PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING
LEASE NO.:	NMNM121958
WELL NAME & NO.:	DOMINATOR 25 FED COM 705H
SURFACE HOLE FOOTAGE:	280'/S & 1980'/E
BOTTOM HOLE FOOTAGE	200'/N & 2310'/E
LOCATION:	SECTION 25, T25S, R33E, NMPM
COUNTY:	LEA

Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	◉ Low	○ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	◉ Conventional	○ Multibowl	
Other	☐4 String Area	☐Capitan Reef	☐WIPP

A. Hydrogen Sulfide

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **10 3/4** inch surface casing shall be set at approximately **1150** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength,

whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **7 5/8** inch intermediate casing is:

   - Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **5 1/2 X 5** inch production casing is:

   - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **7 5/8** inch intermediate casing shoe shall be **10,000 (10M)** psi. **Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi.)**

D. SPECIAL REQUIREMENT(S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

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GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.
    e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after

installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING
LEASE NO.:	NMNM121958
WELL NAME & NO.:	DOMINATOR 25 FED COM 705H
SURFACE HOLE FOOTAGE:	280'/S & 1980'/E
BOTTOM HOLE FOOTAGE	200'/N & 2310'/E
LOCATION:	SECTION 25, T25S, R33E, NMPM
COUNTY:	LEA

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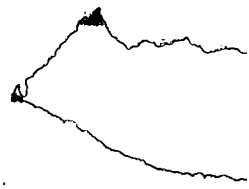
Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

Approval Date: 05/01/2018



I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

Range

The operator must contact the allotment holder prior to construction to identify the location of the pipeline. The operator must take measures to protect the pipeline from compression or other damages. If the pipeline is damaged or compromised in any way near the proposed project as a result of oil and gas activity, the operator is responsible for repairing the pipeline immediately. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

Watershed

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

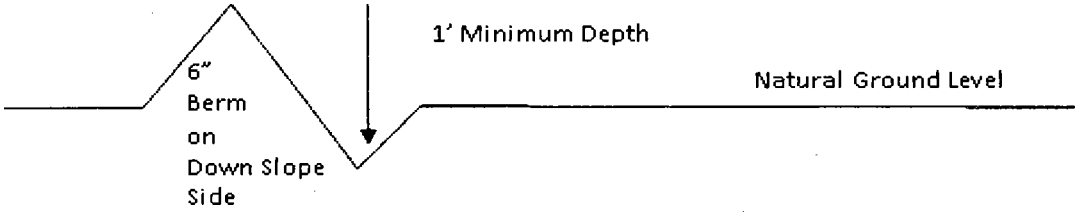
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

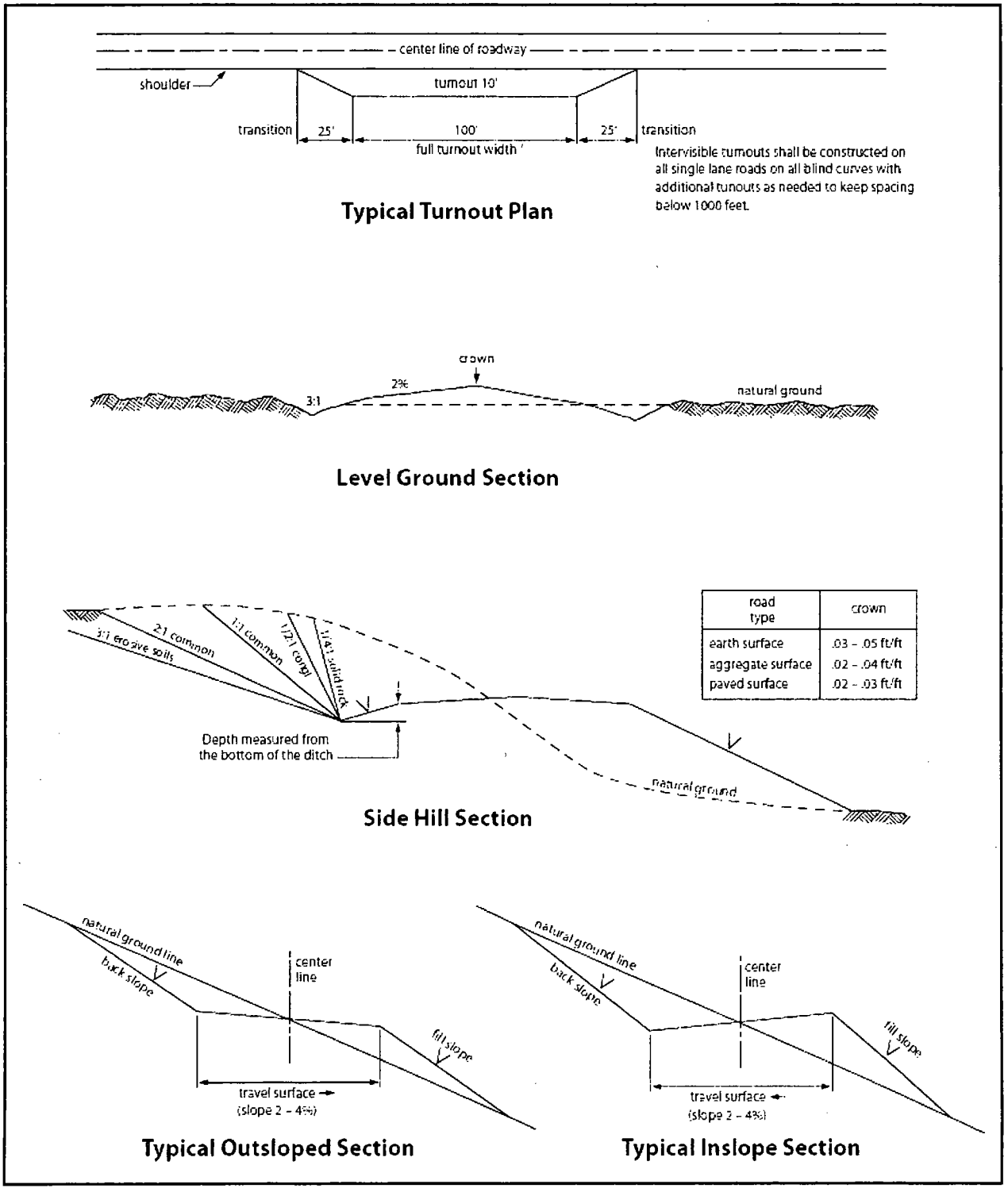


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES
STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the Grant and attachments, including stipulations, survey plat(s) and/or map(s), shall be on location during construction. BLM personnel may request to review a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, Holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC § 2601 *et seq.* (1982) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant (*see* 40 CFR, Part 702-799 and in particular, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way Holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way Holder on the Right-of-Way. This provision applies without regard to whether a release is caused by Holder, its agent, or unrelated third parties.

4. Holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. Holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of Holder including, but not limited to: construction, operation, maintenance, and termination of the facility;

b. Activities of other parties including, but not limited to:
   (1) Land clearing
   (2) Earth-disturbing and earth-moving work
   (3) Blasting
   (4) Vandalism and sabotage;

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of Holder, regardless of fault. Upon failure of Holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he/she deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of Holder. Such action by the Authorized Officer shall not relieve Holder of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation shall be allowed unless approved in writing by the Authorized Officer.

8. Holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline shall be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made

by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines shall be less than or equal to 4 inches and a working pressure below 125 psi.

18. Special Stipulations:

a. **Lesser Prairie-Chicken:** Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

COG OPERATING LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

a. The hazards and characteristics of hydrogen sulfide (H_2S).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
d. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

a. The effects of H2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
c. The contents and requirements of the H_2S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
   Flare line.
   Choke manifold with remotely operated choke.
   Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
   Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG OPERATING LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

WARNING

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH COG OPERATING LLC FOREMAN AT MAIN OFFICE***

COG OPERATING LLC

1-575-748-6940

EMERGENCY CALL LIST

	OFFICE	MOBILE
COG OPERATING LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

EMERGENCY RESPONSE NUMBERS

	OFFICE
STATE POLICE	575-748-9718
EDDY COUNTY SHERIFF	575-746-2701
EMERGENCY MEDICAL SERVICES (AMBULANCE)	911 or 575-746-2701
EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS)	575-887-9511
STATE EMERGENCY RESPONSE CENTER (SERC)	575-476-9620
CARLSBAD POLICE DEPARTMENT	575-885-2111
CARLSBAD FIRE DEPARTMENT	575-885-3125
NEW MEXICO OIL CONSERVATION DIVISION	575-748-1283
INDIAN FIRE & SAFETY	800-530-8693
HALLIBURTON SERVICES	800-844-8451

COG OPERATING, LLC

Lea County, NM (NAD27) NMEZ
Dominator 25 Fed COM
#705H

OH
Plan #1 - IP

Anticollision Report

28 November, 2017

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1 - IP		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.000 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 11/28/17

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,670.32	Plan #1 - IP (OH)	MWD	MWD v3:standard declination

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Dominator 25 Fed COM						
#104H - OH - Plan #1 - IP	2,000.00	2,000.70	42.29	33.57	4.854	CC, ES
#104H - OH - Plan #1 - IP	2,200.00	2,200.61	44.64	35.11	4.684	SF
#304H - OH - Plan #1 - IP	2,000.00	2,000.80	30.00	21.29	3.444	CC, ES
#304H - OH - Plan #1 - IP	7,500.00	7,500.46	110.49	77.47	3.346	SF
#403H - OH - Plan #1 - IP	2,000.00	2,001.20	67.13	58.42	7.705	CC, ES
#403H - OH - Plan #1 - IP	10,300.00	10,296.36	324.56	280.32	7.336	SF
#404H - OH - Plan #1 - IP	2,000.00	2,001.20	42.43	33.71	4.870	CC
#404H - OH - Plan #1 - IP	8,600.00	8,601.42	43.01	5.54	1.148	Level 2, ES
#404H - OH - Plan #1 - IP	10,203.51	10,205.76	49.93	6.04	1.138	Level 2, SF
#502H - OH - Plan #1 - IP	2,000.00	2,001.30	60.10	51.39	6.898	CC, ES
#502H - OH - Plan #1 - IP	11,209.53	11,207.29	108.19	60.40	2.264	SF
#605H - OH - Plan #1 - IP	2,000.00	2,000.70	30.00	21.29	3.444	CC
#605H - OH - Plan #1 - IP	12,211.07	12,212.95	51.95	0.22	1.004	Level 2, ES, SF
#706H - OH - Plan #1 - IP	1,500.00	1,499.60	29.90	23.44	4.628	CC, ES
#706H - OH - Plan #1 - IP	17,670.32	17,525.11	133.02	32.59	1.325	Level 3, SF

Offset Design Dominator 25 Fed COM - #104H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.70	0.70	0.00	0.00	-45.38	29.70	-30.10	42.29				
100.00	100.00	100.70	100.70	0.08	0.09	-45.38	29.70	-30.10	42.29	42.12	.170	248.524	
200.00	200.00	200.70	200.70	0.31	0.31	-45.38	29.70	-30.10	42.29	41.67	.620	68.238	
300.00	300.00	300.70	300.70	0.53	0.54	-45.38	29.70	-30.10	42.29	41.22	1.069	39.549	
400.00	400.00	400.70	400.70	0.76	0.76	-45.38	29.70	-30.10	42.29	40.77	1.519	27.843	
500.00	500.00	500.70	500.70	0.98	0.98	-45.38	29.70	-30.10	42.29	40.32	1.968	21.484	
600.00	600.00	600.70	600.70	1.21	1.21	-45.38	29.70	-30.10	42.29	39.87	2.418	17.489	
700.00	700.00	700.70	700.70	1.43	1.43	-45.38	29.70	-30.10	42.29	39.42	2.867	14.747	
800.00	800.00	800.70	800.70	1.66	1.66	-45.38	29.70	-30.10	42.29	38.97	3.317	12.749	
900.00	900.00	900.70	900.70	1.88	1.88	-45.38	29.70	-30.10	42.29	38.52	3.766	11.227	
1,000.00	1,000.00	1,000.70	1,000.70	2.11	2.11	-45.38	29.70	-30.10	42.29	38.07	4.216	10.030	
1,100.00	1,100.00	1,100.70	1,100.70	2.33	2.33	-45.38	29.70	-30.10	42.29	37.62	4.665	9.064	
1,200.00	1,200.00	1,200.70	1,200.70	2.56	2.56	-45.38	29.70	-30.10	42.29	37.17	5.115	8.267	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #104H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,300.00	1,300.00	1,300.70	1,300.70	2.78	2.78	-45.38	29.70	-30.10	42.29	36.72	5.565	7.599	
1,400.00	1,400.00	1,400.70	1,400.70	3.01	3.01	-45.38	29.70	-30.10	42.29	36.27	6.014	7.031	
1,500.00	1,500.00	1,500.70	1,500.70	3.23	3.23	-45.38	29.70	-30.10	42.29	35.82	6.464	6.542	
1,600.00	1,600.00	1,600.70	1,600.70	3.46	3.46	-45.38	29.70	-30.10	42.29	35.37	6.913	6.117	
1,700.00	1,700.00	1,700.70	1,700.70	3.68	3.68	-45.38	29.70	-30.10	42.29	34.92	7.363	5.743	
1,800.00	1,800.00	1,800.70	1,800.70	3.91	3.91	-45.38	29.70	-30.10	42.29	34.47	7.812	5.413	
1,900.00	1,900.00	1,900.70	1,900.70	4.13	4.13	-45.38	29.70	-30.10	42.29	34.02	8.262	5.118	
2,000.00	2,000.00	2,000.70	2,000.70	4.35	4.36	-45.38	29.70	-30.10	42.29	33.57	8.711	4.854	CC, ES
2,100.00	2,099.99	2,100.69	2,100.69	4.55	4.58	115.21	29.70	-30.10	42.83	33.69	9.133	4.690	
2,200.00	2,199.91	2,200.61	2,200.61	4.73	4.81	119.75	29.70	-30.10	44.64	35.11	9.530	4.684	SF
2,300.00	2,299.69	2,300.39	2,300.39	4.90	5.03	126.46	29.70	-30.10	48.23	38.29	9.933	4.855	
2,400.00	2,399.38	2,400.08	2,400.08	5.09	5.25	133.25	29.70	-30.10	53.27	42.93	10.342	5.151	
2,500.00	2,499.08	2,500.22	2,499.78	5.28	5.48	138.81	29.70	-30.10	58.93	48.18	10.756	5.479	
2,600.00	2,598.77	2,600.53	2,599.47	5.48	5.70	143.36	29.70	-30.10	65.05	53.88	11.173	5.822	
2,700.00	2,698.46	2,700.84	2,699.16	5.68	5.93	147.11	29.70	-30.10	71.51	59.91	11.593	6.168	
2,800.00	2,798.15	2,801.15	2,798.85	5.89	6.16	150.23	29.70	-30.10	78.22	66.20	12.015	6.510	
2,900.00	2,897.84	2,901.46	2,898.54	6.11	6.38	152.85	29.70	-30.10	85.12	72.68	12.439	6.843	
3,000.00	2,997.53	2,998.23	2,998.23	6.33	6.60	155.08	29.70	-30.10	92.17	79.32	12.856	7.170	
3,100.00	3,097.23	3,099.64	3,099.63	6.55	6.80	156.45	28.80	-31.03	98.50	85.24	13.262	7.427	
3,200.00	3,196.92	3,201.32	3,201.22	6.78	6.98	156.56	26.02	-33.92	103.09	89.44	13.648	7.553	
3,300.00	3,296.61	3,303.09	3,302.78	7.01	7.17	155.56	21.35	-38.75	105.93	91.89	14.040	7.545	
3,400.00	3,396.30	3,403.57	3,402.88	7.24	7.36	153.80	15.35	-44.96	107.53	93.08	14.444	7.444	
3,500.00	3,495.99	3,503.50	3,502.43	7.47	7.55	152.05	9.30	-51.22	109.15	94.30	14.856	7.347	
3,600.00	3,595.68	3,603.44	3,601.98	7.71	7.75	150.35	3.25	-57.49	110.88	95.60	15.276	7.258	
3,700.00	3,695.38	3,703.37	3,701.54	7.95	7.96	148.71	-2.80	-63.75	112.69	96.99	15.703	7.177	
3,800.00	3,795.07	3,803.30	3,801.09	8.19	8.16	147.12	-8.85	-70.02	114.60	98.47	16.136	7.102	
3,900.00	3,894.76	3,903.23	3,900.64	8.43	8.38	145.59	-14.90	-76.29	116.60	100.02	16.576	7.034	
4,000.00	3,994.45	4,003.16	4,000.19	8.67	8.59	144.11	-20.95	-82.55	118.67	101.65	17.023	6.971	
4,100.00	4,094.14	4,103.10	4,099.74	8.92	8.81	142.67	-27.00	-88.82	120.82	103.34	17.475	6.914	
4,200.00	4,193.83	4,203.03	4,199.30	9.17	9.03	141.29	-33.05	-95.08	123.04	105.11	17.933	6.861	
4,300.00	4,293.53	4,302.96	4,298.85	9.41	9.26	139.96	-39.10	-101.35	125.34	106.94	18.396	6.813	
4,400.00	4,393.22	4,402.89	4,398.40	9.66	9.49	138.68	-45.15	-107.61	127.69	108.83	18.864	6.769	
4,500.00	4,492.91	4,502.82	4,497.95	9.91	9.72	137.45	-51.20	-113.88	130.11	110.77	19.337	6.729	
4,600.00	4,592.60	4,602.76	4,597.50	10.16	9.95	136.26	-57.25	-120.14	132.59	112.77	19.814	6.692	
4,700.00	4,692.29	4,702.69	4,697.06	10.42	10.18	135.11	-63.30	-126.41	135.12	114.83	20.296	6.658	
4,800.00	4,791.99	4,802.62	4,796.61	10.67	10.42	134.01	-69.35	-132.67	137.71	116.92	20.781	6.627	
4,900.00	4,891.68	4,902.55	4,896.16	10.92	10.66	132.95	-75.40	-138.94	140.34	119.07	21.270	6.598	
5,000.00	4,991.37	5,002.49	4,995.71	11.18	10.90	131.93	-81.45	-145.20	143.02	121.26	21.762	6.572	
5,100.00	5,091.06	5,102.42	5,095.26	11.43	11.14	130.94	-87.50	-151.47	145.74	123.49	22.257	6.548	
5,200.00	5,190.75	5,202.35	5,194.81	11.69	11.39	129.99	-93.55	-157.73	148.51	125.75	22.755	6.526	
5,300.00	5,290.44	5,302.28	5,294.37	11.94	11.63	129.08	-99.60	-164.00	151.31	128.06	23.256	6.506	
5,400.00	5,390.14	5,402.21	5,393.92	12.20	11.88	128.20	-105.65	-170.26	154.15	130.39	23.759	6.488	
5,490.14	5,480.00	5,507.71	5,483.66	12.43	12.14	127.44	-111.11	-175.91	156.74	132.49	24.253	6.463	
5,500.00	5,489.83	5,502.15	5,493.47	12.46	12.13	127.35	-111.70	-176.53	157.02	132.76	24.265	6.471	
5,600.00	5,589.63	5,602.06	5,593.01	12.70	12.38	126.11	-117.75	-182.79	159.00	134.23	24.773	6.418	
5,700.00	5,689.56	5,701.90	5,692.47	12.93	12.63	124.11	-123.80	-189.05	159.58	134.30	25.281	6.312	
5,790.14	5,779.69	5,808.22	5,782.00	13.11	12.90	-37.37	-129.24	-194.69	159.08	133.31	25.771	6.173	
5,800.00	5,789.55	5,801.60	5,791.78	13.13	12.88	-37.68	-129.83	-195.30	158.98	133.20	25.777	6.167	
5,900.00	5,889.55	5,901.22	5,891.02	13.31	13.13	-40.80	-135.87	-201.55	158.25	131.99	26.260	6.026	
6,000.00	5,989.55	6,000.84	5,990.26	13.50	13.39	-43.95	-141.90	-207.79	158.01	131.27	26.737	5.910	
6,001.66	5,991.21	6,002.49	5,991.91	13.50	13.39	-44.00	-142.00	-207.90	158.01	131.26	26.745	5.908	
6,100.00	6,089.55	6,100.45	6,089.50	13.68	13.64	-47.09	-147.93	-214.04	158.24	131.03	27.208	5.816	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #104H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,200.00	6,189.55	6,200.07	6,188.74	13.87	13.89	-50.22	-153.96	-220.28	158.95	131.28	27.671	5.744	
6,300.00	6,289.55	6,300.31	6,287.98	14.06	14.15	-53.31	-159.99	-226.53	160.13	132.00	28.128	5.693	
6,400.00	6,389.55	6,400.69	6,387.22	14.25	14.41	-56.35	-166.02	-232.78	161.77	133.20	28.576	5.661	
6,500.00	6,489.55	6,501.07	6,486.46	14.44	14.67	-59.31	-172.05	-239.02	163.87	134.85	29.016	5.647	
6,600.00	6,589.55	6,601.45	6,585.70	14.63	14.93	-62.20	-178.08	-245.27	166.39	136.94	29.448	5.650	
6,700.00	6,689.55	6,701.83	6,684.94	14.82	15.19	-64.99	-184.12	-251.51	169.32	139.45	29.873	5.668	
6,800.00	6,789.55	6,802.21	6,784.19	15.01	15.45	-67.69	-190.15	-257.76	172.65	142.36	30.291	5.700	
6,900.00	6,889.55	6,902.59	6,883.43	15.20	15.71	-70.27	-196.18	-264.00	176.34	145.64	30.704	5.743	
7,000.00	6,989.55	6,997.03	6,982.67	15.40	15.96	-72.75	-202.21	-270.25	180.38	149.28	31.096	5.801	
7,100.00	7,089.55	7,103.35	7,081.91	15.59	16.24	-75.11	-208.24	-276.50	184.74	153.23	31.515	5.862	
7,200.00	7,189.55	7,203.73	7,181.15	15.79	16.50	-77.36	-214.27	-282.74	189.40	157.49	31.915	5.935	
7,300.00	7,289.55	7,304.11	7,280.39	15.99	16.76	-79.51	-220.30	-288.99	194.35	162.03	32.314	6.014	
7,400.00	7,389.55	7,404.49	7,379.63	16.18	17.03	-81.54	-226.34	-295.23	199.55	166.84	32.711	6.100	
7,500.00	7,489.55	7,504.87	7,478.87	16.38	17.29	-83.47	-232.37	-301.48	204.99	171.88	33.108	6.192	
7,600.00	7,589.55	7,605.25	7,578.11	16.58	17.56	-85.29	-238.40	-307.72	210.65	177.14	33.504	6.287	
7,700.00	7,689.55	7,694.37	7,677.35	16.78	17.79	-87.02	-244.43	-313.97	216.51	182.64	33.872	6.392	
7,800.00	7,789.55	7,795.98	7,778.61	16.98	18.06	-88.63	-250.37	-320.12	222.35	188.07	34.277	6.487	
7,900.00	7,889.55	7,900.15	7,882.58	17.18	18.32	-89.77	-254.77	-324.67	226.67	191.98	34.692	6.534	
8,000.00	7,989.55	8,004.59	7,986.95	17.38	18.55	-90.39	-257.20	-327.19	229.09	193.98	35.108	6.525	
8,100.00	8,089.55	8,107.89	8,090.25	17.58	18.75	-90.52	-257.73	-327.74	229.61	194.10	35.510	6.466	
8,200.00	8,189.55	8,207.89	8,190.25	17.79	18.94	-90.52	-257.73	-327.74	229.61	193.70	35.906	6.395	
8,300.00	8,289.55	8,307.89	8,290.25	17.99	19.13	-90.52	-257.73	-327.74	229.61	193.31	36.303	6.325	
8,400.00	8,389.55	8,407.89	8,390.25	18.19	19.32	-90.52	-257.73	-327.74	229.61	192.91	36.702	6.256	
8,500.00	8,489.55	8,507.89	8,490.25	18.40	19.50	-90.52	-257.73	-327.74	229.61	192.51	37.101	6.189	
8,600.00	8,589.55	8,607.89	8,590.25	18.60	19.69	-90.52	-257.73	-327.74	229.61	192.11	37.502	6.123	
8,700.00	8,689.55	8,707.89	8,690.25	18.81	19.88	-90.52	-257.73	-327.74	229.61	191.71	37.904	6.058	
8,800.00	8,789.55	8,807.89	8,790.25	19.01	20.08	-90.52	-257.73	-327.74	229.61	191.30	38.307	5.994	
8,900.00	8,889.55	8,907.89	8,890.25	19.22	20.27	-90.52	-257.73	-327.74	229.61	190.90	38.711	5.931	
9,000.00	8,989.55	9,007.89	8,990.25	19.42	20.46	-90.52	-257.73	-327.74	229.61	190.49	39.116	5.870	
9,100.00	9,089.55	9,107.89	9,090.25	19.63	20.65	-90.52	-257.73	-327.74	229.61	190.09	39.522	5.810	
9,141.37	9,130.92	9,149.27	9,131.62	19.72	20.73	-90.42	-257.34	-327.74	229.61	189.92	39.691	5.785	
9,200.00	9,189.55	9,207.28	9,189.30	19.84	20.82	-88.97	-251.52	-327.78	229.69	189.74	39.948	5.750	
9,300.00	9,289.55	9,300.43	9,279.20	20.05	20.92	-83.06	-227.69	-327.96	231.78	191.38	40.401	5.737	
9,400.00	9,389.55	9,381.88	9,352.74	20.25	20.97	-74.74	-192.91	-328.22	241.41	200.70	40.709	5.930	
9,500.00	9,489.55	9,450.00	9,408.97	20.46	20.98	-66.31	-154.56	-328.50	264.37	223.73	40.643	6.505	
9,600.00	9,589.55	9,505.49	9,450.38	20.67	20.97	-59.11	-117.66	-328.77	302.98	262.77	40.209	7.535	
9,700.00	9,689.55	9,550.00	9,480.32	20.88	20.96	-53.49	-84.75	-329.01	355.78	316.14	39.641	8.975	
9,800.00	9,789.55	9,587.31	9,502.97	21.09	20.95	-49.05	-55.11	-329.23	419.71	380.55	39.160	10.718	
9,900.00	9,889.55	9,617.46	9,519.53	21.30	20.94	-45.70	-29.93	-329.41	491.81	452.99	38.818	12.670	
10,000.00	9,989.55	9,642.46	9,532.04	21.51	20.93	-43.09	-8.29	-329.57	569.83	531.21	38.623	14.754	
10,100.00	10,089.55	9,663.43	9,541.64	21.72	20.93	-41.04	10.35	-329.71	652.19	613.64	38.548	16.919	
10,200.00	10,189.55	9,675.00	9,546.59	21.93	20.92	-39.96	20.81	-329.79	737.83	699.29	38.533	19.148	
10,300.00	10,289.55	9,700.00	9,556.41	22.14	20.91	-37.75	43.80	-329.96	825.79	787.12	38.673	21.353	
10,400.00	10,389.55	9,709.56	9,559.84	22.35	20.91	-36.94	52.71	-330.02	915.66	876.87	38.798	23.601	
10,500.00	10,489.55	9,725.00	9,565.01	22.56	20.90	-35.69	67.27	-330.13	1,007.06	968.06	38.996	25.825	
10,600.00	10,589.55	9,725.00	9,565.01	22.77	20.90	-35.69	67.27	-330.13	1,099.64	1,060.47	39.179	28.067	
10,700.00	10,689.55	9,739.98	9,569.57	22.98	20.89	-34.54	81.53	-330.23	1,193.10	1,153.67	39.437	30.254	
10,800.00	10,789.55	9,750.00	9,572.37	23.20	20.89	-33.80	91.15	-330.30	1,287.41	1,247.70	39.702	32.427	
10,900.00	10,889.55	9,750.00	9,572.37	23.41	20.89	-33.80	91.15	-330.30	1,382.39	1,342.43	39.961	34.593	
11,000.00	10,989.55	9,761.38	9,575.30	23.62	20.88	-32.99	102.15	-330.39	1,477.85	1,437.59	40.261	36.706	
11,100.00	11,089.55	9,775.00	9,578.47	23.83	20.88	-32.05	115.40	-330.48	1,573.90	1,533.32	40.577	38.788	
11,200.00	11,189.55	9,775.00	9,578.47	24.05	20.88	-32.05	115.40	-330.48	1,670.18	1,629.31	40.876	40.859	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #104H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,300.00	11,289.55	9,775.00	9,578.47	24.26	20.88	-32.05	115.40	-330.48	1,766.88	1,725.69	41.187	42.899	
11,400.00	11,389.55	9,775.00	9,578.47	24.47	20.88	-32.05	115.40	-330.48	1,863.93	1,822.42	41.506	44.908	
11,500.00	11,489.55	9,785.63	9,580.67	24.69	20.88	-31.35	125.80	-330.56	1,961.12	1,919.28	41.848	46.863	
11,600.00	11,589.55	9,789.36	9,581.39	24.90	20.88	-31.11	129.45	-330.59	2,058.60	2,016.42	42.186	48.798	
11,700.00	11,689.55	9,800.00	9,583.29	25.11	20.88	-30.45	139.92	-330.66	2,156.35	2,113.81	42.540	50.690	
11,800.00	11,789.55	9,800.00	9,583.29	25.33	20.88	-30.45	139.92	-330.66	2,254.16	2,211.27	42.884	52.564	
11,900.00	11,889.55	9,800.00	9,583.29	25.54	20.88	-30.45	139.92	-330.66	2,352.15	2,308.92	43.234	54.405	
12,000.00	11,989.55	9,800.00	9,583.29	25.76	20.88	-30.45	139.92	-330.66	2,450.31	2,406.72	43.589	56.214	
12,100.00	12,089.55	9,800.00	9,583.29	25.97	20.88	-30.45	139.92	-330.66	2,548.61	2,504.66	43.948	57.992	
12,200.00	12,189.55	9,800.00	9,583.29	26.19	20.88	-30.45	139.92	-330.66	2,647.04	2,602.72	44.311	59.737	
12,274.76	12,264.31	9,800.00	9,583.29	26.35	20.88	-30.45	139.92	-330.66	2,720.70	2,676.11	44.586	61.021	
12,300.00	12,289.54	9,800.00	9,583.29	26.40	20.88	5.24	139.92	-330.66	2,745.45	2,700.78	44.678	61.450	
12,325.00	12,314.46	9,800.00	9,583.29	26.45	20.88	4.25	139.92	-330.66	2,769.70	2,724.94	44.767	61.869	
12,350.00	12,339.24	9,810.79	9,584.97	26.50	20.89	3.95	150.58	-330.74	2,793.48	2,748.61	44.866	62.262	
12,375.00	12,363.81	9,811.84	9,585.12	26.55	20.89	3.45	151.62	-330.75	2,816.98	2,772.02	44.953	62.665	
12,400.00	12,388.12	9,813.01	9,585.29	26.59	20.89	3.08	152.77	-330.76	2,840.03	2,794.99	45.038	63.058	
12,425.00	12,412.08	9,814.29	9,585.47	26.64	20.89	2.79	154.05	-330.77	2,862.58	2,817.46	45.121	63.443	
12,450.00	12,435.64	9,825.00	9,586.82	26.68	20.91	2.77	164.67	-330.85	2,884.68	2,839.47	45.211	63.805	
12,475.00	12,458.73	9,825.00	9,586.82	26.72	20.91	2.54	164.67	-330.85	2,906.04	2,860.76	45.287	64.169	
12,500.00	12,481.29	9,825.00	9,586.82	26.76	20.91	2.35	164.67	-330.85	2,926.77	2,881.41	45.361	64.522	
12,525.00	12,503.25	9,825.00	9,586.82	26.79	20.91	2.19	164.67	-330.85	2,946.80	2,901.37	45.431	64.863	
12,550.00	12,524.56	9,825.00	9,586.82	26.83	20.91	2.06	164.67	-330.85	2,966.11	2,920.62	45.499	65.191	
12,575.00	12,545.15	9,825.00	9,586.82	26.86	20.91	1.94	164.67	-330.85	2,984.66	2,939.10	45.563	65.506	
12,600.00	12,564.97	9,825.00	9,586.82	26.90	20.91	1.84	164.67	-330.85	3,002.41	2,956.78	45.625	65.807	
12,625.00	12,583.97	9,825.00	9,586.82	26.93	20.91	1.76	164.67	-330.85	3,019.32	2,973.64	45.683	66.093	
12,650.00	12,602.10	9,825.00	9,586.82	26.96	20.91	1.68	164.67	-330.85	3,035.36	2,989.63	45.738	66.364	
12,675.00	12,619.30	9,825.00	9,586.82	26.99	20.91	1.62	164.67	-330.85	3,050.51	3,004.72	45.791	66.618	
12,700.00	12,635.52	9,825.00	9,586.82	27.03	20.91	1.56	164.67	-330.85	3,064.74	3,018.90	45.840	66.857	
12,725.00	12,650.73	9,837.19	9,588.07	27.06	20.94	1.66	176.80	-330.93	3,077.83	3,031.93	45.898	67.058	
12,733.09	12,655.43	9,837.95	9,588.14	27.08	20.95	1.66	177.55	-330.94	3,081.90	3,035.99	45.912	67.126	
12,750.00	12,664.97	9,850.00	9,589.05	27.11	20.99	1.58	189.56	-331.03	3,090.28	3,044.33	45.954	67.247	
12,775.00	12,678.51	9,850.00	9,589.05	27.16	20.99	1.28	189.56	-331.03	3,101.92	3,055.92	45.999	67.435	
12,800.00	12,691.34	9,850.00	9,589.05	27.22	20.99	1.02	189.56	-331.03	3,112.95	3,066.91	46.043	67.610	
12,825.00	12,703.41	9,850.00	9,589.05	27.30	20.99	0.80	189.56	-331.03	3,123.35	3,077.26	46.085	67.773	
12,850.00	12,714.69	9,850.00	9,589.05	27.37	20.99	0.60	189.56	-331.03	3,133.08	3,086.95	46.127	67.922	
12,875.00	12,725.16	9,850.00	9,589.05	27.46	20.99	0.44	189.56	-331.03	3,142.14	3,095.97	46.168	68.058	
12,900.00	12,734.78	9,850.00	9,589.05	27.55	20.99	0.31	189.56	-331.03	3,150.50	3,104.29	46.209	68.179	
12,925.00	12,743.54	9,850.00	9,589.05	27.64	20.99	0.19	189.56	-331.03	3,158.14	3,111.89	46.249	68.286	
12,950.00	12,751.39	9,861.78	9,589.65	27.73	21.04	0.16	201.33	-331.11	3,164.89	3,118.59	46.297	68.360	
12,975.00	12,758.33	9,875.00	9,589.98	27.83	21.09	0.14	214.54	-331.21	3,171.08	3,124.74	46.346	68.421	
13,000.00	12,764.33	9,875.00	9,589.98	27.93	21.09	0.07	214.54	-331.21	3,176.31	3,129.92	46.385	68.477	
13,025.00	12,769.38	9,875.00	9,589.98	28.04	21.09	0.02	214.54	-331.21	3,180.76	3,134.34	46.423	68.517	
13,050.00	12,773.46	9,875.00	9,589.98	28.14	21.09	-0.01	214.54	-331.21	3,184.44	3,137.98	46.461	68.540	
13,075.00	12,776.57	9,875.00	9,589.98	28.25	21.09	-0.03	214.54	-331.21	3,187.33	3,140.83	46.499	68.546	
13,100.00	12,778.69	9,882.27	9,590.00	28.35	21.13	-0.02	221.81	-331.27	3,189.39	3,142.84	46.542	68.527	
13,125.00	12,779.81	9,895.75	9,589.94	28.46	21.19	-0.01	235.30	-331.36	3,190.60	3,144.01	46.590	68.483	
13,143.56	12,780.00	9,914.30	9,589.86	28.54	21.28	0.00	253.85	-331.50	3,190.87	3,144.24	46.633	68.425	
13,200.00	12,779.75	9,970.75	9,589.61	28.79	21.59	0.00	310.29	-331.92	3,190.87	3,144.10	46.770	68.224	
13,300.00	12,779.31	10,070.75	9,589.18	29.32	22.23	0.00	410.28	-332.65	3,190.87	3,143.82	47.047	67.823	
13,400.00	12,778.87	10,170.75	9,588.74	29.94	22.99	0.00	510.28	-333.39	3,190.86	3,143.49	47.370	67.360	
13,500.00	12,778.43	10,270.75	9,588.30	30.66	23.87	0.00	610.28	-334.12	3,190.86	3,143.12	47.738	66.841	
13,600.00	12,777.99	10,370.75	9,587.86	31.47	24.85	0.00	710.27	-334.86	3,190.85	3,142.70	48.150	66.269	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #104H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,700.00	12,777.54	10,470.75	9,587.43	32.36	25.92	0.00	810.27	-335.59	3,190.85	3,142.24	48.604	65.650	
13,800.00	12,777.10	10,570.75	9,586.99	33.33	27.08	0.00	910.27	-336.33	3,190.84	3,141.75	49.099	64.988	
13,900.00	12,776.66	10,670.75	9,586.55	34.38	28.30	0.00	1,010.26	-337.07	3,190.84	3,141.21	49.633	64.288	
14,000.00	12,776.22	10,770.75	9,586.11	35.49	29.59	0.00	1,110.26	-337.80	3,190.84	3,140.63	50.206	63.555	
14,100.00	12,775.78	10,870.75	9,585.68	36.66	30.94	0.00	1,210.25	-338.54	3,190.83	3,140.02	50.815	62.793	
14,200.00	12,775.34	10,970.75	9,585.24	37.89	32.34	0.00	1,310.25	-339.27	3,190.83	3,139.37	51.460	62.006	
14,300.00	12,774.89	11,070.75	9,584.80	39.16	33.78	0.00	1,410.25	-340.01	3,190.82	3,138.68	52.138	61.200	
14,400.00	12,774.45	11,170.75	9,584.36	40.48	35.26	0.00	1,510.24	-340.74	3,190.82	3,137.97	52.848	60.377	
14,500.00	12,774.01	11,270.75	9,583.93	41.84	36.77	0.00	1,610.24	-341.48	3,190.81	3,137.22	53.590	59.542	
14,600.00	12,773.57	11,370.75	9,583.49	43.24	38.31	0.00	1,710.24	-342.21	3,190.81	3,136.45	54.361	58.697	
14,700.00	12,773.13	11,470.75	9,583.05	44.67	39.87	0.00	1,810.23	-342.95	3,190.80	3,135.64	55.160	57.847	
14,800.00	12,772.68	11,570.75	9,582.62	46.13	41.46	0.00	1,910.23	-343.69	3,190.80	3,134.81	55.986	56.993	
14,900.00	12,772.24	11,670.75	9,582.18	47.61	43.08	0.00	2,010.23	-344.42	3,190.79	3,133.96	56.837	56.139	
15,000.00	12,771.80	11,770.75	9,581.74	49.13	44.70	0.00	2,110.22	-345.16	3,190.79	3,133.08	57.713	55.287	
15,100.00	12,771.36	11,870.75	9,581.30	50.66	46.35	0.00	2,210.22	-345.89	3,190.79	3,132.17	58.613	54.439	
15,200.00	12,770.92	11,970.75	9,580.87	52.21	48.01	0.00	2,310.21	-346.63	3,190.78	3,131.25	59.534	53.596	
15,300.00	12,770.47	12,070.75	9,580.43	53.79	49.69	0.00	2,410.21	-347.36	3,190.78	3,130.30	60.477	52.760	
15,400.00	12,770.03	12,170.75	9,579.99	55.38	51.37	0.00	2,510.21	-348.10	3,190.77	3,129.33	61.440	51.934	
15,500.00	12,769.59	12,270.75	9,579.55	56.99	53.07	0.00	2,610.20	-348.83	3,190.77	3,128.35	62.422	51.116	
15,600.00	12,769.15	12,370.75	9,579.12	58.61	54.78	0.00	2,710.20	-349.57	3,190.76	3,127.34	63.422	50.310	
15,700.00	12,768.71	12,470.75	9,578.68	60.24	56.49	0.00	2,810.20	-350.30	3,190.76	3,126.32	64.440	49.516	
15,800.00	12,768.27	12,570.75	9,578.24	61.89	58.22	0.00	2,910.19	-351.04	3,190.75	3,125.28	65.474	48.733	
15,900.00	12,767.82	12,670.75	9,577.80	63.55	59.95	0.00	3,010.19	-351.78	3,190.75	3,124.23	66.524	47.964	
16,000.00	12,767.38	12,770.75	9,577.37	65.21	61.69	0.00	3,110.19	-352.51	3,190.74	3,123.16	67.589	47.208	
16,100.00	12,766.94	12,870.75	9,576.93	66.89	63.43	0.00	3,210.18	-353.25	3,190.74	3,122.07	68.669	46.466	
16,200.00	12,766.50	12,970.75	9,576.49	68.58	65.18	0.00	3,310.18	-353.98	3,190.74	3,120.97	69.762	45.737	
16,300.00	12,766.06	13,070.75	9,576.05	70.27	66.94	0.00	3,410.17	-354.72	3,190.73	3,119.86	70.869	45.023	
16,400.00	12,765.61	13,170.75	9,575.62	71.98	68.70	0.00	3,510.17	-355.45	3,190.73	3,118.74	71.988	44.323	
16,500.00	12,765.17	13,270.75	9,575.18	73.69	70.47	0.00	3,610.17	-356.19	3,190.72	3,117.60	73.119	43.637	
16,600.00	12,764.73	13,370.75	9,574.74	75.40	72.24	0.00	3,710.16	-356.92	3,190.72	3,116.46	74.261	42.966	
16,700.00	12,764.29	13,470.75	9,574.31	77.12	74.01	0.00	3,810.16	-357.66	3,190.71	3,115.30	75.414	42.309	
16,800.00	12,763.85	13,570.75	9,573.87	78.85	75.79	0.00	3,910.16	-358.40	3,190.71	3,114.13	76.578	41.666	
16,900.00	12,763.40	13,670.75	9,573.43	80.59	77.57	0.00	4,010.15	-359.13	3,190.70	3,112.95	77.752	41.037	
17,000.00	12,762.96	13,770.75	9,572.99	82.33	79.35	0.00	4,110.15	-359.87	3,190.70	3,111.77	78.935	40.422	
17,100.00	12,762.52	13,870.75	9,572.56	84.07	81.14	0.00	4,210.14	-360.60	3,190.70	3,110.57	80.127	39.820	
17,200.00	12,762.08	13,970.75	9,572.12	85.82	82.93	0.00	4,310.14	-361.34	3,190.69	3,109.36	81.328	39.232	
17,300.00	12,761.64	14,070.75	9,571.68	87.57	84.72	0.00	4,410.14	-362.07	3,190.69	3,108.15	82.537	38.658	
17,400.00	12,761.19	14,170.75	9,571.24	89.33	86.52	0.00	4,510.13	-362.81	3,190.68	3,106.93	83.754	38.096	
17,500.00	12,760.75	14,270.75	9,570.81	91.09	88.31	0.00	4,610.13	-363.54	3,190.68	3,105.70	84.979	37.547	
17,600.00	12,760.31	14,370.75	9,570.37	92.85	90.11	0.00	4,710.13	-364.28	3,190.67	3,104.46	86.212	37.010	
17,670.32	12,760.00	14,441.07	9,570.06	94.09	91.38	0.00	4,780.45	-364.80	3,190.67	3,103.59	87.082	36.640	

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #304H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.80	0.80	0.00	0.00	-0.38	30.00	-0.20	30.00				
100.00	100.00	100.80	100.80	0.08	0.09	-0.38	30.00	-0.20	30.00	29.83	.170	176.088	
200.00	200.00	200.80	200.80	0.31	0.31	-0.38	30.00	-0.20	30.00	29.38	.620	48.396	
300.00	300.00	300.80	300.80	0.53	0.54	-0.38	30.00	-0.20	30.00	28.93	1.069	28.053	
400.00	400.00	400.80	400.80	0.76	0.76	-0.38	30.00	-0.20	30.00	28.48	1.519	19.751	
500.00	500.00	500.80	500.80	0.98	0.99	-0.38	30.00	-0.20	30.00	28.03	1.969	15.240	
600.00	600.00	600.80	600.80	1.21	1.21	-0.38	30.00	-0.20	30.00	27.58	2.418	12.407	
700.00	700.00	700.80	700.80	1.43	1.43	-0.38	30.00	-0.20	30.00	27.13	2.868	10.462	
800.00	800.00	800.80	800.80	1.66	1.66	-0.38	30.00	-0.20	30.00	26.68	3.317	9.044	
900.00	900.00	900.80	900.80	1.88	1.88	-0.38	30.00	-0.20	30.00	26.23	3.767	7.965	
1,000.00	1,000.00	1,000.80	1,000.80	2.11	2.11	-0.38	30.00	-0.20	30.00	25.78	4.216	7.116	
1,100.00	1,100.00	1,100.80	1,100.80	2.33	2.33	-0.38	30.00	-0.20	30.00	25.33	4.666	6.430	
1,200.00	1,200.00	1,200.80	1,200.80	2.56	2.56	-0.38	30.00	-0.20	30.00	24.89	5.115	5.865	
1,300.00	1,300.00	1,300.80	1,300.80	2.78	2.78	-0.38	30.00	-0.20	30.00	24.44	5.565	5.391	
1,400.00	1,400.00	1,400.80	1,400.80	3.01	3.01	-0.38	30.00	-0.20	30.00	23.99	6.014	4.988	
1,500.00	1,500.00	1,500.80	1,500.80	3.23	3.23	-0.38	30.00	-0.20	30.00	23.54	6.464	4.641	
1,600.00	1,600.00	1,600.80	1,600.80	3.46	3.46	-0.38	30.00	-0.20	30.00	23.09	6.913	4.340	
1,700.00	1,700.00	1,700.80	1,700.80	3.68	3.68	-0.38	30.00	-0.20	30.00	22.64	7.363	4.075	
1,800.00	1,800.00	1,800.80	1,800.80	3.91	3.91	-0.38	30.00	-0.20	30.00	22.19	7.812	3.840	
1,900.00	1,900.00	1,900.80	1,900.80	4.13	4.13	-0.38	30.00	-0.20	30.00	21.74	8.262	3.631	
2,000.00	2,000.00	2,000.80	2,000.80	4.35	4.36	-0.38	30.00	-0.20	30.00	21.29	8.711	3.444	CC, ES
2,100.00	2,099.99	2,100.79	2,100.79	4.55	4.58	159.49	30.00	-0.20	31.22	22.09	9.133	3.419	
2,200.00	2,199.91	2,200.71	2,200.71	4.73	4.81	161.73	30.00	-0.20	34.93	25.40	9.531	3.665	
2,300.00	2,299.69	2,300.49	2,300.49	4.90	5.03	164.56	30.00	-0.20	41.19	31.26	9.934	4.146	
2,400.00	2,399.38	2,400.18	2,400.18	5.09	5.25	167.01	30.00	-0.20	48.80	38.46	10.340	4.719	
2,500.00	2,499.08	2,500.12	2,499.88	5.28	5.48	168.80	30.00	-0.20	56.47	45.72	10.750	5.253	
2,600.00	2,598.77	2,600.43	2,599.57	5.48	5.70	170.16	30.00	-0.20	64.19	53.02	11.163	5.750	
2,700.00	2,698.46	2,700.74	2,699.26	5.68	5.93	171.23	30.00	-0.20	71.93	60.35	11.580	6.212	
2,800.00	2,798.15	2,801.05	2,798.95	5.89	6.16	172.09	30.00	-0.20	79.69	67.69	12.000	6.641	
2,900.00	2,897.84	2,901.36	2,898.64	6.11	6.38	172.79	30.00	-0.20	87.47	75.05	12.422	7.042	
3,000.00	2,997.53	3,001.67	2,998.33	6.33	6.61	173.39	30.00	-0.20	95.26	82.42	12.846	7.416	
3,100.00	3,097.23	3,101.97	3,098.03	6.55	6.83	173.89	30.00	-0.20	103.06	89.79	13.273	7.765	
3,200.00	3,196.92	3,202.28	3,197.72	6.78	7.06	174.32	30.00	-0.20	110.86	97.16	13.702	8.091	
3,300.00	3,296.61	3,302.59	3,297.41	7.01	7.28	174.70	30.00	-0.20	118.67	104.54	14.132	8.398	
3,400.00	3,396.30	3,402.90	3,397.10	7.24	7.51	175.02	30.00	-0.20	126.49	111.93	14.564	8.685	
3,500.00	3,495.99	3,496.79	3,496.79	7.47	7.72	175.31	30.00	-0.20	134.31	119.32	14.983	8.964	
3,600.00	3,595.68	3,599.87	3,599.86	7.71	7.93	175.37	29.00	-1.04	140.97	125.57	15.398	9.155	
3,700.00	3,695.38	3,703.33	3,703.23	7.95	8.11	174.98	25.86	-3.68	145.17	129.38	15.785	9.196	
3,800.00	3,795.07	3,806.90	3,806.57	8.19	8.29	174.16	20.56	-8.12	146.90	130.73	16.172	9.084	
3,900.00	3,894.76	3,906.63	3,905.99	8.43	8.48	173.19	14.57	-13.15	147.61	131.04	16.570	8.908	
4,000.00	3,994.45	4,006.59	4,005.65	8.67	8.67	172.23	8.56	-18.19	148.36	131.39	16.972	8.742	
4,100.00	4,094.14	4,106.56	4,105.31	8.92	8.86	171.28	2.55	-23.23	149.15	131.77	17.377	8.583	
4,200.00	4,193.83	4,206.53	4,204.97	9.17	9.05	170.34	-3.45	-28.27	149.98	132.19	17.787	8.432	
4,300.00	4,293.53	4,306.49	4,304.62	9.41	9.25	169.41	-9.46	-33.31	150.85	132.65	18.201	8.288	
4,400.00	4,393.22	4,406.46	4,404.28	9.66	9.46	168.50	-15.47	-38.35	151.75	133.14	18.618	8.151	
4,500.00	4,492.91	4,506.43	4,503.94	9.91	9.66	167.59	-21.48	-43.40	152.70	133.66	19.039	8.020	
4,600.00	4,592.60	4,606.39	4,603.60	10.16	9.87	166.69	-27.49	-48.44	153.68	134.22	19.464	7.896	
4,700.00	4,692.29	4,706.36	4,703.26	10.42	10.08	165.81	-33.50	-53.48	154.71	134.81	19.893	7.777	
4,800.00	4,791.99	4,806.33	4,802.92	10.67	10.30	164.94	-39.50	-58.52	155.76	135.44	20.324	7.664	
4,900.00	4,891.68	4,906.29	4,902.57	10.92	10.51	164.08	-45.51	-63.56	156.86	136.10	20.760	7.556	
5,000.00	4,991.37	5,006.26	5,002.23	11.18	10.73	163.23	-51.52	-68.60	157.99	136.79	21.198	7.453	
5,100.00	5,091.06	5,106.23	5,101.89	11.43	10.96	162.39	-57.53	-73.65	159.15	137.51	21.640	7.354	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #304H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,190.75	5,206.19	5,201.55	11.69	11.18	161.57	-63.54	-78.69	160.34	138.26	22.085	7.260	
5,300.00	5,290.44	5,306.16	5,301.21	11.94	11.40	160.76	-69.54	-83.73	161.57	139.04	22.533	7.170	
5,400.00	5,390.14	5,406.12	5,400.87	12.20	11.63	159.96	-75.55	-88.77	162.83	139.85	22.984	7.085	
5,490.14	5,480.00	5,503.76	5,490.70	12.43	11.86	159.25	-80.97	-93.31	163.99	140.59	23.409	7.006	
5,500.00	5,489.83	5,506.09	5,500.52	12.46	11.86	159.17	-81.56	-93.81	164.11	140.67	23.438	7.002	
5,600.00	5,589.63	5,606.05	5,600.17	12.70	12.09	158.19	-87.57	-98.85	163.98	140.08	23.895	6.862	
5,700.00	5,689.56	5,705.94	5,699.76	12.93	12.32	156.84	-93.57	-103.89	161.48	137.13	24.356	6.630	
5,790.14	5,779.69	5,804.12	5,789.42	13.11	12.55	-3.76	-98.98	-108.43	157.27	132.48	24.786	6.345	
5,800.00	5,789.55	5,805.71	5,799.21	13.13	12.56	-3.95	-99.57	-108.92	156.71	131.90	24.812	6.316	
5,900.00	5,889.55	5,905.40	5,898.60	13.31	12.79	-6.01	-105.56	-113.95	151.15	125.88	25.267	5.982	
6,000.00	5,989.55	6,005.09	5,997.98	13.50	13.03	-8.23	-111.55	-118.98	145.80	120.07	25.729	5.667	
6,100.00	6,089.55	6,104.78	6,097.37	13.68	13.26	-10.61	-117.54	-124.00	140.69	114.49	26.198	5.370	
6,200.00	6,189.55	6,204.47	6,196.75	13.87	13.50	-13.16	-123.54	-129.03	135.84	109.16	26.675	5.092	
6,300.00	6,289.55	6,304.16	6,296.14	14.06	13.74	-15.90	-129.53	-134.06	131.27	104.11	27.160	4.833	
6,400.00	6,389.55	6,403.86	6,395.52	14.25	13.98	-18.82	-135.52	-139.09	127.03	99.38	27.651	4.594	
6,500.00	6,489.55	6,503.55	6,494.91	14.44	14.22	-21.94	-141.51	-144.12	123.14	94.99	28.148	4.375	
6,600.00	6,589.55	6,603.24	6,594.29	14.63	14.47	-25.25	-147.50	-149.14	119.64	90.99	28.651	4.176	
6,700.00	6,689.55	6,702.93	6,693.67	14.82	14.71	-28.74	-153.50	-154.17	116.57	87.41	29.157	3.998	
6,800.00	6,789.55	6,802.62	6,793.06	15.01	14.95	-32.41	-159.49	-159.20	113.95	84.29	29.663	3.841	
6,900.00	6,889.55	6,902.31	6,892.44	15.20	15.20	-36.24	-165.48	-164.23	111.82	81.65	30.169	3.707	
7,000.00	6,989.55	7,002.01	6,991.83	15.40	15.44	-40.19	-171.47	-169.25	110.21	79.54	30.670	3.594	
7,100.00	7,089.55	7,101.70	7,091.21	15.59	15.69	-44.24	-177.46	-174.28	109.15	77.98	31.163	3.502	
7,200.00	7,189.55	7,201.39	7,190.60	15.79	15.94	-48.35	-183.45	-179.31	108.64	76.99	31.647	3.433	
7,240.07	7,229.62	7,241.33	7,230.42	15.87	16.03	-50.00	-185.86	-181.32	108.59	76.75	31.837	3.411	
7,300.00	7,289.55	7,301.08	7,289.98	15.99	16.18	-52.47	-189.45	-184.34	108.69	76.58	32.118	3.384	
7,400.00	7,389.55	7,400.77	7,389.36	16.18	16.43	-56.57	-195.44	-189.36	109.31	76.74	32.575	3.356	
7,500.00	7,489.55	7,500.46	7,488.75	16.38	16.68	-60.60	-201.43	-194.39	110.49	77.47	33.018	3.346 SF	
7,600.00	7,589.55	7,600.16	7,588.13	16.58	16.93	-64.53	-207.42	-199.42	112.20	78.76	33.448	3.355	
7,700.00	7,689.55	7,700.15	7,687.52	16.78	17.18	-68.33	-213.41	-204.45	114.43	80.57	33.865	3.379	
7,800.00	7,789.55	7,800.46	7,786.90	16.98	17.43	-71.96	-219.41	-209.48	117.14	82.87	34.272	3.418	
7,900.00	7,889.55	7,900.77	7,886.29	17.18	17.68	-75.42	-225.40	-214.50	120.30	85.63	34.670	3.470	
8,000.00	7,989.55	8,001.08	7,985.67	17.38	17.94	-78.69	-231.39	-219.53	123.88	88.82	35.061	3.533	
8,100.00	8,089.55	8,101.39	8,085.06	17.58	18.19	-81.77	-237.38	-224.56	127.85	92.40	35.447	3.607	
8,200.00	8,189.55	8,201.69	8,184.44	17.79	18.45	-84.66	-243.37	-229.59	132.15	96.32	35.830	3.688	
8,300.00	8,289.55	8,298.75	8,284.59	17.99	18.69	-87.33	-249.29	-234.55	136.68	100.48	36.207	3.775	
8,400.00	8,389.55	8,400.89	8,386.56	18.19	18.93	-89.19	-253.68	-238.23	140.16	103.55	36.605	3.829	
8,500.00	8,489.55	8,503.27	8,488.89	18.40	19.16	-90.13	-255.97	-240.16	142.03	105.02	37.011	3.837	
8,600.00	8,589.55	8,604.73	8,590.35	18.60	19.36	-90.28	-256.34	-240.47	142.34	104.92	37.415	3.804	
8,700.00	8,689.55	8,704.73	8,690.35	18.81	19.55	-90.28	-256.34	-240.47	142.34	104.52	37.816	3.764	
8,800.00	8,789.55	8,804.73	8,790.35	19.01	19.75	-90.28	-256.34	-240.47	142.34	104.12	38.219	3.724	
8,900.00	8,889.55	8,904.73	8,890.35	19.22	19.94	-90.28	-256.34	-240.47	142.34	103.71	38.622	3.685	
9,000.00	8,989.55	9,004.73	8,990.35	19.42	20.14	-90.28	-256.34	-240.47	142.34	103.31	39.027	3.647	
9,100.00	9,089.55	9,104.73	9,090.35	19.63	20.33	-90.28	-256.34	-240.47	142.34	102.90	39.433	3.610	
9,200.00	9,189.55	9,204.73	9,190.35	19.84	20.53	-90.28	-256.34	-240.47	142.34	102.50	39.839	3.573	
9,300.00	9,289.55	9,304.73	9,290.35	20.05	20.72	-90.28	-256.34	-240.47	142.34	102.09	40.246	3.537	
9,400.00	9,389.55	9,404.73	9,390.35	20.25	20.92	-90.28	-256.34	-240.47	142.34	101.68	40.655	3.501	
9,500.00	9,489.55	9,504.73	9,490.35	20.46	21.11	-90.28	-256.34	-240.47	142.34	101.27	41.064	3.466	
9,600.00	9,589.55	9,604.73	9,590.35	20.67	21.31	-90.28	-256.34	-240.47	142.34	100.86	41.474	3.432	
9,700.00	9,689.55	9,704.73	9,690.35	20.88	21.51	-90.28	-256.34	-240.47	142.34	100.45	41.885	3.398	
9,707.94	9,697.49	9,712.67	9,698.29	20.90	21.53	-90.28	-256.34	-240.47	142.34	100.42	41.917	3.396	
9,800.00	9,789.55	9,802.27	9,787.76	21.09	21.70	-89.00	-253.17	-240.92	142.82	100.51	42.311	3.376	
9,900.00	9,889.55	9,893.86	9,877.18	21.30	21.82	-81.58	-234.13	-243.57	147.61	104.85	42.762	3.452	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #304H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,989.55	9,975.60	9,952.58	21.51	21.90	-70.67	-203.14	-247.90	163.14	120.17	42.974	3.796	
10,100.00	10,089.55	10,045.09	10,011.71	21.72	21.94	-60.23	-167.10	-252.94	194.91	152.16	42.750	4.559	
10,200.00	10,189.55	10,102.59	10,056.22	21.93	21.96	-52.07	-131.10	-257.96	243.00	200.70	42.301	5.745	
10,300.00	10,289.55	10,150.00	10,089.42	22.14	21.97	-46.15	-97.61	-262.64	303.99	262.09	41.906	7.254	
10,400.00	10,389.55	10,188.23	10,113.64	22.35	21.97	-41.99	-68.34	-266.73	374.27	332.62	41.649	8.986	
10,500.00	10,489.55	10,220.00	10,131.93	22.56	21.97	-38.94	-42.61	-270.32	451.11	409.57	41.541	10.859	
10,600.00	10,589.55	10,250.00	10,147.57	22.77	21.97	-36.39	-17.26	-273.86	532.70	491.13	41.572	12.814	
10,700.00	10,689.55	10,268.59	10,156.44	22.98	21.97	-34.96	-1.08	-276.12	617.69	576.05	41.637	14.835	
10,800.00	10,789.55	10,287.40	10,164.77	23.20	21.97	-33.61	15.62	-278.45	705.31	663.52	41.790	16.877	
10,900.00	10,889.55	10,300.00	10,169.97	23.41	21.97	-32.76	26.99	-280.04	794.94	752.96	41.976	18.938	
11,000.00	10,989.55	10,317.42	10,176.66	23.62	21.97	-31.66	42.92	-282.26	886.08	843.86	42.222	20.986	
11,100.00	11,089.55	10,325.00	10,179.39	23.83	21.97	-31.21	49.92	-283.24	978.52	936.05	42.470	23.040	
11,200.00	11,189.55	10,340.20	10,184.51	24.05	21.97	-30.33	64.09	-285.22	1,071.89	1,029.13	42.762	25.067	
11,300.00	11,289.55	10,350.00	10,187.58	24.26	21.97	-29.80	73.31	-286.51	1,166.11	1,123.05	43.059	27.082	
11,400.00	11,389.55	10,350.00	10,187.58	24.47	21.97	-29.80	73.31	-286.51	1,261.09	1,217.74	43.353	29.089	
11,500.00	11,489.55	10,365.49	10,192.03	24.69	21.97	-28.99	88.00	-288.56	1,356.46	1,312.78	43.687	31.049	
11,600.00	11,589.55	10,375.00	10,194.52	24.90	21.98	-28.52	97.09	-289.83	1,452.41	1,408.39	44.022	32.993	
11,700.00	11,689.55	10,375.00	10,194.52	25.11	21.98	-28.52	97.09	-289.83	1,548.76	1,504.41	44.351	34.921	
11,800.00	11,789.55	10,375.00	10,194.52	25.33	21.98	-28.52	97.09	-289.83	1,645.55	1,600.86	44.688	36.823	
11,900.00	11,889.55	10,388.94	10,197.85	25.54	22.00	-27.86	110.50	-291.70	1,742.44	1,697.39	45.050	38.678	
12,000.00	11,989.55	10,400.00	10,200.20	25.76	22.02	-27.37	121.20	-293.20	1,839.75	1,794.34	45.413	40.512	
12,100.00	12,089.55	10,400.00	10,200.20	25.97	22.02	-27.37	121.20	-293.20	1,937.20	1,891.43	45.769	42.325	
12,200.00	12,189.55	10,400.00	10,200.20	26.19	22.02	-27.37	121.20	-293.20	2,034.88	1,988.75	46.131	44.111	
12,274.76	12,264.31	10,400.00	10,200.20	26.35	22.02	-27.37	121.20	-293.20	2,108.06	2,061.66	46.405	45.428	
12,300.00	12,289.54	10,400.00	10,200.20	26.40	22.02	7.91	121.20	-293.20	2,132.65	2,086.15	46.496	45.867	
12,325.00	12,314.46	10,400.00	10,200.20	26.45	22.02	6.57	121.20	-293.20	2,156.69	2,110.11	46.585	46.296	
12,350.00	12,339.24	10,400.00	10,200.20	26.50	22.02	5.63	121.20	-293.20	2,180.38	2,133.71	46.672	46.717	
12,375.00	12,363.81	10,400.00	10,200.20	26.55	22.02	4.92	121.20	-293.20	2,203.66	2,156.90	46.757	47.130	
12,400.00	12,388.12	10,411.17	10,202.33	26.59	22.05	4.66	132.07	-294.71	2,226.31	2,179.46	46.851	47.519	
12,425.00	12,412.08	10,412.99	10,202.65	26.64	22.06	4.25	133.84	-294.96	2,248.56	2,201.62	46.934	47.908	
12,450.00	12,435.64	10,414.96	10,202.99	26.68	22.06	3.92	135.76	-295.23	2,270.24	2,223.22	47.015	48.287	
12,475.00	12,458.73	10,425.00	10,204.60	26.72	22.10	3.81	145.57	-296.60	2,291.38	2,244.28	47.101	48.649	
12,500.00	12,481.29	10,425.00	10,204.60	26.76	22.10	3.54	145.57	-296.60	2,311.76	2,264.58	47.175	49.004	
12,525.00	12,503.25	10,425.00	10,204.60	26.79	22.10	3.31	145.57	-296.60	2,331.44	2,284.20	47.246	49.347	
12,550.00	12,524.56	10,425.00	10,204.60	26.83	22.10	3.11	145.57	-296.60	2,350.41	2,303.10	47.315	49.676	
12,575.00	12,545.15	10,425.00	10,204.60	26.86	22.10	2.94	145.57	-296.60	2,368.62	2,321.24	47.381	49.991	
12,600.00	12,564.97	10,425.00	10,204.60	26.90	22.10	2.80	145.57	-296.60	2,386.05	2,338.61	47.444	50.292	
12,625.00	12,583.97	10,425.00	10,204.60	26.93	22.10	2.67	145.57	-296.60	2,402.66	2,355.15	47.504	50.578	
12,650.00	12,602.10	10,425.00	10,204.60	26.96	22.10	2.56	145.57	-296.60	2,418.42	2,370.86	47.561	50.849	
12,675.00	12,619.30	10,437.92	10,206.36	26.99	22.15	2.63	158.25	-298.37	2,433.10	2,385.48	47.625	51.089	
12,700.00	12,635.52	10,450.00	10,207.70	27.03	22.20	2.70	170.14	-300.03	2,447.09	2,399.41	47.685	51.318	
12,725.00	12,650.73	10,450.00	10,207.70	27.06	22.20	2.62	170.14	-300.03	2,459.98	2,412.25	47.733	51.536	
12,733.09	12,655.43	10,450.00	10,207.70	27.08	22.20	2.59	170.14	-300.03	2,463.95	2,416.20	47.747	51.604	
12,750.00	12,664.97	10,450.00	10,207.70	27.11	22.20	2.33	170.14	-300.03	2,472.01	2,424.23	47.780	51.737	
12,775.00	12,678.51	10,450.00	10,207.70	27.16	22.20	2.00	170.14	-300.03	2,483.46	2,435.64	47.828	51.925	
12,800.00	12,691.34	10,450.00	10,207.70	27.22	22.20	1.71	170.14	-300.03	2,494.33	2,446.46	47.874	52.102	
12,825.00	12,703.41	10,450.00	10,207.70	27.30	22.20	1.45	170.14	-300.03	2,504.59	2,456.67	47.920	52.266	
12,850.00	12,714.69	10,460.74	10,208.63	27.37	22.24	1.32	180.73	-301.51	2,514.07	2,466.10	47.971	52.408	
12,875.00	12,725.16	10,464.33	10,208.89	27.46	22.26	1.15	184.28	-302.01	2,522.95	2,474.93	48.017	52.543	
12,900.00	12,734.78	10,475.00	10,209.50	27.55	22.31	1.04	194.83	-303.48	2,531.18	2,483.12	48.066	52.660	
12,925.00	12,743.54	10,475.00	10,209.50	27.64	22.31	0.89	194.83	-303.48	2,538.59	2,490.48	48.109	52.767	
12,950.00	12,751.39	10,475.00	10,209.50	27.73	22.31	0.78	194.83	-303.48	2,545.30	2,497.15	48.151	52.860	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #304H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,975.00	12,758.33	10,475.00	10,209.50	27.83	22.31	0.69	194.83	-303.48	2,551.30	2,503.11	48.193	52.939	
13,000.00	12,764.33	10,475.00	10,209.50	27.93	22.31	0.62	194.83	-303.48	2,556.58	2,508.34	48.235	53.003	
13,025.00	12,769.38	10,486.96	10,209.90	28.04	22.36	0.58	206.67	-305.13	2,560.95	2,512.67	48.282	53.041	
13,050.00	12,773.46	10,499.00	10,210.00	28.14	22.42	0.54	218.59	-306.80	2,564.70	2,516.37	48.329	53.067	
13,075.00	12,776.57	10,499.00	10,210.00	28.25	22.42	0.52	218.59	-306.80	2,567.53	2,519.16	48.370	53.080	
13,100.00	12,778.69	10,499.00	10,210.00	28.35	22.42	0.51	218.59	-306.80	2,569.60	2,521.19	48.412	53.078	
13,125.00	12,779.81	10,521.38	10,209.90	28.46	22.54	0.48	240.77	-309.81	2,570.81	2,522.35	48.466	53.044	
13,143.56	12,780.00	10,539.70	10,209.82	28.54	22.64	0.44	258.94	-312.14	2,571.07	2,522.56	48.506	53.005	
13,200.00	12,779.75	10,595.51	10,209.58	28.79	22.95	0.30	314.38	-318.53	2,571.03	2,522.40	48.632	52.867	
13,300.00	12,779.31	10,694.88	10,209.14	29.32	23.61	0.12	413.36	-327.24	2,571.00	2,522.10	48.894	52.583	
13,400.00	12,778.87	10,794.68	10,208.71	29.94	24.38	0.02	513.02	-332.52	2,570.99	2,521.79	49.200	52.256	
13,500.00	12,778.43	10,894.68	10,208.27	30.66	25.24	0.00	613.00	-334.39	2,570.98	2,521.43	49.548	51.888	
13,600.00	12,777.99	11,005.32	10,207.83	31.47	26.30	0.00	712.99	-335.12	2,570.98	2,521.01	49.964	51.456	
13,700.00	12,777.54	11,094.68	10,207.40	32.36	27.23	0.00	812.99	-335.85	2,570.97	2,520.60	50.370	51.042	
13,800.00	12,777.10	11,205.32	10,206.96	33.33	28.47	0.00	912.99	-336.58	2,570.97	2,520.10	50.871	50.539	
13,900.00	12,776.66	11,305.32	10,206.52	34.38	29.67	0.00	1,012.98	-337.31	2,570.96	2,519.58	51.382	50.037	
14,000.00	12,776.22	11,405.32	10,206.09	35.49	30.94	0.00	1,112.98	-338.04	2,570.96	2,519.03	51.930	49.508	
14,100.00	12,775.78	11,505.32	10,205.65	36.66	32.26	0.00	1,212.98	-338.77	2,570.95	2,518.44	52.514	48.958	
14,200.00	12,775.34	11,605.32	10,205.21	37.89	33.62	0.00	1,312.97	-339.50	2,570.95	2,517.82	53.132	48.388	
14,300.00	12,774.89	11,694.68	10,204.78	39.16	34.88	0.00	1,412.97	-340.23	2,570.94	2,517.20	53.744	47.837	
14,400.00	12,774.45	11,794.68	10,204.34	40.48	36.33	0.00	1,512.97	-340.96	2,570.94	2,516.51	54.425	47.238	
14,500.00	12,774.01	11,905.32	10,203.90	41.84	37.97	0.00	1,612.96	-341.69	2,570.93	2,515.75	55.182	46.590	
14,600.00	12,773.57	11,994.68	10,203.46	43.24	39.33	0.00	1,712.96	-342.42	2,570.93	2,515.05	55.880	46.008	
14,700.00	12,773.13	12,105.32	10,203.03	44.67	41.03	0.00	1,812.95	-343.15	2,570.92	2,514.23	56.698	45.344	
14,800.00	12,772.68	12,205.32	10,202.59	46.13	42.60	0.00	1,912.95	-343.88	2,570.92	2,513.42	57.497	44.714	
14,900.00	12,772.24	12,294.68	10,202.15	47.61	44.02	0.00	2,012.95	-344.61	2,570.91	2,512.64	58.272	44.119	
15,000.00	12,771.80	12,405.32	10,201.72	49.13	45.80	0.00	2,112.94	-345.34	2,570.91	2,511.74	59.171	43.449	
15,100.00	12,771.36	12,505.32	10,201.28	50.66	47.43	0.00	2,212.94	-346.07	2,570.90	2,510.86	60.044	42.817	
15,200.00	12,770.92	12,605.32	10,200.84	52.21	49.07	0.00	2,312.94	-346.80	2,570.90	2,509.96	60.940	42.187	
15,300.00	12,770.47	12,694.68	10,200.41	53.79	50.55	0.00	2,412.93	-347.53	2,570.89	2,509.09	61.803	41.598	
15,400.00	12,770.03	12,805.32	10,199.97	55.38	52.40	0.00	2,512.93	-348.25	2,570.89	2,508.09	62.796	40.941	
15,500.00	12,769.59	12,905.32	10,199.53	56.99	54.08	0.00	2,612.93	-348.98	2,570.88	2,507.13	63.753	40.325	
15,600.00	12,769.15	13,005.32	10,199.10	58.61	55.77	0.00	2,712.92	-349.71	2,570.88	2,506.15	64.730	39.717	
15,700.00	12,768.71	13,105.32	10,198.66	60.24	57.47	0.00	2,812.92	-350.44	2,570.87	2,505.15	65.724	39.116	
15,800.00	12,768.27	13,205.32	10,198.22	61.89	59.18	0.00	2,912.91	-351.17	2,570.87	2,504.13	66.736	38.523	
15,900.00	12,767.82	13,305.32	10,197.78	63.55	60.90	0.00	3,012.91	-351.90	2,570.86	2,503.10	67.764	37.938	
16,000.00	12,767.38	13,394.68	10,197.35	65.21	62.45	0.00	3,112.91	-352.63	2,570.86	2,502.11	68.747	37.396	
16,100.00	12,766.94	13,505.32	10,196.91	66.89	64.36	0.00	3,212.90	-353.36	2,570.85	2,500.99	69.867	36.797	
16,200.00	12,766.50	13,605.32	10,196.47	68.58	66.10	0.00	3,312.90	-354.09	2,570.85	2,499.91	70.940	36.240	
16,300.00	12,766.06	13,694.68	10,196.04	70.27	67.66	0.00	3,412.90	-354.82	2,570.84	2,498.88	71.963	35.724	
16,400.00	12,765.61	13,805.32	10,195.60	71.98	69.60	0.00	3,512.89	-355.55	2,570.84	2,497.71	73.126	35.156	
16,500.00	12,765.17	13,905.32	10,195.16	73.69	71.36	0.00	3,612.89	-356.28	2,570.83	2,496.60	74.238	34.630	
16,600.00	12,764.73	13,994.68	10,194.73	75.40	72.93	0.00	3,712.89	-357.01	2,570.83	2,495.53	75.297	34.142	
16,700.00	12,764.29	14,105.32	10,194.29	77.12	74.88	0.00	3,812.88	-357.74	2,570.82	2,494.33	76.497	33.607	
16,800.00	12,763.85	14,205.32	10,193.85	78.85	76.65	0.00	3,912.88	-358.47	2,570.82	2,493.18	77.644	33.110	
16,900.00	12,763.40	14,305.32	10,193.42	80.59	78.42	0.00	4,012.87	-359.20	2,570.81	2,492.01	78.800	32.624	
17,000.00	12,762.96	14,394.68	10,192.98	82.33	80.01	0.00	4,112.87	-359.93	2,570.81	2,490.91	79.901	32.175	
17,100.00	12,762.52	14,505.32	10,192.54	84.07	81.98	0.00	4,212.87	-360.66	2,570.80	2,489.66	81.143	31.682	
17,200.00	12,762.08	14,605.32	10,192.10	85.82	83.76	0.00	4,312.86	-361.39	2,570.80	2,488.47	82.329	31.226	
17,300.00	12,761.64	14,705.32	10,191.67	87.57	85.55	0.00	4,412.86	-362.12	2,570.79	2,487.27	83.523	30.779	
17,400.00	12,761.19	14,805.32	10,191.23	89.33	87.34	0.00	4,512.86	-362.85	2,570.79	2,486.06	84.726	30.343	
17,500.00	12,760.75	14,905.32	10,190.79	91.09	89.13	0.00	4,612.85	-363.58	2,570.78	2,484.85	85.936	29.915	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #304H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,600.00	12,760.31	14,994.68	10,190.36	92.85	90.73	0.00	4,712.85	-364.31	2,570.78	2,483.69	87.086	29.520	
17,670.32	12,760.00	15,065.00	10,190.05	94.09	91.99	0.00	4,783.17	-364.82	2,570.78	2,482.83	87.947	29.231	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #403H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	1.20	1.20	0.00	0.00	62.98	30.50	59.80	67.13				
100.00	100.00	101.20	101.20	0.08	0.09	62.98	30.50	59.80	67.13	66.96	.171	391.943	
200.00	200.00	201.20	201.20	0.31	0.31	62.98	30.50	59.80	67.13	66.51	.621	108.132	
300.00	300.00	301.20	301.20	0.53	0.54	62.98	30.50	59.80	67.13	66.06	1.070	62.718	
400.00	400.00	401.20	401.20	0.76	0.76	62.98	30.50	59.80	67.13	65.61	1.520	44.168	
500.00	500.00	501.20	501.20	0.98	0.99	62.98	30.50	59.80	67.13	65.16	1.969	34.086	
600.00	600.00	601.20	601.20	1.21	1.21	62.98	30.50	59.80	67.13	64.71	2.419	27.751	
700.00	700.00	701.20	701.20	1.43	1.44	62.98	30.50	59.80	67.13	64.26	2.868	23.402	
800.00	800.00	801.20	801.20	1.66	1.66	62.98	30.50	59.80	67.13	63.81	3.318	20.232	
900.00	900.00	901.20	901.20	1.88	1.89	62.98	30.50	59.80	67.13	63.36	3.768	17.818	
1,000.00	1,000.00	1,001.20	1,001.20	2.11	2.11	62.98	30.50	59.80	67.13	62.91	4.217	15.918	
1,100.00	1,100.00	1,101.20	1,101.20	2.33	2.33	62.98	30.50	59.80	67.13	62.46	4.667	14.385	
1,200.00	1,200.00	1,201.20	1,201.20	2.56	2.56	62.98	30.50	59.80	67.13	62.01	5.116	13.121	
1,300.00	1,300.00	1,301.20	1,301.20	2.78	2.78	62.98	30.50	59.80	67.13	61.56	5.566	12.061	
1,400.00	1,400.00	1,401.20	1,401.20	3.01	3.01	62.98	30.50	59.80	67.13	61.11	6.015	11.160	
1,500.00	1,500.00	1,501.20	1,501.20	3.23	3.23	62.98	30.50	59.80	67.13	60.66	6.465	10.384	
1,600.00	1,600.00	1,601.20	1,601.20	3.46	3.46	62.98	30.50	59.80	67.13	60.21	6.914	9.709	
1,700.00	1,700.00	1,701.20	1,701.20	3.68	3.68	62.98	30.50	59.80	67.13	59.77	7.364	9.116	
1,800.00	1,800.00	1,801.20	1,801.20	3.91	3.91	62.98	30.50	59.80	67.13	59.32	7.813	8.592	
1,900.00	1,900.00	1,901.20	1,901.20	4.13	4.13	62.98	30.50	59.80	67.13	58.87	8.263	8.124	
2,000.00	2,000.00	2,001.20	2,001.20	4.35	4.36	62.98	30.50	59.80	67.13	58.42	8.712	7.705	CC, ES
2,100.00	2,099.99	2,101.19	2,101.19	4.55	4.58	-138.75	30.50	59.80	68.11	58.97	9.134	7.457	
2,200.00	2,199.91	2,201.11	2,201.11	4.73	4.81	-140.81	30.50	59.80	71.11	61.58	9.530	7.461	
2,300.00	2,299.69	2,300.89	2,300.89	4.90	5.03	-143.86	30.50	59.80	76.29	66.36	9.932	7.681	
2,400.00	2,399.38	2,400.58	2,400.58	5.09	5.26	-147.07	30.50	59.80	82.76	72.42	10.338	8.006	
2,500.00	2,499.08	2,500.28	2,500.28	5.28	5.48	-149.80	30.50	59.80	89.45	78.71	10.748	8.323	
2,600.00	2,598.77	2,600.03	2,599.97	5.48	5.70	-152.14	30.50	59.80	96.32	85.16	11.162	8.629	
2,700.00	2,698.46	2,700.34	2,699.66	5.68	5.93	-154.18	30.50	59.80	103.33	91.75	11.580	8.923	
2,800.00	2,798.15	2,800.65	2,799.35	5.89	6.15	-155.95	30.50	59.80	110.45	98.45	12.001	9.203	
2,900.00	2,897.84	2,900.96	2,899.04	6.11	6.38	-157.50	30.50	59.80	117.66	105.23	12.425	9.469	
3,000.00	2,997.53	2,998.73	2,998.73	6.33	6.60	-158.88	30.50	59.80	124.95	112.10	12.845	9.727	
3,100.00	3,097.23	3,099.53	3,099.52	6.55	6.80	-159.58	29.38	60.45	131.88	118.64	13.248	9.955	
3,200.00	3,196.92	3,200.47	3,200.38	6.78	6.97	-159.17	25.95	62.43	137.99	124.36	13.628	10.125	
3,300.00	3,296.61	3,301.02	3,300.72	7.01	7.15	-157.84	20.37	65.65	143.36	129.35	14.016	10.228	
3,400.00	3,396.30	3,400.81	3,400.27	7.24	7.33	-156.41	14.34	69.13	148.65	134.24	14.412	10.315	
3,500.00	3,495.99	3,500.60	3,499.82	7.47	7.52	-155.08	8.31	72.61	154.03	139.22	14.814	10.398	
3,600.00	3,595.68	3,600.40	3,599.37	7.71	7.71	-153.83	2.28	76.09	159.48	144.26	15.222	10.477	
3,700.00	3,695.38	3,700.19	3,698.92	7.95	7.90	-152.67	-3.75	79.57	165.01	149.37	15.637	10.553	
3,800.00	3,795.07	3,800.02	3,798.47	8.19	8.10	-151.59	-9.78	83.05	170.59	154.54	16.057	10.624	
3,900.00	3,894.76	3,900.22	3,898.02	8.43	8.30	-150.57	-15.80	86.53	176.24	159.76	16.484	10.692	
4,000.00	3,994.45	4,000.43	3,997.57	8.67	8.51	-149.62	-21.83	90.01	181.94	165.02	16.915	10.756	
4,100.00	4,094.14	4,100.64	4,097.12	8.92	8.72	-148.73	-27.86	93.50	187.68	170.33	17.351	10.816	
4,200.00	4,193.83	4,200.84	4,196.67	9.17	8.93	-147.88	-33.89	96.98	193.47	175.67	17.792	10.874	
4,300.00	4,293.53	4,301.05	4,296.22	9.41	9.14	-147.09	-39.92	100.46	199.29	181.05	18.236	10.928	
4,400.00	4,393.22	4,401.26	4,395.77	9.66	9.36	-146.34	-45.95	103.94	205.15	186.47	18.685	10.980	
4,500.00	4,492.91	4,501.46	4,495.32	9.91	9.58	-145.64	-51.98	107.42	211.05	191.91	19.137	11.028	
4,600.00	4,592.60	4,601.67	4,594.87	10.16	9.80	-144.97	-58.01	110.90	216.97	197.38	19.592	11.074	
4,700.00	4,692.29	4,701.88	4,694.42	10.42	10.02	-144.34	-64.03	114.38	222.92	202.87	20.050	11.118	
4,800.00	4,791.99	4,802.08	4,793.97	10.67	10.24	-143.74	-70.06	117.86	228.90	208.39	20.512	11.160	
4,900.00	4,891.68	4,902.29	4,893.52	10.92	10.47	-143.17	-76.09	121.34	234.90	213.93	20.976	11.199	
5,000.00	4,991.37	5,002.50	4,993.07	11.18	10.69	-142.63	-82.12	124.82	240.93	219.49	21.442	11.236	
5,100.00	5,091.06	5,102.70	5,092.62	11.43	10.92	-142.12	-88.15	128.30	246.97	225.06	21.911	11.272	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #403H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,190.75	5,202.91	5,192.17	11.69	11.15	-141.63	-94.18	131.78	253.03	230.65	22.382	11.305	
5,300.00	5,290.44	5,303.12	5,291.72	11.94	11.39	-141.16	-100.21	135.26	259.11	236.26	22.855	11.337	
5,400.00	5,390.14	5,403.32	5,391.27	12.20	11.62	-140.72	-106.23	138.74	265.21	241.88	23.330	11.368	
5,490.14	5,480.00	5,486.63	5,481.01	12.43	11.81	-140.34	-111.67	141.88	270.72	246.98	23.744	11.402	
5,500.00	5,489.83	5,503.53	5,490.82	12.46	11.85	-140.30	-112.26	142.22	271.31	247.51	23.807	11.396	
5,600.00	5,589.63	5,603.70	5,590.41	12.70	12.09	-139.73	-118.29	145.71	276.24	251.96	24.283	11.376	
5,700.00	5,689.56	5,703.85	5,690.02	12.93	12.32	-138.82	-124.33	149.19	279.23	254.48	24.755	11.280	
5,790.14	5,779.69	5,786.11	5,779.76	13.11	12.52	63.31	-129.76	152.33	280.33	255.18	25.149	11.146	
5,800.00	5,789.55	5,804.05	5,789.57	13.13	12.56	63.45	-130.35	152.67	280.37	255.16	25.212	11.120	
5,900.00	5,889.55	5,904.30	5,889.08	13.31	12.80	64.87	-136.38	156.15	280.88	255.22	25.659	10.946	
6,000.00	5,989.55	6,004.54	5,988.60	13.50	13.04	66.28	-142.41	159.63	281.55	255.45	26.107	10.785	
6,100.00	6,089.55	6,104.78	6,088.11	13.68	13.28	67.69	-148.43	163.11	282.41	255.85	26.554	10.635	
6,200.00	6,189.55	6,205.03	6,187.62	13.87	13.52	69.08	-154.46	166.59	283.42	256.42	27.002	10.496	
6,300.00	6,289.55	6,305.27	6,287.14	14.06	13.76	70.46	-160.49	170.07	284.61	257.16	27.450	10.368	
6,400.00	6,389.55	6,405.52	6,386.65	14.25	14.00	71.83	-166.51	173.55	285.96	258.07	27.898	10.250	
6,500.00	6,489.55	6,505.76	6,486.16	14.44	14.24	73.19	-172.54	177.02	287.48	259.13	28.345	10.142	
6,600.00	6,589.55	6,606.00	6,585.68	14.63	14.49	74.53	-178.57	180.50	289.15	260.36	28.792	10.043	
6,700.00	6,689.55	6,706.25	6,685.19	14.82	14.73	75.86	-184.59	183.98	290.99	261.75	29.239	9.952	
6,800.00	6,789.55	6,793.51	6,784.70	15.01	14.94	77.17	-190.62	187.46	292.97	263.32	29.653	9.880	
6,900.00	6,889.55	6,906.73	6,884.22	15.20	15.22	78.46	-196.64	190.94	295.11	264.98	30.130	9.795	
7,000.00	6,989.55	7,006.98	6,983.73	15.40	15.46	79.73	-202.67	194.42	297.40	266.83	30.574	9.727	
7,100.00	7,089.55	7,107.22	7,083.24	15.59	15.71	80.99	-208.70	197.90	299.83	268.81	31.018	9.666	
7,200.00	7,189.55	7,207.46	7,182.76	15.79	15.96	82.22	-214.72	201.38	302.41	270.95	31.461	9.612	
7,300.00	7,289.55	7,292.29	7,282.27	15.99	16.17	83.43	-220.75	204.86	305.12	273.25	31.866	9.575	
7,400.00	7,389.55	7,407.95	7,381.78	16.18	16.45	84.62	-226.78	208.34	307.96	275.62	32.345	9.521	
7,500.00	7,489.55	7,508.20	7,481.30	16.38	16.70	85.78	-232.80	211.82	310.94	278.15	32.786	9.484	
7,600.00	7,589.55	7,608.44	7,580.81	16.58	16.95	86.93	-238.83	215.30	314.04	280.82	33.226	9.452	
7,700.00	7,689.55	7,691.32	7,680.32	16.78	17.15	88.05	-244.86	218.78	317.27	283.65	33.623	9.436	
7,800.00	7,789.55	7,792.35	7,781.12	16.98	17.40	89.14	-250.85	222.24	320.55	286.49	34.065	9.410	
7,900.00	7,889.55	7,896.57	7,885.21	17.18	17.65	89.92	-255.18	224.74	322.92	288.41	34.508	9.358	
8,000.00	7,989.55	8,000.98	7,989.60	17.38	17.88	90.25	-257.05	225.82	323.96	289.02	34.938	9.273	
8,100.00	8,089.55	8,102.13	8,090.75	17.58	18.07	90.26	-257.13	225.86	324.01	288.67	35.336	9.169	
8,200.00	8,189.55	8,202.13	8,190.75	17.79	18.26	90.26	-257.13	225.86	324.01	288.27	35.731	9.068	
8,300.00	8,289.55	8,302.13	8,290.75	17.99	18.45	90.26	-257.13	225.86	324.01	287.88	36.127	8.968	
8,400.00	8,389.55	8,402.13	8,390.75	18.19	18.64	90.26	-257.13	225.86	324.01	287.48	36.525	8.871	
8,500.00	8,489.55	8,502.13	8,490.75	18.40	18.83	90.26	-257.13	225.86	324.01	287.08	36.923	8.775	
8,600.00	8,589.55	8,602.13	8,590.75	18.60	19.03	90.26	-257.13	225.86	324.01	286.68	37.323	8.681	
8,700.00	8,689.55	8,702.13	8,690.75	18.81	19.22	90.26	-257.13	225.86	324.01	286.28	37.724	8.589	
8,800.00	8,789.55	8,802.13	8,790.75	19.01	19.41	90.26	-257.13	225.86	324.01	285.88	38.126	8.498	
8,900.00	8,889.55	8,902.13	8,890.75	19.22	19.61	90.26	-257.13	225.86	324.01	285.48	38.529	8.409	
9,000.00	8,989.55	9,002.13	8,990.75	19.42	19.81	90.26	-257.13	225.86	324.01	285.07	38.933	8.322	
9,100.00	9,089.55	9,102.13	9,090.75	19.63	20.00	90.26	-257.13	225.86	324.01	284.67	39.338	8.236	
9,200.00	9,189.55	9,202.13	9,190.75	19.84	20.20	90.26	-257.13	225.86	324.01	284.26	39.744	8.152	
9,300.00	9,289.55	9,302.13	9,290.75	20.05	20.40	90.26	-257.13	225.86	324.01	283.85	40.151	8.070	
9,400.00	9,389.55	9,402.13	9,390.75	20.25	20.59	90.26	-257.13	225.86	324.01	283.45	40.559	7.989	
9,500.00	9,489.55	9,502.13	9,490.75	20.46	20.79	90.26	-257.13	225.86	324.01	283.04	40.968	7.909	
9,600.00	9,589.55	9,602.13	9,590.75	20.67	20.99	90.26	-257.13	225.86	324.01	282.63	41.377	7.831	
9,700.00	9,689.55	9,702.13	9,690.75	20.88	21.19	90.26	-257.13	225.86	324.01	282.22	41.788	7.754	
9,800.00	9,789.55	9,802.13	9,790.75	21.09	21.39	90.26	-257.13	225.86	324.01	281.81	42.199	7.678	
9,900.00	9,889.55	9,902.13	9,890.75	21.30	21.59	90.26	-257.13	225.86	324.01	281.39	42.611	7.604	
10,000.00	9,989.55	10,002.13	9,990.75	21.51	21.79	90.26	-257.13	225.86	324.01	280.98	43.023	7.531	
10,100.00	10,089.55	10,102.13	10,090.75	21.72	21.99	90.26	-257.13	225.86	324.01	280.57	43.437	7.459	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #403H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.00	10,189.55	10,202.13	10,190.75	21.93	22.20	90.26	-257.13	225.86	324.01	280.15	43.851	7.389	
10,204.45	10,194.00	10,206.58	10,195.20	21.94	22.20	90.26	-257.13	225.86	324.01	280.14	43.869	7.386	
10,300.00	10,289.55	10,296.36	10,284.84	22.14	22.38	89.66	-253.72	226.36	324.56	280.32	44.244	7.336 SF	
10,400.00	10,389.55	10,383.38	10,369.80	22.35	22.50	86.50	-235.67	229.00	328.42	283.85	44.570	7.369	
10,500.00	10,489.55	10,461.58	10,442.22	22.56	22.58	81.59	-206.68	233.24	338.48	293.68	44.793	7.556	
10,600.00	10,589.55	10,528.79	10,499.93	22.77	22.62	76.15	-172.71	238.21	358.13	313.25	44.880	7.980	
10,700.00	10,689.55	10,585.06	10,544.15	22.98	22.64	71.03	-138.33	243.24	389.61	344.77	44.841	8.689	
10,800.00	10,789.55	10,631.64	10,577.45	23.20	22.66	66.63	-106.13	247.95	433.16	388.42	44.742	9.681	
10,900.00	10,889.55	10,670.15	10,602.49	23.41	22.67	63.00	-77.20	252.18	487.51	442.85	44.656	10.917	
11,000.00	10,989.55	10,700.00	10,620.22	23.62	22.67	60.25	-53.44	255.65	550.77	506.15	44.620	12.344	
11,100.00	11,089.55	10,725.00	10,633.90	23.83	22.67	58.01	-32.74	258.68	621.06	576.41	44.659	13.907	
11,200.00	11,189.55	10,750.00	10,646.46	24.05	22.68	55.83	-11.36	261.81	696.77	651.99	44.778	15.561	
11,300.00	11,289.55	10,775.00	10,657.88	24.26	22.68	53.75	10.65	265.03	776.74	731.79	44.958	17.277	
11,400.00	11,389.55	10,787.21	10,663.03	24.47	22.68	52.76	21.61	266.63	859.95	814.79	45.160	19.042	
11,500.00	11,489.55	10,800.00	10,668.11	24.69	22.68	51.75	33.21	268.33	945.76	900.36	45.404	20.830	
11,600.00	11,589.55	10,814.04	10,673.34	24.90	22.68	50.67	46.11	270.21	1,033.63	987.95	45.681	22.627	
11,700.00	11,689.55	10,825.00	10,677.14	25.11	22.69	49.85	56.28	271.70	1,123.16	1,077.18	45.977	24.429	
11,800.00	11,789.55	10,834.80	10,680.34	25.33	22.69	49.14	65.44	273.04	1,214.03	1,167.74	46.289	26.227	
11,900.00	11,889.55	10,850.00	10,684.94	25.54	22.71	48.06	79.78	275.14	1,306.08	1,259.45	46.622	28.014	
12,000.00	11,989.55	10,850.00	10,684.94	25.76	22.71	48.06	79.78	275.14	1,398.93	1,351.97	46.953	29.794	
12,100.00	12,089.55	10,850.00	10,684.94	25.97	22.71	48.06	79.78	275.14	1,492.70	1,445.41	47.295	31.561	
12,200.00	12,189.55	10,864.64	10,688.92	26.19	22.74	47.05	93.71	277.17	1,586.95	1,539.29	47.657	33.299	
12,274.76	12,264.31	10,875.00	10,691.48	26.35	22.76	46.36	103.65	278.63	1,657.90	1,609.97	47.932	34.589	
12,300.00	12,289.54	10,875.00	10,691.48	26.40	22.76	74.73	103.65	278.63	1,681.85	1,633.82	48.022	35.022	
12,325.00	12,314.46	10,875.00	10,691.48	26.45	22.76	66.49	103.65	278.63	1,705.49	1,657.38	48.112	35.448	
12,350.00	12,339.24	10,875.00	10,691.48	26.50	22.76	59.10	103.65	278.63	1,729.01	1,680.81	48.202	35.870	
12,375.00	12,363.81	10,875.00	10,691.48	26.55	22.76	52.66	103.65	278.63	1,752.34	1,704.05	48.290	36.288	
12,400.00	12,388.12	10,875.00	10,691.48	26.59	22.76	47.15	103.65	278.63	1,775.42	1,727.04	48.378	36.699	
12,425.00	12,412.08	10,875.00	10,691.48	26.64	22.76	42.47	103.65	278.63	1,798.20	1,749.73	48.464	37.104	
12,450.00	12,435.64	10,875.00	10,691.48	26.68	22.76	38.51	103.65	278.63	1,820.63	1,772.08	48.549	37.501	
12,475.00	12,458.73	10,884.95	10,693.73	26.72	22.79	35.32	113.24	280.03	1,842.54	1,793.90	48.638	37.883	
12,500.00	12,481.29	10,887.48	10,694.27	26.76	22.80	32.53	115.69	280.39	1,864.06	1,815.34	48.720	38.261	
12,525.00	12,503.25	10,890.11	10,694.82	26.79	22.80	30.15	118.23	280.76	1,885.08	1,836.28	48.800	38.629	
12,550.00	12,524.56	10,900.00	10,696.75	26.83	22.83	28.27	127.83	282.16	1,905.62	1,856.74	48.882	38.984	
12,575.00	12,545.15	10,900.00	10,696.75	26.86	22.83	26.47	127.83	282.16	1,925.47	1,876.51	48.956	39.330	
12,600.00	12,564.97	10,900.00	10,696.75	26.90	22.83	24.90	127.83	282.16	1,944.71	1,895.68	49.028	39.665	
12,625.00	12,583.97	10,900.00	10,696.75	26.93	22.83	23.53	127.83	282.16	1,963.31	1,914.22	49.097	39.988	
12,650.00	12,602.10	10,900.00	10,696.75	26.96	22.83	22.33	127.83	282.16	1,981.25	1,932.08	49.164	40.298	
12,675.00	12,619.30	10,900.00	10,696.75	26.99	22.83	21.27	127.83	282.16	1,998.48	1,949.25	49.229	40.595	
12,700.00	12,635.52	10,910.56	10,698.59	27.03	22.87	20.55	138.12	283.67	2,014.84	1,965.54	49.297	40.871	
12,725.00	12,650.73	10,913.71	10,699.09	27.06	22.88	19.78	141.19	284.12	2,030.49	1,981.13	49.359	41.137	
12,733.09	12,655.43	10,914.74	10,699.25	27.08	22.88	19.55	142.20	284.26	2,035.38	1,986.00	49.377	41.221	
12,750.00	12,664.97	10,925.00	10,700.73	27.11	22.92	19.45	152.25	285.73	2,045.43	1,996.01	49.423	41.386	
12,775.00	12,678.51	10,925.00	10,700.73	27.16	22.92	19.02	152.25	285.73	2,059.51	2,010.03	49.481	41.622	
12,800.00	12,691.34	10,925.00	10,700.73	27.22	22.92	18.62	152.25	285.73	2,072.86	2,023.32	49.538	41.844	
12,825.00	12,703.41	10,925.00	10,700.73	27.30	22.92	18.26	152.25	285.73	2,085.45	2,035.86	49.593	42.052	
12,850.00	12,714.69	10,925.00	10,700.73	27.37	22.92	17.92	152.25	285.73	2,097.28	2,047.63	49.647	42.244	
12,875.00	12,725.16	10,935.00	10,701.96	27.46	22.95	17.75	162.07	287.17	2,108.19	2,058.49	49.706	42.413	
12,900.00	12,734.78	10,938.97	10,702.39	27.55	22.97	17.52	165.97	287.74	2,118.30	2,068.54	49.760	42.570	
12,925.00	12,743.54	10,950.00	10,703.42	27.64	23.01	17.39	176.84	289.33	2,127.61	2,077.79	49.818	42.707	
12,950.00	12,751.39	10,950.00	10,703.42	27.73	23.01	17.17	176.84	289.33	2,135.91	2,086.05	49.868	42.831	
12,975.00	12,758.33	10,950.00	10,703.42	27.83	23.01	16.99	176.84	289.33	2,143.37	2,093.45	49.918	42.938	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #403H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,000.00	12,764.33	10,950.00	10,703.42	27.93	23.01	16.84	176.84	289.33	2,149.95	2,099.98	49.966	43.028	
13,025.00	12,769.38	10,960.17	10,704.14	28.04	23.05	16.80	186.87	290.80	2,155.53	2,105.51	50.021	43.093	
13,050.00	12,773.46	10,964.62	10,704.39	28.14	23.06	16.74	191.27	291.44	2,160.21	2,110.14	50.071	43.143	
13,075.00	12,776.57	10,975.00	10,704.80	28.25	23.10	16.74	201.53	292.94	2,163.99	2,113.87	50.124	43.173	
13,100.00	12,778.69	10,975.00	10,704.80	28.35	23.10	16.71	201.53	292.94	2,166.74	2,116.57	50.170	43.188	
13,125.00	12,779.81	10,975.00	10,704.80	28.46	23.10	16.71	201.53	292.94	2,168.58	2,118.36	50.215	43.186	
13,143.56	12,780.00	10,981.68	10,704.95	28.54	23.13	16.76	208.14	293.91	2,169.30	2,119.05	50.253	43.167	
13,200.00	12,779.75	10,998.59	10,704.97	28.79	23.20	16.82	224.87	296.34	2,171.32	2,120.95	50.373	43.105	
13,300.00	12,779.31	11,126.43	10,704.41	29.32	23.85	17.23	351.78	311.68	2,175.08	2,124.36	50.713	42.890	
13,400.00	12,778.87	11,255.49	10,703.84	29.94	24.69	17.50	480.46	321.40	2,177.55	2,126.42	51.130	42.588	
13,500.00	12,778.43	11,385.26	10,703.28	30.66	25.70	17.62	610.16	325.32	2,178.68	2,127.06	51.618	42.208	
13,600.00	12,777.99	11,504.90	10,702.80	31.47	26.78	17.63	720.00	324.84	2,178.75	2,126.58	52.173	41.760	
13,700.00	12,777.54	11,604.90	10,702.36	32.36	27.78	17.63	819.99	324.11	2,178.74	2,126.00	52.744	41.308	
13,800.00	12,777.10	11,704.90	10,701.92	33.33	28.86	17.63	919.99	323.38	2,178.74	2,125.37	53.370	40.823	
13,900.00	12,776.66	11,804.90	10,701.49	34.38	30.02	17.63	1,019.99	322.64	2,178.73	2,124.68	54.049	40.310	
14,000.00	12,776.22	11,904.90	10,701.05	35.49	31.25	17.63	1,119.98	321.91	2,178.73	2,123.95	54.778	39.774	
14,100.00	12,775.78	12,004.90	10,700.62	36.66	32.53	17.63	1,219.98	321.18	2,178.72	2,123.17	55.556	39.217	
14,200.00	12,775.34	12,104.90	10,700.18	37.89	33.86	17.63	1,319.97	320.45	2,178.72	2,122.34	56.380	38.644	
14,300.00	12,774.89	12,204.90	10,699.74	39.16	35.25	17.63	1,419.97	319.72	2,178.71	2,121.46	57.248	38.057	
14,400.00	12,774.45	12,304.90	10,699.31	40.48	36.67	17.63	1,519.97	318.99	2,178.71	2,120.55	58.158	37.462	
14,500.00	12,774.01	12,404.90	10,698.87	41.84	38.13	17.63	1,619.96	318.26	2,178.70	2,119.59	59.109	36.859	
14,600.00	12,773.57	12,504.90	10,698.43	43.24	39.62	17.63	1,719.96	317.52	2,178.70	2,118.60	60.098	36.252	
14,700.00	12,773.13	12,604.90	10,698.00	44.67	41.14	17.63	1,819.96	316.79	2,178.69	2,117.57	61.124	35.644	
14,800.00	12,772.68	12,704.90	10,697.56	46.13	42.69	17.63	1,919.95	316.06	2,178.69	2,116.50	62.184	35.036	
14,900.00	12,772.24	12,804.90	10,697.13	47.61	44.26	17.63	2,019.95	315.33	2,178.68	2,115.40	63.277	34.431	
15,000.00	12,771.80	12,904.90	10,696.69	49.13	45.85	17.63	2,119.95	314.60	2,178.68	2,114.27	64.400	33.830	
15,100.00	12,771.36	13,004.90	10,696.25	50.66	47.46	17.63	2,219.94	313.87	2,178.67	2,113.12	65.554	33.235	
15,200.00	12,770.92	13,104.90	10,695.82	52.21	49.08	17.63	2,319.94	313.14	2,178.66	2,111.93	66.735	32.646	
15,300.00	12,770.47	13,204.90	10,695.38	53.79	50.73	17.63	2,419.93	312.40	2,178.66	2,110.72	67.943	32.066	
15,400.00	12,770.03	13,304.90	10,694.94	55.38	52.38	17.63	2,519.93	311.67	2,178.65	2,109.48	69.176	31.494	
15,500.00	12,769.59	13,404.90	10,694.51	56.99	54.05	17.63	2,619.93	310.94	2,178.65	2,108.22	70.433	30.932	
15,600.00	12,769.15	13,504.90	10,694.07	58.61	55.73	17.63	2,719.92	310.21	2,178.64	2,106.93	71.712	30.380	
15,700.00	12,768.71	13,604.90	10,693.64	60.24	57.42	17.63	2,819.92	309.48	2,178.64	2,105.63	73.013	29.839	
15,800.00	12,768.27	13,704.90	10,693.20	61.89	59.12	17.63	2,919.92	308.75	2,178.63	2,104.30	74.334	29.309	
15,900.00	12,767.82	13,804.90	10,692.76	63.55	60.83	17.63	3,019.91	308.02	2,178.63	2,102.95	75.674	28.790	
16,000.00	12,767.38	13,904.90	10,692.33	65.21	62.55	17.63	3,119.91	307.28	2,178.62	2,101.59	77.032	28.282	
16,100.00	12,766.94	13,995.10	10,691.89	66.89	64.10	17.63	3,219.91	306.55	2,178.62	2,100.28	78.336	27.811	
16,200.00	12,766.50	14,104.90	10,691.45	68.58	66.00	17.63	3,319.90	305.82	2,178.61	2,098.81	79.800	27.301	
16,300.00	12,766.06	14,204.90	10,691.02	70.27	67.74	17.63	3,419.90	305.09	2,178.61	2,097.40	81.207	26.828	
16,400.00	12,765.61	14,304.90	10,690.58	71.98	69.48	17.63	3,519.89	304.36	2,178.60	2,095.97	82.629	26.366	
16,500.00	12,765.17	14,404.90	10,690.15	73.69	71.23	17.63	3,619.89	303.63	2,178.60	2,094.53	84.065	25.915	
16,600.00	12,764.73	14,504.90	10,689.71	75.40	72.99	17.63	3,719.89	302.90	2,178.59	2,093.08	85.515	25.476	
16,700.00	12,764.29	14,604.90	10,689.27	77.12	74.74	17.63	3,819.88	302.16	2,178.59	2,091.61	86.977	25.048	
16,800.00	12,763.85	14,704.90	10,688.84	78.85	76.51	17.63	3,919.88	301.43	2,178.58	2,090.13	88.451	24.630	
16,900.00	12,763.40	14,804.90	10,688.40	80.59	78.27	17.63	4,019.88	300.70	2,178.58	2,088.64	89.937	24.223	
17,000.00	12,762.96	14,904.90	10,687.96	82.33	80.04	17.63	4,119.87	299.97	2,178.57	2,087.14	91.434	23.827	
17,100.00	12,762.52	15,004.90	10,687.53	84.07	81.82	17.63	4,219.87	299.24	2,178.57	2,085.62	92.940	23.440	
17,200.00	12,762.08	15,104.90	10,687.09	85.82	83.60	17.63	4,319.87	298.51	2,178.56	2,084.10	94.457	23.064	
17,300.00	12,761.64	15,204.90	10,686.66	87.57	85.38	17.63	4,419.86	297.77	2,178.55	2,082.57	95.984	22.697	
17,400.00	12,761.19	15,304.90	10,686.22	89.33	87.16	17.63	4,519.86	297.04	2,178.55	2,081.03	97.519	22.340	
17,500.00	12,760.75	15,404.90	10,685.78	91.09	88.95	17.63	4,619.85	296.31	2,178.54	2,079.48	99.063	21.992	
17,600.00	12,760.31	15,495.10	10,685.35	92.85	90.56	17.63	4,719.85	295.58	2,178.54	2,078.00	100.535	21.669	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #403H - OH - Plan #1 - IP

Offset Site Error: 0.00 usft

Survey Program: 0-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,670.32	12,760.00	15,565.42	10,685.04	94.09	91.82	17.63	4,790.17	295.07	2,178.54	2,076.90	101.631	21.436	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #404H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	1.20	1.20	0.00	0.00	44.62	30.20	29.80	42.43				
100.00	100.00	101.20	101.20	0.08	0.09	44.62	30.20	29.80	42.43	42.26	.171	247.719	
200.00	200.00	201.20	201.20	0.31	0.31	44.62	30.20	29.80	42.43	41.81	.621	68.343	
300.00	300.00	301.20	301.20	0.53	0.54	44.62	30.20	29.80	42.43	41.36	1.070	39.639	
400.00	400.00	401.20	401.20	0.76	0.76	44.62	30.20	29.80	42.43	40.91	1.520	27.915	
500.00	500.00	501.20	501.20	0.98	0.99	44.62	30.20	29.80	42.43	40.46	1.969	21.543	
600.00	600.00	601.20	601.20	1.21	1.21	44.62	30.20	29.80	42.43	40.01	2.419	17.540	
700.00	700.00	701.20	701.20	1.43	1.44	44.62	30.20	29.80	42.43	39.56	2.868	14.791	
800.00	800.00	801.20	801.20	1.66	1.66	44.62	30.20	29.80	42.43	39.11	3.318	12.787	
900.00	900.00	901.20	901.20	1.88	1.89	44.62	30.20	29.80	42.43	38.66	3.768	11.261	
1,000.00	1,000.00	1,001.20	1,001.20	2.11	2.11	44.62	30.20	29.80	42.43	38.21	4.217	10.061	
1,100.00	1,100.00	1,101.20	1,101.20	2.33	2.33	44.62	30.20	29.80	42.43	37.76	4.667	9.092	
1,200.00	1,200.00	1,201.20	1,201.20	2.56	2.56	44.62	30.20	29.80	42.43	37.31	5.116	8.293	
1,300.00	1,300.00	1,301.20	1,301.20	2.78	2.78	44.62	30.20	29.80	42.43	36.86	5.566	7.623	
1,400.00	1,400.00	1,401.20	1,401.20	3.01	3.01	44.62	30.20	29.80	42.43	36.41	6.015	7.053	
1,500.00	1,500.00	1,501.20	1,501.20	3.23	3.23	44.62	30.20	29.80	42.43	35.96	6.465	6.563	
1,600.00	1,600.00	1,601.20	1,601.20	3.46	3.46	44.62	30.20	29.80	42.43	35.51	6.914	6.136	
1,700.00	1,700.00	1,701.20	1,701.20	3.68	3.68	44.62	30.20	29.80	42.43	35.06	7.364	5.762	
1,800.00	1,800.00	1,801.20	1,801.20	3.91	3.91	44.62	30.20	29.80	42.43	34.61	7.813	5.430	
1,900.00	1,900.00	1,901.20	1,901.20	4.13	4.13	44.62	30.20	29.80	42.43	34.16	8.263	5.135	
2,000.00	2,000.00	2,001.20	2,001.20	4.35	4.36	44.62	30.20	29.80	42.43	33.71	8.712	4.870 CC	
2,100.00	2,099.99	2,101.19	2,101.19	4.55	4.58	-157.06	30.20	29.80	43.63	34.50	9.134	4.777	
2,200.00	2,199.91	2,201.11	2,201.11	4.73	4.81	-158.90	30.20	29.80	47.27	37.74	9.531	4.960	
2,300.00	2,299.69	2,300.89	2,300.89	4.90	5.03	-161.39	30.20	29.80	53.42	43.49	9.933	5.378	
2,400.00	2,399.38	2,400.58	2,400.58	5.09	5.26	-163.75	30.20	29.80	60.91	50.58	10.339	5.892	
2,500.00	2,499.08	2,500.28	2,500.28	5.28	5.48	-165.59	30.20	29.80	68.48	57.74	10.747	6.372	
2,600.00	2,598.77	2,600.03	2,599.97	5.48	5.70	-167.06	30.20	29.80	76.11	64.95	11.160	6.820	
2,700.00	2,698.46	2,700.34	2,699.66	5.68	5.93	-168.26	30.20	29.80	83.77	72.20	11.577	7.237	
2,800.00	2,798.15	2,800.65	2,799.35	5.89	6.15	-169.26	30.20	29.80	91.47	79.47	11.996	7.625	
2,900.00	2,897.84	2,900.96	2,899.04	6.11	6.38	-170.10	30.20	29.80	99.19	86.77	12.419	7.987	
3,000.00	2,997.53	3,001.27	2,998.73	6.33	6.61	-170.83	30.20	29.80	106.93	94.09	12.843	8.326	
3,100.00	3,097.23	3,101.57	3,098.43	6.55	6.83	-171.45	30.20	29.80	114.68	101.41	13.270	8.642	
3,200.00	3,196.92	3,201.88	3,198.12	6.78	7.06	-172.00	30.20	29.80	122.45	108.75	13.699	8.938	
3,300.00	3,296.61	3,302.19	3,297.81	7.01	7.28	-172.48	30.20	29.80	130.22	116.09	14.129	9.216	
3,400.00	3,396.30	3,402.50	3,397.50	7.24	7.51	-172.90	30.20	29.80	138.00	123.44	14.562	9.477	
3,500.00	3,495.99	3,502.81	3,497.19	7.47	7.73	-173.28	30.20	29.80	145.79	130.80	14.995	9.723	
3,600.00	3,595.68	3,603.12	3,596.88	7.71	7.96	-173.63	30.20	29.80	153.59	138.16	15.430	9.954	
3,700.00	3,695.38	3,703.42	3,696.58	7.95	8.18	-173.94	30.20	29.80	161.39	145.52	15.866	10.172	
3,800.00	3,795.07	3,803.73	3,796.27	8.19	8.41	-174.22	30.20	29.80	169.19	152.89	16.304	10.378	
3,900.00	3,894.76	3,904.04	3,895.96	8.43	8.63	-174.47	30.20	29.80	177.00	160.26	16.742	10.572	
4,000.00	3,994.45	3,995.65	3,995.65	8.67	8.84	-174.71	30.20	29.80	184.81	167.65	17.162	10.769	
4,100.00	4,094.14	4,100.35	4,100.34	8.92	9.05	-174.97	29.08	29.10	191.38	173.80	17.585	10.883	
4,200.00	4,193.83	4,205.57	4,205.47	9.17	9.23	-175.31	25.51	26.87	195.22	177.25	17.975	10.861	
4,300.00	4,293.53	4,308.66	4,308.35	9.41	9.41	-175.72	19.82	23.32	196.58	178.21	18.364	10.704	
4,400.00	4,393.22	4,408.65	4,408.09	9.66	9.59	-176.13	13.91	19.62	197.48	178.72	18.759	10.527	
4,500.00	4,492.91	4,508.64	4,507.83	9.91	9.77	-176.53	8.00	15.92	198.40	179.24	19.156	10.357	
4,600.00	4,592.60	4,608.62	4,607.57	10.16	9.96	-176.93	2.08	12.23	199.32	179.76	19.557	10.192	
4,700.00	4,692.29	4,708.61	4,707.32	10.42	10.15	-177.33	-3.83	8.53	200.25	180.29	19.960	10.033	
4,800.00	4,791.99	4,808.60	4,807.06	10.67	10.34	-177.72	-9.75	4.84	201.19	180.83	20.365	9.879	
4,900.00	4,891.68	4,908.58	4,906.80	10.92	10.54	-178.11	-15.66	1.14	202.14	181.37	20.773	9.731	
5,000.00	4,991.37	5,008.57	5,006.54	11.18	10.73	-178.49	-21.58	-2.56	203.10	181.92	21.183	9.588	
5,100.00	5,091.06	5,108.55	5,106.29	11.43	10.93	-178.87	-27.49	-6.25	204.07	182.48	21.595	9.450	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #404H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,190.75	5,208.54	5,206.03	11.69	11.14	-179.25	-33.41	-9.95	205.05	183.04	22.010	9.317	
5,300.00	5,290.44	5,308.53	5,305.77	11.94	11.34	-179.62	-39.32	-13.64	206.04	183.61	22.426	9.188	
5,400.00	5,390.14	5,408.51	5,405.51	12.20	11.55	-179.99	-45.24	-17.34	207.04	184.19	22.844	9.063	
5,490.14	5,480.00	5,501.36	5,495.42	12.43	11.74	179.68	-50.57	-20.67	207.94	184.71	23.228	8.952	
5,500.00	5,489.83	5,508.50	5,505.26	12.46	11.76	179.64	-51.15	-21.04	208.03	184.76	23.264	8.942	
5,600.00	5,589.63	5,608.48	5,605.00	12.70	11.97	179.27	-57.07	-24.73	207.47	183.79	23.684	8.760	
5,700.00	5,689.56	5,708.42	5,704.69	12.93	12.18	178.89	-62.98	-28.43	204.31	180.21	24.103	8.477	
5,790.14	5,779.69	5,801.59	5,794.46	13.11	12.39	19.51	-68.30	-31.75	199.23	174.75	24.477	8.139	
5,800.00	5,789.55	5,808.24	5,804.27	13.13	12.40	19.47	-68.89	-32.12	198.56	174.05	24.510	8.101	
5,900.00	5,889.55	5,908.00	5,903.78	13.31	12.62	19.02	-74.79	-35.80	191.75	166.84	24.910	7.698	
6,000.00	5,989.55	6,007.76	6,003.30	13.50	12.83	18.53	-80.69	-39.49	184.96	159.65	25.312	7.307	
6,100.00	6,089.55	6,107.51	6,102.81	13.68	13.05	18.01	-86.59	-43.18	178.18	152.47	25.716	6.929	
6,200.00	6,189.55	6,207.27	6,202.33	13.87	13.28	17.44	-92.49	-46.87	171.42	145.30	26.122	6.562	
6,300.00	6,289.55	6,307.03	6,301.84	14.06	13.50	16.83	-98.39	-50.55	164.68	138.15	26.531	6.207	
6,400.00	6,389.55	6,406.78	6,401.35	14.25	13.72	16.17	-104.29	-54.24	157.96	131.02	26.942	5.863	
6,500.00	6,489.55	6,506.54	6,500.87	14.44	13.95	15.45	-110.19	-57.93	151.26	123.90	27.355	5.529	
6,600.00	6,589.55	6,606.29	6,600.38	14.63	14.17	14.66	-116.10	-61.62	144.58	116.81	27.771	5.206	
6,700.00	6,689.55	6,706.05	6,699.89	14.82	14.40	13.80	-122.00	-65.30	137.94	109.75	28.189	4.893	
6,800.00	6,789.55	6,805.81	6,799.41	15.01	14.63	12.85	-127.90	-68.99	131.33	102.72	28.611	4.590	
6,900.00	6,889.55	6,905.56	6,898.92	15.20	14.86	11.80	-133.80	-72.68	124.76	95.72	29.035	4.297	
7,000.00	6,989.55	7,005.32	6,998.43	15.40	15.09	10.63	-139.70	-76.37	118.23	88.77	29.463	4.013	
7,100.00	7,089.55	7,105.08	7,097.95	15.59	15.32	9.33	-145.60	-80.05	111.76	81.87	29.895	3.739	
7,200.00	7,189.55	7,204.83	7,197.46	15.79	15.55	7.87	-151.50	-83.74	105.36	75.03	30.331	3.474	
7,300.00	7,289.55	7,304.59	7,296.97	15.99	15.79	6.22	-157.40	-87.43	99.03	68.26	30.773	3.218	
7,400.00	7,389.55	7,404.35	7,396.49	16.18	16.02	4.35	-163.31	-91.12	92.79	61.57	31.222	2.972	
7,500.00	7,489.55	7,504.10	7,496.00	16.38	16.26	2.21	-169.21	-94.80	86.67	55.00	31.678	2.736	
7,600.00	7,589.55	7,603.86	7,595.51	16.58	16.49	-0.25	-175.11	-98.49	80.69	48.55	32.143	2.510	
7,700.00	7,689.55	7,703.62	7,695.03	16.78	16.73	-3.10	-181.01	-102.18	74.88	42.26	32.621	2.295	
7,800.00	7,789.55	7,803.37	7,794.54	16.98	16.96	-6.41	-186.91	-105.87	69.28	36.17	33.113	2.092	
7,900.00	7,889.55	7,903.13	7,894.05	17.18	17.20	-10.30	-192.81	-109.55	63.96	30.34	33.622	1.902	
8,000.00	7,989.55	8,002.88	7,993.57	17.38	17.44	-14.86	-198.71	-113.24	58.98	24.83	34.152	1.727	
8,100.00	8,089.55	8,102.64	8,093.08	17.58	17.68	-20.21	-204.61	-116.93	54.44	19.74	34.703	1.569	
8,200.00	8,189.55	8,202.40	8,192.59	17.79	17.92	-26.47	-210.52	-120.62	50.46	15.19	35.275	1.431 Level 3	
8,300.00	8,289.55	8,302.15	8,292.11	17.99	18.16	-33.70	-216.42	-124.30	47.18	11.33	35.858	1.316 Level 3	
8,400.00	8,389.55	8,401.91	8,391.62	18.19	18.40	-41.84	-222.32	-127.99	44.76	8.32	36.435	1.228 Level 2	
8,500.00	8,489.55	8,501.67	8,491.13	18.40	18.64	-50.72	-228.22	-131.68	43.34	6.35	36.982	1.172 Level 2	
8,578.95	8,568.50	8,580.42	8,569.70	18.56	18.83	-58.00	-232.88	-134.59	42.98	5.61	37.375	1.150 Level 2	
8,600.00	8,589.55	8,601.42	8,590.65	18.60	18.88	-59.95	-234.12	-135.37	43.01	5.54	37.473	1.148 Level 2, ES	
8,700.00	8,689.55	8,701.18	8,690.16	18.81	19.12	-69.09	-240.02	-139.05	43.81	5.91	37.896	1.156 Level 2	
8,800.00	8,789.55	8,800.94	8,789.67	19.01	19.37	-77.69	-245.92	-142.74	45.67	7.41	38.260	1.194 Level 2	
8,900.00	8,889.55	8,901.20	8,889.76	19.22	19.60	-84.38	-250.96	-145.89	47.99	9.39	38.601	1.243 Level 2	
9,000.00	8,989.55	9,001.76	8,990.26	19.42	19.83	-87.83	-253.78	-147.65	49.55	10.58	38.969	1.272 Level 3	
9,100.00	9,089.55	9,102.25	9,090.75	19.63	20.03	-88.59	-254.43	-148.05	49.93	10.57	39.366	1.268 Level 3	
9,200.00	9,189.55	9,202.25	9,190.75	19.84	20.23	-88.59	-254.43	-148.05	49.93	10.16	39.772	1.255 Level 3	
9,300.00	9,289.55	9,302.25	9,290.75	20.05	20.43	-88.59	-254.43	-148.05	49.93	9.75	40.179	1.243 Level 2	
9,400.00	9,389.55	9,402.25	9,390.75	20.25	20.62	-88.59	-254.43	-148.05	49.93	9.35	40.586	1.230 Level 2	
9,500.00	9,489.55	9,502.25	9,490.75	20.46	20.82	-88.59	-254.43	-148.05	49.93	8.94	40.995	1.218 Level 2	
9,600.00	9,589.55	9,602.25	9,590.75	20.67	21.02	-88.59	-254.43	-148.05	49.93	8.53	41.404	1.206 Level 2	
9,700.00	9,689.55	9,702.25	9,690.75	20.88	21.22	-88.59	-254.43	-148.05	49.93	8.12	41.814	1.194 Level 2	
9,800.00	9,789.55	9,802.25	9,790.75	21.09	21.42	-88.59	-254.43	-148.05	49.93	7.71	42.225	1.183 Level 2	
9,900.00	9,889.55	9,902.25	9,890.75	21.30	21.62	-88.59	-254.43	-148.05	49.93	7.30	42.636	1.171 Level 2	
10,000.00	9,989.55	10,002.25	9,990.75	21.51	21.82	-88.59	-254.43	-148.05	49.93	6.88	43.049	1.160 Level 2	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #404H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	10,089.55	10,102.25	10,090.75	21.72	22.02	-88.59	-254.43	-148.05	49.93	6.47	43.462	1.149	Level 2
10,200.00	10,189.55	10,202.25	10,190.75	21.93	22.22	-88.59	-254.43	-148.05	49.93	6.06	43.876	1.138	Level 2
10,203.51	10,193.06	10,205.76	10,194.26	21.94	22.23	-88.59	-254.43	-148.05	49.93	6.04	43.890	1.138	Level 2, SF
10,300.00	10,289.55	10,300.28	10,288.61	22.14	22.41	-84.33	-250.61	-148.96	51.12	6.78	44.340	1.153	Level 2
10,400.00	10,389.55	10,392.51	10,378.38	22.35	22.55	-65.75	-230.63	-153.69	62.17	17.47	44.702	1.391	Level 3
10,500.00	10,489.55	10,474.33	10,453.42	22.56	22.63	-48.12	-199.15	-161.15	92.51	48.04	44.464	2.081	
10,600.00	10,589.55	10,543.53	10,511.80	22.77	22.68	-37.71	-163.12	-169.69	141.13	97.04	44.091	3.201	
10,700.00	10,689.55	10,600.00	10,555.08	22.98	22.71	-32.02	-127.87	-178.04	202.78	158.93	43.851	4.624	
10,800.00	10,789.55	10,650.00	10,589.60	23.20	22.72	-28.43	-92.70	-186.37	273.50	229.68	43.815	6.242	
10,900.00	10,889.55	10,685.15	10,611.51	23.41	22.73	-26.50	-65.97	-192.71	350.57	306.75	43.816	8.001	
11,000.00	10,989.55	10,716.46	10,629.28	23.62	22.74	-25.08	-40.89	-198.65	432.30	388.36	43.938	9.839	
11,100.00	11,089.55	10,742.46	10,642.73	23.83	22.75	-24.08	-19.24	-203.78	517.46	473.34	44.121	11.728	
11,200.00	11,189.55	10,764.28	10,653.07	24.05	22.75	-23.34	-0.54	-208.21	605.22	560.87	44.350	13.647	
11,300.00	11,289.55	10,782.78	10,661.14	24.26	22.75	-22.78	15.66	-212.05	694.98	650.36	44.612	15.578	
11,400.00	11,389.55	10,800.00	10,668.07	24.47	22.75	-22.30	30.99	-215.68	786.29	741.39	44.902	17.511	
11,500.00	11,489.55	10,812.31	10,672.67	24.69	22.75	-21.98	42.10	-218.32	878.84	833.64	45.204	19.442	
11,600.00	11,589.55	10,825.00	10,677.10	24.90	22.76	-21.67	53.67	-221.06	972.39	926.87	45.526	21.359	
11,700.00	11,689.55	10,834.70	10,680.28	25.11	22.76	-21.45	62.59	-223.17	1,066.76	1,020.90	45.856	23.263	
11,800.00	11,789.55	10,850.00	10,684.90	25.33	22.80	-21.12	76.78	-226.53	1,161.85	1,115.65	46.205	25.146	
11,900.00	11,889.55	10,850.00	10,684.90	25.54	22.80	-21.12	76.78	-226.53	1,257.41	1,210.86	46.545	27.015	
12,000.00	11,989.55	10,859.58	10,687.56	25.76	22.83	-20.92	85.73	-228.65	1,353.47	1,306.57	46.903	28.857	
12,100.00	12,089.55	10,866.22	10,689.29	25.97	22.85	-20.79	91.97	-230.13	1,449.95	1,402.68	47.265	30.677	
12,200.00	12,189.55	10,875.00	10,691.45	26.19	22.89	-20.63	100.26	-232.09	1,546.78	1,499.14	47.635	32.471	
12,274.76	12,264.31	10,875.00	10,691.45	26.35	22.89	-20.63	100.26	-232.09	1,619.35	1,571.44	47.909	33.800	
12,300.00	12,289.54	10,875.00	10,691.45	26.40	22.89	13.70	100.26	-232.09	1,643.73	1,595.73	48.001	34.244	
12,325.00	12,314.46	10,875.00	10,691.45	26.45	22.89	11.63	100.26	-232.09	1,667.56	1,619.47	48.090	34.676	
12,350.00	12,339.24	10,875.00	10,691.45	26.50	22.89	10.10	100.26	-232.09	1,691.01	1,642.83	48.178	35.099	
12,375.00	12,363.81	10,875.00	10,691.45	26.55	22.89	8.93	100.26	-232.09	1,714.03	1,665.77	48.265	35.513	
12,400.00	12,388.12	10,885.72	10,693.87	26.59	22.93	8.22	110.42	-234.50	1,736.44	1,688.08	48.357	35.909	
12,425.00	12,412.08	10,888.18	10,694.39	26.64	22.94	7.51	112.75	-235.06	1,758.40	1,709.96	48.441	36.300	
12,450.00	12,435.64	10,900.00	10,696.73	26.68	22.98	7.10	124.03	-237.73	1,779.91	1,731.38	48.530	36.677	
12,475.00	12,458.73	10,900.00	10,696.73	26.72	22.98	6.57	124.03	-237.73	1,800.63	1,752.02	48.608	37.044	
12,500.00	12,481.29	10,900.00	10,696.73	26.76	22.98	6.12	124.03	-237.73	1,820.71	1,772.03	48.684	37.398	
12,525.00	12,503.25	10,900.00	10,696.73	26.79	22.98	5.74	124.03	-237.73	1,840.13	1,791.37	48.758	37.740	
12,550.00	12,524.56	10,900.00	10,696.73	26.83	22.98	5.41	124.03	-237.73	1,858.84	1,810.01	48.829	38.068	
12,575.00	12,545.15	10,900.00	10,696.73	26.86	22.98	5.13	124.03	-237.73	1,876.83	1,827.93	48.898	38.382	
12,600.00	12,564.97	10,909.59	10,698.41	26.90	23.02	5.01	133.22	-239.90	1,893.93	1,844.97	48.969	38.676	
12,625.00	12,583.97	10,913.15	10,698.99	26.93	23.04	4.84	136.63	-240.71	1,910.27	1,861.24	49.034	38.958	
12,650.00	12,602.10	10,925.00	10,700.72	26.96	23.09	4.80	148.04	-243.42	1,925.86	1,876.76	49.100	39.223	
12,675.00	12,619.30	10,925.00	10,700.72	26.99	23.09	4.63	148.04	-243.42	1,940.42	1,891.26	49.158	39.473	
12,700.00	12,635.52	10,925.00	10,700.72	27.03	23.09	4.47	148.04	-243.42	1,954.12	1,904.91	49.213	39.707	
12,725.00	12,650.73	10,925.00	10,700.72	27.06	23.09	4.33	148.04	-243.42	1,966.95	1,917.69	49.266	39.925	
12,733.09	12,655.43	10,925.00	10,700.72	27.08	23.09	4.29	148.04	-243.42	1,970.91	1,921.63	49.281	39.993	
12,750.00	12,664.97	10,925.00	10,700.72	27.11	23.09	4.01	148.04	-243.42	1,978.97	1,929.66	49.317	40.128	
12,775.00	12,678.51	10,936.37	10,702.10	27.16	23.14	3.76	159.02	-246.02	1,990.27	1,940.89	49.373	40.311	
12,800.00	12,691.34	10,950.00	10,703.41	27.22	23.20	3.54	172.22	-249.15	2,001.14	1,951.71	49.429	40.485	
12,825.00	12,703.41	10,950.00	10,703.41	27.30	23.20	3.23	172.22	-249.15	2,011.19	1,961.71	49.478	40.648	
12,850.00	12,714.69	10,950.00	10,703.41	27.37	23.20	2.97	172.22	-249.15	2,020.63	1,971.10	49.527	40.799	
12,875.00	12,725.16	10,950.00	10,703.41	27.46	23.20	2.75	172.22	-249.15	2,029.45	1,979.88	49.575	40.937	
12,900.00	12,734.78	10,950.00	10,703.41	27.55	23.20	2.57	172.22	-249.15	2,037.64	1,988.02	49.622	41.063	
12,925.00	12,743.54	10,962.53	10,704.27	27.64	23.26	2.44	184.39	-252.03	2,044.97	1,995.30	49.673	41.169	
12,950.00	12,751.39	10,975.00	10,704.80	27.73	23.33	2.32	196.51	-254.90	2,051.75	2,002.03	49.723	41.264	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #404H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,975.00	12,758.33	10,975.00	10,704.80	27.83	23.33	2.21	196.51	-254.90	2,057.65	2,007.88	49.768	41.345	
13,000.00	12,764.33	10,975.00	10,704.80	27.93	23.33	2.12	196.51	-254.90	2,062.85	2,013.04	49.814	41.411	
13,025.00	12,769.38	10,975.00	10,704.80	28.04	23.33	2.06	196.51	-254.90	2,067.36	2,017.51	49.859	41.464	
13,050.00	12,773.46	10,991.13	10,705.00	28.14	23.41	1.98	212.20	-258.62	2,071.07	2,021.16	49.908	41.498	
13,075.00	12,776.57	10,991.13	10,705.00	28.25	23.41	1.96	212.20	-258.62	2,073.97	2,024.02	49.953	41.519	
13,100.00	12,778.69	11,009.91	10,704.92	28.35	23.51	1.87	230.49	-262.89	2,076.07	2,026.06	50.003	41.519	
13,125.00	12,779.81	11,033.95	10,704.81	28.46	23.65	1.75	253.94	-268.18	2,077.17	2,027.11	50.055	41.498	
13,143.56	12,780.00	11,051.77	10,704.74	28.54	23.76	1.65	271.35	-271.97	2,077.33	2,027.24	50.093	41.470	
13,200.00	12,779.75	11,106.11	10,704.50	28.79	24.09	1.36	324.59	-282.88	2,077.04	2,026.83	50.212	41.365	
13,300.00	12,779.31	11,203.33	10,704.07	29.32	24.78	0.91	420.30	-299.85	2,076.71	2,026.24	50.465	41.152	
13,400.00	12,778.87	11,301.56	10,703.64	29.94	25.58	0.55	517.55	-313.70	2,076.54	2,025.78	50.759	40.910	
13,500.00	12,778.43	11,400.58	10,703.21	30.66	26.47	0.28	616.00	-324.28	2,076.46	2,025.37	51.095	40.639	
13,600.00	12,777.99	11,500.18	10,702.77	31.47	27.44	0.10	715.33	-331.47	2,076.44	2,024.97	51.472	40.341	
13,700.00	12,777.54	11,600.10	10,702.33	32.36	28.48	0.02	815.18	-335.22	2,076.43	2,024.54	51.888	40.017	
13,800.00	12,777.10	11,700.11	10,701.90	33.33	29.58	0.01	915.18	-336.19	2,076.42	2,024.08	52.343	39.670	
13,900.00	12,776.66	11,800.11	10,701.46	34.38	30.74	0.01	1,015.17	-336.93	2,076.42	2,023.58	52.834	39.301	
14,000.00	12,776.22	11,900.11	10,701.03	35.49	31.97	0.01	1,115.17	-337.67	2,076.41	2,023.05	53.362	38.912	
14,100.00	12,775.78	12,000.11	10,700.59	36.66	33.25	0.01	1,215.17	-338.41	2,076.41	2,022.48	53.925	38.506	
14,200.00	12,775.34	12,100.11	10,700.16	37.89	34.59	0.01	1,315.16	-339.15	2,076.40	2,021.88	54.522	38.084	
14,300.00	12,774.89	12,200.11	10,699.72	39.16	35.97	0.01	1,415.16	-339.89	2,076.39	2,021.24	55.151	37.649	
14,400.00	12,774.45	12,300.11	10,699.28	40.48	37.39	0.01	1,515.16	-340.63	2,076.39	2,020.57	55.812	37.203	
14,500.00	12,774.01	12,400.11	10,698.85	41.84	38.84	0.01	1,615.15	-341.37	2,076.38	2,019.88	56.504	36.747	
14,600.00	12,773.57	12,500.11	10,698.41	43.24	40.33	0.01	1,715.15	-342.11	2,076.37	2,019.15	57.225	36.284	
14,700.00	12,773.13	12,600.11	10,697.98	44.67	41.85	0.01	1,815.15	-342.85	2,076.37	2,018.39	57.975	35.815	
14,800.00	12,772.68	12,700.11	10,697.54	46.13	43.39	0.01	1,915.14	-343.59	2,076.36	2,017.61	58.751	35.342	
14,900.00	12,772.24	12,800.11	10,697.11	47.61	44.96	0.01	2,015.14	-344.33	2,076.36	2,016.80	59.553	34.865	
15,000.00	12,771.80	12,900.11	10,696.67	49.13	46.54	0.01	2,115.13	-345.07	2,076.35	2,015.97	60.381	34.388	
15,100.00	12,771.36	13,000.11	10,696.24	50.66	48.15	0.01	2,215.13	-345.81	2,076.34	2,015.11	61.232	33.910	
15,200.00	12,770.92	13,100.11	10,695.80	52.21	49.77	0.01	2,315.13	-346.55	2,076.34	2,014.23	62.106	33.432	
15,300.00	12,770.47	13,200.11	10,695.36	53.79	51.41	0.01	2,415.12	-347.29	2,076.33	2,013.33	63.002	32.957	
15,400.00	12,770.03	13,300.11	10,694.93	55.38	53.06	0.01	2,515.12	-348.03	2,076.32	2,012.40	63.919	32.484	
15,500.00	12,769.59	13,400.11	10,694.49	56.99	54.73	0.00	2,615.12	-348.77	2,076.32	2,011.46	64.856	32.014	
15,600.00	12,769.15	13,500.11	10,694.06	58.61	56.40	0.00	2,715.11	-349.51	2,076.31	2,010.50	65.812	31.549	
15,700.00	12,768.71	13,600.11	10,693.62	60.24	58.09	0.00	2,815.11	-350.25	2,076.30	2,009.52	66.787	31.089	
15,800.00	12,768.27	13,700.11	10,693.19	61.89	59.79	0.00	2,915.10	-350.99	2,076.30	2,008.52	67.779	30.633	
15,900.00	12,767.82	13,800.11	10,692.75	63.55	61.49	0.00	3,015.10	-351.73	2,076.29	2,007.50	68.788	30.184	
16,000.00	12,767.38	13,900.11	10,692.32	65.21	63.21	0.00	3,115.10	-352.47	2,076.29	2,006.47	69.813	29.741	
16,100.00	12,766.94	14,000.11	10,691.88	66.89	64.93	0.00	3,215.09	-353.21	2,076.28	2,005.43	70.854	29.304	
16,200.00	12,766.50	14,100.11	10,691.44	68.58	66.65	0.00	3,315.09	-353.95	2,076.27	2,004.36	71.909	28.874	
16,300.00	12,766.06	14,200.11	10,691.01	70.27	68.39	0.00	3,415.09	-354.69	2,076.27	2,003.29	72.978	28.451	
16,400.00	12,765.61	14,300.11	10,690.57	71.98	70.13	0.00	3,515.08	-355.43	2,076.26	2,002.20	74.061	28.035	
16,500.00	12,765.17	14,400.11	10,690.14	73.69	71.88	0.00	3,615.08	-356.17	2,076.25	2,001.10	75.156	27.626	
16,600.00	12,764.73	14,500.11	10,689.70	75.40	73.63	0.00	3,715.08	-356.91	2,076.25	1,999.98	76.264	27.224	
16,700.00	12,764.29	14,600.11	10,689.27	77.12	75.38	0.00	3,815.07	-357.65	2,076.24	1,998.86	77.384	26.830	
16,800.00	12,763.85	14,700.11	10,688.83	78.85	77.14	0.00	3,915.07	-358.39	2,076.24	1,997.72	78.515	26.444	
16,900.00	12,763.40	14,800.11	10,688.39	80.59	78.91	0.00	4,015.06	-359.13	2,076.23	1,996.57	79.657	26.065	
17,000.00	12,762.96	14,900.11	10,687.96	82.33	80.67	0.00	4,115.06	-359.87	2,076.22	1,995.41	80.809	25.693	
17,100.00	12,762.52	15,000.11	10,687.52	84.07	82.45	0.00	4,215.06	-360.61	2,076.22	1,994.24	81.972	25.328	
17,200.00	12,762.08	15,100.11	10,687.09	85.82	84.22	0.00	4,315.05	-361.35	2,076.21	1,993.07	83.143	24.971	
17,300.00	12,761.64	15,200.11	10,686.65	87.57	86.00	0.00	4,415.05	-362.09	2,076.20	1,991.88	84.324	24.622	
17,400.00	12,761.19	15,300.11	10,686.22	89.33	87.78	0.00	4,515.05	-362.83	2,076.20	1,990.68	85.514	24.279	
17,500.00	12,760.75	15,400.11	10,685.78	91.09	89.57	0.00	4,615.04	-363.57	2,076.19	1,989.48	86.712	23.944	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #404H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,600.00	12,760.31	15,500.11	10,685.35	92.85	91.35	0.00	4,715.04	-364.31	2,076.18	1,988.27	87.918	23.615	
17,670.32	12,760.00	15,570.43	10,685.04	94.09	92.61	0.00	4,785.36	-364.83	2,076.18	1,987.41	88.770	23.388	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #502H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	1.30	1.30	0.00	0.00	89.52	0.50	60.10	60.10				
100.00	100.00	101.30	101.30	0.08	0.09	89.52	0.50	60.10	60.10	59.93	.171	350.456	
200.00	200.00	201.30	201.30	0.31	0.31	89.52	0.50	60.10	60.10	59.48	.621	96.778	
300.00	300.00	301.30	301.30	0.53	0.54	89.52	0.50	60.10	60.10	59.03	1.071	56.141	
400.00	400.00	401.30	401.30	0.76	0.76	89.52	0.50	60.10	60.10	58.58	1.520	39.538	
500.00	500.00	501.30	501.30	0.98	0.99	89.52	0.50	60.10	60.10	58.13	1.970	30.514	
600.00	600.00	601.30	601.30	1.21	1.21	89.52	0.50	60.10	60.10	57.68	2.419	24.844	
700.00	700.00	701.30	701.30	1.43	1.44	89.52	0.50	60.10	60.10	57.23	2.869	20.951	
800.00	800.00	801.30	801.30	1.66	1.66	89.52	0.50	60.10	60.10	56.78	3.318	18.113	
900.00	900.00	901.30	901.30	1.88	1.89	89.52	0.50	60.10	60.10	56.33	3.768	15.952	
1,000.00	1,000.00	1,001.30	1,001.30	2.11	2.11	89.52	0.50	60.10	60.10	55.88	4.217	14.251	
1,100.00	1,100.00	1,101.30	1,101.30	2.33	2.33	89.52	0.50	60.10	60.10	55.44	4.667	12.879	
1,200.00	1,200.00	1,201.30	1,201.30	2.56	2.56	89.52	0.50	60.10	60.10	54.99	5.116	11.747	
1,300.00	1,300.00	1,301.30	1,301.30	2.78	2.78	89.52	0.50	60.10	60.10	54.54	5.566	10.798	
1,400.00	1,400.00	1,401.30	1,401.30	3.01	3.01	89.52	0.50	60.10	60.10	54.09	6.015	9.991	
1,500.00	1,500.00	1,501.30	1,501.30	3.23	3.23	89.52	0.50	60.10	60.10	53.64	6.465	9.297	
1,600.00	1,600.00	1,601.30	1,601.30	3.46	3.46	89.52	0.50	60.10	60.10	53.19	6.914	8.692	
1,700.00	1,700.00	1,701.30	1,701.30	3.68	3.68	89.52	0.50	60.10	60.10	52.74	7.364	8.162	
1,800.00	1,800.00	1,801.30	1,801.30	3.91	3.91	89.52	0.50	60.10	60.10	52.29	7.814	7.692	
1,900.00	1,900.00	1,901.30	1,901.30	4.13	4.13	89.52	0.50	60.10	60.10	51.84	8.263	7.274	
2,000.00	2,000.00	2,001.30	2,001.30	4.35	4.36	89.52	0.50	60.10	60.10	51.39	8.713	6.898	CC, ES
2,100.00	2,099.99	2,101.29	2,101.29	4.55	4.58	-112.62	0.50	60.10	60.59	51.46	9.134	6.634	
2,200.00	2,199.91	2,201.21	2,201.21	4.73	4.81	-115.94	0.50	60.10	62.21	52.68	9.530	6.528	
2,300.00	2,299.69	2,300.99	2,300.99	4.90	5.03	-121.05	0.50	60.10	65.34	55.41	9.931	6.579	
2,400.00	2,399.38	2,400.68	2,400.68	5.09	5.26	-126.57	0.50	60.10	69.72	59.38	10.339	6.743	
2,500.00	2,499.08	2,500.38	2,500.38	5.28	5.48	-131.41	0.50	60.10	74.67	63.92	10.751	6.945	
2,600.00	2,598.77	2,600.07	2,600.07	5.48	5.70	-135.61	0.50	60.10	80.08	68.92	11.167	7.171	
2,700.00	2,698.46	2,700.24	2,699.76	5.68	5.93	-139.27	0.50	60.10	85.87	74.29	11.588	7.411	
2,800.00	2,798.15	2,800.55	2,799.45	5.89	6.15	-142.46	0.50	60.10	91.97	79.96	12.011	7.657	
2,900.00	2,897.84	2,900.86	2,899.14	6.11	6.38	-145.24	0.50	60.10	98.31	85.88	12.436	7.906	
3,000.00	2,997.53	2,998.83	2,998.83	6.33	6.60	-147.69	0.50	60.10	104.86	92.00	12.858	8.155	
3,100.00	3,097.23	3,100.75	3,100.74	6.55	6.80	-149.44	-0.80	59.85	110.59	97.32	13.261	8.339	
3,200.00	3,196.92	3,202.98	3,202.88	6.78	6.97	-150.16	-4.79	59.07	114.34	100.70	13.637	8.385	
3,300.00	3,296.61	3,302.87	3,302.64	7.01	7.15	-150.43	-9.92	58.07	117.13	103.11	14.019	8.355	
3,400.00	3,396.30	3,402.83	3,402.46	7.24	7.32	-150.69	-15.06	57.08	119.93	105.52	14.407	8.324	
3,500.00	3,495.99	3,502.79	3,502.28	7.47	7.50	-150.94	-20.19	56.08	122.72	107.92	14.800	8.292	
3,600.00	3,595.68	3,602.75	3,602.10	7.71	7.68	-151.17	-25.33	55.08	125.52	110.33	15.197	8.260	
3,700.00	3,695.38	3,702.71	3,701.93	7.95	7.87	-151.40	-30.46	54.08	128.33	112.73	15.598	8.227	
3,800.00	3,795.07	3,802.67	3,801.75	8.19	8.06	-151.61	-35.60	53.08	131.13	115.13	16.003	8.194	
3,900.00	3,894.76	3,902.63	3,901.57	8.43	8.25	-151.82	-40.74	52.08	133.94	117.52	16.412	8.161	
4,000.00	3,994.45	4,002.59	4,001.39	8.67	8.45	-152.02	-45.87	51.09	136.74	119.92	16.824	8.128	
4,100.00	4,094.14	4,102.54	4,101.22	8.92	8.65	-152.21	-51.01	50.09	139.55	122.31	17.239	8.095	
4,200.00	4,193.83	4,202.50	4,201.04	9.17	8.85	-152.39	-56.14	49.09	142.36	124.71	17.657	8.063	
4,300.00	4,293.53	4,302.46	4,300.86	9.41	9.05	-152.57	-61.28	48.09	145.17	127.10	18.077	8.031	
4,400.00	4,393.22	4,402.42	4,400.68	9.66	9.26	-152.74	-66.41	47.09	147.99	129.49	18.500	7.999	
4,500.00	4,492.91	4,502.38	4,500.51	9.91	9.47	-152.90	-71.55	46.10	150.80	131.88	18.925	7.968	
4,600.00	4,592.60	4,602.34	4,600.33	10.16	9.68	-153.05	-76.68	45.10	153.62	134.26	19.352	7.938	
4,700.00	4,692.29	4,702.30	4,700.15	10.42	9.89	-153.21	-81.82	44.10	156.43	136.65	19.781	7.908	
4,800.00	4,791.99	4,802.26	4,799.97	10.67	10.10	-153.35	-86.95	43.10	159.25	139.04	20.212	7.879	
4,900.00	4,891.68	4,902.22	4,899.80	10.92	10.31	-153.49	-92.09	42.10	162.07	141.42	20.644	7.851	
5,000.00	4,991.37	5,002.18	4,999.62	11.18	10.53	-153.63	-97.22	41.10	164.89	143.81	21.078	7.823	
5,100.00	5,091.06	5,102.14	5,099.44	11.43	10.75	-153.76	-102.36	40.11	167.71	146.19	21.514	7.795	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #502H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,190.75	5,202.10	5,199.26	11.69	10.96	-153.88	-107.50	39.11	170.53	148.58	21.951	7.769	
5,300.00	5,290.44	5,302.06	5,299.09	11.94	11.18	-154.01	-112.63	38.11	173.35	150.96	22.390	7.743	
5,400.00	5,390.14	5,402.02	5,398.91	12.20	11.40	-154.13	-117.77	37.11	176.18	153.35	22.829	7.717	
5,490.14	5,480.00	5,507.88	5,488.89	12.43	11.64	-154.23	-122.40	36.21	178.72	155.46	23.260	7.684	
5,500.00	5,489.83	5,501.98	5,498.73	12.46	11.62	-154.24	-122.90	36.11	178.99	155.72	23.270	7.692	
5,600.00	5,589.63	5,601.96	5,598.58	12.70	11.85	-154.15	-128.04	35.11	180.40	156.69	23.712	7.608	
5,700.00	5,689.56	5,701.95	5,698.43	12.93	12.07	-153.67	-133.17	34.12	179.46	155.31	24.154	7.430	
5,790.14	5,779.69	5,807.99	5,788.37	13.11	12.31	48.10	-137.80	33.22	176.63	152.05	24.580	7.186	
5,800.00	5,789.55	5,801.86	5,798.20	13.13	12.29	48.20	-138.31	33.12	176.22	151.63	24.588	7.167	
5,900.00	5,889.55	5,901.72	5,897.92	13.31	12.52	49.25	-143.44	32.12	172.08	147.06	25.015	6.879	
6,000.00	5,989.55	6,001.58	5,997.65	13.50	12.74	50.36	-148.57	31.12	168.00	142.55	25.444	6.603	
6,100.00	6,089.55	6,101.44	6,097.38	13.68	12.97	51.52	-153.70	30.13	163.98	138.10	25.877	6.337	
6,200.00	6,189.55	6,201.31	6,197.10	13.87	13.20	52.74	-158.83	29.13	160.04	133.72	26.313	6.082	
6,300.00	6,289.55	6,301.17	6,296.83	14.06	13.42	54.01	-163.96	28.13	156.17	129.42	26.751	5.838	
6,400.00	6,389.55	6,401.03	6,396.56	14.25	13.65	55.35	-169.09	27.14	152.38	125.19	27.193	5.604	
6,500.00	6,489.55	6,500.90	6,496.28	14.44	13.88	56.76	-174.22	26.14	148.68	121.04	27.638	5.380	
6,600.00	6,589.55	6,600.76	6,596.01	14.63	14.11	58.24	-179.35	25.14	145.07	116.99	28.086	5.165	
6,700.00	6,689.55	6,700.62	6,695.73	14.82	14.34	59.80	-184.48	24.14	141.57	113.03	28.537	4.961	
6,800.00	6,789.55	6,800.49	6,795.46	15.01	14.57	61.43	-189.61	23.15	138.18	109.19	28.991	4.766	
6,900.00	6,889.55	6,900.35	6,895.19	15.20	14.80	63.14	-194.74	22.15	134.90	105.45	29.449	4.581	
7,000.00	6,989.55	7,000.21	6,994.91	15.40	15.03	64.94	-199.87	21.15	131.75	101.84	29.909	4.405	
7,100.00	7,089.55	7,100.07	7,094.64	15.59	15.27	66.82	-205.00	20.15	128.74	98.36	30.372	4.239	
7,200.00	7,189.55	7,200.06	7,194.36	15.79	15.50	68.79	-210.13	19.16	125.87	95.03	30.838	4.082	
7,300.00	7,289.55	7,300.20	7,294.09	15.99	15.73	70.85	-215.26	18.16	123.16	91.85	31.307	3.934	
7,400.00	7,389.55	7,400.34	7,393.82	16.18	15.96	72.99	-220.39	17.16	120.61	88.83	31.778	3.795	
7,500.00	7,489.55	7,499.53	7,493.54	16.38	16.20	75.23	-225.52	16.17	118.24	85.99	32.248	3.667	
7,600.00	7,589.55	7,600.61	7,593.27	16.58	16.43	77.56	-230.65	15.17	116.06	83.33	32.724	3.547	
7,700.00	7,689.55	7,700.75	7,692.99	16.78	16.67	79.97	-235.78	14.17	114.07	80.87	33.199	3.436	
7,800.00	7,789.55	7,800.89	7,792.72	16.98	16.90	82.46	-240.92	13.17	112.30	78.63	33.673	3.335	
7,900.00	7,889.55	7,898.98	7,892.45	17.18	17.13	85.02	-246.05	12.18	110.74	76.60	34.142	3.244	
8,000.00	7,989.55	7,998.84	7,992.17	17.38	17.37	87.65	-251.18	11.18	109.42	74.80	34.614	3.161	
8,100.00	8,089.55	8,098.21	8,091.45	17.58	17.60	89.76	-255.21	10.40	108.54	73.47	35.071	3.095	
8,200.00	8,189.55	8,215.74	8,190.85	17.79	17.84	90.56	-256.72	10.10	108.24	72.72	35.525	3.047	
8,300.00	8,289.55	8,302.38	8,290.85	17.99	18.01	90.56	-256.72	10.10	108.24	72.35	35.895	3.016	
8,400.00	8,389.55	8,402.38	8,390.85	18.19	18.20	90.56	-256.72	10.10	108.24	71.95	36.292	2.983	
8,500.00	8,489.55	8,502.38	8,490.85	18.40	18.39	90.56	-256.72	10.10	108.24	71.55	36.690	2.950	
8,600.00	8,589.55	8,602.38	8,590.85	18.60	18.59	90.56	-256.72	10.10	108.24	71.16	37.089	2.918	
8,700.00	8,689.55	8,702.38	8,690.85	18.81	18.78	90.56	-256.72	10.10	108.24	70.76	37.490	2.887	
8,800.00	8,789.55	8,802.38	8,790.85	19.01	18.98	90.56	-256.72	10.10	108.24	70.35	37.891	2.857	
8,900.00	8,889.55	8,902.38	8,890.85	19.22	19.17	90.56	-256.72	10.10	108.24	69.95	38.294	2.827	
9,000.00	8,989.55	9,002.38	8,990.85	19.42	19.37	90.56	-256.72	10.10	108.24	69.55	38.697	2.797	
9,100.00	9,089.55	9,102.38	9,090.85	19.63	19.57	90.56	-256.72	10.10	108.24	69.14	39.102	2.768	
9,200.00	9,189.55	9,202.38	9,190.85	19.84	19.76	90.56	-256.72	10.10	108.24	68.74	39.507	2.740	
9,300.00	9,289.55	9,302.38	9,290.85	20.05	19.96	90.56	-256.72	10.10	108.24	68.33	39.914	2.712	
9,400.00	9,389.55	9,402.38	9,390.85	20.25	20.16	90.56	-256.72	10.10	108.24	67.92	40.321	2.685	
9,500.00	9,489.55	9,502.38	9,490.85	20.46	20.36	90.56	-256.72	10.10	108.24	67.52	40.729	2.658	
9,600.00	9,589.55	9,602.38	9,590.85	20.67	20.56	90.56	-256.72	10.10	108.24	67.11	41.138	2.631	
9,700.00	9,689.55	9,702.38	9,690.85	20.88	20.76	90.56	-256.72	10.10	108.24	66.70	41.548	2.605	
9,800.00	9,789.55	9,802.38	9,790.85	21.09	20.96	90.56	-256.72	10.10	108.24	66.29	41.959	2.580	
9,900.00	9,889.55	9,902.38	9,890.85	21.30	21.16	90.56	-256.72	10.10	108.24	65.87	42.371	2.555	
10,000.00	9,989.55	10,002.38	9,990.85	21.51	21.36	90.56	-256.72	10.10	108.24	65.46	42.783	2.530	
10,100.00	10,089.55	10,102.38	10,090.85	21.72	21.57	90.56	-256.72	10.10	108.24	65.05	43.196	2.506	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #502H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.00	10,189.55	10,202.38	10,190.85	21.93	21.77	90.56	-256.72	10.10	108.24	64.63	43.610	2.482	
10,300.00	10,289.55	10,302.38	10,290.85	22.14	21.97	90.56	-256.72	10.10	108.24	64.22	44.024	2.459	
10,400.00	10,389.55	10,402.38	10,390.85	22.35	22.18	90.56	-256.72	10.10	108.24	63.81	44.440	2.436	
10,500.00	10,489.55	10,502.38	10,490.85	22.56	22.38	90.56	-256.72	10.10	108.24	63.39	44.855	2.413	
10,600.00	10,589.55	10,602.38	10,590.85	22.77	22.58	90.56	-256.72	10.10	108.24	62.97	45.272	2.391	
10,700.00	10,689.55	10,702.38	10,690.85	22.98	22.79	90.56	-256.72	10.10	108.24	62.56	45.689	2.369	
10,800.00	10,789.55	10,802.38	10,790.85	23.20	22.99	90.56	-256.72	10.10	108.24	62.14	46.107	2.348	
10,900.00	10,889.55	10,902.38	10,890.85	23.41	23.20	90.56	-256.72	10.10	108.24	61.72	46.525	2.327	
11,000.00	10,989.55	11,002.38	10,990.85	23.62	23.41	90.56	-256.72	10.10	108.24	61.30	46.944	2.306	
11,100.00	11,089.55	11,102.38	11,090.85	23.83	23.61	90.56	-256.72	10.10	108.24	60.88	47.363	2.285	
11,200.00	11,189.55	11,197.81	11,190.96	24.05	23.80	89.26	-254.26	10.05	108.19	60.44	47.756	2.266	
11,209.53	11,199.08	11,207.29	11,200.38	24.07	23.82	88.70	-253.20	10.02	108.19	60.40	47.787	2.264	SF
11,300.00	11,289.55	11,294.11	11,285.13	24.26	23.95	79.11	-234.93	9.61	109.87	61.87	48.002	2.289	
11,400.00	11,389.55	11,379.73	11,364.12	24.47	24.04	63.45	-202.20	8.86	122.56	74.51	48.051	2.551	
11,500.00	11,489.55	11,451.91	11,425.29	24.69	24.10	49.19	-164.02	8.00	154.79	106.72	48.068	3.220	
11,600.00	11,589.55	11,511.04	11,470.65	24.90	24.14	39.11	-126.16	7.14	205.68	157.46	48.214	4.266	
11,700.00	11,689.55	11,558.98	11,503.76	25.11	24.18	32.48	-91.53	6.35	269.92	221.45	48.474	5.568	
11,800.00	11,789.55	11,600.00	11,529.22	25.33	24.22	27.86	-59.39	5.62	343.13	294.33	48.799	7.031	
11,900.00	11,889.55	11,629.74	11,545.91	25.54	24.26	25.04	-34.79	5.07	422.40	373.24	49.158	8.593	
12,000.00	11,989.55	11,656.04	11,559.36	25.76	24.29	22.87	-12.19	4.55	505.97	456.43	49.536	10.214	
12,100.00	12,089.55	11,675.00	11,568.28	25.97	24.32	21.47	4.53	4.17	592.66	542.73	49.927	11.870	
12,200.00	12,189.55	11,700.00	11,579.01	26.19	24.36	19.80	27.10	3.66	681.67	631.35	50.318	13.547	
12,274.76	12,264.31	11,708.64	11,582.44	26.35	24.38	19.27	35.03	3.48	749.37	698.75	50.620	14.804	
12,300.00	12,289.54	11,712.60	11,583.96	26.40	24.39	51.11	38.69	3.40	772.26	721.54	50.720	15.226	
12,325.00	12,314.46	11,716.75	11,585.53	26.45	24.40	46.41	42.52	3.31	794.68	743.86	50.818	15.638	
12,350.00	12,339.24	11,725.00	11,588.54	26.50	24.41	42.34	50.20	3.14	816.82	765.91	50.913	16.043	
12,375.00	12,363.81	11,725.00	11,588.54	26.55	24.41	38.90	50.20	3.14	838.55	787.54	51.014	16.438	
12,400.00	12,388.12	11,725.00	11,588.54	26.59	24.41	35.88	50.20	3.14	859.97	808.85	51.113	16.825	
12,425.00	12,412.08	11,735.16	11,592.06	26.64	24.44	33.37	59.73	2.92	880.85	829.65	51.204	17.203	
12,450.00	12,435.64	11,740.14	11,593.72	26.68	24.45	31.17	64.43	2.81	901.32	850.02	51.298	17.570	
12,475.00	12,458.73	11,750.00	11,596.85	26.72	24.47	29.36	73.77	2.60	921.32	869.94	51.386	17.930	
12,500.00	12,481.29	11,750.00	11,596.85	26.76	24.47	27.60	73.77	2.60	940.72	889.24	51.480	18.274	
12,525.00	12,503.25	11,750.00	11,596.85	26.79	24.47	26.03	73.77	2.60	959.65	908.08	51.571	18.608	
12,550.00	12,524.56	11,761.25	11,600.18	26.83	24.50	24.92	84.51	2.36	977.90	926.24	51.652	18.932	
12,575.00	12,545.15	11,766.76	11,601.73	26.86	24.51	23.83	89.81	2.24	995.58	943.85	51.735	19.244	
12,600.00	12,564.97	11,775.00	11,603.91	26.90	24.53	22.94	97.75	2.06	1,012.65	960.83	51.814	19.544	
12,625.00	12,583.97	11,775.00	11,603.91	26.93	24.53	21.94	97.75	2.06	1,029.05	977.16	51.896	19.829	
12,650.00	12,602.10	11,783.74	11,606.09	26.96	24.56	21.28	106.21	1.87	1,044.77	992.80	51.970	20.103	
12,675.00	12,619.30	11,789.52	11,607.44	26.99	24.57	20.63	111.82	1.74	1,059.81	1,007.77	52.043	20.364	
12,700.00	12,635.52	11,800.00	11,609.71	27.03	24.60	20.19	122.05	1.51	1,074.18	1,022.07	52.111	20.613	
12,725.00	12,650.73	11,800.00	11,609.71	27.06	24.60	19.53	122.05	1.51	1,087.76	1,035.58	52.184	20.845	
12,733.09	12,655.43	11,800.00	11,609.71	27.08	24.60	19.33	122.05	1.51	1,092.03	1,039.82	52.206	20.918	
12,750.00	12,664.97	11,800.00	11,609.71	27.11	24.60	18.90	122.05	1.51	1,100.74	1,048.49	52.254	21.065	
12,775.00	12,678.51	11,813.25	11,612.27	27.16	24.64	18.62	135.05	1.21	1,112.93	1,060.61	52.317	21.273	
12,800.00	12,691.34	11,825.00	11,614.23	27.22	24.67	18.32	146.63	0.95	1,124.57	1,072.19	52.380	21.470	
12,825.00	12,703.41	11,825.00	11,614.23	27.30	24.67	17.81	146.63	0.95	1,135.43	1,082.99	52.448	21.649	
12,850.00	12,714.69	11,825.00	11,614.23	27.37	24.67	17.36	146.63	0.95	1,145.72	1,093.21	52.516	21.817	
12,875.00	12,725.16	11,839.07	11,616.21	27.46	24.72	17.18	160.56	0.63	1,155.13	1,102.56	52.576	21.971	
12,900.00	12,734.78	11,850.00	11,617.46	27.55	24.76	16.96	171.41	0.39	1,163.91	1,111.27	52.637	22.112	
12,925.00	12,743.54	11,850.00	11,617.46	27.64	24.76	16.65	171.41	0.39	1,171.89	1,119.19	52.702	22.236	
12,950.00	12,751.39	11,859.63	11,618.36	27.73	24.79	16.47	181.00	0.17	1,179.11	1,126.35	52.762	22.348	
12,975.00	12,758.33	11,866.65	11,618.89	27.83	24.81	16.30	188.00	0.01	1,185.57	1,132.74	52.822	22.444	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #502H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,000.00	12,764.33	11,875.00	11,619.39	27.93	24.84	16.16	196.33	-0.18	1,191.23	1,138.35	52.882	22.526	
13,025.00	12,769.38	11,875.00	11,619.39	28.04	24.84	16.01	196.33	-0.18	1,196.15	1,143.21	52.942	22.593	
13,050.00	12,773.46	11,888.08	11,619.87	28.14	24.89	15.96	209.40	-0.48	1,200.16	1,147.16	52.999	22.645	
13,075.00	12,776.57	11,901.39	11,620.00	28.25	24.94	15.91	222.71	-0.78	1,203.46	1,150.41	53.056	22.683	
13,100.00	12,778.69	11,904.99	11,619.98	28.35	24.96	15.87	226.30	-0.86	1,205.84	1,152.73	53.114	22.703	
13,125.00	12,779.81	11,927.37	11,619.89	28.46	25.05	15.87	248.67	-1.25	1,207.25	1,154.08	53.169	22.706	
13,143.56	12,780.00	11,946.48	11,619.82	28.54	25.13	15.88	265.17	-1.43	1,207.56	1,154.34	53.213	22.693	
13,200.00	12,779.75	12,000.31	11,619.57	28.79	25.39	15.87	321.61	-1.84	1,207.55	1,154.21	53.344	22.637	
13,300.00	12,779.31	12,100.31	11,619.13	29.32	25.96	15.87	421.61	-2.59	1,207.54	1,153.92	53.626	22.518	
13,400.00	12,778.87	12,200.31	11,618.69	29.94	26.65	15.87	521.60	-3.33	1,207.54	1,153.57	53.963	22.377	
13,500.00	12,778.43	12,300.31	11,618.26	30.66	27.45	15.87	621.60	-4.07	1,207.53	1,153.18	54.353	22.216	
13,600.00	12,777.99	12,400.31	11,617.82	31.47	28.35	15.87	721.60	-4.81	1,207.52	1,152.73	54.796	22.037	
13,700.00	12,777.54	12,500.31	11,617.38	32.36	29.33	15.87	821.59	-5.55	1,207.52	1,152.23	55.291	21.839	
13,800.00	12,777.10	12,600.31	11,616.94	33.33	30.40	15.87	921.59	-6.29	1,207.51	1,151.67	55.835	21.626	
13,900.00	12,776.66	12,700.31	11,616.51	34.38	31.54	15.87	1,021.59	-7.03	1,207.50	1,151.08	56.428	21.399	
14,000.00	12,776.22	12,800.31	11,616.07	35.49	32.74	15.87	1,121.58	-7.77	1,207.50	1,150.43	57.067	21.159	
14,100.00	12,775.78	12,900.31	11,615.63	36.66	34.00	15.87	1,221.58	-8.51	1,207.49	1,149.74	57.752	20.908	
14,200.00	12,775.34	13,000.31	11,615.20	37.89	35.32	15.87	1,321.57	-9.25	1,207.48	1,149.00	58.481	20.648	
14,300.00	12,774.89	13,100.31	11,614.76	39.16	36.68	15.87	1,421.57	-9.99	1,207.48	1,148.22	59.251	20.379	
14,400.00	12,774.45	13,200.31	11,614.32	40.48	38.08	15.87	1,521.57	-10.73	1,207.47	1,147.41	60.062	20.104	
14,500.00	12,774.01	13,300.31	11,613.88	41.84	39.52	15.87	1,621.56	-11.48	1,207.46	1,146.55	60.912	19.823	
14,600.00	12,773.57	13,400.31	11,613.45	43.24	40.99	15.87	1,721.56	-12.22	1,207.45	1,145.66	61.799	19.538	
14,700.00	12,773.13	13,500.31	11,613.01	44.67	42.49	15.87	1,821.56	-12.96	1,207.45	1,144.73	62.722	19.251	
14,800.00	12,772.68	13,600.31	11,612.57	46.13	44.02	15.87	1,921.55	-13.70	1,207.44	1,143.76	63.678	18.962	
14,900.00	12,772.24	13,700.31	11,612.14	47.61	45.57	15.87	2,021.55	-14.44	1,207.43	1,142.77	64.667	18.672	
15,000.00	12,771.80	13,800.31	11,611.70	49.13	47.14	15.87	2,121.54	-15.18	1,207.43	1,141.74	65.687	18.381	
15,100.00	12,771.36	13,900.31	11,611.26	50.66	48.74	15.87	2,221.54	-15.92	1,207.42	1,140.68	66.737	18.092	
15,200.00	12,770.92	14,000.31	11,610.82	52.21	50.35	15.87	2,321.54	-16.66	1,207.41	1,139.60	67.814	17.805	
15,300.00	12,770.47	14,100.31	11,610.39	53.79	51.97	15.87	2,421.53	-17.40	1,207.41	1,138.49	68.919	17.519	
15,400.00	12,770.03	14,200.31	11,609.95	55.38	53.61	15.87	2,521.53	-18.14	1,207.40	1,137.35	70.049	17.236	
15,500.00	12,769.59	14,300.31	11,609.51	56.99	55.27	15.87	2,621.53	-18.88	1,207.39	1,136.19	71.204	16.957	
15,600.00	12,769.15	14,400.31	11,609.07	58.61	56.94	15.87	2,721.52	-19.62	1,207.39	1,135.00	72.381	16.681	
15,700.00	12,768.71	14,500.31	11,608.64	60.24	58.61	15.87	2,821.52	-20.37	1,207.38	1,133.80	73.581	16.409	
15,800.00	12,768.27	14,600.31	11,608.20	61.89	60.30	15.87	2,921.51	-21.11	1,207.37	1,132.57	74.802	16.141	
15,900.00	12,767.82	14,700.31	11,607.76	63.55	62.00	15.87	3,021.51	-21.85	1,207.36	1,131.32	76.043	15.877	
16,000.00	12,767.38	14,800.31	11,607.33	65.21	63.70	15.87	3,121.51	-22.59	1,207.36	1,130.05	77.303	15.619	
16,100.00	12,766.94	14,900.31	11,606.89	66.89	65.42	15.86	3,221.50	-23.33	1,207.35	1,128.77	78.581	15.364	
16,200.00	12,766.50	15,000.31	11,606.45	68.58	67.14	15.86	3,321.50	-24.07	1,207.34	1,127.47	79.876	15.115	
16,300.00	12,766.06	15,100.31	11,606.01	70.27	68.86	15.86	3,421.50	-24.81	1,207.34	1,126.15	81.188	14.871	
16,400.00	12,765.61	15,200.31	11,605.58	71.98	70.60	15.86	3,521.49	-25.55	1,207.33	1,124.81	82.515	14.632	
16,500.00	12,765.17	15,300.31	11,605.14	73.69	72.34	15.86	3,621.49	-26.29	1,207.32	1,123.47	83.857	14.397	
16,600.00	12,764.73	15,400.31	11,604.70	75.40	74.08	15.86	3,721.49	-27.03	1,207.32	1,122.10	85.213	14.168	
16,700.00	12,764.29	15,500.31	11,604.26	77.12	75.83	15.86	3,821.48	-27.77	1,207.31	1,120.73	86.583	13.944	
16,800.00	12,763.85	15,600.31	11,603.83	78.85	77.59	15.86	3,921.48	-28.52	1,207.30	1,119.34	87.966	13.725	
16,900.00	12,763.40	15,700.31	11,603.39	80.59	79.35	15.86	4,021.47	-29.26	1,207.29	1,117.93	89.361	13.510	
17,000.00	12,762.96	15,800.31	11,602.95	82.33	81.11	15.86	4,121.47	-30.00	1,207.29	1,116.52	90.768	13.301	
17,100.00	12,762.52	15,900.31	11,602.52	84.07	82.88	15.86	4,221.47	-30.74	1,207.28	1,115.10	92.186	13.096	
17,200.00	12,762.08	16,000.31	11,602.08	85.82	84.65	15.86	4,321.46	-31.48	1,207.27	1,113.66	93.615	12.896	
17,300.00	12,761.64	16,100.31	11,601.64	87.57	86.42	15.86	4,421.46	-32.22	1,207.27	1,112.21	95.053	12.701	
17,400.00	12,761.19	16,200.31	11,601.20	89.33	88.20	15.86	4,521.46	-32.96	1,207.26	1,110.76	96.502	12.510	
17,500.00	12,760.75	16,300.31	11,600.77	91.09	89.98	15.86	4,621.45	-33.70	1,207.25	1,109.29	97.960	12.324	
17,600.00	12,760.31	16,400.31	11,600.33	92.85	91.76	15.86	4,721.45	-34.44	1,207.25	1,107.82	99.427	12.142	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #502H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,670.32	12,760.00	16,470.63	11,600.02	94.09	93.02	15.86	4,791.77	-34.96	1,207.24	1,106.78	100.463	12.017	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #605H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.70	0.70	0.00	0.00	89.62	0.20	30.00	30.00				
100.00	100.00	100.70	100.70	0.08	0.09	89.62	0.20	30.00	30.00	29.83	.170	176.321	
200.00	200.00	200.70	200.70	0.31	0.31	89.62	0.20	30.00	30.00	29.38	.620	48.413	
300.00	300.00	300.70	300.70	0.53	0.54	89.62	0.20	30.00	30.00	28.93	1.069	28.059	
400.00	400.00	400.70	400.70	0.76	0.76	89.62	0.20	30.00	30.00	28.48	1.519	19.754	
500.00	500.00	500.70	500.70	0.98	0.98	89.62	0.20	30.00	30.00	28.03	1.968	15.242	
600.00	600.00	600.70	600.70	1.21	1.21	89.62	0.20	30.00	30.00	27.58	2.418	12.408	
700.00	700.00	700.70	700.70	1.43	1.43	89.62	0.20	30.00	30.00	27.13	2.867	10.463	
800.00	800.00	800.70	800.70	1.66	1.66	89.62	0.20	30.00	30.00	26.68	3.317	9.045	
900.00	900.00	900.70	900.70	1.88	1.88	89.62	0.20	30.00	30.00	26.23	3.766	7.965	
1,000.00	1,000.00	1,000.70	1,000.70	2.11	2.11	89.62	0.20	30.00	30.00	25.78	4.216	7.116	
1,100.00	1,100.00	1,100.70	1,100.70	2.33	2.33	89.62	0.20	30.00	30.00	25.34	4.665	6.430	
1,200.00	1,200.00	1,200.70	1,200.70	2.56	2.56	89.62	0.20	30.00	30.00	24.89	5.115	5.865	
1,300.00	1,300.00	1,300.70	1,300.70	2.78	2.78	89.62	0.20	30.00	30.00	24.44	5.565	5.391	
1,400.00	1,400.00	1,400.70	1,400.70	3.01	3.01	89.62	0.20	30.00	30.00	23.99	6.014	4.988	
1,500.00	1,500.00	1,500.70	1,500.70	3.23	3.23	89.62	0.20	30.00	30.00	23.54	6.464	4.641	
1,600.00	1,600.00	1,600.70	1,600.70	3.46	3.46	89.62	0.20	30.00	30.00	23.09	6.913	4.340	
1,700.00	1,700.00	1,700.70	1,700.70	3.68	3.68	89.62	0.20	30.00	30.00	22.64	7.363	4.075	
1,800.00	1,800.00	1,800.70	1,800.70	3.91	3.91	89.62	0.20	30.00	30.00	22.19	7.812	3.840	
1,900.00	1,900.00	1,900.70	1,900.70	4.13	4.13	89.62	0.20	30.00	30.00	21.74	8.262	3.631	
2,000.00	2,000.00	2,000.70	2,000.70	4.35	4.36	89.62	0.20	30.00	30.00	21.29	8.711	3.444	CC
2,100.00	2,099.99	2,100.69	2,100.69	4.55	4.58	-113.66	0.20	30.00	30.50	21.37	9.132	3.340	
2,200.00	2,199.91	2,200.61	2,200.61	4.73	4.81	-120.03	0.20	30.00	32.28	22.75	9.528	3.388	
2,300.00	2,299.69	2,300.39	2,300.39	4.90	5.03	-129.03	0.20	30.00	36.00	26.07	9.930	3.626	
2,400.00	2,399.38	2,400.08	2,400.08	5.09	5.25	-137.48	0.20	30.00	41.40	31.07	10.337	4.005	
2,500.00	2,499.08	2,500.22	2,499.78	5.28	5.48	-143.88	0.20	30.00	47.49	36.74	10.749	4.418	
2,600.00	2,598.77	2,600.53	2,599.47	5.48	5.70	-148.79	0.20	30.00	54.03	42.87	11.164	4.840	
2,700.00	2,698.46	2,700.84	2,699.16	5.68	5.93	-152.62	0.20	30.00	60.88	49.30	11.582	5.257	
2,800.00	2,798.15	2,801.15	2,798.85	5.89	6.16	-155.66	0.20	30.00	67.95	55.95	12.003	5.661	
2,900.00	2,897.84	2,901.46	2,898.54	6.11	6.38	-158.12	0.20	30.00	75.17	62.75	12.426	6.050	
3,000.00	2,997.53	2,998.23	2,998.23	6.33	6.60	-160.15	0.20	30.00	82.51	69.66	12.843	6.424	
3,100.00	3,097.23	3,100.05	3,100.04	6.55	6.80	-161.53	-1.07	29.67	88.76	75.52	13.243	6.702	
3,200.00	3,196.92	3,202.18	3,202.09	6.78	6.97	-162.06	-4.97	28.63	92.62	79.00	13.615	6.803	
3,300.00	3,296.61	3,302.86	3,302.58	7.01	7.15	-162.05	-10.79	27.10	94.63	80.64	13.993	6.762	
3,400.00	3,396.30	3,402.84	3,402.38	7.24	7.32	-162.00	-16.69	25.54	96.53	82.15	14.379	6.713	
3,500.00	3,495.99	3,502.82	3,502.17	7.47	7.50	-161.96	-22.59	23.98	98.42	83.66	14.769	6.664	
3,600.00	3,595.68	3,602.80	3,601.97	7.71	7.69	-161.91	-28.50	22.42	100.32	85.16	15.163	6.616	
3,700.00	3,695.38	3,702.78	3,701.76	7.95	7.88	-161.87	-34.40	20.86	102.22	86.66	15.561	6.569	
3,800.00	3,795.07	3,802.77	3,801.56	8.19	8.07	-161.83	-40.30	19.30	104.12	88.15	15.964	6.522	
3,900.00	3,894.76	3,902.75	3,901.35	8.43	8.27	-161.79	-46.20	17.74	106.02	89.65	16.370	6.476	
4,000.00	3,994.45	4,002.73	4,001.15	8.67	8.47	-161.76	-52.10	16.18	107.91	91.13	16.779	6.432	
4,100.00	4,094.14	4,102.71	4,100.94	8.92	8.67	-161.72	-58.00	14.62	109.81	92.62	17.191	6.388	
4,200.00	4,193.83	4,202.69	4,200.74	9.17	8.87	-161.69	-63.90	13.06	111.71	94.10	17.606	6.345	
4,300.00	4,293.53	4,302.68	4,300.54	9.41	9.08	-161.65	-69.80	11.50	113.61	95.58	18.023	6.303	
4,400.00	4,393.22	4,402.66	4,400.33	9.66	9.29	-161.62	-75.71	9.94	115.50	97.06	18.444	6.263	
4,500.00	4,492.91	4,502.64	4,500.13	9.91	9.50	-161.59	-81.61	8.39	117.40	98.54	18.866	6.223	
4,600.00	4,592.60	4,602.62	4,599.92	10.16	9.71	-161.56	-87.51	6.83	119.30	100.01	19.291	6.184	
4,700.00	4,692.29	4,702.60	4,699.72	10.42	9.93	-161.53	-93.41	5.27	121.20	101.48	19.717	6.147	
4,800.00	4,791.99	4,802.59	4,799.51	10.67	10.15	-161.50	-99.31	3.71	123.10	102.95	20.146	6.110	
4,900.00	4,891.68	4,902.57	4,899.31	10.92	10.37	-161.47	-105.21	2.15	124.99	104.42	20.576	6.075	
5,000.00	4,991.37	5,002.55	4,999.10	11.18	10.59	-161.45	-111.11	0.59	126.89	105.88	21.009	6.040	
5,100.00	5,091.06	5,102.53	5,098.90	11.43	10.81	-161.42	-117.01	-0.97	128.79	107.35	21.442	6.006	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #605H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,190.75	5,202.51	5,198.70	11.69	11.03	-161.39	-122.92	-2.53	130.69	108.81	21.877	5.974	
5,300.00	5,290.44	5,302.50	5,298.49	11.94	11.25	-161.37	-128.82	-4.09	132.59	110.27	22.314	5.942	
5,400.00	5,390.14	5,402.48	5,398.29	12.20	11.48	-161.35	-134.72	-5.65	134.48	111.73	22.752	5.911	
5,490.14	5,480.00	5,507.40	5,488.24	12.43	11.72	-161.33	-140.04	-7.05	136.20	113.02	23.179	5.876	
5,500.00	5,489.83	5,502.46	5,498.08	12.46	11.71	-161.32	-140.62	-7.21	136.37	113.18	23.191	5.880	
5,600.00	5,589.63	5,602.45	5,597.89	12.70	11.93	-161.09	-146.52	-8.77	136.79	113.15	23.632	5.788	
5,700.00	5,689.56	5,702.42	5,697.67	12.93	12.16	-160.48	-152.42	-10.32	134.73	110.66	24.074	5.597	
5,790.14	5,779.69	5,807.55	5,787.53	13.11	12.40	41.43	-157.74	-11.73	130.79	106.29	24.498	5.339	
5,800.00	5,789.55	5,802.29	5,797.35	13.13	12.39	41.54	-158.32	-11.88	130.25	105.74	24.508	5.315	
5,900.00	5,889.55	5,902.10	5,896.98	13.31	12.62	42.81	-164.21	-13.44	124.83	99.89	24.937	5.006	
6,000.00	5,989.55	6,001.92	5,996.61	13.50	12.85	44.18	-170.10	-14.99	119.47	94.10	25.370	4.709	
6,100.00	6,089.55	6,101.73	6,096.23	13.68	13.08	45.68	-175.99	-16.55	114.19	88.38	25.808	4.424	
6,200.00	6,189.55	6,201.54	6,195.86	13.87	13.32	47.33	-181.88	-18.11	108.99	82.74	26.252	4.152	
6,300.00	6,289.55	6,301.36	6,295.49	14.06	13.55	49.14	-187.77	-19.66	103.89	77.19	26.701	3.891	
6,400.00	6,389.55	6,401.17	6,395.12	14.25	13.78	51.13	-193.66	-21.22	98.91	71.75	27.157	3.642	
6,500.00	6,489.55	6,500.98	6,494.74	14.44	14.02	53.33	-199.56	-22.78	94.06	66.44	27.620	3.405	
6,600.00	6,589.55	6,600.80	6,594.37	14.63	14.25	55.77	-205.45	-24.33	89.36	61.27	28.091	3.181	
6,700.00	6,689.55	6,700.61	6,694.00	14.82	14.49	58.47	-211.34	-25.89	84.84	56.27	28.571	2.969	
6,800.00	6,789.55	6,800.42	6,793.63	15.01	14.73	61.47	-217.23	-27.45	80.53	51.47	29.061	2.771	
6,900.00	6,889.55	6,900.24	6,893.25	15.20	14.96	64.80	-223.12	-29.00	76.47	46.91	29.560	2.587	
7,000.00	6,989.55	7,000.05	6,992.88	15.40	15.20	68.48	-229.01	-30.56	72.69	42.62	30.069	2.417	
7,100.00	7,089.55	7,100.14	7,092.51	15.59	15.44	72.55	-234.90	-32.12	69.24	38.66	30.587	2.264	
7,200.00	7,189.55	7,200.32	7,192.14	15.79	15.68	77.02	-240.79	-33.67	66.18	35.07	31.112	2.127	
7,300.00	7,289.55	7,300.51	7,291.76	15.99	15.92	81.88	-246.69	-35.23	63.56	31.92	31.640	2.009	
7,400.00	7,389.55	7,399.10	7,391.20	16.18	16.15	86.92	-252.35	-36.73	61.51	29.35	32.156	1.913	
7,500.00	7,489.55	7,498.59	7,490.62	16.38	16.38	90.26	-255.93	-37.67	60.47	27.84	32.629	1.853	
7,600.00	7,589.55	7,601.77	7,590.25	16.58	16.59	91.30	-257.02	-37.96	60.19	27.14	33.053	1.821	
7,700.00	7,689.55	7,701.77	7,690.25	16.78	16.78	91.30	-257.02	-37.96	60.19	26.75	33.446	1.800	
7,800.00	7,789.55	7,801.77	7,790.25	16.98	16.98	91.30	-257.02	-37.96	60.19	26.35	33.841	1.779	
7,900.00	7,889.55	7,901.77	7,890.25	17.18	17.17	91.30	-257.02	-37.96	60.19	25.96	34.237	1.758	
8,000.00	7,989.55	8,001.77	7,990.25	17.38	17.37	91.30	-257.02	-37.96	60.19	25.56	34.634	1.738	
8,100.00	8,089.55	8,101.77	8,090.25	17.58	17.56	91.30	-257.02	-37.96	60.19	25.16	35.033	1.718	
8,200.00	8,189.55	8,201.77	8,190.25	17.79	17.76	91.30	-257.02	-37.96	60.19	24.76	35.432	1.699	
8,300.00	8,289.55	8,301.77	8,290.25	17.99	17.95	91.30	-257.02	-37.96	60.19	24.36	35.833	1.680	
8,400.00	8,389.55	8,401.77	8,390.25	18.19	18.15	91.30	-257.02	-37.96	60.19	23.96	36.236	1.661	
8,500.00	8,489.55	8,501.77	8,490.25	18.40	18.35	91.30	-257.02	-37.96	60.19	23.55	36.639	1.643	
8,600.00	8,589.55	8,601.77	8,590.25	18.60	18.55	91.30	-257.02	-37.96	60.19	23.15	37.043	1.625	
8,700.00	8,689.55	8,701.77	8,690.25	18.81	18.75	91.30	-257.02	-37.96	60.19	22.74	37.448	1.607	
8,800.00	8,789.55	8,801.77	8,790.25	19.01	18.95	91.30	-257.02	-37.96	60.19	22.34	37.855	1.590	
8,900.00	8,889.55	8,901.77	8,890.25	19.22	19.15	91.30	-257.02	-37.96	60.19	21.93	38.262	1.573	
9,000.00	8,989.55	9,001.77	8,990.25	19.42	19.35	91.30	-257.02	-37.96	60.19	21.52	38.670	1.557	
9,100.00	9,089.55	9,101.77	9,090.25	19.63	19.55	91.30	-257.02	-37.96	60.19	21.11	39.079	1.540	
9,200.00	9,189.55	9,201.77	9,190.25	19.84	19.75	91.30	-257.02	-37.96	60.19	20.70	39.489	1.524	
9,300.00	9,289.55	9,301.77	9,290.25	20.05	19.96	91.30	-257.02	-37.96	60.19	20.29	39.900	1.509	
9,400.00	9,389.55	9,401.77	9,390.25	20.25	20.16	91.30	-257.02	-37.96	60.19	19.88	40.312	1.493	Level 3
9,500.00	9,489.55	9,501.77	9,490.25	20.46	20.36	91.30	-257.02	-37.96	60.19	19.47	40.724	1.478	Level 3
9,600.00	9,589.55	9,601.77	9,590.25	20.67	20.57	91.30	-257.02	-37.96	60.19	19.06	41.138	1.463	Level 3
9,700.00	9,689.55	9,701.77	9,690.25	20.88	20.77	91.30	-257.02	-37.96	60.19	18.64	41.552	1.449	Level 3
9,800.00	9,789.55	9,801.77	9,790.25	21.09	20.98	91.30	-257.02	-37.96	60.19	18.23	41.966	1.434	Level 3
9,900.00	9,889.55	9,901.77	9,890.25	21.30	21.18	91.30	-257.02	-37.96	60.19	17.81	42.382	1.420	Level 3
10,000.00	9,989.55	10,001.77	9,990.25	21.51	21.39	91.30	-257.02	-37.96	60.19	17.40	42.798	1.406	Level 3
10,100.00	10,089.55	10,101.77	10,090.25	21.72	21.59	91.30	-257.02	-37.96	60.19	16.98	43.215	1.393	Level 3

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #605H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.00	10,189.55	10,201.77	10,190.25	21.93	21.80	91.30	-257.02	-37.96	60.19	16.56	43.632	1.380	Level 3
10,300.00	10,289.55	10,301.77	10,290.25	22.14	22.01	91.30	-257.02	-37.96	60.19	16.14	44.050	1.366	Level 3
10,400.00	10,389.55	10,401.77	10,390.25	22.35	22.21	91.30	-257.02	-37.96	60.19	15.72	44.469	1.354	Level 3
10,500.00	10,489.55	10,501.77	10,490.25	22.56	22.42	91.30	-257.02	-37.96	60.19	15.30	44.888	1.341	Level 3
10,600.00	10,589.55	10,601.77	10,590.25	22.77	22.63	91.30	-257.02	-37.96	60.19	14.88	45.308	1.329	Level 3
10,700.00	10,689.55	10,701.77	10,690.25	22.98	22.84	91.30	-257.02	-37.96	60.19	14.46	45.729	1.316	Level 3
10,800.00	10,789.55	10,801.77	10,790.25	23.20	23.05	91.30	-257.02	-37.96	60.19	14.04	46.150	1.304	Level 3
10,900.00	10,889.55	10,901.77	10,890.25	23.41	23.25	91.30	-257.02	-37.96	60.19	13.62	46.571	1.292	Level 3
11,000.00	10,989.55	11,001.77	10,990.25	23.62	23.46	91.30	-257.02	-37.96	60.19	13.20	46.993	1.281	Level 3
11,100.00	11,089.55	11,101.77	11,090.25	23.83	23.67	91.30	-257.02	-37.96	60.19	12.78	47.416	1.269	Level 3
11,200.00	11,189.55	11,201.77	11,190.25	24.05	23.88	91.30	-257.02	-37.96	60.19	12.35	47.839	1.258	Level 3
11,300.00	11,289.55	11,301.77	11,290.25	24.26	24.09	91.30	-257.02	-37.96	60.19	11.93	48.262	1.247	Level 2
11,400.00	11,389.55	11,401.77	11,390.25	24.47	24.30	91.30	-257.02	-37.96	60.19	11.51	48.686	1.236	Level 2
11,500.00	11,489.55	11,501.77	11,490.25	24.69	24.51	91.30	-257.02	-37.96	60.19	11.08	49.111	1.226	Level 2
11,600.00	11,589.55	11,601.77	11,590.25	24.90	24.72	91.30	-257.02	-37.96	60.19	10.66	49.535	1.215	Level 2
11,700.00	11,689.55	11,701.77	11,690.25	25.11	24.93	91.30	-257.02	-37.96	60.19	10.23	49.961	1.205	Level 2
11,800.00	11,789.55	11,801.77	11,790.25	25.33	25.15	91.30	-257.02	-37.96	60.19	9.81	50.387	1.195	Level 2
11,900.00	11,889.55	11,901.77	11,890.25	25.54	25.36	91.30	-257.02	-37.96	60.19	9.38	50.813	1.185	Level 2
12,000.00	11,989.55	12,001.77	11,990.25	25.76	25.57	91.30	-257.02	-37.96	60.19	8.95	51.239	1.175	Level 2
12,100.00	12,089.55	12,101.76	12,093.62	25.97	25.77	88.09	-253.71	-39.80	58.47	6.83	51.636	1.132	Level 2
12,200.00	12,189.55	12,202.51	12,191.50	26.19	25.94	64.87	-233.55	-51.00	52.08	0.34	51.743	1.007	Level 2
12,211.07	12,200.62	12,212.95	12,201.32	26.21	25.96	60.95	-230.43	-52.73	51.95	0.22	51.731	1.004	Level 2, ES, SF
12,274.76	12,264.31	12,269.65	12,253.10	26.35	26.03	37.05	-210.31	-63.90	58.05	6.26	51.787	1.121	Level 2
12,300.00	12,289.54	12,290.72	12,271.59	26.40	26.06	65.50	-201.49	-68.80	64.10	12.18	51.917	1.235	Level 2
12,325.00	12,314.46	12,311.21	12,289.13	26.45	26.08	58.24	-192.23	-73.94	71.44	19.35	52.085	1.372	Level 3
12,350.00	12,339.24	12,331.37	12,305.93	26.50	26.10	52.35	-182.49	-79.36	79.65	27.38	52.270	1.524	
12,375.00	12,363.81	12,351.22	12,321.99	26.55	26.12	47.59	-172.30	-85.01	88.40	35.94	52.460	1.685	
12,400.00	12,388.12	12,370.78	12,337.33	26.59	26.14	43.73	-161.70	-90.90	97.46	44.82	52.648	1.851	
12,425.00	12,412.08	12,390.06	12,351.97	26.64	26.16	40.60	-150.72	-97.00	106.68	53.85	52.833	2.019	
12,450.00	12,435.64	12,409.11	12,365.90	26.68	26.18	38.02	-139.37	-103.30	115.93	62.92	53.012	2.187	
12,475.00	12,458.73	12,427.92	12,379.15	26.72	26.19	35.90	-127.70	-109.79	125.13	71.94	53.188	2.353	
12,500.00	12,481.29	12,446.52	12,391.72	26.76	26.21	34.13	-115.72	-116.44	134.23	80.87	53.358	2.516	
12,525.00	12,503.25	12,464.83	12,403.58	26.79	26.22	32.68	-103.51	-123.19	143.18	89.65	53.525	2.675	
12,550.00	12,524.56	12,482.82	12,414.79	26.83	26.23	31.60	-91.03	-129.69	151.97	98.28	53.687	2.831	
12,575.00	12,545.15	12,500.00	12,425.11	26.86	26.24	30.88	-78.67	-135.68	160.57	106.72	53.849	2.982	
12,600.00	12,564.97	12,518.33	12,435.69	26.90	26.25	30.44	-65.02	-141.83	168.95	114.96	53.988	3.129	
12,625.00	12,583.97	12,535.82	12,445.34	26.93	26.27	30.24	-51.56	-147.44	177.11	122.98	54.128	3.272	
12,650.00	12,602.10	12,553.09	12,454.45	26.96	26.32	30.24	-37.88	-152.76	185.05	130.78	54.265	3.410	
12,675.00	12,619.30	12,570.15	12,463.01	26.99	26.36	30.41	-24.01	-157.76	192.77	138.37	54.396	3.544	
12,700.00	12,635.52	12,586.97	12,471.02	27.03	26.41	30.72	-9.99	-162.46	200.28	145.76	54.522	3.673	
12,725.00	12,650.73	12,603.53	12,478.49	27.06	26.46	31.14	4.13	-166.84	207.60	152.96	54.643	3.799	
12,733.09	12,655.43	12,608.84	12,480.80	27.08	26.47	31.30	8.72	-168.20	209.94	155.26	54.680	3.839	
12,750.00	12,664.97	12,619.89	12,485.44	27.11	26.50	31.05	18.36	-170.93	214.73	159.97	54.760	3.921	
12,775.00	12,678.51	12,636.16	12,491.93	27.16	26.55	30.69	32.78	-174.76	221.58	166.70	54.877	4.038	
12,800.00	12,691.34	12,652.37	12,497.97	27.22	26.61	30.33	47.39	-178.34	228.12	173.12	54.995	4.148	
12,825.00	12,703.41	12,668.52	12,503.55	27.30	26.66	29.99	62.18	-181.66	234.33	179.21	55.112	4.252	
12,850.00	12,714.69	12,684.62	12,508.68	27.37	26.71	29.67	77.13	-184.72	240.18	184.95	55.228	4.349	
12,875.00	12,725.16	12,700.00	12,513.16	27.46	26.76	29.35	91.59	-187.41	245.67	190.32	55.347	4.439	
12,900.00	12,734.78	12,716.69	12,517.56	27.55	26.82	29.09	107.47	-190.07	250.77	195.32	55.456	4.522	
12,925.00	12,743.54	12,732.66	12,521.32	27.64	26.88	28.84	122.82	-192.36	255.48	199.91	55.567	4.598	
12,950.00	12,751.39	12,750.00	12,524.90	27.73	26.94	28.65	139.65	-194.55	259.78	204.12	55.669	4.667	
12,975.00	12,758.33	12,764.51	12,527.48	27.83	27.00	28.43	153.84	-196.16	263.66	207.88	55.782	4.727	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #605H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,000.00	12,764.33	12,780.40	12,529.87	27.93	27.06	28.27	169.46	-197.68	267.12	211.23	55.885	4.780	
13,025.00	12,769.38	12,796.26	12,531.81	28.04	27.12	28.14	185.15	-198.93	270.14	214.16	55.984	4.825	
13,050.00	12,773.46	12,812.10	12,533.29	28.14	27.18	28.03	200.89	-199.93	272.73	216.65	56.080	4.863	
13,075.00	12,776.57	12,825.00	12,534.16	28.25	27.24	27.94	213.75	-200.55	274.90	218.72	56.179	4.893	
13,100.00	12,778.69	12,843.73	12,534.88	28.35	27.31	27.92	232.45	-201.14	276.58	220.32	56.261	4.916	
13,125.00	12,779.81	12,860.40	12,534.99	28.46	27.38	27.91	249.13	-201.37	277.83	221.48	56.344	4.931	
13,143.56	12,780.00	12,878.96	12,534.91	28.54	27.46	27.92	267.68	-201.51	278.18	221.78	56.397	4.932	
13,200.00	12,779.75	12,935.40	12,534.66	28.79	27.73	27.92	324.12	-201.93	278.17	221.60	56.576	4.917	
13,300.00	12,779.31	13,035.40	12,534.22	29.32	28.28	27.92	424.12	-202.66	278.17	221.22	56.949	4.885	
13,400.00	12,778.87	13,135.40	12,533.78	29.94	28.92	27.92	524.11	-203.40	278.17	220.76	57.401	4.846	
13,500.00	12,778.43	13,235.40	12,533.34	30.66	29.67	27.92	624.11	-204.14	278.16	220.23	57.931	4.802	
13,600.00	12,777.99	13,335.40	12,532.90	31.47	30.51	27.92	724.11	-204.88	278.16	219.62	58.534	4.752	
13,700.00	12,777.54	13,435.40	12,532.46	32.36	31.44	27.92	824.10	-205.61	278.15	218.94	59.217	4.697	
13,800.00	12,777.10	13,535.40	12,532.02	33.33	32.45	27.92	924.10	-206.35	278.15	218.18	59.965	4.639	
13,900.00	12,776.66	13,635.40	12,531.58	34.38	33.52	27.91	1,024.10	-207.09	278.14	217.36	60.781	4.576	
14,000.00	12,776.22	13,735.40	12,531.14	35.49	34.67	27.91	1,124.09	-207.83	278.14	216.47	61.663	4.511	
14,100.00	12,775.78	13,835.40	12,530.70	36.66	35.87	27.91	1,224.09	-208.56	278.13	215.53	62.608	4.442	
14,200.00	12,775.34	13,935.40	12,530.26	37.89	37.13	27.91	1,324.09	-209.30	278.13	214.52	63.612	4.372	
14,300.00	12,774.89	14,035.40	12,529.83	39.16	38.43	27.91	1,424.08	-210.04	278.12	213.45	64.673	4.300	
14,400.00	12,774.45	14,135.40	12,529.39	40.48	39.78	27.91	1,524.08	-210.78	278.12	212.33	65.788	4.228	
14,500.00	12,774.01	14,235.40	12,528.95	41.84	41.16	27.91	1,624.07	-211.51	278.12	211.16	66.954	4.154	
14,600.00	12,773.57	14,335.40	12,528.51	43.24	42.58	27.91	1,724.07	-212.25	278.11	209.94	68.169	4.080	
14,700.00	12,773.13	14,435.40	12,528.07	44.67	44.04	27.91	1,824.07	-212.99	278.11	208.68	69.431	4.006	
14,800.00	12,772.68	14,535.40	12,527.63	46.13	45.52	27.91	1,924.06	-213.73	278.10	207.37	70.736	3.932	
14,900.00	12,772.24	14,635.40	12,527.19	47.61	47.03	27.91	2,024.06	-214.46	278.10	206.01	72.082	3.858	
15,000.00	12,771.80	14,735.40	12,526.75	49.13	48.56	27.91	2,124.06	-215.20	278.09	204.63	73.468	3.785	
15,100.00	12,771.36	14,835.40	12,526.31	50.66	50.11	27.91	2,224.05	-215.94	278.09	203.20	74.890	3.713	
15,200.00	12,770.92	14,935.40	12,525.87	52.21	51.69	27.90	2,324.05	-216.68	278.08	201.74	76.347	3.642	
15,300.00	12,770.47	15,035.40	12,525.43	53.79	53.28	27.90	2,424.04	-217.41	278.08	200.24	77.837	3.573	
15,400.00	12,770.03	15,135.40	12,524.99	55.38	54.89	27.90	2,524.04	-218.15	278.07	198.72	79.358	3.504	
15,500.00	12,769.59	15,235.40	12,524.55	56.99	56.51	27.90	2,624.04	-218.89	278.07	197.16	80.908	3.437	
15,600.00	12,769.15	15,335.40	12,524.11	58.61	58.15	27.90	2,724.03	-219.62	278.07	195.58	82.486	3.371	
15,700.00	12,768.71	15,435.40	12,523.67	60.24	59.79	27.90	2,824.03	-220.36	278.06	193.97	84.090	3.307	
15,800.00	12,768.27	15,535.40	12,523.23	61.89	61.45	27.90	2,924.03	-221.10	278.06	192.34	85.718	3.244	
15,900.00	12,767.82	15,635.40	12,522.79	63.55	63.13	27.90	3,024.02	-221.84	278.05	190.68	87.370	3.182	
16,000.00	12,767.38	15,735.40	12,522.35	65.21	64.81	27.90	3,124.02	-222.57	278.05	189.00	89.043	3.123	
16,100.00	12,766.94	15,835.40	12,521.91	66.89	66.50	27.90	3,224.02	-223.31	278.04	187.31	90.738	3.064	
16,200.00	12,766.50	15,935.40	12,521.47	68.58	68.19	27.90	3,324.01	-224.05	278.04	185.59	92.451	3.007	
16,300.00	12,766.06	16,035.40	12,521.03	70.27	69.90	27.90	3,424.01	-224.79	278.03	183.85	94.183	2.952	
16,400.00	12,765.61	16,135.40	12,520.59	71.98	71.61	27.89	3,524.00	-225.52	278.03	182.10	95.933	2.898	
16,500.00	12,765.17	16,235.40	12,520.15	73.69	73.33	27.89	3,624.00	-226.26	278.02	180.33	97.699	2.846	
16,600.00	12,764.73	16,335.40	12,519.71	75.40	75.06	27.89	3,724.00	-227.00	278.02	178.54	99.481	2.795	
16,700.00	12,764.29	16,435.40	12,519.27	77.12	76.79	27.89	3,823.99	-227.74	278.02	176.74	101.277	2.745	
16,800.00	12,763.85	16,535.40	12,518.83	78.85	78.53	27.89	3,923.99	-228.47	278.01	174.92	103.088	2.697	
16,900.00	12,763.40	16,635.40	12,518.39	80.59	80.27	27.89	4,023.99	-229.21	278.01	173.09	104.912	2.650	
17,000.00	12,762.96	16,735.40	12,517.95	82.33	82.02	27.89	4,123.98	-229.95	278.00	171.25	106.748	2.604	
17,100.00	12,762.52	16,835.40	12,517.51	84.07	83.77	27.89	4,223.98	-230.69	278.00	169.40	108.597	2.560	
17,200.00	12,762.08	16,935.40	12,517.07	85.82	85.52	27.89	4,323.97	-231.42	277.99	167.54	110.457	2.517	
17,300.00	12,761.64	17,035.40	12,516.63	87.57	87.28	27.89	4,423.97	-232.16	277.99	165.66	112.327	2.475	
17,400.00	12,761.19	17,135.40	12,516.19	89.33	89.05	27.89	4,523.97	-232.90	277.98	163.78	114.208	2.434	
17,500.00	12,760.75	17,235.40	12,515.75	91.09	90.81	27.89	4,623.96	-233.64	277.98	161.88	116.099	2.394	
17,600.00	12,760.31	17,335.40	12,515.31	92.85	92.58	27.88	4,723.96	-234.37	277.97	159.98	117.999	2.356	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #605H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,670.32	12,760.00	17,405.72	12,515.00	94.09	93.83	27.88	4,794.28	-234.89	277.97	158.63	119.340	2.329	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #706H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.40	-0.40	0.00	0.00	-90.57	-0.30	-29.90	29.90				
100.00	100.00	100.40	99.60	0.08	0.09	-90.57	-0.30	-29.90	29.90	29.73	.169	176.437	
200.00	200.00	200.40	199.60	0.31	0.31	-90.57	-0.30	-29.90	29.90	29.28	.619	48.306	
300.00	300.00	300.40	299.60	0.53	0.53	-90.57	-0.30	-29.90	29.90	28.83	1.069	27.984	
400.00	400.00	400.40	399.60	0.76	0.76	-90.57	-0.30	-29.90	29.90	28.38	1.518	19.697	
500.00	500.00	500.40	499.60	0.98	0.98	-90.57	-0.30	-29.90	29.90	27.93	1.968	15.197	
600.00	600.00	600.40	599.60	1.21	1.21	-90.57	-0.30	-29.90	29.90	27.48	2.417	12.371	
700.00	700.00	700.40	699.60	1.43	1.43	-90.57	-0.30	-29.90	29.90	27.03	2.867	10.431	
800.00	800.00	800.40	799.60	1.66	1.66	-90.57	-0.30	-29.90	29.90	26.59	3.316	9.017	
900.00	900.00	900.40	899.60	1.88	1.88	-90.57	-0.30	-29.90	29.90	26.14	3.766	7.940	
1,000.00	1,000.00	1,000.40	999.60	2.11	2.11	-90.57	-0.30	-29.90	29.90	25.69	4.215	7.094	
1,100.00	1,100.00	1,100.40	1,099.60	2.33	2.33	-90.57	-0.30	-29.90	29.90	25.24	4.665	6.410	
1,200.00	1,200.00	1,200.40	1,199.60	2.56	2.56	-90.57	-0.30	-29.90	29.90	24.79	5.114	5.847	
1,300.00	1,300.00	1,300.40	1,299.60	2.78	2.78	-90.57	-0.30	-29.90	29.90	24.34	5.564	5.374	
1,400.00	1,400.00	1,400.40	1,399.60	3.01	3.01	-90.57	-0.30	-29.90	29.90	23.89	6.013	4.972	
1,500.00	1,500.00	1,499.60	1,499.60	3.23	3.23	-90.57	-0.30	-29.90	29.90	23.44	6.461	4.628	CC, ES
1,600.00	1,600.00	1,599.15	1,599.14	3.46	3.43	-92.59	-1.39	-30.59	30.63	23.74	6.883	4.450	
1,700.00	1,700.00	1,698.57	1,698.48	3.68	3.60	-98.10	-4.65	-32.67	33.02	25.74	7.281	4.535	
1,800.00	1,800.00	1,797.72	1,797.42	3.91	3.79	-105.59	-10.08	-36.13	37.57	29.89	7.682	4.891	
1,900.00	1,900.00	1,897.08	1,896.41	4.13	3.98	-112.97	-17.24	-40.69	44.31	36.22	8.089	5.478	
2,000.00	2,000.00	2,003.30	1,995.66	4.35	4.20	-118.44	-24.57	-45.36	51.74	43.22	8.517	6.074	
2,100.00	2,099.99	2,103.58	2,095.00	4.55	4.41	37.18	-31.90	-50.03	58.47	49.56	8.910	6.562	
2,200.00	2,199.91	2,203.71	2,194.49	4.73	4.63	35.86	-39.24	-54.71	63.22	53.93	9.281	6.811	
2,300.00	2,299.69	2,303.74	2,294.07	4.90	4.86	36.04	-46.59	-59.39	65.86	56.20	9.663	6.815	
2,400.00	2,399.38	2,403.76	2,393.67	5.09	5.09	36.89	-53.94	-64.07	67.46	57.40	10.056	6.708	
2,500.00	2,499.08	2,503.78	2,493.28	5.28	5.32	37.69	-61.29	-68.75	69.06	58.61	10.457	6.604	
2,600.00	2,598.77	2,603.80	2,592.88	5.48	5.56	38.46	-68.63	-73.43	70.69	59.82	10.867	6.505	
2,700.00	2,698.46	2,703.81	2,692.48	5.68	5.81	39.20	-75.98	-78.12	72.32	61.03	11.284	6.409	
2,800.00	2,798.15	2,796.17	2,792.08	5.89	6.03	39.90	-83.33	-82.80	73.96	62.27	11.691	6.327	
2,900.00	2,897.84	2,903.85	2,891.68	6.11	6.30	40.57	-90.68	-87.48	75.62	63.48	12.138	6.230	
3,000.00	2,997.53	3,003.87	2,991.29	6.33	6.55	41.21	-98.03	-92.16	77.28	64.71	12.574	6.146	
3,100.00	3,097.23	3,103.88	3,090.89	6.55	6.80	41.82	-105.38	-96.84	78.96	65.94	13.016	6.066	
3,200.00	3,196.92	3,203.90	3,190.49	6.78	7.06	42.41	-112.73	-101.53	80.64	67.18	13.462	5.990	
3,300.00	3,296.61	3,303.92	3,290.09	7.01	7.32	42.98	-120.08	-106.21	82.33	68.42	13.914	5.917	
3,400.00	3,396.30	3,403.94	3,389.69	7.24	7.57	43.52	-127.43	-110.89	84.03	69.66	14.369	5.848	
3,500.00	3,495.99	3,503.95	3,489.30	7.47	7.83	44.04	-134.78	-115.57	85.74	70.91	14.829	5.782	
3,600.00	3,595.68	3,603.97	3,588.90	7.71	8.09	44.54	-142.13	-120.25	87.45	72.16	15.292	5.719	
3,700.00	3,695.38	3,703.99	3,688.50	7.95	8.36	45.02	-149.48	-124.94	89.17	73.41	15.758	5.659	
3,800.00	3,795.07	3,804.01	3,788.10	8.19	8.62	45.49	-156.83	-129.62	90.90	74.67	16.228	5.601	
3,900.00	3,894.76	3,904.02	3,887.70	8.43	8.88	45.93	-164.18	-134.30	92.63	75.93	16.701	5.546	
4,000.00	3,994.45	4,004.04	3,987.31	8.67	9.15	46.36	-171.53	-138.98	94.37	77.19	17.176	5.494	
4,100.00	4,094.14	4,104.06	4,086.91	8.92	9.41	46.77	-178.88	-143.66	96.11	78.45	17.655	5.444	
4,200.00	4,193.83	4,204.08	4,186.51	9.17	9.68	47.17	-186.22	-148.35	97.85	79.72	18.135	5.396	
4,300.00	4,293.53	4,304.09	4,286.11	9.41	9.94	47.56	-193.57	-153.03	99.61	80.99	18.618	5.350	
4,400.00	4,393.22	4,404.11	4,385.71	9.66	10.21	47.93	-200.92	-157.71	101.36	82.26	19.103	5.306	
4,500.00	4,492.91	4,504.13	4,485.32	9.91	10.48	48.29	-208.27	-162.39	103.12	83.53	19.590	5.264	
4,600.00	4,592.60	4,595.85	4,584.92	10.16	10.73	48.64	-215.62	-167.08	104.89	84.83	20.059	5.229	
4,700.00	4,692.29	4,695.84	4,684.52	10.42	10.99	48.97	-222.97	-171.76	106.65	86.10	20.549	5.190	
4,800.00	4,791.99	4,795.82	4,784.12	10.67	11.26	49.30	-230.32	-176.44	108.42	87.38	21.041	5.153	
4,900.00	4,891.68	4,904.20	4,883.72	10.92	11.56	49.61	-237.67	-181.12	110.20	88.64	21.556	5.112	
5,000.00	4,991.37	4,995.86	4,983.40	11.18	11.80	49.91	-245.02	-185.81	111.97	89.94	22.031	5.083	
5,100.00	5,091.06	5,098.20	5,085.46	11.43	12.07	50.68	-251.32	-189.82	112.64	90.10	22.546	4.996	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #706H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,190.75	5,200.43	5,187.59	11.69	12.31	52.34	-255.30	-192.35	111.29	88.22	23.075	4.823	
5,300.00	5,290.44	5,302.43	5,289.56	11.94	12.53	55.02	-256.97	-193.42	108.08	84.46	23.622	4.575	
5,400.00	5,390.14	5,402.60	5,389.74	12.20	12.70	58.55	-257.03	-193.46	103.82	79.66	24.166	4.296	
5,490.14	5,480.00	5,507.53	5,479.60	12.43	12.89	61.99	-257.03	-193.46	100.30	75.61	24.691	4.062	
5,500.00	5,489.83	5,502.30	5,489.43	12.46	12.88	62.37	-257.03	-193.46	99.95	75.23	24.718	4.044	
5,600.00	5,589.63	5,602.10	5,589.23	12.70	13.05	65.61	-257.03	-193.46	97.19	71.95	25.240	3.850	
5,700.00	5,689.56	5,702.02	5,689.16	12.93	13.23	67.59	-257.03	-193.46	95.73	70.02	25.707	3.724	
5,790.14	5,779.69	5,807.84	5,779.29	13.11	13.42	-90.83	-257.03	-193.46	95.33	69.23	26.098	3.653	
5,800.00	5,789.55	5,802.02	5,789.15	13.13	13.41	-90.83	-257.03	-193.46	95.33	69.22	26.106	3.652	
5,900.00	5,889.55	5,902.02	5,889.15	13.31	13.59	-90.83	-257.03	-193.46	95.33	68.85	26.474	3.601	
6,000.00	5,989.55	6,002.02	5,989.15	13.50	13.77	-90.83	-257.03	-193.46	95.33	68.48	26.845	3.551	
6,100.00	6,089.55	6,102.02	6,089.15	13.68	13.96	-90.83	-257.03	-193.46	95.33	68.11	27.219	3.502	
6,200.00	6,189.55	6,202.02	6,189.15	13.87	14.14	-90.83	-257.03	-193.46	95.33	67.73	27.595	3.455	
6,300.00	6,289.55	6,302.02	6,289.15	14.06	14.33	-90.83	-257.03	-193.46	95.33	67.36	27.972	3.408	
6,400.00	6,389.55	6,402.02	6,389.15	14.25	14.51	-90.83	-257.03	-193.46	95.33	66.98	28.352	3.362	
6,500.00	6,489.55	6,502.02	6,489.15	14.44	14.70	-90.83	-257.03	-193.46	95.33	66.59	28.734	3.318	
6,600.00	6,589.55	6,602.02	6,589.15	14.63	14.89	-90.83	-257.03	-193.46	95.33	66.21	29.118	3.274	
6,700.00	6,689.55	6,702.02	6,689.15	14.82	15.08	-90.83	-257.03	-193.46	95.33	65.82	29.504	3.231	
6,800.00	6,789.55	6,802.02	6,789.15	15.01	15.27	-90.83	-257.03	-193.46	95.33	65.44	29.892	3.189	
6,900.00	6,889.55	6,902.02	6,889.15	15.20	15.46	-90.83	-257.03	-193.46	95.33	65.05	30.281	3.148	
7,000.00	6,989.55	7,002.02	6,989.15	15.40	15.66	-90.83	-257.03	-193.46	95.33	64.66	30.672	3.108	
7,100.00	7,089.55	7,102.02	7,089.15	15.59	15.85	-90.83	-257.03	-193.46	95.33	64.26	31.064	3.069	
7,200.00	7,189.55	7,202.02	7,189.15	15.79	16.04	-90.83	-257.03	-193.46	95.33	63.87	31.458	3.030	
7,300.00	7,289.55	7,302.02	7,289.15	15.99	16.24	-90.83	-257.03	-193.46	95.33	63.48	31.854	2.993	
7,400.00	7,389.55	7,402.02	7,389.15	16.18	16.43	-90.83	-257.03	-193.46	95.33	63.08	32.251	2.956	
7,500.00	7,489.55	7,502.02	7,489.15	16.38	16.63	-90.83	-257.03	-193.46	95.33	62.68	32.649	2.920	
7,600.00	7,589.55	7,602.02	7,589.15	16.58	16.83	-90.83	-257.03	-193.46	95.33	62.28	33.049	2.884	
7,700.00	7,689.55	7,702.02	7,689.15	16.78	17.03	-90.83	-257.03	-193.46	95.33	61.88	33.450	2.850	
7,800.00	7,789.55	7,802.02	7,789.15	16.98	17.22	-90.83	-257.03	-193.46	95.33	61.48	33.852	2.816	
7,900.00	7,889.55	7,902.02	7,889.15	17.18	17.42	-90.83	-257.03	-193.46	95.33	61.07	34.255	2.783	
8,000.00	7,989.55	8,002.02	7,989.15	17.38	17.62	-90.83	-257.03	-193.46	95.33	60.67	34.659	2.750	
8,100.00	8,089.55	8,102.02	8,089.15	17.58	17.82	-90.83	-257.03	-193.46	95.33	60.26	35.065	2.719	
8,200.00	8,189.55	8,202.02	8,189.15	17.79	18.03	-90.83	-257.03	-193.46	95.33	59.86	35.471	2.687	
8,300.00	8,289.55	8,302.02	8,289.15	17.99	18.23	-90.83	-257.03	-193.46	95.33	59.45	35.879	2.657	
8,400.00	8,389.55	8,402.02	8,389.15	18.19	18.43	-90.83	-257.03	-193.46	95.33	59.04	36.288	2.627	
8,500.00	8,489.55	8,502.02	8,489.15	18.40	18.63	-90.83	-257.03	-193.46	95.33	58.63	36.697	2.598	
8,600.00	8,589.55	8,602.02	8,589.15	18.60	18.83	-90.83	-257.03	-193.46	95.33	58.22	37.108	2.569	
8,700.00	8,689.55	8,702.02	8,689.15	18.81	19.04	-90.83	-257.03	-193.46	95.33	57.81	37.519	2.541	
8,800.00	8,789.55	8,802.02	8,789.15	19.01	19.24	-90.83	-257.03	-193.46	95.33	57.40	37.931	2.513	
8,900.00	8,889.55	8,902.02	8,889.15	19.22	19.45	-90.83	-257.03	-193.46	95.33	56.98	38.344	2.486	
9,000.00	8,989.55	9,002.02	8,989.15	19.42	19.65	-90.83	-257.03	-193.46	95.33	56.57	38.758	2.460	
9,100.00	9,089.55	9,102.02	9,089.15	19.63	19.86	-90.83	-257.03	-193.46	95.33	56.16	39.173	2.434	
9,200.00	9,189.55	9,202.02	9,189.15	19.84	20.06	-90.83	-257.03	-193.46	95.33	55.74	39.588	2.408	
9,300.00	9,289.55	9,302.02	9,289.15	20.05	20.27	-90.83	-257.03	-193.46	95.33	55.32	40.004	2.383	
9,400.00	9,389.55	9,402.02	9,389.15	20.25	20.48	-90.83	-257.03	-193.46	95.33	54.91	40.421	2.358	
9,500.00	9,489.55	9,502.02	9,489.15	20.46	20.68	-90.83	-257.03	-193.46	95.33	54.49	40.839	2.334	
9,600.00	9,589.55	9,602.02	9,589.15	20.67	20.89	-90.83	-257.03	-193.46	95.33	54.07	41.257	2.311	
9,700.00	9,689.55	9,702.02	9,689.15	20.88	21.10	-90.83	-257.03	-193.46	95.33	53.65	41.676	2.287	
9,800.00	9,789.55	9,802.02	9,789.15	21.09	21.31	-90.83	-257.03	-193.46	95.33	53.23	42.096	2.265	
9,900.00	9,889.55	9,902.02	9,889.15	21.30	21.51	-90.83	-257.03	-193.46	95.33	52.81	42.516	2.242	
10,000.00	9,989.55	10,002.02	9,989.15	21.51	21.72	-90.83	-257.03	-193.46	95.33	52.39	42.936	2.220	
10,100.00	10,089.55	10,102.02	10,089.15	21.72	21.93	-90.83	-257.03	-193.46	95.33	51.97	43.358	2.199	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #706H - OH - Plan #1 - IP — Offset Site Error: 0.00 usft

Survey Program: 0-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.00	10,189.55	10,202.02	10,189.15	21.93	22.14	-90.83	-257.03	-193.46	95.33	51.55	43.780	2.177	
10,300.00	10,289.55	10,302.02	10,289.15	22.14	22.35	-90.83	-257.03	-193.46	95.33	51.13	44.202	2.157	
10,400.00	10,389.55	10,402.02	10,389.15	22.35	22.56	-90.83	-257.03	-193.46	95.33	50.70	44.625	2.136	
10,500.00	10,489.55	10,502.02	10,489.15	22.56	22.77	-90.83	-257.03	-193.46	95.33	50.28	45.048	2.116	
10,600.00	10,589.55	10,602.02	10,589.15	22.77	22.98	-90.83	-257.03	-193.46	95.33	49.86	45.472	2.096	
10,700.00	10,689.55	10,702.02	10,689.15	22.98	23.19	-90.83	-257.03	-193.46	95.33	49.43	45.897	2.077	
10,800.00	10,789.55	10,802.02	10,789.15	23.20	23.40	-90.83	-257.03	-193.46	95.33	49.01	46.322	2.058	
10,900.00	10,889.55	10,902.02	10,889.15	23.41	23.62	-90.83	-257.03	-193.46	95.33	48.58	46.747	2.039	
11,000.00	10,989.55	11,002.02	10,989.15	23.62	23.83	-90.83	-257.03	-193.46	95.33	48.16	47.173	2.021	
11,100.00	11,089.55	11,102.02	11,089.15	23.83	24.04	-90.83	-257.03	-193.46	95.33	47.73	47.599	2.003	
11,200.00	11,189.55	11,202.02	11,189.15	24.05	24.25	-90.83	-257.03	-193.46	95.33	47.30	48.026	1.985	
11,300.00	11,289.55	11,302.02	11,289.15	24.26	24.46	-90.83	-257.03	-193.46	95.33	46.88	48.453	1.967	
11,400.00	11,389.55	11,402.02	11,389.15	24.47	24.68	-90.83	-257.03	-193.46	95.33	46.45	48.881	1.950	
11,500.00	11,489.55	11,502.02	11,489.15	24.69	24.89	-90.83	-257.03	-193.46	95.33	46.02	49.308	1.933	
11,600.00	11,589.55	11,602.02	11,589.15	24.90	25.10	-90.83	-257.03	-193.46	95.33	45.59	49.737	1.917	
11,700.00	11,689.55	11,702.02	11,689.15	25.11	25.31	-90.83	-257.03	-193.46	95.33	45.16	50.165	1.900	
11,800.00	11,789.55	11,802.02	11,789.15	25.33	25.53	-90.83	-257.03	-193.46	95.33	44.73	50.594	1.884	
11,900.00	11,889.55	11,902.02	11,889.15	25.54	25.74	-90.83	-257.03	-193.46	95.33	44.31	51.024	1.868	
12,000.00	11,989.55	12,002.02	11,989.15	25.76	25.95	-90.83	-257.03	-193.46	95.33	43.88	51.453	1.853	
12,100.00	12,089.55	12,102.02	12,089.15	25.97	26.17	-90.83	-257.03	-193.46	95.33	43.45	51.884	1.837	
12,100.29	12,089.84	12,102.31	12,089.44	25.97	26.17	-90.83	-257.03	-193.46	95.33	43.44	51.885	1.837	
12,200.00	12,189.55	12,197.74	12,184.83	26.19	26.37	-89.95	-255.58	-194.36	96.32	44.00	52.322	1.841	
12,274.76	12,264.31	12,263.81	12,250.07	26.35	26.50	-85.12	-246.99	-199.71	102.88	50.19	52.688	1.953	
12,300.00	12,289.54	12,285.48	12,271.08	26.40	26.54	-45.45	-242.51	-202.49	106.26	53.45	52.812	2.012	
12,325.00	12,314.46	12,306.77	12,291.47	26.45	26.58	-43.28	-237.33	-205.72	109.57	56.64	52.928	2.070	
12,350.00	12,339.24	12,327.89	12,311.42	26.50	26.62	-41.29	-231.44	-209.39	112.80	59.76	53.039	2.127	
12,375.00	12,363.81	12,348.85	12,330.89	26.55	26.65	-39.44	-224.85	-213.49	115.95	62.80	53.147	2.182	
12,400.00	12,388.12	12,369.67	12,349.87	26.59	26.69	-37.73	-217.59	-218.01	118.97	65.72	53.252	2.234	
12,425.00	12,412.08	12,390.36	12,368.35	26.64	26.72	-36.14	-209.70	-222.92	121.87	68.51	53.355	2.284	
12,450.00	12,435.64	12,410.91	12,386.29	26.68	26.75	-34.66	-201.18	-228.22	124.61	71.15	53.458	2.331	
12,475.00	12,458.73	12,431.35	12,403.68	26.72	26.78	-33.29	-192.08	-233.89	127.18	73.62	53.561	2.375	
12,500.00	12,481.29	12,451.68	12,420.51	26.76	26.81	-32.00	-182.40	-239.91	129.58	75.92	53.667	2.415	
12,525.00	12,503.25	12,471.91	12,436.76	26.79	26.84	-30.80	-172.18	-246.27	131.79	78.02	53.773	2.451	
12,550.00	12,524.56	12,492.04	12,452.42	26.83	26.86	-29.68	-161.43	-252.96	133.80	79.92	53.881	2.483	
12,575.00	12,545.15	12,512.08	12,467.46	26.86	26.89	-28.62	-150.19	-259.96	135.61	81.62	53.992	2.512	
12,600.00	12,564.97	12,532.05	12,481.88	26.90	26.92	-27.63	-138.46	-267.26	137.19	83.09	54.106	2.536	
12,625.00	12,583.97	12,553.59	12,496.80	26.93	26.95	-26.59	-125.21	-275.37	138.47	84.27	54.206	2.555	
12,650.00	12,602.10	12,576.24	12,511.89	26.96	26.98	-25.38	-110.49	-283.64	139.06	84.77	54.297	2.561	
12,675.00	12,619.30	12,598.68	12,526.21	26.99	27.00	-24.01	-95.12	-291.50	138.95	84.56	54.395	2.555	
12,700.00	12,635.52	12,620.87	12,539.73	27.03	27.03	-22.48	-79.17	-298.94	138.18	83.68	54.499	2.535	
12,725.00	12,650.73	12,642.79	12,552.43	27.06	27.06	-20.77	-62.73	-305.94	136.79	82.18	54.612	2.505	
12,733.09	12,655.43	12,649.82	12,556.36	27.08	27.07	-20.17	-57.32	-308.11	136.22	81.57	54.651	2.493	
12,750.00	12,664.97	12,664.45	12,564.31	27.11	27.09	-20.09	-45.85	-312.51	135.04	80.30	54.732	2.467	
12,775.00	12,678.51	12,686.00	12,575.45	27.16	27.13	-19.85	-28.47	-318.67	133.53	78.67	54.857	2.434	
12,800.00	12,691.34	12,707.44	12,585.83	27.22	27.16	-19.52	-10.62	-324.44	132.29	77.30	54.990	2.406	
12,825.00	12,703.41	12,728.80	12,595.46	27.30	27.21	-19.10	7.68	-329.80	131.32	76.19	55.125	2.382	
12,850.00	12,714.69	12,750.07	12,604.32	27.37	27.25	-18.61	26.37	-334.76	130.58	75.32	55.264	2.363	
12,875.00	12,725.16	12,771.27	12,612.40	27.46	27.30	-18.08	45.42	-339.30	130.07	74.67	55.406	2.348	
12,900.00	12,734.78	12,792.39	12,619.72	27.55	27.36	-17.52	64.80	-343.42	129.77	74.22	55.551	2.336	
12,925.00	12,743.54	12,813.45	12,626.24	27.64	27.42	-16.95	84.47	-347.13	129.64	73.94	55.699	2.328	
12,931.50	12,745.67	12,818.91	12,627.81	27.66	27.44	-16.80	89.63	-348.03	129.64	73.90	55.737	2.326	
12,950.00	12,751.39	12,834.44	12,631.99	27.73	27.48	-16.38	104.39	-350.42	129.68	73.83	55.847	2.322	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Offset Design Dominator 25 Fed COM - #706H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,975.00	12,758.33	12,855.37	12,636.94	27.83	27.55	-15.82	124.53	-353.28	129.85	73.86	55.996	2.319	
13,000.00	12,764.33	12,876.26	12,641.09	27.93	27.62	-15.28	144.85	-355.72	130.15	74.01	56.146	2.318	
13,025.00	12,769.38	12,897.09	12,644.46	28.04	27.69	-14.77	165.31	-357.73	130.55	74.26	56.295	2.319	
13,050.00	12,773.46	12,917.88	12,647.03	28.14	27.77	-14.30	185.88	-359.31	131.04	74.60	56.444	2.322	
13,075.00	12,776.57	12,938.63	12,648.81	28.25	27.84	-13.86	206.52	-360.47	131.60	75.01	56.592	2.325	
13,100.00	12,778.69	12,959.34	12,649.79	28.35	27.92	-13.46	227.19	-361.20	132.22	75.48	56.738	2.330	
13,125.00	12,779.81	12,980.62	12,649.99	28.46	28.01	-13.10	248.46	-361.51	132.88	76.01	56.873	2.336	
13,143.56	12,780.00	13,000.83	12,649.91	28.54	28.09	-12.97	267.02	-361.65	133.09	76.17	56.920	2.338	
13,200.00	12,779.75	13,055.62	12,649.66	28.79	28.34	-12.97	323.46	-362.06	133.09	76.03	57.061	2.332	
13,300.00	12,779.31	13,155.62	12,649.23	29.32	28.86	-12.98	423.45	-362.79	133.09	75.74	57.347	2.321	
13,400.00	12,778.87	13,255.62	12,648.79	29.94	29.48	-12.98	523.45	-363.53	133.08	75.40	57.679	2.307	
13,500.00	12,778.43	13,355.62	12,648.35	30.66	30.21	-12.98	623.45	-364.26	133.08	75.02	58.056	2.292	
13,600.00	12,777.99	13,455.62	12,647.92	31.47	31.02	-12.98	723.44	-364.99	133.07	74.59	58.478	2.276	
13,700.00	12,777.54	13,555.62	12,647.48	32.36	31.93	-12.98	823.44	-365.73	133.07	74.12	58.942	2.258	
13,800.00	12,777.10	13,655.62	12,647.04	33.33	32.91	-12.98	923.44	-366.46	133.06	73.61	59.449	2.238	
13,900.00	12,776.66	13,755.62	12,646.61	34.38	33.96	-12.98	1,023.43	-367.19	133.06	73.06	59.998	2.218	
14,000.00	12,776.22	13,855.62	12,646.17	35.49	35.08	-12.98	1,123.43	-367.93	133.05	72.46	60.586	2.196	
14,100.00	12,775.78	13,955.62	12,645.74	36.66	36.26	-12.98	1,223.42	-368.66	133.04	71.83	61.213	2.173	
14,200.00	12,775.34	14,055.62	12,645.30	37.89	37.49	-12.99	1,323.42	-369.39	133.04	71.16	61.879	2.150	
14,300.00	12,774.89	14,155.62	12,644.86	39.16	38.77	-12.99	1,423.42	-370.12	133.03	70.45	62.581	2.126	
14,400.00	12,774.45	14,255.62	12,644.43	40.48	40.10	-12.99	1,523.41	-370.86	133.03	69.71	63.318	2.101	
14,500.00	12,774.01	14,355.62	12,643.99	41.84	41.46	-12.99	1,623.41	-371.59	133.02	68.93	64.090	2.076	
14,600.00	12,773.57	14,455.62	12,643.55	43.24	42.87	-12.99	1,723.41	-372.32	133.02	68.12	64.894	2.050	
14,700.00	12,773.13	14,555.62	12,643.12	44.67	44.30	-12.99	1,823.40	-373.06	133.01	67.28	65.731	2.024	
14,800.00	12,772.68	14,655.62	12,642.68	46.13	45.77	-12.99	1,923.40	-373.79	133.01	66.41	66.598	1.997	
14,900.00	12,772.24	14,755.62	12,642.24	47.61	47.26	-12.99	2,023.40	-374.52	133.00	65.51	67.494	1.971	
15,000.00	12,771.80	14,855.62	12,641.81	49.13	48.78	-12.99	2,123.39	-375.26	133.00	64.58	68.419	1.944	
15,100.00	12,771.36	14,955.62	12,641.37	50.66	50.32	-12.99	2,223.39	-375.99	132.99	63.62	69.371	1.917	
15,200.00	12,770.92	15,055.62	12,640.94	52.21	51.88	-13.00	2,323.38	-376.72	132.99	62.64	70.349	1.890	
15,300.00	12,770.47	15,155.62	12,640.50	53.79	53.46	-13.00	2,423.38	-377.45	132.98	61.63	71.351	1.864	
15,400.00	12,770.03	15,255.62	12,640.06	55.38	55.05	-13.00	2,523.38	-378.19	132.98	60.60	72.378	1.837	
15,500.00	12,769.59	15,355.62	12,639.63	56.99	56.66	-13.00	2,623.37	-378.92	132.97	59.54	73.428	1.811	
15,600.00	12,769.15	15,455.62	12,639.19	58.61	58.29	-13.00	2,723.37	-379.65	132.97	58.47	74.500	1.785	
15,700.00	12,768.71	15,555.62	12,638.75	60.24	59.93	-13.00	2,823.37	-380.39	132.96	57.37	75.592	1.759	
15,800.00	12,768.27	15,655.62	12,638.32	61.89	61.58	-13.00	2,923.36	-381.12	132.96	56.25	76.705	1.733	
15,900.00	12,767.82	15,755.62	12,637.88	63.55	63.24	-13.00	3,023.36	-381.85	132.95	55.11	77.837	1.708	
16,000.00	12,767.38	15,855.62	12,637.45	65.21	64.91	-13.00	3,123.36	-382.59	132.95	53.96	78.988	1.683	
16,100.00	12,766.94	15,955.62	12,637.01	66.89	66.59	-13.00	3,223.35	-383.32	132.94	52.79	80.156	1.659	
16,200.00	12,766.50	16,055.62	12,636.57	68.58	68.28	-13.01	3,323.35	-384.05	132.94	51.60	81.342	1.634	
16,300.00	12,766.06	16,155.62	12,636.14	70.27	69.98	-13.01	3,423.34	-384.78	132.93	50.39	82.543	1.610	
16,400.00	12,765.61	16,255.62	12,635.70	71.98	71.68	-13.01	3,523.34	-385.52	132.93	49.17	83.760	1.587	
16,500.00	12,765.17	16,355.62	12,635.26	73.69	73.40	-13.01	3,623.34	-386.25	132.92	47.93	84.991	1.564	
16,600.00	12,764.73	16,455.62	12,634.83	75.40	75.12	-13.01	3,723.33	-386.98	132.92	46.68	86.237	1.541	
16,700.00	12,764.29	16,555.62	12,634.39	77.12	76.84	-13.01	3,823.33	-387.72	132.91	45.41	87.497	1.519	
16,800.00	12,763.85	16,655.62	12,633.95	78.85	78.57	-13.01	3,923.33	-388.45	132.91	44.14	88.769	1.497	Level 3
16,900.00	12,763.40	16,755.62	12,633.52	80.59	80.31	-13.01	4,023.32	-389.18	132.90	42.85	90.054	1.476	Level 3
17,000.00	12,762.96	16,855.62	12,633.08	82.33	82.05	-13.01	4,123.32	-389.92	132.90	41.54	91.351	1.455	Level 3
17,100.00	12,762.52	16,955.62	12,632.65	84.07	83.80	-13.02	4,223.32	-390.65	132.89	40.23	92.660	1.434	Level 3
17,200.00	12,762.08	17,055.62	12,632.21	85.82	85.55	-13.02	4,323.31	-391.38	132.89	38.91	93.979	1.414	Level 3
17,300.00	12,761.64	17,155.62	12,631.77	87.57	87.30	-13.02	4,423.31	-392.12	132.88	37.57	95.309	1.394	Level 3
17,400.00	12,761.19	17,255.62	12,631.34	89.33	89.06	-13.02	4,523.30	-392.85	132.87	36.23	96.649	1.375	Level 3
17,500.00	12,760.75	17,355.62	12,630.90	91.09	90.82	-13.02	4,623.30	-393.58	132.87	34.87	97.998	1.356	Level 3

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

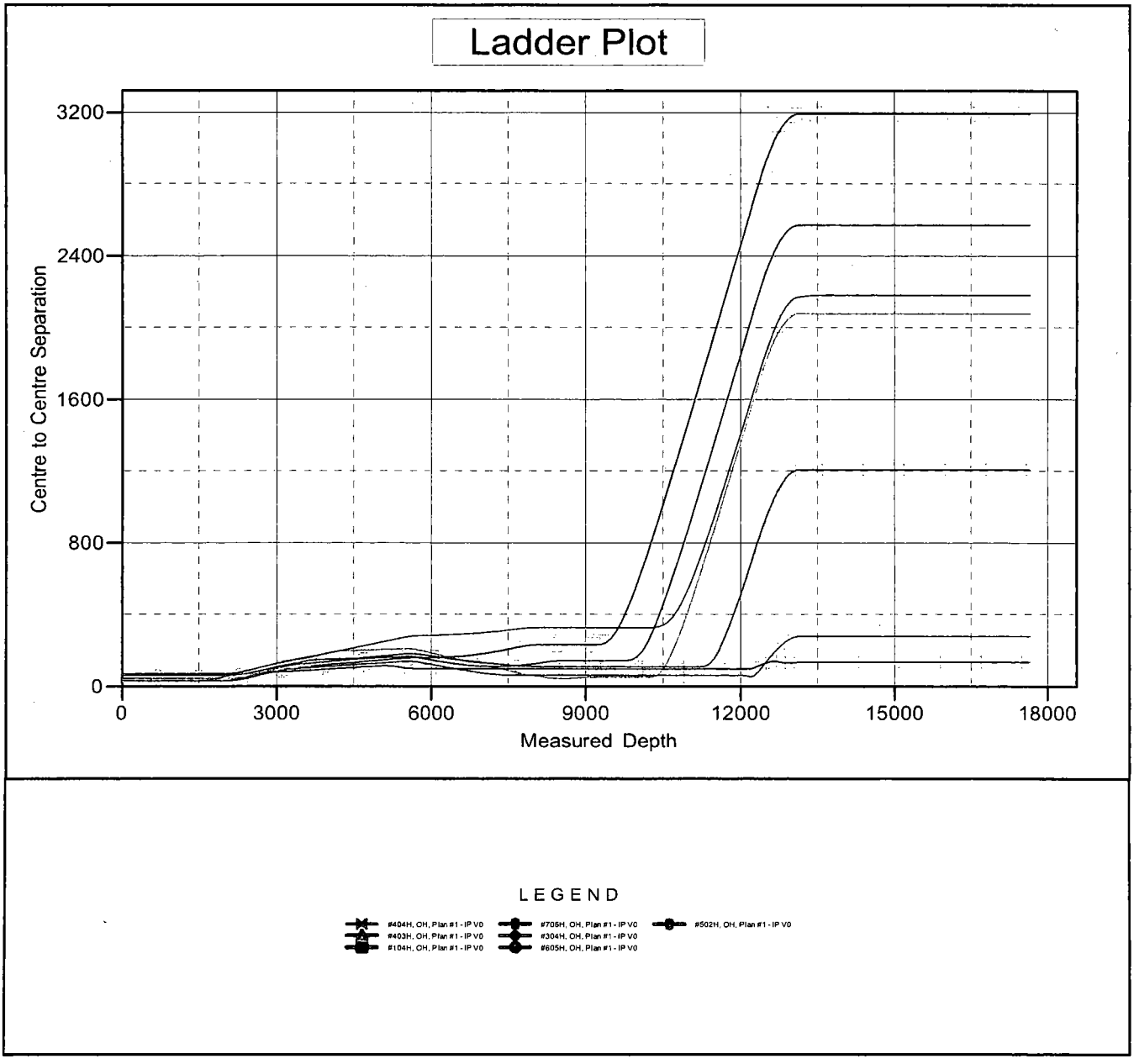
Offset Design Dominator 25 Fed COM - #706H - OH - Plan #1 - IP — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,600.00	12,760.31	17,455.62	12,630.46	92.85	92.59	-13.02	4,723.30	-394.31	132.86	33.51	99.357	1.337	Level 3
17,631.25	12,760.17	17,486.87	12,630.33	93.40	93.14	-13.02	4,754.55	-394.54	132.86	33.08	99.784	1.332	Level 3
17,670.32	12,760.00	17,525.11	12,630.01	94.09	93.82	-13.03	4,792.79	-394.89	133.02	32.59	100.428	1.325	Level 3, SF

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

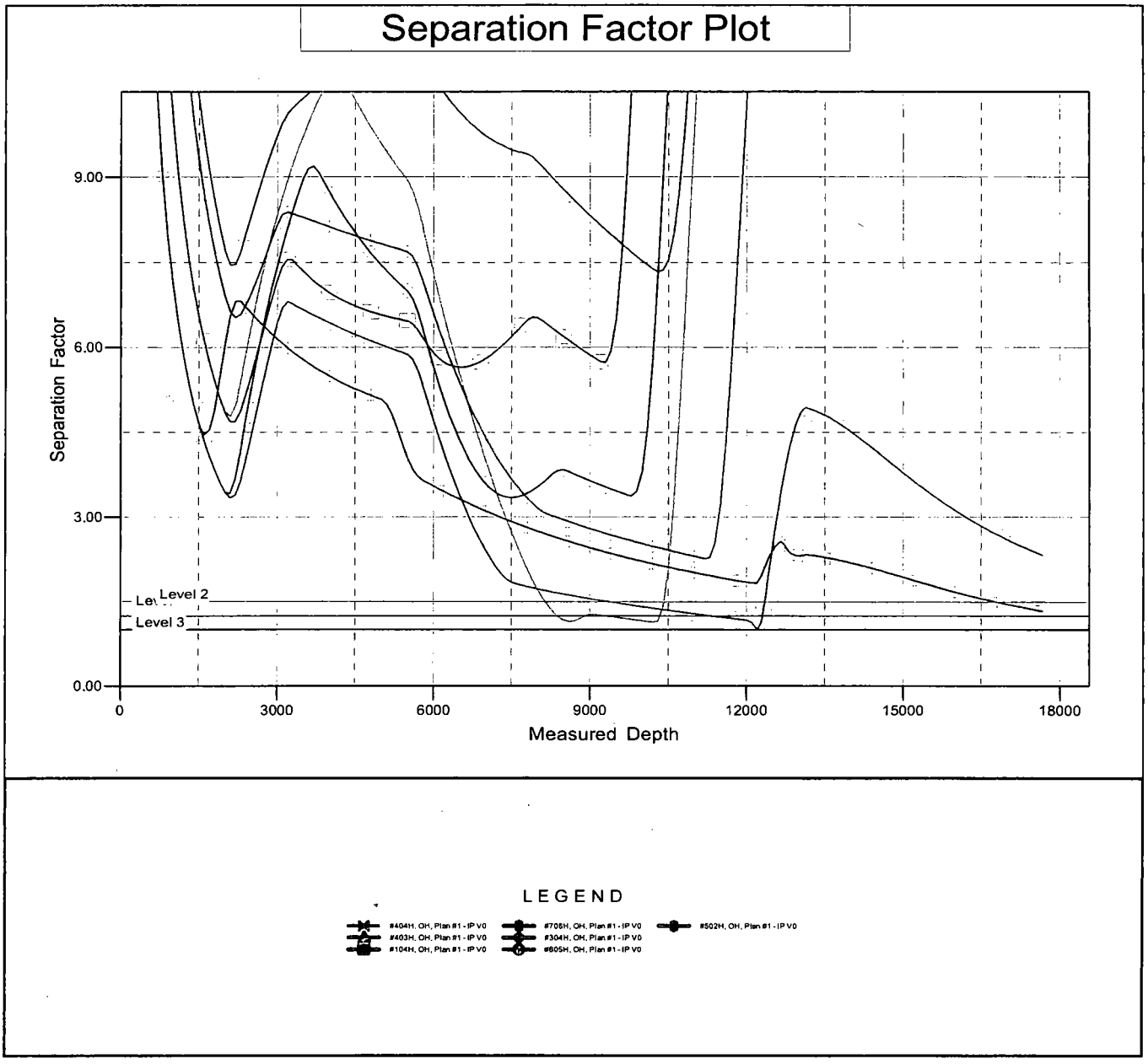
Reference Depths are relative to RKB @ 3364.40usft (Rig KB = 25')	Coordinates are relative to: #705H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.43°



Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #705H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB @ 3364.40usft (Rig KB = 25')
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #705H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.43°



COG OPERATING, LLC

Lea County, NM (NAD27) NMEZ
Dominator 25 Fed COM
#705H

OH

Plan: Plan #1 - IP

Standard Planning Report

28 November, 2017

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #705H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - IP		

Project Lea County, NM (NAD27) NMEZ

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 Dominator 25 Fed COM

Site Position:		**Northing:**	399,214.70 usft	**Latitude:**	32° 5' 41.936 N
From:	Map	**Easting:**	750,109.50 usft	**Longitude:**	103° 31' 32.494 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.43 °

Well #705H

Well Position	**+N/-S**	-23.80 usft	**Northing:**	399,190.90 usft	**Latitude:**	32° 5' 41.649 N
	+E/-W	694.20 usft	**Easting:**	750,803.70 usft	**Longitude:**	103° 31' 24.427 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,339.40 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/27/17	6.87	59.95	47,821.19620167

Design Plan #1 - IP

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.58

Plan Survey Tool Program **Date** 11/28/17

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,670.32	Plan #1 - IP (OH)	MWD	
				MWD v3:standard declination	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,300.00	4.50	201.00	2,299.69	-10.99	-4.22	1.50	1.50	0.00	201.00	
5,490.14	4.50	201.00	5,480.00	-244.66	-93.92	0.00	0.00	0.00	0.00	
5,790.14	0.00	0.00	5,779.69	-255.66	-98.14	1.50	-1.50	0.00	180.00	
12,274.76	0.00	0.00	12,264.31	-255.66	-98.14	0.00	0.00	0.00	0.00	
12,733.09	55.00	322.70	12,655.43	-93.70	-221.52	12.00	12.00	0.00	322.70	
13,143.56	90.25	359.58	12,780.00	267.80	-331.77	12.00	8.59	8.99	52.39	
17,670.32	90.25	359.58	12,760.00	4,794.40	-364.90	0.00	0.00	0.00	0.00	PBHL(D25#705H)

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #705H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - IP		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	1.50	201.00	2,099.99	-1.22	-0.47	-1.22	1.50	1.50	0.00
2,200.00	3.00	201.00	2,199.91	-4.89	-1.88	-4.87	1.50	1.50	0.00
2,300.00	4.50	201.00	2,299.69	-10.99	-4.22	-10.96	1.50	1.50	0.00
2,400.00	4.50	201.00	2,399.38	-18.32	-7.03	-18.27	0.00	0.00	0.00
2,500.00	4.50	201.00	2,499.08	-25.64	-9.84	-25.57	0.00	0.00	0.00
2,600.00	4.50	201.00	2,598.77	-32.97	-12.65	-32.87	0.00	0.00	0.00
2,700.00	4.50	201.00	2,698.46	-40.29	-15.47	-40.18	0.00	0.00	0.00
2,800.00	4.50	201.00	2,798.15	-47.62	-18.28	-47.48	0.00	0.00	0.00
2,900.00	4.50	201.00	2,897.84	-54.94	-21.09	-54.79	0.00	0.00	0.00
3,000.00	4.50	201.00	2,997.53	-62.27	-23.90	-62.09	0.00	0.00	0.00
3,100.00	4.50	201.00	3,097.23	-69.59	-26.71	-69.39	0.00	0.00	0.00
3,200.00	4.50	201.00	3,196.92	-76.92	-29.53	-76.70	0.00	0.00	0.00
3,300.00	4.50	201.00	3,296.61	-84.24	-32.34	-84.00	0.00	0.00	0.00
3,400.00	4.50	201.00	3,396.30	-91.57	-35.15	-91.31	0.00	0.00	0.00
3,500.00	4.50	201.00	3,495.99	-98.89	-37.96	-98.61	0.00	0.00	0.00
3,600.00	4.50	201.00	3,595.68	-106.22	-40.77	-105.91	0.00	0.00	0.00
3,700.00	4.50	201.00	3,695.38	-113.54	-43.58	-113.22	0.00	0.00	0.00
3,800.00	4.50	201.00	3,795.07	-120.86	-46.40	-120.52	0.00	0.00	0.00
3,900.00	4.50	201.00	3,894.76	-128.19	-49.21	-127.83	0.00	0.00	0.00
4,000.00	4.50	201.00	3,994.45	-135.51	-52.02	-135.13	0.00	0.00	0.00
4,100.00	4.50	201.00	4,094.14	-142.84	-54.83	-142.43	0.00	0.00	0.00
4,200.00	4.50	201.00	4,193.83	-150.16	-57.64	-149.74	0.00	0.00	0.00
4,300.00	4.50	201.00	4,293.53	-157.49	-60.45	-157.04	0.00	0.00	0.00
4,400.00	4.50	201.00	4,393.22	-164.81	-63.27	-164.35	0.00	0.00	0.00
4,500.00	4.50	201.00	4,492.91	-172.14	-66.08	-171.65	0.00	0.00	0.00
4,600.00	4.50	201.00	4,592.60	-179.46	-68.89	-178.95	0.00	0.00	0.00
4,700.00	4.50	201.00	4,692.29	-186.79	-71.70	-186.26	0.00	0.00	0.00
4,800.00	4.50	201.00	4,791.99	-194.11	-74.51	-193.56	0.00	0.00	0.00
4,900.00	4.50	201.00	4,891.68	-201.44	-77.32	-200.87	0.00	0.00	0.00
5,000.00	4.50	201.00	4,991.37	-208.76	-80.14	-208.17	0.00	0.00	0.00
5,100.00	4.50	201.00	5,091.06	-216.09	-82.95	-215.47	0.00	0.00	0.00
5,200.00	4.50	201.00	5,190.75	-223.41	-85.76	-222.78	0.00	0.00	0.00
5,300.00	4.50	201.00	5,290.44	-230.74	-88.57	-230.08	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #705H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - IP		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.00	4.50	201.00	5,390.14	-238.06	-91.38	-237.38	0.00	0.00	0.00
5,490.14	4.50	201.00	5,480.00	-244.66	-93.92	-243.97	0.00	0.00	0.00
5,500.00	4.35	201.00	5,489.83	-245.37	-94.19	-244.68	1.50	-1.50	0.00
5,600.00	2.85	201.00	5,589.63	-251.24	-96.44	-250.53	1.50	-1.50	0.00
5,700.00	1.35	201.00	5,689.56	-254.66	-97.76	-253.94	1.50	-1.50	0.00
5,790.14	0.00	0.00	5,779.69	-255.66	-98.14	-254.93	1.50	-1.50	0.00
5,800.00	0.00	0.00	5,789.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
5,900.00	0.00	0.00	5,889.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,000.00	0.00	0.00	5,989.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,100.00	0.00	0.00	6,089.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,200.00	0.00	0.00	6,189.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,300.00	0.00	0.00	6,289.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,400.00	0.00	0.00	6,389.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,500.00	0.00	0.00	6,489.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,600.00	0.00	0.00	6,589.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,700.00	0.00	0.00	6,689.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,800.00	0.00	0.00	6,789.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
6,900.00	0.00	0.00	6,889.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,000.00	0.00	0.00	6,989.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,100.00	0.00	0.00	7,089.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,200.00	0.00	0.00	7,189.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,300.00	0.00	0.00	7,289.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,400.00	0.00	0.00	7,389.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,500.00	0.00	0.00	7,489.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,600.00	0.00	0.00	7,589.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,700.00	0.00	0.00	7,689.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,800.00	0.00	0.00	7,789.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
7,900.00	0.00	0.00	7,889.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,000.00	0.00	0.00	7,989.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,100.00	0.00	0.00	8,089.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,200.00	0.00	0.00	8,189.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,300.00	0.00	0.00	8,289.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,400.00	0.00	0.00	8,389.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,500.00	0.00	0.00	8,489.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,600.00	0.00	0.00	8,589.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,700.00	0.00	0.00	8,689.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,800.00	0.00	0.00	8,789.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
8,900.00	0.00	0.00	8,889.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,000.00	0.00	0.00	8,989.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,100.00	0.00	0.00	9,089.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,200.00	0.00	0.00	9,189.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,300.00	0.00	0.00	9,289.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,400.00	0.00	0.00	9,389.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,500.00	0.00	0.00	9,489.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,600.00	0.00	0.00	9,589.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,700.00	0.00	0.00	9,689.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,800.00	0.00	0.00	9,789.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
9,900.00	0.00	0.00	9,889.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,000.00	0.00	0.00	9,989.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,100.00	0.00	0.00	10,089.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,200.00	0.00	0.00	10,189.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,300.00	0.00	0.00	10,289.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,400.00	0.00	0.00	10,389.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,500.00	0.00	0.00	10,489.55	-255.66	-98.14	-254.93	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #705H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - IP		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,600.00	0.00	0.00	10,589.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,700.00	0.00	0.00	10,689.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,800.00	0.00	0.00	10,789.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
10,900.00	0.00	0.00	10,889.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,000.00	0.00	0.00	10,989.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,100.00	0.00	0.00	11,089.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,200.00	0.00	0.00	11,189.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,300.00	0.00	0.00	11,289.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,400.00	0.00	0.00	11,389.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,500.00	0.00	0.00	11,489.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,600.00	0.00	0.00	11,589.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,700.00	0.00	0.00	11,689.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,800.00	0.00	0.00	11,789.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
11,900.00	0.00	0.00	11,889.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
12,000.00	0.00	0.00	11,989.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
12,100.00	0.00	0.00	12,089.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
12,200.00	0.00	0.00	12,189.55	-255.66	-98.14	-254.93	0.00	0.00	0.00
12,274.76	0.00	0.00	12,264.31	-255.66	-98.14	-254.93	0.00	0.00	0.00
KOP: 12274.76' MD, 12264.31' TVD									
12,300.00	3.03	322.70	12,289.54	-255.13	-98.54	-254.40	12.00	12.00	0.00
12,325.00	6.03	322.70	12,314.46	-253.56	-99.74	-252.82	12.00	12.00	0.00
12,350.00	9.03	322.70	12,339.24	-250.95	-101.72	-250.20	12.00	12.00	0.00
12,375.00	12.03	322.70	12,363.81	-247.32	-104.49	-246.54	12.00	12.00	0.00
12,400.00	15.03	322.70	12,388.12	-242.67	-108.03	-241.87	12.00	12.00	0.00
12,425.00	18.03	322.70	12,412.08	-237.01	-112.34	-236.18	12.00	12.00	0.00
12,450.00	21.03	322.70	12,435.64	-230.36	-117.41	-229.49	12.00	12.00	0.00
12,475.00	24.03	322.70	12,458.73	-222.74	-123.21	-221.83	12.00	12.00	0.00
12,500.00	27.03	322.70	12,481.29	-214.17	-129.74	-213.22	12.00	12.00	0.00
12,525.00	30.03	322.70	12,503.25	-204.68	-136.97	-203.67	12.00	12.00	0.00
12,550.00	33.03	322.70	12,524.56	-194.28	-144.90	-193.21	12.00	12.00	0.00
12,575.00	36.03	322.70	12,545.15	-183.01	-153.48	-181.88	12.00	12.00	0.00
12,600.00	39.03	322.70	12,564.97	-170.89	-162.71	-169.70	12.00	12.00	0.00
12,625.00	42.03	322.70	12,583.97	-157.97	-172.55	-156.70	12.00	12.00	0.00
12,650.00	45.03	322.70	12,602.10	-144.28	-182.99	-142.93	12.00	12.00	0.00
12,675.00	48.03	322.70	12,619.30	-129.85	-193.98	-128.42	12.00	12.00	0.00
12,700.00	51.03	322.70	12,635.52	-114.72	-205.50	-113.21	12.00	12.00	0.00
12,725.00	54.03	322.70	12,650.73	-98.94	-217.52	-97.34	12.00	12.00	0.00
12,733.09	55.00	322.70	12,655.43	-93.70	-221.52	-92.07	12.00	12.00	0.00
12,750.00	56.25	324.63	12,664.97	-82.46	-229.78	-80.77	12.00	7.42	11.43
12,775.00	58.16	327.39	12,678.51	-65.03	-241.53	-63.26	12.00	7.63	11.02
12,800.00	60.12	330.03	12,691.34	-46.69	-252.67	-44.84	12.00	7.85	10.57
12,825.00	62.14	332.57	12,703.41	-27.49	-263.17	-25.56	12.00	8.06	10.16
12,850.00	64.20	335.01	12,714.69	-7.48	-273.02	-5.47	12.00	8.24	9.78
12,875.00	66.30	337.38	12,725.16	13.29	-282.18	15.36	12.00	8.39	9.44
12,900.00	68.43	339.66	12,734.78	34.76	-290.62	36.89	12.00	8.53	9.14
12,925.00	70.59	341.88	12,743.54	56.87	-298.33	59.06	12.00	8.65	8.88
12,936.50	71.60	342.88	12,747.26	67.24	-301.62	69.45	12.00	8.73	8.70
FTP(D25#705H)									
12,950.00	72.78	344.04	12,751.39	79.56	-305.28	81.80	12.00	8.78	8.59
12,975.00	74.99	346.15	12,758.33	102.77	-311.46	105.05	12.00	8.85	8.44
13,000.00	77.23	348.22	12,764.33	126.43	-316.84	128.75	12.00	8.92	8.26
13,025.00	79.47	350.25	12,769.38	150.48	-321.41	152.84	12.00	8.99	8.12
13,050.00	81.73	352.25	12,773.46	174.86	-325.16	177.24	12.00	9.04	8.00
13,075.00	84.00	354.22	12,776.57	199.49	-328.08	201.89	12.00	9.08	7.91

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #705H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - IP		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,100.00	86.28	356.18	12,778.69	224.31	-330.16	226.72	12.00	9.11	7.84
13,125.00	88.56	358.14	12,779.81	249.25	-331.40	251.67	12.00	9.12	7.80
13,143.56	90.25	359.58	12,780.00	267.80	-331.77	270.23	12.00	9.13	7.79
EOC: 13143.56' MD, 12780.00' TVD, 90.25° INC, 359.58° AZ, 270.23' VS									
13,200.00	90.25	359.58	12,779.75	324.24	-332.18	326.67	0.00	0.00	0.00
13,300.00	90.25	359.58	12,779.31	424.24	-332.92	426.67	0.00	0.00	0.00
13,400.00	90.25	359.58	12,778.87	524.24	-333.65	526.67	0.00	0.00	0.00
13,500.00	90.25	359.58	12,778.43	624.23	-334.38	626.67	0.00	0.00	0.00
13,600.00	90.25	359.58	12,777.99	724.23	-335.11	726.66	0.00	0.00	0.00
13,700.00	90.25	359.58	12,777.54	824.22	-335.84	826.66	0.00	0.00	0.00
13,800.00	90.25	359.58	12,777.10	924.22	-336.58	926.66	0.00	0.00	0.00
13,900.00	90.25	359.58	12,776.66	1,024.22	-337.31	1,026.66	0.00	0.00	0.00
14,000.00	90.25	359.58	12,776.22	1,124.21	-338.04	1,126.66	0.00	0.00	0.00
14,100.00	90.25	359.58	12,775.78	1,224.21	-338.77	1,226.66	0.00	0.00	0.00
14,200.00	90.25	359.58	12,775.34	1,324.21	-339.50	1,326.66	0.00	0.00	0.00
14,300.00	90.25	359.58	12,774.89	1,424.20	-340.23	1,426.66	0.00	0.00	0.00
14,400.00	90.25	359.58	12,774.45	1,524.20	-340.97	1,526.66	0.00	0.00	0.00
14,500.00	90.25	359.58	12,774.01	1,624.19	-341.70	1,626.66	0.00	0.00	0.00
14,600.00	90.25	359.58	12,773.57	1,724.19	-342.43	1,726.65	0.00	0.00	0.00
14,700.00	90.25	359.58	12,773.13	1,824.19	-343.16	1,826.65	0.00	0.00	0.00
14,800.00	90.25	359.58	12,772.68	1,924.18	-343.89	1,926.65	0.00	0.00	0.00
14,900.00	90.25	359.58	12,772.24	2,024.18	-344.63	2,026.65	0.00	0.00	0.00
15,000.00	90.25	359.58	12,771.80	2,124.18	-345.36	2,126.65	0.00	0.00	0.00
15,100.00	90.25	359.58	12,771.36	2,224.17	-346.09	2,226.65	0.00	0.00	0.00
15,200.00	90.25	359.58	12,770.92	2,324.17	-346.82	2,326.65	0.00	0.00	0.00
15,300.00	90.25	359.58	12,770.47	2,424.17	-347.55	2,426.65	0.00	0.00	0.00
15,400.00	90.25	359.58	12,770.03	2,524.16	-348.28	2,526.65	0.00	0.00	0.00
15,500.00	90.25	359.58	12,769.59	2,624.16	-349.02	2,626.65	0.00	0.00	0.00
15,600.00	90.25	359.58	12,769.15	2,724.15	-349.75	2,726.65	0.00	0.00	0.00
15,700.00	90.25	359.58	12,768.71	2,824.15	-350.48	2,826.64	0.00	0.00	0.00
15,800.00	90.25	359.58	12,768.27	2,924.15	-351.21	2,926.64	0.00	0.00	0.00
15,900.00	90.25	359.58	12,767.82	3,024.14	-351.94	3,026.64	0.00	0.00	0.00
16,000.00	90.25	359.58	12,767.38	3,124.14	-352.68	3,126.64	0.00	0.00	0.00
16,100.00	90.25	359.58	12,766.94	3,224.14	-353.41	3,226.64	0.00	0.00	0.00
16,200.00	90.25	359.58	12,766.50	3,324.13	-354.14	3,326.64	0.00	0.00	0.00
16,300.00	90.25	359.58	12,766.06	3,424.13	-354.87	3,426.64	0.00	0.00	0.00
16,400.00	90.25	359.58	12,765.61	3,524.13	-355.60	3,526.64	0.00	0.00	0.00
16,500.00	90.25	359.58	12,765.17	3,624.12	-356.34	3,626.64	0.00	0.00	0.00
16,600.00	90.25	359.58	12,764.73	3,724.12	-357.07	3,726.64	0.00	0.00	0.00
16,700.00	90.25	359.58	12,764.29	3,824.11	-357.80	3,826.63	0.00	0.00	0.00
16,800.00	90.25	359.58	12,763.85	3,924.11	-358.53	3,926.63	0.00	0.00	0.00
16,900.00	90.25	359.58	12,763.40	4,024.11	-359.26	4,026.63	0.00	0.00	0.00
17,000.00	90.25	359.58	12,762.96	4,124.10	-359.99	4,126.63	0.00	0.00	0.00
17,100.00	90.25	359.58	12,762.52	4,224.10	-360.73	4,226.63	0.00	0.00	0.00
17,200.00	90.25	359.58	12,762.08	4,324.10	-361.46	4,326.63	0.00	0.00	0.00
17,300.00	90.25	359.58	12,761.64	4,424.09	-362.19	4,426.63	0.00	0.00	0.00
17,400.00	90.25	359.58	12,761.19	4,524.09	-362.92	4,526.63	0.00	0.00	0.00
17,500.00	90.25	359.58	12,760.75	4,624.09	-363.65	4,626.63	0.00	0.00	0.00
17,600.00	90.25	359.58	12,760.31	4,724.08	-364.39	4,726.63	0.00	0.00	0.00
17,670.32	90.25	359.58	12,760.00	4,794.40	-364.90	4,796.95	0.00	0.00	0.00
TD: 17670.32' MD, 12760.00' TVD - PBHL(D25#705H)									

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #705H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3364.40usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#705H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - IP		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL(D25#705H) - plan hits target center - Point	0.00	0.00	12,760.00	4,794.40	-364.90	403,985.30	750,438.80	32° 6' 29.120 N	103° 31' 28.250 W
FTP(D25#705H) - plan misses target center by 47.91usft at 12936.50usft MD (12747.26 TVD, 67.24 N, -301.62 E) - Point	0.00	0.00	12,780.00	47.13	-330.25	399,238.03	750,473.45	32° 5' 42.140 N	103° 31' 28.261 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
12,274.76	12,264.31	-255.66	-98.14	KOP: 12274.76' MD, 12264.31' TVD
13,143.56	12,780.00	267.80	-331.77	EOC: 13143.56' MD, 12780.00' TVD, 90.25° INC, 359.58° AZ, 270.23' VS
17,670.32	12,760.00	4,794.40	-364.90	TD: 17670.32' MD, 12760.00' TVD

Azimuths to Grid North
True North: -0.43°
Magnetic North: 6.44°

Magnetic Field
Strength: 47821.2snT
Dip Angle: 59.95°
Date: 11/27/2017
Model: IGRF2015

CONCHO

VGR ENERGY SERVICES, LLC.

COG OPERATING, LLC
#705H
Lea County, NM (NAD27) NMEZ
Plan #1 - IP

PROJECT DETAILS: Lea County, NM (NAD27) NMEZ

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

Ground Elev: 3339.40 RKB @ 3364.40usft (Rig KB = 25')

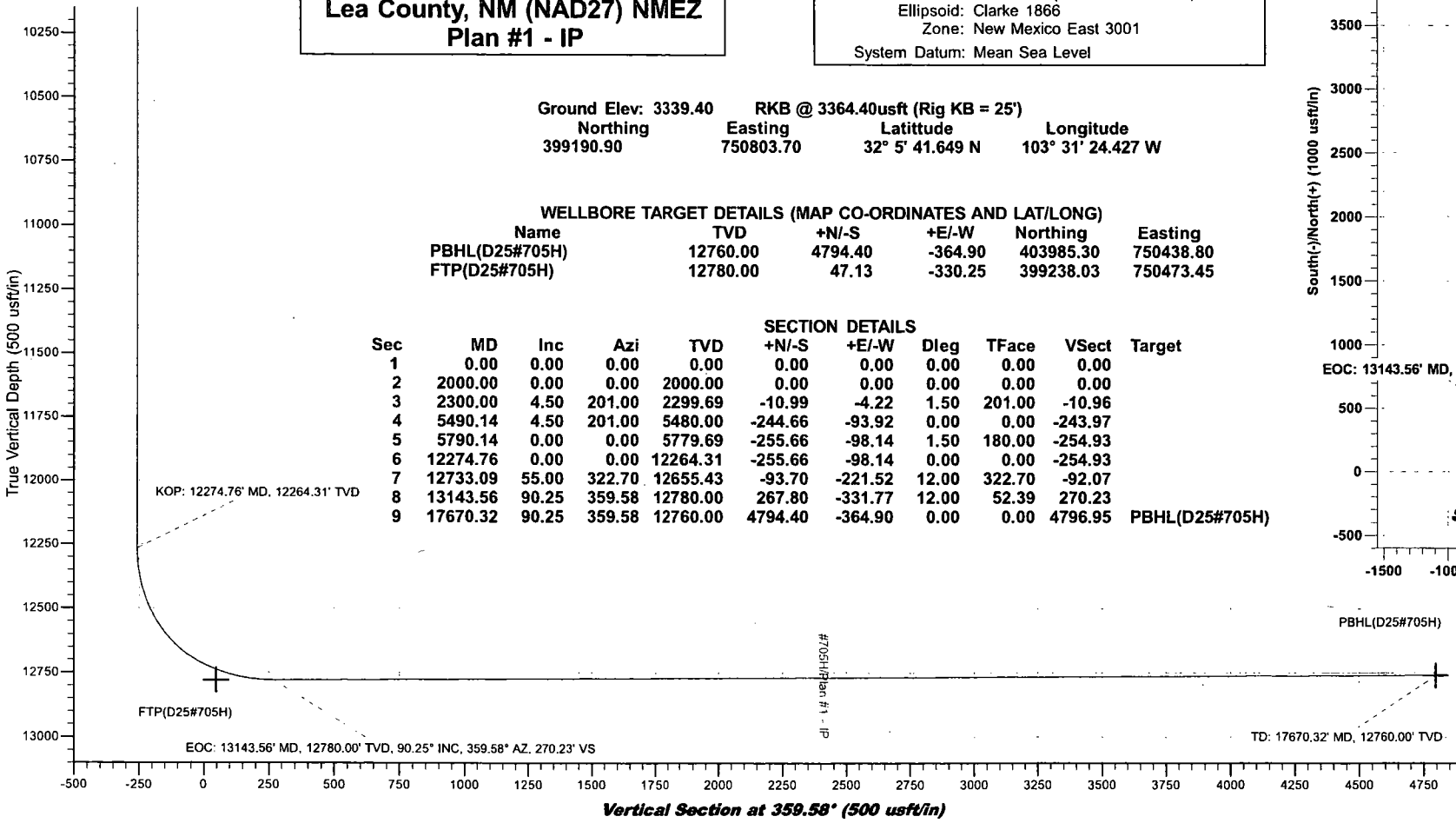
Northing	Easting	Latitude	Longitude
399190.90	750803.70	32° 5' 41.649 N	103° 31' 24.427 W

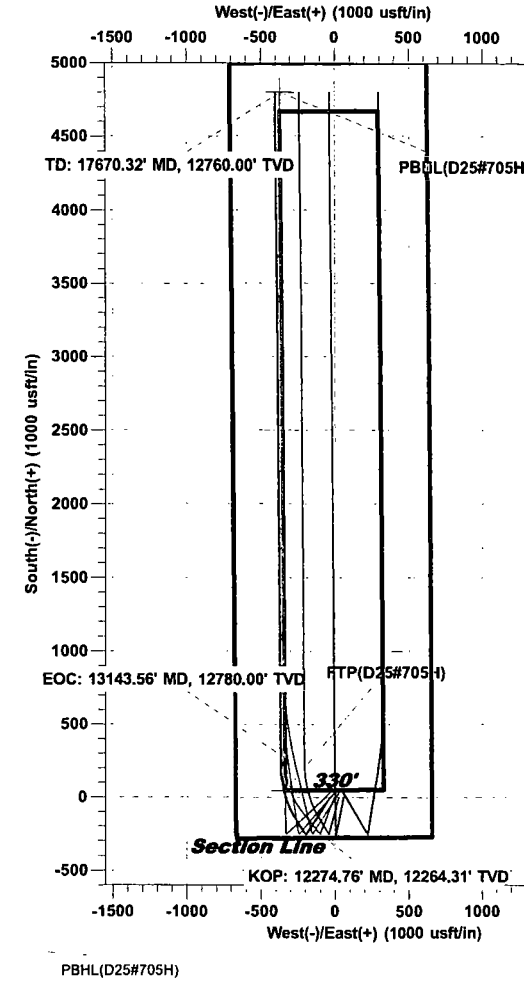
WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL(D25#705H)	12760.00	4794.40	-364.90	403985.30	750438.80
FTP(D25#705H)	12780.00	47.13	-330.25	399238.03	750473.45

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	
3	2300.00	4.50	201.00	2299.69	-10.99	-4.22	1.50	201.00	-10.96	
4	5490.14	4.50	201.00	5480.00	-244.66	-93.92	0.00	0.00	-243.97	
5	5790.14	0.00	0.00	5779.69	-255.66	-98.14	1.50	180.00	-254.93	
6	12274.76	0.00	0.00	12264.31	-255.66	-98.14	0.00	0.00	-254.93	
7	12733.09	55.00	322.70	12655.43	-93.70	-221.52	12.00	322.70	-92.07	
8	13143.56	90.25	359.58	12780.00	267.80	-331.77	12.00	52.39	270.23	
9	17670.32	90.25	359.58	12760.00	4794.40	-364.90	0.00	0.00	4796.95	PBHL(D25#705H)





0:49, November 28 2017

Well Planning: Gabriel Cruz