PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMNM121958
WELL NAME & NO.:	Dominator 25 Federal Com 304H
SURFACE HOLE FOOTAGE:	310'/S & 1980'/E
BOTTOM HOLE FOOTAGE	200'/N & 2310'/E
LOCATION:	Section 25, T.25 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

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 **13 3/8** 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.

2. The minimum required fill of cement behind the **9 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** inch production casing is:

   - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 17% - additional cement might be required.**

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 **13 3/8** inch surface casing shoe shall be **2000 (2M)** psi **Annular. In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9 5/8** inch intermediate casing shoe shall be **3000 (3M)** 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.

MHH 04072018

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

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WELL NAME & NO.:	Dominator 25 Federal Com 304H
SURFACE HOLE FOOTAGE:	310'/S & 1980'/E
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LOCATION:	Section 25, T.25 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

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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: 04/09/2018

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.

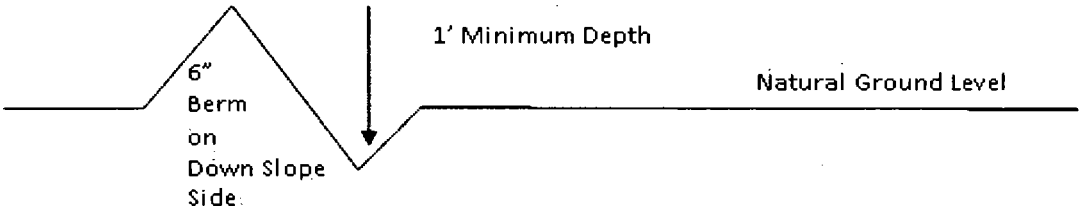
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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

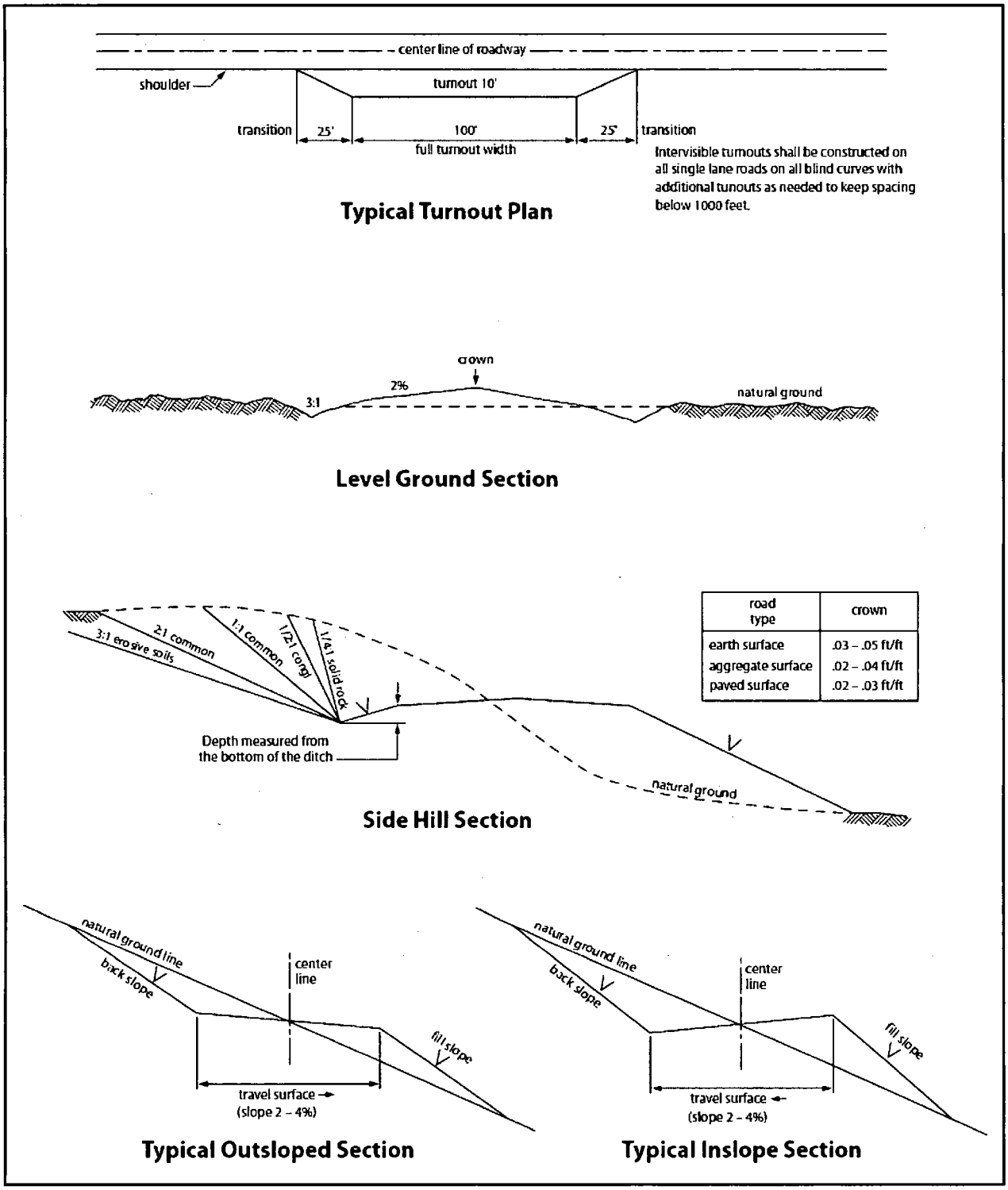


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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
#304H

OH
Plan #1 - IP

Anticollision Report

28 November, 2017

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	15,076.16	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	3,000.00	2,999.90	29.90	16.70	2.264	CC, ES
#104H - OH - Plan #1 - IP	9,200.00	9,202.71	87.41	47.07	2.167	SF
#403H - OH - Plan #1 - IP	3,000.00	3,000.40	60.00	46.80	4.544	CC, ES
#403H - OH - Plan #1 - IP	3,100.00	3,099.61	60.66	47.03	4.452	SF
#404H - OH - Plan #1 - IP	3,500.00	3,500.40	30.00	14.55	1.941	CC, ES, SF
#502H - OH - Plan #1 - IP	3,000.00	3,000.50	67.13	53.92	5.083	CC
#502H - OH - Plan #1 - IP	3,100.00	3,100.02	67.48	53.86	4.953	ES
#502H - OH - Plan #1 - IP	3,300.00	3,300.73	70.58	56.16	4.896	SF
#605H - OH - Plan #1 - IP	3,000.00	2,999.90	42.43	29.22	3.213	CC, ES
#605H - OH - Plan #1 - IP	3,100.00	3,099.33	43.09	29.46	3.163	SF
#705H - OH - Plan #1 - IP	2,000.00	1,999.20	30.00	21.29	3.445	CC, ES
#705H - OH - Plan #1 - IP	7,500.00	7,502.06	110.47	77.45	3.345	SF
#706H - OH - Plan #1 - IP	8,035.68	8,033.98	36.46	0.75	1.021	Level 2, CC, ES, 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	0.10	-0.10	0.00	0.00	-90.57	-0.30	-29.90	29.90				
100.00	100.00	100.10	99.90	0.08	0.08	-90.57	-0.30	-29.90	29.90	29.73	.169	177.142	
200.00	200.00	200.10	199.90	0.31	0.31	-90.57	-0.30	-29.90	29.90	29.28	.618	48.358	
300.00	300.00	300.10	299.90	0.53	0.53	-90.57	-0.30	-29.90	29.90	28.83	1.068	28.001	
400.00	400.00	400.10	399.90	0.76	0.76	-90.57	-0.30	-29.90	29.90	28.38	1.517	19.706	
500.00	500.00	500.10	499.90	0.98	0.98	-90.57	-0.30	-29.90	29.90	27.93	1.967	15.202	
600.00	600.00	600.10	599.90	1.21	1.21	-90.57	-0.30	-29.90	29.90	27.49	2.416	12.374	
700.00	700.00	700.10	699.90	1.43	1.43	-90.57	-0.30	-29.90	29.90	27.04	2.866	10.433	
800.00	800.00	800.10	799.90	1.66	1.66	-90.57	-0.30	-29.90	29.90	26.59	3.316	9.019	
900.00	900.00	900.10	899.90	1.88	1.88	-90.57	-0.30	-29.90	29.90	26.14	3.765	7.942	
1,000.00	1,000.00	1,000.10	999.90	2.11	2.11	-90.57	-0.30	-29.90	29.90	25.69	4.215	7.095	
1,100.00	1,100.00	1,100.10	1,099.90	2.33	2.33	-90.57	-0.30	-29.90	29.90	25.24	4.664	6.411	
1,200.00	1,200.00	1,200.10	1,199.90	2.56	2.56	-90.57	-0.30	-29.90	29.90	24.79	5.114	5.847	
1,300.00	1,300.00	1,300.10	1,299.90	2.78	2.78	-90.57	-0.30	-29.90	29.90	24.34	5.563	5.375	
1,400.00	1,400.00	1,400.10	1,399.90	3.01	3.01	-90.57	-0.30	-29.90	29.90	23.89	6.013	4.973	

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

Anticollision Report

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Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
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Reference Well:	#304H	**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
1,500.00	1,500.00	1,500.10	1,499.90	3.23	3.23	-90.57	-0.30	-29.90	29.90	23.44	6.462	4.627	
1,600.00	1,600.00	1,600.10	1,599.90	3.46	3.46	-90.57	-0.30	-29.90	29.90	22.99	6.912	4.326	
1,700.00	1,700.00	1,700.10	1,699.90	3.68	3.68	-90.57	-0.30	-29.90	29.90	22.54	7.361	4.062	
1,800.00	1,800.00	1,800.10	1,799.90	3.91	3.91	-90.57	-0.30	-29.90	29.90	22.09	7.811	3.828	
1,900.00	1,900.00	1,900.10	1,899.90	4.13	4.13	-90.57	-0.30	-29.90	29.90	21.64	8.260	3.620	
2,000.00	2,000.00	2,000.10	1,999.90	4.35	4.36	-90.57	-0.30	-29.90	29.90	21.19	8.710	3.433	
2,100.00	2,100.00	2,100.10	2,099.90	4.58	4.58	-90.57	-0.30	-29.90	29.90	20.74	9.159	3.265	
2,200.00	2,200.00	2,200.10	2,199.90	4.80	4.80	-90.57	-0.30	-29.90	29.90	20.29	9.609	3.112	
2,300.00	2,300.00	2,300.10	2,299.90	5.03	5.03	-90.57	-0.30	-29.90	29.90	19.84	10.059	2.973	
2,400.00	2,400.00	2,400.10	2,399.90	5.25	5.25	-90.57	-0.30	-29.90	29.90	19.39	10.508	2.846	
2,500.00	2,500.00	2,500.10	2,499.90	5.48	5.48	-90.57	-0.30	-29.90	29.90	18.94	10.958	2.729	
2,600.00	2,600.00	2,600.10	2,599.90	5.70	5.70	-90.57	-0.30	-29.90	29.90	18.49	11.407	2.621	
2,700.00	2,700.00	2,700.10	2,699.90	5.93	5.93	-90.57	-0.30	-29.90	29.90	18.04	11.857	2.522	
2,800.00	2,800.00	2,800.10	2,799.90	6.15	6.15	-90.57	-0.30	-29.90	29.90	17.60	12.306	2.430	
2,900.00	2,900.00	2,900.10	2,899.90	6.38	6.38	-90.57	-0.30	-29.90	29.90	17.15	12.756	2.344	
3,000.00	3,000.00	2,999.90	2,999.90	6.60	6.60	-90.57	-0.30	-29.90	29.90	16.70	13.205	2.264	CC, ES
3,100.00	3,100.00	3,099.31	3,099.30	6.83	6.80	-92.22	-1.20	-30.83	30.86	17.23	13.627	2.265	
3,200.00	3,200.00	3,198.59	3,198.50	7.05	6.98	-96.59	-3.89	-33.61	33.87	19.84	14.021	2.415	
3,300.00	3,300.00	3,297.60	3,297.30	7.28	7.16	-102.32	-8.35	-38.24	39.22	24.81	14.412	2.722	
3,400.00	3,400.00	3,403.09	3,396.24	7.50	7.36	-107.81	-14.25	-44.34	46.72	31.90	14.821	3.152	
3,500.00	3,500.00	3,503.47	3,495.48	7.73	7.55	-111.84	-20.28	-50.59	54.68	39.45	15.230	3.590	
3,600.00	3,599.99	3,603.75	3,594.83	7.93	7.75	25.63	-26.31	-56.84	61.66	46.05	15.615	3.949	
3,700.00	3,699.91	3,703.87	3,694.33	8.10	7.96	24.54	-32.36	-63.10	66.35	50.37	15.980	4.152	
3,800.00	3,799.69	3,803.90	3,793.92	8.28	8.16	24.47	-38.41	-69.37	68.67	52.32	16.350	4.200	
3,900.00	3,899.38	3,903.91	3,893.53	8.46	8.38	24.87	-44.47	-75.64	69.80	53.07	16.725	4.173	
4,000.00	3,999.08	4,003.92	3,993.14	8.65	8.59	25.26	-50.52	-81.91	70.93	53.83	17.106	4.147	
4,100.00	4,098.77	4,096.08	4,092.75	8.84	8.79	25.64	-56.58	-88.18	72.07	54.59	17.476	4.124	
4,200.00	4,198.46	4,196.07	4,192.36	9.04	9.02	26.00	-62.63	-94.44	73.21	55.34	17.867	4.097	
4,300.00	4,298.15	4,296.06	4,291.98	9.24	9.24	26.35	-68.68	-100.71	74.35	56.09	18.262	4.071	
4,400.00	4,397.84	4,403.95	4,391.59	9.44	9.49	26.69	-74.74	-106.98	75.50	56.82	18.677	4.042	
4,500.00	4,497.53	4,503.95	4,491.20	9.65	9.72	27.03	-80.79	-113.25	76.64	57.56	19.081	4.017	
4,600.00	4,597.23	4,603.96	4,590.81	9.86	9.95	27.35	-86.85	-119.52	77.79	58.31	19.488	3.992	
4,700.00	4,696.92	4,703.97	4,690.42	10.07	10.19	27.66	-92.90	-125.79	78.95	59.05	19.899	3.967	
4,800.00	4,796.61	4,803.98	4,790.04	10.28	10.42	27.96	-98.95	-132.06	80.10	59.79	20.313	3.943	
4,900.00	4,896.30	4,903.98	4,889.65	10.50	10.66	28.26	-105.01	-138.33	81.26	60.53	20.731	3.920	
5,000.00	4,995.99	5,003.99	4,989.26	10.72	10.90	28.54	-111.06	-144.60	82.42	61.27	21.152	3.896	
5,100.00	5,095.68	5,096.00	5,088.87	10.94	11.13	28.82	-117.12	-150.87	83.58	62.02	21.559	3.877	
5,200.00	5,195.38	5,204.01	5,188.48	11.17	11.39	29.09	-123.17	-157.13	84.74	62.74	22.003	3.851	
5,300.00	5,295.07	5,295.99	5,288.10	11.39	11.62	29.36	-129.22	-163.40	85.91	63.49	22.415	3.833	
5,400.00	5,394.76	5,404.02	5,387.71	11.62	11.88	29.61	-135.28	-169.67	87.07	64.21	22.864	3.808	
5,500.00	5,494.45	5,504.03	5,487.32	11.85	12.13	29.86	-141.33	-175.94	88.24	64.94	23.299	3.787	
5,600.00	5,594.14	5,595.96	5,586.93	12.08	12.36	30.11	-147.38	-182.21	89.41	65.69	23.718	3.770	
5,700.00	5,693.83	5,704.04	5,686.54	12.31	12.63	30.34	-153.44	-188.48	90.58	66.41	24.175	3.747	
5,800.00	5,793.53	5,804.05	5,786.15	12.54	12.89	30.57	-159.49	-194.75	91.76	67.14	24.616	3.727	
5,900.00	5,893.22	5,904.06	5,885.77	12.78	13.14	30.80	-165.55	-201.02	92.93	67.87	25.060	3.708	
6,000.00	5,992.91	6,004.07	5,985.38	13.02	13.39	31.02	-171.60	-207.29	94.11	68.60	25.505	3.690	
6,100.00	6,092.60	6,104.07	6,084.99	13.25	13.65	31.23	-177.65	-213.56	95.28	69.33	25.952	3.671	
6,200.00	6,192.29	6,204.08	6,184.60	13.49	13.90	31.44	-183.71	-219.82	96.46	70.06	26.401	3.654	
6,300.00	6,291.99	6,295.91	6,284.21	13.73	14.14	31.64	-189.76	-226.09	97.64	70.81	26.833	3.639	
6,400.00	6,391.68	6,404.10	6,383.83	13.97	14.42	31.84	-195.82	-232.36	98.82	71.52	27.304	3.619	
6,500.00	6,491.37	6,504.10	6,483.44	14.21	14.68	32.04	-201.87	-238.63	100.00	72.25	27.758	3.603	
6,600.00	6,591.06	6,604.11	6,583.05	14.46	14.94	32.22	-207.92	-244.90	101.19	72.97	28.214	3.586	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
6,700.00	6,690.75	6,704.12	6,682.66	14.70	15.19	32.41	-213.98	-251.17	102.37	73.70	28.671	3.571	
6,800.00	6,790.44	6,804.13	6,782.27	14.95	15.45	32.59	-220.03	-257.44	103.56	74.43	29.130	3.555	
6,900.00	6,890.14	6,904.13	6,881.89	15.19	15.72	32.77	-226.09	-263.71	104.74	75.15	29.589	3.540	
7,000.00	6,989.83	7,004.14	6,981.50	15.44	15.98	32.94	-232.14	-269.98	105.93	75.88	30.051	3.525	
7,100.00	7,089.52	7,104.15	7,081.11	15.68	16.24	33.11	-238.19	-276.25	107.12	76.61	30.513	3.511	
7,200.00	7,189.21	7,204.16	7,180.72	15.93	16.50	33.27	-244.25	-282.51	108.31	77.33	30.977	3.496	
7,300.00	7,288.90	7,304.16	7,280.33	16.18	16.76	33.44	-250.30	-288.78	109.50	78.06	31.441	3.483	
7,400.00	7,388.59	7,404.17	7,379.95	16.43	17.03	33.59	-256.35	-295.05	110.69	78.78	31.907	3.469	
7,500.00	7,488.29	7,504.18	7,479.56	16.68	17.29	33.75	-262.41	-301.32	111.88	79.51	32.374	3.456	
7,600.00	7,587.98	7,604.19	7,579.17	16.93	17.55	33.90	-268.46	-307.59	113.07	80.23	32.842	3.443	
7,700.00	7,687.67	7,695.81	7,678.78	17.18	17.80	34.05	-274.52	-313.86	114.27	80.98	33.291	3.432	
7,800.00	7,787.36	7,797.12	7,779.74	17.43	18.06	34.27	-280.42	-319.98	115.18	81.41	33.772	3.411	
7,900.00	7,887.05	7,899.81	7,882.24	17.68	18.31	35.07	-284.76	-324.46	114.05	79.78	34.272	3.328	
8,000.00	7,986.74	8,002.33	7,984.69	17.94	18.55	36.59	-287.17	-326.96	110.62	75.84	34.786	3.180	
8,100.00	8,086.44	8,103.98	8,086.34	18.19	18.75	38.97	-287.73	-327.54	105.08	69.77	35.313	2.976	
8,200.00	8,186.13	8,203.67	8,186.03	18.44	18.93	41.82	-287.73	-327.54	99.10	63.24	35.861	2.763	
8,264.07	8,250.00	8,267.54	8,249.90	18.60	19.05	43.83	-287.73	-327.54	95.40	59.18	36.223	2.634	
8,300.00	8,285.83	8,303.37	8,285.73	18.69	19.12	44.93	-287.73	-327.54	93.51	57.08	36.426	2.567	
8,400.00	8,385.67	8,403.21	8,385.57	18.93	19.31	47.42	-287.73	-327.54	89.62	52.66	36.960	2.425	
8,500.00	8,485.63	8,503.17	8,485.53	19.16	19.50	48.83	-287.73	-327.54	87.63	50.19	37.438	2.341	
8,564.07	8,549.69	8,567.23	8,549.59	19.28	19.62	-90.91	-287.73	-327.54	87.28	49.57	37.706	2.315	
8,600.00	8,585.62	8,603.16	8,585.52	19.35	19.68	-90.91	-287.73	-327.54	87.28	49.43	37.846	2.306	
8,700.00	8,685.62	8,703.16	8,685.52	19.55	19.88	-90.91	-287.73	-327.54	87.28	49.04	38.238	2.282	
8,800.00	8,785.62	8,803.16	8,785.52	19.74	20.07	-90.91	-287.73	-327.54	87.28	48.65	38.632	2.259	
8,900.00	8,885.62	8,903.16	8,885.52	19.93	20.26	-90.91	-287.73	-327.54	87.28	48.25	39.026	2.236	
9,000.00	8,985.62	9,003.16	8,985.52	20.13	20.45	-90.91	-287.73	-327.54	87.28	47.86	39.422	2.214	
9,100.00	9,085.62	9,103.16	9,085.52	20.32	20.64	-90.91	-287.73	-327.54	87.28	47.46	39.819	2.192	
9,153.58	9,139.20	9,156.75	9,139.10	20.43	20.74	-90.42	-286.99	-327.54	87.27	47.23	40.048	2.179	
9,200.00	9,185.62	9,202.71	9,184.79	20.52	20.82	-87.30	-282.23	-327.58	87.41	47.07	40.340	2.167 SF	
9,300.00	9,285.62	9,296.38	9,275.40	20.71	20.92	-72.70	-259.09	-327.75	92.18	51.09	41.093	2.243	
9,400.00	9,385.62	9,378.48	9,349.80	20.91	20.96	-54.86	-224.61	-328.00	113.07	71.95	41.114	2.750	
9,500.00	9,485.62	9,447.17	9,406.75	21.11	20.98	-41.34	-186.31	-328.28	154.78	114.52	40.263	3.844	
9,600.00	9,585.62	9,503.30	9,448.83	21.30	20.97	-32.77	-149.21	-328.56	212.80	173.44	39.365	5.406	
9,700.00	9,685.62	9,550.00	9,480.32	21.50	20.96	-27.29	-114.75	-328.81	281.77	243.01	38.754	7.271	
9,746.92	9,732.54	9,567.17	9,491.03	21.59	20.96	-25.60	-101.34	-328.91	316.81	278.29	38.519	8.225	
9,750.00	9,735.62	9,568.32	9,491.72	21.60	20.96	-17.41	-100.42	-328.92	319.15	280.64	38.507	8.288	
9,775.00	9,760.61	9,575.00	9,495.75	21.65	20.96	-15.86	-95.09	-328.96	337.95	299.59	38.360	8.810	
9,800.00	9,785.51	9,587.25	9,502.93	21.69	20.95	-14.13	-85.16	-329.03	356.24	317.93	38.313	9.298	
9,825.00	9,810.27	9,600.00	9,510.13	21.73	20.95	-12.65	-74.64	-329.11	374.10	335.83	38.270	9.775	
9,850.00	9,834.82	9,606.70	9,513.80	21.77	20.95	-11.69	-69.04	-329.15	391.40	353.26	38.134	10.264	
9,875.00	9,859.09	9,616.58	9,519.07	21.80	20.94	-10.70	-60.68	-329.21	408.19	370.14	38.050	10.728	
9,900.00	9,883.01	9,625.00	9,523.42	21.83	20.94	-9.89	-53.47	-329.26	424.44	386.49	37.950	11.184	
9,925.00	9,906.52	9,636.62	9,529.22	21.86	20.94	-9.06	-43.40	-329.34	440.12	402.23	37.893	11.615	
9,950.00	9,929.55	9,650.00	9,535.59	21.88	20.93	-8.28	-31.64	-329.42	455.25	417.39	37.857	12.025	
9,975.00	9,952.05	9,656.97	9,538.78	21.90	20.93	-7.77	-25.43	-329.47	469.74	431.99	37.751	12.443	
10,000.00	9,973.94	9,667.25	9,543.31	21.91	20.92	-7.23	-16.21	-329.54	483.65	445.96	37.685	12.834	
10,025.00	9,995.17	9,675.00	9,546.59	21.93	20.92	-6.80	-9.19	-329.59	496.95	459.35	37.599	13.217	
10,050.00	10,015.67	9,687.98	9,551.84	21.94	20.92	-6.29	2.67	-329.67	509.59	472.02	37.566	13.565	
10,075.00	10,035.41	9,700.00	9,556.41	21.95	20.91	-5.86	13.80	-329.76	521.61	484.08	37.525	13.900	
10,100.00	10,054.31	9,708.90	9,559.61	21.96	20.91	-5.52	22.10	-329.82	532.97	495.50	37.464	14.226	
10,125.00	10,072.33	9,719.42	9,563.20	21.96	20.90	-5.19	31.99	-329.89	543.67	506.25	37.421	14.529	
10,150.00	10,089.42	9,725.00	9,565.01	21.97	20.90	-4.97	37.27	-329.93	553.75	516.40	37.352	14.825	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,175.00	10,105.53	9,740.57	9,569.74	21.97	20.89	-4.60	52.10	-330.04	563.06	525.71	37.350	15.075	
10,200.00	10,120.62	9,750.00	9,572.37	21.97	20.89	-4.35	61.15	-330.10	571.73	534.42	37.317	15.321	
10,225.00	10,134.65	9,761.85	9,575.42	21.97	20.88	-4.09	72.60	-330.19	579.71	542.41	37.303	15.541	
10,250.00	10,147.57	9,775.00	9,578.47	21.97	20.88	-3.83	85.40	-330.28	587.00	549.70	37.299	15.738	
10,275.00	10,159.35	9,783.22	9,580.19	21.97	20.88	-3.66	93.43	-330.34	593.56	556.28	37.281	15.921	
10,300.00	10,169.97	9,793.93	9,582.24	21.97	20.88	-3.46	103.94	-330.42	599.43	562.15	37.281	16.078	
10,325.00	10,179.39	9,800.00	9,583.29	21.97	20.88	-3.34	109.92	-330.46	604.62	567.34	37.278	16.219	
10,350.00	10,187.58	9,815.40	9,585.62	21.97	20.89	-3.10	125.15	-330.58	609.01	571.71	37.303	16.326	
10,375.00	10,194.52	9,825.00	9,586.82	21.98	20.91	-2.95	134.67	-330.65	612.72	575.40	37.324	16.416	
10,400.00	10,200.20	9,836.93	9,588.05	22.02	20.94	-2.78	146.53	-330.73	615.71	578.35	37.356	16.482	
10,425.00	10,204.60	9,850.00	9,589.05	22.10	20.99	-2.60	159.56	-330.83	617.98	580.58	37.395	16.526	
10,450.00	10,207.70	9,858.48	9,589.51	22.20	21.02	-2.49	168.03	-330.89	619.50	582.06	37.441	16.546	
10,475.00	10,209.50	9,875.00	9,589.98	22.31	21.09	-2.29	184.54	-331.01	620.36	582.87	37.493	16.546	
10,499.00	10,210.00	9,879.61	9,590.00	22.42	21.11	-2.23	189.16	-331.05	620.38	582.82	37.556	16.519	
10,600.00	10,209.56	9,976.50	9,589.59	22.98	21.62	-1.22	286.04	-331.76	620.01	582.21	37.805	16.400	
10,700.00	10,209.12	10,076.19	9,589.15	23.65	22.27	-0.49	385.72	-332.49	619.90	581.79	38.107	16.267	
10,800.00	10,208.68	10,176.08	9,588.72	24.42	23.04	-0.08	485.62	-333.23	619.88	581.41	38.468	16.114	
10,834.19	10,208.53	10,210.27	9,588.57	24.71	23.32	-0.01	519.80	-333.48	619.87	581.27	38.605	16.057	
10,875.60	10,208.35	10,251.67	9,588.38	25.07	23.70	0.02	561.20	-333.78	619.88	581.09	38.780	15.984	
10,900.00	10,208.25	10,276.08	9,588.28	25.29	23.92	0.02	585.61	-333.96	619.88	580.99	38.887	15.940	
11,000.00	10,207.81	10,376.08	9,587.84	26.24	24.90	0.02	685.60	-334.70	619.88	580.52	39.359	15.749	
11,100.00	10,207.37	10,476.08	9,587.40	27.29	25.98	0.02	785.60	-335.43	619.88	580.00	39.880	15.544	
11,200.00	10,206.94	10,576.08	9,586.97	28.41	27.14	0.02	885.59	-336.17	619.88	579.43	40.447	15.326	
11,300.00	10,206.50	10,676.08	9,586.53	29.61	28.37	0.02	985.59	-336.90	619.88	578.82	41.058	15.098	
11,400.00	10,206.06	10,776.08	9,586.09	30.87	29.66	0.02	1,085.59	-337.64	619.88	578.16	41.713	14.861	
11,500.00	10,205.63	10,876.08	9,585.65	32.18	31.01	0.02	1,185.58	-338.38	619.88	577.47	42.408	14.617	
11,600.00	10,205.19	10,976.08	9,585.22	33.55	32.41	0.02	1,285.58	-339.11	619.88	576.74	43.141	14.369	
11,700.00	10,204.75	11,076.08	9,584.78	34.96	33.86	0.02	1,385.58	-339.85	619.88	575.97	43.912	14.116	
11,800.00	10,204.31	11,176.08	9,584.34	36.41	35.33	0.02	1,485.57	-340.58	619.88	575.16	44.717	13.862	
11,900.00	10,203.88	11,276.08	9,583.90	37.89	36.85	0.02	1,585.57	-341.32	619.88	574.32	45.555	13.607	
12,000.00	10,203.44	11,376.08	9,583.47	39.41	38.39	0.02	1,685.57	-342.05	619.88	573.46	46.425	13.352	
12,100.00	10,203.00	11,476.08	9,583.03	40.95	39.96	0.02	1,785.56	-342.79	619.88	572.56	47.324	13.099	
12,200.00	10,202.57	11,576.08	9,582.59	42.52	41.55	0.02	1,885.56	-343.52	619.88	571.63	48.251	12.847	
12,300.00	10,202.13	11,676.08	9,582.15	44.11	43.16	0.02	1,985.55	-344.26	619.88	570.68	49.204	12.598	
12,400.00	10,201.69	11,776.08	9,581.72	45.71	44.79	0.01	2,085.55	-345.00	619.88	569.70	50.181	12.353	
12,500.00	10,201.26	11,876.08	9,581.28	47.34	46.44	0.01	2,185.55	-345.73	619.88	568.70	51.183	12.111	
12,600.00	10,200.82	11,976.08	9,580.84	48.98	48.10	0.01	2,285.54	-346.47	619.88	567.68	52.206	11.874	
12,700.00	10,200.38	12,076.08	9,580.41	50.64	49.78	0.01	2,385.54	-347.20	619.88	566.63	53.250	11.641	
12,800.00	10,199.95	12,176.08	9,579.97	52.31	51.46	0.01	2,485.54	-347.94	619.88	565.57	54.313	11.413	
12,900.00	10,199.51	12,276.08	9,579.53	53.99	53.16	0.01	2,585.53	-348.67	619.88	564.49	55.395	11.190	
13,000.00	10,199.07	12,376.08	9,579.09	55.68	54.87	0.01	2,685.53	-349.41	619.88	563.39	56.494	10.973	
13,100.00	10,198.63	12,476.08	9,578.66	57.38	56.58	0.01	2,785.52	-350.14	619.89	562.28	57.610	10.760	
13,200.00	10,198.20	12,576.08	9,578.22	59.09	58.31	0.01	2,885.52	-350.88	619.89	561.15	58.741	10.553	
13,300.00	10,197.76	12,676.08	9,577.78	60.81	60.04	0.01	2,985.52	-351.62	619.89	560.00	59.886	10.351	
13,400.00	10,197.32	12,776.08	9,577.34	62.54	61.78	0.01	3,085.51	-352.35	619.89	558.84	61.045	10.155	
13,500.00	10,196.89	12,876.08	9,576.91	64.27	63.53	0.01	3,185.51	-353.09	619.89	557.67	62.218	9.963	
13,600.00	10,196.45	12,976.08	9,576.47	66.01	65.28	0.01	3,285.51	-353.82	619.89	556.49	63.402	9.777	
13,700.00	10,196.01	13,076.08	9,576.03	67.76	67.03	0.01	3,385.50	-354.56	619.89	555.29	64.598	9.596	
13,800.00	10,195.58	13,176.08	9,575.59	69.51	68.79	0.01	3,485.50	-355.29	619.89	554.08	65.805	9.420	
13,900.00	10,195.14	13,276.08	9,575.16	71.26	70.56	0.01	3,585.50	-356.03	619.89	552.87	67.022	9.249	
14,000.00	10,194.70	13,376.08	9,574.72	73.02	72.33	0.01	3,685.49	-356.76	619.89	551.64	68.249	9.083	
14,100.00	10,194.27	13,476.08	9,574.28	74.79	74.10	0.01	3,785.49	-357.50	619.89	550.40	69.486	8.921	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
14,200.00	10,193.83	13,576.08	9,573.84	76.56	75.88	0.00	3,885.48	-358.23	619.89	549.16	70.731	8.764	
14,300.00	10,193.39	13,676.08	9,573.41	78.33	77.66	0.00	3,985.48	-358.97	619.89	547.91	71.985	8.611	
14,400.00	10,192.95	13,776.08	9,572.97	80.11	79.45	0.00	4,085.48	-359.71	619.89	546.64	73.246	8.463	
14,500.00	10,192.52	13,876.08	9,572.53	81.89	81.24	0.00	4,185.47	-360.44	619.89	545.38	74.515	8.319	
14,600.00	10,192.08	13,976.08	9,572.10	83.67	83.03	0.00	4,285.47	-361.18	619.89	544.10	75.791	8.179	
14,700.00	10,191.64	14,076.08	9,571.66	85.45	84.82	0.00	4,385.47	-361.91	619.89	542.82	77.074	8.043	
14,800.00	10,191.21	14,176.08	9,571.22	87.24	86.61	0.00	4,485.46	-362.65	619.89	541.53	78.364	7.910	
14,900.00	10,190.77	14,276.08	9,570.78	89.03	88.41	0.00	4,585.46	-363.38	619.89	540.23	79.659	7.782	
15,000.00	10,190.33	14,376.08	9,570.35	90.83	90.21	0.00	4,685.46	-364.12	619.89	538.93	80.960	7.657	
15,076.24	10,190.00	14,452.31	9,570.01	92.19	91.58	0.00	4,761.69	-364.68	619.89	537.94	81.956	7.564	

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	0.40	0.40	0.00	0.00	89.52	0.50	60.00	60.00				
100.00	100.00	100.40	100.40	0.08	0.09	89.52	0.50	60.00	60.00	59.83	.169	354.049	
200.00	200.00	200.40	200.40	0.31	0.31	89.52	0.50	60.00	60.00	59.38	.619	96.933	
300.00	300.00	300.40	300.40	0.53	0.53	89.52	0.50	60.00	60.00	58.93	1.069	56.153	
400.00	400.00	400.40	400.40	0.76	0.76	89.52	0.50	60.00	60.00	58.48	1.518	39.525	
500.00	500.00	500.40	500.40	0.98	0.98	89.52	0.50	60.00	60.00	58.03	1.968	30.495	
600.00	600.00	600.40	600.40	1.21	1.21	89.52	0.50	60.00	60.00	57.58	2.417	24.824	
700.00	700.00	700.40	700.40	1.43	1.43	89.52	0.50	60.00	60.00	57.14	2.867	20.931	
800.00	800.00	800.40	800.40	1.66	1.66	89.52	0.50	60.00	60.00	56.69	3.316	18.094	
900.00	900.00	900.40	900.40	1.88	1.88	89.52	0.50	60.00	60.00	56.24	3.766	15.934	
1,000.00	1,000.00	1,000.40	1,000.40	2.11	2.11	89.52	0.50	60.00	60.00	55.79	4.215	14.234	
1,100.00	1,100.00	1,100.40	1,100.40	2.33	2.33	89.52	0.50	60.00	60.00	55.34	4.665	12.863	
1,200.00	1,200.00	1,200.40	1,200.40	2.56	2.56	89.52	0.50	60.00	60.00	54.89	5.114	11.732	
1,300.00	1,300.00	1,300.40	1,300.40	2.78	2.78	89.52	0.50	60.00	60.00	54.44	5.564	10.784	
1,400.00	1,400.00	1,400.40	1,400.40	3.01	3.01	89.52	0.50	60.00	60.00	53.99	6.013	9.978	
1,500.00	1,500.00	1,500.40	1,500.40	3.23	3.23	89.52	0.50	60.00	60.00	53.54	6.463	9.284	
1,600.00	1,600.00	1,600.40	1,600.40	3.46	3.46	89.52	0.50	60.00	60.00	53.09	6.912	8.680	
1,700.00	1,700.00	1,700.40	1,700.40	3.68	3.68	89.52	0.50	60.00	60.00	52.64	7.362	8.150	
1,800.00	1,800.00	1,800.40	1,800.40	3.91	3.91	89.52	0.50	60.00	60.00	52.19	7.812	7.681	
1,900.00	1,900.00	1,900.40	1,900.40	4.13	4.13	89.52	0.50	60.00	60.00	51.74	8.261	7.263	
2,000.00	2,000.00	2,000.40	2,000.40	4.35	4.36	89.52	0.50	60.00	60.00	51.29	8.711	6.888	
2,100.00	2,100.00	2,100.40	2,100.40	4.58	4.58	89.52	0.50	60.00	60.00	50.84	9.160	6.550	
2,200.00	2,200.00	2,200.40	2,200.40	4.80	4.81	89.52	0.50	60.00	60.00	50.39	9.610	6.244	
2,300.00	2,300.00	2,300.40	2,300.40	5.03	5.03	89.52	0.50	60.00	60.00	49.94	10.059	5.965	
2,400.00	2,400.00	2,400.40	2,400.40	5.25	5.25	89.52	0.50	60.00	60.00	49.49	10.509	5.710	
2,500.00	2,500.00	2,500.40	2,500.40	5.48	5.48	89.52	0.50	60.00	60.00	49.04	10.958	5.476	
2,600.00	2,600.00	2,600.40	2,600.40	5.70	5.70	89.52	0.50	60.00	60.00	48.59	11.408	5.260	
2,700.00	2,700.00	2,700.40	2,700.40	5.93	5.93	89.52	0.50	60.00	60.00	48.14	11.857	5.060	
2,800.00	2,800.00	2,800.40	2,800.40	6.15	6.15	89.52	0.50	60.00	60.00	47.70	12.307	4.876	
2,900.00	2,900.00	2,900.40	2,900.40	6.38	6.38	89.52	0.50	60.00	60.00	47.25	12.756	4.704	
3,000.00	3,000.00	3,000.40	3,000.40	6.60	6.60	89.52	0.50	60.00	60.00	46.80	13.206	4.544	CC, ES
3,100.00	3,100.00	3,099.61	3,099.60	6.83	6.80	90.59	-0.62	60.65	60.66	47.03	13.625	4.452	SF
3,200.00	3,200.00	3,198.68	3,198.59	7.05	6.97	93.63	-3.97	62.58	62.74	48.72	14.018	4.475	
3,300.00	3,300.00	3,302.18	3,297.53	7.28	7.16	98.17	-9.44	65.74	66.48	52.06	14.419	4.610	
3,400.00	3,400.00	3,402.42	3,397.04	7.50	7.34	102.60	-15.47	69.22	71.00	56.18	14.821	4.791	
3,500.00	3,500.00	3,502.66	3,496.56	7.73	7.52	106.47	-21.49	72.70	75.91	60.68	15.227	4.985	
3,600.00	3,599.99	3,602.89	3,596.09	7.93	7.72	-110.92	-27.52	76.18	81.57	65.96	15.610	5.225	
3,700.00	3,699.91	3,703.12	3,695.62	8.10	7.91	-110.24	-33.55	79.66	88.25	72.27	15.974	5.524	
3,800.00	3,799.69	3,803.42	3,795.07	8.28	8.11	-111.11	-39.57	83.13	95.84	79.50	16.345	5.864	
3,900.00	3,899.38	3,903.79	3,894.46	8.46	8.31	-112.61	-45.59	86.61	103.96	87.23	16.724	6.216	
4,000.00	3,999.08	4,004.15	3,993.86	8.65	8.52	-113.89	-51.61	90.08	112.13	95.02	17.109	6.554	
4,100.00	4,098.77	4,104.51	4,093.25	8.84	8.73	-115.00	-57.63	93.56	120.36	102.86	17.501	6.877	
4,200.00	4,198.46	4,204.88	4,192.64	9.04	8.94	-115.96	-63.65	97.04	128.62	110.72	17.899	7.186	
4,300.00	4,298.15	4,305.24	4,292.04	9.24	9.15	-116.81	-69.67	100.51	136.92	118.61	18.303	7.481	
4,400.00	4,397.84	4,394.39	4,391.43	9.44	9.34	-117.56	-75.69	103.99	145.24	126.55	18.688	7.772	
4,500.00	4,497.53	4,505.97	4,490.82	9.65	9.59	-118.23	-81.70	107.46	153.58	134.46	19.126	8.030	
4,600.00	4,597.23	4,593.67	4,590.22	9.86	9.78	-118.83	-87.72	110.94	161.94	142.43	19.517	8.298	
4,700.00	4,696.92	4,706.70	4,689.61	10.07	10.03	-119.38	-93.74	114.41	170.32	150.36	19.967	8.530	
4,800.00	4,796.61	4,807.06	4,789.00	10.28	10.25	-119.87	-99.76	117.89	178.72	158.32	20.394	8.763	
4,900.00	4,896.30	4,907.43	4,888.40	10.50	10.48	-120.31	-105.78	121.36	187.12	166.30	20.824	8.986	
5,000.00	4,995.99	5,007.79	4,987.79	10.72	10.71	-120.72	-111.80	124.84	195.53	174.28	21.258	9.198	
5,100.00	5,095.68	5,108.15	5,087.18	10.94	10.94	-121.10	-117.82	128.31	203.96	182.26	21.696	9.401	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	5,195.38	5,208.52	5,186.58	11.17	11.17	-121.44	-123.84	131.79	212.39	190.25	22.136	9.595	
5,300.00	5,295.07	5,308.88	5,285.97	11.39	11.40	-121.76	-129.86	135.26	220.83	198.25	22.580	9.780	
5,400.00	5,394.76	5,409.25	5,385.36	11.62	11.63	-122.06	-135.88	138.74	229.27	206.25	23.026	9.957	
5,500.00	5,494.45	5,509.61	5,484.76	11.85	11.87	-122.33	-141.90	142.21	237.72	214.25	23.475	10.127	
5,600.00	5,594.14	5,609.97	5,584.15	12.08	12.10	-122.59	-147.91	145.69	246.18	222.25	23.926	10.289	
5,700.00	5,693.83	5,689.66	5,683.54	12.31	12.29	-122.83	-153.93	149.16	254.64	230.31	24.332	10.465	
5,800.00	5,793.53	5,789.30	5,782.94	12.54	12.52	-123.05	-159.95	152.64	263.10	238.32	24.786	10.615	
5,900.00	5,893.22	5,888.94	5,882.33	12.78	12.76	-123.26	-165.97	156.11	271.57	246.33	25.242	10.759	
6,000.00	5,992.91	5,988.57	5,981.72	13.02	13.00	-123.45	-171.99	159.59	280.04	254.34	25.700	10.897	
6,100.00	6,092.60	6,088.21	6,081.12	13.25	13.24	-123.64	-178.01	163.06	288.52	262.36	26.160	11.029	
6,200.00	6,192.29	6,187.84	6,180.51	13.49	13.48	-123.81	-184.03	166.54	296.99	270.37	26.621	11.156	
6,300.00	6,291.99	6,287.48	6,279.90	13.73	13.72	-123.98	-190.05	170.01	305.47	278.39	27.085	11.278	
6,400.00	6,391.68	6,387.12	6,379.30	13.97	13.96	-124.14	-196.07	173.49	313.96	286.41	27.549	11.396	
6,500.00	6,491.37	6,486.75	6,478.69	14.21	14.20	-124.28	-202.09	176.96	322.44	294.42	28.016	11.509	
6,600.00	6,591.06	6,586.39	6,578.08	14.46	14.44	-124.42	-208.11	180.44	330.93	302.44	28.484	11.618	
6,700.00	6,690.75	6,686.02	6,677.48	14.70	14.68	-124.56	-214.12	183.91	339.41	310.46	28.953	11.723	
6,800.00	6,790.44	6,785.66	6,776.87	14.95	14.92	-124.68	-220.14	187.39	347.90	318.48	29.423	11.824	
6,900.00	6,890.14	6,885.30	6,876.26	15.19	15.17	-124.80	-226.16	190.86	356.40	326.50	29.895	11.922	
7,000.00	6,989.83	6,984.93	6,975.66	15.44	15.41	-124.92	-232.18	194.34	364.89	334.52	30.368	12.016	
7,100.00	7,089.52	7,084.57	7,075.05	15.68	15.66	-125.03	-238.20	197.81	373.38	342.54	30.842	12.106	
7,200.00	7,189.21	7,184.20	7,174.45	15.93	15.90	-125.13	-244.22	201.29	381.88	350.56	31.317	12.194	
7,300.00	7,288.90	7,283.84	7,273.84	16.18	16.15	-125.23	-250.24	204.76	390.38	358.58	31.793	12.279	
7,400.00	7,388.59	7,383.48	7,373.23	16.43	16.39	-125.33	-256.26	208.24	398.87	366.60	32.270	12.361	
7,500.00	7,488.29	7,483.11	7,472.63	16.68	16.64	-125.42	-262.28	211.71	407.37	374.63	32.748	12.440	
7,600.00	7,587.98	7,582.75	7,572.02	16.93	16.88	-125.51	-268.30	215.19	415.87	382.65	33.227	12.516	
7,700.00	7,687.67	7,682.38	7,671.41	17.18	17.13	-125.59	-274.32	218.66	424.37	390.67	33.706	12.590	
7,800.00	7,787.36	7,783.44	7,772.22	17.43	17.38	-125.68	-280.36	222.16	432.84	398.65	34.192	12.659	
7,900.00	7,887.05	7,889.95	7,878.60	17.68	17.63	-126.00	-284.98	224.82	440.24	405.56	34.686	12.692	
8,000.00	7,986.74	7,996.52	7,985.14	17.94	17.87	-126.61	-287.02	226.00	446.12	410.96	35.163	12.687	
8,100.00	8,086.44	8,101.78	8,086.84	18.19	18.07	-127.41	-287.13	226.06	450.92	415.31	35.608	12.663	
8,200.00	8,186.13	8,202.09	8,186.53	18.44	18.26	-128.20	-287.13	226.06	455.74	419.70	36.040	12.645	
8,264.07	8,250.00	8,261.78	8,250.40	18.60	18.37	-128.69	-287.13	226.06	458.87	422.56	36.308	12.638	
8,300.00	8,285.83	8,302.39	8,286.23	18.69	18.45	-128.97	-287.13	226.06	460.54	424.07	36.471	12.627	
8,400.00	8,385.67	8,402.55	8,386.07	18.93	18.64	-129.54	-287.13	226.06	464.09	427.19	36.894	12.579	
8,500.00	8,485.63	8,502.59	8,486.03	19.16	18.83	-129.85	-287.13	226.06	465.99	428.69	37.307	12.491	
8,564.07	8,549.69	8,561.47	8,550.09	19.28	18.95	90.10	-287.13	226.06	466.34	428.79	37.552	12.418	
8,600.00	8,585.62	8,602.60	8,586.02	19.35	19.03	90.10	-287.13	226.06	466.34	428.64	37.702	12.369	
8,700.00	8,685.62	8,702.60	8,686.02	19.55	19.22	90.10	-287.13	226.06	466.34	428.24	38.093	12.242	
8,800.00	8,785.62	8,802.60	8,786.02	19.74	19.42	90.10	-287.13	226.06	466.34	427.85	38.485	12.117	
8,900.00	8,885.62	8,902.60	8,886.02	19.93	19.61	90.10	-287.13	226.06	466.34	427.46	38.879	11.995	
9,000.00	8,985.62	9,002.60	8,986.02	20.13	19.81	90.10	-287.13	226.06	466.34	427.06	39.274	11.874	
9,100.00	9,085.62	9,102.60	9,086.02	20.32	20.00	90.10	-287.13	226.06	466.34	426.67	39.670	11.756	
9,200.00	9,185.62	9,202.60	9,186.02	20.52	20.20	90.10	-287.13	226.06	466.34	426.27	40.066	11.639	
9,300.00	9,285.62	9,302.60	9,286.02	20.71	20.40	90.10	-287.13	226.06	466.34	425.87	40.465	11.525	
9,400.00	9,385.62	9,402.60	9,386.02	20.91	20.59	90.10	-287.13	226.06	466.34	425.47	40.864	11.412	
9,500.00	9,485.62	9,502.60	9,486.02	21.11	20.79	90.10	-287.13	226.06	466.34	425.07	41.264	11.301	
9,600.00	9,585.62	9,602.60	9,586.02	21.30	20.99	90.10	-287.13	226.06	466.34	424.67	41.665	11.193	
9,700.00	9,685.62	9,702.60	9,686.02	21.50	21.19	90.10	-287.13	226.06	466.34	424.27	42.067	11.086	
9,746.92	9,732.54	9,744.32	9,732.94	21.59	21.28	90.10	-287.13	226.06	466.34	424.09	42.246	11.039	
9,750.00	9,735.62	9,747.40	9,736.02	21.60	21.28	98.05	-287.13	226.06	466.34	424.08	42.258	11.035	
9,775.00	9,760.61	9,772.39	9,761.01	21.65	21.33	98.13	-287.13	226.06	466.45	424.10	42.357	11.012	
9,800.00	9,785.51	9,802.71	9,785.91	21.69	21.39	98.35	-287.13	226.06	466.76	424.30	42.462	10.992	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
9,825.00	9,810.27	9,822.06	9,810.67	21.73	21.43	98.70	-287.13	226.06	467.27	424.73	42.542	10.984	
9,850.00	9,834.82	9,846.60	9,835.22	21.77	21.48	99.18	-287.13	226.06	468.02	425.39	42.628	10.979	
9,875.00	9,859.09	9,870.87	9,859.49	21.80	21.53	99.76	-287.13	226.06	469.03	426.32	42.709	10.982	
9,900.00	9,883.01	9,895.21	9,883.41	21.83	21.60	100.44	-287.13	226.06	470.36	427.55	42.806	10.988	
9,925.00	9,906.52	9,918.30	9,906.92	21.86	21.62	101.19	-287.13	226.06	472.05	429.20	42.857	11.015	
9,950.00	9,929.55	9,941.34	9,929.95	21.88	21.67	102.01	-287.13	226.06	474.17	431.24	42.923	11.047	
9,975.00	9,952.05	9,963.83	9,952.45	21.90	21.72	102.86	-287.13	226.06	476.77	433.78	42.985	11.091	
10,000.00	9,973.94	9,985.72	9,974.34	21.91	21.76	103.73	-287.13	226.06	479.91	436.87	43.042	11.150	
10,025.00	9,995.17	10,006.95	9,995.57	21.93	21.80	104.60	-287.13	226.06	483.68	440.58	43.095	11.224	
10,050.00	10,015.67	10,027.46	10,016.07	21.94	21.84	105.43	-287.13	226.06	488.12	444.98	43.143	11.314	
10,075.00	10,035.41	10,047.19	10,035.81	21.95	21.88	106.21	-287.13	226.06	493.31	450.13	43.187	11.423	
10,100.00	10,054.31	10,066.09	10,054.71	21.96	21.92	106.91	-287.13	226.06	499.30	456.08	43.227	11.551	
10,125.00	10,072.33	10,084.11	10,072.73	21.96	21.96	107.51	-287.13	226.06	506.15	462.89	43.263	11.699	
10,150.00	10,089.42	10,101.20	10,089.82	21.97	21.99	107.98	-287.13	226.06	513.89	470.60	43.296	11.869	
10,175.00	10,105.53	10,117.31	10,105.93	21.97	22.02	108.30	-287.13	226.06	522.56	479.24	43.326	12.061	
10,200.00	10,120.62	10,132.40	10,121.02	21.97	22.06	108.46	-287.13	226.06	532.18	488.83	43.353	12.276	
10,225.00	10,134.65	10,146.43	10,135.05	21.97	22.08	108.43	-287.13	226.06	542.77	499.39	43.377	12.513	
10,250.00	10,147.57	10,159.35	10,147.97	21.97	22.11	108.18	-287.13	226.06	554.31	510.92	43.399	12.773	
10,275.00	10,159.35	10,171.14	10,159.75	21.97	22.13	107.70	-287.13	226.06	566.81	523.39	43.418	13.055	
10,300.00	10,169.97	10,181.75	10,170.37	21.97	22.15	106.96	-287.13	226.06	580.23	536.79	43.435	13.358	
10,325.00	10,179.39	10,191.17	10,179.79	21.97	22.17	105.95	-287.13	226.06	594.53	551.08	43.450	13.683	
10,350.00	10,187.58	10,200.64	10,187.98	21.97	22.19	104.64	-287.13	226.06	609.69	566.22	43.465	14.027	
10,375.00	10,194.52	10,206.31	10,194.92	21.98	22.20	103.00	-287.13	226.06	625.63	582.16	43.472	14.392	
10,400.00	10,200.20	10,211.98	10,200.60	22.02	22.22	101.03	-287.13	226.06	642.31	598.83	43.479	14.773	
10,425.00	10,204.60	10,216.38	10,205.00	22.10	22.22	98.70	-287.13	226.06	659.65	616.17	43.483	15.170	
10,450.00	10,207.70	10,219.48	10,208.10	22.20	22.23	96.01	-287.13	226.06	677.59	634.10	43.485	15.582	
10,475.00	10,209.50	10,221.28	10,209.90	22.31	22.23	92.96	-287.13	226.06	696.04	652.56	43.484	16.007	
10,499.00	10,210.00	10,221.78	10,210.40	22.42	22.24	89.71	-287.13	226.06	714.17	670.69	43.481	16.425	
10,600.00	10,209.56	10,221.34	10,209.96	22.98	22.23	89.67	-287.13	226.06	792.86	749.39	43.470	18.239	
10,700.00	10,209.12	11,134.20	10,704.37	23.65	23.90	127.93	329.51	312.63	811.16	766.14	45.020	18.018	
10,800.00	10,208.68	11,262.50	10,703.81	24.42	24.74	127.13	457.46	321.96	821.00	774.72	46.277	17.741	
10,875.60	10,208.35	11,360.46	10,703.39	25.07	25.50	126.88	555.36	325.23	824.25	776.87	47.380	17.396	
10,900.00	10,208.25	11,392.16	10,703.25	25.29	25.76	126.86	587.06	325.57	824.60	776.85	47.754	17.268	
11,000.00	10,207.81	11,500.40	10,702.77	26.24	26.74	126.85	695.30	325.00	824.74	775.51	49.228	16.753	
11,100.00	10,207.37	11,600.40	10,702.34	27.29	27.73	126.85	795.29	324.27	824.74	773.95	50.783	16.240	
11,200.00	10,206.94	11,700.40	10,701.90	28.41	28.81	126.85	895.29	323.54	824.74	772.26	52.473	15.717	
11,300.00	10,206.50	11,800.40	10,701.47	29.61	29.97	126.85	995.29	322.81	824.73	770.45	54.287	15.192	
11,400.00	10,206.06	11,900.40	10,701.03	30.87	31.19	126.85	1,095.28	322.07	824.73	768.52	56.211	14.672	
11,500.00	10,205.63	12,000.40	10,700.59	32.18	32.47	126.85	1,195.28	321.34	824.73	766.50	58.236	14.162	
11,600.00	10,205.19	12,100.40	10,700.16	33.55	33.80	126.85	1,295.27	320.61	824.73	764.38	60.352	13.665	
11,700.00	10,204.75	12,200.40	10,699.72	34.96	35.18	126.85	1,395.27	319.88	824.73	762.18	62.548	13.186	
11,800.00	10,204.31	12,300.40	10,699.28	36.41	36.60	126.85	1,495.27	319.15	824.73	759.91	64.817	12.724	
11,900.00	10,203.88	12,400.40	10,698.85	37.89	38.06	126.85	1,595.26	318.42	824.73	757.58	67.151	12.282	
12,000.00	10,203.44	12,500.40	10,698.41	39.41	39.55	126.85	1,695.26	317.69	824.73	755.18	69.544	11.859	
12,100.00	10,203.00	12,600.40	10,697.98	40.95	41.07	126.85	1,795.26	316.95	824.72	752.73	71.991	11.456	
12,200.00	10,202.57	12,700.40	10,697.54	42.52	42.62	126.85	1,895.25	316.22	824.72	750.24	74.485	11.072	
12,300.00	10,202.13	12,800.40	10,697.10	44.11	44.18	126.85	1,995.25	315.49	824.72	747.70	77.022	10.708	
12,400.00	10,201.69	12,900.40	10,696.67	45.71	45.77	126.85	2,095.25	314.76	824.72	745.12	79.598	10.361	
12,500.00	10,201.26	13,000.40	10,696.23	47.34	47.38	126.85	2,195.24	314.03	824.72	742.51	82.209	10.032	
12,600.00	10,200.82	13,100.40	10,695.79	48.98	49.01	126.85	2,295.24	313.30	824.72	739.87	84.853	9.719	
12,700.00	10,200.38	13,200.40	10,695.36	50.64	50.65	126.85	2,395.23	312.57	824.72	737.19	87.526	9.423	
12,800.00	10,199.95	13,300.40	10,694.92	52.31	52.31	126.85	2,495.23	311.83	824.72	734.49	90.225	9.141	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
12,900.00	10,199.51	13,400.40	10,694.49	53.99	53.97	126.85	2,595.23	311.10	824.72	731.77	92.949	8.873	
13,000.00	10,199.07	13,500.40	10,694.05	55.68	55.65	126.85	2,695.22	310.37	824.71	729.02	95.695	8.618	
13,100.00	10,198.63	13,600.40	10,693.61	57.38	57.34	126.85	2,795.22	309.64	824.71	726.25	98.461	8.376	
13,200.00	10,198.20	13,700.40	10,693.18	59.09	59.04	126.85	2,895.22	308.91	824.71	723.47	101.246	8.146	
13,300.00	10,197.76	13,800.40	10,692.74	60.81	60.75	126.85	2,995.21	308.18	824.71	720.66	104.048	7.926	
13,400.00	10,197.32	13,900.40	10,692.30	62.54	62.47	126.85	3,095.21	307.45	824.71	717.84	106.865	7.717	
13,500.00	10,196.89	14,000.40	10,691.87	64.27	64.19	126.85	3,195.21	306.71	824.71	715.01	109.698	7.518	
13,600.00	10,196.45	14,100.40	10,691.43	66.01	65.92	126.85	3,295.20	305.98	824.71	712.16	112.544	7.328	
13,700.00	10,196.01	14,200.40	10,690.99	67.76	67.66	126.85	3,395.20	305.25	824.71	709.30	115.402	7.146	
13,800.00	10,195.58	14,300.40	10,690.56	69.51	69.40	126.85	3,495.19	304.52	824.71	706.43	118.272	6.973	
13,900.00	10,195.14	14,400.40	10,690.12	71.26	71.15	126.85	3,595.19	303.79	824.70	703.55	121.153	6.807	
14,000.00	10,194.70	14,500.40	10,689.69	73.02	72.91	126.85	3,695.19	303.06	824.70	700.66	124.044	6.648	
14,100.00	10,194.27	14,600.40	10,689.25	74.79	74.66	126.85	3,795.18	302.32	824.70	697.76	126.944	6.497	
14,200.00	10,193.83	14,700.40	10,688.81	76.56	76.43	126.85	3,895.18	301.59	824.70	694.85	129.853	6.351	
14,300.00	10,193.39	14,800.40	10,688.38	78.33	78.19	126.85	3,995.18	300.86	824.70	691.93	132.770	6.212	
14,400.00	10,192.95	14,900.40	10,687.94	80.11	79.96	126.85	4,095.17	300.13	824.70	689.00	135.694	6.078	
14,500.00	10,192.52	15,000.40	10,687.50	81.89	81.74	126.85	4,195.17	299.40	824.70	686.07	138.626	5.949	
14,600.00	10,192.08	15,100.40	10,687.07	83.67	83.52	126.85	4,295.17	298.67	824.70	683.13	141.564	5.826	
14,700.00	10,191.64	15,200.40	10,686.63	85.45	85.30	126.85	4,395.16	297.94	824.70	680.19	144.509	5.707	
14,800.00	10,191.21	15,300.40	10,686.20	87.24	87.08	126.85	4,495.16	297.20	824.69	677.23	147.459	5.593	
14,900.00	10,190.77	15,400.40	10,685.76	89.03	88.87	126.85	4,595.15	296.47	824.69	674.28	150.415	5.483	
15,000.00	10,190.33	15,500.40	10,685.32	90.83	90.65	126.85	4,695.15	295.74	824.69	671.32	153.377	5.377	
15,076.24	10,190.00	15,576.64	10,684.99	92.19	92.02	126.85	4,771.38	295.18	824.69	669.05	155.638	5.299	

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	0.40	0.40	0.00	0.00	89.62	0.20	30.00	30.00				
100.00	100.00	100.40	100.40	0.08	0.09	89.62	0.20	30.00	30.00	29.83	.169	177.022	
200.00	200.00	200.40	200.40	0.31	0.31	89.62	0.20	30.00	30.00	29.38	.619	48.466	
300.00	300.00	300.40	300.40	0.53	0.53	89.62	0.20	30.00	30.00	28.93	1.069	28.076	
400.00	400.00	400.40	400.40	0.76	0.76	89.62	0.20	30.00	30.00	28.48	1.518	19.762	
500.00	500.00	500.40	500.40	0.98	0.98	89.62	0.20	30.00	30.00	28.03	1.968	15.247	
600.00	600.00	600.40	600.40	1.21	1.21	89.62	0.20	30.00	30.00	27.58	2.417	12.412	
700.00	700.00	700.40	700.40	1.43	1.43	89.62	0.20	30.00	30.00	27.13	2.867	10.465	
800.00	800.00	800.40	800.40	1.66	1.66	89.62	0.20	30.00	30.00	26.68	3.316	9.047	
900.00	900.00	900.40	900.40	1.88	1.88	89.62	0.20	30.00	30.00	26.23	3.766	7.967	
1,000.00	1,000.00	1,000.40	1,000.40	2.11	2.11	89.62	0.20	30.00	30.00	25.79	4.215	7.117	
1,100.00	1,100.00	1,100.40	1,100.40	2.33	2.33	89.62	0.20	30.00	30.00	25.34	4.665	6.431	
1,200.00	1,200.00	1,200.40	1,200.40	2.56	2.56	89.62	0.20	30.00	30.00	24.89	5.114	5.866	
1,300.00	1,300.00	1,300.40	1,300.40	2.78	2.78	89.62	0.20	30.00	30.00	24.44	5.564	5.392	
1,400.00	1,400.00	1,400.40	1,400.40	3.01	3.01	89.62	0.20	30.00	30.00	23.99	6.013	4.989	
1,500.00	1,500.00	1,500.40	1,500.40	3.23	3.23	89.62	0.20	30.00	30.00	23.54	6.463	4.642	
1,600.00	1,600.00	1,600.40	1,600.40	3.46	3.46	89.62	0.20	30.00	30.00	23.09	6.912	4.340	
1,700.00	1,700.00	1,700.40	1,700.40	3.68	3.68	89.62	0.20	30.00	30.00	22.64	7.362	4.075	
1,800.00	1,800.00	1,800.40	1,800.40	3.91	3.91	89.62	0.20	30.00	30.00	22.19	7.812	3.841	
1,900.00	1,900.00	1,900.40	1,900.40	4.13	4.13	89.62	0.20	30.00	30.00	21.74	8.261	3.632	
2,000.00	2,000.00	2,000.40	2,000.40	4.35	4.36	89.62	0.20	30.00	30.00	21.29	8.711	3.444	
2,100.00	2,100.00	2,100.40	2,100.40	4.58	4.58	89.62	0.20	30.00	30.00	20.84	9.160	3.275	
2,200.00	2,200.00	2,200.40	2,200.40	4.80	4.81	89.62	0.20	30.00	30.00	20.39	9.610	3.122	
2,300.00	2,300.00	2,300.40	2,300.40	5.03	5.03	89.62	0.20	30.00	30.00	19.94	10.059	2.982	
2,400.00	2,400.00	2,400.40	2,400.40	5.25	5.25	89.62	0.20	30.00	30.00	19.49	10.509	2.855	
2,500.00	2,500.00	2,500.40	2,500.40	5.48	5.48	89.62	0.20	30.00	30.00	19.04	10.958	2.738	
2,600.00	2,600.00	2,600.40	2,600.40	5.70	5.70	89.62	0.20	30.00	30.00	18.59	11.408	2.630	
2,700.00	2,700.00	2,700.40	2,700.40	5.93	5.93	89.62	0.20	30.00	30.00	18.14	11.857	2.530	
2,800.00	2,800.00	2,800.40	2,800.40	6.15	6.15	89.62	0.20	30.00	30.00	17.69	12.307	2.438	
2,900.00	2,900.00	2,900.40	2,900.40	6.38	6.38	89.62	0.20	30.00	30.00	17.24	12.756	2.352	
3,000.00	3,000.00	3,000.40	3,000.40	6.60	6.60	89.62	0.20	30.00	30.00	16.79	13.206	2.272	
3,100.00	3,100.00	3,100.40	3,100.40	6.83	6.83	89.62	0.20	30.00	30.00	16.35	13.655	2.197	
3,200.00	3,200.00	3,200.40	3,200.40	7.05	7.05	89.62	0.20	30.00	30.00	15.90	14.105	2.127	
3,300.00	3,300.00	3,300.40	3,300.40	7.28	7.28	89.62	0.20	30.00	30.00	15.45	14.554	2.061	
3,400.00	3,400.00	3,400.40	3,400.40	7.50	7.50	89.62	0.20	30.00	30.00	15.00	15.004	2.000	
3,500.00	3,500.00	3,500.40	3,500.40	7.73	7.73	89.62	0.20	30.00	30.00	14.55	15.454	1.941	CC, ES, SF
3,600.00	3,599.99	3,600.39	3,600.39	7.93	7.95	-132.22	0.20	30.00	30.86	14.99	15.877	1.944	
3,700.00	3,699.91	3,700.31	3,700.31	8.10	8.18	-137.15	0.20	30.00	33.63	17.35	16.276	2.066	
3,800.00	3,799.69	3,800.09	3,800.09	8.28	8.40	-143.70	0.20	30.00	38.68	22.01	16.677	2.320	
3,900.00	3,899.38	3,900.22	3,899.78	8.46	8.63	-149.59	0.20	30.00	45.25	28.17	17.082	2.649	
4,000.00	3,999.08	3,999.48	3,999.48	8.65	8.85	-153.95	0.20	30.00	52.17	34.69	17.487	2.984	
4,100.00	4,098.77	4,100.49	4,100.48	8.84	9.05	-156.66	-0.92	29.30	58.21	40.34	17.868	3.258	
4,200.00	4,198.46	4,201.78	4,201.69	9.04	9.22	-157.64	-4.32	27.18	62.05	43.83	18.220	3.406	
4,300.00	4,298.15	4,302.68	4,302.38	9.24	9.40	-157.40	-9.82	23.74	63.76	45.18	18.576	3.432	
4,400.00	4,397.84	4,402.67	4,402.13	9.44	9.58	-156.93	-15.74	20.04	65.00	46.06	18.944	3.431	
4,500.00	4,497.53	4,502.67	4,501.87	9.65	9.76	-156.48	-21.65	16.35	66.25	46.93	19.317	3.430	
4,600.00	4,597.23	4,602.66	4,601.62	9.86	9.95	-156.04	-27.57	12.65	67.50	47.81	19.695	3.427	
4,700.00	4,696.92	4,702.65	4,701.37	10.07	10.14	-155.62	-33.48	8.95	68.76	48.68	20.078	3.425	
4,800.00	4,796.61	4,802.64	4,801.12	10.28	10.33	-155.21	-39.40	5.26	70.02	49.55	20.464	3.421	
4,900.00	4,896.30	4,902.63	4,900.86	10.50	10.52	-154.82	-45.31	1.56	71.28	50.42	20.855	3.418	
5,000.00	4,995.99	5,002.62	5,000.61	10.72	10.72	-154.44	-51.23	-2.14	72.54	51.29	21.250	3.414	
5,100.00	5,095.68	5,102.61	5,100.36	10.94	10.92	-154.08	-57.14	-5.83	73.81	52.16	21.648	3.410	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	5,195.38	5,202.60	5,200.11	11.17	11.12	-153.73	-63.06	-9.53	75.08	53.03	22.051	3.405	
5,300.00	5,295.07	5,302.59	5,299.85	11.39	11.33	-153.39	-68.97	-13.22	76.36	53.90	22.456	3.400	
5,400.00	5,394.76	5,402.58	5,399.60	11.62	11.54	-153.06	-74.89	-16.92	77.63	54.77	22.865	3.395	
5,500.00	5,494.45	5,502.57	5,499.35	11.85	11.75	-152.74	-80.80	-20.62	78.91	55.64	23.277	3.390	
5,600.00	5,594.14	5,602.57	5,599.09	12.08	11.96	-152.43	-86.72	-24.31	80.20	56.50	23.692	3.385	
5,700.00	5,693.83	5,702.56	5,698.84	12.31	12.17	-152.13	-92.63	-28.01	81.48	57.37	24.110	3.380	
5,800.00	5,793.53	5,802.55	5,798.59	12.54	12.39	-151.84	-98.55	-31.70	82.77	58.24	24.530	3.374	
5,900.00	5,893.22	5,902.54	5,898.34	12.78	12.60	-151.56	-104.46	-35.40	84.05	59.10	24.954	3.368	
6,000.00	5,992.91	6,002.53	5,998.08	13.02	12.82	-151.29	-110.38	-39.10	85.34	59.96	25.379	3.363	
6,100.00	6,092.60	6,102.52	6,097.83	13.25	13.04	-151.02	-116.29	-42.79	86.64	60.83	25.808	3.357	
6,200.00	6,192.29	6,202.51	6,197.58	13.49	13.26	-150.76	-122.21	-46.49	87.93	61.69	26.238	3.351	
6,300.00	6,291.99	6,302.50	6,297.33	13.73	13.49	-150.52	-128.12	-50.19	89.23	62.55	26.671	3.345	
6,400.00	6,391.68	6,402.49	6,397.07	13.97	13.71	-150.27	-134.04	-53.88	90.52	63.42	27.106	3.340	
6,500.00	6,491.37	6,502.48	6,496.82	14.21	13.94	-150.04	-139.95	-57.58	91.82	64.28	27.543	3.334	
6,600.00	6,591.06	6,602.47	6,596.57	14.46	14.16	-149.81	-145.87	-61.27	93.12	65.14	27.982	3.328	
6,700.00	6,690.75	6,702.46	6,696.31	14.70	14.39	-149.59	-151.78	-64.97	94.42	66.00	28.422	3.322	
6,800.00	6,790.44	6,802.46	6,796.06	14.95	14.62	-149.37	-157.70	-68.67	95.73	66.86	28.865	3.316	
6,900.00	6,890.14	6,902.45	6,895.81	15.19	14.85	-149.16	-163.62	-72.36	97.03	67.72	29.309	3.311	
7,000.00	6,989.83	7,002.44	6,995.56	15.44	15.08	-148.96	-169.53	-76.06	98.34	68.58	29.755	3.305	
7,100.00	7,089.52	7,102.43	7,095.30	15.68	15.31	-148.76	-175.45	-79.76	99.64	69.44	30.203	3.299	
7,200.00	7,189.21	7,202.42	7,195.05	15.93	15.55	-148.56	-181.36	-83.45	100.95	70.30	30.652	3.293	
7,300.00	7,288.90	7,302.41	7,294.80	16.18	15.78	-148.37	-187.28	-87.15	102.26	71.16	31.103	3.288	
7,400.00	7,388.59	7,402.40	7,394.55	16.43	16.02	-148.19	-193.19	-90.84	103.57	72.02	31.555	3.282	
7,500.00	7,488.29	7,502.39	7,494.29	16.68	16.25	-148.01	-199.11	-94.54	104.88	72.87	32.008	3.277	
7,600.00	7,587.98	7,602.38	7,594.04	16.93	16.49	-147.83	-205.02	-98.24	106.20	73.73	32.463	3.271	
7,700.00	7,687.67	7,702.37	7,693.79	17.18	16.72	-147.66	-210.94	-101.93	107.51	74.59	32.919	3.266	
7,800.00	7,787.36	7,802.36	7,793.53	17.43	16.96	-147.50	-216.85	-105.63	108.82	75.45	33.376	3.260	
7,900.00	7,887.05	7,902.36	7,893.28	17.68	17.20	-147.33	-222.77	-109.33	110.14	76.30	33.835	3.255	
8,000.00	7,986.74	8,002.35	7,993.03	17.94	17.44	-147.17	-228.68	-113.02	111.45	77.16	34.294	3.250	
8,100.00	8,086.44	8,102.34	8,092.78	18.19	17.68	-147.02	-234.60	-116.72	112.77	78.02	34.755	3.245	
8,200.00	8,186.13	8,202.33	8,192.52	18.44	17.92	-146.87	-240.51	-120.41	114.09	78.87	35.217	3.240	
8,264.07	8,250.00	8,266.39	8,256.43	18.60	18.07	-146.77	-244.30	-122.78	114.93	79.42	35.513	3.236	
8,300.00	8,285.83	8,302.32	8,292.27	18.69	18.16	-146.67	-246.43	-124.11	115.27	79.59	35.680	3.231	
8,400.00	8,385.67	8,402.30	8,392.01	18.93	18.40	-145.90	-252.34	-127.81	114.72	78.56	36.157	3.173	
8,500.00	8,485.63	8,502.22	8,491.68	19.16	18.64	-144.35	-258.25	-131.50	112.05	75.40	36.652	3.057	
8,564.07	8,549.69	8,566.17	8,555.48	19.28	18.80	77.13	-262.04	-133.86	109.28	72.30	36.978	2.955	
8,600.00	8,585.62	8,602.01	8,591.23	19.35	18.88	78.08	-264.16	-135.19	107.53	70.36	37.163	2.893	
8,700.00	8,685.62	8,701.77	8,690.75	19.55	19.13	80.87	-270.06	-138.88	102.80	65.12	37.683	2.728	
8,800.00	8,785.62	8,801.52	8,790.26	19.74	19.37	83.93	-275.96	-142.56	98.35	60.14	38.215	2.574	
8,900.00	8,885.62	8,900.01	8,888.57	19.93	19.60	86.71	-280.91	-145.66	94.80	56.07	38.735	2.447	
9,000.00	8,985.62	8,998.59	8,987.09	20.13	19.82	88.39	-283.73	-147.42	92.90	53.69	39.206	2.369	
9,100.00	9,085.62	9,102.47	9,086.02	20.32	20.03	88.81	-284.43	-147.85	92.44	52.81	39.629	2.333	
9,200.00	9,185.62	9,202.47	9,186.02	20.52	20.23	88.81	-284.43	-147.85	92.44	52.41	40.027	2.309	
9,300.00	9,285.62	9,302.47	9,286.02	20.71	20.43	88.81	-284.43	-147.85	92.44	52.01	40.425	2.287	
9,400.00	9,385.62	9,402.47	9,386.02	20.91	20.62	88.81	-284.43	-147.85	92.44	51.61	40.825	2.264	
9,500.00	9,485.62	9,502.47	9,486.02	21.11	20.82	88.81	-284.43	-147.85	92.44	51.21	41.225	2.242	
9,600.00	9,585.62	9,602.47	9,586.02	21.30	21.02	88.81	-284.43	-147.85	92.44	50.81	41.627	2.221	
9,700.00	9,685.62	9,702.47	9,686.02	21.50	21.22	88.81	-284.43	-147.85	92.44	50.41	42.029	2.199	
9,746.92	9,732.54	9,744.44	9,732.94	21.59	21.30	88.81	-284.43	-147.85	92.44	50.23	42.209	2.190	
9,750.00	9,735.62	9,747.53	9,736.02	21.60	21.31	96.77	-284.43	-147.85	92.44	50.22	42.221	2.189	
9,775.00	9,760.61	9,772.51	9,761.01	21.65	21.36	97.26	-284.43	-147.85	92.54	50.20	42.334	2.186	
9,800.00	9,785.51	9,802.58	9,785.91	21.69	21.42	98.52	-284.43	-147.85	92.83	50.35	42.476	2.185	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
9,825.00	9,810.27	9,822.18	9,810.67	21.73	21.46	100.51	-284.43	-147.85	93.40	50.79	42.614	2.192	
9,850.00	9,834.82	9,846.73	9,835.22	21.77	21.51	103.16	-284.43	-147.85	94.39	51.61	42.774	2.207	
9,875.00	9,859.09	9,871.00	9,859.49	21.80	21.56	106.37	-284.43	-147.85	95.96	53.02	42.943	2.235	
9,900.00	9,883.01	9,895.08	9,883.41	21.83	21.63	110.00	-284.43	-147.85	98.32	55.19	43.131	2.279	
9,925.00	9,906.52	9,918.43	9,906.92	21.86	21.65	113.91	-284.43	-147.85	101.67	58.40	43.272	2.350	
9,950.00	9,929.55	9,941.46	9,929.95	21.88	21.70	117.93	-284.43	-147.85	106.21	62.79	43.418	2.446	
9,975.00	9,952.05	9,963.95	9,952.45	21.90	21.74	121.90	-284.43	-147.85	112.09	68.55	43.542	2.574	
10,000.00	9,973.94	9,985.84	9,974.34	21.91	21.79	125.68	-284.43	-147.85	119.43	75.78	43.644	2.736	
10,025.00	9,995.17	10,007.07	9,995.57	21.93	21.83	129.19	-284.43	-147.85	128.27	84.55	43.722	2.934	
10,050.00	10,015.67	10,027.58	10,016.07	21.94	21.87	132.34	-284.43	-147.85	138.63	94.85	43.781	3.167	
10,075.00	10,035.41	10,047.31	10,035.81	21.95	21.91	135.12	-284.43	-147.85	150.48	106.65	43.823	3.434	
10,100.00	10,054.31	10,066.21	10,054.71	21.96	21.95	137.50	-284.43	-147.85	163.74	119.89	43.855	3.734	
10,125.00	10,072.33	10,084.23	10,072.73	21.96	21.99	139.49	-284.43	-147.85	178.35	134.47	43.878	4.065	
10,150.00	10,089.42	10,101.32	10,089.82	21.97	22.02	141.09	-284.43	-147.85	194.22	150.32	43.895	4.425	
10,175.00	10,105.53	10,117.44	10,105.93	21.97	22.05	142.30	-284.43	-147.85	211.26	167.35	43.909	4.811	
10,200.00	10,120.62	10,132.52	10,121.02	21.97	22.08	143.14	-284.43	-147.85	229.37	185.45	43.920	5.222	
10,225.00	10,134.65	10,146.55	10,135.05	21.97	22.11	143.60	-284.43	-147.85	248.47	204.54	43.930	5.656	
10,250.00	10,147.57	10,159.47	10,147.97	21.97	22.14	143.65	-284.43	-147.85	268.47	224.53	43.938	6.110	
10,275.00	10,159.35	10,171.26	10,159.75	21.97	22.16	143.26	-284.43	-147.85	289.28	245.34	43.944	6.583	
10,300.00	10,169.97	10,181.87	10,170.37	21.97	22.18	142.36	-284.43	-147.85	310.83	266.88	43.949	7.072	
10,325.00	10,179.39	10,191.29	10,179.79	21.97	22.20	140.86	-284.43	-147.85	333.02	289.07	43.952	7.577	
10,350.00	10,187.58	10,200.52	10,187.98	21.97	22.22	138.60	-284.43	-147.85	355.78	311.83	43.955	8.094	
10,375.00	10,194.52	10,206.43	10,194.92	21.98	22.23	135.34	-284.43	-147.85	379.03	335.08	43.952	8.624	
10,400.00	10,200.20	10,212.11	10,200.60	22.02	22.24	130.73	-284.43	-147.85	402.70	358.75	43.949	9.163	
10,425.00	10,204.60	10,216.50	10,205.00	22.10	22.25	124.26	-284.43	-147.85	426.69	382.75	43.943	9.710	
10,450.00	10,207.70	10,219.61	10,208.10	22.20	22.26	115.26	-284.43	-147.85	450.95	407.01	43.936	10.264	
10,475.00	10,209.50	10,221.41	10,209.90	22.31	22.26	103.13	-284.43	-147.85	475.38	431.46	43.926	10.822	
10,499.00	10,210.00	11,010.31	10,704.92	22.42	23.51	174.79	200.88	-262.78	496.61	455.51	41.095	12.084	
10,600.00	10,209.56	11,109.51	10,704.48	22.98	24.11	175.81	297.92	-283.33	495.88	454.56	41.322	12.000	
10,700.00	10,209.12	11,208.02	10,704.05	23.65	24.82	176.83	394.94	-300.39	495.31	453.72	41.591	11.909	
10,800.00	10,208.68	11,306.83	10,703.62	24.42	25.63	177.86	492.78	-314.15	494.89	452.99	41.905	11.810	
10,875.60	10,208.35	11,381.72	10,703.29	25.07	26.30	178.64	567.22	-322.32	494.69	452.51	42.178	11.729	
10,900.00	10,208.25	11,405.95	10,703.18	25.29	26.53	178.88	591.34	-324.55	494.64	452.37	42.270	11.702	
11,000.00	10,207.81	11,505.51	10,702.75	26.24	27.50	179.60	690.66	-331.56	494.55	451.87	42.688	11.585	
11,100.00	10,207.37	11,605.40	10,702.31	27.29	28.54	179.93	790.47	-335.12	494.54	451.38	43.164	11.457	
11,106.74	10,207.34	11,612.14	10,702.28	27.36	28.61	179.94	797.21	-335.24	494.54	451.34	43.199	11.448	
11,200.00	10,206.94	11,705.39	10,701.87	28.41	29.64	179.95	890.46	-336.03	494.54	450.85	43.691	11.319	
11,300.00	10,206.50	11,805.39	10,701.44	29.61	30.80	179.95	990.46	-336.77	494.54	450.29	44.259	11.174	
11,400.00	10,206.06	11,905.39	10,701.00	30.87	32.03	179.96	1,090.45	-337.51	494.55	449.68	44.868	11.022	
11,500.00	10,205.63	12,005.39	10,700.57	32.18	33.32	179.96	1,190.45	-338.25	494.55	449.03	45.517	10.865	
11,600.00	10,205.19	12,105.39	10,700.13	33.55	34.66	179.96	1,290.45	-338.99	494.55	448.35	46.203	10.704	
11,700.00	10,204.75	12,205.39	10,699.70	34.96	36.04	179.96	1,390.44	-339.73	494.55	447.63	46.924	10.539	
11,800.00	10,204.31	12,305.39	10,699.26	36.41	37.46	179.96	1,490.44	-340.47	494.55	446.87	47.681	10.372	
11,900.00	10,203.88	12,405.39	10,698.83	37.89	38.92	179.96	1,590.44	-341.21	494.55	446.08	48.470	10.203	
12,000.00	10,203.44	12,505.39	10,698.39	39.41	40.41	179.96	1,690.43	-341.95	494.55	445.26	49.289	10.034	
12,100.00	10,203.00	12,605.39	10,697.95	40.95	41.93	179.96	1,790.43	-342.69	494.56	444.42	50.138	9.864	
12,200.00	10,202.57	12,705.39	10,697.52	42.52	43.47	179.97	1,890.42	-343.43	494.56	443.54	51.016	9.694	
12,300.00	10,202.13	12,805.39	10,697.08	44.11	45.04	179.97	1,990.42	-344.17	494.56	442.64	51.919	9.525	
12,400.00	10,201.69	12,905.39	10,696.65	45.71	46.63	179.97	2,090.42	-344.91	494.56	441.71	52.848	9.358	
12,500.00	10,201.26	13,005.39	10,696.21	47.34	48.24	179.97	2,190.41	-345.65	494.56	440.76	53.802	9.192	
12,600.00	10,200.82	13,105.39	10,695.78	48.98	49.86	179.97	2,290.41	-346.39	494.56	439.78	54.777	9.029	
12,700.00	10,200.38	13,205.39	10,695.34	50.64	51.50	179.97	2,390.41	-347.13	494.56	438.79	55.774	8.867	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
12,800.00	10,199.95	13,305.39	10,694.91	52.31	53.15	179.97	2,490.40	-347.87	494.56	437.77	56.792	8.708	
12,900.00	10,199.51	13,405.39	10,694.47	53.99	54.82	179.97	2,590.40	-348.61	494.57	436.74	57.828	8.552	
13,000.00	10,199.07	13,505.39	10,694.03	55.68	56.49	179.97	2,690.39	-349.35	494.57	435.68	58.884	8.399	
13,100.00	10,198.63	13,605.39	10,693.60	57.38	58.18	179.98	2,790.39	-350.09	494.57	434.61	59.956	8.249	
13,200.00	10,198.20	13,705.39	10,693.16	59.09	59.88	179.98	2,890.39	-350.83	494.57	433.53	61.045	8.102	
13,300.00	10,197.76	13,805.39	10,692.73	60.81	61.58	179.98	2,990.38	-351.57	494.57	432.42	62.149	7.958	
13,400.00	10,197.32	13,905.39	10,692.29	62.54	63.30	179.98	3,090.38	-352.31	494.57	431.30	63.268	7.817	
13,500.00	10,196.89	14,005.39	10,691.86	64.27	65.02	179.98	3,190.38	-353.05	494.57	430.17	64.402	7.680	
13,600.00	10,196.45	14,105.39	10,691.42	66.01	66.75	179.98	3,290.37	-353.79	494.58	429.03	65.548	7.545	
13,700.00	10,196.01	14,205.39	10,690.99	67.76	68.48	179.98	3,390.37	-354.53	494.58	427.87	66.706	7.414	
13,800.00	10,195.58	14,305.39	10,690.55	69.51	70.22	179.98	3,490.37	-355.27	494.58	426.70	67.877	7.286	
13,900.00	10,195.14	14,405.39	10,690.11	71.26	71.97	179.99	3,590.36	-356.01	494.58	425.52	69.059	7.162	
14,000.00	10,194.70	14,505.39	10,689.68	73.02	73.72	179.99	3,690.36	-356.75	494.58	424.33	70.252	7.040	
14,100.00	10,194.27	14,605.39	10,689.24	74.79	75.48	179.99	3,790.35	-357.49	494.58	423.13	71.455	6.922	
14,200.00	10,193.83	14,705.39	10,688.81	76.56	77.24	179.99	3,890.35	-358.23	494.58	421.92	72.667	6.806	
14,300.00	10,193.39	14,805.39	10,688.37	78.33	79.00	179.99	3,990.35	-358.97	494.58	420.70	73.889	6.694	
14,400.00	10,192.95	14,905.39	10,687.94	80.11	80.77	179.99	4,090.34	-359.71	494.59	419.47	75.120	6.584	
14,500.00	10,192.52	15,005.39	10,687.50	81.89	82.54	179.99	4,190.34	-360.45	494.59	418.23	76.359	6.477	
14,600.00	10,192.08	15,105.39	10,687.07	83.67	84.32	179.99	4,290.34	-361.19	494.59	416.98	77.606	6.373	
14,700.00	10,191.64	15,205.39	10,686.63	85.45	86.09	180.00	4,390.33	-361.93	494.59	415.73	78.860	6.272	
14,800.00	10,191.21	15,305.39	10,686.19	87.24	87.88	180.00	4,490.33	-362.67	494.59	414.47	80.121	6.173	
14,900.00	10,190.77	15,405.39	10,685.76	89.03	89.66	180.00	4,590.32	-363.41	494.59	413.20	81.390	6.077	
15,000.00	10,190.33	15,505.39	10,685.32	90.83	91.45	180.00	4,690.32	-364.15	494.59	411.93	82.665	5.983	
15,076.24	10,190.00	15,581.63	10,684.99	92.19	92.81	-180.00	4,766.55	-364.72	494.60	410.95	83.641	5.913	

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	0.50	0.50	0.00	0.00	116.07	-29.50	60.30	67.13				
100.00	100.00	100.50	100.50	0.08	0.09	116.07	-29.50	60.30	67.13	66.96	.170	395.579	
200.00	200.00	200.50	200.50	0.31	0.31	116.07	-29.50	60.30	67.13	66.51	.619	108.408	
300.00	300.00	300.50	300.50	0.53	0.53	116.07	-29.50	60.30	67.13	66.06	1.069	62.810	
400.00	400.00	400.50	400.50	0.76	0.76	116.07	-29.50	60.30	67.13	65.61	1.518	44.214	
500.00	500.00	500.50	500.50	0.98	0.98	116.07	-29.50	60.30	67.13	65.16	1.968	34.113	
600.00	600.00	600.50	600.50	1.21	1.21	116.07	-29.50	60.30	67.13	64.71	2.417	27.770	
700.00	700.00	700.50	700.50	1.43	1.43	116.07	-29.50	60.30	67.13	64.26	2.867	23.415	
800.00	800.00	800.50	800.50	1.66	1.66	116.07	-29.50	60.30	67.13	63.81	3.316	20.241	
900.00	900.00	900.50	900.50	1.88	1.88	116.07	-29.50	60.30	67.13	63.36	3.766	17.825	
1,000.00	1,000.00	1,000.50	1,000.50	2.11	2.11	116.07	-29.50	60.30	67.13	62.91	4.215	15.924	
1,100.00	1,100.00	1,100.50	1,100.50	2.33	2.33	116.07	-29.50	60.30	67.13	62.46	4.665	14.390	
1,200.00	1,200.00	1,200.50	1,200.50	2.56	2.56	116.07	-29.50	60.30	67.13	62.01	5.115	13.125	
1,300.00	1,300.00	1,300.50	1,300.50	2.78	2.78	116.07	-29.50	60.30	67.13	61.57	5.564	12.065	
1,400.00	1,400.00	1,400.50	1,400.50	3.01	3.01	116.07	-29.50	60.30	67.13	61.12	6.014	11.163	
1,500.00	1,500.00	1,500.50	1,500.50	3.23	3.23	116.07	-29.50	60.30	67.13	60.67	6.463	10.386	
1,600.00	1,600.00	1,600.50	1,600.50	3.46	3.46	116.07	-29.50	60.30	67.13	60.22	6.913	9.711	
1,700.00	1,700.00	1,700.50	1,700.50	3.68	3.68	116.07	-29.50	60.30	67.13	59.77	7.362	9.118	
1,800.00	1,800.00	1,800.50	1,800.50	3.91	3.91	116.07	-29.50	60.30	67.13	59.32	7.812	8.593	
1,900.00	1,900.00	1,900.50	1,900.50	4.13	4.13	116.07	-29.50	60.30	67.13	58.87	8.261	8.126	
2,000.00	2,000.00	2,000.50	2,000.50	4.35	4.36	116.07	-29.50	60.30	67.13	58.42	8.711	7.706	
2,100.00	2,100.00	2,100.50	2,100.50	4.58	4.58	116.07	-29.50	60.30	67.13	57.97	9.160	7.328	
2,200.00	2,200.00	2,200.50	2,200.50	4.80	4.81	116.07	-29.50	60.30	67.13	57.52	9.610	6.985	
2,300.00	2,300.00	2,300.50	2,300.50	5.03	5.03	116.07	-29.50	60.30	67.13	57.07	10.059	6.673	
2,400.00	2,400.00	2,400.50	2,400.50	5.25	5.26	116.07	-29.50	60.30	67.13	56.62	10.509	6.388	
2,500.00	2,500.00	2,500.50	2,500.50	5.48	5.48	116.07	-29.50	60.30	67.13	56.17	10.958	6.126	
2,600.00	2,600.00	2,600.50	2,600.50	5.70	5.70	116.07	-29.50	60.30	67.13	55.72	11.408	5.884	
2,700.00	2,700.00	2,700.50	2,700.50	5.93	5.93	116.07	-29.50	60.30	67.13	55.27	11.858	5.661	
2,800.00	2,800.00	2,800.50	2,800.50	6.15	6.15	116.07	-29.50	60.30	67.13	54.82	12.307	5.455	
2,900.00	2,900.00	2,900.50	2,900.50	6.38	6.38	116.07	-29.50	60.30	67.13	54.37	12.757	5.262	
3,000.00	3,000.00	3,000.50	3,000.50	6.60	6.60	116.07	-29.50	60.30	67.13	53.92	13.206	5.083	CC
3,100.00	3,100.00	3,100.02	3,100.01	6.83	6.80	117.14	-30.79	60.05	67.48	53.86	13.625	4.953	ES
3,200.00	3,200.00	3,200.60	3,199.31	7.05	6.97	120.27	-34.61	59.31	68.68	54.66	14.018	4.899	
3,300.00	3,300.00	3,300.73	3,299.04	7.28	7.14	124.27	-39.74	58.31	70.58	56.16	14.415	4.896	SF
3,400.00	3,400.00	3,400.87	3,398.76	7.50	7.32	128.06	-44.87	57.31	72.81	57.99	14.816	4.914	
3,500.00	3,500.00	3,501.01	3,498.49	7.73	7.50	131.60	-50.00	56.32	75.34	60.11	15.220	4.950	
3,600.00	3,599.99	3,601.10	3,598.27	7.93	7.68	-86.01	-55.13	55.32	78.03	62.43	15.602	5.001	
3,700.00	3,699.91	3,701.13	3,698.09	8.10	7.87	-85.64	-60.27	54.32	80.61	64.65	15.963	5.050	
3,800.00	3,799.69	3,801.19	3,797.90	8.28	8.06	-87.09	-65.40	53.32	83.02	66.69	16.332	5.083	
3,900.00	3,899.38	3,901.27	3,897.68	8.46	8.25	-89.36	-70.54	52.32	85.45	68.75	16.708	5.114	
4,000.00	3,999.08	4,001.36	3,997.45	8.65	8.45	-91.51	-75.67	51.33	88.02	70.93	17.092	5.150	
4,100.00	4,098.77	4,101.45	4,097.23	8.84	8.65	-93.53	-80.80	50.33	90.70	73.22	17.481	5.188	
4,200.00	4,198.46	4,201.53	4,197.01	9.04	8.85	-95.44	-85.93	49.33	93.49	75.61	17.878	5.229	
4,300.00	4,298.15	4,301.62	4,296.79	9.24	9.05	-97.23	-91.07	48.33	96.37	78.09	18.279	5.272	
4,400.00	4,397.84	4,401.70	4,396.56	9.44	9.26	-98.92	-96.20	47.33	99.34	80.66	18.687	5.316	
4,500.00	4,497.53	4,501.79	4,496.34	9.65	9.47	-100.51	-101.33	46.34	102.40	83.30	19.099	5.361	
4,600.00	4,597.23	4,601.87	4,596.12	9.86	9.67	-102.00	-106.47	45.34	105.53	86.01	19.515	5.407	
4,700.00	4,696.92	4,701.96	4,695.90	10.07	9.89	-103.41	-111.60	44.34	108.72	88.79	19.936	5.453	
4,800.00	4,796.61	4,802.05	4,795.67	10.28	10.10	-104.74	-116.73	43.34	111.98	91.62	20.361	5.500	
4,900.00	4,896.30	4,902.13	4,895.45	10.50	10.31	-105.99	-121.87	42.35	115.29	94.51	20.789	5.546	
5,000.00	4,995.99	5,002.22	4,995.23	10.72	10.53	-107.17	-127.00	41.35	118.66	97.44	21.221	5.592	
5,100.00	5,095.68	5,102.30	5,095.01	10.94	10.75	-108.29	-132.13	40.35	122.08	100.42	21.655	5.637	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	5,195.38	5,202.39	5,194.78	11.17	10.96	-109.34	-137.26	39.35	125.53	103.44	22.093	5.682	
5,300.00	5,295.07	5,302.47	5,294.56	11.39	11.18	-110.34	-142.40	38.35	129.03	106.50	22.533	5.726	
5,400.00	5,394.76	5,397.44	5,394.34	11.62	11.39	-111.28	-147.53	37.36	132.57	109.60	22.964	5.773	
5,500.00	5,494.45	5,502.65	5,494.11	11.85	11.63	-112.18	-152.66	36.36	136.14	112.72	23.420	5.813	
5,600.00	5,594.14	5,602.73	5,593.89	12.08	11.85	-113.03	-157.80	35.36	139.74	115.87	23.867	5.855	
5,700.00	5,693.83	5,702.82	5,693.67	12.31	12.07	-113.83	-162.93	34.36	143.37	119.05	24.316	5.896	
5,800.00	5,793.53	5,802.90	5,793.45	12.54	12.30	-114.60	-168.06	33.37	147.02	122.26	24.766	5.936	
5,900.00	5,893.22	5,902.99	5,893.22	12.78	12.52	-115.33	-173.20	32.37	150.71	125.49	25.219	5.976	
6,000.00	5,992.91	6,003.07	5,993.00	13.02	12.75	-116.02	-178.33	31.37	154.41	128.74	25.673	6.015	
6,100.00	6,092.60	6,103.16	6,092.78	13.25	12.97	-116.69	-183.46	30.37	158.14	132.01	26.128	6.052	
6,200.00	6,192.29	6,203.25	6,192.56	13.49	13.20	-117.32	-188.60	29.38	161.88	135.30	26.585	6.089	
6,300.00	6,291.99	6,303.33	6,292.33	13.73	13.43	-117.92	-193.73	28.38	165.65	138.61	27.043	6.125	
6,400.00	6,391.68	6,396.58	6,392.11	13.97	13.64	-118.50	-198.86	27.38	169.43	141.95	27.487	6.164	
6,500.00	6,491.37	6,503.50	6,491.89	14.21	13.89	-119.05	-203.99	26.38	173.23	145.27	27.963	6.195	
6,600.00	6,591.06	6,603.59	6,591.67	14.46	14.12	-119.57	-209.13	25.38	177.05	148.62	28.425	6.229	
6,700.00	6,690.75	6,703.67	6,691.44	14.70	14.35	-120.08	-214.26	24.39	180.88	151.99	28.888	6.261	
6,800.00	6,790.44	6,803.76	6,791.22	14.95	14.58	-120.56	-219.39	23.39	184.72	155.37	29.351	6.293	
6,900.00	6,890.14	6,903.85	6,891.00	15.19	14.81	-121.03	-224.53	22.39	188.57	158.76	29.816	6.325	
7,000.00	6,989.83	7,003.93	6,990.77	15.44	15.04	-121.47	-229.66	21.39	192.44	162.16	30.282	6.355	
7,100.00	7,089.52	7,095.98	7,090.55	15.68	15.26	-121.90	-234.79	20.40	196.32	165.59	30.729	6.389	
7,200.00	7,189.21	7,204.10	7,190.33	15.93	15.51	-122.31	-239.93	19.40	200.21	168.99	31.215	6.414	
7,300.00	7,288.90	7,304.19	7,290.11	16.18	15.74	-122.71	-245.06	18.40	204.11	172.42	31.683	6.442	
7,400.00	7,388.59	7,404.28	7,389.88	16.43	15.97	-123.09	-250.19	17.40	208.01	175.86	32.152	6.470	
7,500.00	7,488.29	7,504.36	7,489.66	16.68	16.21	-123.45	-255.32	16.40	211.93	179.31	32.622	6.497	
7,600.00	7,587.98	7,595.55	7,589.44	16.93	16.42	-123.81	-260.46	15.41	215.85	182.78	33.071	6.527	
7,700.00	7,687.67	7,704.53	7,689.22	17.18	16.68	-124.15	-265.59	14.41	219.79	186.23	33.562	6.549	
7,800.00	7,787.36	7,804.62	7,788.99	17.43	16.91	-124.48	-270.72	13.41	223.73	189.69	34.034	6.574	
7,900.00	7,887.05	7,904.70	7,888.77	17.68	17.15	-124.79	-275.86	12.41	227.68	193.17	34.506	6.598	
8,000.00	7,986.74	7,995.21	7,988.55	17.94	17.36	-125.10	-280.99	11.42	231.63	196.67	34.955	6.626	
8,100.00	8,086.44	8,094.50	8,087.75	18.19	17.59	-125.64	-285.10	10.62	235.71	200.29	35.416	6.655	
8,200.00	8,186.13	8,193.51	8,186.74	18.44	17.80	-126.76	-286.70	10.31	240.14	204.30	35.842	6.700	
8,264.07	8,250.00	8,257.27	8,250.50	18.60	17.92	-127.70	-286.72	10.30	243.19	207.08	36.102	6.736	
8,300.00	8,285.83	8,306.90	8,286.33	18.69	18.02	-128.21	-286.72	10.30	244.82	208.55	36.273	6.749	
8,400.00	8,385.67	8,407.06	8,386.17	18.93	18.21	-129.27	-286.72	10.30	248.33	211.65	36.675	6.771	
8,500.00	8,485.63	8,507.10	8,486.13	19.16	18.40	-129.82	-286.72	10.30	250.23	213.15	37.077	6.749	
8,564.07	8,549.69	8,556.96	8,550.19	19.28	18.50	90.09	-286.72	10.30	250.57	213.27	37.303	6.717	
8,600.00	8,585.62	8,607.11	8,586.12	19.35	18.60	90.09	-286.72	10.30	250.57	213.10	37.471	6.687	
8,700.00	8,685.62	8,707.11	8,686.12	19.55	18.79	90.09	-286.72	10.30	250.57	212.71	37.861	6.618	
8,800.00	8,785.62	8,807.11	8,786.12	19.74	18.99	90.09	-286.72	10.30	250.57	212.32	38.253	6.550	
8,900.00	8,885.62	8,907.11	8,886.12	19.93	19.18	90.09	-286.72	10.30	250.57	211.93	38.646	6.484	
9,000.00	8,985.62	9,007.11	8,986.12	20.13	19.38	90.09	-286.72	10.30	250.57	211.53	39.040	6.418	
9,100.00	9,085.62	9,107.11	9,086.12	20.32	19.58	90.09	-286.72	10.30	250.57	211.14	39.436	6.354	
9,200.00	9,185.62	9,207.11	9,186.12	20.52	19.77	90.09	-286.72	10.30	250.57	210.74	39.832	6.291	
9,300.00	9,285.62	9,307.11	9,286.12	20.71	19.97	90.09	-286.72	10.30	250.57	210.34	40.230	6.229	
9,400.00	9,385.62	9,407.11	9,386.12	20.91	20.17	90.09	-286.72	10.30	250.57	209.95	40.629	6.167	
9,500.00	9,485.62	9,507.11	9,486.12	21.11	20.37	90.09	-286.72	10.30	250.57	209.55	41.028	6.107	
9,600.00	9,585.62	9,607.11	9,586.12	21.30	20.57	90.09	-286.72	10.30	250.57	209.14	41.429	6.048	
9,700.00	9,685.62	9,707.11	9,686.12	21.50	20.77	90.09	-286.72	10.30	250.57	208.74	41.831	5.990	
9,746.92	9,732.54	9,739.81	9,733.04	21.59	20.84	90.09	-286.72	10.30	250.57	208.58	41.991	5.967	
9,750.00	9,735.62	9,742.89	9,736.12	21.60	20.84	98.04	-286.72	10.30	250.58	208.57	42.004	5.966	
9,775.00	9,760.61	9,767.88	9,761.11	21.65	20.89	98.21	-286.72	10.30	250.69	208.59	42.106	5.954	
9,800.00	9,785.51	9,807.22	9,786.01	21.69	20.97	98.65	-286.72	10.30	251.00	208.77	42.238	5.943	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
9,825.00	9,810.27	9,817.54	9,810.77	21.73	20.99	99.35	-286.72	10.30	251.54	209.23	42.312	5.945	
9,850.00	9,834.82	9,842.09	9,835.32	21.77	21.04	100.29	-286.72	10.30	252.36	209.95	42.415	5.950	
9,875.00	9,859.09	9,866.36	9,859.59	21.80	21.09	101.45	-286.72	10.30	253.53	211.01	42.517	5.963	
9,900.00	9,883.01	9,909.72	9,883.51	21.83	21.18	102.79	-286.72	10.30	255.12	212.46	42.657	5.981	
9,925.00	9,906.52	9,913.79	9,907.02	21.86	21.19	104.29	-286.72	10.30	257.22	214.51	42.717	6.022	
9,950.00	9,929.55	9,936.82	9,930.05	21.88	21.23	105.90	-286.72	10.30	259.96	217.14	42.812	6.072	
9,975.00	9,952.05	9,959.32	9,952.55	21.90	21.28	107.57	-286.72	10.30	263.42	220.51	42.903	6.140	
10,000.00	9,973.94	9,981.21	9,974.44	21.91	21.32	109.27	-286.72	10.30	267.71	224.72	42.988	6.228	
10,025.00	9,995.17	10,002.44	9,995.67	21.93	21.36	110.95	-286.72	10.30	272.94	229.87	43.068	6.337	
10,050.00	10,015.67	10,022.94	10,016.17	21.94	21.41	112.56	-286.72	10.30	279.20	236.06	43.141	6.472	
10,075.00	10,035.41	10,042.68	10,035.91	21.95	21.45	114.07	-286.72	10.30	286.56	243.35	43.207	6.632	
10,100.00	10,054.31	10,061.58	10,054.81	21.96	21.48	115.44	-286.72	10.30	295.09	251.82	43.266	6.820	
10,125.00	10,072.33	10,079.60	10,072.83	21.96	21.52	116.63	-286.72	10.30	304.81	261.49	43.318	7.037	
10,150.00	10,089.42	10,103.31	10,089.92	21.97	21.57	117.61	-286.72	10.30	315.76	272.38	43.377	7.279	
10,175.00	10,105.53	10,112.80	10,106.03	21.97	21.59	118.35	-286.72	10.30	327.92	284.52	43.401	7.556	
10,200.00	10,120.62	10,127.89	10,121.12	21.97	21.62	118.82	-286.72	10.30	341.29	297.85	43.434	7.858	
10,225.00	10,134.65	10,141.92	10,135.15	21.97	21.65	119.00	-286.72	10.30	355.81	312.35	43.460	8.187	
10,250.00	10,147.57	10,154.84	10,148.07	21.97	21.67	118.85	-286.72	10.30	371.45	327.97	43.481	8.543	
10,275.00	10,159.35	10,166.63	10,159.85	21.97	21.70	118.33	-286.72	10.30	388.14	344.64	43.497	8.923	
10,300.00	10,169.97	10,177.24	10,170.47	21.97	21.72	117.42	-286.72	10.30	405.80	362.29	43.509	9.327	
10,325.00	10,179.39	10,186.66	10,179.89	21.97	21.74	116.05	-286.72	10.30	424.36	380.84	43.516	9.752	
10,350.00	10,187.58	10,205.15	10,188.08	21.97	21.77	114.18	-286.72	10.30	443.73	400.19	43.541	10.191	
10,375.00	10,194.52	10,201.79	10,195.02	21.98	21.77	111.75	-286.72	10.30	463.83	420.31	43.520	10.658	
10,400.00	10,200.20	10,207.47	10,200.70	22.02	21.78	108.69	-286.72	10.30	484.58	441.06	43.517	11.135	
10,425.00	10,204.60	10,211.87	10,205.10	22.10	21.79	104.93	-286.72	10.30	505.87	462.36	43.510	11.626	
10,450.00	10,207.70	10,214.97	10,208.20	22.20	21.79	100.43	-286.72	10.30	527.63	484.12	43.501	12.129	
10,475.00	10,209.50	10,216.77	10,210.00	22.31	21.80	95.18	-286.72	10.30	549.75	506.27	43.489	12.641	
10,499.00	10,210.00	10,217.27	10,210.50	22.42	21.80	89.48	-286.72	10.30	571.27	527.79	43.474	13.140	
10,600.00	10,209.56	10,216.83	10,210.06	22.98	21.80	89.43	-286.72	10.30	663.01	619.59	43.416	15.271	
10,700.00	10,209.12	10,216.39	10,209.62	23.65	21.80	89.40	-286.72	10.30	754.93	711.56	43.370	17.407	
10,800.00	10,208.68	10,215.95	10,209.18	24.42	21.80	89.38	-286.72	10.30	847.48	804.15	43.334	19.557	
10,875.60	10,208.35	10,215.62	10,208.85	25.07	21.80	89.37	-286.72	10.30	917.69	874.38	43.312	21.188	
10,900.00	10,208.25	10,215.52	10,208.75	25.29	21.80	89.35	-286.72	10.30	940.42	897.11	43.305	21.716	
11,000.00	10,207.81	10,215.08	10,208.31	26.24	21.80	89.28	-286.72	10.30	1,034.35	991.07	43.288	23.895	
11,100.00	10,207.37	10,214.64	10,207.87	27.29	21.79	89.20	-286.72	10.30	1,129.33	1,086.05	43.279	26.094	
11,200.00	10,206.94	10,214.21	10,207.44	28.41	21.79	89.13	-286.72	10.30	1,225.11	1,181.83	43.275	28.310	
11,300.00	10,206.50	10,213.77	10,207.00	29.61	21.79	89.05	-286.72	10.30	1,321.51	1,278.24	43.277	30.536	
11,400.00	10,206.06	10,213.33	10,206.56	30.87	21.79	88.98	-286.72	10.30	1,418.41	1,375.13	43.282	32.771	
11,500.00	10,205.63	12,905.63	11,615.61	32.18	34.07	166.81	1,196.90	-8.35	1,447.68	1,398.06	49.628	29.171	
11,600.00	10,205.19	13,005.63	11,615.17	33.55	35.39	166.81	1,296.90	-9.09	1,447.68	1,397.25	50.428	28.708	
11,700.00	10,204.75	13,105.63	11,614.74	34.96	36.75	166.81	1,396.90	-9.83	1,447.68	1,396.41	51.270	28.237	
11,800.00	10,204.31	13,205.63	11,614.30	36.41	38.15	166.81	1,496.89	-10.57	1,447.68	1,395.52	52.151	27.759	
11,900.00	10,203.88	13,305.63	11,613.86	37.89	39.59	166.81	1,596.89	-11.32	1,447.67	1,394.60	53.069	27.279	
12,000.00	10,203.44	13,405.63	11,613.42	39.41	41.07	166.81	1,696.88	-12.06	1,447.67	1,393.65	54.023	26.797	
12,100.00	10,203.00	13,505.63	11,612.99	40.95	42.57	166.81	1,796.88	-12.80	1,447.67	1,392.66	55.009	26.317	
12,200.00	10,202.57	13,605.63	11,612.55	42.52	44.10	166.81	1,896.88	-13.54	1,447.66	1,391.64	56.027	25.839	
12,300.00	10,202.13	13,705.63	11,612.11	44.11	45.65	166.81	1,996.87	-14.28	1,447.66	1,390.59	57.075	25.364	
12,400.00	10,201.69	13,805.63	11,611.67	45.71	47.23	166.81	2,096.87	-15.02	1,447.66	1,389.51	58.152	24.895	
12,500.00	10,201.26	13,905.63	11,611.24	47.34	48.82	166.82	2,196.87	-15.76	1,447.66	1,388.40	59.254	24.431	
12,600.00	10,200.82	14,005.63	11,610.80	48.98	50.43	166.82	2,296.86	-16.50	1,447.65	1,387.27	60.382	23.975	
12,700.00	10,200.38	14,105.63	11,610.36	50.64	52.06	166.82	2,396.86	-17.24	1,447.65	1,386.12	61.535	23.526	
12,800.00	10,199.95	14,205.63	11,609.93	52.31	53.70	166.82	2,496.85	-17.98	1,447.65	1,384.94	62.708	23.085	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
12,900.00	10,199.51	14,305.63	11,609.49	53.99	55.36	166.82	2,596.85	-18.72	1,447.64	1,383.74	63.905	22.653	
13,000.00	10,199.07	14,405.63	11,609.05	55.68	57.02	166.82	2,696.85	-19.46	1,447.64	1,382.52	65.120	22.230	
13,100.00	10,198.63	14,505.63	11,608.61	57.38	58.70	166.82	2,796.84	-20.21	1,447.64	1,381.28	66.355	21.817	
13,200.00	10,198.20	14,605.63	11,608.18	59.09	60.39	166.82	2,896.84	-20.95	1,447.64	1,380.03	67.608	21.412	
13,300.00	10,197.76	14,705.63	11,607.74	60.81	62.09	166.82	2,996.84	-21.69	1,447.63	1,378.75	68.878	21.017	
13,400.00	10,197.32	14,805.63	11,607.30	62.54	63.79	166.82	3,096.83	-22.43	1,447.63	1,377.47	70.164	20.632	
13,500.00	10,196.89	14,905.63	11,606.87	64.27	65.51	166.82	3,196.83	-23.17	1,447.63	1,376.16	71.465	20.256	
13,600.00	10,196.45	15,005.63	11,606.43	66.01	67.23	166.82	3,296.83	-23.91	1,447.62	1,374.84	72.780	19.890	
13,700.00	10,196.01	15,105.63	11,605.99	67.76	68.96	166.82	3,396.82	-24.65	1,447.62	1,373.51	74.110	19.533	
13,800.00	10,195.58	15,205.63	11,605.55	69.51	70.69	166.82	3,496.82	-25.39	1,447.62	1,372.17	75.452	19.186	
13,900.00	10,195.14	15,305.63	11,605.12	71.26	72.43	166.82	3,596.81	-26.13	1,447.62	1,370.81	76.806	18.848	
14,000.00	10,194.70	15,405.63	11,604.68	73.02	74.18	166.82	3,696.81	-26.87	1,447.61	1,369.44	78.172	18.518	
14,100.00	10,194.27	15,505.63	11,604.24	74.79	75.93	166.82	3,796.81	-27.61	1,447.61	1,368.06	79.549	18.198	
14,200.00	10,193.83	15,605.63	11,603.80	76.56	77.68	166.82	3,896.80	-28.35	1,447.61	1,366.67	80.937	17.886	
14,300.00	10,193.39	15,705.63	11,603.37	78.33	79.44	166.82	3,996.80	-29.10	1,447.60	1,365.27	82.334	17.582	
14,400.00	10,192.95	15,805.63	11,602.93	80.11	81.20	166.82	4,096.80	-29.84	1,447.60	1,363.86	83.740	17.287	
14,500.00	10,192.52	15,905.63	11,602.49	81.89	82.97	166.82	4,196.79	-30.58	1,447.60	1,362.44	85.156	16.999	
14,600.00	10,192.08	16,005.63	11,602.06	83.67	84.74	166.82	4,296.79	-31.32	1,447.59	1,361.01	86.580	16.720	
14,700.00	10,191.64	16,105.63	11,601.62	85.45	86.52	166.82	4,396.78	-32.06	1,447.59	1,359.58	88.013	16.448	
14,800.00	10,191.21	16,205.63	11,601.18	87.24	88.29	166.83	4,496.78	-32.80	1,447.59	1,358.14	89.453	16.183	
14,900.00	10,190.77	16,305.63	11,600.74	89.03	90.07	166.83	4,596.78	-33.54	1,447.59	1,356.69	90.900	15.925	
15,000.00	10,190.33	16,405.63	11,600.31	90.83	91.86	166.83	4,696.77	-34.28	1,447.58	1,355.23	92.354	15.674	
15,076.24	10,190.00	16,481.87	11,599.97	92.19	93.22	166.83	4,773.01	-34.85	1,447.58	1,354.11	93.467	15.488	

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	0.10	-0.10	0.00	0.00	134.62	-29.80	30.20	42.43				
100.00	100.00	100.10	99.90	0.08	0.08	134.62	-29.80	30.20	42.43	42.26	.169	251.348	
200.00	200.00	200.10	199.90	0.31	0.31	134.62	-29.80	30.20	42.43	41.81	.618	68.616	
300.00	300.00	300.10	299.90	0.53	0.53	134.62	-29.80	30.20	42.43	41.36	1.068	39.731	
400.00	400.00	400.10	399.90	0.76	0.76	134.62	-29.80	30.20	42.43	40.91	1.517	27.961	
500.00	500.00	500.10	499.90	0.98	0.98	134.62	-29.80	30.20	42.43	40.46	1.967	21.570	
600.00	600.00	600.10	599.90	1.21	1.21	134.62	-29.80	30.20	42.43	40.01	2.416	17.558	
700.00	700.00	700.10	699.90	1.43	1.43	134.62	-29.80	30.20	42.43	39.56	2.866	14.804	
800.00	800.00	800.10	799.90	1.66	1.66	134.62	-29.80	30.20	42.43	39.11	3.316	12.797	
900.00	900.00	900.10	899.90	1.88	1.88	134.62	-29.80	30.20	42.43	38.66	3.765	11.269	
1,000.00	1,000.00	1,000.10	999.90	2.11	2.11	134.62	-29.80	30.20	42.43	38.21	4.215	10.067	
1,100.00	1,100.00	1,100.10	1,099.90	2.33	2.33	134.62	-29.80	30.20	42.43	37.76	4.664	9.097	
1,200.00	1,200.00	1,200.10	1,199.90	2.56	2.56	134.62	-29.80	30.20	42.43	37.31	5.114	8.297	
1,300.00	1,300.00	1,300.10	1,299.90	2.78	2.78	134.62	-29.80	30.20	42.43	36.86	5.563	7.626	
1,400.00	1,400.00	1,400.10	1,399.90	3.01	3.01	134.62	-29.80	30.20	42.43	36.41	6.013	7.056	
1,500.00	1,500.00	1,500.10	1,499.90	3.23	3.23	134.62	-29.80	30.20	42.43	35.97	6.462	6.565	
1,600.00	1,600.00	1,600.10	1,599.90	3.46	3.46	134.62	-29.80	30.20	42.43	35.52	6.912	6.138	
1,700.00	1,700.00	1,700.10	1,699.90	3.68	3.68	134.62	-29.80	30.20	42.43	35.07	7.361	5.764	
1,800.00	1,800.00	1,800.10	1,799.90	3.91	3.91	134.62	-29.80	30.20	42.43	34.62	7.811	5.432	
1,900.00	1,900.00	1,900.10	1,899.90	4.13	4.13	134.62	-29.80	30.20	42.43	34.17	8.260	5.136	
2,000.00	2,000.00	2,000.10	1,999.90	4.35	4.36	134.62	-29.80	30.20	42.43	33.72	8.710	4.871	
2,100.00	2,100.00	2,100.10	2,099.90	4.58	4.58	134.62	-29.80	30.20	42.43	33.27	9.159	4.632	
2,200.00	2,200.00	2,200.10	2,199.90	4.80	4.80	134.62	-29.80	30.20	42.43	32.82	9.609	4.415	
2,300.00	2,300.00	2,300.10	2,299.90	5.03	5.03	134.62	-29.80	30.20	42.43	32.37	10.059	4.218	
2,400.00	2,400.00	2,400.10	2,399.90	5.25	5.25	134.62	-29.80	30.20	42.43	31.92	10.508	4.038	
2,500.00	2,500.00	2,500.10	2,499.90	5.48	5.48	134.62	-29.80	30.20	42.43	31.47	10.958	3.872	
2,600.00	2,600.00	2,600.10	2,599.90	5.70	5.70	134.62	-29.80	30.20	42.43	31.02	11.407	3.719	
2,700.00	2,700.00	2,700.10	2,699.90	5.93	5.93	134.62	-29.80	30.20	42.43	30.57	11.857	3.578	
2,800.00	2,800.00	2,800.10	2,799.90	6.15	6.15	134.62	-29.80	30.20	42.43	30.12	12.306	3.448	
2,900.00	2,900.00	2,900.10	2,899.90	6.38	6.38	134.62	-29.80	30.20	42.43	29.67	12.756	3.326	
3,000.00	3,000.00	2,999.90	2,999.90	6.60	6.60	134.62	-29.80	30.20	42.43	29.22	13.205	3.213	CC, ES
3,100.00	3,100.00	3,099.33	3,099.32	6.83	6.80	136.11	-31.05	29.87	43.09	29.46	13.623	3.163	SF
3,200.00	3,200.00	3,198.62	3,198.53	7.05	6.97	140.30	-34.79	28.88	45.24	31.22	14.013	3.228	
3,300.00	3,300.00	3,301.80	3,297.93	7.28	7.15	145.96	-40.52	27.37	48.93	34.52	14.414	3.395	
3,400.00	3,400.00	3,398.01	3,397.56	7.50	7.32	150.92	-46.41	25.81	53.15	38.35	14.808	3.590	
3,500.00	3,500.00	3,502.18	3,497.19	7.73	7.50	155.12	-52.30	24.26	57.71	42.50	15.219	3.792	
3,600.00	3,599.99	3,602.30	3,596.87	7.93	7.69	-62.31	-58.19	22.70	61.92	46.32	15.600	3.969	
3,700.00	3,699.91	3,702.35	3,696.64	8.10	7.88	-62.09	-64.09	21.14	64.97	49.00	15.962	4.070	
3,800.00	3,799.69	3,802.39	3,796.41	8.28	8.07	-63.88	-69.99	19.58	66.82	50.49	16.332	4.091	
3,900.00	3,899.38	3,902.45	3,896.16	8.46	8.27	-66.59	-75.89	18.02	68.21	51.50	16.709	4.082	
4,000.00	3,999.08	4,002.51	3,995.92	8.65	8.47	-69.19	-81.79	16.46	69.74	52.65	17.094	4.080	
4,100.00	4,098.77	4,102.57	4,095.67	8.84	8.67	-71.68	-87.69	14.90	71.41	53.93	17.486	4.084	
4,200.00	4,198.46	4,202.64	4,195.42	9.04	8.87	-74.04	-93.59	13.35	73.21	55.33	17.885	4.094	
4,300.00	4,298.15	4,302.70	4,295.17	9.24	9.08	-76.29	-99.49	11.79	75.13	56.84	18.290	4.108	
4,400.00	4,397.84	4,402.76	4,394.93	9.44	9.29	-78.43	-105.39	10.23	77.16	58.46	18.701	4.126	
4,500.00	4,497.53	4,502.82	4,494.68	9.65	9.50	-80.45	-111.28	8.67	79.29	60.17	19.118	4.148	
4,600.00	4,597.23	4,602.88	4,594.43	9.86	9.71	-82.36	-117.18	7.11	81.52	61.98	19.540	4.172	
4,700.00	4,696.92	4,702.94	4,694.19	10.07	9.93	-84.17	-123.08	5.55	83.83	63.86	19.967	4.198	
4,800.00	4,796.61	4,803.00	4,793.94	10.28	10.15	-85.88	-128.98	4.00	86.22	65.82	20.398	4.227	
4,900.00	4,896.30	4,903.06	4,893.69	10.50	10.37	-87.50	-134.88	2.44	88.68	67.84	20.834	4.256	
5,000.00	4,995.99	5,003.12	4,993.44	10.72	10.59	-89.03	-140.78	0.88	91.21	69.93	21.274	4.287	
5,100.00	5,095.68	5,103.18	5,093.20	10.94	10.81	-90.48	-146.68	-0.68	93.80	72.08	21.717	4.319	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	5,195.38	5,203.24	5,192.95	11.17	11.03	-91.85	-152.58	-2.24	96.44	74.28	22.164	4.351	
5,300.00	5,295.07	5,303.30	5,292.70	11.39	11.26	-93.14	-158.47	-3.80	99.14	76.53	22.614	4.384	
5,400.00	5,394.76	5,403.37	5,392.45	11.62	11.48	-94.37	-164.37	-5.36	101.89	78.82	23.066	4.417	
5,500.00	5,494.45	5,503.43	5,492.21	11.85	11.71	-95.53	-170.27	-6.91	104.68	81.16	23.522	4.450	
5,600.00	5,594.14	5,603.49	5,591.96	12.08	11.94	-96.62	-176.17	-8.47	107.51	83.53	23.980	4.483	
5,700.00	5,693.83	5,703.55	5,691.71	12.31	12.17	-97.67	-182.07	-10.03	110.38	85.94	24.440	4.516	
5,800.00	5,793.53	5,803.61	5,791.47	12.54	12.39	-98.66	-187.97	-11.59	113.28	88.38	24.902	4.549	
5,900.00	5,893.22	5,903.67	5,891.22	12.78	12.63	-99.60	-193.87	-13.15	116.22	90.85	25.366	4.582	
6,000.00	5,992.91	6,003.73	5,990.97	13.02	12.86	-100.49	-199.77	-14.71	119.18	93.35	25.832	4.614	
6,100.00	6,092.60	6,103.79	6,090.72	13.25	13.09	-101.34	-205.66	-16.27	122.18	95.88	26.300	4.646	
6,200.00	6,192.29	6,203.85	6,190.48	13.49	13.32	-102.15	-211.56	-17.82	125.20	98.43	26.769	4.677	
6,300.00	6,291.99	6,303.91	6,290.23	13.73	13.56	-102.92	-217.46	-19.38	128.24	101.00	27.240	4.708	
6,400.00	6,391.68	6,403.97	6,389.98	13.97	13.79	-103.66	-223.36	-20.94	131.30	103.59	27.712	4.738	
6,500.00	6,491.37	6,504.03	6,489.74	14.21	14.03	-104.36	-229.26	-22.50	134.39	106.20	28.186	4.768	
6,600.00	6,591.06	6,604.10	6,589.49	14.46	14.26	-105.03	-235.16	-24.06	137.49	108.83	28.660	4.797	
6,700.00	6,690.75	6,704.16	6,689.24	14.70	14.50	-105.67	-241.06	-25.62	140.61	111.48	29.136	4.826	
6,800.00	6,790.44	6,804.22	6,788.99	14.95	14.74	-106.28	-246.96	-27.17	143.75	114.14	29.613	4.854	
6,900.00	6,890.14	6,904.28	6,888.75	15.19	14.97	-106.86	-252.85	-28.73	146.91	116.82	30.091	4.882	
7,000.00	6,989.83	7,004.34	6,988.50	15.44	15.21	-107.43	-258.75	-30.29	150.08	119.51	30.570	4.909	
7,100.00	7,089.52	7,104.40	7,088.25	15.68	15.45	-107.96	-264.65	-31.85	153.26	122.21	31.050	4.936	
7,200.00	7,189.21	7,204.46	7,188.00	15.93	15.69	-108.48	-270.55	-33.41	156.46	124.93	31.531	4.962	
7,300.00	7,288.90	7,304.52	7,287.76	16.18	15.93	-108.98	-276.45	-34.97	159.67	127.65	32.012	4.988	
7,400.00	7,388.59	7,395.58	7,387.68	16.43	16.14	-109.52	-282.18	-36.48	162.87	130.40	32.472	5.016	
7,500.00	7,488.29	7,495.84	7,487.87	16.68	16.37	-110.77	-285.87	-37.46	165.91	132.97	32.937	5.037	
7,600.00	7,587.98	7,604.14	7,587.88	16.93	16.59	-112.86	-287.02	-37.76	168.90	135.52	33.386	5.059	
7,700.00	7,687.67	7,704.45	7,687.57	17.18	16.79	-115.26	-287.02	-37.76	172.11	138.31	33.798	5.092	
7,800.00	7,787.36	7,804.76	7,787.26	17.43	16.98	-117.57	-287.02	-37.76	175.61	141.40	34.206	5.134	
7,900.00	7,887.05	7,905.06	7,886.95	17.68	17.18	-119.79	-287.02	-37.76	179.38	144.77	34.612	5.183	
8,000.00	7,986.74	8,005.37	7,986.64	17.94	17.37	-121.91	-287.02	-37.76	183.42	148.40	35.015	5.238	
8,100.00	8,086.44	8,105.68	8,086.34	18.19	17.57	-123.94	-287.02	-37.76	187.69	152.27	35.416	5.300	
8,200.00	8,186.13	8,205.99	8,186.03	18.44	17.77	-125.87	-287.02	-37.76	192.19	156.37	35.816	5.366	
8,264.07	8,250.00	8,257.88	8,249.90	18.60	17.87	-127.07	-287.02	-37.76	195.18	159.14	36.048	5.415	
8,300.00	8,285.83	8,306.28	8,285.73	18.69	17.96	-127.70	-287.02	-37.76	196.80	160.58	36.216	5.434	
8,400.00	8,385.67	8,406.44	8,385.57	18.93	18.16	-129.01	-287.02	-37.76	200.28	163.66	36.617	5.470	
8,500.00	8,485.63	8,506.49	8,485.53	19.16	18.36	-129.69	-287.02	-37.76	202.17	165.15	37.020	5.461	
8,564.07	8,549.69	8,557.58	8,549.59	19.28	18.46	90.19	-287.02	-37.76	202.51	165.26	37.250	5.437	
8,600.00	8,585.62	8,606.49	8,585.52	19.35	18.56	90.19	-287.02	-37.76	202.51	165.10	37.418	5.412	
8,700.00	8,685.62	8,706.49	8,685.52	19.55	18.76	90.19	-287.02	-37.76	202.51	164.70	37.814	5.356	
8,800.00	8,785.62	8,806.49	8,785.52	19.74	18.96	90.19	-287.02	-37.76	202.51	164.30	38.210	5.300	
8,900.00	8,885.62	8,906.49	8,885.52	19.93	19.16	90.19	-287.02	-37.76	202.51	163.91	38.608	5.245	
9,000.00	8,985.62	9,006.49	8,985.52	20.13	19.36	90.19	-287.02	-37.76	202.51	163.51	39.007	5.192	
9,100.00	9,085.62	9,106.49	9,085.52	20.32	19.56	90.19	-287.02	-37.76	202.51	163.11	39.407	5.139	
9,200.00	9,185.62	9,206.49	9,185.52	20.52	19.76	90.19	-287.02	-37.76	202.51	162.70	39.808	5.087	
9,300.00	9,285.62	9,306.49	9,285.52	20.71	19.97	90.19	-287.02	-37.76	202.51	162.30	40.210	5.036	
9,400.00	9,385.62	9,406.49	9,385.52	20.91	20.17	90.19	-287.02	-37.76	202.51	161.90	40.614	4.986	
9,500.00	9,485.62	9,506.49	9,485.52	21.11	20.37	90.19	-287.02	-37.76	202.51	161.50	41.018	4.937	
9,600.00	9,585.62	9,606.49	9,585.52	21.30	20.58	90.19	-287.02	-37.76	202.51	161.09	41.423	4.889	
9,700.00	9,685.62	9,706.49	9,685.52	21.50	20.78	90.19	-287.02	-37.76	202.51	160.68	41.829	4.841	
9,746.92	9,732.54	9,740.42	9,732.44	21.59	20.85	90.19	-287.02	-37.76	202.51	160.52	41.993	4.823	
9,750.00	9,735.62	9,743.51	9,735.52	21.60	20.86	98.14	-287.02	-37.76	202.51	160.51	42.005	4.821	
9,775.00	9,760.61	9,768.49	9,760.51	21.65	20.91	98.36	-287.02	-37.76	202.63	160.52	42.109	4.812	
9,800.00	9,785.51	9,806.60	9,785.41	21.69	20.99	98.91	-287.02	-37.76	202.95	160.71	42.243	4.804	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
9,825.00	9,810.27	9,818.16	9,810.17	21.73	21.01	99.79	-287.02	-37.76	203.51	161.19	42.325	4.808	
9,850.00	9,834.82	9,842.71	9,834.72	21.77	21.06	100.96	-287.02	-37.76	204.38	161.94	42.435	4.816	
9,875.00	9,859.09	9,866.97	9,858.99	21.80	21.11	102.41	-287.02	-37.76	205.63	163.08	42.545	4.833	
9,900.00	9,883.01	9,909.10	9,882.91	21.83	21.20	104.09	-287.02	-37.76	207.36	164.67	42.692	4.857	
9,925.00	9,906.52	9,914.41	9,906.42	21.86	21.21	105.94	-287.02	-37.76	209.69	166.93	42.761	4.904	
9,950.00	9,929.55	9,937.44	9,929.45	21.88	21.26	107.93	-287.02	-37.76	212.75	169.88	42.865	4.963	
9,975.00	9,952.05	9,959.93	9,951.95	21.90	21.30	109.99	-287.02	-37.76	216.64	173.68	42.963	5.043	
10,000.00	9,973.94	9,981.82	9,973.84	21.91	21.35	112.07	-287.02	-37.76	221.50	178.44	43.054	5.145	
10,025.00	9,995.17	10,003.05	9,995.07	21.93	21.39	114.10	-287.02	-37.76	227.43	184.29	43.138	5.272	
10,050.00	10,015.67	10,023.56	10,015.57	21.94	21.43	116.05	-287.02	-37.76	234.51	191.30	43.213	5.427	
10,075.00	10,035.41	10,043.29	10,035.31	21.95	21.47	117.85	-287.02	-37.76	242.83	199.55	43.280	5.611	
10,100.00	10,054.31	10,062.19	10,054.21	21.96	21.51	119.48	-287.02	-37.76	252.42	209.08	43.338	5.824	
10,125.00	10,072.33	10,080.21	10,072.23	21.96	21.55	120.89	-287.02	-37.76	263.31	219.92	43.387	6.069	
10,150.00	10,089.42	10,102.70	10,089.32	21.97	21.60	122.05	-287.02	-37.76	275.48	232.04	43.440	6.342	
10,175.00	10,105.53	10,113.42	10,105.43	21.97	21.62	122.94	-287.02	-37.76	288.93	245.47	43.463	6.648	
10,200.00	10,120.62	10,128.50	10,120.52	21.97	21.65	123.53	-287.02	-37.76	303.60	260.10	43.492	6.981	
10,225.00	10,134.65	10,142.53	10,134.55	21.97	21.68	123.78	-287.02	-37.76	319.43	275.91	43.514	7.341	
10,250.00	10,147.57	10,155.45	10,147.47	21.97	21.70	123.67	-287.02	-37.76	336.35	292.82	43.532	7.727	
10,275.00	10,159.35	10,167.24	10,159.25	21.97	21.73	123.15	-287.02	-37.76	354.30	310.75	43.545	8.136	
10,300.00	10,169.97	10,177.85	10,169.87	21.97	21.75	122.18	-287.02	-37.76	373.18	329.62	43.554	8.568	
10,325.00	10,179.39	10,187.27	10,179.29	21.97	21.77	120.71	-287.02	-37.76	392.91	349.35	43.559	9.020	
10,350.00	10,187.58	10,204.54	10,187.48	21.97	21.81	118.64	-287.02	-37.76	413.39	369.81	43.580	9.486	
10,375.00	10,194.52	10,202.41	10,194.42	21.98	21.80	115.91	-287.02	-37.76	434.55	390.99	43.560	9.976	
10,400.00	10,200.20	10,208.09	10,200.10	22.02	21.81	112.40	-287.02	-37.76	456.29	412.73	43.556	10.476	
10,425.00	10,204.60	10,212.48	10,204.50	22.10	21.82	108.02	-287.02	-37.76	478.51	434.96	43.549	10.988	
10,450.00	10,207.70	10,215.58	10,207.60	22.20	21.83	102.67	-287.02	-37.76	501.14	457.60	43.539	11.510	
10,475.00	10,209.50	10,217.39	10,209.40	22.31	21.83	96.32	-287.02	-37.76	524.09	480.56	43.526	12.041	
10,499.00	10,210.00	10,217.88	10,209.90	22.42	21.83	89.37	-287.02	-37.76	546.33	502.82	43.512	12.556	
10,600.00	10,209.56	10,217.44	10,209.46	22.98	21.83	89.31	-287.02	-37.76	640.78	597.33	43.453	14.746	
10,700.00	10,209.12	10,217.01	10,209.02	23.65	21.83	89.28	-287.02	-37.76	734.96	691.56	43.408	16.932	
10,800.00	10,208.68	10,216.57	10,208.58	24.42	21.83	89.27	-287.02	-37.76	829.49	786.11	43.371	19.125	
10,875.60	10,208.35	10,216.24	10,208.25	25.07	21.83	89.26	-287.02	-37.76	901.04	857.69	43.349	20.786	
10,900.00	10,208.25	10,216.13	10,208.15	25.29	21.83	89.24	-287.02	-37.76	924.18	880.83	43.342	21.323	
11,000.00	10,207.81	10,215.69	10,207.71	26.24	21.83	89.16	-287.02	-37.76	1,019.61	976.28	43.324	23.534	
11,100.00	10,207.37	10,215.26	10,207.27	27.29	21.83	89.07	-287.02	-37.76	1,115.83	1,072.52	43.313	25.762	
11,200.00	10,206.94	10,214.82	10,206.84	28.41	21.83	88.98	-287.02	-37.76	1,212.67	1,169.37	43.309	28.001	
11,300.00	10,206.50	10,214.38	10,206.40	29.61	21.83	88.90	-287.02	-37.76	1,309.99	1,266.68	43.309	30.247	
11,400.00	10,206.06	10,213.95	10,205.96	30.87	21.83	88.81	-287.02	-37.76	1,407.68	1,364.37	43.314	32.499	
11,500.00	10,205.63	10,213.51	10,205.53	32.18	21.82	88.73	-287.02	-37.76	1,505.67	1,462.35	43.322	34.755	
11,600.00	10,205.19	10,213.07	10,205.09	33.55	21.82	88.64	-287.02	-37.76	1,603.91	1,560.58	43.334	37.013	
11,700.00	10,204.75	10,212.64	10,204.65	34.96	21.82	88.55	-287.02	-37.76	1,702.36	1,659.01	43.349	39.271	
11,800.00	10,204.31	10,212.20	10,204.21	36.41	21.82	88.47	-287.02	-37.76	1,800.98	1,757.61	43.366	41.529	
11,900.00	10,203.88	10,211.76	10,203.78	37.89	21.82	88.38	-287.02	-37.76	1,899.74	1,856.35	43.386	43.787	
12,000.00	10,203.44	10,211.32	10,203.34	39.41	21.82	88.29	-287.02	-37.76	1,998.62	1,955.22	43.409	46.042	
12,100.00	10,203.00	10,210.89	10,202.90	40.95	21.82	88.21	-287.02	-37.76	2,097.61	2,054.18	43.433	48.295	
12,200.00	10,202.57	10,210.45	10,202.47	42.52	21.82	88.12	-287.02	-37.76	2,196.70	2,153.24	43.460	50.545	
12,300.00	10,202.13	10,210.01	10,202.03	44.11	21.82	88.04	-287.02	-37.76	2,295.86	2,252.37	43.489	52.792	
12,400.00	10,201.69	14,740.79	12,526.72	45.71	48.64	176.79	2,099.44	-215.04	2,328.80	2,270.31	58.484	39.819	
12,500.00	10,201.26	14,840.79	12,526.28	47.34	50.20	176.79	2,199.44	-215.78	2,328.79	2,269.42	59.377	39.221	
12,600.00	10,200.82	14,940.79	12,525.84	48.98	51.77	176.80	2,299.44	-216.51	2,328.79	2,268.50	60.293	38.625	
12,700.00	10,200.38	15,040.79	12,525.40	50.64	53.37	176.80	2,399.43	-217.25	2,328.79	2,267.56	61.230	38.033	
12,800.00	10,199.95	15,140.79	12,524.96	52.31	54.97	176.80	2,499.43	-217.99	2,328.78	2,266.59	62.189	37.447	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
12,900.00	10,199.51	15,240.79	12,524.52	53.99	56.60	176.80	2,599.43	-218.73	2,328.78	2,265.61	63.167	36.867	
13,000.00	10,199.07	15,340.79	12,524.08	55.68	58.23	176.80	2,699.42	-219.46	2,328.78	2,264.61	64.164	36.294	
13,100.00	10,198.63	15,440.79	12,523.65	57.38	59.88	176.80	2,799.42	-220.20	2,328.77	2,263.59	65.180	35.728	
13,200.00	10,198.20	15,540.79	12,523.21	59.09	61.54	176.80	2,899.42	-220.94	2,328.77	2,262.56	66.212	35.171	
13,300.00	10,197.76	15,640.79	12,522.77	60.81	63.22	176.80	2,999.41	-221.68	2,328.77	2,261.51	67.261	34.623	
13,400.00	10,197.32	15,740.79	12,522.33	62.54	64.90	176.80	3,099.41	-222.41	2,328.76	2,260.44	68.326	34.083	
13,500.00	10,196.89	15,840.79	12,521.89	64.27	66.59	176.80	3,199.40	-223.15	2,328.76	2,259.35	69.405	33.553	
13,600.00	10,196.45	15,940.79	12,521.45	66.01	68.29	176.80	3,299.40	-223.89	2,328.76	2,258.26	70.499	33.032	
13,700.00	10,196.01	16,040.79	12,521.01	67.76	69.99	176.80	3,399.40	-224.63	2,328.75	2,257.15	71.607	32.521	
13,800.00	10,195.58	16,140.79	12,520.57	69.51	71.71	176.80	3,499.39	-225.36	2,328.75	2,256.02	72.727	32.020	
13,900.00	10,195.14	16,240.79	12,520.13	71.26	73.43	176.80	3,599.39	-226.10	2,328.75	2,254.89	73.860	31.529	
14,000.00	10,194.70	16,340.79	12,519.69	73.02	75.15	176.80	3,699.39	-226.84	2,328.74	2,253.74	75.005	31.048	
14,100.00	10,194.27	16,440.79	12,519.25	74.79	76.88	176.80	3,799.38	-227.58	2,328.74	2,252.58	76.161	30.577	
14,200.00	10,193.83	16,540.79	12,518.81	76.56	78.62	176.80	3,899.38	-228.31	2,328.74	2,251.41	77.328	30.115	
14,300.00	10,193.39	16,640.79	12,518.37	78.33	80.36	176.80	3,999.37	-229.05	2,328.73	2,250.23	78.505	29.664	
14,400.00	10,192.95	16,740.79	12,517.93	80.11	82.11	176.80	4,099.37	-229.79	2,328.73	2,249.04	79.692	29.222	
14,500.00	10,192.52	16,840.79	12,517.49	81.89	83.86	176.80	4,199.37	-230.53	2,328.73	2,247.84	80.889	28.789	
14,600.00	10,192.08	16,940.79	12,517.05	83.67	85.62	176.80	4,299.36	-231.26	2,328.72	2,246.63	82.094	28.366	
14,700.00	10,191.64	17,040.79	12,516.61	85.45	87.38	176.80	4,399.36	-232.00	2,328.72	2,245.41	83.309	27.953	
14,800.00	10,191.21	17,140.79	12,516.17	87.24	89.14	176.80	4,499.36	-232.74	2,328.72	2,244.19	84.531	27.549	
14,900.00	10,190.77	17,240.79	12,515.73	89.03	90.91	176.80	4,599.35	-233.48	2,328.71	2,242.95	85.762	27.153	
15,000.00	10,190.33	17,340.79	12,515.29	90.83	92.68	176.80	4,699.35	-234.21	2,328.71	2,241.71	87.000	26.767	
15,076.24	10,190.00	17,417.03	12,514.96	92.19	94.03	176.80	4,775.58	-234.78	2,328.71	2,240.76	87.948	26.478	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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 - #705H - 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	179.62	-30.00	0.20	30.00				
100.00	100.00	100.80	99.20	0.08	0.09	179.62	-30.00	0.20	30.00	29.83	.170	176.088	
200.00	200.00	200.80	199.20	0.31	0.31	179.62	-30.00	0.20	30.00	29.38	.620	48.396	
300.00	300.00	300.80	299.20	0.53	0.54	179.62	-30.00	0.20	30.00	28.93	1.069	28.053	
400.00	400.00	400.80	399.20	0.76	0.76	179.62	-30.00	0.20	30.00	28.48	1.519	19.751	
500.00	500.00	500.80	499.20	0.98	0.99	179.62	-30.00	0.20	30.00	28.03	1.969	15.240	
600.00	600.00	600.80	599.20	1.21	1.21	179.62	-30.00	0.20	30.00	27.58	2.418	12.407	
700.00	700.00	700.80	699.20	1.43	1.43	179.62	-30.00	0.20	30.00	27.13	2.868	10.462	
800.00	800.00	800.80	799.20	1.66	1.66	179.62	-30.00	0.20	30.00	26.68	3.317	9.044	
900.00	900.00	900.80	899.20	1.88	1.88	179.62	-30.00	0.20	30.00	26.23	3.767	7.965	
1,000.00	1,000.00	1,000.80	999.20	2.11	2.11	179.62	-30.00	0.20	30.00	25.78	4.216	7.116	
1,100.00	1,100.00	1,100.80	1,099.20	2.33	2.33	179.62	-30.00	0.20	30.00	25.33	4.666	6.430	
1,200.00	1,200.00	1,200.80	1,199.20	2.56	2.56	179.62	-30.00	0.20	30.00	24.89	5.115	5.865	
1,300.00	1,300.00	1,300.80	1,299.20	2.78	2.78	179.62	-30.00	0.20	30.00	24.44	5.565	5.391	
1,400.00	1,400.00	1,400.80	1,399.20	3.01	3.01	179.62	-30.00	0.20	30.00	23.99	6.014	4.988	
1,500.00	1,500.00	1,500.80	1,499.20	3.23	3.23	179.62	-30.00	0.20	30.00	23.54	6.464	4.641	
1,600.00	1,600.00	1,600.80	1,599.20	3.46	3.46	179.62	-30.00	0.20	30.00	23.09	6.913	4.340	
1,700.00	1,700.00	1,700.80	1,699.20	3.68	3.68	179.62	-30.00	0.20	30.00	22.64	7.363	4.075	
1,800.00	1,800.00	1,800.80	1,799.20	3.91	3.91	179.62	-30.00	0.20	30.00	22.19	7.812	3.840	
1,900.00	1,900.00	1,900.80	1,899.20	4.13	4.13	179.62	-30.00	0.20	30.00	21.74	8.262	3.631	
2,000.00	2,000.00	1,999.20	1,999.20	4.35	4.35	179.62	-30.00	0.20	30.00	21.29	8.708	3.445	CC, ES
2,100.00	2,100.00	2,098.46	2,098.45	4.58	4.55	-179.53	-31.18	-0.25	31.19	22.07	9.127	3.418	
2,200.00	2,200.00	2,197.58	2,197.49	4.80	4.72	-177.31	-34.77	-1.63	34.85	25.33	9.518	3.661	
2,300.00	2,300.00	2,303.61	2,296.10	5.03	4.91	-174.50	-40.73	-3.92	41.03	31.11	9.921	4.136	
2,400.00	2,400.00	2,396.09	2,395.48	5.25	5.08	-172.03	-48.03	-6.72	48.64	38.33	10.313	4.717	
2,500.00	2,500.00	2,504.22	2,494.87	5.48	5.29	-170.23	-55.33	-9.52	56.31	45.58	10.737	5.245	
2,600.00	2,600.00	2,604.53	2,594.25	5.70	5.49	-168.87	-62.64	-12.33	64.03	52.88	11.151	5.742	
2,700.00	2,700.00	2,704.84	2,693.63	5.93	5.69	-167.79	-69.94	-15.13	71.77	60.20	11.568	6.205	
2,800.00	2,800.00	2,805.15	2,793.02	6.15	5.91	-166.93	-77.24	-17.93	79.53	67.55	11.987	6.635	
2,900.00	2,900.00	2,905.46	2,892.40	6.38	6.12	-166.22	-84.54	-20.74	87.31	74.90	12.409	7.036	
3,000.00	3,000.00	3,005.76	2,991.79	6.60	6.34	-165.62	-91.84	-23.54	95.10	82.27	12.834	7.410	
3,100.00	3,100.00	3,106.07	3,091.17	6.83	6.56	-165.12	-99.15	-26.34	102.90	89.64	13.261	7.760	
3,200.00	3,200.00	3,206.38	3,190.56	7.05	6.79	-164.69	-106.45	-29.15	110.70	97.02	13.689	8.087	
3,300.00	3,300.00	3,306.69	3,289.94	7.28	7.02	-164.31	-113.75	-31.95	118.51	104.39	14.120	8.394	
3,400.00	3,400.00	3,393.00	3,389.33	7.50	7.22	-163.98	-121.05	-34.75	126.33	111.81	14.523	8.699	
3,500.00	3,500.00	3,507.31	3,488.71	7.73	7.49	-163.69	-128.36	-37.56	134.15	119.16	14.985	8.952	
3,600.00	3,599.99	3,607.53	3,588.18	7.93	7.73	-23.60	-135.66	-40.36	140.77	125.38	15.394	9.144	
3,700.00	3,699.91	3,692.38	3,687.78	8.10	7.93	-23.95	-142.98	-43.17	145.00	129.25	15.749	9.207	
3,800.00	3,799.69	3,807.66	3,787.43	8.28	8.21	-24.71	-150.30	-45.98	146.86	130.69	16.173	9.081	
3,900.00	3,899.38	3,907.70	3,887.09	8.46	8.45	-25.68	-157.63	-48.79	147.56	130.99	16.570	8.905	
4,000.00	3,999.08	4,007.73	3,986.74	8.65	8.69	-26.64	-164.95	-51.60	148.31	131.33	16.971	8.739	
4,100.00	4,098.77	4,092.24	4,086.40	8.84	8.90	-27.59	-172.27	-54.41	149.09	131.75	17.343	8.597	
4,200.00	4,198.46	4,207.80	4,186.06	9.04	9.18	-28.53	-179.59	-57.22	149.92	132.13	17.786	8.429	
4,300.00	4,298.15	4,292.17	4,285.72	9.24	9.39	-29.46	-186.91	-60.03	150.78	132.62	18.166	8.300	
4,400.00	4,397.84	4,407.87	4,385.38	9.44	9.68	-30.38	-194.24	-62.84	151.69	133.07	18.617	8.148	
4,500.00	4,497.53	4,507.90	4,485.04	9.65	9.93	-31.29	-201.56	-65.66	152.63	133.59	19.038	8.017	
4,600.00	4,597.23	4,607.93	4,584.69	9.86	10.18	-32.18	-208.88	-68.47	153.61	134.15	19.463	7.893	
4,700.00	4,696.92	4,707.97	4,684.35	10.07	10.44	-33.07	-216.20	-71.28	154.63	134.74	19.891	7.774	
4,800.00	4,796.61	4,792.00	4,784.01	10.28	10.65	-33.94	-223.53	-74.09	155.69	135.40	20.287	7.674	
4,900.00	4,896.30	4,908.03	4,883.67	10.50	10.94	-34.80	-230.85	-76.90	156.78	136.02	20.758	7.553	
5,000.00	4,995.99	5,008.07	4,983.33	10.72	11.20	-35.65	-238.17	-79.71	157.90	136.71	21.197	7.449	
5,100.00	5,095.68	5,108.10	5,082.99	10.94	11.45	-36.49	-245.49	-82.52	159.06	137.42	21.638	7.351	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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 - #705H - 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	5,195.38	5,208.13	5,182.64	11.17	11.71	-37.31	-252.82	-85.33	160.26	138.17	22.083	7.257	
5,300.00	5,295.07	5,308.17	5,282.30	11.39	11.96	-38.13	-260.14	-88.14	161.48	138.95	22.531	7.167	
5,400.00	5,394.76	5,408.20	5,381.96	11.62	12.22	-38.93	-267.46	-90.95	162.74	139.76	22.982	7.081	
5,500.00	5,494.45	5,491.83	5,481.69	11.85	12.43	-39.72	-274.79	-93.77	164.03	140.63	23.399	7.010	
5,600.00	5,594.14	5,595.97	5,585.60	12.08	12.69	-40.71	-281.05	-96.17	164.04	140.17	23.876	6.871	
5,700.00	5,693.83	5,699.97	5,689.53	12.31	12.93	-42.09	-284.66	-97.56	161.59	137.24	24.347	6.637	
5,800.00	5,793.53	5,803.18	5,792.73	12.54	13.14	-43.93	-285.66	-97.94	156.78	131.98	24.805	6.321	
5,900.00	5,893.22	5,902.87	5,892.42	12.78	13.32	-45.99	-285.66	-97.94	151.22	125.96	25.260	5.987	
6,000.00	5,992.91	6,002.56	5,992.11	13.02	13.50	-48.20	-285.66	-97.94	145.87	120.15	25.722	5.671	
6,100.00	6,092.60	6,102.25	6,091.80	13.25	13.69	-50.58	-285.66	-97.94	140.75	114.56	26.191	5.374	
6,200.00	6,192.29	6,201.94	6,191.49	13.49	13.87	-53.13	-285.66	-97.94	135.90	109.23	26.668	5.096	
6,300.00	6,291.99	6,301.64	6,291.19	13.73	14.06	-55.86	-285.66	-97.94	131.33	104.18	27.152	4.837	
6,400.00	6,391.68	6,401.33	6,390.88	13.97	14.25	-58.78	-285.66	-97.94	127.08	99.44	27.643	4.597	
6,500.00	6,491.37	6,501.02	6,490.57	14.21	14.44	-61.90	-285.66	-97.94	123.19	95.05	28.140	4.378	
6,600.00	6,591.06	6,600.71	6,590.26	14.46	14.63	-65.21	-285.66	-97.94	119.68	91.04	28.643	4.179	
6,700.00	6,690.75	6,700.40	6,689.95	14.70	14.82	-68.70	-285.66	-97.94	116.60	87.45	29.149	4.000	
6,800.00	6,790.44	6,800.09	6,789.64	14.95	15.01	-72.37	-285.66	-97.94	113.98	84.32	29.656	3.843	
6,900.00	6,890.14	6,900.21	6,889.34	15.19	15.20	-76.19	-285.66	-97.94	111.85	81.68	30.162	3.708	
7,000.00	6,989.83	7,000.52	6,989.03	15.44	15.40	-80.14	-285.66	-97.94	110.23	79.57	30.665	3.595	
7,100.00	7,089.52	7,100.83	7,088.72	15.68	15.60	-84.19	-285.66	-97.94	109.16	78.00	31.160	3.503	
7,200.00	7,189.21	7,201.14	7,188.41	15.93	15.79	-88.29	-285.66	-97.94	108.64	77.00	31.645	3.433	
7,241.33	7,230.42	7,240.07	7,229.62	16.03	15.87	-90.00	-285.66	-97.94	108.59	76.75	31.837	3.411	
7,300.00	7,288.90	7,301.45	7,288.10	16.18	15.99	-92.42	-285.66	-97.94	108.69	76.57	32.118	3.384	
7,400.00	7,388.59	7,401.76	7,387.79	16.43	16.19	-96.52	-285.66	-97.94	109.30	76.73	32.577	3.355	
7,500.00	7,488.29	7,502.06	7,487.49	16.68	16.39	-100.55	-285.66	-97.94	110.47	77.45	33.022	3.345 SF	
7,600.00	7,587.98	7,602.37	7,587.18	16.93	16.59	-104.49	-285.66	-97.94	112.18	78.73	33.453	3.353	
7,700.00	7,687.67	7,702.68	7,686.87	17.18	16.79	-108.28	-285.66	-97.94	114.40	80.53	33.872	3.377	
7,800.00	7,787.36	7,802.99	7,786.56	17.43	16.99	-111.92	-285.66	-97.94	117.10	82.83	34.279	3.416	
7,900.00	7,887.05	7,903.30	7,886.25	17.68	17.19	-115.38	-285.66	-97.94	120.26	85.58	34.678	3.468	
8,000.00	7,986.74	8,003.60	7,985.94	17.94	17.39	-118.65	-285.66	-97.94	123.84	88.77	35.069	3.531	
8,100.00	8,086.44	8,103.91	8,085.64	18.19	17.59	-121.74	-285.66	-97.94	127.79	92.34	35.456	3.604	
8,200.00	8,186.13	8,204.22	8,185.33	18.44	17.80	-124.63	-285.66	-97.94	132.10	96.26	35.839	3.686	
8,264.07	8,250.00	8,259.65	8,249.20	18.60	17.91	-126.38	-285.66	-97.94	135.02	98.96	36.066	3.744	
8,300.00	8,285.83	8,304.52	8,285.03	18.69	18.00	-127.29	-285.66	-97.94	136.61	100.39	36.222	3.772	
8,400.00	8,385.67	8,404.68	8,384.87	18.93	18.20	-129.15	-285.66	-97.94	140.08	103.47	36.612	3.826	
8,500.00	8,485.63	8,504.72	8,484.83	19.16	18.41	-130.11	-285.66	-97.94	141.99	104.98	37.013	3.836	
8,564.07	8,549.69	8,559.34	8,548.89	19.28	18.52	89.72	-285.66	-97.94	142.34	105.08	37.252	3.821	
8,600.00	8,585.62	8,604.73	8,584.82	19.35	18.61	89.72	-285.66	-97.94	142.34	104.92	37.415	3.804	
8,700.00	8,685.62	8,704.73	8,684.82	19.55	18.82	89.72	-285.66	-97.94	142.34	104.52	37.817	3.764	
8,800.00	8,785.62	8,804.73	8,784.82	19.74	19.02	89.72	-285.66	-97.94	142.34	104.12	38.219	3.724	
8,900.00	8,885.62	8,904.73	8,884.82	19.93	19.23	89.72	-285.66	-97.94	142.34	103.71	38.623	3.685	
9,000.00	8,985.62	9,004.73	8,984.82	20.13	19.43	89.72	-285.66	-97.94	142.34	103.31	39.027	3.647	
9,100.00	9,085.62	9,104.73	9,084.82	20.32	19.64	89.72	-285.66	-97.94	142.34	102.90	39.433	3.610	
9,200.00	9,185.62	9,204.73	9,184.82	20.52	19.85	89.72	-285.66	-97.94	142.34	102.50	39.839	3.573	
9,300.00	9,285.62	9,304.73	9,284.82	20.71	20.06	89.72	-285.66	-97.94	142.34	102.09	40.247	3.537	
9,400.00	9,385.62	9,404.73	9,384.82	20.91	20.26	89.72	-285.66	-97.94	142.34	101.68	40.655	3.501	
9,500.00	9,485.62	9,504.73	9,484.82	21.11	20.47	89.72	-285.66	-97.94	142.34	101.27	41.064	3.466	
9,600.00	9,585.62	9,604.73	9,584.82	21.30	20.68	89.72	-285.66	-97.94	142.34	100.86	41.474	3.432	
9,700.00	9,685.62	9,704.73	9,684.82	21.50	20.89	89.72	-285.66	-97.94	142.34	100.45	41.885	3.398	
9,746.92	9,732.54	9,742.19	9,731.74	21.59	20.97	89.72	-285.66	-97.94	142.34	100.28	42.058	3.384	
9,750.00	9,735.62	9,745.27	9,734.82	21.60	20.97	97.68	-285.66	-97.94	142.34	100.27	42.071	3.383	
9,775.00	9,760.61	9,770.26	9,759.81	21.65	21.03	97.99	-285.66	-97.94	142.45	100.27	42.179	3.377	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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 - #705H - 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
9,800.00	9,785.51	9,804.84	9,784.71	21.69	21.10	98.79	-285.66	-97.94	142.76	100.45	42.314	3.374	
9,825.00	9,810.27	9,819.93	9,809.47	21.73	21.13	100.06	-285.66	-97.94	143.33	100.91	42.414	3.379	
9,850.00	9,834.82	9,844.47	9,834.02	21.77	21.18	101.77	-285.66	-97.94	144.23	101.70	42.540	3.391	
9,875.00	9,859.09	9,868.74	9,858.29	21.80	21.23	103.85	-285.66	-97.94	145.60	102.94	42.667	3.413	
9,900.00	9,883.01	9,907.34	9,882.21	21.83	21.31	106.25	-285.66	-97.94	147.57	104.74	42.826	3.446	
9,925.00	9,906.52	9,916.17	9,905.72	21.86	21.33	108.89	-285.66	-97.94	150.28	107.36	42.920	3.501	
9,950.00	9,929.55	9,939.21	9,928.75	21.88	21.38	111.67	-285.66	-97.94	153.90	110.86	43.039	3.576	
9,975.00	9,952.05	9,961.70	9,951.25	21.90	21.43	114.52	-285.66	-97.94	158.58	115.43	43.149	3.675	
10,000.00	9,973.94	9,983.59	9,973.14	21.91	21.47	117.34	-285.66	-97.94	164.45	121.20	43.249	3.802	
10,025.00	9,995.17	10,004.82	9,994.37	21.93	21.52	120.05	-285.66	-97.94	171.60	128.27	43.336	3.960	
10,050.00	10,015.67	10,025.33	10,014.87	21.94	21.56	122.59	-285.66	-97.94	180.13	136.71	43.411	4.149	
10,075.00	10,035.41	10,045.06	10,034.61	21.95	21.60	124.91	-285.66	-97.94	190.05	146.57	43.474	4.372	
10,100.00	10,054.31	10,063.96	10,053.51	21.96	21.64	126.97	-285.66	-97.94	201.38	157.85	43.525	4.627	
10,125.00	10,072.33	10,081.98	10,071.53	21.96	21.68	128.73	-285.66	-97.94	214.08	170.52	43.567	4.914	
10,150.00	10,089.42	10,100.93	10,088.62	21.97	21.72	130.17	-285.66	-97.94	228.12	184.52	43.605	5.232	
10,175.00	10,105.53	10,115.18	10,104.73	21.97	21.75	131.28	-285.66	-97.94	243.43	199.80	43.629	5.580	
10,200.00	10,120.62	10,130.27	10,119.82	21.97	21.78	132.04	-285.66	-97.94	259.93	216.28	43.651	5.955	
10,225.00	10,134.65	10,144.30	10,133.85	21.97	21.81	132.42	-285.66	-97.94	277.54	233.87	43.669	6.355	
10,250.00	10,147.57	10,157.22	10,146.77	21.97	21.84	132.39	-285.66	-97.94	296.16	252.48	43.683	6.780	
10,275.00	10,159.35	10,169.01	10,158.55	21.97	21.86	131.91	-285.66	-97.94	315.72	272.03	43.693	7.226	
10,300.00	10,169.97	10,179.62	10,169.17	21.97	21.89	130.92	-285.66	-97.94	336.12	292.42	43.701	7.691	
10,325.00	10,179.39	10,189.04	10,178.59	21.97	21.91	129.35	-285.66	-97.94	357.27	313.56	43.706	8.174	
10,350.00	10,187.58	10,202.77	10,186.78	21.97	21.93	127.07	-285.66	-97.94	379.08	335.36	43.720	8.671	
10,375.00	10,194.52	10,204.17	10,193.72	21.98	21.94	123.94	-285.66	-97.94	401.47	357.76	43.708	9.185	
10,400.00	10,200.20	10,209.85	10,199.40	22.02	21.95	119.77	-285.66	-97.94	424.35	380.64	43.704	9.710	
10,425.00	10,204.60	10,214.25	10,203.80	22.10	21.96	114.32	-285.66	-97.94	447.63	403.93	43.698	10.244	
10,450.00	10,207.70	10,217.35	10,206.90	22.20	21.97	107.36	-285.66	-97.94	471.24	427.55	43.690	10.786	
10,475.00	10,209.50	10,219.15	10,208.70	22.31	21.97	98.78	-285.66	-97.94	495.08	451.40	43.679	11.334	
10,499.00	10,210.00	10,219.65	10,209.20	22.42	21.97	89.12	-285.66	-97.94	518.12	474.46	43.667	11.865	
10,600.00	10,209.56	10,219.21	10,208.76	22.98	21.97	89.07	-285.66	-97.94	615.50	571.88	43.614	14.112	
10,700.00	10,209.12	10,218.77	10,208.32	23.65	21.97	89.06	-285.66	-97.94	712.11	668.54	43.573	16.343	
10,800.00	10,208.68	10,218.34	10,207.88	24.42	21.97	89.06	-285.66	-97.94	808.75	765.21	43.540	18.575	
10,875.60	10,208.35	10,218.00	10,207.55	25.07	21.97	89.07	-285.66	-97.94	881.77	838.25	43.519	20.262	
10,900.00	10,208.25	10,217.90	10,207.45	25.29	21.97	89.05	-285.66	-97.94	905.35	861.84	43.512	20.807	
11,000.00	10,207.81	10,217.46	10,207.01	26.24	21.97	88.94	-285.66	-97.94	1,002.39	958.90	43.495	23.046	
11,100.00	10,207.37	10,217.02	10,206.57	27.29	21.96	88.83	-285.66	-97.94	1,099.97	1,056.48	43.485	25.295	
11,200.00	10,206.94	10,216.59	10,206.14	28.41	21.96	88.72	-285.66	-97.94	1,197.94	1,154.46	43.481	27.551	
11,300.00	10,206.50	10,216.15	10,205.70	29.61	21.96	88.61	-285.66	-97.94	1,296.22	1,252.74	43.481	29.811	
11,400.00	10,206.06	10,215.71	10,205.26	30.87	21.96	88.50	-285.66	-97.94	1,394.75	1,351.26	43.486	32.073	
11,500.00	10,205.63	10,215.28	10,204.83	32.18	21.96	88.39	-285.66	-97.94	1,493.47	1,449.98	43.494	34.337	
11,600.00	10,205.19	10,214.84	10,204.39	33.55	21.96	88.28	-285.66	-97.94	1,592.35	1,548.84	43.506	36.601	
11,700.00	10,204.75	10,214.40	10,203.95	34.96	21.96	88.18	-285.66	-97.94	1,691.36	1,647.84	43.520	38.864	
11,800.00	10,204.31	10,213.97	10,203.51	36.41	21.96	88.07	-285.66	-97.94	1,790.49	1,746.95	43.538	41.125	
11,900.00	10,203.88	10,213.53	10,203.08	37.89	21.96	87.96	-285.66	-97.94	1,889.70	1,846.14	43.557	43.384	
12,000.00	10,203.44	10,213.09	10,202.64	39.41	21.96	87.85	-285.66	-97.94	1,988.99	1,945.41	43.579	45.641	
12,100.00	10,203.00	10,212.65	10,202.20	40.95	21.96	87.74	-285.66	-97.94	2,088.36	2,044.75	43.604	47.894	
12,200.00	10,202.57	10,212.22	10,201.77	42.52	21.95	87.63	-285.66	-97.94	2,187.77	2,144.14	43.630	50.143	
12,300.00	10,202.13	10,211.78	10,201.33	44.11	21.95	87.52	-285.66	-97.94	2,287.24	2,243.58	43.659	52.389	
12,400.00	10,201.69	10,211.34	10,200.89	45.71	21.95	87.42	-285.66	-97.94	2,386.76	2,343.07	43.690	54.630	
12,500.00	10,201.26	10,210.91	10,200.46	47.34	21.95	87.31	-285.66	-97.94	2,486.31	2,442.59	43.722	56.866	
12,600.00	10,200.82	15,205.45	12,770.89	48.98	52.30	180.00	2,299.61	-346.66	2,570.90	2,509.96	60.935	42.191	
12,700.00	10,200.38	15,305.45	12,770.45	50.64	53.87	180.00	2,399.61	-347.39	2,570.89	2,509.04	61.853	41.565	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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 - #705H - 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
12,800.00	10,199.95	15,405.45	12,770.01	52.31	55.47	180.00	2,499.61	-348.12	2,570.89	2,508.10	62.791	40.943	
12,900.00	10,199.51	15,505.45	12,769.57	53.99	57.07	180.00	2,599.60	-348.86	2,570.88	2,507.13	63.749	40.328	
13,000.00	10,199.07	15,605.45	12,769.12	55.68	58.70	180.00	2,699.60	-349.59	2,570.88	2,506.15	64.725	39.720	
13,100.00	10,198.63	15,705.45	12,768.68	57.38	60.33	180.00	2,799.60	-350.32	2,570.87	2,505.15	65.720	39.118	
13,200.00	10,198.20	15,805.45	12,768.24	59.09	61.98	180.00	2,899.59	-351.05	2,570.87	2,504.14	66.732	38.525	
13,300.00	10,197.76	15,905.45	12,767.80	60.81	63.64	180.00	2,999.59	-351.78	2,570.86	2,503.10	67.760	37.941	
13,400.00	10,197.32	16,005.45	12,767.36	62.54	65.30	180.00	3,099.58	-352.52	2,570.86	2,502.05	68.804	37.365	
13,500.00	10,196.89	16,105.45	12,766.92	64.27	66.98	180.00	3,199.58	-353.25	2,570.85	2,500.99	69.863	36.799	
13,600.00	10,196.45	16,205.45	12,766.47	66.01	68.67	180.00	3,299.58	-353.98	2,570.85	2,499.91	70.936	36.242	
13,700.00	10,196.01	16,305.45	12,766.03	67.76	70.37	180.00	3,399.57	-354.71	2,570.84	2,498.82	72.023	35.695	
13,800.00	10,195.58	16,405.45	12,765.59	69.51	72.07	180.00	3,499.57	-355.44	2,570.84	2,497.72	73.122	35.158	
13,900.00	10,195.14	16,505.45	12,765.15	71.26	73.78	180.00	3,599.57	-356.17	2,570.83	2,496.60	74.235	34.631	
14,000.00	10,194.70	16,605.45	12,764.71	73.02	75.50	180.00	3,699.56	-356.91	2,570.83	2,495.47	75.359	34.115	
14,100.00	10,194.27	16,705.45	12,764.26	74.79	77.22	180.00	3,799.56	-357.64	2,570.82	2,494.33	76.494	33.608	
14,200.00	10,193.83	16,805.45	12,763.82	76.56	78.95	180.00	3,899.56	-358.37	2,570.82	2,493.18	77.641	33.112	
14,300.00	10,193.39	16,905.45	12,763.38	78.33	80.68	180.00	3,999.55	-359.10	2,570.81	2,492.02	78.797	32.626	
14,400.00	10,192.95	17,005.45	12,762.94	80.11	82.42	180.00	4,099.55	-359.83	2,570.81	2,490.84	79.964	32.150	
14,500.00	10,192.52	17,105.45	12,762.50	81.89	84.17	180.00	4,199.54	-360.57	2,570.80	2,489.66	81.141	31.683	
14,600.00	10,192.08	17,205.45	12,762.05	83.67	85.91	180.00	4,299.54	-361.30	2,570.80	2,488.47	82.326	31.227	
14,700.00	10,191.64	17,305.45	12,761.61	85.45	87.67	180.00	4,399.54	-362.03	2,570.79	2,487.27	83.520	30.781	
14,800.00	10,191.21	17,405.45	12,761.17	87.24	89.42	180.00	4,499.53	-362.76	2,570.79	2,486.07	84.723	30.343	
14,900.00	10,190.77	17,505.45	12,760.73	89.03	91.18	180.00	4,599.53	-363.49	2,570.78	2,484.85	85.934	29.916	
15,000.00	10,190.33	17,605.45	12,760.29	90.83	92.95	180.00	4,699.53	-364.23	2,570.78	2,483.63	87.152	29.498	
15,070.17	10,190.03	17,675.62	12,759.98	92.09	94.19	-180.00	4,769.70	-364.74	2,570.78	2,482.76	88.012	29.210	
15,076.24	10,190.00	17,670.32	12,760.00	92.19	94.09	180.00	4,764.40	-364.70	2,570.80	2,482.83	87.968	29.224	

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	1.20	-1.20	0.00	0.00	-135.57	-30.30	-29.70	42.43				
100.00	100.00	101.20	98.80	0.08	0.09	-135.57	-30.30	-29.70	42.43	42.26	.171	247.726	
200.00	200.00	201.20	198.80	0.31	0.31	-135.57	-30.30	-29.70	42.43	41.81	.621	68.344	
300.00	300.00	301.20	298.80	0.53	0.54	-135.57	-30.30	-29.70	42.43	41.36	1.070	39.640	
400.00	400.00	401.20	398.80	0.76	0.76	-135.57	-30.30	-29.70	42.43	40.91	1.520	27.916	
500.00	500.00	501.20	498.80	0.98	0.99	-135.57	-30.30	-29.70	42.43	40.46	1.969	21.544	
600.00	600.00	601.20	598.80	1.21	1.21	-135.57	-30.30	-29.70	42.43	40.01	2.419	17.540	
700.00	700.00	701.20	698.80	1.43	1.44	-135.57	-30.30	-29.70	42.43	39.56	2.868	14.791	
800.00	800.00	801.20	798.80	1.66	1.66	-135.57	-30.30	-29.70	42.43	39.11	3.318	12.787	
900.00	900.00	901.20	898.80	1.88	1.89	-135.57	-30.30	-29.70	42.43	38.66	3.768	11.262	
1,000.00	1,000.00	1,001.20	998.80	2.11	2.11	-135.57	-30.30	-29.70	42.43	38.21	4.217	10.061	
1,100.00	1,100.00	1,101.20	1,098.80	2.33	2.33	-135.57	-30.30	-29.70	42.43	37.76	4.667	9.092	
1,200.00	1,200.00	1,201.20	1,198.80	2.56	2.56	-135.57	-30.30	-29.70	42.43	37.31	5.116	8.293	
1,300.00	1,300.00	1,301.20	1,298.80	2.78	2.78	-135.57	-30.30	-29.70	42.43	36.86	5.566	7.623	
1,400.00	1,400.00	1,401.20	1,398.80	3.01	3.01	-135.57	-30.30	-29.70	42.43	36.41	6.015	7.054	
1,500.00	1,500.00	1,498.80	1,498.80	3.23	3.23	-135.57	-30.30	-29.70	42.43	35.97	6.459	6.569	
1,600.00	1,600.00	1,597.72	1,597.71	3.46	3.43	-135.91	-31.35	-30.37	43.67	36.79	6.880	6.347	
1,700.00	1,700.00	1,696.49	1,696.40	3.68	3.60	-136.84	-34.56	-32.41	47.44	40.17	7.276	6.521	
1,800.00	1,800.00	1,795.00	1,794.71	3.91	3.78	-138.09	-39.90	-35.82	53.78	46.10	7.673	7.009	
1,900.00	1,900.00	1,905.91	1,893.43	4.13	4.00	-139.37	-47.02	-40.35	62.20	54.10	8.100	7.678	
2,000.00	2,000.00	2,006.29	1,992.67	4.35	4.20	-140.36	-54.35	-45.02	70.84	62.32	8.517	8.318	
2,100.00	2,100.00	2,093.33	2,091.91	4.58	4.39	-141.14	-61.67	-49.68	79.49	70.58	8.911	8.921	
2,200.00	2,200.00	2,207.05	2,191.15	4.80	4.64	-141.77	-68.99	-54.35	88.16	78.80	9.361	9.418	
2,300.00	2,300.00	2,307.43	2,290.39	5.03	4.87	-142.29	-76.32	-59.02	96.84	87.05	9.788	9.893	
2,400.00	2,400.00	2,392.18	2,389.64	5.25	5.06	-142.72	-83.64	-63.68	105.52	95.33	10.186	10.359	
2,500.00	2,500.00	2,491.80	2,488.88	5.48	5.30	-143.08	-90.96	-68.35	114.21	103.59	10.616	10.758	
2,600.00	2,600.00	2,608.58	2,588.12	5.70	5.58	-143.39	-98.28	-73.01	122.90	111.81	11.085	11.087	
2,700.00	2,700.00	2,708.96	2,687.36	5.93	5.82	-143.66	-105.61	-77.68	131.59	120.07	11.521	11.422	
2,800.00	2,800.00	2,809.34	2,786.60	6.15	6.07	-143.90	-112.93	-82.34	140.29	128.33	11.959	11.731	
2,900.00	2,900.00	2,909.72	2,885.84	6.38	6.32	-144.11	-120.25	-87.01	148.99	136.59	12.399	12.016	
3,000.00	3,000.00	2,989.90	2,985.08	6.60	6.52	-144.30	-127.57	-91.67	157.69	144.90	12.796	12.323	
3,100.00	3,100.00	3,089.52	3,084.32	6.83	6.77	-144.47	-134.90	-96.34	166.40	153.16	13.236	12.571	
3,200.00	3,200.00	3,189.14	3,183.56	7.05	7.02	-144.62	-142.22	-101.00	175.10	161.42	13.678	12.802	
3,300.00	3,300.00	3,288.76	3,282.80	7.28	7.28	-144.76	-149.54	-105.67	183.80	169.68	14.120	13.017	
3,400.00	3,400.00	3,388.38	3,382.04	7.50	7.53	-144.88	-156.86	-110.33	192.51	177.95	14.563	13.219	
3,500.00	3,500.00	3,488.00	3,481.28	7.73	7.79	-144.99	-164.19	-115.00	201.22	186.21	15.007	13.408	
3,600.00	3,599.99	3,587.72	3,580.62	7.93	8.05	-5.12	-171.52	-119.67	208.63	193.20	15.426	13.524	
3,700.00	3,699.91	3,687.60	3,680.12	8.10	8.31	-5.30	-178.86	-124.34	213.43	197.61	15.822	13.489	
3,800.00	3,799.69	3,787.57	3,779.71	8.28	8.58	-5.55	-186.21	-129.02	215.64	199.42	16.222	13.293	
3,900.00	3,899.38	3,887.56	3,879.32	8.46	8.84	-5.83	-193.56	-133.71	216.54	199.92	16.625	13.025	
4,000.00	3,999.08	3,987.55	3,978.93	8.65	9.10	-6.11	-200.91	-138.39	217.46	200.43	17.032	12.768	
4,100.00	4,098.77	4,087.54	4,078.54	8.84	9.37	-6.38	-208.26	-143.07	218.37	200.93	17.441	12.521	
4,200.00	4,198.46	4,187.53	4,178.15	9.04	9.63	-6.65	-215.61	-147.75	219.30	201.44	17.853	12.284	
4,300.00	4,298.15	4,287.52	4,277.76	9.24	9.90	-6.92	-222.96	-152.44	220.22	201.96	18.267	12.056	
4,400.00	4,397.84	4,387.51	4,377.37	9.44	10.17	-7.19	-230.31	-157.12	221.16	202.47	18.684	11.837	
4,500.00	4,497.53	4,487.50	4,476.98	9.65	10.43	-7.46	-237.66	-161.80	222.09	202.99	19.103	11.626	
4,600.00	4,597.23	4,587.49	4,576.59	9.86	10.70	-7.72	-245.01	-166.48	223.03	203.51	19.524	11.423	
4,700.00	4,696.92	4,687.48	4,676.20	10.07	10.97	-7.98	-252.36	-171.17	223.98	204.03	19.948	11.229	
4,800.00	4,796.61	4,787.47	4,775.81	10.28	11.24	-8.24	-259.71	-175.85	224.93	204.56	20.373	11.041	
4,900.00	4,896.30	4,887.46	4,875.42	10.50	11.51	-8.49	-267.06	-180.53	225.89	205.09	20.799	10.860	
5,000.00	4,995.99	4,987.45	4,975.03	10.72	11.78	-8.75	-274.41	-185.21	226.85	205.62	21.228	10.686	
5,100.00	5,095.68	5,093.44	5,080.72	10.94	12.05	-9.03	-281.08	-189.46	226.56	204.87	21.682	10.449	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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	5,195.38	5,199.65	5,186.80	11.17	12.31	-9.33	-285.28	-192.14	223.49	201.37	22.125	10.101	
5,300.00	5,295.07	5,305.59	5,292.72	11.39	12.53	-9.67	-286.99	-193.23	217.66	195.11	22.556	9.650	
5,400.00	5,394.76	5,406.43	5,393.56	11.62	12.71	-10.03	-287.03	-193.26	209.98	187.03	22.955	9.147	
5,500.00	5,494.45	5,506.12	5,493.25	11.85	12.89	-10.42	-287.03	-193.26	202.26	178.90	23.356	8.660	
5,600.00	5,594.14	5,605.81	5,592.94	12.08	13.06	-10.83	-287.03	-193.26	194.55	170.79	23.759	8.188	
5,700.00	5,693.83	5,705.50	5,692.63	12.31	13.24	-11.29	-287.03	-193.26	186.85	162.68	24.164	7.732	
5,800.00	5,793.53	5,805.19	5,792.33	12.54	13.42	-11.78	-287.03	-193.26	179.16	154.59	24.572	7.291	
5,900.00	5,893.22	5,904.89	5,892.02	12.78	13.60	-12.31	-287.03	-193.26	171.48	146.50	24.982	6.864	
6,000.00	5,992.91	6,004.58	5,991.71	13.02	13.78	-12.90	-287.03	-193.26	163.83	138.43	25.395	6.451	
6,100.00	6,092.60	6,104.27	6,091.40	13.25	13.96	-13.54	-287.03	-193.26	156.19	130.38	25.810	6.051	
6,200.00	6,192.29	6,203.96	6,191.09	13.49	14.15	-14.25	-287.03	-193.26	148.57	122.34	26.228	5.664	
6,300.00	6,291.99	6,303.65	6,290.79	13.73	14.33	-15.03	-287.03	-193.26	140.98	114.33	26.649	5.290	
6,400.00	6,391.68	6,403.34	6,390.48	13.97	14.52	-15.91	-287.03	-193.26	133.41	106.34	27.073	4.928	
6,500.00	6,491.37	6,503.04	6,490.17	14.21	14.70	-16.88	-287.03	-193.26	125.88	98.38	27.501	4.577	
6,600.00	6,591.06	6,602.73	6,589.86	14.46	14.89	-17.99	-287.03	-193.26	118.40	90.46	27.933	4.239	
6,700.00	6,690.75	6,702.42	6,689.55	14.70	15.08	-19.24	-287.03	-193.26	110.96	82.59	28.369	3.911	
6,800.00	6,790.44	6,802.11	6,789.24	14.95	15.27	-20.67	-287.03	-193.26	103.58	74.77	28.812	3.595	
6,900.00	6,890.14	6,901.80	6,888.94	15.19	15.46	-22.31	-287.03	-193.26	96.27	67.01	29.261	3.290	
7,000.00	6,989.83	7,001.49	6,988.63	15.44	15.66	-24.23	-287.03	-193.26	89.06	59.34	29.720	2.997	
7,100.00	7,089.52	7,101.19	7,088.32	15.68	15.85	-26.48	-287.03	-193.26	81.97	51.78	30.190	2.715	
7,200.00	7,189.21	7,200.88	7,188.01	15.93	16.04	-29.15	-287.03	-193.26	75.02	44.35	30.676	2.446	
7,300.00	7,288.90	7,300.57	7,287.70	16.18	16.24	-32.36	-287.03	-193.26	68.27	37.09	31.181	2.189	
7,400.00	7,388.59	7,400.26	7,387.39	16.43	16.43	-36.25	-287.03	-193.26	61.78	30.07	31.713	1.948	
7,500.00	7,488.29	7,500.05	7,487.09	16.68	16.63	-41.03	-287.03	-193.26	55.64	23.36	32.280	1.724	
7,600.00	7,587.98	7,600.36	7,586.78	16.93	16.83	-46.93	-287.03	-193.26	49.98	17.09	32.890	1.519	
7,700.00	7,687.67	7,700.66	7,686.47	17.18	17.02	-54.24	-287.03	-193.26	44.98	11.43	33.547	1.341	Level 3
7,800.00	7,787.36	7,800.97	7,786.16	17.43	17.22	-63.18	-287.03	-193.26	40.88	6.64	34.239	1.194	Level 2
7,900.00	7,887.05	7,901.28	7,885.85	17.68	17.42	-73.77	-287.03	-193.26	37.98	3.06	34.923	1.088	Level 2
8,000.00	7,986.74	8,001.59	7,985.54	17.94	17.62	-85.62	-287.03	-193.26	36.57	1.04	35.529	1.029	Level 2
8,035.68	8,022.32	8,033.98	8,021.12	18.03	17.69	-90.00	-287.03	-193.26	36.46	0.75	35.705	1.021	Level 2, CC, ES, SF
8,100.00	8,086.44	8,101.90	8,085.24	18.19	17.82	-97.86	-287.03	-193.26	36.81	0.82	35.990	1.023	Level 2
8,200.00	8,186.13	8,202.21	8,184.93	18.44	18.03	-109.42	-287.03	-193.26	38.67	2.37	36.305	1.065	Level 2
8,264.07	8,250.00	8,261.67	8,248.80	18.60	18.15	-116.10	-287.03	-193.26	40.62	4.18	36.447	1.115	Level 2
8,300.00	8,285.83	8,302.50	8,284.63	18.69	18.23	-119.37	-287.03	-193.26	41.86	5.32	36.537	1.146	Level 2
8,400.00	8,385.67	8,402.66	8,384.47	18.93	18.43	-125.65	-287.03	-193.26	44.88	8.08	36.801	1.219	Level 2
8,500.00	8,485.63	8,502.71	8,484.43	19.16	18.63	-128.65	-287.03	-193.26	46.68	9.55	37.136	1.257	Level 3
8,564.07	8,549.69	8,561.36	8,548.49	19.28	18.75	90.84	-287.03	-193.26	47.02	9.65	37.372	1.258	Level 3
8,600.00	8,585.62	8,602.71	8,584.42	19.35	18.84	90.84	-287.03	-193.26	47.02	9.49	37.527	1.253	Level 3
8,700.00	8,685.62	8,702.71	8,684.42	19.55	19.04	90.84	-287.03	-193.26	47.02	9.09	37.928	1.240	Level 2
8,800.00	8,785.62	8,802.71	8,784.42	19.74	19.24	90.84	-287.03	-193.26	47.02	8.69	38.330	1.227	Level 2
8,900.00	8,885.62	8,902.71	8,884.42	19.93	19.45	90.84	-287.03	-193.26	47.02	8.29	38.733	1.214	Level 2
9,000.00	8,985.62	9,002.71	8,984.42	20.13	19.65	90.84	-287.03	-193.26	47.02	7.88	39.137	1.201	Level 2
9,100.00	9,085.62	9,102.71	9,084.42	20.32	19.86	90.84	-287.03	-193.26	47.02	7.48	39.542	1.189	Level 2
9,200.00	9,185.62	9,202.71	9,184.42	20.52	20.06	90.84	-287.03	-193.26	47.02	7.07	39.948	1.177	Level 2
9,300.00	9,285.62	9,302.71	9,284.42	20.71	20.27	90.84	-287.03	-193.26	47.02	6.67	40.355	1.165	Level 2
9,400.00	9,385.62	9,402.71	9,384.42	20.91	20.48	90.84	-287.03	-193.26	47.02	6.26	40.763	1.154	Level 2
9,500.00	9,485.62	9,502.71	9,484.42	21.11	20.68	90.84	-287.03	-193.26	47.02	5.85	41.171	1.142	Level 2
9,600.00	9,585.62	9,602.71	9,584.42	21.30	20.89	90.84	-287.03	-193.26	47.02	5.44	41.581	1.131	Level 2
9,700.00	9,685.62	9,702.71	9,684.42	21.50	21.10	90.84	-287.03	-193.26	47.02	5.03	41.991	1.120	Level 2
9,746.92	9,732.54	9,744.21	9,731.34	21.59	21.19	90.84	-287.03	-193.26	47.02	4.85	42.173	1.115	Level 2
9,750.00	9,735.62	9,747.29	9,734.42	21.60	21.19	98.80	-287.03	-193.26	47.02	4.84	42.186	1.115	Level 2
9,775.00	9,760.61	9,772.27	9,759.41	21.65	21.24	99.76	-287.03	-193.26	47.15	4.84	42.312	1.114	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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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
9,800.00	9,785.51	9,802.82	9,784.31	21.69	21.31	102.23	-287.03	-193.26	47.56	5.07	42.486	1.119	Level 2
9,825.00	9,810.27	9,821.94	9,809.07	21.73	21.35	106.06	-287.03	-193.26	48.40	5.74	42.664	1.135	Level 2
9,850.00	9,834.82	9,846.49	9,833.62	21.77	21.40	111.01	-287.03	-193.26	49.93	7.06	42.867	1.165	Level 2
9,875.00	9,859.09	9,870.76	9,857.89	21.80	21.45	116.72	-287.03	-193.26	52.42	9.36	43.064	1.217	Level 2
9,900.00	9,883.01	9,905.32	9,881.81	21.83	21.52	122.77	-287.03	-193.26	56.15	12.89	43.257	1.298	Level 3
9,925.00	9,906.52	9,918.19	9,905.32	21.86	21.55	128.72	-287.03	-193.26	61.32	17.95	43.369	1.414	Level 3
9,950.00	9,929.55	9,941.22	9,928.35	21.88	21.60	134.27	-287.03	-193.26	68.06	24.60	43.463	1.566	
9,975.00	9,952.05	9,963.71	9,950.85	21.90	21.64	139.21	-287.03	-193.26	76.39	32.87	43.524	1.755	
10,000.00	9,973.94	9,985.60	9,972.74	21.91	21.69	143.47	-287.03	-193.26	86.28	42.72	43.565	1.981	
10,025.00	9,995.17	10,006.83	9,993.97	21.93	21.73	147.07	-287.03	-193.26	97.66	54.07	43.593	2.240	
10,050.00	10,015.67	10,027.34	10,014.47	21.94	21.78	150.06	-287.03	-193.26	110.44	66.83	43.617	2.532	
10,075.00	10,035.41	10,047.07	10,034.21	21.95	21.82	152.51	-287.03	-193.26	124.53	80.89	43.638	2.854	
10,100.00	10,054.31	10,065.98	10,053.11	21.96	21.86	154.50	-287.03	-193.26	139.84	96.18	43.661	3.203	
10,125.00	10,072.33	10,084.00	10,071.13	21.96	21.89	156.09	-287.03	-193.26	156.28	112.60	43.684	3.578	
10,150.00	10,089.42	10,101.09	10,088.22	21.97	21.93	157.33	-287.03	-193.26	173.79	130.08	43.707	3.976	
10,175.00	10,105.53	10,117.20	10,104.33	21.97	21.96	158.25	-287.03	-193.26	192.27	148.54	43.731	4.397	
10,200.00	10,120.62	10,132.29	10,119.42	21.97	22.00	158.88	-287.03	-193.26	211.66	167.91	43.755	4.837	
10,225.00	10,134.65	10,146.31	10,133.45	21.97	22.03	159.23	-287.03	-193.26	231.90	188.12	43.779	5.297	
10,250.00	10,147.57	10,159.24	10,146.37	21.97	22.05	159.29	-287.03	-193.26	252.90	209.10	43.800	5.774	
10,275.00	10,159.35	10,171.02	10,158.15	21.97	22.08	159.04	-287.03	-193.26	274.60	230.77	43.821	6.266	
10,300.00	10,169.97	10,181.64	10,168.77	21.97	22.10	158.43	-287.03	-193.26	296.92	253.09	43.839	6.773	
10,325.00	10,179.39	10,208.95	10,178.19	21.97	22.16	157.37	-287.03	-193.26	319.82	275.92	43.892	7.286	
10,350.00	10,187.58	10,200.75	10,186.38	21.97	22.14	155.72	-287.03	-193.26	343.20	299.33	43.870	7.823	
10,375.00	10,194.52	10,206.19	10,193.32	21.98	22.15	153.19	-287.03	-193.26	367.00	323.13	43.877	8.364	
10,400.00	10,200.20	10,211.87	10,199.00	22.02	22.16	149.31	-287.03	-193.26	391.16	347.28	43.884	8.914	
10,425.00	10,204.60	10,216.27	10,203.40	22.10	22.17	143.14	-287.03	-193.26	415.61	371.72	43.887	9.470	
10,450.00	10,207.70	10,219.37	10,206.50	22.20	22.18	132.75	-287.03	-193.26	440.27	396.38	43.888	10.031	
10,475.00	10,209.50	10,221.17	10,208.30	22.31	22.18	114.56	-287.03	-193.26	465.07	421.18	43.886	10.597	
10,499.00	10,210.00	10,221.67	10,208.80	22.42	22.18	87.38	-287.03	-193.26	488.95	445.06	43.882	11.142	
10,600.00	10,209.56	10,221.23	10,208.36	22.98	22.18	87.76	-287.03	-193.26	589.41	545.55	43.857	13.439	
10,700.00	10,209.12	10,220.79	10,207.92	23.65	22.18	88.04	-287.03	-193.26	688.69	644.86	43.835	15.711	
10,800.00	10,208.68	10,220.35	10,207.48	24.42	22.18	88.27	-287.03	-193.26	787.77	743.96	43.814	17.980	
10,875.60	10,208.35	10,220.02	10,207.15	25.07	22.18	88.42	-287.03	-193.26	862.51	818.72	43.800	19.692	
10,900.00	10,208.25	10,219.91	10,207.05	25.29	22.18	88.37	-287.03	-193.26	886.63	842.83	43.795	20.245	
11,000.00	10,207.81	10,219.48	10,206.61	26.24	22.18	88.18	-287.03	-193.26	985.58	941.80	43.784	22.510	
11,100.00	10,207.37	10,219.04	10,206.17	27.29	22.18	88.00	-287.03	-193.26	1,084.73	1,040.95	43.778	24.778	
11,200.00	10,206.94	10,218.60	10,205.74	28.41	22.18	87.81	-287.03	-193.26	1,184.02	1,140.25	43.777	27.046	
11,300.00	10,206.50	10,218.17	10,205.30	29.61	22.18	87.63	-287.03	-193.26	1,283.42	1,239.64	43.781	29.315	
11,400.00	10,206.06	10,217.73	10,204.86	30.87	22.17	87.44	-287.03	-193.26	1,382.91	1,339.12	43.788	31.582	
11,500.00	10,205.63	10,217.29	10,204.43	32.18	22.17	87.26	-287.03	-193.26	1,482.47	1,438.67	43.798	33.848	
11,600.00	10,205.19	10,216.86	10,203.99	33.55	22.17	87.07	-287.03	-193.26	1,582.08	1,538.27	43.811	36.111	
11,700.00	10,204.75	10,216.42	10,203.55	34.96	22.17	86.88	-287.03	-193.26	1,681.74	1,637.91	43.827	38.372	
11,800.00	10,204.31	10,215.98	10,203.11	36.41	22.17	86.70	-287.03	-193.26	1,781.44	1,737.59	43.846	40.630	
11,900.00	10,203.88	10,215.55	10,202.68	37.89	22.17	86.51	-287.03	-193.26	1,881.16	1,837.30	43.866	42.884	
12,000.00	10,203.44	10,215.11	10,202.24	39.41	22.17	86.33	-287.03	-193.26	1,980.92	1,937.03	43.889	45.135	
12,100.00	10,203.00	10,214.67	10,201.80	40.95	22.17	86.14	-287.03	-193.26	2,080.70	2,036.78	43.914	47.381	
12,200.00	10,202.57	10,214.23	10,201.37	42.52	22.17	85.96	-287.03	-193.26	2,180.50	2,136.56	43.941	49.623	
12,300.00	10,202.13	10,213.80	10,200.93	44.11	22.17	85.77	-287.03	-193.26	2,280.31	2,236.34	43.970	51.860	
12,400.00	10,201.69	10,213.36	10,200.49	45.71	22.17	85.59	-287.03	-193.26	2,380.15	2,336.14	44.001	54.093	
12,500.00	10,201.26	14,960.92	12,641.35	47.34	50.40	-179.30	2,198.69	-375.83	2,441.50	2,381.97	59.528	41.015	
12,600.00	10,200.82	15,060.92	12,640.91	48.98	51.96	-179.30	2,298.69	-376.56	2,441.50	2,381.07	60.426	40.405	
12,700.00	10,200.38	15,160.92	12,640.48	50.64	53.54	-179.30	2,398.68	-377.29	2,441.50	2,380.15	61.346	39.799	

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 #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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

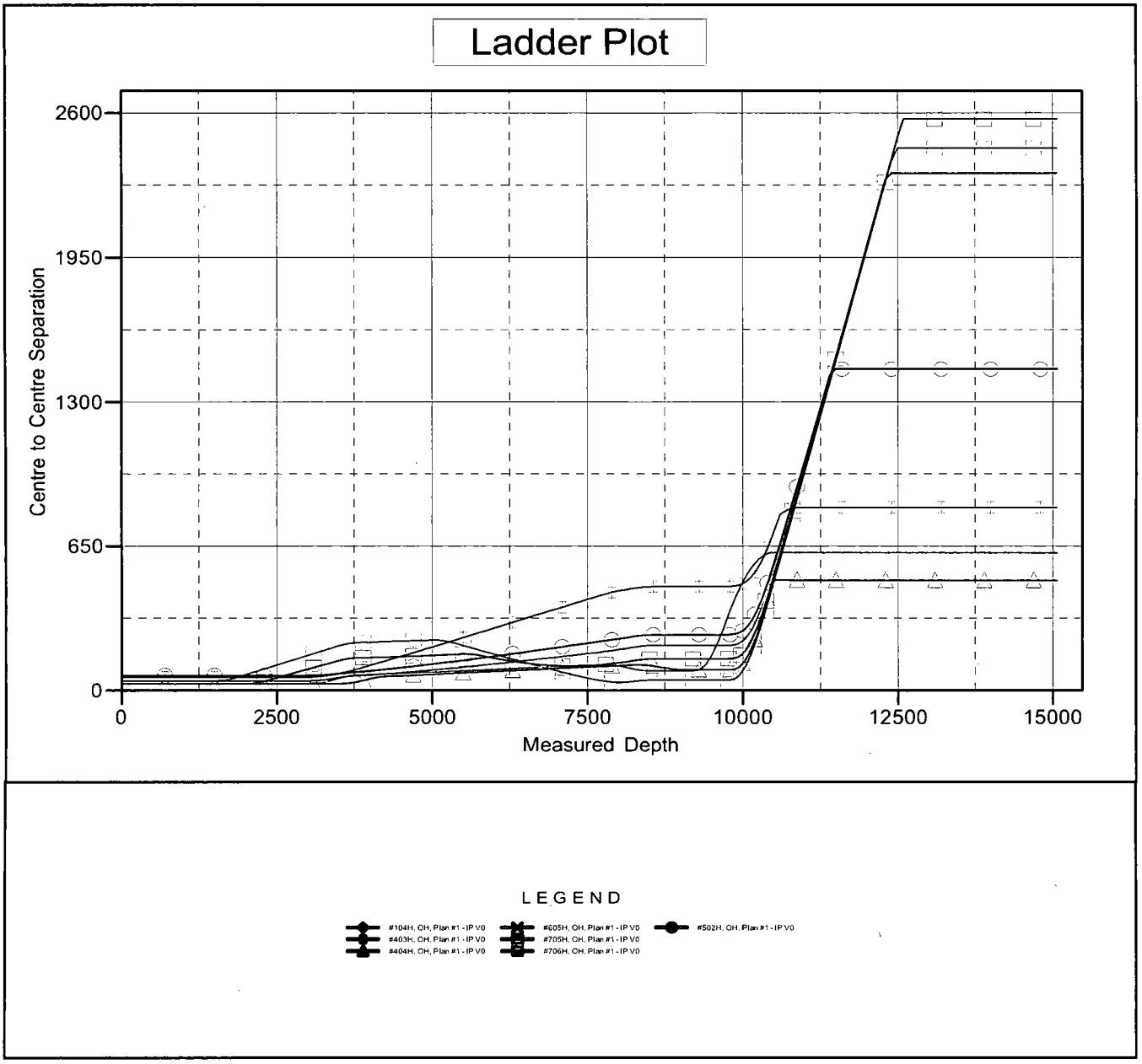
Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

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
12,800.00	10,199.95	15,260.92	12,640.04	52.31	55.14	-179.30	2,498.68	-378.03	2,441.50	2,379.21	62.286	39.198	
12,900.00	10,199.51	15,360.92	12,639.60	53.99	56.75	-179.30	2,598.68	-378.76	2,441.50	2,378.25	63.247	38.603	
13,000.00	10,199.07	15,460.92	12,639.17	55.68	58.37	-179.30	2,698.67	-379.49	2,441.50	2,377.28	64.226	38.014	
13,100.00	10,198.63	15,560.92	12,638.73	57.38	60.01	-179.30	2,798.67	-380.23	2,441.50	2,376.28	65.224	37.433	
13,200.00	10,198.20	15,660.92	12,638.29	59.09	61.66	-179.30	2,898.66	-380.96	2,441.50	2,375.26	66.238	36.859	
13,300.00	10,197.76	15,760.92	12,637.86	60.81	63.33	-179.30	2,998.66	-381.69	2,441.50	2,374.23	67.269	36.294	
13,400.00	10,197.32	15,860.92	12,637.42	62.54	65.00	-179.30	3,098.66	-382.42	2,441.50	2,373.19	68.316	35.738	
13,500.00	10,196.89	15,960.92	12,636.99	64.27	66.68	-179.30	3,198.65	-383.16	2,441.50	2,372.13	69.378	35.191	
13,600.00	10,196.45	16,060.92	12,636.55	66.01	68.37	-179.30	3,298.65	-383.89	2,441.51	2,371.05	70.454	34.654	
13,700.00	10,196.01	16,160.92	12,636.11	67.76	70.07	-179.30	3,398.65	-384.62	2,441.51	2,369.96	71.544	34.126	
13,800.00	10,195.58	16,260.92	12,635.68	69.51	71.78	-179.30	3,498.64	-385.36	2,441.51	2,368.86	72.647	33.608	
13,900.00	10,195.14	16,360.92	12,635.24	71.26	73.49	-179.30	3,598.64	-386.09	2,441.51	2,367.74	73.763	33.099	
14,000.00	10,194.70	16,460.92	12,634.80	73.02	75.21	-179.30	3,698.64	-386.82	2,441.51	2,366.62	74.890	32.601	
14,100.00	10,194.27	16,560.92	12,634.37	74.79	76.93	-179.30	3,798.63	-387.56	2,441.51	2,365.48	76.029	32.113	
14,200.00	10,193.83	16,660.92	12,633.93	76.56	78.66	-179.30	3,898.63	-388.29	2,441.51	2,364.33	77.179	31.635	
14,300.00	10,193.39	16,760.92	12,633.49	78.33	80.40	-179.30	3,998.62	-389.02	2,441.51	2,363.17	78.339	31.166	
14,400.00	10,192.95	16,860.92	12,633.06	80.11	82.14	-179.30	4,098.62	-389.75	2,441.51	2,362.00	79.509	30.707	
14,500.00	10,192.52	16,960.92	12,632.62	81.89	83.89	-179.30	4,198.62	-390.49	2,441.51	2,360.82	80.688	30.258	
14,600.00	10,192.08	17,060.92	12,632.19	83.67	85.64	-179.30	4,298.61	-391.22	2,441.51	2,359.63	81.877	29.819	
14,700.00	10,191.64	17,160.92	12,631.75	85.45	87.40	-179.30	4,398.61	-391.95	2,441.51	2,358.44	83.075	29.389	
14,800.00	10,191.21	17,260.92	12,631.31	87.24	89.15	-179.30	4,498.61	-392.69	2,441.51	2,357.23	84.281	28.969	
14,900.00	10,190.77	17,360.92	12,630.88	89.03	90.92	-179.30	4,598.60	-393.42	2,441.51	2,356.02	85.495	28.557	
15,000.00	10,190.33	17,460.92	12,630.44	90.83	92.68	-179.30	4,698.60	-394.15	2,441.51	2,354.80	86.716	28.155	
15,065.73	10,190.05	17,526.52	12,630.00	92.01	93.84	-179.30	4,764.20	-394.70	2,441.36	2,353.84	87.522	27.894	
15,076.24	10,190.00	17,526.52	12,630.00	92.19	93.84	-179.30	4,764.20	-394.70	2,441.38	2,353.84	87.541	27.889	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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 @ 3365.20usft (Rig KB = 25')
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #304H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.43°

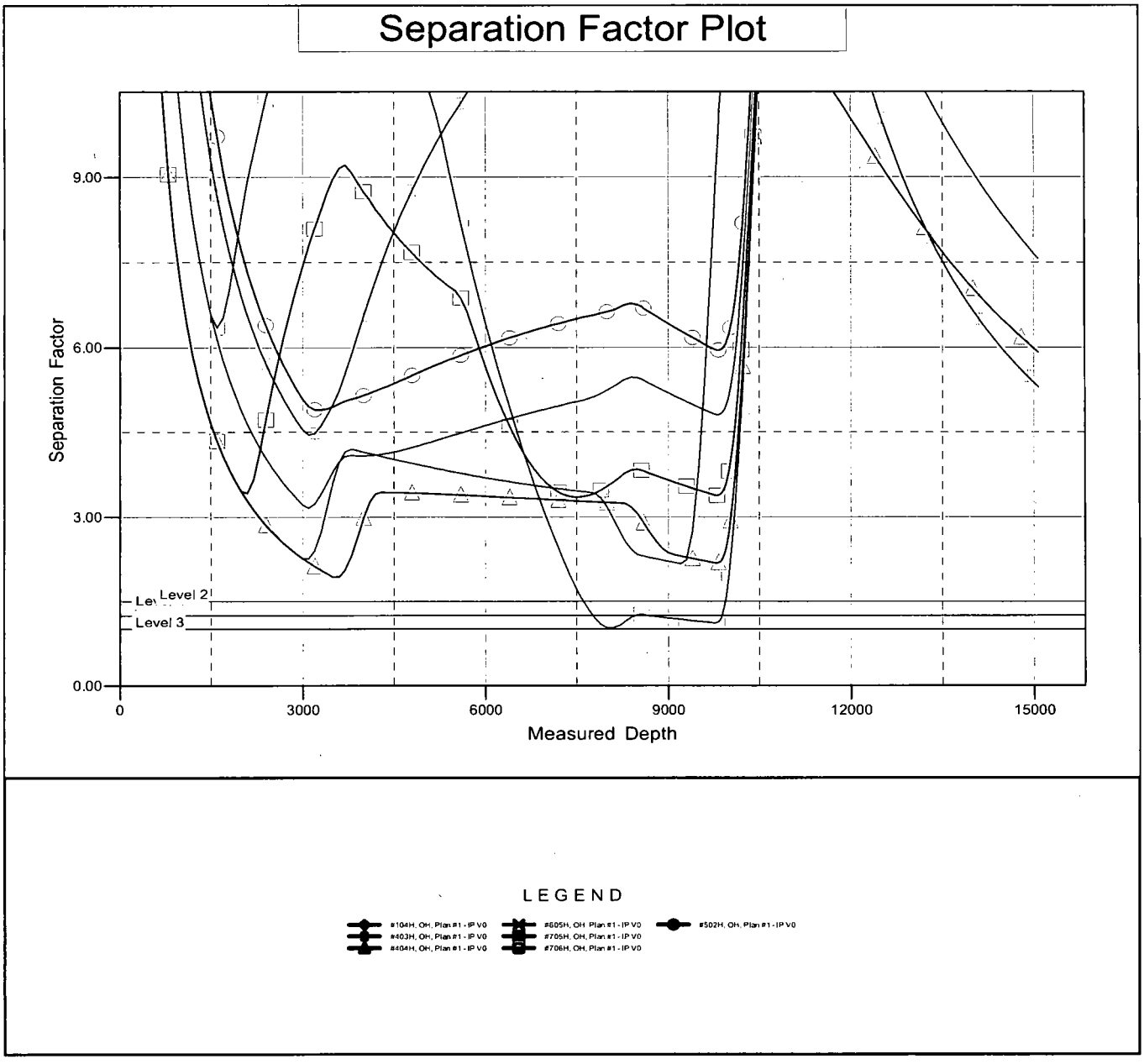


CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #304H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#304H	**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 @ 3365.20usft (Rig KB = 25')
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #304H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.43°



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

COG OPERATING, LLC

Lea County, NM (NAD27) NMEZ
Dominator 25 Fed COM
#304H

OH

Plan: Plan #1 - IP

Standard Planning Report

28 November, 2017

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #304H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#304H	**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	#304H,					
Well Position	**+N/-S**	6.20 usft	**Northing:**	399,220.90 usft	**Latitude:**	32° 5' 41.946 N
	+E/-W	694.00 usft	**Easting:**	750,803.50 usft	**Longitude:**	103° 31' 24.426 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,340.20 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	11/27/17	6.87	59.95	47,821.23939718

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	15,076.16	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	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,800.00	4.50	220.00	3,799.69	-9.02	-7.57	1.50	1.50	0.00	220.00	
8,264.07	4.50	220.00	8,250.00	-277.32	-232.70	0.00	0.00	0.00	0.00	
8,564.07	0.00	0.00	8,549.69	-286.34	-240.27	1.50	-1.50	0.00	180.00	
9,746.92	0.00	0.00	9,732.54	-286.34	-240.27	0.00	0.00	0.00	0.00	
10,499.00	90.25	352.05	10,210.00	188.59	-306.60	12.00	12.00	0.00	352.05	
10,875.60	90.25	359.58	10,208.35	563.91	-334.05	2.00	0.00	2.00	89.98	
15,076.24	90.25	359.58	10,190.00	4,764.40	-364.70	0.00	0.00	0.00	0.00	PBHL(D25#304H)

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #304H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#304H	**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	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	1.50	220.00	3,599.99	-1.00	-0.84	-1.00	1.50	1.50	0.00
3,700.00	3.00	220.00	3,699.91	-4.01	-3.36	-3.99	1.50	1.50	0.00
3,800.00	4.50	220.00	3,799.69	-9.02	-7.57	-8.96	1.50	1.50	0.00
3,900.00	4.50	220.00	3,899.38	-15.03	-12.61	-14.94	0.00	0.00	0.00
4,000.00	4.50	220.00	3,999.08	-21.04	-17.66	-20.91	0.00	0.00	0.00
4,100.00	4.50	220.00	4,098.77	-27.05	-22.70	-26.88	0.00	0.00	0.00
4,200.00	4.50	220.00	4,198.46	-33.06	-27.74	-32.86	0.00	0.00	0.00
4,300.00	4.50	220.00	4,298.15	-39.07	-32.79	-38.83	0.00	0.00	0.00
4,400.00	4.50	220.00	4,397.84	-45.08	-37.83	-44.80	0.00	0.00	0.00
4,500.00	4.50	220.00	4,497.53	-51.09	-42.87	-50.78	0.00	0.00	0.00
4,600.00	4.50	220.00	4,597.23	-57.10	-47.91	-56.75	0.00	0.00	0.00
4,700.00	4.50	220.00	4,696.92	-63.11	-52.96	-62.72	0.00	0.00	0.00
4,800.00	4.50	220.00	4,796.61	-69.12	-58.00	-68.70	0.00	0.00	0.00
4,900.00	4.50	220.00	4,896.30	-75.13	-63.04	-74.67	0.00	0.00	0.00
5,000.00	4.50	220.00	4,995.99	-81.14	-68.09	-80.64	0.00	0.00	0.00
5,100.00	4.50	220.00	5,095.68	-87.15	-73.13	-86.62	0.00	0.00	0.00
5,200.00	4.50	220.00	5,195.38	-93.16	-78.17	-92.59	0.00	0.00	0.00
5,300.00	4.50	220.00	5,295.07	-99.17	-83.22	-98.56	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #304H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#304H	**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	220.00	5,394.76	-105.19	-88.26	-104.54	0.00	0.00	0.00
5,500.00	4.50	220.00	5,494.45	-111.20	-93.30	-110.51	0.00	0.00	0.00
5,600.00	4.50	220.00	5,594.14	-117.21	-98.35	-116.48	0.00	0.00	0.00
5,700.00	4.50	220.00	5,693.83	-123.22	-103.39	-122.45	0.00	0.00	0.00
5,800.00	4.50	220.00	5,793.53	-129.23	-108.43	-128.43	0.00	0.00	0.00
5,900.00	4.50	220.00	5,893.22	-135.24	-113.48	-134.40	0.00	0.00	0.00
6,000.00	4.50	220.00	5,992.91	-141.25	-118.52	-140.37	0.00	0.00	0.00
6,100.00	4.50	220.00	6,092.60	-147.26	-123.56	-146.35	0.00	0.00	0.00
6,200.00	4.50	220.00	6,192.29	-153.27	-128.61	-152.32	0.00	0.00	0.00
6,300.00	4.50	220.00	6,291.99	-159.28	-133.65	-158.29	0.00	0.00	0.00
6,400.00	4.50	220.00	6,391.68	-165.29	-138.69	-164.27	0.00	0.00	0.00
6,500.00	4.50	220.00	6,491.37	-171.30	-143.74	-170.24	0.00	0.00	0.00
6,600.00	4.50	220.00	6,591.06	-177.31	-148.78	-176.21	0.00	0.00	0.00
6,700.00	4.50	220.00	6,690.75	-183.32	-153.82	-182.19	0.00	0.00	0.00
6,800.00	4.50	220.00	6,790.44	-189.33	-158.87	-188.16	0.00	0.00	0.00
6,900.00	4.50	220.00	6,890.14	-195.34	-163.91	-194.13	0.00	0.00	0.00
7,000.00	4.50	220.00	6,989.83	-201.35	-168.95	-200.11	0.00	0.00	0.00
7,100.00	4.50	220.00	7,089.52	-207.36	-174.00	-206.08	0.00	0.00	0.00
7,200.00	4.50	220.00	7,189.21	-213.37	-179.04	-212.05	0.00	0.00	0.00
7,300.00	4.50	220.00	7,288.90	-219.38	-184.08	-218.03	0.00	0.00	0.00
7,400.00	4.50	220.00	7,388.59	-225.39	-189.13	-224.00	0.00	0.00	0.00
7,500.00	4.50	220.00	7,488.29	-231.40	-194.17	-229.97	0.00	0.00	0.00
7,600.00	4.50	220.00	7,587.98	-237.41	-199.21	-235.95	0.00	0.00	0.00
7,700.00	4.50	220.00	7,687.67	-243.42	-204.26	-241.92	0.00	0.00	0.00
7,800.00	4.50	220.00	7,787.36	-249.43	-209.30	-247.89	0.00	0.00	0.00
7,900.00	4.50	220.00	7,887.05	-255.44	-214.34	-253.86	0.00	0.00	0.00
8,000.00	4.50	220.00	7,986.74	-261.45	-219.39	-259.84	0.00	0.00	0.00
8,100.00	4.50	220.00	8,086.44	-267.46	-224.43	-265.81	0.00	0.00	0.00
8,200.00	4.50	220.00	8,186.13	-273.47	-229.47	-271.78	0.00	0.00	0.00
8,264.07	4.50	220.00	8,250.00	-277.32	-232.70	-275.61	0.00	0.00	0.00
8,300.00	3.96	220.00	8,285.83	-279.36	-234.41	-277.63	1.50	-1.50	0.00
8,400.00	2.46	220.00	8,385.67	-283.65	-238.01	-281.89	1.50	-1.50	0.00
8,500.00	0.96	220.00	8,485.63	-285.93	-239.93	-284.17	1.50	-1.50	0.00
8,564.07	0.00	0.00	8,549.69	-286.34	-240.27	-284.58	1.50	-1.50	0.00
8,600.00	0.00	0.00	8,585.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
8,700.00	0.00	0.00	8,685.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
8,800.00	0.00	0.00	8,785.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
8,900.00	0.00	0.00	8,885.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,000.00	0.00	0.00	8,985.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,100.00	0.00	0.00	9,085.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,200.00	0.00	0.00	9,185.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,300.00	0.00	0.00	9,285.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,400.00	0.00	0.00	9,385.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,500.00	0.00	0.00	9,485.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,600.00	0.00	0.00	9,585.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,700.00	0.00	0.00	9,685.62	-286.34	-240.27	-284.58	0.00	0.00	0.00
9,746.92	0.00	0.00	9,732.54	-286.34	-240.27	-284.58	0.00	0.00	0.00
KOP: 9746.92' MD, 9732.54' TVD									
9,750.00	0.37	352.05	9,735.62	-286.34	-240.27	-284.57	12.01	12.01	0.00
9,775.00	3.37	352.05	9,760.61	-285.53	-240.39	-283.76	12.00	12.00	0.00
9,800.00	6.37	352.05	9,785.51	-283.43	-240.68	-281.65	12.00	12.00	0.00
9,825.00	9.37	352.05	9,810.27	-280.04	-241.15	-278.26	12.00	12.00	0.00
9,850.00	12.37	352.05	9,834.82	-275.37	-241.80	-273.59	12.00	12.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #304H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#304H	**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)
9,875.00	15.37	352.05	9,859.09	-269.43	-242.63	-267.65	12.00	12.00	0.00
9,900.00	18.37	352.05	9,883.01	-262.25	-243.64	-260.46	12.00	12.00	0.00
9,925.00	21.37	352.05	9,906.52	-253.83	-244.81	-252.03	12.00	12.00	0.00
9,950.00	24.37	352.05	9,929.55	-244.21	-246.16	-242.40	12.00	12.00	0.00
9,975.00	27.37	352.05	9,952.05	-233.41	-247.66	-231.59	12.00	12.00	0.00
10,000.00	30.37	352.05	9,973.94	-221.46	-249.33	-219.62	12.00	12.00	0.00
10,025.00	33.37	352.05	9,995.17	-208.39	-251.16	-206.54	12.00	12.00	0.00
10,050.00	36.37	352.05	10,015.67	-194.23	-253.14	-192.37	12.00	12.00	0.00
10,075.00	39.37	352.05	10,035.41	-179.03	-255.26	-177.16	12.00	12.00	0.00
10,100.00	42.37	352.05	10,054.31	-162.83	-257.52	-160.94	12.00	12.00	0.00
10,125.00	45.37	352.05	10,072.33	-145.68	-259.92	-143.77	12.00	12.00	0.00
10,150.00	48.37	352.05	10,089.42	-127.61	-262.44	-125.68	12.00	12.00	0.00
10,175.00	51.37	352.05	10,105.53	-108.68	-265.08	-106.73	12.00	12.00	0.00
10,200.00	54.37	352.05	10,120.62	-88.94	-267.84	-86.98	12.00	12.00	0.00
10,225.00	57.37	352.05	10,134.65	-68.45	-270.70	-66.46	12.00	12.00	0.00
10,250.00	60.37	352.05	10,147.57	-47.26	-273.66	-45.25	12.00	12.00	0.00
10,275.00	63.37	352.05	10,159.35	-25.43	-276.71	-23.40	12.00	12.00	0.00
10,300.00	66.37	352.05	10,169.97	-3.01	-279.84	-0.96	12.00	12.00	0.00
10,325.00	69.37	352.05	10,179.39	19.92	-283.04	22.00	12.00	12.00	0.00
10,338.57	71.00	352.05	10,183.99	32.56	-284.81	34.65	12.00	12.00	0.00
FTP(D25#304H)									
10,350.00	72.37	352.05	10,187.58	43.31	-286.31	45.41	12.00	12.00	0.00
10,375.00	75.37	352.05	10,194.52	67.09	-289.63	69.21	12.00	12.00	0.00
10,400.00	78.37	352.05	10,200.20	91.20	-293.00	93.35	12.00	12.00	0.00
10,425.00	81.37	352.05	10,204.60	115.57	-296.40	117.74	12.00	12.00	0.00
10,450.00	84.37	352.05	10,207.70	140.14	-299.83	142.33	12.00	12.00	0.00
10,475.00	87.37	352.05	10,209.50	164.83	-303.28	167.05	12.00	12.00	0.00
10,499.00	90.25	352.05	10,210.00	188.59	-306.60	190.84	12.00	12.00	0.00
EOC: 10499.00' MD, 10210.00' TVD, 90.25° INC, 352.05° AZ, 190.84' VS									
10,600.00	90.25	354.07	10,209.56	288.85	-318.80	291.18	2.00	0.00	2.00
10,700.00	90.25	356.07	10,209.12	388.47	-327.39	390.86	2.00	0.00	2.00
10,800.00	90.25	358.07	10,208.68	488.33	-332.51	490.76	2.00	0.00	2.00
10,875.60	90.25	359.58	10,208.35	563.91	-334.05	566.35	2.00	0.00	2.00
10,900.00	90.25	359.58	10,208.25	588.31	-334.23	590.75	0.00	0.00	0.00
11,000.00	90.25	359.58	10,207.81	688.31	-334.96	690.75	0.00	0.00	0.00
11,100.00	90.25	359.58	10,207.37	788.31	-335.69	790.75	0.00	0.00	0.00
11,200.00	90.25	359.58	10,206.94	888.30	-336.42	890.75	0.00	0.00	0.00
11,300.00	90.25	359.58	10,206.50	988.30	-337.15	990.75	0.00	0.00	0.00
11,400.00	90.25	359.58	10,206.06	1,088.30	-337.88	1,090.74	0.00	0.00	0.00
11,500.00	90.25	359.58	10,205.63	1,188.29	-338.61	1,190.74	0.00	0.00	0.00
11,600.00	90.25	359.58	10,205.19	1,288.29	-339.34	1,290.74	0.00	0.00	0.00
11,700.00	90.25	359.58	10,204.75	1,388.29	-340.07	1,390.74	0.00	0.00	0.00
11,800.00	90.25	359.58	10,204.31	1,488.28	-340.80	1,490.74	0.00	0.00	0.00
11,900.00	90.25	359.58	10,203.88	1,588.28	-341.53	1,590.74	0.00	0.00	0.00
12,000.00	90.25	359.58	10,203.44	1,688.27	-342.26	1,690.74	0.00	0.00	0.00
12,100.00	90.25	359.58	10,203.00	1,788.27	-342.99	1,790.74	0.00	0.00	0.00
12,200.00	90.25	359.58	10,202.57	1,888.27	-343.72	1,890.74	0.00	0.00	0.00
12,300.00	90.25	359.58	10,202.13	1,988.26	-344.45	1,990.74	0.00	0.00	0.00
12,400.00	90.25	359.58	10,201.69	2,088.26	-345.18	2,090.73	0.00	0.00	0.00
12,500.00	90.25	359.58	10,201.26	2,188.26	-345.90	2,190.73	0.00	0.00	0.00
12,600.00	90.25	359.58	10,200.82	2,288.25	-346.63	2,290.73	0.00	0.00	0.00
12,700.00	90.25	359.58	10,200.38	2,388.25	-347.36	2,390.73	0.00	0.00	0.00
12,800.00	90.25	359.58	10,199.95	2,488.25	-348.09	2,490.73	0.00	0.00	0.00
12,900.00	90.25	359.58	10,199.51	2,588.24	-348.82	2,590.73	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #304H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.20usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#304H	**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)
13,000.00	90.25	359.58	10,199.07	2,688.24	-349.55	2,690.73	0.00	0.00	0.00
13,100.00	90.25	359.58	10,198.63	2,788.24	-350.28	2,790.73	0.00	0.00	0.00
13,200.00	90.25	359.58	10,198.20	2,888.23	-351.01	2,890.73	0.00	0.00	0.00
13,300.00	90.25	359.58	10,197.76	2,988.23	-351.74	2,990.73	0.00	0.00	0.00
13,400.00	90.25	359.58	10,197.32	3,088.22	-352.47	3,090.73	0.00	0.00	0.00
13,500.00	90.25	359.58	10,196.89	3,188.22	-353.20	3,190.72	0.00	0.00	0.00
13,600.00	90.25	359.58	10,196.45	3,288.22	-353.93	3,290.72	0.00	0.00	0.00
13,700.00	90.25	359.58	10,196.01	3,388.21	-354.66	3,390.72	0.00	0.00	0.00
13,800.00	90.25	359.58	10,195.58	3,488.21	-355.39	3,490.72	0.00	0.00	0.00
13,900.00	90.25	359.58	10,195.14	3,588.21	-356.12	3,590.72	0.00	0.00	0.00
14,000.00	90.25	359.58	10,194.70	3,688.20	-356.85	3,690.72	0.00	0.00	0.00
14,100.00	90.25	359.58	10,194.27	3,788.20	-357.58	3,790.72	0.00	0.00	0.00
14,200.00	90.25	359.58	10,193.83	3,888.20	-358.31	3,890.72	0.00	0.00	0.00
14,300.00	90.25	359.58	10,193.39	3,988.19	-359.04	3,990.72	0.00	0.00	0.00
14,400.00	90.25	359.58	10,192.95	4,088.19	-359.77	4,090.72	0.00	0.00	0.00
14,500.00	90.25	359.58	10,192.52	4,188.18	-360.50	4,190.71	0.00	0.00	0.00
14,600.00	90.25	359.58	10,192.08	4,288.18	-361.23	4,290.71	0.00	0.00	0.00
14,700.00	90.25	359.58	10,191.64	4,388.18	-361.96	4,390.71	0.00	0.00	0.00
14,800.00	90.25	359.58	10,191.21	4,488.17	-362.68	4,490.71	0.00	0.00	0.00
14,900.00	90.25	359.58	10,190.77	4,588.17	-363.41	4,590.71	0.00	0.00	0.00
15,000.00	90.25	359.58	10,190.33	4,688.17	-364.14	4,690.71	0.00	0.00	0.00
15,076.24	90.25	359.58	10,190.00	4,764.40	-364.70	4,766.95	0.00	0.00	0.00

TD: 15076.24' MD, 10190.00' TVD - PBHL(D25#304H)

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#304H) - plan hits target center - Point	0.00	0.00	10,190.00	4,764.40	-364.70	403,985.30	750,438.80	32° 6' 29.120 N	103° 31' 28.250 W
FTP(D25#304H) - plan misses target center by 54.42usft at 10338.57usft MD (10183.99 TVD, 32.56 N, -284.81 E) - Point	0.00	0.00	10,210.00	17.13	-330.05	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
9,746.92	9,732.54	-286.34	-240.27	KOP: 9746.92' MD, 9732.54' TVD
10,499.00	10,210.00	188.59	-306.60	EOC: 10499.00' MD, 10210.00' TVD, 90.25° INC, 352.05° AZ, 190.84' VS
15,076.24	10,190.00	4,764.40	-364.70	TD: 15076.24' MD, 10190.00' 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

VON ENERGY SERVICES, LLC.

COG OPERATING, LLC
#304H
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: 3340.20 RKB @ 3365.20usft (Rig KB = 25')

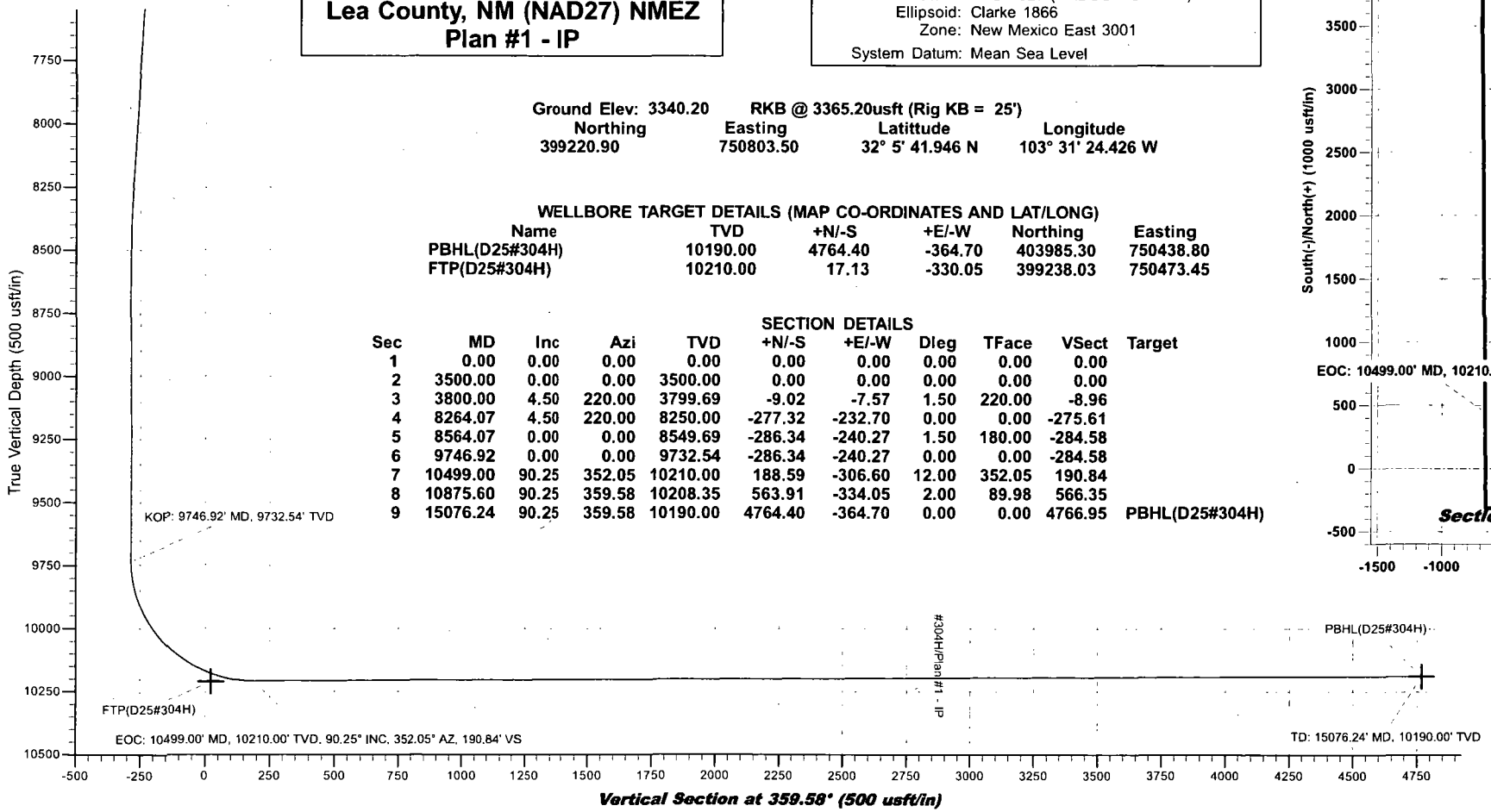
Northing	Easting	Latittude	Longitude
399220.90	750803.50	32° 5' 41.946 N	103° 31' 24.426 W

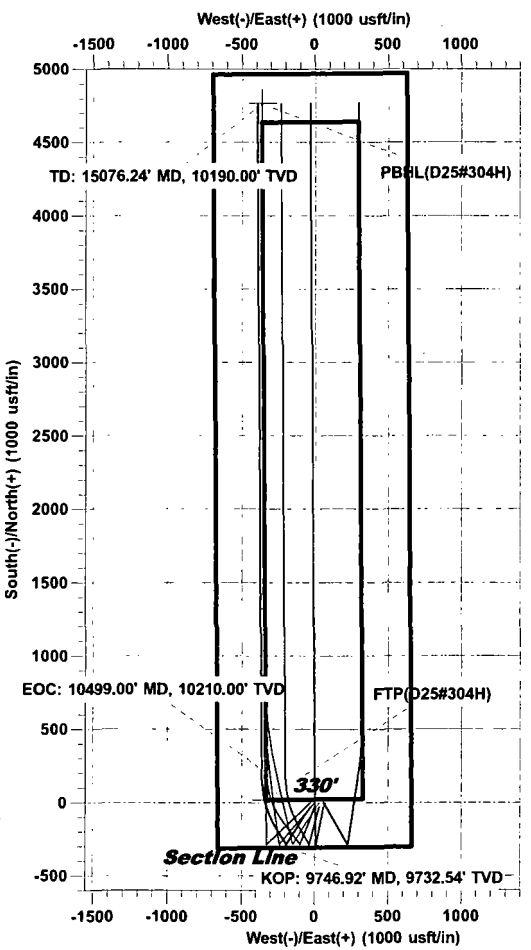
WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL(D25#304H)	10190.00	4764.40	-364.70	403985.30	750438.80
FTP(D25#304H)	10210.00	17.13	-330.05	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	3500.00	0.00	0.00	3500.00	0.00	0.00	0.00	0.00	0.00	
3	3800.00	4.50	220.00	3799.69	-9.02	-7.57	1.50	220.00	-8.96	
4	8264.07	4.50	220.00	8250.00	-277.32	-232.70	0.00	0.00	-275.61	
5	8564.07	0.00	0.00	8549.69	-286.34	-240.27	1.50	180.00	-284.58	
6	9746.92	0.00	0.00	9732.54	-286.34	-240.27	0.00	0.00	-284.58	
7	10499.00	90.25	352.05	10210.00	188.59	-306.60	12.00	352.05	190.84	
8	10875.60	90.25	359.58	10208.35	563.91	-334.05	2.00	89.98	566.35	
9	15076.24	90.25	359.58	10190.00	4764.40	-364.70	0.00	0.00	4766.95	PBHL(D25#304H)





1:43, November 28 2017

Well Planning: Gabriel Cruz

COG Operating, LLC - Dominator 25 Federal Com #304H

1. Geologic Formations

TVD of target	10,190' EOL	Pilot hole depth	NA
MD at TD:	15,076'	Deepest expected fresh water:	142'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1070	Water	
Top of Salt	1575	Salt	
Base of Salt	5135	Salt	
Lamar	5153	Salt Water	
Bell Canyon	5295	Salt Water	
Cherry Canyon	6294	Oil/Gas	
Brushy Canyon	7874	Oil/Gas	
Bone Spring Lime	9340	Oil/Gas	
U. Avalon Shale	9414	Oil/Gas	
L. Avalon Shale	10025	Oil/Gas	
Basal Avalon	10175	Target Oil/Gas	
1st Bone Spring Sand	10372	Not Penetrated	
2nd Bone Spring Sand	10890	Not Penetrated	

2. Casing Program

Hole Size	Casing From	Casing To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	1095	13.375"	54.5	J55	STC	2.26	1.18	8.61
12.25"	0	4000	9.625"	40	J55	LTC	1.22	1.01	3.25
12.25"	4000	5180	9.625"	40	L80	LTC	1.14	1.47	5.73
8.75"	0	15,076	5.5"	17	P110	LTC	1.52	2.72	2.57
			BLM Minimum Safety Factor				1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing.to mitigate collapse. Intermediate burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

COG Operating, LLC - Dominator 25 Federal Com #304H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary?	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	470	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter.	1000	12.7	2.0	9.6	16	Lead: 35:65:6 C Blend
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl
5.5 Prod	700	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	1370	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results
Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0'	50%
1st Intermediate	0'	50%
Production	3,500'	25% OH in Lateral (KOP to EOL) – 40% OH in Vertical

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
12-1/4"	13-5/8"	2M	Annular	x	2000 psi
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram	x	3M
			Pipe Ram	x	
			Double Ram		
			Other*		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or 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. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	N Are anchors required by manufacturer?
N	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. Shoe	FW Gel	8.6 - 8.8	28-34	N/C
Surf csg	9-5/8" Int shoe	Saturated Brine	10 - 10.1	28-34	N/C
9-5/8" Int shoe	Lateral TD	Cut Brine	8.6 - 9.3	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
Y	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
Y	No Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain.
N	Coring? If yes, explain.

Additional logs planned		Interval
N	Resistivity	Pilot Hole TD to ICP
N	Density	Pilot Hole TD to ICP
Y	CBL	Production casing (If cement not circulated to surface)
Y	Mud log	Intermediate shoe to TD
N	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4930 psi at 10190' TVD
Abnormal Temperature	NO 160 Deg. F.

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

8. Other Facets of Operation

Y	Is it a walking operation?
N	Is casing pre-set?

x	H2S Plan.
x	BOP & Choke Schematics.
x	Directional Plan