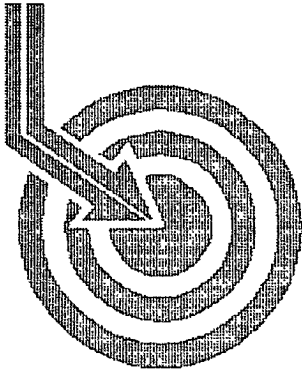




# Scientific Drilling

SUR: L-22-17s-32e, 2310/ S & 330/W  
BHL: L-22-17s-32e, 2318/S & 400/W  
API #30-025-35988

## COG RESOURCES

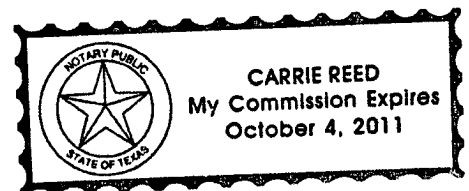
Field: Maljamar  
Site: Lea County, NM  
Well: JC Federal #3  
Wellpath: VH - Job #32K0808610  
Survey: 08/07/08

This survey is correct to the best of my knowledge  
and is supported by actual field data.

.....*Fluharty*.....Company Representative

Notorized this date 9th of September, 2008.

*Carrie Reed*  
Notary Signature  
County of Midland  
State of Texas





# Scientific Drilling International Survey Report

**Company:** COG RESOURCES  
**Field:** Maljamar  
**Site:** Lea County, NM  
**Well:** JC Federal #3  
**Wellpath:** VH - Job #32K0808610

**Date:** 09/08/2008 **Time:** 08:40:50 **Page:** 1  
**Co-ordinate(NE) Reference:** Site: Lea County, NM, True North  
**Vertical (TVD) Reference:** SITE 0.0  
**Section (VS) Reference:** Well (0.00N,0.00E,84.47Azi)  
**Survey Calculation Method:** Minimum Curvature **Db:** Sybase

**Survey:** 08/07/08  
KSRG 2800'-6890'  
**Company:** Scientific Drilling Internatio  
**Tool:** Keeper;Keeper Gyro

**Start Date:** 08/07/2008  
**Engineer:** Garza w/GeoGyro  
**Tied-to:** User Defined

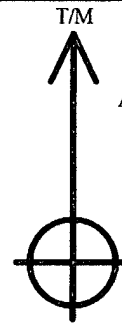
## Survey

| MD<br>ft | Incl<br>deg | Azlm<br>deg | TVD<br>ft | VS<br>ft | N/S<br>ft | E/W<br>ft | DLS<br>deg/100ft | ClsD<br>ft | ClsA<br>deg |
|----------|-------------|-------------|-----------|----------|-----------|-----------|------------------|------------|-------------|
| 2800.00  | 1.02        | 32.74       | 2800.00   | 0.00     | 0.00      | 0.00      | 0.00             | 0.00       | 0.00        |
| 2900.00  | 1.03        | 34.63       | 2899.98   | 1.13     | 1.49      | 0.99      | 0.04             | 1.79       | 33.69       |
| 3000.00  | 0.99        | 39.93       | 2999.97   | 2.33     | 2.89      | 2.06      | 0.10             | 3.55       | 35.44       |
| 3100.00  | 0.92        | 49.77       | 3099.95   | 3.60     | 4.07      | 3.22      | 0.18             | 5.19       | 38.38       |
| 3200.00  | 0.73        | 70.00       | 3199.94   | 4.88     | 4.81      | 4.44      | 0.34             | 6.54       | 42.70       |
| 3300.00  | 0.90        | 32.08       | 3299.94   | 5.98     | 5.69      | 5.45      | 0.55             | 7.88       | 43.77       |
| 3400.00  | 1.01        | 37.21       | 3399.92   | 7.05     | 7.06      | 6.40      | 0.14             | 9.53       | 42.21       |
| 3500.00  | 0.89        | 38.80       | 3499.91   | 8.19     | 8.37      | 7.42      | 0.12             | 11.18      | 41.58       |
| 3600.00  | 1.07        | 41.32       | 3599.89   | 9.42     | 9.67      | 8.52      | 0.19             | 12.89      | 41.39       |
| 3700.00  | 0.94        | 44.26       | 3699.88   | 10.73    | 10.96     | 9.71      | 0.14             | 14.65      | 41.55       |
| 3800.00  | 0.64        | 52.55       | 3799.87   | 11.83    | 11.89     | 10.73     | 0.32             | 16.01      | 42.07       |
| 3900.00  | 0.83        | 54.34       | 3899.86   | 12.93    | 12.65     | 11.76     | 0.19             | 17.27      | 42.92       |
| 4000.00  | 0.95        | 43.25       | 3999.85   | 14.18    | 13.68     | 12.92     | 0.21             | 18.81      | 43.37       |
| 4100.00  | 0.90        | 51.72       | 4099.83   | 15.46    | 14.77     | 14.10     | 0.15             | 20.42      | 43.68       |
| 4200.00  | 0.81        | 58.44       | 4199.82   | 16.76    | 15.62     | 15.32     | 0.13             | 21.88      | 44.44       |
| 4300.00  | 0.82        | 57.13       | 4299.81   | 18.03    | 16.38     | 16.52     | 0.02             | 23.27      | 45.25       |
| 4400.00  | 0.97        | 73.36       | 4399.80   | 19.49    | 17.01     | 17.94     | 0.29             | 24.72      | 46.52       |
| 4500.00  | 1.02        | 72.60       | 4499.79   | 21.20    | 17.52     | 19.60     | 0.05             | 26.29      | 48.20       |
| 4600.00  | 1.18        | 76.93       | 4599.77   | 23.09    | 18.02     | 21.45     | 0.18             | 28.01      | 49.97       |
| 4700.00  | 1.23        | 80.97       | 4699.75   | 25.18    | 18.42     | 23.51     | 0.10             | 29.87      | 51.92       |
| 4800.00  | 1.33        | 86.04       | 4799.72   | 27.41    | 18.67     | 25.73     | 0.15             | 31.79      | 54.04       |
| 4900.00  | 1.51        | 96.21       | 4899.69   | 29.86    | 18.61     | 28.20     | 0.31             | 33.78      | 56.58       |
| 5000.00  | 1.50        | 103.03      | 4999.66   | 32.39    | 18.17     | 30.78     | 0.18             | 35.74      | 59.45       |
| 5100.00  | 1.44        | 97.65       | 5099.62   | 34.86    | 17.71     | 33.30     | 0.15             | 37.72      | 62.00       |
| 5200.00  | 1.53        | 95.25       | 5199.59   | 37.39    | 17.42     | 35.88     | 0.11             | 39.88      | 64.11       |
| 5300.00  | 1.41        | 110.37      | 5299.56   | 39.81    | 16.87     | 38.36     | 0.40             | 41.91      | 66.27       |
| 5400.00  | 1.80        | 123.44      | 5399.52   | 42.14    | 15.57     | 40.82     | 0.53             | 43.69      | 69.12       |
| 5500.00  | 1.68        | 132.78      | 5499.47   | 44.33    | 13.71     | 43.21     | 0.31             | 45.33      | 72.39       |
| 5600.00  | 1.69        | 133.16      | 5599.43   | 46.28    | 11.71     | 45.36     | 0.01             | 46.85      | 75.53       |
| 5700.00  | 1.65        | 131.33      | 5699.39   | 48.24    | 9.75      | 47.52     | 0.07             | 48.51      | 78.41       |
| 5800.00  | 1.55        | 126.35      | 5799.35   | 50.23    | 8.00      | 49.69     | 0.17             | 50.33      | 80.86       |
| 5900.00  | 1.74        | 121.38      | 5899.31   | 52.45    | 6.40      | 52.08     | 0.24             | 52.47      | 82.99       |
| 6000.00  | 1.59        | 119.97      | 5999.26   | 54.79    | 4.92      | 54.57     | 0.16             | 54.79      | 84.85       |
| 6100.00  | 1.23        | 99.35       | 6099.23   | 56.96    | 4.05      | 56.83     | 0.62             | 56.98      | 85.92       |
| 6200.00  | 1.26        | 95.11       | 6199.21   | 59.08    | 3.78      | 58.99     | 0.10             | 59.11      | 86.33       |
| 6300.00  | 1.16        | 83.98       | 6299.19   | 61.17    | 3.79      | 61.09     | 0.25             | 61.21      | 86.45       |
| 6400.00  | 1.17        | 68.14       | 6399.17   | 63.16    | 4.27      | 63.04     | 0.32             | 63.19      | 86.12       |
| 6500.00  | 1.03        | 73.12       | 6499.15   | 65.02    | 4.92      | 64.85     | 0.17             | 65.04      | 85.66       |
| 6600.00  | 0.67        | 74.89       | 6599.14   | 66.48    | 5.33      | 66.28     | 0.36             | 66.49      | 85.40       |
| 6700.00  | 0.55        | 60.29       | 6699.13   | 67.50    | 5.72      | 67.26     | 0.20             | 67.50      | 85.14       |
| 6800.00  | 0.57        | 76.23       | 6799.13   | 68.43    | 6.08      | 68.16     | 0.16             | 68.43      | 84.91       |
| 6890.00  | 0.70        | 27.68       | 6889.12   | 69.17    | 6.67      | 68.85     | 0.59             | 69.17      | 84.47       |



**Scientific  
Drilling**

Field: Maljamar  
Site: Lea County, NM  
Well: JC Federal #3  
Wellpath: VH - Job #32K0808610  
Survey: 08/07/08



Azimuths to True North  
Magnetic North: 0.00°

Magnetic Field  
Strength: 0nT  
Dip Angle: 0.00°  
Date: 09/08/2008  
Model: igrf2000

