42                      | 0.55                      | 223.66                      | 0.35                          |
| 7900.00                 | 0.21                 | 112.37                    | 7899.64   | -0.53       | -0.07       | 0.53                      | 0.53                      | 187.28                      | 0.04                          |
| 8000.00                 | 0.19                 | 156.33                    | 7999.64   | -0.75       | 0.17        | 0.73                      | 0.77                      | 167.26                      | 0.15                          |
| 8100.00                 | 0.23                 | 123.12                    | 8099.64   | -1.00       | 0.40        | 0.97                      | 1.08                      | 158.20                      | 0.13                          |
| 8200.00                 | 0.50                 | 115.04                    | 8199.64   | -1.30       | 0.97        | 1.23                      | 1.62                      | 143.35                      | 0.28                          |
| 8300.00                 | 0.64                 | 163.78                    | 8299.63   | -2.02       | 1.52        | 1.91                      | 2.53                      | 143.02                      | 0.48                          |
| 8400.00                 | 0.53                 | 157.50                    | 8399.63   | -2.98       | 1.85        | 2.84                      | 3.51                      | 148.13                      | 0.12                          |
| 8500.00                 | 0.56                 | 166.71                    | 8499.62   | -3.89       | 2.14        | 3.73                      | 4.44                      | 151.13                      | 0.09                          |
| 8600.00                 | 0.37                 | 183.26                    | 8599.62   | -4.89       | 2.24        | 4.52                      | 5.19                      | 154.47                      | 0.24                          |
| 8700.00                 | 0.35                 | 177.93                    | 8699.62   | -5.31       | 2.23        | 5.14                      | 5.76                      | 157.23                      | 0.04                          |



VES Survey International  
Midland, Texas  
432-563-5444  
Surveyor: Michael Cook  
Rojo AE 7811 JV-P Federal No. 001H / API 30-025-43476



V.E.S. Survey Date: 12/29/2016



I Michael Cook certify that I am employed by VES Survey International. That I did on the day(s) of 12/29/16 through 12/29/16 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 8,700.00 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 Rojo AE 7811 JV-P Federal Com Well # 1H API # 30-025-43476 in Lea 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 cursive script, appearing to read "M. Cook", is written over a horizontal line.

Michael Cook  
Service Technician  
VES Survey International