

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

NMOCD

Hobbs

AUG 29 2016

FORM APPROVED  
OMB No. 1004-0137  
Expires: July 31, 2010

## WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No.  
NMNM119760

|                                                                                                                                                                                                                                                                   |  |                                           |                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                              |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1a. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Dry <input type="checkbox"/> Other                                                                                                       |  |                                           | 6. If Indian, Allottee or Tribe Name                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                              |  |
| b. Type of Completion <input checked="" type="checkbox"/> New Well <input type="checkbox"/> Work Over <input type="checkbox"/> Deepen <input type="checkbox"/> Plug Back <input type="checkbox"/> Diff. Resvr.<br>Other                                           |  |                                           | 7. Unit or CA Agreement Name and No.<br>NMNM136125                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                              |  |
| 2. Name of Operator<br>COG OPERATING LLC                                                                                                                                                                                                                          |  |                                           | 8. Lease Name and Well No.<br>STOVE PIPE FEDERAL COM 2H                                                                                                                                              |                                                                                                                                                                                                                                                                                                                              |  |
| 3. Address<br>ONE CONCHO CENTER 600 W ILLINOIS AVENUE<br>MIDLAND, TX 79701-4287                                                                                                                                                                                   |  |                                           | 9. API Well No.<br>30-025-42926-00-S1                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                              |  |
| 4. Location of Well (Report location clearly and in accordance with Federal requirements)*<br>At surface Sec 6 T25S R35E Mer NMP<br>Lot 2 225FNL 1905FEL<br>At top prod interval reported below<br>Sec 7 T25S R35E Mer NMP<br>At total depth SWNE 2299FNL 1977FEL |  |                                           | 10. Field and Pool, or Exploratory<br>WC025G09S243532M-BONE SPRING<br>11. Sec., T., R., M., or Block and Survey<br>or Area Sec 6 T25S R35E Mer NMP<br>12. County or Parish<br>LEA<br>13. State<br>NM |                                                                                                                                                                                                                                                                                                                              |  |
| 14. Date Spudded<br>11/23/2015                                                                                                                                                                                                                                    |  | 15. Date T.D. Reached<br>12/21/2015       |                                                                                                                                                                                                      | 16. Date Completed<br><input type="checkbox"/> D & A <input checked="" type="checkbox"/> Ready to Prod.<br>06/15/2016                                                                                                                                                                                                        |  |
| 18. Total Depth: MD 19693<br>TVD 12521                                                                                                                                                                                                                            |  | 19. Plug Back T.D.: MD 19650<br>TVD 12521 |                                                                                                                                                                                                      | 20. Depth Bridge Plug Set: MD 19650<br>TVD 12521                                                                                                                                                                                                                                                                             |  |
| 21. Type Electric & Other Mechanical Logs Run (Submit copy of each)<br>CNL;LATEROLOG;S                                                                                                                                                                            |  |                                           |                                                                                                                                                                                                      | 22. Was well cored? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Submit analysis)<br>Was DST run? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Submit analysis)<br>Directional Survey? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (Submit analysis) |  |

## 23. Casing and Liner Record (Report all strings set in well)

| Hole Size | Size/Grade  | Wt. (#/ft.) | Top (MD) | Bottom (MD) | Stage Cementer Depth | No. of Sk. & Type of Cement | Slurry Vol. (BBL) | Cement Top* | Amount Pulled |
|-----------|-------------|-------------|----------|-------------|----------------------|-----------------------------|-------------------|-------------|---------------|
| 17.500    | 13.375 J-55 | 54.5        | 0        | 950         |                      | 929                         |                   | 0           |               |
| 12.250    | 9.625 J-55  | 40.0        | 0        | 5480        |                      | 1940                        |                   | 0           |               |
| 8.750     | 7.000 P-110 | 29.0        | 0        | 12761       |                      | 1195                        |                   | 2155        |               |
| 6.125     | 4.500 P-110 | 13.5        | 11853    | 19693       |                      | 830                         |                   | 11853       |               |

## 24. Tubing Record

| Size  | Depth Set (MD) | Packer Depth (MD) | Size | Depth Set (MD) | Packer Depth (MD) | Size | Depth Set (MD) | Packer Depth (MD) |
|-------|----------------|-------------------|------|----------------|-------------------|------|----------------|-------------------|
| 2.875 | 12035          | 12016             |      |                |                   |      |                |                   |

## 25. Producing Intervals

| Formation      | Top   | Bottom | Perforated Interval | Size  | No. Holes | Perf. Status |
|----------------|-------|--------|---------------------|-------|-----------|--------------|
| A) BONE SPRING | 12791 | 19596  | 12791 TO 19536      | 0.000 | 1620      | OPEN         |
| B)             |       |        | 19586 TO 19596      |       | 60        | OPEN         |
| C)             |       |        |                     |       |           |              |
| D)             |       |        |                     |       |           |              |

## 26. Perforation Record

## 27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

| Depth Interval | Amount and Type of Material |
|----------------|-----------------------------|
| 12791 TO 19536 | SEE ATTACHED                |

## 28. Production - Interval A

| Date First Produced | Test Date            | Hours Tested | Test Production | Oil BBL | Gas MCF | Water BBL | Oil Gravity Corr. API | Gas Gravity | Production Method |
|---------------------|----------------------|--------------|-----------------|---------|---------|-----------|-----------------------|-------------|-------------------|
| 06/17/2016          | 07/03/2016           | 24           | →               | 1992.0  | 2317.0  | 3375.0    |                       |             | FLows FROM WELL   |
| Choke Size          | Tbg. Press. Flwg. SI | Csg. Press.  | 24 Hr. Rate     | Oil BBL | Gas MCF | Water BBL | Gas:Oil Ratio         | Well Status |                   |
| 32/64               | 1800                 |              | →               | 1992    | 2317    | 3375      | 1163                  | POW         |                   |

## 28a. Production - Interval B

| Date First Produced | Test Date            | Hours Tested | Test Production | Oil BBL | Gas MCF | Water BBL | Oil Gravity Corr. API | Gas Gravity | Production Method |
|---------------------|----------------------|--------------|-----------------|---------|---------|-----------|-----------------------|-------------|-------------------|
|                     |                      |              | →               |         |         |           |                       |             |                   |
| Choke Size          | Tbg. Press. Flwg. SI | Csg. Press.  | 24 Hr. Rate     | Oil BBL | Gas MCF | Water BBL | Gas:Oil Ratio         | Well Status |                   |
|                     |                      |              | →               |         |         |           |                       |             |                   |

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #344035 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

\*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\*

RECLAMATION DUE:  
DEC 15 2016

PETROLEUM ENGINEER

ACCEPTED FOR RECORD  
IS/DAVID R. GLASS  
AUG 24 2016



## 28b. Production - Interval C

| Date First Produced | Test Date                  | Hours Tested | Test Production<br>→ | Oil BBL | Gas MCF | Water BBL | Oil Gravity<br>Corr. API | Gas Gravity | Production Method |
|---------------------|----------------------------|--------------|----------------------|---------|---------|-----------|--------------------------|-------------|-------------------|
| Choke Size          | Tbg. Press.<br>Flwg.<br>SI | Csg. Press.  | 24 Hr.<br>Rate<br>→  | Oil BBL | Gas MCF | Water BBL | Gas:Oil<br>Ratio         | Well Status |                   |

## 28c. Production - Interval D

| Date First Produced | Test Date                  | Hours Tested | Test Production<br>→ | Oil BBL | Gas MCF | Water BBL | Oil Gravity<br>Corr. API | Gas Gravity | Production Method |
|---------------------|----------------------------|--------------|----------------------|---------|---------|-----------|--------------------------|-------------|-------------------|
| Choke Size          | Tbg. Press.<br>Flwg.<br>SI | Csg. Press.  | 24 Hr.<br>Rate<br>→  | Oil BBL | Gas MCF | Water BBL | Gas:Oil<br>Ratio         | Well Status |                   |

29. Disposition of Gas(Sold, used for fuel, vented, etc.)  
SOLD

## 30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

## 31. Formation (Log) Markers

| Formation        | Top   | Bottom | Descriptions, Contents, etc. | Name             | Top<br>Meas. Depth |
|------------------|-------|--------|------------------------------|------------------|--------------------|
| RED BEDS         | 0     | 844    |                              | RUSTLER          | 844                |
| DELAWARE         | 5453  | 5493   |                              | TOP OF SALT      | 1286               |
| BELL CANYON      | 5494  | 6459   |                              | BASE OF SALT     | 5138               |
| CHERRY CANYON    | 6460  | 8059   |                              | DELAWARE         | 5453               |
| BRUSHY CANYON    | 8060  | 9328   |                              | BELL CANYON      | 5494               |
| BONE SPRING LIME | 9329  | 10585  |                              | CHERRY CANYON    | 6460               |
| BONE SPRING 1ST  | 10586 | 11117  |                              | BRUSHY CANYON    | 8060               |
| BONE SPRING 2ND  | 11118 | 11787  |                              | BONE SPRING LIME | 9329               |
|                  |       |        |                              | BONE SPRING 1ST  | 10586              |
|                  |       |        |                              | BONE SPRING 2ND  | 11118              |

32. Additional remarks (include plugging procedure):  
Logs, Surveys & perms/stimulation are attached.

Additional Tops:  
3rd Bone Spring 12140'  
Wolfcamp 12602'

## 33. Circle enclosed attachments:

- |                                                       |                    |               |                       |
|-------------------------------------------------------|--------------------|---------------|-----------------------|
| 1. Electrical/Mechanical Logs (1 full set req'd.)     | 2. Geologic Report | 3. DST Report | 4. Directional Survey |
| 5. Sundry Notice for plugging and cement verification | 6. Core Analysis   | 7 Other:      |                       |

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

**Electronic Submission #344035 Verified by the BLM Well Information System.**

**For COG OPERATING LLC, sent to the Hobbs**

**Committed to AFMSS for processing by DEBORAH HAM on 08/11/2016 (16DMH0168SE)**

Name (please print) STORMI DAVIS

Title REGULATORY ANALYST

Signature \_\_\_\_\_ (Electronic Submission)

Date 07/07/2016

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**\*\* REVISED \*\* REVISED \*\* REVISED \*\* REVISED \*\* REVISED \*\* REVISED \*\* REVISED \*\***

Stove Pipe Federal Com #2H

30-025-42926

Sec 6-T255-R35E

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| <u>Perfs</u>  | <u>7 1/2% Acid (Gal)</u> | <u>Sand (#)</u>   | <u>Fluid (Gal)</u> |
|---------------|--------------------------|-------------------|--------------------|
| 1             | 2520                     | 199091            | 257796             |
| 2             | 3024                     | 197889            | 211932             |
| 3             | 3024                     | 198825            | 217392             |
| 4             | 3024                     | 200250            | 261828             |
| 5             | 3066                     | 200712            | 214872             |
| 6             | 3024                     | 200291            | 218526             |
| 7             | 3024                     | 200511            | 219576             |
| 8             | 3024                     | 199948            | 216720             |
| 9             | 3024                     | 200087            | 215754             |
| 10            | 3024                     | 201221            | 217938             |
| 11            | 3024                     | 201144            | 216552             |
| 12            | 3024                     | 198897            | 213402             |
| 13            | 3024                     | 198697            | 213108             |
| 14            | 3024                     | 200475            | 214032             |
| 15            | 3024                     | 200205            | 216972             |
| 16            | 3024                     | 200907            | 214158             |
| 17            | 3024                     | 200972            | 213108             |
| 18            | 3024                     | 199591            | 252756             |
| 19            | 3024                     | 199151            | 214914             |
| 20            | 2982                     | 200778            | 214956             |
| 21            | 3276                     | 200021            | 216090             |
| 22            | 3024                     | 199758            | 213108             |
| 23            | 3024                     | 199592            | 210882             |
| 24            | 3024                     | 199015            | 212226             |
| 25            | 3024                     | 300604            | 297654             |
| 26            | 3024                     | 299570            | 295008             |
| 27            | 3024                     | 300280            | 296898             |
| 28            | 3024                     | 300124            | 445200             |
| 29            | 3024                     | 300460            | 297444             |
| 30            | 3024                     | 300416            | 297906             |
| 31            | 3024                     | 299448            | 295680             |
| 32            | 3024                     | 300870            | 296142             |
| 33            | 3024                     | 298867            | 297612             |
| 34            | 2520                     | 303006            | 293496             |
| 35            | 2520                     | 301705            | 286902             |
| 36            | 2520                     | 298217            | 292068             |
| 37            | 2520                     | 300482            | 294462             |
| 38            | 2520                     | 300395            | 295764             |
| 39            | 2520                     | 300485            | 297696             |
| 40            | 2520                     | 301063            | 292362             |
| 41            | 2520                     | 300664            | 297444             |
| 42            | 2520                     | 300954            | 291186             |
| 43            | 2520                     | 301521            | 294210             |
| 44            | 2478                     | 300370            | 295386             |
| 45            | 2520                     | 301417            | 294672             |
| 46            | 2520                     | 300520            | 311052             |
| 47            | 3024                     | 299746            | 336294             |
| 48            | 1512                     | 301313            | 293664             |
| 49            | 2772                     | 300075            | 292068             |
| 50            | 3024                     | 299038            | 292320             |
| 51            | 3024                     | 300450            | 291606             |
| 52            | 3024                     | 299482            | 292362             |
| 53            | 3024                     | 299957            | 293244             |
| <b>Totals</b> | <b>151,662</b>           | <b>13,509,527</b> | <b>14,036,400</b>  |



|   |    |              |
|---|----|--------------|
| 1 | 1  | OCA          |
|   | 2  | CL-28        |
|   | 3  | CL-31        |
|   | 4  | MO-67        |
|   | 5  | Clay Web     |
|   | 6  | PCP          |
|   | 7  | Scalotrol    |
|   | 8  | Soil Breaker |
|   | 9  | Opakloner WP |
|   | 10 | Overkill     |

[illegible]





HOBBS OCD

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December 9, 2015

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

HOBBS OCD

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RECEIVED

Attn: Kanicia Castillo

RE: Stove Pipe Federal Com No 002H

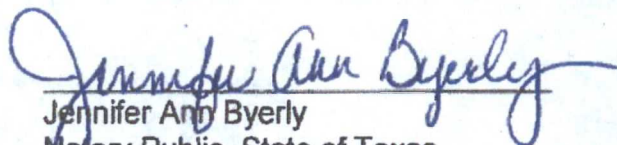
Please find enclosed a copy of the survey from 0' to 12,600' ran on the above referenced well.

Sincerely,

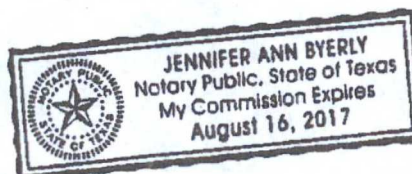
Keith Havelka  
Operations

STATE OF TEXAS §  
§  
COUNTY OF NUECES §

This instrument was acknowledged before me on the 9 day of December  
A.D., 2015, 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





**McVAY DRILLING COMPANY**  
P.O. Box 2450  
Hobbs, New Mexico 88241  
(575) 397-3311  
FAX: 39-DRILL

Well Name and Num: Stove Pipe Federal Com 2H  
Location: Sec. 6, T25S, R35E  
Operator: COG  
Drilling Contractor: McVay Drilling Company

The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

| <u>Degrees @</u> | <u>Depth</u> | <u>Degrees @</u> | <u>Depth</u> | <u>Degrees @</u> | <u>Depth</u> | <u>Degrees @</u> | <u>Depth</u> |
|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|
| 0.73             | 423          | 1.70             | 5937         | 0.90             | 10559        | 90.40            | 14218        |
| 1.08             | 794          | 1.20             | 6315         | 0.30             | 10842        | 91.50            | 14504        |
| 0.95             | 871          | 0.70             | 6690         | 2.40             | 11314        | 89.40            | 14789        |
| 0.50             | 1214         | 0.60             | 6972         | 2.40             | 11594        | 89.90            | 14979        |
| 0.30             | 1590         | 0.40             | 7447         | 1.70             | 11880        | 90.80            | 15170        |
| 0.20             | 1968         | 0.40             | 7635         | 0.90             | 12352        | 91.10            | 15265        |
| 0.30             | 2345         | 0.60             | 8013         | 0.30             | 12632        | 90.10            | 15455        |
| 0.40             | 2723         | 1.40             | 8485         | 0.07             | 12822        | 89.70            | 15551        |
| 0.80             | 3100         | 1.50             | 8671         | 4.40             | 11912        | 90.10            | 16027        |
| 0.70             | 3477         | 1.30             | 9047         | 20.10            | 12104        | 89.20            | 18215        |
| 0.10             | 3855         | 1.50             | 9236         | 39.80            | 12339        | 90.6             | 18691        |
| 0.60             | 4233         | 2.00             | 9422         | 55.30            | 12528        | 90.1             | 18976        |
| 1.70             | 4610         | 1.60             | 9613         | 73.00            | 12717        | 92.7             | 19357        |
| 2.30             | 4988         | 1.50             | 9709         | 78.30            | 12791        | 91               | 19548        |
| 2.50             | 5176         | 1.50             | 9898         | 89.70            | 13171        |                  |              |
| 2.20             | 5365         | 0.10             | 10087        | 88.90            | 13674        |                  |              |
| 2.00             | 5559         | 0.90             | 10559        | 94.70            | 13933        |                  |              |

By: *Tina Flemens*

Subscribed and sworn to before me this 31<sup>st</sup> day of December, 2015

*Tina Flemens*  
Notary Public, Lea County, New Mexico





Company: Concho  
Lease/Well: Stove Pipe Federal Com No/002H  
Location: 11 Miles from Jal  
Rig Name: McVay 8  
State/County: New Mexico/Lea  
VS-Azi: 0.00 Degrees  
Latitude: 32.16598, Longitude: -103.40373  
Grid North = True North -0.49 degs (NAD 27)  
Grid Correction Applied = -0.49 degs



Depth Reference : RKB = 26 Foot

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...federal com 2h\_gyro survey.ut

Minimum Curvature Method

Report Date/Time: 12/9/2015 / 14:19

VES Survey International

West Texas

(432) 563-5444

Surveyor: Gene Heiss

Stove Pipe Federal Com No 002H / API 30-025-42926

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| 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                  | 0.22                 | 53.12                     | 100.00    | 0.11        | 0.15        | 0.11                      | 0.19                      | 53.12                       | 0.22                          |
| 200.00                  | 0.53                 | 103.62                    | 200.00    | 0.12        | 0.75        | 0.12                      | 0.76                      | 80.99                       | 0.42                          |
| 300.00                  | 0.72                 | 80.43                     | 299.99    | 0.12        | 1.82        | 0.12                      | 1.82                      | 86.36                       | 0.32                          |
| 400.00                  | 0.56                 | 76.81                     | 399.99    | 0.33        | 2.91        | 0.33                      | 2.93                      | 83.51                       | 0.17                          |
| 500.00                  | 0.45                 | 87.93                     | 499.98    | 0.46        | 3.78        | 0.46                      | 3.81                      | 83.11                       | 0.14                          |
| 600.00                  | 0.27                 | 100.78                    | 599.98    | 0.43        | 4.41        | 0.43                      | 4.43                      | 84.47                       | 0.20                          |
| 700.00                  | 0.50                 | 102.32                    | 699.98    | 0.29        | 5.07        | 0.29                      | 5.08                      | 86.73                       | 0.24                          |
| 800.00                  | 0.64                 | 78.48                     | 799.97    | 0.31        | 6.04        | 0.31                      | 6.05                      | 87.10                       | 0.27                          |
| 900.00                  | 0.59                 | 108.69                    | 899.97    | 0.25        | 7.08        | 0.25                      | 7.08                      | 87.97                       | 0.32                          |
| 1000.00                 | 0.59                 | 103.52                    | 999.96    | -0.03       | 8.07        | -0.03                     | 8.07                      | 90.24                       | 0.05                          |
| 1100.00                 | 0.52                 | 121.81                    | 1099.96   | -0.39       | 8.95        | -0.39                     | 8.96                      | 92.52                       | 0.19                          |
| 1200.00                 | 0.49                 | 102.07                    | 1199.95   | -0.72       | 9.76        | -0.72                     | 9.78                      | 94.25                       | 0.18                          |
| 1300.00                 | 0.51                 | 116.59                    | 1299.95   | -1.01       | 10.58       | -1.01                     | 10.62                     | 95.48                       | 0.13                          |
| 1400.00                 | 0.42                 | 119.28                    | 1399.95   | -1.39       | 11.30       | -1.39                     | 11.38                     | 97.04                       | 0.09                          |
| 1500.00                 | 0.31                 | 136.51                    | 1499.94   | -1.77       | 11.81       | -1.77                     | 11.94                     | 98.54                       | 0.16                          |
| 1600.00                 | 0.29                 | 112.92                    | 1599.94   | -2.07       | 12.23       | -2.07                     | 12.40                     | 99.60                       | 0.12                          |



| 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                 | 0.35                 | 99.51                     | 1699.94   | -2.22       | 12.76       | -2.22                     | 12.95                     | 99.86                       | 0.09                          |
| 1800.00                 | 0.24                 | 82.88                     | 1799.94   | -2.24       | 13.27       | -2.24                     | 13.45                     | 99.59                       | 0.13                          |
| 1900.00                 | 0.10                 | 77.46                     | 1899.94   | -2.20       | 13.56       | -2.20                     | 13.73                     | 99.20                       | 0.14                          |
| 2000.00                 | 0.15                 | 129.20                    | 1999.94   | -2.26       | 13.74       | -2.26                     | 13.92                     | 99.33                       | 0.11                          |
| 2100.00                 | 0.21                 | 109.14                    | 2099.94   | -2.40       | 14.01       | -2.40                     | 14.22                     | 99.72                       | 0.09                          |
| 2200.00                 | 0.22                 | 59.13                     | 2199.94   | -2.36       | 14.35       | -2.36                     | 14.54                     | 99.35                       | 0.18                          |
| 2300.00                 | 0.17                 | 109.10                    | 2299.94   | -2.31       | 14.66       | -2.31                     | 14.84                     | 98.97                       | 0.17                          |
| 2400.00                 | 0.19                 | 86.17                     | 2399.94   | -2.35       | 14.96       | -2.35                     | 15.14                     | 98.94                       | 0.07                          |
| 2500.00                 | 0.26                 | 94.91                     | 2499.94   | -2.36       | 15.35       | -2.36                     | 15.54                     | 98.74                       | 0.08                          |
| 2600.00                 | 0.38                 | 68.98                     | 2599.93   | -2.26       | 15.89       | -2.26                     | 16.05                     | 98.10                       | 0.18                          |
| 2700.00                 | 0.35                 | 75.37                     | 2699.93   | -2.07       | 16.50       | -2.07                     | 16.63                     | 97.14                       | 0.05                          |
| 2800.00                 | 0.37                 | 70.84                     | 2799.93   | -1.88       | 17.09       | -1.88                     | 17.20                     | 96.29                       | 0.03                          |
| 2900.00                 | 0.44                 | 79.39                     | 2899.93   | -1.71       | 17.77       | -1.71                     | 17.85                     | 95.49                       | 0.09                          |
| 3000.00                 | 0.68                 | 84.10                     | 2999.92   | -1.58       | 18.74       | -1.58                     | 18.80                     | 94.81                       | 0.25                          |
| 3100.00                 | 0.79                 | 65.77                     | 3099.92   | -1.23       | 19.96       | -1.23                     | 20.00                     | 93.53                       | 0.26                          |
| 3200.00                 | 0.79                 | 85.36                     | 3199.91   | -0.89       | 21.27       | -0.89                     | 21.29                     | 92.40                       | 0.27                          |
| 3300.00                 | 0.89                 | 70.53                     | 3299.90   | -0.58       | 22.69       | -0.58                     | 22.69                     | 91.46                       | 0.24                          |
| 3400.00                 | 0.91                 | 72.18                     | 3399.88   | -0.08       | 24.17       | -0.08                     | 24.17                     | 90.19                       | 0.03                          |
| 3500.00                 | 0.62                 | 95.89                     | 3499.87   | 0.11        | 25.46       | 0.11                      | 25.46                     | 89.76                       | 0.42                          |
| 3600.00                 | 0.74                 | 62.68                     | 3599.87   | 0.35        | 26.58       | 0.35                      | 26.58                     | 89.25                       | 0.41                          |
| 3700.00                 | 0.48                 | 99.91                     | 3699.86   | 0.57        | 27.57       | 0.57                      | 27.58                     | 88.81                       | 0.46                          |
| 3800.00                 | 0.70                 | 86.30                     | 3799.86   | 0.54        | 28.59       | 0.54                      | 28.60                     | 88.92                       | 0.26                          |
| 3900.00                 | 0.57                 | 85.25                     | 3899.85   | 0.62        | 29.70       | 0.62                      | 29.70                     | 88.80                       | 0.13                          |
| 4000.00                 | 0.50                 | 61.23                     | 3999.85   | 0.87        | 30.58       | 0.87                      | 30.59                     | 88.36                       | 0.23                          |
| 4100.00                 | 0.35                 | 73.53                     | 4099.84   | 1.17        | 31.26       | 1.17                      | 31.28                     | 87.85                       | 0.17                          |
| 4200.00                 | 0.40                 | 78.00                     | 4199.84   | 1.33        | 31.90       | 1.33                      | 31.93                     | 87.60                       | 0.06                          |
| 4300.00                 | 0.39                 | 79.02                     | 4299.84   | 1.47        | 32.58       | 1.47                      | 32.61                     | 87.41                       | 0.01                          |
| 4400.00                 | 0.31                 | 51.42                     | 4399.84   | 1.71        | 33.13       | 1.71                      | 33.17                     | 87.05                       | 0.19                          |
| 4500.00                 | 0.94                 | 86.50                     | 4499.83   | 1.93        | 34.16       | 1.93                      | 34.22                     | 86.77                       | 0.71                          |
| 4600.00                 | 1.65                 | 98.63                     | 4599.81   | 1.76        | 36.41       | 1.76                      | 36.45                     | 87.23                       | 0.76                          |
| 4700.00                 | 1.62                 | 92.50                     | 4699.76   | 1.48        | 39.25       | 1.48                      | 39.28                     | 87.84                       | 0.18                          |
| 4800.00                 | 1.48                 | 86.89                     | 4799.73   | 1.49        | 41.95       | 1.49                      | 41.98                     | 87.97                       | 0.21                          |
| 4900.00                 | 1.76                 | 79.85                     | 4899.69   | 1.83        | 44.75       | 1.83                      | 44.78                     | 87.66                       | 0.34                          |
| 5000.00                 | 1.93                 | 75.70                     | 4999.64   | 2.52        | 47.89       | 2.52                      | 47.95                     | 86.99                       | 0.22                          |
| 5100.00                 | 2.40                 | 90.88                     | 5099.56   | 3.26        | 51.58       | 3.26                      | 51.69                     | 86.38                       | 0.51                          |
| 5200.00                 | 2.35                 | 84.20                     | 5199.48   | 3.80        | 55.69       | 3.80                      | 55.82                     | 86.09                       | 0.14                          |
| 5300.00                 | 2.14                 | 85.01                     | 5299.40   | 4.17        | 59.59       | 4.17                      | 59.74                     | 85.99                       | 0.22                          |
| 5400.00                 | 2.01                 | 85.44                     | 5399.34   | 4.47        | 63.20       | 4.47                      | 63.36                     | 85.95                       | 0.13                          |
| 5500.00                 | 1.87                 | 80.57                     | 5499.28   | 4.88        | 66.55       | 4.88                      | 66.73                     | 85.81                       | 0.22                          |



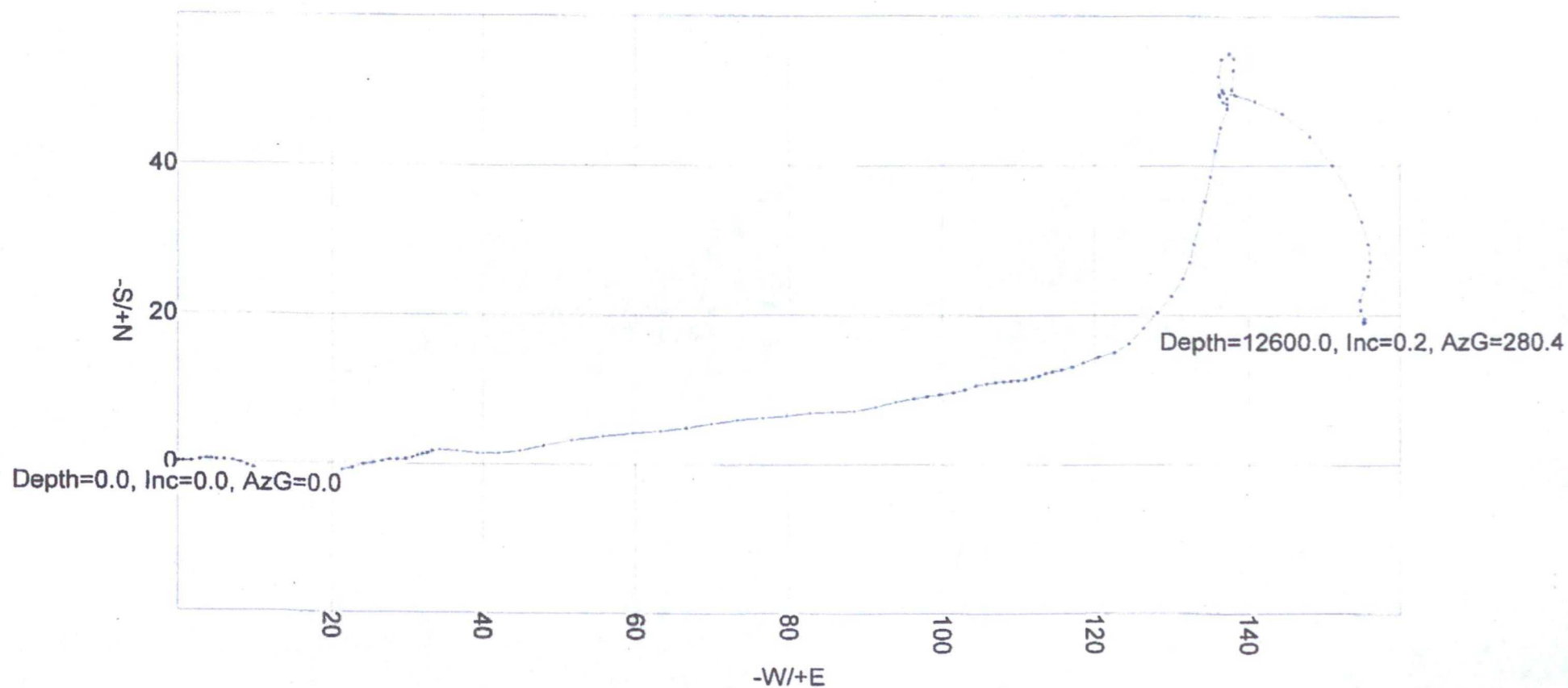
| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 5600.00                 | 1.95                 | 79.18                     | 5599.22   | 5.47        | 69.83       | 5.47                      | 70.04                     | 85.52                       | 0.10                          |
| 5700.00                 | 1.96                 | 84.16                     | 5699.17   | 5.96        | 73.20       | 5.96                      | 73.45                     | 85.35                       | 0.17                          |
| 5800.00                 | 1.80                 | 86.48                     | 5799.11   | 6.23        | 76.47       | 6.23                      | 76.72                     | 85.34                       | 0.18                          |
| 5900.00                 | 1.81                 | 83.52                     | 5899.06   | 6.51        | 79.61       | 6.51                      | 79.87                     | 85.33                       | 0.09                          |
| 6000.00                 | 1.67                 | 81.86                     | 5999.02   | 6.89        | 82.62       | 6.89                      | 82.91                     | 85.23                       | 0.15                          |
| 6100.00                 | 1.68                 | 92.39                     | 6098.97   | 7.04        | 86.53       | 7.04                      | 85.82                     | 85.30                       | 0.31                          |
| 6200.00                 | 1.65                 | 83.42                     | 6198.93   | 7.14        | 88.42       | 7.14                      | 88.71                     | 85.38                       | 0.26                          |
| 6300.00                 | 1.61                 | 73.90                     | 6298.89   | 7.70        | 91.20       | 7.70                      | 91.53                     | 85.18                       | 0.27                          |
| 6400.00                 | 1.51                 | 78.42                     | 6398.85   | 8.35        | 93.85       | 8.35                      | 94.22                     | 84.91                       | 0.16                          |
| 6500.00                 | 1.26                 | 80.52                     | 6498.82   | 8.80        | 96.23       | 8.80                      | 96.63                     | 84.78                       | 0.26                          |
| 6600.00                 | 0.77                 | 82.84                     | 6598.81   | 9.06        | 97.98       | 9.06                      | 98.39                     | 84.72                       | 0.49                          |
| 6700.00                 | 1.12                 | 77.62                     | 6698.80   | 9.36        | 99.60       | 9.36                      | 100.04                    | 84.63                       | 0.36                          |
| 6800.00                 | 0.98                 | 86.65                     | 6798.78   | 9.62        | 101.41      | 9.62                      | 101.86                    | 84.58                       | 0.22                          |
| 6900.00                 | 0.77                 | 65.50                     | 6898.77   | 9.95        | 102.87      | 9.95                      | 103.35                    | 84.48                       | 0.38                          |
| 7000.00                 | 0.94                 | 72.57                     | 6998.76   | 10.47       | 104.27      | 10.47                     | 104.80                    | 84.26                       | 0.20                          |
| 7100.00                 | 0.75                 | 86.29                     | 7098.74   | 10.76       | 105.71      | 10.76                     | 106.26                    | 84.19                       | 0.27                          |
| 7200.00                 | 0.64                 | 77.49                     | 7198.74   | 10.92       | 106.91      | 10.92                     | 107.47                    | 84.17                       | 0.16                          |
| 7300.00                 | 0.54                 | 88.67                     | 7298.73   | 11.06       | 107.93      | 11.06                     | 108.50                    | 84.15                       | 0.15                          |
| 7400.00                 | 0.57                 | 84.20                     | 7398.73   | 11.12       | 108.90      | 11.12                     | 109.47                    | 84.17                       | 0.05                          |
| 7500.00                 | 0.52                 | 90.90                     | 7498.72   | 11.16       | 109.84      | 11.16                     | 110.41                    | 84.20                       | 0.08                          |
| 7600.00                 | 0.58                 | 73.06                     | 7598.72   | 11.30       | 110.78      | 11.30                     | 111.36                    | 84.18                       | 0.18                          |
| 7700.00                 | 0.51                 | 80.80                     | 7698.71   | 11.52       | 111.71      | 11.52                     | 112.30                    | 84.11                       | 0.10                          |
| 7800.00                 | 0.47                 | 67.52                     | 7798.71   | 11.75       | 112.53      | 11.75                     | 113.14                    | 84.04                       | 0.12                          |
| 7900.00                 | 0.60                 | 69.43                     | 7898.71   | 12.09       | 113.40      | 12.09                     | 114.04                    | 83.92                       | 0.13                          |
| 8000.00                 | 0.51                 | 84.89                     | 7998.70   | 12.31       | 114.32      | 12.31                     | 114.98                    | 83.85                       | 0.17                          |
| 8100.00                 | 0.88                 | 73.97                     | 8098.69   | 12.56       | 115.50      | 12.56                     | 116.18                    | 83.79                       | 0.39                          |
| 8200.00                 | 0.81                 | 75.15                     | 8198.68   | 12.95       | 116.91      | 12.95                     | 117.63                    | 83.68                       | 0.07                          |
| 8300.00                 | 1.07                 | 60.53                     | 8298.67   | 13.60       | 118.41      | 13.60                     | 119.19                    | 83.45                       | 0.35                          |
| 8400.00                 | 1.40                 | 74.19                     | 8398.65   | 14.39       | 120.41      | 14.39                     | 121.26                    | 83.19                       | 0.44                          |
| 8500.00                 | 1.11                 | 74.50                     | 8498.62   | 14.98       | 122.52      | 14.98                     | 123.43                    | 83.03                       | 0.29                          |
| 8600.00                 | 1.54                 | 46.88                     | 8598.60   | 16.16       | 124.44      | 16.16                     | 125.48                    | 82.60                       | 0.76                          |
| 8700.00                 | 1.73                 | 36.73                     | 8698.56   | 18.29       | 126.32      | 18.29                     | 127.64                    | 81.76                       | 0.34                          |
| 8800.00                 | 1.49                 | 45.49                     | 8798.52   | 20.41       | 128.15      | 20.41                     | 129.76                    | 80.95                       | 0.34                          |
| 8900.00                 | 1.78                 | 36.24                     | 8898.48   | 22.57       | 129.99      | 22.57                     | 131.93                    | 80.15                       | 0.39                          |
| 9000.00                 | 1.38                 | 28.73                     | 8998.44   | 24.88       | 131.49      | 24.88                     | 133.82                    | 79.29                       | 0.44                          |
| 9100.00                 | 1.31                 | 16.00                     | 9098.41   | 27.03       | 132.38      | 27.03                     | 135.12                    | 78.46                       | 0.31                          |
| 9200.00                 | 1.58                 | 10.23                     | 9198.38   | 29.49       | 132.94      | 29.49                     | 136.17                    | 77.49                       | 0.31                          |
| 9300.00                 | 1.67                 | 15.36                     | 9298.34   | 32.26       | 133.57      | 32.26                     | 137.41                    | 76.42                       | 0.17                          |
| 9400.00                 | 1.86                 | 11.92                     | 9398.29   | 35.25       | 134.30      | 35.25                     | 138.85                    | 75.29                       | 0.21                          |

| 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                 | 2.02                 | 12.41                     | 9498.23   | 38.56       | 135.01      | 38.58                     | 140.41                    | 74.06                       | 0.17                          |
| 9600.00                 | 2.03                 | 8.10                      | 9598.17   | 42.04       | 135.84      | 42.04                     | 142.01                    | 72.78                       | 0.15                          |
| 9700.00                 | 1.55                 | 18.54                     | 9698.12   | 45.07       | 136.32      | 45.07                     | 143.58                    | 71.70                       | 0.58                          |
| 9800.00                 | 1.50                 | 21.13                     | 9798.09   | 47.58       | 137.22      | 47.58                     | 145.24                    | 70.88                       | 0.08                          |
| 9900.00                 | 1.49                 | 4.58                      | 9898.05   | 50.10       | 137.80      | 50.10                     | 146.62                    | 70.02                       | 0.43                          |
| 10000.00                | 1.42                 | 5.62                      | 9998.02   | 52.62       | 138.02      | 52.62                     | 147.72                    | 69.13                       | 0.07                          |
| 10100.00                | 0.46                 | 347.60                    | 10098.01  | 54.25       | 138.06      | 54.25                     | 148.34                    | 68.55                       | 1.00                          |
| 10200.00                | 0.63                 | 298.81                    | 10198.00  | 54.91       | 137.49      | 54.91                     | 148.05                    | 68.23                       | 0.48                          |
| 10300.00                | 1.32                 | 205.15                    | 10297.99  | 54.13       | 136.52      | 54.13                     | 146.86                    | 68.37                       | 1.50                          |
| 10400.00                | 1.48                 | 175.03                    | 10397.96  | 51.80       | 136.14      | 51.80                     | 145.67                    | 69.17                       | 0.75                          |
| 10500.00                | 0.64                 | 145.96                    | 10497.95  | 50.05       | 136.57      | 50.05                     | 145.45                    | 69.87                       | 0.97                          |
| 10600.00                | 0.83                 | 152.46                    | 10597.94  | 48.94       | 137.22      | 48.94                     | 145.68                    | 70.37                       | 0.21                          |
| 10700.00                | 0.40                 | 243.85                    | 10697.93  | 48.15       | 137.24      | 48.15                     | 145.44                    | 70.67                       | 0.93                          |
| 10800.00                | 0.59                 | 332.41                    | 10797.93  | 48.45       | 136.68      | 48.45                     | 145.01                    | 70.48                       | 0.71                          |
| 10900.00                | 0.36                 | 328.81                    | 10897.93  | 49.17       | 136.28      | 49.17                     | 144.88                    | 70.16                       | 0.24                          |
| 11000.00                | 0.07                 | 37.71                     | 10997.93  | 49.49       | 136.16      | 49.49                     | 144.88                    | 70.03                       | 0.34                          |
| 11100.00                | 0.63                 | 73.04                     | 11097.92  | 49.70       | 136.73      | 49.70                     | 145.48                    | 70.02                       | 0.57                          |
| 11200.00                | 1.16                 | 116.68                    | 11197.91  | 49.41       | 138.16      | 49.41                     | 146.73                    | 70.32                       | 0.83                          |
| 11300.00                | 2.01                 | 104.65                    | 11297.87  | 48.51       | 140.76      | 48.51                     | 148.89                    | 70.99                       | 0.90                          |
| 11400.00                | 2.65                 | 120.50                    | 11397.79  | 46.89       | 144.45      | 46.89                     | 151.87                    | 72.02                       | 0.91                          |
| 11500.00                | 2.81                 | 139.25                    | 11497.68  | 43.86       | 148.05      | 43.86                     | 154.41                    | 73.50                       | 0.90                          |
| 11600.00                | 2.71                 | 146.11                    | 11597.56  | 40.04       | 150.96      | 40.04                     | 156.18                    | 75.15                       | 0.35                          |
| 11700.00                | 2.51                 | 152.04                    | 11697.46  | 36.14       | 153.31      | 36.14                     | 157.51                    | 76.73                       | 0.33                          |
| 11800.00                | 2.00                 | 162.63                    | 11797.38  | 32.54       | 154.86      | 32.54                     | 158.24                    | 78.13                       | 0.66                          |
| 11900.00                | 1.59                 | 166.94                    | 11897.33  | 29.52       | 155.69      | 29.52                     | 158.47                    | 79.26                       | 0.43                          |
| 12000.00                | 1.12                 | 181.46                    | 11997.31  | 27.19       | 155.98      | 27.19                     | 158.33                    | 80.11                       | 0.58                          |
| 12100.00                | 1.07                 | 195.07                    | 12097.29  | 25.31       | 155.71      | 25.31                     | 157.76                    | 80.77                       | 0.26                          |
| 12200.00                | 1.02                 | 202.87                    | 12197.27  | 23.59       | 155.12      | 23.59                     | 156.91                    | 81.35                       | 0.15                          |
| 12300.00                | 0.84                 | 194.14                    | 12297.26  | 22.05       | 154.60      | 22.05                     | 156.16                    | 81.88                       | 0.23                          |
| 12400.00                | 0.76                 | 154.76                    | 12397.25  | 20.74       | 154.70      | 20.74                     | 156.08                    | 82.36                       | 0.54                          |
| 12500.00                | 0.65                 | 158.91                    | 12497.24  | 19.61       | 155.19      | 19.61                     | 156.42                    | 82.80                       | 0.12                          |
| 12600.00                | 0.22                 | 280.44                    | 12597.24  | 19.11       | 155.20      | 19.11                     | 156.37                    | 82.98                       | 0.79                          |





VES Survey International  
West Texas  
(432) 563-5444  
Surveyor: Gene Heiss  
Stove Pipe Federal Com No 002H / API 30-025-42926



VES Survey Date: 12/6/2015



I Gene Heiss certify that I am employed by VES Survey International. That I did on the day(s) of 12/06/15 through 12/06/15 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 12,600.00 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 Concho for the Stove Pipe Federal Com Well # 2H API # 30-025-42926 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 Vaughn Energy Services

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

Gene Heiss  
Service Technician  
Vaughn Energy Services





## **COG Operating, LLC**

**Lea County, NM**

**Sec 6, T25-S, R35-E**

**Stove Pipe Federal Com #2H**

**Curve & Lateral**

**Design: Curve & Lateral**

## **Survey Report - Geographic**

**22 December, 2015**

**HOBBS OCD**

**AUG 29 2016**

**RECEIVED**





DDC  
Survey Report - Geographic



|           |                            |                              |                                 |
|-----------|----------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating, LLC         | Local Co-ordinate Reference: | Well Stove Pipe Federal Com #2H |
| Project:  | Lea County, NM             | TVD Reference:               | WELL @ 3336.0usft (McVay #8)    |
| Site:     | Sec 6, T25-S, R35-E        | MD Reference:                | WELL @ 3336.0usft (McVay #8)    |
| Well:     | Stove Pipe Federal Com #2H | North Reference:             | Grid                            |
| Wellbore: | Curve & Lateral            | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Curve & Lateral            | Database:                    | EDM 5000.1 Single User Db       |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project     | Lea County, NM                       |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|                       |                     |                   |                   |
|-----------------------|---------------------|-------------------|-------------------|
| Site                  | Sec 6, T25-S, R35-E |                   |                   |
| Site Position:        | Map                 | Northing:         | 425,345.30 usft   |
| From:                 |                     | Easting:          | 787,658.50 usft   |
| Position Uncertainty: | 0.0 usft            | Slot Radius:      | 13-3/16 "         |
|                       |                     | Latitude:         | 32° 9' 57.513 N   |
|                       |                     | Longitude:        | 103° 24' 13.414 W |
|                       |                     | Grid Convergence: | 0.49 °            |

|                      |                            |                     |                   |
|----------------------|----------------------------|---------------------|-------------------|
| Well                 | Stove Pipe Federal Com #2H |                     |                   |
| Well Position        | +N/-S                      | 0.0 usft            | Northing:         |
|                      | +E/-W                      | 0.0 usft            | Easting:          |
| Position Uncertainty | 0.0 usft                   | Wellhead Elevation: | 0.0 usft          |
|                      |                            | Latitude:           | 32° 9' 57.513 N   |
|                      |                            | Longitude:          | 103° 24' 13.414 W |
|                      |                            | Ground Level:       | 3,310.0 usft      |

|           |                 |             |                 |               |                     |
|-----------|-----------------|-------------|-----------------|---------------|---------------------|
| Wellbore  | Curve & Lateral |             |                 |               |                     |
| Magnetics | Model Name      | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|           | IGRF2015        | 11/19/2015  | 7.04            | 60.06         | 48,084              |

|                   |                         |              |              |                        |
|-------------------|-------------------------|--------------|--------------|------------------------|
| Design            | Curve & Lateral         |              |              |                        |
| Audit Notes:      |                         |              |              |                        |
| Version:          | 1.0                     | Phase:       | ACTUAL       | Tie On Depth: 11,900.0 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°)          |
|                   | 0.0                     | 0.0          | 0.0          | 180.26                 |

|                |                 |                       |             |                |
|----------------|-----------------|-----------------------|-------------|----------------|
| Survey Program | Date 12/22/2015 |                       |             |                |
| From (usft)    | To (usft)       | Survey (Wellbore)     | Tool Name   | Description    |
| 100.0          | 11,900.0        | Gyro (Pilot Hole)     | Good_gyro   | Good Gyro      |
| 11,962.0       | 19,693.0        | MWD (Curve & Lateral) | MWD default | MWD - Standard |

|                       |                 |             |                       |              |              |                     |                    |                 |                   |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------------|-------------------|--|
| Survey                |                 |             |                       |              |              |                     |                    |                 |                   |  |
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude         |  |
| 0.0                   | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 425,345.30          | 787,658.50         | 32° 9' 57.513 N | 103° 24' 13.414 W |  |
| 100.0                 | 0.22            | 53.12       | 100.0                 | 0.1          | 0.2          | 425,345.41          | 787,658.65         | 32° 9' 57.514 N | 103° 24' 13.412 W |  |
| 200.0                 | 0.53            | 103.62      | 200.0                 | 0.1          | 0.8          | 425,345.42          | 787,659.25         | 32° 9' 57.514 N | 103° 24' 13.405 W |  |
| 300.0                 | 0.72            | 80.43       | 300.0                 | 0.1          | 1.8          | 425,345.42          | 787,660.32         | 32° 9' 57.514 N | 103° 24' 13.393 W |  |
| 400.0                 | 0.56            | 78.81       | 400.0                 | 0.3          | 2.9          | 425,345.63          | 787,661.42         | 32° 9' 57.516 N | 103° 24' 13.380 W |  |
| 500.0                 | 0.45            | 87.93       | 500.0                 | 0.5          | 3.8          | 425,345.76          | 787,662.29         | 32° 9' 57.517 N | 103° 24' 13.370 W |  |
| 600.0                 | 0.27            | 100.78      | 600.0                 | 0.4          | 4.4          | 425,345.73          | 787,662.91         | 32° 9' 57.517 N | 103° 24' 13.363 W |  |
| 700.0                 | 0.50            | 102.32      | 700.0                 | 0.3          | 5.1          | 425,345.59          | 787,663.57         | 32° 9' 57.515 N | 103° 24' 13.355 W |  |
| 800.0                 | 0.84            | 78.48       | 800.0                 | 0.3          | 6.0          | 425,345.61          | 787,664.54         | 32° 9' 57.515 N | 103° 24' 13.344 W |  |
| 900.0                 | 0.59            | 108.69      | 900.0                 | 0.3          | 7.1          | 425,345.58          | 787,665.58         | 32° 9' 57.515 N | 103° 24' 13.332 W |  |
| 1,000.0               | 0.59            | 103.52      | 1,000.0               | 0.0          | 8.1          | 425,345.27          | 787,666.57         | 32° 9' 57.512 N | 103° 24' 13.320 W |  |



|           |                            |                              |                                 |
|-----------|----------------------------|------------------------------|---------------------------------|
| Company:  | COG Operating, LLC         | Local Co-ordinate Reference: | Well Stove Pipe Federal Com #2H |
| Project:  | Lea County, NM             | TVD Reference:               | WELL @ 3336.0usft (McVay #8)    |
| Site:     | Sec 6, T25-S, R35-E        | MD Reference:                | WELL @ 3336.0usft (McVay #8)    |
| Well:     | Stove Pipe Federal Com #2H | North Reference:             | Grid                            |
| Wellbore: | Curve & Lateral            | Survey Calculation Method:   | Minimum Curvature               |
| Design:   | Curve & Lateral            | Database:                    | EDM 5000.1 Single User Db       |

| Survey                |                 |             |                       |              |              |                     |                    |                 |                   |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------------|-------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude         |
| 1,100.0               | 0.52            | 121.81      | 1,100.0               | -0.4         | 9.0          | 425,344.91          | 787,667.45         | 32° 9' 57.508 N | 103° 24' 13.310 W |
| 1,200.0               | 0.49            | 102.07      | 1,200.0               | -0.7         | 9.8          | 425,344.58          | 787,668.26         | 32° 9' 57.505 N | 103° 24' 13.301 W |
| 1,300.0               | 0.51            | 116.59      | 1,299.9               | -1.0         | 10.6         | 425,344.29          | 787,669.07         | 32° 9' 57.502 N | 103° 24' 13.291 W |
| 1,400.0               | 0.42            | 119.28      | 1,399.9               | -1.4         | 11.3         | 425,343.92          | 787,669.79         | 32° 9' 57.498 N | 103° 24' 13.283 W |
| 1,500.0               | 0.31            | 136.51      | 1,499.9               | -1.8         | 11.8         | 425,343.54          | 787,670.29         | 32° 9' 57.494 N | 103° 24' 13.277 W |
| 1,600.0               | 0.29            | 112.92      | 1,599.9               | -2.1         | 12.2         | 425,343.25          | 787,670.71         | 32° 9' 57.491 N | 103° 24' 13.272 W |
| 1,700.0               | 0.35            | 99.51       | 1,699.9               | -2.2         | 12.8         | 425,343.10          | 787,671.25         | 32° 9' 57.489 N | 103° 24' 13.266 W |
| 1,800.0               | 0.24            | 82.88       | 1,799.9               | -2.2         | 13.3         | 425,343.07          | 787,671.78         | 32° 9' 57.490 N | 103° 24' 13.260 W |
| 1,900.0               | 0.10            | 77.46       | 1,899.9               | -2.2         | 13.6         | 425,343.12          | 787,672.05         | 32° 9' 57.490 N | 103° 24' 13.257 W |
| 2,000.0               | 0.15            | 129.20      | 1,999.9               | -2.2         | 13.7         | 425,343.05          | 787,672.24         | 32° 9' 57.489 N | 103° 24' 13.254 W |
| 2,100.0               | 0.21            | 109.14      | 2,099.9               | -2.4         | 14.0         | 425,342.91          | 787,672.51         | 32° 9' 57.488 N | 103° 24' 13.251 W |
| 2,200.0               | 0.22            | 59.13       | 2,199.9               | -2.4         | 14.4         | 425,342.95          | 787,672.85         | 32° 9' 57.488 N | 103° 24' 13.247 W |
| 2,300.0               | 0.17            | 109.10      | 2,299.9               | -2.3         | 14.7         | 425,343.00          | 787,673.15         | 32° 9' 57.489 N | 103° 24' 13.244 W |
| 2,400.0               | 0.19            | 86.17       | 2,399.9               | -2.3         | 15.0         | 425,342.96          | 787,673.46         | 32° 9' 57.488 N | 103° 24' 13.240 W |
| 2,500.0               | 0.28            | 94.91       | 2,499.9               | -2.3         | 15.4         | 425,342.95          | 787,673.85         | 32° 9' 57.488 N | 103° 24' 13.236 W |
| 2,600.0               | 0.38            | 88.98       | 2,599.9               | -2.2         | 15.9         | 425,343.05          | 787,674.39         | 32° 9' 57.489 N | 103° 24' 13.229 W |
| 2,700.0               | 0.35            | 75.37       | 2,699.9               | -2.1         | 16.5         | 425,343.25          | 787,674.99         | 32° 9' 57.491 N | 103° 24' 13.222 W |
| 2,800.0               | 0.37            | 70.84       | 2,799.9               | -1.9         | 17.1         | 425,343.43          | 787,675.59         | 32° 9' 57.493 N | 103° 24' 13.215 W |
| 2,900.0               | 0.44            | 79.39       | 2,899.9               | -1.7         | 17.8         | 425,343.61          | 787,676.28         | 32° 9' 57.495 N | 103° 24' 13.207 W |
| 3,000.0               | 0.68            | 84.10       | 2,999.9               | -1.6         | 18.7         | 425,343.74          | 787,677.24         | 32° 9' 57.496 N | 103° 24' 13.196 W |
| 3,100.0               | 0.79            | 65.77       | 3,099.9               | -1.2         | 20.0         | 425,344.08          | 787,678.46         | 32° 9' 57.499 N | 103° 24' 13.182 W |
| 3,200.0               | 0.79            | 85.36       | 3,199.9               | -0.9         | 21.3         | 425,344.42          | 787,679.78         | 32° 9' 57.502 N | 103° 24' 13.167 W |
| 3,300.0               | 0.89            | 70.53       | 3,299.9               | -0.6         | 22.7         | 425,344.74          | 787,681.20         | 32° 9' 57.505 N | 103° 24' 13.150 W |
| 3,400.0               | 0.91            | 72.18       | 3,399.9               | -0.1         | 24.2         | 425,345.24          | 787,682.69         | 32° 9' 57.510 N | 103° 24' 13.133 W |
| 3,500.0               | 0.82            | 95.89       | 3,499.9               | 0.1          | 25.5         | 425,345.43          | 787,683.98         | 32° 9' 57.512 N | 103° 24' 13.118 W |
| 3,600.0               | 0.74            | 82.68       | 3,599.9               | 0.4          | 26.6         | 425,345.67          | 787,685.08         | 32° 9' 57.514 N | 103° 24' 13.105 W |
| 3,700.0               | 0.48            | 98.91       | 3,699.9               | 0.6          | 27.6         | 425,345.89          | 787,686.08         | 32° 9' 57.516 N | 103° 24' 13.093 W |
| 3,800.0               | 0.70            | 86.30       | 3,799.9               | 0.6          | 28.6         | 425,345.88          | 787,687.10         | 32° 9' 57.516 N | 103° 24' 13.081 W |
| 3,900.0               | 0.57            | 85.25       | 3,899.9               | 0.6          | 29.7         | 425,345.94          | 787,688.21         | 32° 9' 57.517 N | 103° 24' 13.068 W |
| 4,000.0               | 0.50            | 61.23       | 3,899.8               | 0.9          | 30.6         | 425,346.19          | 787,689.08         | 32° 9' 57.519 N | 103° 24' 13.058 W |
| 4,100.0               | 0.35            | 73.53       | 4,099.8               | 1.2          | 31.3         | 425,346.49          | 787,689.76         | 32° 9' 57.522 N | 103° 24' 13.050 W |
| 4,200.0               | 0.40            | 78.00       | 4,199.8               | 1.3          | 31.9         | 425,346.65          | 787,690.39         | 32° 9' 57.523 N | 103° 24' 13.043 W |
| 4,300.0               | 0.39            | 79.02       | 4,299.8               | 1.5          | 32.6         | 425,346.78          | 787,691.07         | 32° 9' 57.525 N | 103° 24' 13.035 W |
| 4,400.0               | 0.31            | 51.42       | 4,399.8               | 1.7          | 33.1         | 425,347.02          | 787,691.61         | 32° 9' 57.527 N | 103° 24' 13.029 W |
| 4,500.0               | 0.94            | 86.50       | 4,499.8               | 1.9          | 34.1         | 425,347.24          | 787,692.84         | 32° 9' 57.529 N | 103° 24' 13.017 W |
| 4,600.0               | 1.85            | 98.63       | 4,599.8               | 1.8          | 36.4         | 425,347.07          | 787,694.89         | 32° 9' 57.527 N | 103° 24' 12.991 W |
| 4,700.0               | 1.82            | 92.50       | 4,699.8               | 1.5          | 39.2         | 425,346.79          | 787,697.72         | 32° 9' 57.524 N | 103° 24' 12.958 W |
| 4,800.0               | 1.48            | 86.89       | 4,799.7               | 1.5          | 41.9         | 425,346.80          | 787,700.42         | 32° 9' 57.524 N | 103° 24' 12.926 W |
| 4,900.0               | 1.76            | 79.85       | 4,899.7               | 1.8          | 44.7         | 425,347.14          | 787,703.23         | 32° 9' 57.527 N | 103° 24' 12.894 W |
| 5,000.0               | 1.93            | 75.70       | 4,999.6               | 2.5          | 47.9         | 425,347.83          | 787,706.37         | 32° 9' 57.534 N | 103° 24' 12.857 W |
| 5,100.0               | 2.40            | 80.88       | 5,099.6               | 3.3          | 51.8         | 425,348.58          | 787,710.07         | 32° 9' 57.541 N | 103° 24' 12.814 W |
| 5,200.0               | 2.35            | 84.20       | 5,199.5               | 3.8          | 55.7         | 425,349.11          | 787,714.17         | 32° 9' 57.546 N | 103° 24' 12.768 W |
| 5,300.0               | 2.14            | 85.01       | 5,299.4               | 4.2          | 59.6         | 425,349.48          | 787,718.07         | 32° 9' 57.549 N | 103° 24' 12.721 W |
| 5,400.0               | 2.01            | 85.44       | 5,399.3               | 4.5          | 63.2         | 425,349.79          | 787,721.68         | 32° 9' 57.552 N | 103° 24' 12.679 W |
| 5,500.0               | 1.87            | 80.57       | 5,499.3               | 4.9          | 66.5         | 425,350.19          | 787,725.04         | 32° 9' 57.555 N | 103° 24' 12.639 W |
| 5,600.0               | 1.95            | 79.18       | 5,599.2               | 5.5          | 69.8         | 425,350.78          | 787,728.32         | 32° 9' 57.561 N | 103° 24' 12.601 W |
| 5,700.0               | 1.98            | 84.16       | 5,699.2               | 6.0          | 73.2         | 425,351.27          | 787,731.69         | 32° 9' 57.566 N | 103° 24' 12.562 W |
| 5,800.0               | 1.80            | 88.48       | 5,799.1               | 6.2          | 76.5         | 425,351.54          | 787,734.96         | 32° 9' 57.568 N | 103° 24' 12.524 W |
| 5,900.0               | 1.81            | 83.52       | 5,899.1               | 6.5          | 79.6         | 425,351.82          | 787,738.10         | 32° 9' 57.570 N | 103° 24' 12.487 W |
| 6,000.0               | 1.87            | 81.66       | 5,999.0               | 6.9          | 82.6         | 425,352.20          | 787,741.11         | 32° 9' 57.574 N | 103° 24' 12.452 W |
| 6,100.0               | 1.68            | 92.39       | 6,099.0               | 7.0          | 85.5         | 425,352.35          | 787,744.02         | 32° 9' 57.575 N | 103° 24' 12.419 W |
| 6,200.0               | 1.65            | 83.42       | 6,198.9               | 7.2          | 88.4         | 425,352.45          | 787,746.91         | 32° 9' 57.576 N | 103° 24' 12.385 W |
| 6,300.0               | 1.61            | 73.90       | 6,298.9               | 7.7          | 91.2         | 425,353.01          | 787,749.69         | 32° 9' 57.581 N | 103° 24' 12.352 W |
| 6,400.0               | 1.51            | 78.42       | 6,398.9               | 8.4          | 93.8         | 425,353.66          | 787,752.33         | 32° 9' 57.587 N | 103° 24' 12.322 W |
| 6,500.0               | 1.26            | 80.52       | 6,498.8               | 8.8          | 96.2         | 425,354.11          | 787,754.71         | 32° 9' 57.592 N | 103° 24' 12.294 W |





DDC  
Survey Report - Geographic



Company: COG Operating, LLC  
Project: Lea County, NM  
Site: Sec 6, T25-S, R35-E  
Well: Stove Pipe Federal Com #2H  
Wellbore: Curve & Lateral  
Design: Curve & Lateral

Local Co-ordinate Reference: Well Stove Pipe Federal Com #2H  
TVD Reference: WELL @ 3336.0usft (McVay #8)  
MD Reference: WELL @ 3336.0usft (McVay #8)  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: EDM 5000.1 Single User Db

Survey

| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Map<br>Northing<br>(usft) | Map<br>Easting<br>(usft) | Latitude        | Longitude         |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|---------------------------|--------------------------|-----------------|-------------------|
| 6,600.0                     | 0.77               | 82.84          | 6,598.8                     | 9.1             | 98.0            | 425,354.37                | 787,756.46               | 32° 9' 57.594 N | 103° 24' 12.274 W |
| 6,700.0                     | 1.12               | 77.82          | 6,698.8                     | 9.4             | 99.6            | 425,354.66                | 787,758.08               | 32° 9' 57.597 N | 103° 24' 12.255 W |
| 6,800.0                     | 0.98               | 88.65          | 6,798.8                     | 9.6             | 101.4           | 425,354.92                | 787,759.89               | 32° 9' 57.598 N | 103° 24' 12.234 W |
| 6,900.0                     | 0.77               | 85.50          | 6,898.8                     | 10.0            | 102.9           | 425,355.25                | 787,761.35               | 32° 9' 57.602 N | 103° 24' 12.217 W |
| 7,000.0                     | 0.94               | 72.57          | 6,998.8                     | 10.5            | 104.3           | 425,355.78                | 787,762.75               | 32° 9' 57.608 N | 103° 24' 12.200 W |
| 7,100.0                     | 0.75               | 86.29          | 7,098.7                     | 10.8            | 105.7           | 425,356.06                | 787,764.18               | 32° 9' 57.610 N | 103° 24' 12.184 W |
| 7,200.0                     | 0.64               | 77.49          | 7,198.7                     | 10.9            | 106.9           | 425,356.23                | 787,765.38               | 32° 9' 57.612 N | 103° 24' 12.170 W |
| 7,300.0                     | 0.54               | 88.67          | 7,298.7                     | 11.1            | 107.9           | 425,356.38                | 787,766.40               | 32° 9' 57.613 N | 103° 24' 12.158 W |
| 7,400.0                     | 0.57               | 84.20          | 7,398.7                     | 11.1            | 108.9           | 425,356.42                | 787,767.36               | 32° 9' 57.614 N | 103° 24' 12.147 W |
| 7,500.0                     | 0.52               | 90.90          | 7,498.7                     | 11.2            | 109.8           | 425,356.46                | 787,768.31               | 32° 9' 57.614 N | 103° 24' 12.135 W |
| 7,600.0                     | 0.58               | 73.05          | 7,598.7                     | 11.3            | 110.8           | 425,356.60                | 787,769.25               | 32° 9' 57.615 N | 103° 24' 12.125 W |
| 7,700.0                     | 0.51               | 80.80          | 7,698.7                     | 11.5            | 111.7           | 425,356.82                | 787,770.17               | 32° 9' 57.617 N | 103° 24' 12.114 W |
| 7,800.0                     | 0.47               | 67.52          | 7,798.7                     | 11.8            | 112.5           | 425,357.05                | 787,770.99               | 32° 9' 57.619 N | 103° 24' 12.104 W |
| 7,900.0                     | 0.60               | 69.43          | 7,898.7                     | 12.1            | 113.4           | 425,357.39                | 787,771.86               | 32° 9' 57.623 N | 103° 24' 12.094 W |
| 8,000.0                     | 0.51               | 84.89          | 7,998.7                     | 12.3            | 114.3           | 425,357.62                | 787,772.79               | 32° 9' 57.625 N | 103° 24' 12.083 W |
| 8,100.0                     | 0.88               | 73.97          | 8,098.7                     | 12.6            | 115.5           | 425,357.87                | 787,773.98               | 32° 9' 57.627 N | 103° 24' 12.069 W |
| 8,200.0                     | 0.81               | 75.15          | 8,198.7                     | 13.0            | 116.9           | 425,358.26                | 787,775.40               | 32° 9' 57.631 N | 103° 24' 12.053 W |
| 8,300.0                     | 1.07               | 60.53          | 8,298.7                     | 13.6            | 118.4           | 425,358.90                | 787,776.89               | 32° 9' 57.637 N | 103° 24' 12.035 W |
| 8,400.0                     | 1.40               | 74.19          | 8,398.6                     | 14.4            | 120.4           | 425,359.69                | 787,778.88               | 32° 9' 57.645 N | 103° 24' 12.012 W |
| 8,500.0                     | 1.11               | 74.50          | 8,498.6                     | 15.0            | 122.5           | 425,360.29                | 787,780.99               | 32° 9' 57.651 N | 103° 24' 11.988 W |
| 8,600.0                     | 1.54               | 46.88          | 8,598.6                     | 16.2            | 124.4           | 425,361.46                | 787,782.90               | 32° 9' 57.662 N | 103° 24' 11.965 W |
| 8,700.0                     | 1.73               | 38.73          | 8,698.6                     | 16.3            | 126.3           | 425,363.59                | 787,784.79               | 32° 9' 57.683 N | 103° 24' 11.943 W |
| 8,800.0                     | 1.49               | 45.49          | 8,798.5                     | 20.4            | 128.1           | 425,365.71                | 787,786.62               | 32° 9' 57.704 N | 103° 24' 11.922 W |
| 8,900.0                     | 1.78               | 36.24          | 8,898.5                     | 22.6            | 130.0           | 425,367.88                | 787,788.46               | 32° 9' 57.725 N | 103° 24' 11.900 W |
| 9,000.0                     | 1.38               | 28.73          | 8,998.4                     | 24.9            | 131.5           | 425,370.18                | 787,789.96               | 32° 9' 57.748 N | 103° 24' 11.882 W |
| 9,100.0                     | 1.31               | 16.00          | 9,098.4                     | 27.0            | 132.4           | 425,372.34                | 787,790.85               | 32° 9' 57.769 N | 103° 24' 11.872 W |
| 9,200.0                     | 1.58               | 10.23          | 9,198.4                     | 29.5            | 132.9           | 425,374.79                | 787,791.41               | 32° 9' 57.793 N | 103° 24' 11.865 W |
| 9,300.0                     | 1.67               | 15.36          | 9,298.3                     | 32.3            | 133.5           | 425,377.56                | 787,792.05               | 32° 9' 57.821 N | 103° 24' 11.857 W |
| 9,400.0                     | 1.86               | 11.92          | 9,398.3                     | 35.3            | 134.3           | 425,380.55                | 787,792.77               | 32° 9' 57.850 N | 103° 24' 11.849 W |
| 9,500.0                     | 2.02               | 12.41          | 9,498.2                     | 38.6            | 135.0           | 425,383.66                | 787,793.48               | 32° 9' 57.883 N | 103° 24' 11.840 W |
| 9,600.0                     | 2.03               | 8.10           | 9,598.2                     | 42.0            | 135.6           | 425,387.33                | 787,794.11               | 32° 9' 57.917 N | 103° 24' 11.832 W |
| 9,700.0                     | 1.55               | 16.54          | 9,698.1                     | 45.1            | 136.3           | 425,390.37                | 787,794.79               | 32° 9' 57.947 N | 103° 24' 11.824 W |
| 9,800.0                     | 1.50               | 21.13          | 9,798.1                     | 47.6            | 137.2           | 425,392.87                | 787,795.69               | 32° 9' 57.972 N | 103° 24' 11.813 W |
| 9,900.0                     | 1.49               | 4.58           | 9,898.1                     | 50.1            | 137.8           | 425,395.39                | 787,796.27               | 32° 9' 57.997 N | 103° 24' 11.806 W |
| 10,000.0                    | 1.42               | 5.62           | 9,998.0                     | 52.6            | 138.0           | 425,397.92                | 787,796.49               | 32° 9' 58.022 N | 103° 24' 11.804 W |
| 10,100.0                    | 0.46               | 347.60         | 10,098.0                    | 54.2            | 138.0           | 425,399.54                | 787,796.53               | 32° 9' 58.038 N | 103° 24' 11.803 W |
| 10,200.0                    | 0.63               | 298.81         | 10,198.0                    | 54.9            | 137.5           | 425,400.20                | 787,795.96               | 32° 9' 58.044 N | 103° 24' 11.810 W |
| 10,300.0                    | 1.32               | 205.15         | 10,298.0                    | 54.1            | 138.5           | 425,399.42                | 787,794.99               | 32° 9' 58.037 N | 103° 24' 11.821 W |
| 10,400.0                    | 1.48               | 175.03         | 10,398.0                    | 51.8            | 136.1           | 425,397.09                | 787,794.61               | 32° 9' 58.014 N | 103° 24' 11.826 W |
| 10,500.0                    | 0.64               | 145.96         | 10,497.9                    | 50.0            | 136.5           | 425,395.34                | 787,795.03               | 32° 9' 57.998 N | 103° 24' 11.821 W |
| 10,600.0                    | 0.83               | 152.46         | 10,597.9                    | 48.9            | 137.2           | 425,394.24                | 787,795.68               | 32° 9' 57.985 N | 103° 24' 11.813 W |
| 10,700.0                    | 0.40               | 243.85         | 10,697.9                    | 48.1            | 137.2           | 425,393.44                | 787,795.70               | 32° 9' 57.977 N | 103° 24' 11.813 W |
| 10,800.0                    | 0.59               | 332.41         | 10,797.9                    | 48.4            | 136.7           | 425,393.75                | 787,795.15               | 32° 9' 57.980 N | 103° 24' 11.820 W |
| 10,900.0                    | 0.36               | 328.81         | 10,897.9                    | 49.2            | 136.3           | 425,394.47                | 787,794.75               | 32° 9' 57.988 N | 103° 24' 11.824 W |
| 11,000.0                    | 0.07               | 37.71          | 10,997.9                    | 49.5            | 136.1           | 425,394.79                | 787,794.62               | 32° 9' 57.991 N | 103° 24' 11.826 W |
| 11,100.0                    | 0.63               | 73.04          | 11,097.9                    | 49.7            | 136.7           | 425,395.00                | 787,795.19               | 32° 9' 57.993 N | 103° 24' 11.819 W |
| 11,200.0                    | 1.16               | 116.68         | 11,197.9                    | 49.4            | 138.1           | 425,394.70                | 787,796.62               | 32° 9' 57.990 N | 103° 24' 11.802 W |
| 11,300.0                    | 2.01               | 104.65         | 11,297.9                    | 48.5            | 140.7           | 425,393.80                | 787,798.22               | 32° 9' 57.981 N | 103° 24' 11.772 W |
| 11,400.0                    | 2.65               | 120.50         | 11,397.8                    | 48.9            | 144.4           | 425,392.19                | 787,802.91               | 32° 9' 57.964 N | 103° 24' 11.729 W |
| 11,500.0                    | 2.81               | 139.25         | 11,497.7                    | 43.9            | 148.0           | 425,389.16                | 787,808.50               | 32° 9' 57.934 N | 103° 24' 11.688 W |
| 11,600.0                    | 2.71               | 146.11         | 11,597.6                    | 40.0            | 150.9           | 425,385.34                | 787,809.42               | 32° 9' 57.896 N | 103° 24' 11.654 W |
| 11,700.0                    | 2.51               | 152.04         | 11,697.5                    | 36.1            | 153.3           | 425,381.44                | 787,811.76               | 32° 9' 57.857 N | 103° 24' 11.628 W |
| 11,800.0                    | 2.00               | 162.83         | 11,797.4                    | 32.5            | 154.8           | 425,377.84                | 787,813.31               | 32° 9' 57.822 N | 103° 24' 11.610 W |
| 11,900.0                    | 1.59               | 166.94         | 11,897.3                    | 29.5            | 155.6           | 425,374.82                | 787,814.15               | 32° 9' 57.792 N | 103° 24' 11.600 W |
| 11,982.0                    | 4.40               | 193.90         | 11,959.2                    | 26.4            | 155.3           | 425,371.88                | 787,813.77               | 32° 9' 57.760 N | 103° 24' 11.605 W |





DDC  
Survey Report - Geographic



Company: COG Operating, LLC  
Project: Lea County, NM  
Site: Sec 8, T25-S, R35-E  
Well: Stove Pipe Federal Com #2H  
Wellbore: Curve & Lateral  
Design: Curve & Lateral

Local Co-ordinate Reference:  
TVD Reference:  
MD Reference:  
North Reference:  
Survey Calculation Method:  
Database:

Well Stove Pipe Federal Com #2H  
WELL @ 3336.0usft (McVay #8)  
WELL @ 3336.0usft (McVay #8)  
Grid  
Minimum Curvature  
EDM 5000.1 Single User Db

Survey

| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N-S<br>(usft) | +E-W<br>(usft) | Map<br>Northing<br>(usft) | Map<br>Easting<br>(usft) | Latitude        | Longitude         |
|-----------------------------|--------------------|----------------|-----------------------------|----------------|----------------|---------------------------|--------------------------|-----------------|-------------------|
| 16,122.0                    | 90.60              | 182.00         | 12,533.9                    | -3,782.3       | -5.8           | 421,552.96                | 787,852.71               | 32° 9' 19.987 N | 103° 24' 13.662 W |
| 16,217.0                    | 90.80              | 182.00         | 12,532.7                    | -3,867.3       | -9.1           | 421,458.03                | 787,849.39               | 32° 9' 19.048 N | 103° 24' 13.910 W |
| 16,312.0                    | 90.60              | 182.30         | 12,531.5                    | -3,982.2       | -12.7          | 421,383.10                | 787,845.83               | 32° 9' 18.109 N | 103° 24' 13.961 W |
| 16,407.0                    | 89.70              | 181.30         | 12,531.3                    | -4,077.1       | -15.7          | 421,288.15                | 787,842.84               | 32° 9' 17.170 N | 103° 24' 14.008 W |
| 16,502.0                    | 90.10              | 182.30         | 12,531.5                    | -4,172.1       | -18.6          | 421,173.20                | 787,839.86               | 32° 9' 16.231 N | 103° 24' 14.050 W |
| 16,597.0                    | 88.90              | 182.00         | 12,532.3                    | -4,267.0       | -22.2          | 421,078.27                | 787,836.30               | 32° 9' 15.292 N | 103° 24' 14.101 W |
| 16,692.0                    | 88.70              | 182.30         | 12,534.3                    | -4,361.9       | -25.8          | 420,983.36                | 787,832.73               | 32° 9' 14.353 N | 103° 24' 14.152 W |
| 16,787.0                    | 88.50              | 182.30         | 12,536.6                    | -4,456.8       | -29.6          | 420,888.46                | 787,828.92               | 32° 9' 13.414 N | 103° 24' 14.208 W |
| 16,883.0                    | 88.30              | 182.00         | 12,539.3                    | -4,552.7       | -33.2          | 420,792.57                | 787,825.32               | 32° 9' 12.466 N | 103° 24' 14.257 W |
| 16,978.0                    | 90.10              | 180.90         | 12,540.6                    | -4,647.7       | -35.6          | 420,697.61                | 787,822.92               | 32° 9' 11.526 N | 103° 24' 14.295 W |
| 17,073.0                    | 90.80              | 180.90         | 12,540.0                    | -4,742.7       | -37.1          | 420,602.63                | 787,821.43               | 32° 9' 10.566 N | 103° 24' 14.322 W |
| 17,168.0                    | 89.90              | 181.30         | 12,539.6                    | -4,837.7       | -38.9          | 420,507.65                | 787,819.60               | 32° 9' 9.847 N  | 103° 24' 14.352 W |
| 17,263.0                    | 90.60              | 179.90         | 12,539.2                    | -4,932.6       | -39.9          | 420,412.66                | 787,818.61               | 32° 9' 8.707 N  | 103° 24' 14.374 W |
| 17,358.0                    | 90.80              | 180.80         | 12,538.0                    | -5,027.6       | -40.3          | 420,317.67                | 787,818.19               | 32° 9' 7.767 N  | 103° 24' 14.388 W |
| 17,454.0                    | 90.60              | 180.20         | 12,536.9                    | -5,123.6       | -41.0          | 420,221.68                | 787,817.52               | 32° 9' 6.817 N  | 103° 24' 14.405 W |
| 17,549.0                    | 90.60              | 180.20         | 12,535.9                    | -5,218.6       | -41.3          | 420,126.68                | 787,817.19               | 32° 9' 5.877 N  | 103° 24' 14.419 W |
| 17,644.0                    | 90.40              | 180.60         | 12,535.0                    | -5,313.6       | -42.0          | 420,031.69                | 787,816.53               | 32° 9' 4.937 N  | 103° 24' 14.436 W |
| 17,739.0                    | 90.10              | 180.60         | 12,534.6                    | -5,408.6       | -43.0          | 419,936.69                | 787,815.53               | 32° 9' 3.997 N  | 103° 24' 14.457 W |
| 17,834.0                    | 90.10              | 180.90         | 12,534.5                    | -5,503.6       | -44.2          | 419,841.70                | 787,814.29               | 32° 9' 3.057 N  | 103° 24' 14.481 W |
| 17,929.0                    | 88.30              | 179.50         | 12,535.8                    | -5,598.6       | -44.5          | 419,746.72                | 787,813.96               | 32° 9' 2.118 N  | 103° 24' 14.494 W |
| 18,024.0                    | 87.40              | 178.50         | 12,539.3                    | -5,693.5       | -42.9          | 419,651.80                | 787,815.61               | 32° 9' 1.178 N  | 103° 24' 14.485 W |
| 18,119.0                    | 89.20              | 178.50         | 12,542.2                    | -5,788.4       | -40.4          | 419,556.88                | 787,818.10               | 32° 9' 0.239 N  | 103° 24' 14.465 W |
| 18,215.0                    | 89.20              | 179.90         | 12,543.5                    | -5,884.4       | -39.1          | 419,460.90                | 787,819.44               | 32° 8' 59.289 N | 103° 24' 14.459 W |
| 18,310.0                    | 90.30              | 178.50         | 12,543.9                    | -5,979.4       | -37.7          | 419,365.91                | 787,820.77               | 32° 8' 58.349 N | 103° 24' 14.453 W |
| 18,405.0                    | 90.10              | 178.10         | 12,543.6                    | -6,074.3       | -34.9          | 419,270.96                | 787,823.58               | 32° 8' 57.409 N | 103° 24' 14.430 W |
| 18,500.0                    | 90.60              | 178.50         | 12,543.0                    | -6,169.3       | -32.1          | 419,176.00                | 787,826.40               | 32° 8' 56.468 N | 103° 24' 14.407 W |
| 18,595.0                    | 90.60              | 178.80         | 12,542.0                    | -6,264.3       | -29.9          | 419,081.03                | 787,828.64               | 32° 8' 55.528 N | 103° 24' 14.390 W |
| 18,691.0                    | 90.60              | 179.50         | 12,541.0                    | -6,360.2       | -28.4          | 418,985.05                | 787,830.06               | 32° 8' 54.579 N | 103° 24' 14.384 W |
| 18,786.0                    | 90.10              | 179.20         | 12,540.4                    | -6,455.2       | -27.4          | 418,890.06                | 787,831.14               | 32° 8' 53.639 N | 103° 24' 14.381 W |
| 18,881.0                    | 89.40              | 179.20         | 12,540.8                    | -6,550.2       | -26.0          | 418,795.07                | 787,832.47               | 32° 8' 52.699 N | 103° 24' 14.375 W |
| 18,976.0                    | 90.10              | 179.20         | 12,541.3                    | -6,645.2       | -24.7          | 418,700.08                | 787,833.80               | 32° 8' 51.759 N | 103° 24' 14.369 W |
| 19,072.0                    | 91.50              | 179.20         | 12,539.9                    | -6,741.2       | -23.4          | 418,604.10                | 787,835.14               | 32° 8' 50.809 N | 103° 24' 14.363 W |
| 19,167.0                    | 92.60              | 180.20         | 12,536.5                    | -6,836.1       | -22.9          | 418,509.17                | 787,835.63               | 32° 8' 49.870 N | 103° 24' 14.367 W |
| 19,262.0                    | 92.40              | 180.20         | 12,532.4                    | -6,931.0       | -23.2          | 418,414.26                | 787,835.30               | 32° 8' 48.931 N | 103° 24' 14.380 W |
| 19,357.0                    | 92.70              | 180.90         | 12,528.1                    | -7,025.9       | -24.1          | 418,319.36                | 787,834.39               | 32° 8' 47.992 N | 103° 24' 14.400 W |
| 19,453.0                    | 90.80              | 181.30         | 12,525.2                    | -7,121.9       | -25.9          | 418,223.42                | 787,832.55               | 32° 8' 47.043 N | 103° 24' 14.431 W |
| 19,548.0                    | 91.00              | 180.90         | 12,523.7                    | -7,216.8       | -27.8          | 418,128.45                | 787,830.72               | 32° 8' 46.103 N | 103° 24' 14.462 W |
| 19,643.0                    | 91.00              | 180.90         | 12,521.2                    | -7,311.8       | -30.0          | 417,983.49                | 787,828.45               | 32° 8' 44.669 N | 103° 24' 14.503 W |

TD @ 19693' MD / 12521' TVD

Design Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates<br>+N-S<br>(usft) | +E-W<br>(usft) | Comment                                        |
|-----------------------------|-----------------------------|-------------------------------------|----------------|------------------------------------------------|
| 12,324.0                    | 12,288.3                    | -104.0                              | 107.7          | Crossed 330' Hardline @ 12324' MD / 12288' TVD |
| 19,693.0                    | 12,521.2                    | -7,361.8                            | -30.0          | TD @ 19693' MD / 12521' TVD                    |

Checked By: \_\_\_\_\_

Approved By: \_\_\_\_\_

Date: \_\_\_\_\_





DDC  
Survey Report - Geographic



Company: COG Operating, LLC  
Project: Lea County, NM  
Site: Sec 6, T25-S, R35-E  
Well: Stove Pipe Federal Com #2H  
Wellbore: Curve & Lateral  
Design: Curve & Lateral

Local Co-ordinate Reference: Well Stove Pipe Federal Com #2H  
TVD Reference: WELL @ 3336.0usft (McVay #8)  
MD Reference: WELL @ 3336.0usft (McVay #8)  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: EDM 5000.1 Single User Db

Survey

| Measured Depth (usft)                          | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude         |
|------------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-----------------|-------------------|
| 12,009.0                                       | 10.70           | 197.80      | 12,005.8              | 20.5         | 153.5        | 425,365.77          | 787,812.00         | 32° 9' 57.702 N | 103° 24' 11.628 W |
| 12,058.0                                       | 15.70           | 199.90      | 12,051.6              | 10.3         | 150.0        | 425,355.83          | 787,808.50         | 32° 9' 57.802 N | 103° 24' 11.688 W |
| 12,104.0                                       | 20.10           | 199.60      | 12,097.2              | -3.6         | 145.0        | 425,341.74          | 787,803.52         | 32° 9' 57.465 N | 103° 24' 11.727 W |
| 12,151.0                                       | 24.60           | 196.80      | 12,140.7              | -20.5        | 139.5        | 425,324.76          | 787,797.98         | 32° 9' 57.298 N | 103° 24' 11.784 W |
| 12,198.0                                       | 28.50           | 197.10      | 12,182.7              | -40.6        | 133.4        | 425,304.67          | 787,791.85         | 32° 9' 57.099 N | 103° 24' 11.867 W |
| 12,245.0                                       | 31.00           | 201.00      | 12,223.5              | -62.7        | 125.7        | 425,282.85          | 787,764.22         | 32° 9' 56.882 N | 103° 24' 11.958 W |
| 12,292.0                                       | 35.70           | 204.80      | 12,262.8              | -86.4        | 115.6        | 425,258.88          | 787,774.12         | 32° 9' 56.848 N | 103° 24' 12.078 W |
| 12,324.0                                       | 38.49           | 203.82      | 12,288.3              | -104.0       | 107.7        | 425,241.30          | 787,766.18         | 32° 9' 56.474 N | 103° 24' 12.172 W |
| Crossed 330° Hardline @ 12324' MD / 12288' TVD |                 |             |                       |              |              |                     |                    |                 |                   |
| 12,338.0                                       | 39.80           | 203.40      | 12,299.9              | -112.7       | 103.9        | 425,232.62          | 787,762.39         | 32° 9' 56.389 N | 103° 24' 12.217 W |
| 12,387.0                                       | 43.10           | 204.80      | 12,335.9              | -141.7       | 90.9         | 425,203.62          | 787,749.40         | 32° 9' 56.103 N | 103° 24' 12.371 W |
| 12,434.0                                       | 47.50           | 203.10      | 12,389.0              | -172.2       | 77.4         | 425,173.10          | 787,735.86         | 32° 9' 55.802 N | 103° 24' 12.531 W |
| 12,481.0                                       | 51.90           | 201.70      | 12,399.4              | -205.3       | 63.7         | 425,139.98          | 787,722.22         | 32° 9' 55.475 N | 103° 24' 12.683 W |
| 12,528.0                                       | 55.30           | 202.40      | 12,427.2              | -240.4       | 49.5         | 425,104.90          | 787,708.02         | 32° 9' 55.130 N | 103° 24' 12.862 W |
| 12,576.0                                       | 59.50           | 204.50      | 12,453.1              | -277.5       | 33.4         | 425,087.82          | 787,691.91         | 32° 9' 54.784 N | 103° 24' 13.053 W |
| 12,623.0                                       | 64.10           | 204.10      | 12,475.3              | -315.2       | 16.4         | 425,030.08          | 787,674.88         | 32° 9' 54.392 N | 103° 24' 13.255 W |
| 12,670.0                                       | 69.00           | 200.60      | 12,494.0              | -355.1       | 0.0          | 424,990.21          | 787,658.51         | 32° 9' 53.999 N | 103° 24' 13.450 W |
| 12,717.0                                       | 73.00           | 197.10      | 12,509.3              | -397.1       | -14.3        | 424,948.17          | 787,644.17         | 32° 9' 53.584 N | 103° 24' 13.621 W |
| 12,791.0                                       | 78.30           | 191.50      | 12,527.7              | -468.6       | -32.0        | 424,878.74          | 787,628.52         | 32° 9' 52.899 N | 103° 24' 13.833 W |
| 12,838.0                                       | 79.90           | 188.00      | 12,536.5              | -512.0       | -39.8        | 424,833.27          | 787,618.71         | 32° 9' 52.450 N | 103° 24' 13.928 W |
| 12,886.0                                       | 83.10           | 183.40      | 12,543.6              | -559.3       | -44.5        | 424,788.05          | 787,614.01         | 32° 9' 51.983 N | 103° 24' 13.988 W |
| 12,933.0                                       | 86.00           | 179.90      | 12,548.1              | -606.0       | -45.8        | 424,739.29          | 787,612.68         | 32° 9' 51.520 N | 103° 24' 14.008 W |
| 12,981.0                                       | 88.60           | 178.10      | 12,551.2              | -653.9       | -45.0        | 424,691.40          | 787,613.50         | 32° 9' 51.046 N | 103° 24' 14.003 W |
| 13,078.0                                       | 87.10           | 178.70      | 12,556.4              | -748.7       | -40.7        | 424,596.65          | 787,617.80         | 32° 9' 50.108 N | 103° 24' 13.983 W |
| 13,171.0                                       | 89.70           | 178.50      | 12,559.1              | -843.5       | -36.7        | 424,501.78          | 787,621.78         | 32° 9' 49.169 N | 103° 24' 13.926 W |
| 13,267.0                                       | 91.00           | 179.20      | 12,558.5              | -939.5       | -34.8        | 424,405.80          | 787,623.70         | 32° 9' 48.219 N | 103° 24' 13.913 W |
| 13,362.0                                       | 90.40           | 178.80      | 12,557.3              | -1,034.5     | -33.1        | 424,310.82          | 787,625.36         | 32° 9' 47.279 N | 103° 24' 13.903 W |
| 13,457.0                                       | 88.70           | 178.10      | 12,558.1              | -1,129.4     | -30.6        | 424,215.87          | 787,627.93         | 32° 9' 46.339 N | 103° 24' 13.883 W |
| 13,552.0                                       | 90.40           | 177.40      | 12,558.8              | -1,224.4     | -26.8        | 424,120.95          | 787,631.66         | 32° 9' 45.400 N | 103° 24' 13.849 W |
| 13,647.0                                       | 88.90           | 176.70      | 12,559.4              | -1,319.2     | -21.9        | 424,026.08          | 787,636.55         | 32° 9' 44.461 N | 103° 24' 13.802 W |
| 13,742.0                                       | 89.20           | 176.70      | 12,561.0              | -1,414.1     | -16.5        | 423,931.25          | 787,642.02         | 32° 9' 43.522 N | 103° 24' 13.748 W |
| 13,837.0                                       | 91.80           | 178.50      | 12,560.1              | -1,509.0     | -12.5        | 423,836.35          | 787,645.99         | 32° 9' 42.582 N | 103° 24' 13.711 W |
| 13,933.0                                       | 94.70           | 180.90      | 12,554.7              | -1,604.8     | -12.0        | 423,740.52          | 787,646.50         | 32° 9' 41.634 N | 103° 24' 13.715 W |
| 14,028.0                                       | 92.20           | 178.20      | 12,549.0              | -1,699.6     | -12.1        | 423,645.70          | 787,646.42         | 32° 9' 40.688 N | 103° 24' 13.725 W |
| 14,123.0                                       | 91.80           | 179.50      | 12,545.7              | -1,794.5     | -11.0        | 423,550.77          | 787,647.50         | 32° 9' 39.756 N | 103° 24' 13.722 W |
| 14,218.0                                       | 90.40           | 179.90      | 12,543.9              | -1,889.5     | -10.5        | 423,455.79          | 787,647.89         | 32° 9' 38.817 N | 103° 24' 13.726 W |
| 14,314.0                                       | 89.60           | 179.90      | 12,543.9              | -1,985.5     | -10.3        | 423,359.79          | 787,648.16         | 32° 9' 37.867 N | 103° 24' 13.734 W |
| 14,408.0                                       | 90.40           | 178.80      | 12,543.9              | -2,079.5     | -9.3         | 423,265.80          | 787,648.23         | 32° 9' 36.937 N | 103° 24' 13.731 W |
| 14,503.0                                       | 91.50           | 177.40      | 12,542.3              | -2,174.4     | -6.1         | 423,170.87          | 787,652.38         | 32° 9' 35.997 N | 103° 24' 13.704 W |
| 14,599.0                                       | 92.00           | 178.00      | 12,539.3              | -2,270.2     | -0.6         | 423,075.07          | 787,657.90         | 32° 9' 35.049 N | 103° 24' 13.649 W |
| 14,694.0                                       | 91.70           | 178.10      | 12,538.3              | -2,365.0     | 4.3          | 422,980.25          | 787,662.79         | 32° 9' 34.110 N | 103° 24' 13.602 W |
| 14,789.0                                       | 89.40           | 178.10      | 12,535.4              | -2,460.0     | 7.4          | 422,885.32          | 787,665.93         | 32° 9' 33.170 N | 103° 24' 13.575 W |
| 14,884.0                                       | 87.10           | 177.10      | 12,538.3              | -2,554.8     | 11.4         | 422,790.45          | 787,669.91         | 32° 9' 32.231 N | 103° 24' 13.538 W |
| 14,979.0                                       | 89.90           | 178.50      | 12,540.8              | -2,649.7     | 15.1         | 422,695.57          | 787,673.55         | 32° 9' 31.292 N | 103° 24' 13.505 W |
| 15,075.0                                       | 91.00           | 179.90      | 12,540.0              | -2,745.7     | 16.4         | 422,599.58          | 787,674.89         | 32° 9' 30.342 N | 103° 24' 13.499 W |
| 15,170.0                                       | 90.80           | 179.50      | 12,538.5              | -2,840.7     | 16.9         | 422,504.60          | 787,675.39         | 32° 9' 29.402 N | 103° 24' 13.503 W |
| 15,265.0                                       | 91.10           | 179.90      | 12,538.9              | -2,935.7     | 17.4         | 422,409.61          | 787,675.89         | 32° 9' 28.462 N | 103° 24' 13.507 W |
| 15,360.0                                       | 90.10           | 181.60      | 12,535.9              | -3,030.7     | 16.1         | 422,314.63          | 787,674.65         | 32° 9' 27.522 N | 103° 24' 13.531 W |
| 15,455.0                                       | 90.10           | 181.60      | 12,535.8              | -3,125.6     | 13.5         | 422,219.67          | 787,671.99         | 32° 9' 26.583 N | 103° 24' 13.571 W |
| 15,551.0                                       | 89.70           | 181.30      | 12,535.9              | -3,221.6     | 11.1         | 422,123.70          | 787,669.58         | 32° 9' 25.633 N | 103° 24' 13.609 W |
| 15,646.0                                       | 89.90           | 181.30      | 12,536.3              | -3,316.6     | 8.9          | 422,028.72          | 787,667.41         | 32° 9' 24.694 N | 103° 24' 13.644 W |
| 15,741.0                                       | 90.40           | 181.60      | 12,536.0              | -3,411.5     | 6.5          | 421,933.75          | 787,665.01         | 32° 9' 23.754 N | 103° 24' 13.681 W |
| 15,836.0                                       | 90.10           | 182.00      | 12,535.6              | -3,506.5     | 3.5          | 421,838.80          | 787,662.02         | 32° 9' 22.815 N | 103° 24' 13.725 W |
| 15,931.0                                       | 90.60           | 182.30      | 12,535.0              | -3,601.4     | 0.0          | 421,743.87          | 787,658.46         | 32° 9' 21.876 N | 103° 24' 13.776 W |
| 16,027.0                                       | 90.10           | 181.30      | 12,534.4              | -3,697.4     | -3.1         | 421,647.92          | 787,655.44         | 32° 9' 20.927 N | 103° 24' 13.821 W |