PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING
LEASE NO.:	NMNM121958
WELL NAME & NO.:	DOMINATOR 25 FED COM 605H
SURFACE HOLE FOOTAGE:	280'/S & 1950'/E
BOTTOM HOLE FOOTAGE	200'/N & 2180'/E
LOCATION:	SECTION 25, T25S, R33E, NMPM
COUNTY:	LEA

HOBBS OCD
MAY 07 2018
RECEIVED

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

A. Hydrogen Sulfide

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

B. CASING

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

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

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

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

Approval Date: 04/23/2018

whichever is greater.

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

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

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

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

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

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

C. PRESSURE CONTROL

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

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

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

D. SPECIAL REQUIREMENT(S)

Communitization Agreement

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

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

Waste Minimization Plan (WMP)

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

MHH 04182018

GENERAL REQUIREMENTS

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

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

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

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

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

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

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

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

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

A. CASING

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

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

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

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

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

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

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

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

B. PRESSURE CONTROL

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING
LEASE NO.:	NMNM121958
WELL NAME & NO.:	DOMINATOR 25 FED COM 605H
SURFACE HOLE FOOTAGE:	280'/S & 1950'/E
BOTTOM HOLE FOOTAGE	200'/N & 2180'/E
LOCATION:	SECTION 25, T25S, R33E, NMPM
COUNTY:	LEA

TABLE OF CONTENTS

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: 04/23/2018

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.

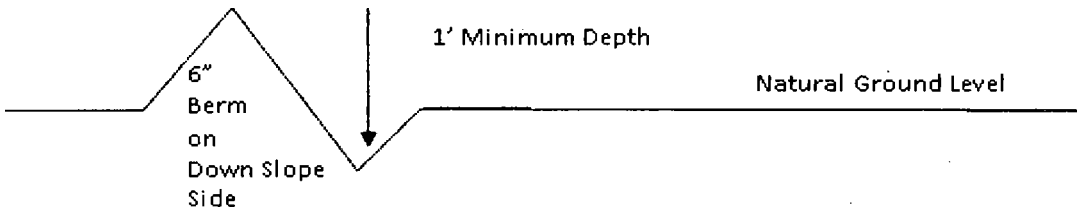
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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

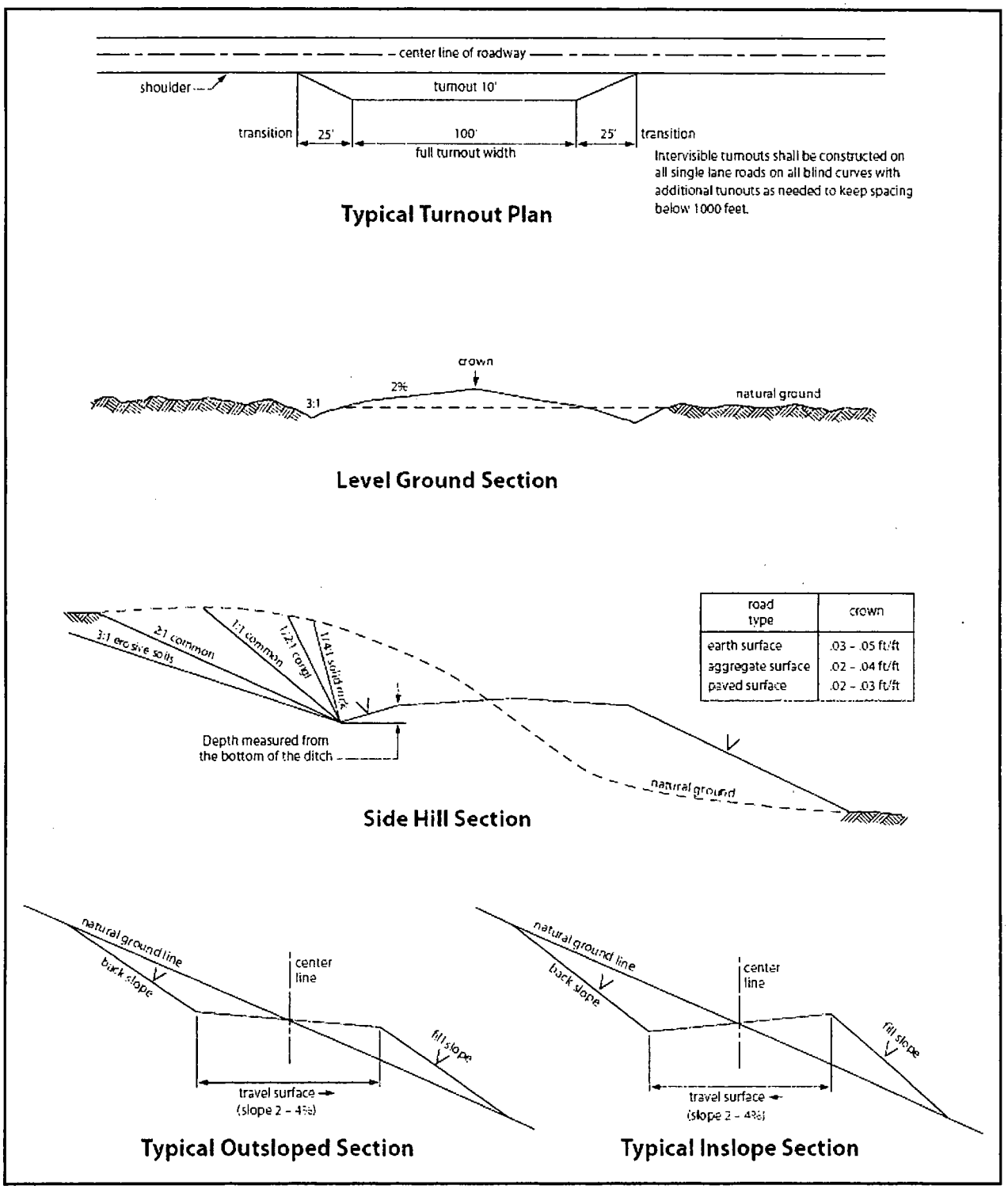


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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
#605H

OH
Plan #1 - IP

Anticollision Report

28 November, 2017

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

Reference Plan #1 - IP

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

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

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,406.22	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	3,000.00	66.95	53.74	5.070	CC, ES
#104H - OH - Plan #1 - IP	3,100.00	3,099.40	67.65	54.05	4.975	SF
#304H - OH - Plan #1 - IP	3,000.00	3,000.10	42.43	29.22	3.213	CC, ES
#304H - OH - Plan #1 - IP	3,100.00	3,100.09	43.09	29.47	3.163	SF
#403H - OH - Plan #1 - IP	3,000.22	3,000.72	42.50	29.29	3.218	CC, ES
#403H - OH - Plan #1 - IP	3,100.00	3,100.79	43.29	29.69	3.183	SF
#404H - OH - Plan #1 - IP	3,000.00	3,000.50	30.00	16.79	2.272	CC, ES, SF
#502H - OH - Plan #1 - IP	3,001.88	3,002.48	30.10	16.89	2.278	CC
#502H - OH - Plan #1 - IP	11,200.00	11,199.29	48.09	0.48	1.010	Level 2, ES, SF
#705H - OH - Plan #1 - IP	2,000.00	1,999.30	30.00	21.29	3.445	CC
#705H - OH - Plan #1 - IP	12,212.95	12,211.07	51.95	0.22	1.004	Level 2, ES, SF
#706H - OH - Plan #1 - IP	1,500.00	1,498.90	59.90	53.44	9.273	CC
#706H - OH - Plan #1 - IP	17,406.74	17,527.23	197.69	37.20	1.232	Level 2, 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	0.00	0.00	0.00	0.00	-63.86	29.50	-60.10	66.95				
100.00	100.00	100.00	100.00	0.08	0.08	-63.86	29.50	-60.10	66.95	66.78	.169	397.151	
200.00	200.00	200.00	200.00	0.31	0.31	-63.86	29.50	-60.10	66.95	66.33	.618	108.314	
300.00	300.00	300.00	300.00	0.53	0.53	-63.86	29.50	-60.10	66.95	65.88	1.068	62.708	
400.00	400.00	400.00	400.00	0.76	0.76	-63.86	29.50	-60.10	66.95	65.43	1.517	44.128	
500.00	500.00	500.00	500.00	0.98	0.98	-63.86	29.50	-60.10	66.95	64.98	1.967	34.042	
600.00	600.00	600.00	600.00	1.21	1.21	-63.86	29.50	-60.10	66.95	64.53	2.416	27.708	
700.00	700.00	700.00	700.00	1.43	1.43	-63.86	29.50	-60.10	66.95	64.08	2.866	23.362	
800.00	800.00	800.00	800.00	1.66	1.66	-63.86	29.50	-60.10	66.95	63.63	3.315	20.194	
900.00	900.00	900.00	900.00	1.88	1.88	-63.86	29.50	-60.10	66.95	63.18	3.765	17.783	
1,000.00	1,000.00	1,000.00	1,000.00	2.11	2.11	-63.86	29.50	-60.10	66.95	62.74	4.214	15.886	
1,100.00	1,100.00	1,100.00	1,100.00	2.33	2.33	-63.86	29.50	-60.10	66.95	62.29	4.664	14.355	
1,200.00	1,200.00	1,200.00	1,200.00	2.56	2.56	-63.86	29.50	-60.10	66.95	61.84	5.113	13.093	
1,300.00	1,300.00	1,300.00	1,300.00	2.78	2.78	-63.86	29.50	-60.10	66.95	61.39	5.563	12.035	
1,400.00	1,400.00	1,400.00	1,400.00	3.01	3.01	-63.86	29.50	-60.10	66.95	60.94	6.012	11.135	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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	1,500.00	1,500.00	3.23	3.23	-63.86	29.50	-60.10	66.95	60.49	6.462	10.360	
1,600.00	1,600.00	1,600.00	1,600.00	3.46	3.46	-63.86	29.50	-60.10	66.95	60.04	6.912	9.687	
1,700.00	1,700.00	1,700.00	1,700.00	3.68	3.68	-63.86	29.50	-60.10	66.95	59.59	7.361	9.095	
1,800.00	1,800.00	1,800.00	1,800.00	3.91	3.91	-63.86	29.50	-60.10	66.95	59.14	7.811	8.572	
1,900.00	1,900.00	1,900.00	1,900.00	4.13	4.13	-63.86	29.50	-60.10	66.95	58.69	8.260	8.105	
2,000.00	2,000.00	2,000.00	2,000.00	4.35	4.35	-63.86	29.50	-60.10	66.95	58.24	8.710	7.687	
2,100.00	2,100.00	2,100.00	2,100.00	4.58	4.58	-63.86	29.50	-60.10	66.95	57.79	9.159	7.310	
2,200.00	2,200.00	2,200.00	2,200.00	4.80	4.80	-63.86	29.50	-60.10	66.95	57.34	9.609	6.968	
2,300.00	2,300.00	2,300.00	2,300.00	5.03	5.03	-63.86	29.50	-60.10	66.95	56.89	10.058	6.656	
2,400.00	2,400.00	2,400.00	2,400.00	5.25	5.25	-63.86	29.50	-60.10	66.95	56.44	10.508	6.371	
2,500.00	2,500.00	2,500.00	2,500.00	5.48	5.48	-63.86	29.50	-60.10	66.95	55.99	10.957	6.110	
2,600.00	2,600.00	2,600.00	2,600.00	5.70	5.70	-63.86	29.50	-60.10	66.95	55.54	11.407	5.869	
2,700.00	2,700.00	2,700.00	2,700.00	5.93	5.93	-63.86	29.50	-60.10	66.95	55.09	11.856	5.647	
2,800.00	2,800.00	2,800.00	2,800.00	6.15	6.15	-63.86	29.50	-60.10	66.95	54.64	12.306	5.440	
2,900.00	2,900.00	2,900.00	2,900.00	6.38	6.38	-63.86	29.50	-60.10	66.95	54.19	12.755	5.249	
3,000.00	3,000.00	3,000.00	3,000.00	6.60	6.60	-63.86	29.50	-60.10	66.95	53.74	13.205	5.070	CC, ES
3,100.00	3,099.99	3,099.40	3,099.39	6.80	6.80	101.38	28.60	-61.03	67.65	54.05	13.599	4.975	SF
3,200.00	3,199.91	3,198.78	3,198.69	6.97	6.98	101.50	25.91	-63.82	69.75	55.80	13.943	5.002	
3,233.33	3,233.19	3,231.89	3,231.75	7.03	7.04	101.55	24.61	-65.16	70.76	56.70	14.060	5.033	
3,300.00	3,299.73	3,298.09	3,297.79	7.14	7.16	101.26	21.42	-68.46	73.13	58.83	14.294	5.116	
3,400.00	3,399.54	3,402.25	3,397.09	7.32	7.36	99.74	15.50	-74.59	77.26	62.60	14.664	5.269	
3,500.00	3,499.36	3,502.36	3,496.60	7.50	7.55	98.26	9.46	-80.86	81.51	66.47	15.036	5.421	
3,600.00	3,599.17	3,602.47	3,596.10	7.68	7.75	96.93	3.41	-87.12	85.81	70.39	15.417	5.566	
3,700.00	3,698.98	3,697.42	3,695.61	7.87	7.94	95.73	-2.64	-93.38	90.14	74.35	15.795	5.707	
3,800.00	3,798.80	3,802.69	3,795.12	8.07	8.16	94.63	-8.69	-99.64	94.52	78.32	16.201	5.834	
3,900.00	3,898.61	3,902.80	3,894.63	8.26	8.37	93.64	-14.74	-105.91	98.92	82.32	16.604	5.958	
4,000.00	3,998.43	4,002.91	3,994.14	8.46	8.59	92.73	-20.78	-112.17	103.36	86.35	17.012	6.076	
4,100.00	4,098.24	4,103.02	4,093.65	8.66	8.81	91.89	-26.83	-118.43	107.82	90.39	17.426	6.187	
4,200.00	4,198.05	4,203.14	4,193.16	8.87	9.03	91.12	-32.88	-124.69	112.29	94.45	17.845	6.293	
4,300.00	4,297.87	4,303.25	4,292.66	9.07	9.26	90.41	-38.93	-130.96	116.79	98.52	18.269	6.393	
4,400.00	4,397.68	4,403.36	4,392.17	9.28	9.49	89.75	-44.97	-137.22	121.30	102.61	18.698	6.488	
4,500.00	4,497.49	4,503.47	4,491.68	9.50	9.72	89.14	-51.02	-143.48	125.83	106.70	19.130	6.578	
4,600.00	4,597.31	4,603.58	4,591.19	9.71	9.95	88.58	-57.07	-149.74	130.37	110.81	19.567	6.663	
4,700.00	4,697.12	4,703.69	4,690.70	9.92	10.19	88.05	-63.12	-156.01	134.93	114.92	20.007	6.744	
4,800.00	4,796.93	4,803.80	4,790.21	10.14	10.42	87.55	-69.16	-162.27	139.49	119.04	20.450	6.821	
4,900.00	4,896.75	4,903.91	4,889.72	10.36	10.66	87.09	-75.21	-168.53	144.07	123.17	20.896	6.894	
5,000.00	4,996.56	4,995.97	4,989.23	10.58	10.89	86.65	-81.26	-174.79	148.65	127.32	21.326	6.970	
5,100.00	5,096.37	5,104.14	5,088.73	10.80	11.15	86.24	-87.31	-181.06	153.24	131.44	21.797	7.030	
5,200.00	5,196.19	5,204.25	5,188.24	11.02	11.39	85.86	-93.35	-187.32	157.84	135.59	22.251	7.093	
5,300.00	5,296.00	5,304.36	5,287.75	11.25	11.64	85.50	-99.40	-193.58	162.44	139.73	22.708	7.154	
5,400.00	5,395.81	5,404.47	5,387.26	11.47	11.89	85.15	-105.45	-199.84	167.05	143.89	23.166	7.211	
5,500.00	5,495.63	5,504.58	5,486.77	11.70	12.13	84.83	-111.50	-206.11	171.67	148.04	23.627	7.266	
5,600.00	5,595.44	5,604.69	5,586.28	11.93	12.38	84.52	-117.54	-212.37	176.29	152.20	24.090	7.318	
5,700.00	5,695.25	5,704.80	5,685.79	12.16	12.64	84.23	-123.59	-218.63	180.92	156.36	24.554	7.368	
5,800.00	5,795.07	5,804.92	5,785.29	12.39	12.89	83.95	-129.64	-224.89	185.55	160.53	25.021	7.416	
5,900.00	5,894.88	5,905.03	5,884.80	12.62	13.14	83.69	-135.69	-231.16	190.18	164.70	25.489	7.462	
6,000.00	5,994.69	6,005.14	5,984.31	12.85	13.40	83.44	-141.74	-237.42	194.82	168.86	25.958	7.505	
6,100.00	6,094.51	6,105.25	6,083.82	13.08	13.65	83.20	-147.78	-243.68	199.47	173.04	26.429	7.547	
6,200.00	6,194.32	6,205.36	6,183.33	13.31	13.91	82.97	-153.83	-249.94	204.11	177.21	26.901	7.588	
6,300.00	6,294.14	6,305.47	6,282.84	13.55	14.16	82.75	-159.88	-256.21	208.76	181.39	27.374	7.626	
6,400.00	6,393.95	6,405.58	6,382.35	13.78	14.42	82.54	-165.93	-262.47	213.41	185.56	27.849	7.663	
6,500.00	6,493.76	6,505.69	6,481.86	14.02	14.68	82.34	-171.97	-268.73	218.07	189.74	28.325	7.699	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
6,600.00	6,593.58	6,605.80	6,581.36	14.25	14.94	82.15	-178.02	-274.99	222.72	193.92	28.802	7.733	
6,700.00	6,693.39	6,705.92	6,680.87	14.49	15.20	81.96	-184.07	-281.26	227.38	198.10	29.280	7.766	
6,800.00	6,793.20	6,806.03	6,780.38	14.73	15.46	81.79	-190.12	-287.52	232.05	202.29	29.759	7.798	
6,900.00	6,893.02	6,906.14	6,879.89	14.96	15.72	81.62	-196.16	-293.78	236.71	206.47	30.238	7.828	
7,000.00	6,992.83	6,993.75	6,979.40	15.20	15.95	81.45	-202.21	-300.04	241.38	210.69	30.688	7.865	
7,100.00	7,092.64	7,106.36	7,078.91	15.44	16.24	81.30	-208.26	-306.31	246.04	214.84	31.201	7.886	
7,200.00	7,192.46	7,206.47	7,178.42	15.68	16.51	81.15	-214.31	-312.57	250.71	219.03	31.683	7.913	
7,300.00	7,292.27	7,293.42	7,277.92	15.92	16.74	81.00	-220.35	-318.83	255.38	223.25	32.134	7.948	
7,357.84	7,350.00	7,351.19	7,335.48	16.06	16.89	80.92	-223.85	-322.45	258.09	225.67	32.413	7.962	
7,400.00	7,392.10	7,406.70	7,377.43	16.16	17.03	80.84	-226.40	-325.09	260.09	227.45	32.648	7.967	
7,500.00	7,492.03	7,506.87	7,476.87	16.38	17.30	80.27	-232.45	-331.35	265.17	232.06	33.107	8.010	
7,591.17	7,583.19	7,584.02	7,567.42	16.57	17.50	-85.90	-237.95	-337.05	270.24	236.78	33.458	8.077	
7,600.00	7,592.02	7,607.18	7,576.19	16.59	17.56	-86.03	-238.48	-337.60	270.76	237.23	33.529	8.075	
7,700.00	7,692.02	7,692.44	7,675.43	16.78	17.79	-87.36	-244.51	-343.85	276.68	242.78	33.895	8.163	
7,800.00	7,792.02	7,794.52	7,777.14	16.97	18.06	-88.63	-250.49	-350.04	282.55	248.24	34.307	8.236	
7,900.00	7,892.02	7,899.90	7,882.33	17.17	18.31	-89.55	-254.96	-354.67	286.88	252.15	34.729	8.260	
8,000.00	7,992.02	8,005.57	7,987.93	17.36	18.55	-90.04	-257.41	-357.21	289.28	254.13	35.146	8.231	
8,100.00	8,092.02	8,109.66	8,092.02	17.56	18.76	-90.14	-257.93	-357.74	289.78	254.23	35.545	8.152	
8,200.00	8,192.02	8,209.66	8,192.02	17.75	18.94	-90.14	-257.93	-357.74	289.78	253.84	35.935	8.064	
8,300.00	8,292.02	8,309.66	8,292.02	17.95	19.13	-90.14	-257.93	-357.74	289.78	253.45	36.325	7.977	
8,400.00	8,392.02	8,409.66	8,392.02	18.15	19.32	-90.14	-257.93	-357.74	289.78	253.06	36.717	7.892	
8,500.00	8,492.02	8,509.66	8,492.02	18.35	19.51	-90.14	-257.93	-357.74	289.78	252.67	37.111	7.809	
8,600.00	8,592.02	8,609.66	8,592.02	18.55	19.70	-90.14	-257.93	-357.74	289.78	252.27	37.505	7.726	
8,700.00	8,692.02	8,709.66	8,692.02	18.75	19.89	-90.14	-257.93	-357.74	289.78	251.88	37.901	7.646	
8,800.00	8,792.02	8,809.66	8,792.02	18.95	20.08	-90.14	-257.93	-357.74	289.78	251.48	38.298	7.566	
8,900.00	8,892.02	8,909.66	8,892.02	19.15	20.27	-90.14	-257.93	-357.74	289.78	251.08	38.696	7.489	
9,000.00	8,992.02	9,009.66	8,992.02	19.35	20.46	-90.14	-257.93	-357.74	289.78	250.68	39.096	7.412	
9,100.00	9,092.02	9,109.66	9,092.02	19.55	20.66	-90.14	-257.93	-357.74	289.78	250.28	39.496	7.337	
9,106.92	9,098.94	9,116.58	9,098.94	19.56	20.67	-90.14	-257.93	-357.74	289.78	250.26	39.524	7.332	
9,200.00	9,192.02	9,208.71	9,190.71	19.75	20.83	-88.87	-251.48	-357.79	289.89	249.98	39.904	7.264	
9,300.00	9,292.02	9,301.39	9,280.10	19.95	20.92	-84.16	-227.56	-357.96	291.76	251.45	40.312	7.237	
9,400.00	9,392.02	9,382.41	9,353.20	20.16	20.97	-77.49	-192.84	-358.22	299.83	259.22	40.610	7.383	
9,500.00	9,492.02	9,450.00	9,408.97	20.36	20.98	-70.58	-154.76	-358.50	319.07	278.43	40.643	7.851	
9,600.00	9,592.02	9,505.48	9,450.37	20.56	20.97	-64.40	-117.88	-358.77	352.21	311.83	40.375	8.723	
9,700.00	9,692.02	9,550.00	9,480.32	20.77	20.96	-59.38	-84.95	-359.01	399.00	359.07	39.931	9.992	
9,800.00	9,792.02	9,587.05	9,502.81	20.97	20.95	-55.30	-55.53	-359.23	457.33	417.84	39.493	11.580	
9,900.00	9,892.02	9,617.14	9,519.36	21.18	20.94	-52.11	-30.41	-359.41	524.65	485.51	39.145	13.403	
10,000.00	9,992.02	9,642.11	9,531.87	21.38	20.93	-49.57	-8.80	-359.57	598.74	559.82	38.919	15.384	
10,100.00	10,092.02	9,663.06	9,541.48	21.59	20.93	-47.53	9.81	-359.71	677.87	639.07	38.807	17.468	
10,200.00	10,192.02	9,675.00	9,546.59	21.80	20.92	-46.41	20.61	-359.79	760.87	722.11	38.760	19.630	
10,300.00	10,292.02	9,700.00	9,556.41	22.00	20.91	-44.15	43.60	-359.96	846.68	807.82	38.865	21.785	
10,400.00	10,392.02	9,709.18	9,559.71	22.21	20.91	-43.35	52.16	-360.02	934.75	895.78	38.963	23.991	
10,500.00	10,492.02	9,725.00	9,565.01	22.42	20.90	-42.02	67.07	-360.13	1,024.63	985.49	39.139	26.179	
10,600.00	10,592.02	9,725.00	9,565.01	22.63	20.90	-42.02	67.07	-360.13	1,115.92	1,076.61	39.304	28.392	
10,700.00	10,692.02	9,739.62	9,569.46	22.83	20.89	-40.83	80.99	-360.23	1,208.28	1,168.73	39.545	30.554	
10,800.00	10,792.02	9,750.00	9,572.37	23.04	20.89	-40.02	90.95	-360.30	1,301.63	1,261.83	39.798	32.706	
10,900.00	10,892.02	9,750.00	9,572.37	23.25	20.89	-40.02	90.95	-360.30	1,395.77	1,355.72	40.047	34.853	
11,000.00	10,992.02	9,761.06	9,575.22	23.46	20.88	-39.18	101.64	-360.38	1,490.50	1,450.16	40.337	36.951	
11,100.00	11,092.02	9,775.00	9,578.47	23.67	20.88	-38.15	115.20	-360.48	1,585.91	1,545.26	40.646	39.018	
11,200.00	11,192.02	9,775.00	9,578.47	23.88	20.88	-38.15	115.20	-360.48	1,681.61	1,640.67	40.939	41.076	
11,300.00	11,292.02	9,775.00	9,578.47	24.09	20.88	-38.15	115.20	-360.48	1,777.78	1,736.54	41.244	43.104	
11,400.00	11,392.02	9,775.00	9,578.47	24.30	20.88	-38.15	115.20	-360.48	1,874.36	1,832.80	41.558	45.102	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,500.00	11,492.02	9,785.36	9,580.62	24.51	20.88	-37.41	125.32	-360.56	1,971.14	1,929.24	41.895	47.050	
11,600.00	11,592.02	9,789.09	9,581.34	24.72	20.88	-37.15	128.98	-360.58	2,068.24	2,026.01	42.230	48.976	
11,700.00	11,692.02	9,800.00	9,583.29	24.93	20.88	-36.41	139.72	-360.66	2,165.63	2,123.05	42.581	50.859	
11,800.00	11,792.02	9,800.00	9,583.29	25.14	20.88	-36.41	139.72	-360.66	2,263.12	2,220.20	42.923	52.726	
11,900.00	11,892.02	9,800.00	9,583.29	25.35	20.88	-36.41	139.72	-360.66	2,360.82	2,317.55	43.270	54.561	
12,000.00	11,992.02	9,800.00	9,583.29	25.56	20.88	-36.41	139.72	-360.66	2,458.70	2,415.08	43.622	56.364	
12,041.62	12,033.64	9,800.00	9,583.29	25.65	20.88	-36.41	139.72	-360.66	2,499.49	2,455.72	43.770	57.105	
12,050.00	12,042.02	9,800.00	9,583.29	25.67	20.88	-6.77	139.72	-360.66	2,507.69	2,463.89	43.800	57.254	
12,075.00	12,066.99	9,800.00	9,583.29	25.72	20.88	-5.46	139.72	-360.66	2,531.97	2,488.08	43.887	57.693	
12,100.00	12,091.87	9,800.00	9,583.29	25.77	20.88	-4.58	139.72	-360.66	2,555.93	2,511.95	43.972	58.127	
12,125.00	12,116.59	9,800.00	9,583.29	25.82	20.88	-3.95	139.72	-360.66	2,579.50	2,535.45	44.055	58.552	
12,150.00	12,141.09	9,800.00	9,583.29	25.86	20.88	-3.47	139.72	-360.66	2,602.64	2,558.51	44.137	58.968	
12,175.00	12,165.29	9,800.00	9,583.29	25.90	20.88	-3.10	139.72	-360.66	2,625.30	2,581.08	44.216	59.375	
12,200.00	12,189.13	9,800.00	9,583.29	25.94	20.88	-2.81	139.72	-360.66	2,647.42	2,603.13	44.293	59.771	
12,225.00	12,212.54	9,811.60	9,585.09	25.97	20.89	-2.33	151.18	-360.75	2,668.80	2,624.42	44.381	60.134	
12,250.00	12,235.47	9,813.41	9,585.34	26.01	20.89	-2.12	152.97	-360.76	2,689.67	2,645.21	44.455	60.504	
12,275.00	12,257.83	9,825.00	9,586.82	26.04	20.91	-1.77	164.47	-360.85	2,709.97	2,665.43	44.536	60.849	
12,300.00	12,279.59	9,825.00	9,586.82	26.07	20.91	-1.66	164.47	-360.85	2,729.39	2,684.79	44.602	61.194	
12,325.00	12,300.67	9,825.00	9,586.82	26.09	20.91	-1.57	164.47	-360.85	2,748.06	2,703.39	44.665	61.525	
12,350.00	12,321.02	9,825.00	9,586.82	26.12	20.91	-1.49	164.47	-360.85	2,765.94	2,721.22	44.726	61.842	
12,375.00	12,340.58	9,825.00	9,586.82	26.15	20.91	-1.42	164.47	-360.85	2,783.01	2,738.22	44.783	62.144	
12,400.00	12,359.30	9,825.00	9,586.82	26.17	20.91	-1.35	164.47	-360.85	2,799.22	2,754.38	44.838	62.430	
12,425.00	12,377.13	9,825.00	9,586.82	26.19	20.91	-1.30	164.47	-360.85	2,814.55	2,769.66	44.890	62.700	
12,450.00	12,394.02	9,825.00	9,586.82	26.21	20.91	-1.25	164.47	-360.85	2,828.98	2,784.04	44.939	62.952	
12,458.29	12,399.40	9,825.00	9,586.82	26.22	20.91	-1.24	164.47	-360.85	2,833.56	2,788.60	44.953	63.034	
12,475.00	12,409.97	9,825.00	9,586.82	26.23	20.91	-1.45	164.47	-360.85	2,842.53	2,797.54	44.985	63.189	
12,500.00	12,425.11	9,837.08	9,588.06	26.24	20.94	-1.59	176.49	-360.93	2,855.20	2,810.16	45.043	63.388	
12,525.00	12,439.42	9,850.00	9,589.05	26.26	20.99	-1.70	189.36	-361.03	2,867.37	2,822.27	45.099	63.579	
12,550.00	12,452.85	9,850.00	9,589.05	26.31	20.99	-1.90	189.36	-361.03	2,878.60	2,833.45	45.143	63.767	
12,575.00	12,465.37	9,850.00	9,589.05	26.38	20.99	-2.06	189.36	-361.03	2,889.06	2,843.87	45.185	63.939	
12,600.00	12,476.94	9,850.00	9,589.05	26.45	20.99	-2.20	189.36	-361.03	2,898.74	2,853.51	45.225	64.095	
12,625.00	12,487.53	9,850.00	9,589.05	26.52	20.99	-2.30	189.36	-361.03	2,907.61	2,862.35	45.265	64.235	
12,650.00	12,497.12	9,850.00	9,589.05	26.60	20.99	-2.39	189.36	-361.03	2,915.67	2,870.37	45.304	64.357	
12,675.00	12,505.67	9,850.00	9,589.05	26.68	20.99	-2.46	189.36	-361.03	2,922.90	2,877.55	45.343	64.462	
12,700.00	12,513.16	9,862.05	9,589.66	26.76	21.04	-2.46	201.40	-361.12	2,929.10	2,883.71	45.390	64.531	
12,725.00	12,519.58	9,875.00	9,589.98	26.85	21.09	-2.47	214.34	-361.21	2,934.61	2,889.18	45.438	64.586	
12,750.00	12,524.90	9,875.00	9,589.98	26.94	21.09	-2.50	214.34	-361.21	2,939.05	2,893.58	45.474	64.631	
12,775.00	12,529.11	9,875.00	9,589.98	27.04	21.09	-2.53	214.34	-361.21	2,942.62	2,897.11	45.511	64.657	
12,800.00	12,532.20	9,875.00	9,589.98	27.14	21.09	-2.54	214.34	-361.21	2,945.29	2,899.74	45.548	64.664	
12,825.00	12,534.16	9,879.21	9,590.00	27.24	21.11	-2.54	218.56	-361.24	2,947.06	2,901.47	45.588	64.646	
12,850.00	12,534.98	9,885.34	9,589.99	27.34	21.14	-2.53	224.69	-361.29	2,947.89	2,902.26	45.629	64.605	
12,858.01	12,535.00	9,893.35	9,589.95	27.37	21.18	-2.53	232.70	-361.35	2,947.95	2,902.30	45.647	64.582	
12,900.00	12,534.82	9,935.34	9,589.77	27.55	21.39	-2.53	274.69	-361.66	2,947.95	2,902.20	45.747	64.440	
13,000.00	12,534.38	10,035.34	9,589.33	28.06	21.99	-2.53	374.68	-362.39	2,947.95	2,901.94	46.012	64.069	
13,100.00	12,533.94	10,135.34	9,588.89	28.67	22.71	-2.53	474.68	-363.13	2,947.94	2,901.62	46.324	63.637	
13,200.00	12,533.50	10,235.34	9,588.46	29.39	23.55	-2.53	574.68	-363.86	2,947.94	2,901.26	46.683	63.148	
13,300.00	12,533.06	10,335.34	9,588.02	30.20	24.49	-2.53	674.67	-364.60	2,947.94	2,900.85	47.086	62.607	
13,400.00	12,532.62	10,435.34	9,587.58	31.10	25.53	-2.53	774.67	-365.33	2,947.94	2,900.40	47.534	62.018	
13,500.00	12,532.18	10,535.34	9,587.14	32.07	26.66	-2.53	874.66	-366.07	2,947.93	2,899.91	48.023	61.386	
13,600.00	12,531.74	10,635.34	9,586.71	33.13	27.86	-2.53	974.66	-366.80	2,947.93	2,899.38	48.553	60.715	
13,700.00	12,531.30	10,735.34	9,586.27	34.25	29.13	-2.53	1,074.66	-367.54	2,947.93	2,898.81	49.123	60.011	
13,800.00	12,530.86	10,835.34	9,585.83	35.43	30.46	-2.53	1,174.65	-368.28	2,947.93	2,898.20	49.730	59.278	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	12,530.42	10,935.34	9,585.39	36.67	31.84	-2.53	1,274.65	-369.01	2,947.93	2,897.55	50.374	58.521	
14,000.00	12,529.98	11,035.34	9,584.96	37.96	33.26	-2.53	1,374.65	-369.75	2,947.92	2,896.87	51.053	57.743	
14,100.00	12,529.54	11,135.34	9,584.52	39.29	34.73	-2.53	1,474.64	-370.48	2,947.92	2,896.16	51.764	56.949	
14,200.00	12,529.10	11,235.34	9,584.08	40.66	36.23	-2.53	1,574.64	-371.22	2,947.92	2,895.41	52.508	56.142	
14,300.00	12,528.66	11,335.34	9,583.65	42.07	37.76	-2.53	1,674.63	-371.95	2,947.92	2,894.63	53.282	55.327	
14,400.00	12,528.22	11,435.34	9,583.21	43.52	39.32	-2.53	1,774.63	-372.69	2,947.91	2,893.83	54.085	54.505	
14,500.00	12,527.78	11,535.34	9,582.77	44.99	40.90	-2.53	1,874.63	-373.42	2,947.91	2,892.99	54.916	53.681	
14,600.00	12,527.34	11,635.34	9,582.33	46.49	42.50	-2.53	1,974.62	-374.16	2,947.91	2,892.14	55.773	52.856	
14,700.00	12,526.90	11,735.34	9,581.90	48.01	44.13	-2.53	2,074.62	-374.90	2,947.91	2,891.25	56.655	52.033	
14,800.00	12,526.46	11,835.34	9,581.46	49.56	45.77	-2.53	2,174.62	-375.63	2,947.90	2,890.34	57.561	51.213	
14,900.00	12,526.02	11,935.34	9,581.02	51.13	47.42	-2.53	2,274.61	-376.37	2,947.90	2,889.41	58.490	50.400	
15,000.00	12,525.58	12,035.34	9,580.58	52.71	49.09	-2.53	2,374.61	-377.10	2,947.90	2,888.46	59.440	49.594	
15,100.00	12,525.14	12,135.34	9,580.15	54.31	50.77	-2.53	2,474.61	-377.84	2,947.90	2,887.48	60.412	48.797	
15,200.00	12,524.70	12,235.34	9,579.71	55.93	52.47	-2.53	2,574.60	-378.57	2,947.89	2,886.49	61.402	48.009	
15,300.00	12,524.26	12,335.34	9,579.27	57.56	54.17	-2.53	2,674.60	-379.31	2,947.89	2,885.48	62.412	47.233	
15,400.00	12,523.82	12,435.34	9,578.83	59.21	55.88	-2.53	2,774.59	-380.04	2,947.89	2,884.45	63.439	46.468	
15,500.00	12,523.38	12,535.34	9,578.40	60.86	57.61	-2.53	2,874.59	-380.78	2,947.89	2,883.40	64.483	45.716	
15,600.00	12,522.95	12,635.34	9,577.96	62.53	59.33	-2.53	2,974.59	-381.52	2,947.88	2,882.34	65.544	44.976	
15,700.00	12,522.51	12,735.34	9,577.52	64.21	61.07	-2.53	3,074.58	-382.25	2,947.88	2,881.26	66.619	44.250	
15,800.00	12,522.07	12,835.34	9,577.08	65.90	62.81	-2.53	3,174.58	-382.99	2,947.88	2,880.17	67.710	43.537	
15,900.00	12,521.63	12,935.34	9,576.65	67.59	64.56	-2.53	3,274.58	-383.72	2,947.88	2,879.06	68.814	42.838	
16,000.00	12,521.19	13,035.34	9,576.21	69.29	66.32	-2.53	3,374.57	-384.46	2,947.87	2,877.94	69.931	42.154	
16,100.00	12,520.75	13,135.34	9,575.77	71.00	68.08	-2.53	3,474.57	-385.19	2,947.87	2,876.81	71.062	41.483	
16,200.00	12,520.31	13,235.34	9,575.33	72.72	69.84	-2.53	3,574.57	-385.93	2,947.87	2,875.67	72.204	40.827	
16,300.00	12,519.87	13,335.34	9,574.90	74.45	71.61	-2.53	3,674.56	-386.66	2,947.87	2,874.51	73.358	40.185	
16,400.00	12,519.43	13,435.34	9,574.46	76.18	73.38	-2.53	3,774.56	-387.40	2,947.86	2,873.34	74.523	39.557	
16,500.00	12,518.99	13,535.34	9,574.02	77.91	75.16	-2.53	3,874.55	-388.14	2,947.86	2,872.16	75.698	38.942	
16,600.00	12,518.55	13,635.34	9,573.59	79.65	76.94	-2.53	3,974.55	-388.87	2,947.86	2,870.98	76.883	38.342	
16,700.00	12,518.11	13,735.34	9,573.15	81.40	78.72	-2.53	4,074.55	-389.61	2,947.86	2,869.78	78.078	37.755	
16,800.00	12,517.67	13,835.34	9,572.71	83.15	80.51	-2.53	4,174.54	-390.34	2,947.85	2,868.57	79.282	37.182	
16,900.00	12,517.23	13,935.34	9,572.27	84.90	82.30	-2.53	4,274.54	-391.08	2,947.85	2,867.36	80.495	36.621	
17,000.00	12,516.79	14,035.34	9,571.84	86.66	84.09	-2.53	4,374.54	-391.81	2,947.85	2,866.13	81.717	36.074	
17,100.00	12,516.35	14,135.34	9,571.40	88.42	85.88	-2.53	4,474.53	-392.55	2,947.85	2,864.90	82.946	35.539	
17,200.00	12,515.91	14,235.34	9,570.96	90.19	87.68	-2.53	4,574.53	-393.28	2,947.84	2,863.66	84.183	35.017	
17,300.00	12,515.47	14,335.34	9,570.52	91.96	89.48	-2.53	4,674.52	-394.02	2,947.84	2,862.42	85.427	34.507	
17,406.74	12,515.00	14,442.09	9,570.06	93.85	91.40	-2.53	4,781.26	-394.80	2,947.84	2,861.08	86.763	33.976	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.10	0.10	0.00	0.00	-45.38	29.80	-30.20	42.43				
100.00	100.00	100.10	100.10	0.08	0.08	-45.38	29.80	-30.20	42.43	42.26	.169	251.348	
200.00	200.00	200.10	200.10	0.31	0.31	-45.38	29.80	-30.20	42.43	41.81	.618	68.616	
300.00	300.00	300.10	300.10	0.53	0.53	-45.38	29.80	-30.20	42.43	41.36	1.068	39.731	
400.00	400.00	400.10	400.10	0.76	0.76	-45.38	29.80	-30.20	42.43	40.91	1.517	27.961	
500.00	500.00	500.10	500.10	0.98	0.98	-45.38	29.80	-30.20	42.43	40.46	1.967	21.570	
600.00	600.00	600.10	600.10	1.21	1.21	-45.38	29.80	-30.20	42.43	40.01	2.416	17.558	
700.00	700.00	700.10	700.10	1.43	1.43	-45.38	29.80	-30.20	42.43	39.56	2.866	14.804	
800.00	800.00	800.10	800.10	1.66	1.66	-45.38	29.80	-30.20	42.43	39.11	3.316	12.797	
900.00	900.00	900.10	900.10	1.88	1.88	-45.38	29.80	-30.20	42.43	38.66	3.765	11.269	
1,000.00	1,000.00	1,000.10	1,000.10	2.11	2.11	-45.38	29.80	-30.20	42.43	38.21	4.215	10.067	
1,100.00	1,100.00	1,100.10	1,100.10	2.33	2.33	-45.38	29.80	-30.20	42.43	37.76	4.664	9.097	
1,200.00	1,200.00	1,200.10	1,200.10	2.56	2.56	-45.38	29.80	-30.20	42.43	37.31	5.114	8.297	
1,300.00	1,300.00	1,300.10	1,300.10	2.78	2.78	-45.38	29.80	-30.20	42.43	36.86	5.563	7.626	
1,400.00	1,400.00	1,400.10	1,400.10	3.01	3.01	-45.38	29.80	-30.20	42.43	36.41	6.013	7.056	
1,500.00	1,500.00	1,500.10	1,500.10	3.23	3.23	-45.38	29.80	-30.20	42.43	35.97	6.462	6.565	
1,600.00	1,600.00	1,600.10	1,600.10	3.46	3.46	-45.38	29.80	-30.20	42.43	35.52	6.912	6.138	
1,700.00	1,700.00	1,700.10	1,700.10	3.68	3.68	-45.38	29.80	-30.20	42.43	35.07	7.361	5.764	
1,800.00	1,800.00	1,800.10	1,800.10	3.91	3.91	-45.38	29.80	-30.20	42.43	34.62	7.811	5.432	
1,900.00	1,900.00	1,900.10	1,900.10	4.13	4.13	-45.38	29.80	-30.20	42.43	34.17	8.260	5.136	
2,000.00	2,000.00	2,000.10	2,000.10	4.35	4.36	-45.38	29.80	-30.20	42.43	33.72	8.710	4.871	
2,100.00	2,100.00	2,100.10	2,100.10	4.58	4.58	-45.38	29.80	-30.20	42.43	33.27	9.159	4.632	
2,200.00	2,200.00	2,200.10	2,200.10	4.80	4.80	-45.38	29.80	-30.20	42.43	32.82	9.609	4.415	
2,300.00	2,300.00	2,300.10	2,300.10	5.03	5.03	-45.38	29.80	-30.20	42.43	32.37	10.059	4.218	
2,400.00	2,400.00	2,400.10	2,400.10	5.25	5.25	-45.38	29.80	-30.20	42.43	31.92	10.508	4.038	
2,500.00	2,500.00	2,500.10	2,500.10	5.48	5.48	-45.38	29.80	-30.20	42.43	31.47	10.958	3.872	
2,600.00	2,600.00	2,600.10	2,600.10	5.70	5.70	-45.38	29.80	-30.20	42.43	31.02	11.407	3.719	
2,700.00	2,700.00	2,700.10	2,700.10	5.93	5.93	-45.38	29.80	-30.20	42.43	30.57	11.857	3.578	
2,800.00	2,800.00	2,800.10	2,800.10	6.15	6.15	-45.38	29.80	-30.20	42.43	30.12	12.306	3.448	
2,900.00	2,900.00	2,900.10	2,900.10	6.38	6.38	-45.38	29.80	-30.20	42.43	29.67	12.756	3.326	
3,000.00	3,000.00	3,000.10	3,000.10	6.60	6.60	-45.38	29.80	-30.20	42.43	29.22	13.205	3.213	CC, ES
3,100.00	3,099.99	3,100.09	3,100.09	6.80	6.83	121.32	29.80	-30.20	43.09	29.47	13.626	3.163	SF
3,200.00	3,199.91	3,200.01	3,200.01	6.97	7.05	125.54	29.80	-30.20	45.26	31.24	14.020	3.228	
3,233.33	3,233.19	3,233.29	3,233.29	7.03	7.13	127.42	29.80	-30.20	46.38	32.23	14.152	3.277	
3,300.00	3,299.73	3,300.17	3,299.83	7.14	7.28	131.21	29.80	-30.20	48.97	34.55	14.419	3.396	
3,400.00	3,399.54	3,400.36	3,399.64	7.32	7.50	136.15	29.80	-30.20	53.19	38.37	14.821	3.589	
3,500.00	3,499.36	3,499.46	3,499.46	7.50	7.73	140.35	29.80	-30.20	57.75	42.53	15.224	3.793	
3,600.00	3,599.17	3,600.04	3,600.03	7.68	7.93	142.88	28.80	-31.04	61.96	46.36	15.607	3.970	
3,700.00	3,698.98	3,700.77	3,700.68	7.87	8.10	143.06	25.76	-33.59	65.00	49.04	15.968	4.071	
3,800.00	3,798.80	3,801.53	3,801.21	8.07	8.28	141.21	20.69	-37.85	66.85	50.51	16.335	4.092	
3,900.00	3,898.61	3,901.45	3,900.83	8.26	8.47	138.50	14.68	-42.89	68.24	51.52	16.713	4.083	
4,000.00	3,998.43	4,001.39	4,000.46	8.46	8.66	135.90	8.68	-47.93	69.77	52.68	17.098	4.081	
4,100.00	4,098.24	4,101.33	4,100.09	8.66	8.85	133.42	2.67	-52.97	71.45	53.96	17.489	4.085	
4,200.00	4,198.05	4,201.27	4,199.73	8.87	9.04	131.05	-3.34	-58.01	73.25	55.36	17.888	4.095	
4,300.00	4,297.87	4,301.21	4,299.36	9.07	9.24	128.81	-9.34	-63.05	75.17	56.88	18.292	4.109	
4,400.00	4,397.68	4,401.15	4,398.99	9.28	9.44	126.68	-15.35	-68.09	77.20	58.50	18.703	4.128	
4,500.00	4,497.49	4,501.09	4,498.62	9.50	9.65	124.66	-21.36	-73.13	79.34	60.22	19.119	4.149	
4,600.00	4,597.31	4,601.03	4,598.25	9.71	9.86	122.74	-27.36	-78.17	81.56	62.02	19.541	4.174	
4,700.00	4,697.12	4,700.97	4,697.88	9.92	10.07	120.93	-33.37	-83.21	83.87	63.91	19.967	4.201	
4,800.00	4,796.93	4,800.91	4,797.51	10.14	10.29	119.22	-39.38	-88.25	86.26	65.86	20.398	4.229	
4,900.00	4,896.75	4,900.85	4,897.14	10.36	10.50	117.61	-45.38	-93.29	88.73	67.89	20.833	4.259	
5,000.00	4,996.56	5,000.78	4,996.77	10.58	10.72	116.08	-51.39	-98.33	91.26	69.98	21.272	4.290	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,096.37	5,100.72	5,096.41	10.80	10.94	114.64	-57.40	-103.37	93.85	72.13	21.715	4.322	
5,200.00	5,196.19	5,200.66	5,196.04	11.02	11.17	113.27	-63.40	-108.41	96.50	74.33	22.161	4.354	
5,300.00	5,296.00	5,300.60	5,295.67	11.25	11.39	111.98	-69.41	-113.45	99.20	76.58	22.610	4.387	
5,400.00	5,395.81	5,400.54	5,395.30	11.47	11.62	110.75	-75.42	-118.49	101.94	78.88	23.063	4.420	
5,500.00	5,495.63	5,500.48	5,494.93	11.70	11.85	109.59	-81.42	-123.53	104.73	81.22	23.517	4.454	
5,600.00	5,595.44	5,600.42	5,594.56	11.93	12.08	108.50	-87.43	-128.57	107.57	83.59	23.974	4.487	
5,700.00	5,695.25	5,700.36	5,694.19	12.16	12.31	107.45	-93.44	-133.61	110.44	86.00	24.434	4.520	
5,800.00	5,795.07	5,800.30	5,793.82	12.39	12.54	106.47	-99.44	-138.65	113.34	88.45	24.896	4.553	
5,900.00	5,894.88	5,900.24	5,893.45	12.62	12.78	105.53	-105.45	-143.69	116.28	90.92	25.359	4.585	
6,000.00	5,994.69	6,000.18	5,993.09	12.85	13.02	104.63	-111.46	-148.73	119.24	93.42	25.825	4.617	
6,100.00	6,094.51	6,100.12	6,092.72	13.08	13.25	103.79	-117.46	-153.77	122.24	95.94	26.292	4.649	
6,200.00	6,194.32	6,200.06	6,192.35	13.31	13.49	102.98	-123.47	-158.81	125.26	98.50	26.761	4.681	
6,300.00	6,294.14	6,299.99	6,291.98	13.55	13.73	102.21	-129.48	-163.85	128.30	101.07	27.231	4.712	
6,400.00	6,393.95	6,400.07	6,391.61	13.78	13.97	101.47	-135.48	-168.89	131.36	103.66	27.703	4.742	
6,500.00	6,493.76	6,500.13	6,491.24	14.02	14.21	100.77	-141.49	-173.93	134.45	106.27	28.176	4.772	
6,600.00	6,593.58	6,600.19	6,590.87	14.25	14.46	100.10	-147.50	-178.97	137.55	108.90	28.651	4.801	
6,700.00	6,693.39	6,700.25	6,690.50	14.49	14.70	99.46	-153.50	-184.01	140.68	111.55	29.126	4.830	
6,800.00	6,793.20	6,800.31	6,790.13	14.73	14.95	98.85	-159.51	-189.05	143.82	114.21	29.603	4.858	
6,900.00	6,893.02	6,900.37	6,889.77	14.96	15.19	98.27	-165.52	-194.09	146.97	116.89	30.081	4.886	
7,000.00	6,992.83	7,000.43	6,989.40	15.20	15.44	97.71	-171.52	-199.13	150.14	119.58	30.560	4.913	
7,100.00	7,092.64	7,100.49	7,089.03	15.44	15.69	97.17	-177.53	-204.17	153.32	122.28	31.040	4.940	
7,200.00	7,192.46	7,200.55	7,188.66	15.68	15.93	96.65	-183.54	-209.21	156.52	125.00	31.520	4.966	
7,300.00	7,292.27	7,300.61	7,288.29	15.92	16.18	96.16	-189.54	-214.25	159.73	127.73	32.002	4.991	
7,357.84	7,350.00	7,357.19	7,345.92	16.06	16.32	95.88	-193.02	-217.17	161.59	129.31	32.277	5.006	
7,400.00	7,392.10	7,400.68	7,387.92	16.16	16.43	95.62	-195.55	-219.29	162.93	130.44	32.482	5.016	
7,500.00	7,492.03	7,500.80	7,487.49	16.38	16.68	94.38	-201.55	-224.33	165.96	133.01	32.945	5.037	
7,591.17	7,583.19	7,609.84	7,578.17	16.57	16.95	-72.68	-207.02	-228.92	168.68	135.30	33.384	5.053	
7,600.00	7,592.02	7,601.03	7,586.95	16.59	16.93	-72.90	-207.55	-229.36	168.95	135.57	33.377	5.062	
7,700.00	7,692.02	7,698.66	7,686.33	16.78	17.18	-75.30	-213.54	-234.39	172.16	138.38	33.782	5.096	
7,800.00	7,792.02	7,801.65	7,785.72	16.97	17.44	-77.60	-219.53	-239.42	175.66	141.47	34.196	5.137	
7,900.00	7,892.02	7,901.96	7,885.10	17.17	17.69	-79.82	-225.53	-244.44	179.44	144.84	34.601	5.186	
8,000.00	7,992.02	8,002.27	7,984.48	17.36	17.94	-81.94	-231.52	-249.47	183.48	148.48	35.004	5.242	
8,100.00	8,092.02	8,102.58	8,083.87	17.56	18.19	-83.97	-237.51	-254.50	187.76	152.35	35.405	5.303	
8,200.00	8,192.02	8,202.88	8,183.25	17.75	18.45	-85.90	-243.50	-259.53	192.26	156.46	35.805	5.370	
8,300.00	8,292.02	8,297.88	8,283.71	17.95	18.69	-87.73	-249.44	-264.51	196.89	160.69	36.194	5.440	
8,400.00	8,392.02	8,401.06	8,386.73	18.15	18.94	-89.05	-253.88	-268.24	200.38	163.77	36.606	5.474	
8,500.00	8,492.02	8,504.48	8,490.10	18.35	19.16	-89.71	-256.19	-270.17	202.23	165.21	37.017	5.463	
8,600.00	8,592.02	8,606.49	8,592.12	18.55	19.37	-89.81	-256.54	-270.47	202.51	165.10	37.418	5.412	
8,700.00	8,692.02	8,706.49	8,692.12	18.75	19.56	-89.81	-256.54	-270.47	202.51	164.70	37.813	5.356	
8,800.00	8,792.02	8,806.49	8,792.12	18.95	19.75	-89.81	-256.54	-270.47	202.51	164.30	38.210	5.300	
8,900.00	8,892.02	8,906.49	8,892.12	19.15	19.94	-89.81	-256.54	-270.47	202.51	163.91	38.608	5.245	
9,000.00	8,992.02	9,006.49	8,992.12	19.35	20.14	-89.81	-256.54	-270.47	202.51	163.51	39.007	5.192	
9,100.00	9,092.02	9,106.49	9,092.12	19.55	20.33	-89.81	-256.54	-270.47	202.51	163.11	39.407	5.139	
9,200.00	9,192.02	9,206.49	9,192.12	19.75	20.53	-89.81	-256.54	-270.47	202.51	162.71	39.808	5.087	
9,300.00	9,292.02	9,306.49	9,292.12	19.95	20.72	-89.81	-256.54	-270.47	202.51	162.30	40.210	5.036	
9,400.00	9,392.02	9,406.49	9,392.12	20.16	20.92	-89.81	-256.54	-270.47	202.51	161.90	40.613	4.986	
9,500.00	9,492.02	9,506.49	9,492.12	20.36	21.12	-89.81	-256.54	-270.47	202.51	161.50	41.017	4.937	
9,600.00	9,592.02	9,606.49	9,592.12	20.56	21.32	-89.81	-256.54	-270.47	202.51	161.09	41.422	4.889	
9,700.00	9,692.02	9,706.49	9,692.12	20.77	21.51	-89.81	-256.54	-270.47	202.51	160.68	41.828	4.842	
9,703.19	9,695.20	9,709.68	9,695.30	20.77	21.52	-89.81	-256.54	-270.47	202.51	160.67	41.841	4.840	
9,800.00	9,792.02	9,802.86	9,788.36	20.97	21.70	-88.89	-253.30	-270.92	203.04	160.80	42.236	4.807	
9,900.00	9,892.02	9,892.74	9,876.11	21.18	21.82	-83.74	-234.66	-273.53	207.42	164.79	42.634	4.865	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,992.02	9,973.18	9,950.43	21.38	21.90	-75.88	-204.44	-277.75	220.31	177.43	42.879	5.138	
10,100.00	10,092.02	10,041.84	10,009.07	21.59	21.94	-67.70	-169.17	-282.67	246.48	203.65	42.826	5.755	
10,200.00	10,192.02	10,100.00	10,054.31	21.80	21.96	-60.53	-133.03	-287.72	287.59	245.04	42.546	6.759	
10,300.00	10,292.02	10,145.84	10,086.64	22.00	21.97	-55.12	-100.88	-292.21	341.98	299.79	42.189	8.106	
10,400.00	10,392.02	10,184.40	10,111.33	22.21	21.97	-50.89	-71.55	-296.31	406.76	364.84	41.925	9.702	
10,500.00	10,492.02	10,216.27	10,129.87	22.42	21.97	-47.66	-45.89	-299.89	479.24	437.46	41.781	11.470	
10,600.00	10,592.02	10,242.83	10,143.98	22.63	21.97	-45.17	-23.61	-303.00	557.36	515.61	41.748	13.351	
10,700.00	10,692.02	10,265.17	10,154.86	22.83	21.97	-43.23	-4.28	-305.70	639.64	597.84	41.803	15.301	
10,800.00	10,792.02	10,284.14	10,163.37	23.04	21.97	-41.67	12.51	-308.05	725.06	683.13	41.928	17.293	
10,900.00	10,892.02	10,300.00	10,169.97	23.25	21.97	-40.44	26.79	-310.04	812.87	770.77	42.102	19.307	
11,000.00	10,992.02	10,314.49	10,175.57	23.46	21.97	-39.37	40.02	-311.89	902.55	860.23	42.319	21.327	
11,100.00	11,092.02	10,325.00	10,179.39	23.67	21.97	-38.63	49.72	-313.24	993.71	951.15	42.559	23.349	
11,200.00	11,192.02	10,337.54	10,183.65	23.88	21.97	-37.77	61.40	-314.87	1,086.04	1,043.21	42.832	25.356	
11,300.00	11,292.02	10,350.00	10,187.58	24.09	21.97	-36.96	73.11	-316.51	1,179.36	1,136.24	43.125	27.347	
11,400.00	11,392.02	10,350.00	10,187.58	24.30	21.97	-36.96	73.11	-316.51	1,273.50	1,230.09	43.411	29.336	
11,500.00	11,492.02	10,363.19	10,191.40	24.51	21.97	-36.13	85.61	-318.25	1,368.23	1,324.49	43.734	31.285	
11,600.00	11,592.02	10,375.00	10,194.52	24.72	21.98	-35.42	96.89	-319.83	1,463.59	1,419.52	44.067	33.213	
11,700.00	11,692.02	10,375.00	10,194.52	24.93	21.98	-35.42	96.89	-319.83	1,559.36	1,514.97	44.391	35.128	
11,800.00	11,792.02	10,375.00	10,194.52	25.14	21.98	-35.42	96.89	-319.83	1,655.64	1,610.91	44.725	37.018	
11,900.00	11,892.02	10,387.00	10,197.41	25.35	21.99	-34.73	108.43	-321.44	1,752.14	1,707.06	45.081	38.866	
12,000.00	11,992.02	10,400.00	10,200.20	25.56	22.02	-34.01	121.00	-323.20	1,849.10	1,803.65	45.443	40.690	
12,041.62	12,033.64	10,400.00	10,200.20	25.65	22.02	-34.01	121.00	-323.20	1,889.46	1,843.87	45.590	41.445	
12,050.00	12,042.02	10,400.00	10,200.20	25.67	22.02	-4.64	121.00	-323.20	1,897.57	1,851.95	45.619	41.596	
12,075.00	12,066.99	10,400.00	10,200.20	25.72	22.02	-3.88	121.00	-323.20	1,921.56	1,875.86	45.705	42.043	
12,100.00	12,091.87	10,400.00	10,200.20	25.77	22.02	-3.33	121.00	-323.20	1,945.19	1,899.40	45.789	42.482	
12,125.00	12,116.59	10,400.00	10,200.20	25.82	22.02	-2.92	121.00	-323.20	1,968.40	1,922.53	45.871	42.912	
12,150.00	12,141.09	10,400.00	10,200.20	25.86	22.02	-2.60	121.00	-323.20	1,991.14	1,945.19	45.952	43.331	
12,175.00	12,165.29	10,400.00	10,200.20	25.90	22.02	-2.35	121.00	-323.20	2,013.37	1,967.34	46.030	43.740	
12,200.00	12,189.13	10,400.00	10,200.20	25.94	22.02	-2.15	121.00	-323.20	2,035.05	1,988.95	46.107	44.138	
12,225.00	12,212.54	10,400.00	10,200.20	25.97	22.02	-1.98	121.00	-323.20	2,056.14	2,009.96	46.181	44.523	
12,250.00	12,235.47	10,400.00	10,200.20	26.01	22.02	-1.84	121.00	-323.20	2,076.59	2,030.33	46.253	44.896	
12,275.00	12,257.83	10,411.99	10,202.47	26.04	22.05	-1.52	132.67	-324.83	2,096.18	2,049.85	46.333	45.242	
12,300.00	12,279.59	10,414.79	10,202.96	26.07	22.06	-1.39	135.39	-325.21	2,115.16	2,068.76	46.402	45.583	
12,325.00	12,300.67	10,425.00	10,204.60	26.09	22.10	-1.17	145.37	-326.60	2,133.45	2,086.97	46.475	45.905	
12,350.00	12,321.02	10,425.00	10,204.60	26.12	22.10	-1.11	145.37	-326.60	2,150.82	2,104.29	46.536	46.219	
12,375.00	12,340.58	10,425.00	10,204.60	26.15	22.10	-1.06	145.37	-326.60	2,167.39	2,120.80	46.594	46.516	
12,400.00	12,359.30	10,425.00	10,204.60	26.17	22.10	-1.02	145.37	-326.60	2,183.14	2,136.48	46.650	46.798	
12,425.00	12,377.13	10,425.00	10,204.60	26.19	22.10	-0.98	145.37	-326.60	2,198.02	2,151.32	46.703	47.063	
12,450.00	12,394.02	10,425.00	10,204.60	26.21	22.10	-0.94	145.37	-326.60	2,212.03	2,165.27	46.754	47.312	
12,458.29	12,399.40	10,435.14	10,206.01	26.22	22.14	-0.82	155.32	-327.99	2,216.34	2,169.57	46.777	47.382	
12,475.00	12,409.97	10,437.51	10,206.31	26.23	22.15	-1.05	157.65	-328.31	2,225.00	2,178.19	46.812	47.531	
12,500.00	12,425.11	10,450.00	10,207.70	26.24	22.20	-1.27	169.94	-330.03	2,237.47	2,190.60	46.869	47.739	
12,525.00	12,439.42	10,450.00	10,207.70	26.26	22.20	-1.55	169.94	-330.03	2,249.06	2,202.15	46.916	47.938	
12,550.00	12,452.85	10,450.00	10,207.70	26.31	22.20	-1.79	169.94	-330.03	2,259.96	2,213.00	46.961	48.124	
12,575.00	12,465.37	10,450.00	10,207.70	26.38	22.20	-1.98	169.94	-330.03	2,270.13	2,223.13	47.006	48.294	
12,600.00	12,476.94	10,450.00	10,207.70	26.45	22.20	-2.14	169.94	-330.03	2,279.57	2,232.52	47.050	48.450	
12,625.00	12,487.53	10,460.53	10,208.62	26.52	22.24	-2.22	180.33	-331.48	2,288.12	2,241.02	47.099	48.581	
12,650.00	12,497.12	10,464.60	10,208.91	26.60	22.26	-2.32	184.34	-332.04	2,295.90	2,248.76	47.144	48.700	
12,675.00	12,505.67	10,475.00	10,209.50	26.68	22.31	-2.38	194.63	-333.48	2,302.91	2,255.72	47.191	48.800	
12,700.00	12,513.16	10,475.00	10,209.50	26.76	22.31	-2.45	194.63	-333.48	2,308.99	2,261.76	47.232	48.886	
12,725.00	12,519.58	10,475.00	10,209.50	26.85	22.31	-2.51	194.63	-333.48	2,314.26	2,266.99	47.273	48.956	
12,750.00	12,524.90	10,475.00	10,209.50	26.94	22.31	-2.54	194.63	-333.48	2,318.71	2,271.40	47.313	49.008	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,775.00	12,529.11	10,485.48	10,209.87	27.04	22.36	-2.57	205.01	-334.93	2,322.20	2,274.84	47.359	49.034	
12,800.00	12,532.20	10,499.00	10,210.00	27.14	22.42	-2.61	218.39	-336.80	2,324.98	2,277.57	47.406	49.044	
12,825.00	12,534.16	10,499.00	10,210.00	27.24	22.42	-2.61	218.39	-336.80	2,326.69	2,279.24	47.447	49.038	
12,850.00	12,534.98	10,499.00	10,210.00	27.34	22.42	-2.61	218.39	-336.80	2,327.56	2,280.07	47.488	49.013	
12,858.01	12,535.00	10,502.27	10,209.99	27.37	22.44	-2.61	221.63	-337.25	2,327.66	2,280.16	47.503	49.000	
12,900.00	12,534.82	10,545.61	10,209.80	27.55	22.67	-2.74	264.60	-342.87	2,327.90	2,280.30	47.599	48.907	
13,000.00	12,534.38	10,649.40	10,209.34	28.06	23.31	-2.99	367.82	-353.68	2,328.39	2,280.53	47.853	48.658	
13,100.00	12,533.94	10,753.79	10,208.89	28.67	24.06	-3.14	471.97	-360.78	2,328.71	2,280.56	48.153	48.360	
13,200.00	12,533.50	10,858.51	10,208.43	29.39	24.92	-3.21	576.62	-364.08	2,328.84	2,280.35	48.497	48.020	
13,300.00	12,533.06	10,959.29	10,207.99	30.20	25.85	-3.21	677.40	-364.86	2,328.84	2,279.96	48.884	47.640	
13,400.00	12,532.62	11,059.29	10,207.55	31.10	26.86	-3.21	777.40	-365.59	2,328.84	2,279.53	49.312	47.227	
13,500.00	12,532.18	11,159.29	10,207.11	32.07	27.95	-3.21	877.39	-366.32	2,328.84	2,279.06	49.780	46.782	
13,600.00	12,531.74	11,259.29	10,206.68	33.13	29.12	-3.21	977.39	-367.05	2,328.83	2,278.54	50.289	46.309	
13,700.00	12,531.30	11,359.29	10,206.24	34.25	30.35	-3.21	1,077.38	-367.78	2,328.83	2,277.99	50.835	45.811	
13,800.00	12,530.86	11,459.29	10,205.80	35.43	31.65	-3.21	1,177.38	-368.51	2,328.83	2,277.41	51.419	45.291	
13,900.00	12,530.42	11,559.29	10,205.37	36.67	32.99	-3.21	1,277.38	-369.24	2,328.82	2,276.78	52.039	44.752	
14,000.00	12,529.98	11,659.29	10,204.93	37.96	34.38	-3.21	1,377.37	-369.97	2,328.82	2,276.13	52.693	44.196	
14,100.00	12,529.54	11,759.29	10,204.49	39.29	35.82	-3.21	1,477.37	-370.70	2,328.82	2,275.44	53.380	43.627	
14,200.00	12,529.10	11,859.29	10,204.06	40.66	37.29	-3.21	1,577.37	-371.43	2,328.81	2,274.71	54.099	43.047	
14,300.00	12,528.66	11,959.29	10,203.62	42.07	38.79	-3.21	1,677.36	-372.16	2,328.81	2,273.96	54.849	42.459	
14,400.00	12,528.22	12,059.29	10,203.18	43.52	40.32	-3.21	1,777.36	-372.89	2,328.81	2,273.18	55.627	41.864	
14,500.00	12,527.78	12,159.29	10,202.75	44.99	41.88	-3.21	1,877.36	-373.62	2,328.80	2,272.37	56.434	41.266	
14,600.00	12,527.34	12,259.29	10,202.31	46.49	43.46	-3.21	1,977.35	-374.35	2,328.80	2,271.53	57.268	40.665	
14,700.00	12,526.90	12,359.29	10,201.87	48.01	45.06	-3.21	2,077.35	-375.08	2,328.80	2,270.67	58.126	40.064	
14,800.00	12,526.46	12,459.29	10,201.43	49.56	46.68	-3.21	2,177.34	-375.81	2,328.79	2,269.78	59.010	39.465	
14,900.00	12,526.02	12,559.29	10,201.00	51.13	48.31	-3.21	2,277.34	-376.54	2,328.79	2,268.87	59.916	38.867	
15,000.00	12,525.58	12,659.29	10,200.56	52.71	49.96	-3.20	2,377.34	-377.27	2,328.79	2,267.94	60.845	38.274	
15,100.00	12,525.14	12,759.29	10,200.12	54.31	51.63	-3.20	2,477.33	-378.00	2,328.78	2,266.99	61.795	37.685	
15,200.00	12,524.70	12,859.29	10,199.69	55.93	53.30	-3.20	2,577.33	-378.73	2,328.78	2,266.02	62.766	37.103	
15,300.00	12,524.26	12,959.29	10,199.25	57.56	54.99	-3.20	2,677.33	-379.46	2,328.78	2,265.02	63.755	36.527	
15,400.00	12,523.82	13,059.29	10,198.81	59.21	56.69	-3.20	2,777.32	-380.19	2,328.77	2,264.01	64.763	35.958	
15,500.00	12,523.38	13,159.29	10,198.38	60.86	58.40	-3.20	2,877.32	-380.91	2,328.77	2,262.98	65.789	35.398	
15,600.00	12,522.95	13,259.29	10,197.94	62.53	60.11	-3.20	2,977.32	-381.64	2,328.77	2,261.94	66.831	34.845	
15,700.00	12,522.51	13,359.29	10,197.50	64.21	61.84	-3.20	3,077.31	-382.37	2,328.76	2,260.87	67.890	34.302	
15,800.00	12,522.07	13,459.29	10,197.07	65.90	63.57	-3.20	3,177.31	-383.10	2,328.76	2,259.80	68.963	33.768	
15,900.00	12,521.63	13,559.29	10,196.63	67.59	65.30	-3.20	3,277.31	-383.83	2,328.76	2,258.71	70.051	33.244	
16,000.00	12,521.19	13,659.29	10,196.19	69.29	67.05	-3.20	3,377.30	-384.56	2,328.75	2,257.60	71.153	32.729	
16,100.00	12,520.75	13,759.29	10,195.75	71.00	68.79	-3.20	3,477.30	-385.29	2,328.75	2,256.48	72.269	32.224	
16,200.00	12,520.31	13,859.29	10,195.32	72.72	70.55	-3.20	3,577.29	-386.02	2,328.75	2,255.35	73.396	31.728	
16,300.00	12,519.87	13,959.29	10,194.88	74.45	72.31	-3.20	3,677.29	-386.75	2,328.75	2,254.21	74.536	31.243	
16,400.00	12,519.43	14,059.29	10,194.44	76.18	74.07	-3.20	3,777.29	-387.48	2,328.74	2,253.05	75.688	30.768	
16,500.00	12,518.99	14,159.29	10,194.01	77.91	75.84	-3.20	3,877.28	-388.21	2,328.74	2,251.89	76.850	30.302	
16,600.00	12,518.55	14,259.29	10,193.57	79.65	77.61	-3.20	3,977.28	-388.94	2,328.74	2,250.71	78.024	29.847	
16,700.00	12,518.11	14,359.29	10,193.13	81.40	79.38	-3.20	4,077.28	-389.67	2,328.73	2,249.53	79.207	29.401	
16,800.00	12,517.67	14,459.29	10,192.70	83.15	81.16	-3.20	4,177.27	-390.40	2,328.73	2,248.33	80.399	28.965	
16,900.00	12,517.23	14,559.29	10,192.26	84.90	82.94	-3.20	4,277.27	-391.13	2,328.73	2,247.12	81.601	28.538	
17,000.00	12,516.79	14,659.29	10,191.82	86.66	84.73	-3.20	4,377.27	-391.86	2,328.72	2,245.91	82.812	28.121	
17,100.00	12,516.35	14,759.29	10,191.39	88.42	86.51	-3.20	4,477.26	-392.59	2,328.72	2,244.69	84.031	27.713	
17,200.00	12,515.91	14,859.29	10,190.95	90.19	88.30	-3.20	4,577.26	-393.32	2,328.72	2,243.46	85.259	27.314	
17,300.00	12,515.47	14,959.29	10,190.51	91.96	90.10	-3.20	4,677.25	-394.05	2,328.71	2,242.22	86.494	26.923	
17,406.74	12,515.00	15,066.03	10,190.04	93.85	92.01	-3.20	4,783.99	-394.83	2,328.71	2,240.89	87.820	26.517	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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	0.50	0.50	0.00	0.00	44.52	30.30	29.80	42.50				
100.00	100.00	100.50	100.50	0.08	0.09	44.52	30.30	29.80	42.50	42.33	.170	250.436	
200.00	200.00	200.50	200.50	0.31	0.31	44.52	30.30	29.80	42.50	41.88	.619	68.631	
300.00	300.00	300.50	300.50	0.53	0.53	44.52	30.30	29.80	42.50	41.43	1.069	39.764	
400.00	400.00	400.50	400.50	0.76	0.76	44.52	30.30	29.80	42.50	40.98	1.518	27.991	
500.00	500.00	500.50	500.50	0.98	0.98	44.52	30.30	29.80	42.50	40.53	1.968	21.597	
600.00	600.00	600.50	600.50	1.21	1.21	44.52	30.30	29.80	42.50	40.08	2.417	17.581	
700.00	700.00	700.50	700.50	1.43	1.43	44.52	30.30	29.80	42.50	39.63	2.867	14.824	
800.00	800.00	800.50	800.50	1.66	1.66	44.52	30.30	29.80	42.50	39.18	3.316	12.815	
900.00	900.00	900.50	900.50	1.88	1.88	44.52	30.30	29.80	42.50	38.73	3.766	11.285	
1,000.00	1,000.00	1,000.50	1,000.50	2.11	2.11	44.52	30.30	29.80	42.50	38.28	4.215	10.082	
1,100.00	1,100.00	1,100.50	1,100.50	2.33	2.33	44.52	30.30	29.80	42.50	37.83	4.665	9.110	
1,200.00	1,200.00	1,200.50	1,200.50	2.56	2.56	44.52	30.30	29.80	42.50	37.38	5.115	8.309	
1,300.00	1,300.00	1,300.50	1,300.50	2.78	2.78	44.52	30.30	29.80	42.50	36.93	5.564	7.638	
1,400.00	1,400.00	1,400.50	1,400.50	3.01	3.01	44.52	30.30	29.80	42.50	36.48	6.014	7.067	
1,500.00	1,500.00	1,500.50	1,500.50	3.23	3.23	44.52	30.30	29.80	42.50	36.04	6.463	6.576	
1,600.00	1,600.00	1,600.50	1,600.50	3.46	3.46	44.52	30.30	29.80	42.50	35.59	6.913	6.148	
1,700.00	1,700.00	1,700.50	1,700.50	3.68	3.68	44.52	30.30	29.80	42.50	35.14	7.362	5.773	
1,800.00	1,800.00	1,800.50	1,800.50	3.91	3.91	44.52	30.30	29.80	42.50	34.69	7.812	5.440	
1,900.00	1,900.00	1,900.50	1,900.50	4.13	4.13	44.52	30.30	29.80	42.50	34.24	8.261	5.144	
2,000.00	2,000.00	2,000.50	2,000.50	4.35	4.36	44.52	30.30	29.80	42.50	33.79	8.711	4.879	
2,100.00	2,100.00	2,100.50	2,100.50	4.58	4.58	44.52	30.30	29.80	42.50	33.34	9.160	4.639	
2,200.00	2,200.00	2,200.50	2,200.50	4.80	4.81	44.52	30.30	29.80	42.50	32.89	9.610	4.422	
2,300.00	2,300.00	2,300.50	2,300.50	5.03	5.03	44.52	30.30	29.80	42.50	32.44	10.059	4.225	
2,400.00	2,400.00	2,400.50	2,400.50	5.25	5.26	44.52	30.30	29.80	42.50	31.99	10.509	4.044	
2,500.00	2,500.00	2,500.50	2,500.50	5.48	5.48	44.52	30.30	29.80	42.50	31.54	10.958	3.878	
2,600.00	2,600.00	2,600.50	2,600.50	5.70	5.70	44.52	30.30	29.80	42.50	31.09	11.408	3.725	
2,700.00	2,700.00	2,700.50	2,700.50	5.93	5.93	44.52	30.30	29.80	42.50	30.64	11.858	3.584	
2,800.00	2,800.00	2,800.50	2,800.50	6.15	6.15	44.52	30.30	29.80	42.50	30.19	12.307	3.453	
2,900.00	2,900.00	2,900.50	2,900.50	6.38	6.38	44.52	30.30	29.80	42.50	29.74	12.757	3.331	
3,000.00	3,000.00	3,000.50	3,000.50	6.60	6.60	44.52	30.30	29.80	42.50	29.29	13.206	3.218	
3,000.22	3,000.22	3,000.72	3,000.72	6.60	6.60	44.52	30.30	29.80	42.50	29.29	13.207	3.218	CC, ES
3,100.00	3,099.99	3,100.79	3,100.78	6.80	6.80	-149.44	29.15	30.46	43.29	29.69	13.600	3.183	SF
3,200.00	3,199.91	3,201.02	3,200.92	6.97	6.98	-147.12	25.72	32.44	45.70	31.76	13.942	3.278	
3,233.33	3,233.19	3,234.40	3,234.25	7.03	7.04	-146.10	24.07	33.39	46.89	32.84	14.058	3.336	
3,300.00	3,299.73	3,301.06	3,300.76	7.14	7.15	-143.59	20.16	35.65	49.43	35.14	14.291	3.459	
3,400.00	3,399.54	3,400.93	3,400.39	7.32	7.33	-140.08	14.13	39.14	53.38	38.73	14.649	3.644	
3,500.00	3,499.36	3,500.81	3,500.02	7.50	7.52	-137.06	8.10	42.62	57.50	42.48	15.014	3.830	
3,600.00	3,599.17	3,600.68	3,599.65	7.68	7.71	-134.44	2.06	46.10	61.75	46.36	15.387	4.013	
3,700.00	3,698.98	3,700.55	3,699.28	7.87	7.90	-132.17	-3.97	49.59	66.12	50.35	15.767	4.193	
3,800.00	3,798.80	3,800.42	3,798.91	8.07	8.10	-130.19	-10.00	53.07	70.58	54.42	16.154	4.369	
3,900.00	3,898.61	3,900.30	3,898.54	8.26	8.30	-128.44	-16.04	56.55	75.11	58.56	16.548	4.539	
4,000.00	3,998.43	4,000.17	3,998.17	8.46	8.51	-126.89	-22.07	60.04	79.70	62.76	16.947	4.703	
4,100.00	4,098.24	4,100.04	4,097.79	8.66	8.72	-125.51	-28.10	63.52	84.35	67.00	17.353	4.861	
4,200.00	4,198.05	4,200.09	4,197.42	8.87	8.93	-124.27	-34.14	67.00	89.04	71.28	17.763	5.013	
4,300.00	4,297.87	4,300.21	4,297.05	9.07	9.14	-123.16	-40.17	70.49	93.77	75.59	18.179	5.158	
4,400.00	4,397.68	4,400.34	4,396.68	9.28	9.36	-122.16	-46.20	73.97	98.53	79.93	18.599	5.297	
4,500.00	4,497.49	4,500.47	4,496.31	9.50	9.57	-121.25	-52.24	77.45	103.32	84.29	19.024	5.431	
4,600.00	4,597.31	4,600.60	4,595.94	9.71	9.79	-120.42	-58.27	80.94	108.13	88.67	19.453	5.558	
4,700.00	4,697.12	4,699.28	4,695.57	9.92	10.01	-119.66	-64.30	84.42	112.96	93.08	19.882	5.681	
4,800.00	4,796.93	4,800.85	4,795.20	10.14	10.24	-118.96	-70.34	87.90	117.81	97.49	20.320	5.797	
4,900.00	4,896.75	4,900.98	4,894.83	10.36	10.46	-118.32	-76.37	91.39	122.67	101.91	20.759	5.909	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
5,000.00	4,996.56	5,001.11	4,994.46	10.58	10.69	-117.73	-82.40	94.87	127.55	106.35	21.201	6.016	
5,100.00	5,096.37	5,101.23	5,094.09	10.80	10.92	-117.18	-88.44	98.35	132.44	110.80	21.646	6.119	
5,200.00	5,196.19	5,201.36	5,193.72	11.02	11.15	-116.67	-94.47	101.84	137.35	115.25	22.093	6.217	
5,300.00	5,296.00	5,301.49	5,293.35	11.25	11.38	-116.19	-100.50	105.32	142.26	119.72	22.543	6.311	
5,400.00	5,395.81	5,401.62	5,392.97	11.47	11.61	-115.75	-106.54	108.80	147.18	124.19	22.996	6.401	
5,500.00	5,495.63	5,501.74	5,492.60	11.70	11.85	-115.33	-112.57	112.29	152.11	128.66	23.450	6.487	
5,600.00	5,595.44	5,601.87	5,592.23	11.93	12.08	-114.95	-118.60	115.77	157.05	133.15	23.907	6.569	
5,700.00	5,695.25	5,702.00	5,691.86	12.16	12.32	-114.58	-124.64	119.25	162.00	137.63	24.365	6.649	
5,800.00	5,795.07	5,802.13	5,791.49	12.39	12.55	-114.24	-130.67	122.74	166.95	142.12	24.825	6.725	
5,900.00	5,894.88	5,902.25	5,891.12	12.62	12.79	-113.92	-136.70	126.22	171.91	146.62	25.288	6.798	
6,000.00	5,994.69	6,002.38	5,990.75	12.85	13.03	-113.61	-142.74	129.70	176.87	151.12	25.751	6.868	
6,100.00	6,094.51	6,102.51	6,090.38	13.08	13.27	-113.32	-148.77	133.19	181.83	155.62	26.217	6.936	
6,200.00	6,194.32	6,202.64	6,190.01	13.31	13.51	-113.05	-154.80	136.67	186.81	160.12	26.683	7.001	
6,300.00	6,294.14	6,302.76	6,289.64	13.55	13.75	-112.79	-160.84	140.15	191.78	164.63	27.152	7.063	
6,400.00	6,393.95	6,402.89	6,389.27	13.78	13.99	-112.54	-166.87	143.64	196.76	169.14	27.621	7.124	
6,500.00	6,493.76	6,503.02	6,488.90	14.02	14.24	-112.31	-172.90	147.12	201.74	173.65	28.092	7.181	
6,600.00	6,593.58	6,603.15	6,588.53	14.25	14.48	-112.09	-178.94	150.60	206.73	178.16	28.564	7.237	
6,700.00	6,693.39	6,703.27	6,688.15	14.49	14.72	-111.88	-184.97	154.09	211.72	182.68	29.037	7.291	
6,800.00	6,793.20	6,803.40	6,787.78	14.73	14.97	-111.67	-191.00	157.57	216.71	187.20	29.511	7.343	
6,900.00	6,893.02	6,903.53	6,887.41	14.96	15.21	-111.48	-197.04	161.05	221.70	191.71	29.986	7.393	
7,000.00	6,992.83	7,003.66	6,987.04	15.20	15.46	-111.30	-203.07	164.54	226.70	196.23	30.463	7.442	
7,100.00	7,092.64	7,103.78	7,086.67	15.44	15.70	-111.12	-209.10	168.02	231.69	200.75	30.940	7.489	
7,200.00	7,192.46	7,203.91	7,186.30	15.68	15.95	-110.95	-215.14	171.50	236.69	205.28	31.418	7.534	
7,300.00	7,292.27	7,304.04	7,285.93	15.92	16.20	-110.79	-221.17	174.99	241.70	209.80	31.897	7.577	
7,357.84	7,350.00	7,353.73	7,343.55	16.06	16.32	-110.70	-224.66	177.00	244.59	212.44	32.154	7.607	
7,400.00	7,392.10	7,404.16	7,385.56	16.16	16.44	-110.61	-227.20	178.47	246.62	214.24	32.375	7.618	
7,500.00	7,492.03	7,504.30	7,485.19	16.38	16.69	-110.00	-233.24	181.95	250.79	217.95	32.842	7.636	
7,591.17	7,583.19	7,586.70	7,575.96	16.57	16.89	85.82	-238.73	185.13	253.88	220.65	33.225	7.641	
7,600.00	7,592.02	7,604.49	7,584.74	16.59	16.94	85.95	-239.27	185.43	254.15	220.86	33.285	7.636	
7,700.00	7,692.02	7,695.26	7,684.26	16.78	17.16	87.34	-245.29	188.91	257.28	223.59	33.691	7.637	
7,800.00	7,792.02	7,796.17	7,784.93	16.97	17.41	88.69	-251.25	192.35	260.49	226.37	34.121	7.634	
7,900.00	7,892.02	7,899.51	7,888.15	17.17	17.65	89.62	-255.47	194.79	262.79	228.24	34.551	7.606	
8,000.00	7,992.02	8,003.04	7,991.66	17.36	17.88	90.01	-257.26	195.82	263.79	228.82	34.970	7.543	
8,100.00	8,092.02	8,103.90	8,092.52	17.56	18.07	90.02	-257.33	195.86	263.82	228.46	35.360	7.461	
8,200.00	8,192.02	8,203.90	8,192.52	17.75	18.26	90.02	-257.33	195.86	263.82	228.08	35.748	7.380	
8,300.00	8,292.02	8,303.90	8,292.52	17.95	18.45	90.02	-257.33	195.86	263.82	227.69	36.138	7.300	
8,400.00	8,392.02	8,403.90	8,392.52	18.15	18.64	90.02	-257.33	195.86	263.82	227.30	36.529	7.222	
8,500.00	8,492.02	8,503.90	8,492.52	18.35	18.84	90.02	-257.33	195.86	263.82	226.90	36.922	7.145	
8,600.00	8,592.02	8,603.90	8,592.52	18.55	19.03	90.02	-257.33	195.86	263.82	226.51	37.316	7.070	
8,700.00	8,692.02	8,703.90	8,692.52	18.75	19.22	90.02	-257.33	195.86	263.82	226.11	37.711	6.996	
8,800.00	8,792.02	8,803.90	8,792.52	18.95	19.42	90.02	-257.33	195.86	263.82	225.72	38.107	6.923	
8,900.00	8,892.02	8,903.90	8,892.52	19.15	19.61	90.02	-257.33	195.86	263.82	225.32	38.505	6.852	
9,000.00	8,992.02	9,003.90	8,992.52	19.35	19.81	90.02	-257.33	195.86	263.82	224.92	38.903	6.782	
9,100.00	9,092.02	9,103.90	9,092.52	19.55	20.00	90.02	-257.33	195.86	263.82	224.52	39.303	6.713	
9,200.00	9,192.02	9,203.90	9,192.52	19.75	20.20	90.02	-257.33	195.86	263.82	224.12	39.703	6.645	
9,300.00	9,292.02	9,303.90	9,292.52	19.95	20.40	90.02	-257.33	195.86	263.82	223.72	40.105	6.578	
9,400.00	9,392.02	9,403.90	9,392.52	20.16	20.60	90.02	-257.33	195.86	263.82	223.32	40.508	6.513	
9,500.00	9,492.02	9,503.90	9,492.52	20.36	20.80	90.02	-257.33	195.86	263.82	222.91	40.912	6.449	
9,600.00	9,592.02	9,603.90	9,592.52	20.56	20.99	90.02	-257.33	195.86	263.82	222.51	41.316	6.385	
9,700.00	9,692.02	9,703.90	9,692.52	20.77	21.19	90.02	-257.33	195.86	263.82	222.10	41.722	6.323	
9,800.00	9,792.02	9,803.90	9,792.52	20.97	21.39	90.02	-257.33	195.86	263.82	221.70	42.129	6.262	
9,900.00	9,892.02	9,903.90	9,892.52	21.18	21.60	90.02	-257.33	195.86	263.82	221.29	42.536	6.202	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,992.02	10,003.90	9,992.52	21.38	21.80	90.02	-257.33	195.86	263.82	220.88	42.944	6.143	
10,100.00	10,092.02	10,103.90	10,092.52	21.59	22.00	90.02	-257.33	195.86	263.82	220.47	43.353	6.085	
10,200.00	10,192.02	10,203.90	10,192.52	21.80	22.20	90.02	-257.33	195.86	263.82	220.06	43.763	6.029	
10,201.95	10,193.96	10,205.84	10,194.46	21.80	22.20	90.02	-257.33	195.86	263.82	220.05	43.771	6.027	
10,300.00	10,292.02	10,298.79	10,287.25	22.00	22.38	89.22	-253.62	196.41	264.44	220.29	44.155	5.989	
10,400.00	10,392.02	10,386.80	10,373.07	22.21	22.50	85.21	-234.85	199.15	268.75	224.27	44.483	6.042	
10,500.00	10,492.02	10,465.61	10,445.81	22.42	22.58	79.13	-205.08	203.51	280.35	235.66	44.691	6.273	
10,600.00	10,592.02	10,533.07	10,503.43	22.63	22.62	72.59	-170.48	208.57	303.19	258.46	44.731	6.778	
10,700.00	10,692.02	10,589.33	10,547.33	22.83	22.64	66.66	-135.72	213.65	339.33	294.70	44.637	7.602	
10,800.00	10,792.02	10,635.76	10,580.24	23.04	22.66	61.75	-103.34	218.39	388.24	343.74	44.506	8.723	
10,900.00	10,892.02	10,675.00	10,605.47	23.25	22.67	57.72	-73.61	222.73	447.89	403.47	44.425	10.082	
11,000.00	10,992.02	10,705.78	10,623.49	23.46	22.67	54.71	-48.92	226.34	515.93	471.52	44.415	11.616	
11,100.00	11,092.02	10,732.30	10,637.68	23.67	22.67	52.24	-26.77	229.58	590.35	545.86	44.491	13.269	
11,200.00	11,192.02	10,750.00	10,646.46	23.88	22.68	50.67	-11.56	231.81	669.61	624.99	44.621	15.007	
11,300.00	11,292.02	10,775.00	10,657.88	24.09	22.68	48.54	10.45	235.03	752.47	707.64	44.833	16.784	
11,400.00	11,392.02	10,790.00	10,664.16	24.30	22.68	47.33	23.93	237.00	838.17	793.11	45.066	18.599	
11,500.00	11,492.02	10,800.00	10,668.11	24.51	22.68	46.54	33.01	238.33	926.11	880.79	45.327	20.432	
11,600.00	11,592.02	10,816.50	10,674.21	24.72	22.68	45.29	48.18	240.54	1,015.74	970.12	45.624	22.263	
11,700.00	11,692.02	10,825.00	10,677.14	24.93	22.69	44.67	56.08	241.70	1,106.81	1,060.88	45.931	24.097	
11,800.00	11,792.02	10,836.98	10,681.03	25.14	22.69	43.81	67.29	243.34	1,199.00	1,152.75	46.257	25.920	
11,900.00	11,892.02	10,850.00	10,684.94	25.35	22.71	42.91	79.58	245.14	1,292.17	1,245.58	46.597	27.731	
12,000.00	11,992.02	10,850.00	10,684.94	25.56	22.71	42.91	79.58	245.14	1,386.08	1,339.15	46.936	29.531	
12,041.62	12,033.64	10,850.00	10,684.94	25.65	22.71	42.91	79.58	245.14	1,425.42	1,378.34	47.080	30.277	
12,050.00	12,042.02	10,850.00	10,684.94	25.67	22.71	69.20	79.58	245.14	1,433.34	1,386.23	47.109	30.426	
12,075.00	12,066.99	10,850.00	10,684.94	25.72	22.71	61.50	79.58	245.14	1,456.91	1,409.71	47.195	30.870	
12,100.00	12,091.87	10,860.82	10,687.92	25.77	22.73	54.42	89.87	246.64	1,480.15	1,432.87	47.289	31.300	
12,125.00	12,116.59	10,863.11	10,688.52	25.82	22.73	48.68	92.05	246.96	1,503.27	1,455.89	47.376	31.731	
12,150.00	12,141.09	10,865.57	10,689.16	25.86	22.74	43.81	94.41	247.30	1,526.09	1,478.63	47.462	32.154	
12,175.00	12,165.29	10,875.00	10,691.48	25.90	22.76	39.71	103.45	248.63	1,548.63	1,501.08	47.551	32.568	
12,200.00	12,189.13	10,875.00	10,691.48	25.94	22.76	36.26	103.45	248.63	1,570.68	1,523.05	47.632	32.975	
12,225.00	12,212.54	10,875.00	10,691.48	25.97	22.76	33.31	103.45	248.63	1,592.30	1,544.59	47.712	33.373	
12,250.00	12,235.47	10,875.00	10,691.48	26.01	22.76	30.78	103.45	248.63	1,613.47	1,565.68	47.791	33.761	
12,275.00	12,257.83	10,875.00	10,691.48	26.04	22.76	28.59	103.45	248.63	1,634.14	1,586.27	47.867	34.139	
12,300.00	12,279.59	10,875.00	10,691.48	26.07	22.76	26.70	103.45	248.63	1,654.27	1,606.33	47.942	34.506	
12,325.00	12,300.67	10,886.75	10,694.11	26.09	22.79	25.26	114.78	250.28	1,673.64	1,625.62	48.021	34.852	
12,350.00	12,321.02	10,890.23	10,694.84	26.12	22.80	23.89	118.15	250.78	1,692.48	1,644.38	48.093	35.192	
12,375.00	12,340.58	10,900.00	10,696.75	26.15	22.83	22.80	127.63	252.16	1,710.69	1,662.52	48.166	35.516	
12,400.00	12,359.30	10,900.00	10,696.75	26.17	22.83	21.70	127.63	252.16	1,728.11	1,679.87	48.232	35.829	
12,425.00	12,377.13	10,900.00	10,696.75	26.19	22.83	20.72	127.63	252.16	1,744.83	1,696.53	48.296	36.128	
12,450.00	12,394.02	10,900.00	10,696.75	26.21	22.83	19.86	127.63	252.16	1,760.83	1,712.47	48.358	36.412	
12,458.29	12,399.40	10,900.00	10,696.75	26.22	22.83	19.59	127.63	252.16	1,765.97	1,717.60	48.377	36.505	
12,475.00	12,409.97	10,900.00	10,696.75	26.23	22.83	19.08	127.63	252.16	1,776.09	1,727.67	48.417	36.683	
12,500.00	12,425.11	10,912.85	10,698.96	26.24	22.88	18.58	140.15	253.99	1,790.37	1,741.89	48.483	36.928	
12,525.00	12,439.42	10,925.00	10,700.73	26.26	22.92	18.11	152.05	255.73	1,804.01	1,755.46	48.546	37.161	
12,550.00	12,452.85	10,925.00	10,700.73	26.31	22.92	17.54	152.05	255.73	1,816.65	1,768.05	48.601	37.379	
12,575.00	12,465.37	10,925.00	10,700.73	26.38	22.92	17.03	152.05	255.73	1,828.46	1,779.81	48.656	37.580	
12,600.00	12,476.94	10,925.00	10,700.73	26.45	22.92	16.59	152.05	255.73	1,839.44	1,790.73	48.708	37.764	
12,625.00	12,487.53	10,934.66	10,701.92	26.52	22.95	16.30	161.53	257.12	1,849.43	1,800.67	48.765	37.925	
12,650.00	12,497.12	10,939.32	10,702.43	26.60	22.97	16.01	166.11	257.79	1,858.53	1,809.72	48.818	38.071	
12,675.00	12,505.67	10,950.00	10,703.42	26.68	23.01	15.81	176.64	259.33	1,866.74	1,817.87	48.873	38.196	
12,700.00	12,513.16	10,950.00	10,703.42	26.76	23.01	15.56	176.64	259.33	1,873.90	1,824.98	48.922	38.304	
12,725.00	12,519.58	10,950.00	10,703.42	26.85	23.01	15.36	176.64	259.33	1,880.16	1,831.19	48.970	38.394	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
12,750.00	12,524.90	10,950.00	10,703.42	26.94	23.01	15.20	176.64	259.33	1,885.51	1,836.49	49.017	38.466	
12,775.00	12,529.11	10,963.68	10,704.34	27.04	23.06	15.17	190.14	261.30	1,889.69	1,840.62	49.071	38.509	
12,800.00	12,532.20	10,975.00	10,704.80	27.14	23.10	15.15	201.33	262.94	1,893.03	1,843.90	49.124	38.536	
12,825.00	12,534.16	10,975.00	10,704.80	27.24	23.10	15.10	201.33	262.94	1,895.27	1,846.10	49.170	38.545	
12,850.00	12,534.98	10,975.00	10,704.80	27.34	23.10	15.09	201.33	262.94	1,896.58	1,847.36	49.216	38.536	
12,858.01	12,535.00	10,975.00	10,704.80	27.37	23.10	15.10	201.33	262.94	1,896.80	1,847.57	49.231	38.529	
12,900.00	12,534.82	10,991.01	10,705.00	27.55	23.17	15.17	217.17	265.26	1,897.92	1,848.60	49.321	38.481	
13,000.00	12,534.38	11,100.20	10,704.52	28.06	23.70	15.59	325.49	278.99	1,901.50	1,851.88	49.616	38.324	
13,100.00	12,533.94	11,221.84	10,703.99	28.67	24.45	15.92	446.67	289.42	1,904.04	1,854.05	49.990	38.088	
13,200.00	12,533.50	11,344.22	10,703.46	29.39	25.37	16.10	568.92	294.72	1,905.44	1,855.01	50.430	37.784	
13,300.00	12,533.06	11,459.70	10,702.95	30.20	26.36	16.14	684.40	295.10	1,905.71	1,854.79	50.920	37.426	
13,400.00	12,532.62	11,559.70	10,702.52	31.10	27.33	16.14	784.39	294.37	1,905.71	1,854.26	51.452	37.038	
13,500.00	12,532.18	11,659.70	10,702.08	32.07	28.37	16.14	884.39	293.63	1,905.71	1,853.67	52.037	36.622	
13,600.00	12,531.74	11,759.70	10,701.64	33.13	29.50	16.14	984.39	292.90	1,905.71	1,853.03	52.673	36.180	
13,700.00	12,531.30	11,859.70	10,701.21	34.25	30.69	16.14	1,084.38	292.17	1,905.70	1,852.35	53.359	35.715	
13,800.00	12,530.86	11,959.70	10,700.77	35.43	31.95	16.14	1,184.38	291.44	1,905.70	1,851.61	54.093	35.230	
13,900.00	12,530.42	12,059.70	10,700.33	36.67	33.26	16.14	1,284.38	290.71	1,905.70	1,850.83	54.873	34.730	
14,000.00	12,529.98	12,159.70	10,699.90	37.96	34.62	16.14	1,384.37	289.98	1,905.70	1,850.00	55.696	34.216	
14,100.00	12,529.54	12,259.70	10,699.46	39.29	36.02	16.14	1,484.37	289.25	1,905.70	1,849.14	56.562	33.692	
14,200.00	12,529.10	12,359.70	10,699.03	40.66	37.47	16.14	1,584.36	288.51	1,905.70	1,848.23	57.467	33.162	
14,300.00	12,528.66	12,459.70	10,698.59	42.07	38.94	16.14	1,684.36	287.78	1,905.69	1,847.28	58.410	32.626	
14,400.00	12,528.22	12,559.70	10,698.15	43.52	40.45	16.14	1,784.36	287.05	1,905.69	1,846.30	59.390	32.088	
14,500.00	12,527.78	12,659.70	10,697.72	44.99	41.99	16.14	1,884.35	286.32	1,905.69	1,845.29	60.404	31.549	
14,600.00	12,527.34	12,759.70	10,697.28	46.49	43.55	16.14	1,984.35	285.59	1,905.69	1,844.24	61.451	31.012	
14,700.00	12,526.90	12,859.70	10,696.84	48.01	45.13	16.14	2,084.35	284.86	1,905.69	1,843.16	62.528	30.477	
14,800.00	12,526.46	12,959.70	10,696.41	49.56	46.73	16.14	2,184.34	284.13	1,905.69	1,842.05	63.636	29.947	
14,900.00	12,526.02	13,059.70	10,695.97	51.13	48.35	16.14	2,284.34	283.39	1,905.68	1,840.91	64.771	29.422	
15,000.00	12,525.58	13,159.70	10,695.54	52.71	49.98	16.14	2,384.34	282.66	1,905.68	1,839.75	65.932	28.904	
15,100.00	12,525.14	13,259.70	10,695.10	54.31	51.63	16.14	2,484.33	281.93	1,905.68	1,838.56	67.119	28.393	
15,200.00	12,524.70	13,359.70	10,694.66	55.93	53.30	16.14	2,584.33	281.20	1,905.68	1,837.35	68.329	27.890	
15,300.00	12,524.26	13,459.70	10,694.23	57.56	54.97	16.14	2,684.32	280.47	1,905.68	1,836.12	69.562	27.395	
15,400.00	12,523.82	13,559.70	10,693.79	59.21	56.66	16.14	2,784.32	279.74	1,905.68	1,834.86	70.817	26.910	
15,500.00	12,523.38	13,659.70	10,693.35	60.86	58.35	16.14	2,884.32	279.01	1,905.67	1,833.58	72.092	26.434	
15,600.00	12,522.95	13,759.70	10,692.92	62.53	60.06	16.14	2,984.31	278.27	1,905.67	1,832.29	73.385	25.968	
15,700.00	12,522.51	13,859.70	10,692.48	64.21	61.77	16.14	3,084.31	277.54	1,905.67	1,830.97	74.698	25.512	
15,800.00	12,522.07	13,959.70	10,692.05	65.90	63.49	16.14	3,184.31	276.81	1,905.67	1,829.64	76.027	25.066	
15,900.00	12,521.63	14,059.70	10,691.61	67.59	65.22	16.14	3,284.30	276.08	1,905.67	1,828.30	77.373	24.630	
16,000.00	12,521.19	14,159.70	10,691.17	69.29	66.95	16.14	3,384.30	275.35	1,905.67	1,826.93	78.734	24.204	
16,100.00	12,520.75	14,259.70	10,690.74	71.00	68.69	16.14	3,484.30	274.62	1,905.66	1,825.55	80.110	23.788	
16,200.00	12,520.31	14,359.70	10,690.30	72.72	70.44	16.14	3,584.29	273.89	1,905.66	1,824.16	81.501	23.382	
16,300.00	12,519.87	14,459.70	10,689.86	74.45	72.19	16.14	3,684.29	273.15	1,905.66	1,822.76	82.904	22.986	
16,400.00	12,519.43	14,559.70	10,689.43	76.18	73.95	16.14	3,784.28	272.42	1,905.66	1,821.34	84.320	22.600	
16,500.00	12,518.99	14,659.70	10,688.99	77.91	75.71	16.14	3,884.28	271.69	1,905.66	1,819.91	85.748	22.224	
16,600.00	12,518.55	14,759.70	10,688.55	79.65	77.47	16.14	3,984.28	270.96	1,905.66	1,818.47	87.188	21.857	
16,700.00	12,518.11	14,859.70	10,688.12	81.40	79.24	16.14	4,084.27	270.23	1,905.65	1,817.02	88.639	21.499	
16,800.00	12,517.67	14,959.70	10,687.68	83.15	81.02	16.14	4,184.27	269.50	1,905.65	1,815.55	90.100	21.150	
16,900.00	12,517.23	15,059.70	10,687.25	84.90	82.79	16.14	4,284.27	268.77	1,905.65	1,814.08	91.571	20.811	
17,000.00	12,516.79	15,159.70	10,686.81	86.66	84.57	16.14	4,384.26	268.03	1,905.65	1,812.60	93.051	20.480	
17,100.00	12,516.35	15,259.70	10,686.37	88.42	86.35	16.14	4,484.26	267.30	1,905.65	1,811.11	94.541	20.157	
17,200.00	12,515.91	15,359.70	10,685.94	90.19	88.14	16.14	4,584.26	266.57	1,905.65	1,809.61	96.039	19.843	
17,300.00	12,515.47	15,459.70	10,685.50	91.96	89.93	16.15	4,684.25	265.84	1,905.64	1,808.10	97.545	19.536	
17,406.74	12,515.00	15,566.44	10,685.04	93.85	91.84	16.15	4,790.99	265.06	1,905.64	1,806.48	99.161	19.218	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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	0.50	0.50	0.00	0.00	-0.38	30.00	-0.20	30.00				
100.00	100.00	100.50	100.50	0.08	0.09	-0.38	30.00	-0.20	30.00	29.83	.170	176.788	
200.00	200.00	200.50	200.50	0.31	0.31	-0.38	30.00	-0.20	30.00	29.38	.619	48.448	
300.00	300.00	300.50	300.50	0.53	0.53	-0.38	30.00	-0.20	30.00	28.93	1.069	28.070	
400.00	400.00	400.50	400.50	0.76	0.76	-0.38	30.00	-0.20	30.00	28.48	1.518	19.759	
500.00	500.00	500.50	500.50	0.98	0.98	-0.38	30.00	-0.20	30.00	28.03	1.968	15.246	
600.00	600.00	600.50	600.50	1.21	1.21	-0.38	30.00	-0.20	30.00	27.58	2.417	12.411	
700.00	700.00	700.50	700.50	1.43	1.43	-0.38	30.00	-0.20	30.00	27.13	2.867	10.465	
800.00	800.00	800.50	800.50	1.66	1.66	-0.38	30.00	-0.20	30.00	26.68	3.316	9.046	
900.00	900.00	900.50	900.50	1.88	1.88	-0.38	30.00	-0.20	30.00	26.23	3.766	7.966	
1,000.00	1,000.00	1,000.50	1,000.50	2.11	2.11	-0.38	30.00	-0.20	30.00	25.79	4.215	7.117	
1,100.00	1,100.00	1,100.50	1,100.50	2.33	2.33	-0.38	30.00	-0.20	30.00	25.34	4.665	6.431	
1,200.00	1,200.00	1,200.50	1,200.50	2.56	2.56	-0.38	30.00	-0.20	30.00	24.89	5.115	5.866	
1,300.00	1,300.00	1,300.50	1,300.50	2.78	2.78	-0.38	30.00	-0.20	30.00	24.44	5.564	5.392	
1,400.00	1,400.00	1,400.50	1,400.50	3.01	3.01	-0.38	30.00	-0.20	30.00	23.99	6.014	4.989	
1,500.00	1,500.00	1,500.50	1,500.50	3.23	3.23	-0.38	30.00	-0.20	30.00	23.54	6.463	4.642	
1,600.00	1,600.00	1,600.50	1,600.50	3.46	3.46	-0.38	30.00	-0.20	30.00	23.09	6.913	4.340	
1,700.00	1,700.00	1,700.50	1,700.50	3.68	3.68	-0.38	30.00	-0.20	30.00	22.64	7.362	4.075	
1,800.00	1,800.00	1,800.50	1,800.50	3.91	3.91	-0.38	30.00	-0.20	30.00	22.19	7.812	3.840	
1,900.00	1,900.00	1,900.50	1,900.50	4.13	4.13	-0.38	30.00	-0.20	30.00	21.74	8.261	3.631	
2,000.00	2,000.00	2,000.50	2,000.50	4.35	4.36	-0.38	30.00	-0.20	30.00	21.29	8.711	3.444	
2,100.00	2,100.00	2,100.50	2,100.50	4.58	4.58	-0.38	30.00	-0.20	30.00	20.84	9.160	3.275	
2,200.00	2,200.00	2,200.50	2,200.50	4.80	4.81	-0.38	30.00	-0.20	30.00	20.39	9.610	3.122	
2,300.00	2,300.00	2,300.50	2,300.50	5.03	5.03	-0.38	30.00	-0.20	30.00	19.94	10.059	2.982	
2,400.00	2,400.00	2,400.50	2,400.50	5.25	5.26	-0.38	30.00	-0.20	30.00	19.49	10.509	2.855	
2,500.00	2,500.00	2,500.50	2,500.50	5.48	5.48	-0.38	30.00	-0.20	30.00	19.04	10.958	2.738	
2,600.00	2,600.00	2,600.50	2,600.50	5.70	5.70	-0.38	30.00	-0.20	30.00	18.59	11.408	2.630	
2,700.00	2,700.00	2,700.50	2,700.50	5.93	5.93	-0.38	30.00	-0.20	30.00	18.14	11.858	2.530	
2,800.00	2,800.00	2,800.50	2,800.50	6.15	6.15	-0.38	30.00	-0.20	30.00	17.69	12.307	2.438	
2,900.00	2,900.00	2,900.50	2,900.50	6.38	6.38	-0.38	30.00	-0.20	30.00	17.24	12.757	2.352	
3,000.00	3,000.00	3,000.50	3,000.50	6.60	6.60	-0.38	30.00	-0.20	30.00	16.79	13.206	2.272	CC, ES, SF
3,100.00	3,099.99	3,100.49	3,100.49	6.80	6.83	165.44	30.00	-0.20	31.27	17.64	13.627	2.294	
3,200.00	3,199.91	3,200.41	3,200.41	6.97	7.05	167.04	30.00	-0.20	35.08	21.06	14.022	2.502	
3,233.33	3,233.19	3,233.69	3,233.69	7.03	7.13	167.69	30.00	-0.20	36.92	22.77	14.155	2.609	
3,300.00	3,299.73	3,300.23	3,300.23	7.14	7.28	168.91	30.00	-0.20	40.91	26.49	14.420	2.837	
3,400.00	3,399.54	3,400.04	3,400.04	7.32	7.50	170.34	30.00	-0.20	46.92	32.10	14.820	3.166	
3,500.00	3,499.36	3,500.14	3,499.86	7.50	7.73	171.45	30.00	-0.20	52.94	37.72	15.224	3.478	
3,600.00	3,599.17	3,600.33	3,599.67	7.68	7.95	172.33	30.00	-0.20	58.99	43.36	15.630	3.774	
3,700.00	3,698.98	3,700.52	3,699.48	7.87	8.18	173.05	30.00	-0.20	65.04	49.00	16.039	4.055	
3,800.00	3,798.80	3,800.70	3,799.30	8.07	8.40	173.64	30.00	-0.20	71.11	54.66	16.450	4.323	
3,900.00	3,898.61	3,900.89	3,899.11	8.26	8.63	174.15	30.00	-0.20	77.18	60.31	16.864	4.577	
4,000.00	3,998.43	3,998.93	3,998.93	8.46	8.85	174.57	30.00	-0.20	83.25	65.98	17.274	4.820	
4,100.00	4,098.24	4,100.90	4,100.89	8.66	9.05	174.62	28.87	-0.91	88.13	70.46	17.666	4.989	
4,200.00	4,198.05	4,203.07	4,202.98	8.87	9.23	174.01	25.42	-3.06	90.54	72.51	18.027	5.022	
4,300.00	4,297.87	4,304.44	4,304.13	9.07	9.41	172.79	19.87	-6.53	90.69	72.30	18.393	4.931	
4,400.00	4,397.68	4,404.41	4,403.86	9.28	9.58	171.45	13.96	-10.22	90.42	71.65	18.770	4.817	
4,500.00	4,497.49	4,504.39	4,503.60	9.50	9.77	170.10	8.05	-13.92	90.20	71.05	19.151	4.710	
4,600.00	4,597.31	4,604.37	4,603.33	9.71	9.95	168.74	2.13	-17.61	90.02	70.49	19.537	4.608	
4,700.00	4,697.12	4,704.35	4,703.06	9.92	10.14	167.38	-3.78	-21.31	89.90	69.98	19.926	4.512	
4,800.00	4,796.93	4,804.32	4,802.80	10.14	10.33	166.02	-9.70	-25.01	89.83	69.51	20.320	4.421	
4,891.20	4,887.96	4,904.50	4,893.75	10.34	10.53	164.78	-15.09	-28.38	89.81	69.11	20.699	4.339	
4,900.00	4,896.75	4,904.30	4,902.53	10.36	10.53	164.66	-15.61	-28.70	89.81	69.09	20.717	4.335	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
5,000.00	4,996.56	5,004.28	5,002.26	10.58	10.73	163.30	-21.53	-32.40	89.84	68.72	21.119	4.254	
5,100.00	5,096.37	5,104.25	5,102.00	10.80	10.93	161.93	-27.44	-36.09	89.92	68.40	21.524	4.178	
5,200.00	5,196.19	5,204.23	5,201.73	11.02	11.13	160.58	-33.35	-39.79	90.05	68.12	21.934	4.106	
5,300.00	5,296.00	5,304.21	5,301.46	11.25	11.33	159.22	-39.27	-43.48	90.23	67.89	22.347	4.038	
5,400.00	5,395.81	5,404.19	5,401.20	11.47	11.54	157.87	-45.18	-47.18	90.47	67.70	22.764	3.974	
5,500.00	5,495.63	5,504.16	5,500.93	11.70	11.75	156.53	-51.10	-50.88	90.75	67.56	23.185	3.914	
5,600.00	5,595.44	5,604.14	5,600.66	11.93	11.96	155.20	-57.01	-54.57	91.08	67.47	23.610	3.858	
5,700.00	5,695.25	5,704.12	5,700.40	12.16	12.18	153.88	-62.93	-58.27	91.46	67.42	24.038	3.805	
5,800.00	5,795.07	5,804.09	5,800.13	12.39	12.39	152.57	-68.84	-61.96	91.89	67.42	24.469	3.755	
5,900.00	5,894.88	5,904.07	5,899.87	12.62	12.61	151.28	-74.75	-65.66	92.36	67.46	24.905	3.709	
6,000.00	5,994.69	6,004.05	5,999.60	12.85	12.83	150.00	-80.67	-69.35	92.88	67.54	25.343	3.665	
6,100.00	6,094.51	6,104.03	6,099.33	13.08	13.05	148.73	-86.58	-73.05	93.45	67.67	25.786	3.624	
6,200.00	6,194.32	6,204.00	6,199.07	13.31	13.27	147.48	-92.50	-76.74	94.07	67.84	26.231	3.586	
6,300.00	6,294.14	6,303.98	6,298.80	13.55	13.49	146.24	-98.41	-80.44	94.72	68.04	26.679	3.550	
6,400.00	6,393.95	6,403.96	6,398.53	13.78	13.72	145.03	-104.33	-84.14	95.43	68.29	27.131	3.517	
6,500.00	6,493.76	6,503.93	6,498.27	14.02	13.94	143.83	-110.24	-87.83	96.17	68.58	27.586	3.486	
6,600.00	6,593.58	6,603.91	6,598.00	14.25	14.17	142.65	-116.15	-91.53	96.95	68.91	28.043	3.457	
6,700.00	6,693.39	6,703.89	6,697.73	14.49	14.40	141.49	-122.07	-95.22	97.78	69.28	28.504	3.430	
6,800.00	6,793.20	6,803.87	6,797.47	14.73	14.62	140.35	-127.98	-98.92	98.64	69.68	28.967	3.405	
6,900.00	6,893.02	6,903.84	6,897.20	14.96	14.85	139.23	-133.90	-102.61	99.55	70.12	29.432	3.382	
7,000.00	6,992.83	7,003.82	6,996.94	15.20	15.09	138.13	-139.81	-106.31	100.49	70.59	29.900	3.361	
7,100.00	7,092.64	7,103.80	7,096.67	15.44	15.32	137.05	-145.73	-110.01	101.47	71.10	30.370	3.341	
7,200.00	7,192.46	7,203.77	7,196.40	15.68	15.55	135.99	-151.64	-113.70	102.48	71.63	30.843	3.323	
7,300.00	7,292.27	7,303.75	7,296.14	15.92	15.78	134.96	-157.56	-117.40	103.52	72.21	31.317	3.306	
7,357.84	7,350.00	7,361.58	7,353.82	16.06	15.92	134.37	-160.98	-119.53	104.14	72.55	31.593	3.296	
7,400.00	7,392.10	7,403.73	7,395.87	16.16	16.02	133.85	-163.47	-121.09	104.44	72.65	31.795	3.285	
7,500.00	7,492.03	7,503.66	7,495.56	16.38	16.25	131.88	-169.38	-124.79	103.93	71.65	32.282	3.219	
7,591.17	7,583.19	7,594.67	7,586.35	16.57	16.47	-36.13	-174.77	-128.15	102.12	69.39	32.730	3.120	
7,600.00	7,592.02	7,603.48	7,595.13	16.59	16.49	-36.45	-175.29	-128.48	101.89	69.12	32.773	3.109	
7,700.00	7,692.02	7,703.23	7,694.65	16.78	16.73	-40.18	-181.19	-132.16	99.54	66.27	33.263	2.992	
7,800.00	7,792.02	7,802.99	7,794.16	16.97	16.96	-44.07	-187.09	-135.85	97.62	63.87	33.751	2.892	
7,900.00	7,892.02	7,902.75	7,893.67	17.17	17.20	-48.10	-192.99	-139.54	96.18	61.94	34.235	2.809	
8,000.00	7,992.02	8,002.50	7,993.19	17.36	17.44	-52.23	-198.89	-143.23	95.22	60.51	34.711	2.743	
8,100.00	8,092.02	8,102.26	8,092.70	17.56	17.68	-56.42	-204.79	-146.91	94.77	59.60	35.179	2.694	
8,137.64	8,129.66	8,139.81	8,130.16	17.63	17.77	-58.00	-207.01	-148.30	94.74	59.39	35.352	2.680	
8,200.00	8,192.02	8,202.02	8,192.21	17.75	17.92	-60.62	-210.69	-150.60	94.84	59.20	35.635	2.661	
8,300.00	8,292.02	8,301.77	8,291.73	17.95	18.16	-64.80	-216.59	-154.29	95.41	59.33	36.079	2.645	
8,400.00	8,392.02	8,401.53	8,391.24	18.15	18.40	-68.91	-222.50	-157.98	96.49	59.98	36.510	2.643	
8,500.00	8,492.02	8,501.29	8,490.75	18.35	18.64	-72.90	-228.40	-161.66	98.05	61.12	36.929	2.655	
8,600.00	8,592.02	8,601.04	8,590.27	18.55	18.88	-76.76	-234.30	-165.35	100.08	62.74	37.337	2.680	
8,700.00	8,692.02	8,700.80	8,689.78	18.75	19.12	-80.44	-240.20	-169.04	102.54	64.80	37.736	2.717	
8,800.00	8,792.02	8,800.55	8,789.29	18.95	19.37	-83.94	-246.10	-172.73	105.40	67.28	38.127	2.765	
8,900.00	8,892.02	8,901.55	8,890.11	19.15	19.61	-86.79	-251.17	-175.90	108.13	69.61	38.522	2.807	
9,000.00	8,992.02	9,002.93	8,991.43	19.35	19.83	-88.32	-254.00	-177.66	109.76	70.83	38.923	2.820	
9,100.00	9,092.02	9,104.02	9,092.52	19.55	20.04	-88.65	-254.63	-178.05	110.13	70.80	39.325	2.800	
9,200.00	9,192.02	9,204.02	9,192.52	19.75	20.23	-88.65	-254.63	-178.05	110.13	70.40	39.726	2.772	
9,300.00	9,292.02	9,304.02	9,292.52	19.95	20.43	-88.65	-254.63	-178.05	110.13	70.00	40.127	2.744	
9,400.00	9,392.02	9,404.02	9,392.52	20.16	20.63	-88.65	-254.63	-178.05	110.13	69.60	40.530	2.717	
9,500.00	9,492.02	9,504.02	9,492.52	20.36	20.83	-88.65	-254.63	-178.05	110.13	69.19	40.933	2.690	
9,600.00	9,592.02	9,604.02	9,592.52	20.56	21.02	-88.65	-254.63	-178.05	110.13	68.79	41.338	2.664	
9,700.00	9,692.02	9,704.02	9,692.52	20.77	21.22	-88.65	-254.63	-178.05	110.13	68.38	41.743	2.638	
9,800.00	9,792.02	9,804.02	9,792.52	20.97	21.42	-88.65	-254.63	-178.05	110.13	67.98	42.150	2.613	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
9,900.00	9,892.02	9,904.02	9,892.52	21.18	21.62	-88.65	-254.63	-178.05	110.13	67.57	42.557	2.588	
10,000.00	9,992.02	10,004.02	9,992.52	21.38	21.82	-88.65	-254.63	-178.05	110.13	67.16	42.965	2.563	
10,100.00	10,092.02	10,104.02	10,092.52	21.59	22.03	-88.65	-254.63	-178.05	110.13	66.75	43.374	2.539	
10,200.00	10,192.02	10,204.02	10,192.52	21.80	22.23	-88.65	-254.63	-178.05	110.13	66.34	43.783	2.515	
10,203.85	10,195.87	10,207.87	10,196.37	21.80	22.23	-88.65	-254.63	-178.05	110.13	66.33	43.799	2.514	
10,300.00	10,292.02	10,300.10	10,288.43	22.00	22.41	-86.71	-250.83	-178.95	111.25	67.05	44.199	2.517	
10,400.00	10,392.02	10,389.70	10,375.71	22.21	22.54	-77.54	-231.69	-183.49	119.50	74.94	44.564	2.682	
10,500.00	10,492.02	10,469.62	10,449.26	22.42	22.62	-65.57	-201.50	-190.64	141.52	96.89	44.627	3.171	
10,600.00	10,592.02	10,537.68	10,507.09	22.63	22.67	-55.34	-166.67	-198.89	180.67	136.27	44.401	4.069	
10,700.00	10,692.02	10,594.18	10,550.82	22.83	22.70	-48.00	-131.93	-207.13	234.82	190.68	44.147	5.319	
10,800.00	10,792.02	10,640.61	10,583.41	23.04	22.72	-42.99	-99.77	-214.75	300.10	256.10	44.005	6.820	
10,900.00	10,892.02	10,675.00	10,605.40	23.25	22.73	-39.85	-74.05	-220.84	373.31	329.36	43.957	8.493	
11,000.00	10,992.02	10,710.29	10,625.92	23.46	22.74	-37.07	-46.12	-227.46	452.10	408.04	44.066	10.260	
11,100.00	11,092.02	10,736.58	10,639.80	23.67	22.74	-35.27	-24.40	-232.60	535.04	490.82	44.220	12.099	
11,200.00	11,192.02	10,758.70	10,650.51	23.88	22.75	-33.90	-5.57	-237.07	621.04	576.61	44.427	13.979	
11,300.00	11,292.02	10,775.00	10,657.83	24.09	22.75	-32.98	8.60	-240.43	709.39	664.73	44.667	15.882	
11,400.00	11,392.02	10,800.00	10,668.07	24.30	22.75	-31.68	30.79	-245.68	799.60	754.64	44.964	17.783	
11,500.00	11,492.02	10,807.57	10,670.93	24.51	22.75	-31.31	37.61	-247.30	891.12	845.87	45.245	19.695	
11,600.00	11,592.02	10,825.00	10,677.10	24.72	22.76	-30.51	53.47	-251.06	983.89	938.32	45.568	21.592	
11,700.00	11,692.02	10,825.00	10,677.10	24.93	22.76	-30.51	53.47	-251.06	1,077.55	1,031.68	45.879	23.487	
11,800.00	11,792.02	10,839.91	10,681.90	25.14	22.77	-29.87	67.20	-254.31	1,171.94	1,125.71	46.224	25.353	
11,900.00	11,892.02	10,850.00	10,684.90	25.35	22.80	-29.46	76.58	-256.53	1,267.01	1,220.44	46.571	27.206	
12,000.00	11,992.02	10,850.00	10,684.90	25.56	22.80	-29.46	76.58	-256.53	1,362.66	1,315.74	46.917	29.044	
12,041.62	12,033.64	10,858.81	10,687.35	25.65	22.83	-29.12	84.81	-258.48	1,402.54	1,355.47	47.072	29.795	
12,050.00	12,042.02	10,859.40	10,687.51	25.67	22.83	-0.04	85.37	-258.61	1,410.56	1,363.46	47.102	29.947	
12,075.00	12,066.99	10,861.33	10,688.03	25.72	22.83	0.02	87.18	-259.04	1,434.27	1,387.08	47.189	30.394	
12,100.00	12,091.87	10,863.50	10,688.60	25.77	22.84	0.08	89.22	-259.53	1,457.56	1,410.29	47.275	30.832	
12,125.00	12,116.59	10,865.91	10,689.22	25.82	22.85	0.13	91.49	-260.06	1,480.41	1,433.05	47.360	31.259	
12,150.00	12,141.09	10,875.00	10,691.45	25.86	22.89	0.30	100.06	-262.09	1,502.81	1,455.36	47.448	31.673	
12,175.00	12,165.29	10,875.00	10,691.45	25.90	22.89	0.28	100.06	-262.09	1,524.57	1,477.04	47.527	32.078	
12,200.00	12,189.13	10,875.00	10,691.45	25.94	22.89	0.25	100.06	-262.09	1,545.76	1,498.16	47.604	32.471	
12,225.00	12,212.54	10,875.00	10,691.45	25.97	22.89	0.24	100.06	-262.09	1,566.36	1,518.69	47.680	32.852	
12,250.00	12,235.47	10,875.00	10,691.45	26.01	22.89	0.22	100.06	-262.09	1,586.34	1,538.58	47.753	33.219	
12,275.00	12,257.83	10,884.58	10,693.62	26.04	22.92	0.34	109.13	-264.24	1,605.53	1,557.70	47.831	33.567	
12,300.00	12,279.59	10,888.28	10,694.41	26.07	22.94	0.37	112.65	-265.08	1,624.04	1,576.14	47.902	33.904	
12,325.00	12,300.67	10,900.00	10,696.73	26.09	22.98	0.50	123.83	-267.73	1,641.88	1,593.91	47.975	34.224	
12,350.00	12,321.02	10,900.00	10,696.73	26.12	22.98	0.48	123.83	-267.73	1,658.79	1,610.75	48.039	34.530	
12,375.00	12,340.58	10,900.00	10,696.73	26.15	22.98	0.46	123.83	-267.73	1,674.93	1,626.83	48.100	34.822	
12,400.00	12,359.30	10,900.00	10,696.73	26.17	22.98	0.44	123.83	-267.73	1,690.27	1,642.11	48.159	35.097	
12,425.00	12,377.13	10,900.00	10,696.73	26.19	22.98	0.42	123.83	-267.73	1,704.81	1,656.59	48.216	35.358	
12,450.00	12,394.02	10,913.17	10,698.99	26.21	23.04	0.54	136.46	-270.72	1,718.28	1,670.00	48.277	35.592	
12,458.29	12,399.40	10,914.66	10,699.22	26.22	23.05	0.55	137.89	-271.06	1,722.58	1,674.29	48.294	35.669	
12,475.00	12,409.97	10,925.00	10,700.72	26.23	23.09	0.35	147.84	-273.42	1,731.08	1,682.74	48.334	35.815	
12,500.00	12,425.11	10,925.00	10,700.72	26.24	23.09	-0.06	147.84	-273.42	1,743.06	1,694.68	48.387	36.024	
12,525.00	12,439.42	10,925.00	10,700.72	26.26	23.09	-0.39	147.84	-273.42	1,754.41	1,705.97	48.438	36.220	
12,550.00	12,452.85	10,925.00	10,700.72	26.31	23.09	-0.67	147.84	-273.42	1,765.11	1,716.62	48.488	36.403	
12,575.00	12,465.37	10,936.61	10,702.13	26.38	23.14	-0.86	159.06	-276.07	1,774.95	1,726.41	48.541	36.566	
12,600.00	12,476.94	10,950.00	10,703.41	26.45	23.20	-1.02	172.02	-279.15	1,784.20	1,735.61	48.593	36.717	
12,625.00	12,487.53	10,950.00	10,703.41	26.52	23.20	-1.19	172.02	-279.15	1,792.51	1,743.87	48.640	36.853	
12,650.00	12,497.12	10,950.00	10,703.41	26.60	23.20	-1.33	172.02	-279.15	1,800.11	1,751.42	48.687	36.973	
12,675.00	12,505.67	10,950.00	10,703.41	26.68	23.20	-1.44	172.02	-279.15	1,806.97	1,758.24	48.733	37.079	
12,700.00	12,513.16	10,961.57	10,704.21	26.76	23.26	-1.54	183.26	-281.81	1,812.92	1,764.14	48.781	37.164	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
12,725.00	12,519.58	10,975.00	10,704.80	26.85	23.33	-1.64	196.31	-284.90	1,818.20	1,769.37	48.830	37.236	
12,750.00	12,524.90	10,975.00	10,704.80	26.94	23.33	-1.69	196.31	-284.90	1,822.49	1,773.61	48.875	37.289	
12,775.00	12,529.11	10,975.00	10,704.80	27.04	23.33	-1.72	196.31	-284.90	1,826.01	1,777.09	48.920	37.326	
12,800.00	12,532.20	10,981.94	10,704.95	27.14	23.36	-1.77	203.06	-286.50	1,828.70	1,779.73	48.967	37.346	
12,825.00	12,534.16	10,991.13	10,705.00	27.24	23.41	-1.82	212.00	-288.62	1,830.58	1,781.56	49.014	37.348	
12,850.00	12,534.98	10,995.83	10,704.98	27.34	23.43	-1.84	216.57	-289.70	1,831.56	1,782.50	49.061	37.332	
12,858.01	12,535.00	11,003.82	10,704.95	27.37	23.48	-1.89	224.36	-291.52	1,831.68	1,782.60	49.077	37.322	
12,900.00	12,534.82	11,045.84	10,704.76	27.55	23.72	-2.17	265.36	-300.72	1,832.00	1,782.84	49.168	37.260	
13,000.00	12,534.38	11,146.94	10,704.32	28.06	24.38	-2.76	364.51	-320.40	1,832.83	1,783.42	49.411	37.093	
13,100.00	12,533.94	11,249.28	10,703.87	28.67	25.15	-3.24	465.53	-336.75	1,833.64	1,783.94	49.701	36.893	
13,200.00	12,533.50	11,352.62	10,703.42	29.39	26.04	-3.62	568.07	-349.58	1,834.35	1,784.31	50.036	36.660	
13,300.00	12,533.06	11,456.71	10,702.96	30.20	27.02	-3.88	671.75	-358.76	1,834.88	1,784.46	50.415	36.396	
13,400.00	12,532.62	11,561.28	10,702.50	31.10	28.08	-4.03	776.17	-364.18	1,835.18	1,784.35	50.834	36.101	
13,500.00	12,532.18	11,664.70	10,702.05	32.07	29.18	-4.06	879.57	-365.93	1,835.25	1,783.96	51.290	35.782	
13,600.00	12,531.74	11,764.70	10,701.62	33.13	30.33	-4.06	979.56	-366.67	1,835.24	1,783.46	51.787	35.438	
13,700.00	12,531.30	11,864.70	10,701.18	34.25	31.53	-4.06	1,079.56	-367.41	1,835.24	1,782.92	52.321	35.077	
13,800.00	12,530.86	11,964.70	10,700.75	35.43	32.80	-4.06	1,179.56	-368.15	1,835.24	1,782.34	52.891	34.698	
13,900.00	12,530.42	12,064.70	10,700.31	36.67	34.11	-4.06	1,279.55	-368.89	1,835.23	1,781.74	53.497	34.306	
14,000.00	12,529.98	12,164.70	10,699.87	37.96	35.48	-4.06	1,379.55	-369.63	1,835.23	1,781.09	54.137	33.900	
14,100.00	12,529.54	12,264.70	10,699.44	39.29	36.88	-4.06	1,479.54	-370.37	1,835.22	1,780.41	54.809	33.484	
14,200.00	12,529.10	12,364.70	10,699.00	40.66	38.33	-4.06	1,579.54	-371.11	1,835.22	1,779.71	55.514	33.059	
14,300.00	12,528.66	12,464.70	10,698.57	42.07	39.80	-4.06	1,679.54	-371.85	1,835.22	1,778.97	56.249	32.627	
14,400.00	12,528.22	12,564.70	10,698.13	43.52	41.31	-4.06	1,779.53	-372.59	1,835.21	1,778.20	57.013	32.189	
14,500.00	12,527.78	12,664.70	10,697.70	44.99	42.84	-4.06	1,879.53	-373.33	1,835.21	1,777.40	57.805	31.748	
14,600.00	12,527.34	12,764.70	10,697.26	46.49	44.40	-4.06	1,979.53	-374.07	1,835.20	1,776.58	58.625	31.304	
14,700.00	12,526.90	12,864.70	10,696.83	48.01	45.98	-4.06	2,079.52	-374.81	1,835.20	1,775.73	59.470	30.859	
14,800.00	12,526.46	12,964.70	10,696.39	49.56	47.58	-4.06	2,179.52	-375.55	1,835.20	1,774.86	60.340	30.414	
14,900.00	12,526.02	13,064.70	10,695.95	51.13	49.20	-4.06	2,279.51	-376.29	1,835.19	1,773.96	61.233	29.971	
15,000.00	12,525.58	13,164.70	10,695.52	52.71	50.83	-4.06	2,379.51	-377.03	1,835.19	1,773.04	62.149	29.529	
15,100.00	12,525.14	13,264.70	10,695.08	54.31	52.48	-4.06	2,479.51	-377.77	1,835.18	1,772.10	63.086	29.090	
15,200.00	12,524.70	13,364.70	10,694.65	55.93	54.14	-4.06	2,579.50	-378.51	1,835.18	1,771.14	64.045	28.655	
15,300.00	12,524.26	13,464.70	10,694.21	57.56	55.81	-4.06	2,679.50	-379.25	1,835.18	1,770.15	65.023	28.224	
15,400.00	12,523.82	13,564.70	10,693.78	59.21	57.49	-4.06	2,779.50	-379.99	1,835.17	1,769.15	66.019	27.797	
15,500.00	12,523.38	13,664.70	10,693.34	60.86	59.19	-4.06	2,879.49	-380.73	1,835.17	1,768.13	67.034	27.377	
15,600.00	12,522.95	13,764.70	10,692.91	62.53	60.89	-4.06	2,979.49	-381.47	1,835.16	1,767.10	68.066	26.962	
15,700.00	12,522.51	13,864.70	10,692.47	64.21	62.60	-4.06	3,079.49	-382.21	1,835.16	1,766.05	69.114	26.552	
15,800.00	12,522.07	13,964.70	10,692.03	65.90	64.32	-4.06	3,179.48	-382.95	1,835.16	1,764.98	70.178	26.150	
15,900.00	12,521.63	14,064.70	10,691.60	67.59	66.04	-4.06	3,279.48	-383.69	1,835.15	1,763.90	71.257	25.754	
16,000.00	12,521.19	14,164.70	10,691.16	69.29	67.77	-4.06	3,379.47	-384.43	1,835.15	1,762.80	72.351	25.365	
16,100.00	12,520.75	14,264.70	10,690.73	71.00	69.51	-4.06	3,479.47	-385.17	1,835.14	1,761.69	73.458	24.982	
16,200.00	12,520.31	14,364.70	10,690.29	72.72	71.26	-4.06	3,579.47	-385.91	1,835.14	1,760.56	74.578	24.607	
16,300.00	12,519.87	14,464.70	10,689.86	74.45	73.01	-4.06	3,679.46	-386.65	1,835.14	1,759.43	75.710	24.239	
16,400.00	12,519.43	14,564.70	10,689.42	76.18	74.76	-4.06	3,779.46	-387.39	1,835.13	1,758.28	76.855	23.878	
16,500.00	12,518.99	14,664.70	10,688.98	77.91	76.52	-4.06	3,879.46	-388.13	1,835.13	1,757.12	78.011	23.524	
16,600.00	12,518.55	14,764.70	10,688.55	79.65	78.28	-4.06	3,979.45	-388.87	1,835.13	1,755.95	79.178	23.177	
16,700.00	12,518.11	14,864.70	10,688.11	81.40	80.05	-4.06	4,079.45	-389.61	1,835.12	1,754.77	80.355	22.838	
16,800.00	12,517.67	14,964.70	10,687.68	83.15	81.82	-4.06	4,179.44	-390.35	1,835.12	1,753.57	81.542	22.505	
16,900.00	12,517.23	15,064.70	10,687.24	84.90	83.59	-4.06	4,279.44	-391.09	1,835.11	1,752.37	82.739	22.180	
17,000.00	12,516.79	15,164.70	10,686.81	86.66	85.37	-4.06	4,379.44	-391.83	1,835.11	1,751.16	83.945	21.861	
17,100.00	12,516.35	15,264.70	10,686.37	88.42	87.15	-4.06	4,479.43	-392.57	1,835.11	1,749.95	85.160	21.549	
17,200.00	12,515.91	15,364.70	10,685.94	90.19	88.93	-4.06	4,579.43	-393.31	1,835.10	1,748.72	86.383	21.244	
17,300.00	12,515.47	15,464.70	10,685.50	91.96	90.72	-4.06	4,679.43	-394.05	1,835.10	1,747.48	87.614	20.945	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,406.74	12,515.00	15,571.44	10,685.04	93.85	92.63	-4.06	4,786.17	-394.84	1,835.09	1,746.16	88.937	20.634	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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	0.60	0.60	0.00	0.00	89.43	0.30	30.10	30.10				
100.00	100.00	100.60	100.60	0.08	0.09	89.43	0.30	30.10	30.10	29.93	.170	177.147	
200.00	200.00	200.60	200.60	0.31	0.31	89.43	0.30	30.10	30.10	29.48	.619	48.593	
300.00	300.00	300.60	300.60	0.53	0.54	89.43	0.30	30.10	30.10	29.03	1.069	28.159	
400.00	400.00	400.60	400.60	0.76	0.76	89.43	0.30	30.10	30.10	28.58	1.519	19.823	
500.00	500.00	500.60	500.60	0.98	0.98	89.43	0.30	30.10	30.10	28.13	1.968	15.295	
600.00	600.00	600.60	600.60	1.21	1.21	89.43	0.30	30.10	30.10	27.68	2.418	12.451	
700.00	700.00	700.60	700.60	1.43	1.43	89.43	0.30	30.10	30.10	27.23	2.867	10.499	
800.00	800.00	800.60	800.60	1.66	1.66	89.43	0.30	30.10	30.10	26.78	3.317	9.076	
900.00	900.00	900.60	900.60	1.88	1.88	89.43	0.30	30.10	30.10	26.34	3.766	7.993	
1,000.00	1,000.00	1,000.60	1,000.60	2.11	2.11	89.43	0.30	30.10	30.10	25.89	4.216	7.140	
1,100.00	1,100.00	1,100.60	1,100.60	2.33	2.33	89.43	0.30	30.10	30.10	25.44	4.665	6.452	
1,200.00	1,200.00	1,200.60	1,200.60	2.56	2.56	89.43	0.30	30.10	30.10	24.99	5.115	5.885	
1,300.00	1,300.00	1,300.60	1,300.60	2.78	2.78	89.43	0.30	30.10	30.10	24.54	5.564	5.410	
1,400.00	1,400.00	1,400.60	1,400.60	3.01	3.01	89.43	0.30	30.10	30.10	24.09	6.014	5.005	
1,500.00	1,500.00	1,500.60	1,500.60	3.23	3.23	89.43	0.30	30.10	30.10	23.64	6.463	4.657	
1,600.00	1,600.00	1,600.60	1,600.60	3.46	3.46	89.43	0.30	30.10	30.10	23.19	6.913	4.354	
1,700.00	1,700.00	1,700.60	1,700.60	3.68	3.68	89.43	0.30	30.10	30.10	22.74	7.362	4.089	
1,800.00	1,800.00	1,800.60	1,800.60	3.91	3.91	89.43	0.30	30.10	30.10	22.29	7.812	3.853	
1,900.00	1,900.00	1,900.60	1,900.60	4.13	4.13	89.43	0.30	30.10	30.10	21.84	8.262	3.644	
2,000.00	2,000.00	2,000.60	2,000.60	4.35	4.36	89.43	0.30	30.10	30.10	21.39	8.711	3.456	
2,100.00	2,100.00	2,100.60	2,100.60	4.58	4.58	89.43	0.30	30.10	30.10	20.94	9.161	3.286	
2,200.00	2,200.00	2,200.60	2,200.60	4.80	4.81	89.43	0.30	30.10	30.10	20.49	9.610	3.132	
2,300.00	2,300.00	2,300.60	2,300.60	5.03	5.03	89.43	0.30	30.10	30.10	20.04	10.060	2.992	
2,400.00	2,400.00	2,400.60	2,400.60	5.25	5.26	89.43	0.30	30.10	30.10	19.59	10.509	2.864	
2,500.00	2,500.00	2,500.60	2,500.60	5.48	5.48	89.43	0.30	30.10	30.10	19.14	10.959	2.747	
2,600.00	2,600.00	2,600.60	2,600.60	5.70	5.70	89.43	0.30	30.10	30.10	18.69	11.408	2.639	
2,700.00	2,700.00	2,700.60	2,700.60	5.93	5.93	89.43	0.30	30.10	30.10	18.24	11.858	2.539	
2,800.00	2,800.00	2,800.60	2,800.60	6.15	6.15	89.43	0.30	30.10	30.10	17.79	12.307	2.446	
2,900.00	2,900.00	2,900.60	2,900.60	6.38	6.38	89.43	0.30	30.10	30.10	17.34	12.757	2.360	
3,000.00	3,000.00	3,000.60	3,000.60	6.60	6.60	89.43	0.30	30.10	30.10	16.90	13.206	2.279	
3,001.88	3,001.88	3,002.48	3,002.48	6.61	6.61	-105.37	0.30	30.10	30.10	16.89	13.214	2.278	CC
3,100.00	3,099.99	3,100.76	3,100.75	6.80	6.80	-105.30	-1.00	29.85	30.18	16.59	13.597	2.220	
3,200.00	3,199.91	3,200.92	3,200.82	6.97	6.97	-105.14	-4.89	29.09	30.43	16.50	13.933	2.184	
3,233.33	3,233.19	3,234.25	3,234.11	7.03	7.03	-105.35	-6.60	28.76	30.58	16.53	14.048	2.177	
3,300.00	3,299.73	3,300.91	3,300.68	7.14	7.14	-106.29	-10.02	28.09	30.97	16.69	14.277	2.169	
3,400.00	3,399.54	3,400.91	3,400.54	7.32	7.32	-107.65	-15.16	27.09	31.56	16.93	14.630	2.157	
3,500.00	3,499.36	3,500.90	3,500.40	7.50	7.50	-108.97	-20.30	26.10	32.16	17.17	14.991	2.145	
3,600.00	3,599.17	3,600.90	3,600.26	7.68	7.68	-110.23	-25.43	25.10	32.79	17.43	15.359	2.135	
3,700.00	3,698.98	3,700.89	3,700.12	7.87	7.87	-111.45	-30.57	24.10	33.42	17.69	15.734	2.124	
3,800.00	3,798.80	3,800.89	3,799.97	8.07	8.06	-112.62	-35.71	23.10	34.08	17.96	16.115	2.115	
3,900.00	3,898.61	3,900.88	3,899.83	8.26	8.25	-113.75	-40.85	22.10	34.74	18.24	16.501	2.106	
4,000.00	3,998.43	4,000.88	3,999.69	8.46	8.45	-114.83	-45.98	21.10	35.42	18.53	16.893	2.097	
4,100.00	4,098.24	4,100.87	4,099.55	8.66	8.65	-115.87	-51.12	20.10	36.12	18.83	17.289	2.089	
4,200.00	4,198.05	4,200.87	4,199.41	8.87	8.85	-116.87	-56.26	19.11	36.82	19.13	17.690	2.081	
4,300.00	4,297.87	4,300.87	4,299.27	9.07	9.05	-117.84	-61.39	18.11	37.53	19.44	18.095	2.074	
4,400.00	4,397.68	4,400.86	4,399.12	9.28	9.26	-118.77	-66.53	17.11	38.26	19.76	18.503	2.068	
4,500.00	4,497.49	4,500.86	4,498.98	9.50	9.46	-119.66	-71.67	16.11	38.99	20.08	18.915	2.062	
4,600.00	4,597.31	4,600.85	4,598.84	9.71	9.67	-120.52	-76.81	15.11	39.74	20.41	19.329	2.056	
4,700.00	4,697.12	4,700.85	4,698.70	9.92	9.88	-121.35	-81.94	14.11	40.49	20.74	19.747	2.050	
4,800.00	4,796.93	4,800.84	4,798.56	10.14	10.10	-122.15	-87.08	13.11	41.25	21.08	20.167	2.045	
4,900.00	4,896.75	4,900.84	4,898.42	10.36	10.31	-122.92	-92.22	12.12	42.02	21.43	20.589	2.041	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
5,000.00	4,996.56	5,000.83	4,998.28	10.58	10.53	-123.66	-97.36	11.12	42.79	21.78	21.014	2.036	
5,100.00	5,096.37	5,100.83	5,098.13	10.80	10.74	-124.37	-102.49	10.12	43.57	22.13	21.441	2.032	
5,200.00	5,196.19	5,200.83	5,197.99	11.02	10.96	-125.06	-107.63	9.12	44.36	22.49	21.869	2.029	
5,300.00	5,296.00	5,300.82	5,297.85	11.25	11.18	-125.73	-112.77	8.12	45.16	22.86	22.299	2.025	
5,400.00	5,395.81	5,400.82	5,397.71	11.47	11.40	-126.37	-117.90	7.12	45.96	23.23	22.731	2.022	
5,500.00	5,495.63	5,500.81	5,497.57	11.70	11.62	-126.99	-123.04	6.12	46.76	23.60	23.165	2.019	
5,600.00	5,595.44	5,600.81	5,597.43	11.93	11.84	-127.59	-128.18	5.13	47.58	23.98	23.600	2.016	
5,700.00	5,695.25	5,700.80	5,697.28	12.16	12.07	-128.17	-133.32	4.13	48.39	24.36	24.036	2.013	
5,800.00	5,795.07	5,800.80	5,797.14	12.39	12.29	-128.73	-138.45	3.13	49.21	24.74	24.473	2.011	
5,900.00	5,894.88	5,900.79	5,897.00	12.62	12.52	-129.27	-143.59	2.13	50.04	25.13	24.911	2.009	
6,000.00	5,994.69	6,000.79	5,996.86	12.85	12.74	-129.79	-148.73	1.13	50.87	25.52	25.351	2.007	
6,100.00	6,094.51	6,100.78	6,096.72	13.08	12.97	-130.30	-153.86	0.13	51.71	25.91	25.791	2.005	
6,200.00	6,194.32	6,200.78	6,196.58	13.31	13.20	-130.79	-159.00	-0.87	52.54	26.31	26.233	2.003	
6,300.00	6,294.14	6,300.78	6,296.43	13.55	13.42	-131.26	-164.14	-1.86	53.39	26.71	26.675	2.001	
6,400.00	6,393.95	6,400.77	6,396.29	13.78	13.65	-131.73	-169.28	-2.86	54.23	27.11	27.118	2.000	
6,500.00	6,493.76	6,500.77	6,496.15	14.02	13.88	-132.17	-174.41	-3.86	55.08	27.52	27.562	1.998	
6,600.00	6,593.58	6,600.76	6,596.01	14.25	14.11	-132.60	-179.55	-4.86	55.93	27.93	28.006	1.997	
6,700.00	6,693.39	6,700.76	6,695.87	14.49	14.34	-133.02	-184.69	-5.86	56.79	28.34	28.451	1.996	
6,800.00	6,793.20	6,800.75	6,795.73	14.73	14.57	-133.43	-189.83	-6.86	57.65	28.75	28.897	1.995	
6,900.00	6,893.02	6,900.75	6,895.59	14.96	14.80	-133.83	-194.96	-7.86	58.51	29.16	29.344	1.994	
7,000.00	6,992.83	7,000.74	6,995.44	15.20	15.03	-134.21	-200.10	-8.85	59.37	29.58	29.791	1.993	
7,100.00	7,092.64	7,100.74	7,095.30	15.44	15.27	-134.58	-205.24	-9.85	60.24	30.00	30.238	1.992	
7,200.00	7,192.46	7,200.74	7,195.16	15.68	15.50	-134.95	-210.37	-10.85	61.11	30.42	30.687	1.991	
7,300.00	7,292.27	7,300.73	7,295.02	15.92	15.73	-135.30	-215.51	-11.85	61.98	30.84	31.135	1.991	
7,357.84	7,350.00	7,358.57	7,352.78	16.06	15.87	-135.50	-218.48	-12.43	62.48	31.09	31.395	1.990	
7,400.00	7,392.10	7,400.73	7,394.88	16.16	15.97	-135.49	-220.65	-12.85	62.68	31.10	31.586	1.985	
7,500.00	7,492.03	7,500.71	7,494.73	16.38	16.20	-134.26	-225.79	-13.85	61.85	29.79	32.059	1.929	
7,591.17	7,583.19	7,591.81	7,585.70	16.57	16.41	63.31	-230.47	-14.76	59.58	27.07	32.509	1.833	
7,600.00	7,592.02	7,600.62	7,594.50	16.59	16.43	63.66	-230.92	-14.84	59.30	26.75	32.554	1.822	
7,700.00	7,692.02	7,700.49	7,694.23	16.78	16.67	67.89	-236.05	-15.84	56.28	23.22	33.060	1.702	
7,800.00	7,792.02	7,800.35	7,793.95	16.97	16.90	72.58	-241.18	-16.84	53.59	20.02	33.572	1.596	
7,900.00	7,892.02	7,900.21	7,893.68	17.17	17.14	77.72	-246.31	-17.84	51.31	17.22	34.086	1.505	
8,000.00	7,992.02	8,000.08	7,993.41	17.36	17.37	83.29	-251.44	-18.83	49.47	14.88	34.596	1.430 Level 3	
8,100.00	8,092.02	8,099.68	8,092.92	17.56	17.60	87.90	-255.45	-19.61	48.38	13.31	35.075	1.379 Level 3	
8,200.00	8,192.02	8,213.97	8,192.62	17.75	17.84	89.64	-256.92	-19.90	48.06	12.54	35.525	1.353 Level 3	
8,300.00	8,292.02	8,300.61	8,292.62	17.95	18.00	89.64	-256.92	-19.90	48.06	12.17	35.889	1.339 Level 3	
8,400.00	8,392.02	8,400.61	8,392.62	18.15	18.20	89.64	-256.92	-19.90	48.06	11.78	36.279	1.325 Level 3	
8,500.00	8,492.02	8,500.61	8,492.62	18.35	18.39	89.64	-256.92	-19.90	48.06	11.39	36.671	1.311 Level 3	
8,600.00	8,592.02	8,600.61	8,592.62	18.55	18.58	89.64	-256.92	-19.90	48.06	11.00	37.065	1.297 Level 3	
8,700.00	8,692.02	8,700.61	8,692.62	18.75	18.78	89.64	-256.92	-19.90	48.06	10.60	37.459	1.283 Level 3	
8,800.00	8,792.02	8,800.61	8,792.62	18.95	18.97	89.64	-256.92	-19.90	48.06	10.21	37.855	1.270 Level 3	
8,900.00	8,892.02	8,900.61	8,892.62	19.15	19.17	89.64	-256.92	-19.90	48.06	9.81	38.252	1.256 Level 3	
9,000.00	8,992.02	9,000.61	8,992.62	19.35	19.37	89.64	-256.92	-19.90	48.06	9.41	38.650	1.244 Level 2	
9,100.00	9,092.02	9,100.61	9,092.62	19.55	19.56	89.64	-256.92	-19.90	48.06	9.01	39.049	1.231 Level 2	
9,200.00	9,192.02	9,200.61	9,192.62	19.75	19.76	89.64	-256.92	-19.90	48.06	8.61	39.450	1.218 Level 2	
9,300.00	9,292.02	9,300.61	9,292.62	19.95	19.96	89.64	-256.92	-19.90	48.06	8.21	39.851	1.206 Level 2	
9,400.00	9,392.02	9,400.61	9,392.62	20.16	20.16	89.64	-256.92	-19.90	48.06	7.81	40.253	1.194 Level 2	
9,500.00	9,492.02	9,500.61	9,492.62	20.36	20.36	89.64	-256.92	-19.90	48.06	7.41	40.657	1.182 Level 2	
9,600.00	9,592.02	9,600.61	9,592.62	20.56	20.56	89.64	-256.92	-19.90	48.06	7.00	41.061	1.171 Level 2	
9,700.00	9,692.02	9,700.61	9,692.62	20.77	20.76	89.64	-256.92	-19.90	48.06	6.60	41.466	1.159 Level 2	
9,800.00	9,792.02	9,800.61	9,792.62	20.97	20.96	89.64	-256.92	-19.90	48.06	6.19	41.873	1.148 Level 2	
9,900.00	9,892.02	9,900.61	9,892.62	21.18	21.16	89.64	-256.92	-19.90	48.06	5.78	42.280	1.137 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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,992.02	10,000.61	9,992.62	21.38	21.36	89.64	-256.92	-19.90	48.06	5.38	42.687	1.126	Level 2
10,100.00	10,092.02	10,100.61	10,092.62	21.59	21.56	89.64	-256.92	-19.90	48.06	4.97	43.096	1.115	Level 2
10,200.00	10,192.02	10,200.61	10,192.62	21.80	21.77	89.64	-256.92	-19.90	48.06	4.56	43.506	1.105	Level 2
10,300.00	10,292.02	10,300.61	10,292.62	22.00	21.97	89.64	-256.92	-19.90	48.06	4.15	43.916	1.094	Level 2
10,400.00	10,392.02	10,400.61	10,392.62	22.21	22.17	89.64	-256.92	-19.90	48.06	3.74	44.327	1.084	Level 2
10,500.00	10,492.02	10,500.61	10,492.62	22.42	22.38	89.64	-256.92	-19.90	48.06	3.32	44.739	1.074	Level 2
10,600.00	10,592.02	10,600.61	10,592.62	22.63	22.58	89.64	-256.92	-19.90	48.06	2.91	45.151	1.064	Level 2
10,700.00	10,692.02	10,700.61	10,692.62	22.83	22.79	89.64	-256.92	-19.90	48.06	2.50	45.565	1.055	Level 2
10,800.00	10,792.02	10,800.61	10,792.62	23.04	22.99	89.64	-256.92	-19.90	48.06	2.08	45.979	1.045	Level 2
10,900.00	10,892.02	10,900.61	10,892.62	23.25	23.20	89.64	-256.92	-19.90	48.06	1.67	46.393	1.036	Level 2
11,000.00	10,992.02	11,000.61	10,992.62	23.46	23.40	89.64	-256.92	-19.90	48.06	1.25	46.808	1.027	Level 2
11,100.00	11,092.02	11,100.61	11,092.62	23.67	23.61	89.64	-256.92	-19.90	48.06	0.84	47.224	1.018	Level 2
11,177.38	11,169.40	11,176.78	11,170.00	23.83	23.76	88.70	-256.13	-19.92	48.06	0.52	47.535	1.011	Level 2
11,200.00	11,192.02	11,199.29	11,192.43	23.88	23.80	86.53	-254.30	-19.96	48.09	0.48	47.607	1.010	Level 2, ES, SF
11,300.00	11,292.02	11,294.94	11,285.93	24.09	23.95	64.85	-234.88	-20.40	52.97	5.27	47.697	1.111	Level 2
11,400.00	11,392.02	11,380.00	11,364.36	24.30	24.04	40.44	-202.28	-21.14	77.52	29.89	47.633	1.627	
11,500.00	11,492.02	11,451.76	11,425.17	24.51	24.10	26.32	-164.31	-22.00	123.67	75.88	47.792	2.588	
11,600.00	11,592.02	11,510.61	11,470.33	24.72	24.14	19.06	-126.65	-22.85	184.49	136.41	48.076	3.837	
11,700.00	11,692.02	11,558.39	11,503.37	24.93	24.18	15.03	-92.18	-23.64	254.98	206.57	48.412	5.267	
11,800.00	11,792.02	11,600.00	11,529.22	25.14	24.22	12.44	-59.59	-24.38	332.16	283.39	48.774	6.810	
11,900.00	11,892.02	11,625.00	11,543.35	25.35	24.25	11.18	-38.98	-24.84	414.10	364.94	49.157	8.424	
12,000.00	11,992.02	11,655.30	11,559.00	25.56	24.29	9.88	-13.04	-25.43	499.45	449.91	49.544	10.081	
12,041.62	12,033.64	11,664.91	11,563.62	25.65	24.31	9.51	-4.61	-25.62	535.81	486.10	49.707	10.779	
12,050.00	12,042.02	11,666.79	11,564.50	25.67	24.31	37.38	-2.95	-25.66	543.14	493.40	49.740	10.920	
12,075.00	12,066.99	11,675.00	11,568.28	25.72	24.32	34.17	4.33	-25.83	564.81	514.98	49.835	11.334	
12,100.00	12,091.87	11,675.00	11,568.28	25.77	24.32	31.53	4.33	-25.83	586.08	536.15	49.936	11.737	
12,125.00	12,116.59	11,684.67	11,572.57	25.82	24.34	29.23	13.00	-26.02	606.88	556.86	50.027	12.131	
12,150.00	12,141.09	11,691.01	11,575.28	25.86	24.35	27.27	18.72	-26.15	627.25	577.13	50.122	12.514	
12,175.00	12,165.29	11,700.00	11,579.01	25.90	24.36	25.63	26.90	-26.34	647.14	596.92	50.214	12.888	
12,200.00	12,189.13	11,700.00	11,579.01	25.94	24.36	24.09	26.90	-26.34	666.51	616.20	50.313	13.247	
12,225.00	12,212.54	11,710.88	11,583.31	25.97	24.39	22.91	36.90	-26.57	685.30	634.90	50.400	13.597	
12,250.00	12,235.47	11,717.76	11,585.90	26.01	24.40	21.83	43.26	-26.71	703.55	653.06	50.490	13.935	
12,275.00	12,257.83	11,725.00	11,588.54	26.04	24.41	20.90	50.00	-26.86	721.22	670.64	50.578	14.260	
12,300.00	12,279.59	11,731.82	11,590.93	26.07	24.43	20.08	56.39	-27.01	738.29	687.62	50.664	14.572	
12,325.00	12,300.67	11,738.98	11,593.34	26.09	24.44	19.37	63.13	-27.16	754.74	703.99	50.749	14.872	
12,350.00	12,321.02	11,750.00	11,596.85	26.12	24.47	18.84	73.57	-27.40	770.57	719.74	50.828	15.160	
12,375.00	12,340.58	11,750.00	11,596.85	26.15	24.47	18.12	73.57	-27.40	785.73	734.81	50.916	15.432	
12,400.00	12,359.30	11,760.90	11,600.08	26.17	24.50	17.74	83.98	-27.63	800.20	749.21	50.991	15.693	
12,425.00	12,377.13	11,775.00	11,603.91	26.19	24.53	17.50	97.55	-27.94	814.08	763.02	51.060	15.944	
12,450.00	12,394.02	11,775.00	11,603.91	26.21	24.53	16.96	97.55	-27.94	827.13	775.99	51.142	16.173	
12,458.29	12,399.40	11,775.00	11,603.91	26.22	24.53	16.79	97.55	-27.94	831.35	780.18	51.168	16.248	
12,475.00	12,409.97	11,783.34	11,605.99	26.23	24.55	16.40	105.62	-28.13	839.56	788.35	51.213	16.394	
12,500.00	12,425.11	11,791.01	11,607.77	26.24	24.58	15.76	113.08	-28.29	851.31	800.03	51.285	16.600	
12,525.00	12,439.42	11,800.00	11,609.71	26.26	24.60	15.22	121.85	-28.49	862.38	811.02	51.355	16.793	
12,550.00	12,452.85	11,800.00	11,609.71	26.31	24.60	14.60	121.85	-28.49	872.80	821.37	51.432	16.970	
12,575.00	12,465.37	11,814.71	11,612.53	26.38	24.64	14.28	136.29	-28.82	882.35	830.86	51.494	17.135	
12,600.00	12,476.94	11,825.00	11,614.23	26.45	24.67	13.94	146.43	-29.05	891.25	839.69	51.559	17.286	
12,625.00	12,487.53	11,825.00	11,614.23	26.52	24.67	13.51	146.43	-29.05	899.43	847.80	51.633	17.420	
12,650.00	12,497.12	11,839.27	11,616.23	26.60	24.72	13.30	160.56	-29.37	906.75	855.06	51.692	17.541	
12,675.00	12,505.67	11,850.00	11,617.46	26.68	24.76	13.08	171.21	-29.61	913.36	861.61	51.755	17.648	
12,700.00	12,513.16	11,850.00	11,617.46	26.76	24.76	12.82	171.21	-29.61	919.23	867.41	51.825	17.737	
12,725.00	12,519.58	11,864.43	11,618.73	26.85	24.81	12.70	185.58	-29.94	924.21	872.33	51.883	17.813	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
12,750.00	12,524.90	11,875.00	11,619.39	26.94	24.84	12.57	196.13	-30.18	928.46	876.51	51.943	17.874	
12,775.00	12,529.11	11,875.00	11,619.39	27.04	24.84	12.44	196.13	-30.18	931.95	879.94	52.011	17.918	
12,800.00	12,532.20	11,889.95	11,619.91	27.14	24.90	12.39	211.07	-30.52	934.52	882.45	52.067	17.948	
12,825.00	12,534.16	11,901.39	11,620.00	27.24	24.94	12.35	222.51	-30.78	936.36	884.23	52.126	17.964	
12,850.00	12,534.98	11,916.88	11,619.93	27.34	25.01	12.33	237.99	-31.09	937.27	885.09	52.181	17.962	
12,858.01	12,535.00	11,924.36	11,619.90	27.37	25.04	12.33	245.47	-31.21	937.32	885.12	52.198	17.957	
12,900.00	12,534.82	11,964.90	11,619.72	27.55	25.22	12.32	286.00	-31.58	937.30	885.02	52.286	17.927	
12,907.43	12,534.79	11,972.32	11,619.69	27.59	25.25	12.32	293.43	-31.64	937.30	885.00	52.303	17.921	
13,000.00	12,534.38	12,064.90	11,619.29	28.06	25.76	12.32	386.00	-32.32	937.30	884.77	52.531	17.843	
13,100.00	12,533.94	12,164.90	11,618.85	28.67	26.41	12.32	485.99	-33.06	937.30	884.47	52.823	17.744	
13,200.00	12,533.50	12,264.90	11,618.41	29.39	27.17	12.32	585.99	-33.81	937.29	884.13	53.165	17.630	
13,300.00	12,533.06	12,364.90	11,617.97	30.20	28.03	12.32	685.99	-34.55	937.29	883.74	53.555	17.502	
13,400.00	12,532.62	12,464.90	11,617.54	31.10	28.98	12.32	785.98	-35.29	937.29	883.30	53.991	17.360	
13,500.00	12,532.18	12,564.90	11,617.10	32.07	30.02	12.32	885.98	-36.03	937.28	882.81	54.474	17.206	
13,600.00	12,531.74	12,664.90	11,616.66	33.13	31.13	12.32	985.98	-36.77	937.28	882.28	55.001	17.041	
13,700.00	12,531.30	12,764.90	11,616.23	34.25	32.31	12.32	1,085.97	-37.51	937.28	881.71	55.571	16.866	
13,800.00	12,530.86	12,864.90	11,615.79	35.43	33.56	12.32	1,185.97	-38.25	937.27	881.09	56.183	16.682	
13,900.00	12,530.42	12,964.90	11,615.35	36.67	34.85	12.32	1,285.97	-38.99	937.27	880.43	56.837	16.491	
14,000.00	12,529.98	13,064.90	11,614.91	37.96	36.19	12.32	1,385.96	-39.73	937.27	879.74	57.529	16.292	
14,100.00	12,529.54	13,164.90	11,614.48	39.29	37.58	12.32	1,485.96	-40.47	937.26	879.01	58.259	16.088	
14,200.00	12,529.10	13,264.90	11,614.04	40.66	39.01	12.32	1,585.95	-41.21	937.26	878.24	59.025	15.879	
14,300.00	12,528.66	13,364.90	11,613.60	42.07	40.47	12.32	1,685.95	-41.95	937.26	877.43	59.827	15.666	
14,400.00	12,528.22	13,464.90	11,613.16	43.52	41.96	12.32	1,785.95	-42.70	937.26	876.59	60.662	15.450	
14,500.00	12,527.78	13,564.90	11,612.73	44.99	43.48	12.32	1,885.94	-43.44	937.25	875.72	61.529	15.233	
14,600.00	12,527.34	13,664.90	11,612.29	46.49	45.02	12.32	1,985.94	-44.18	937.25	874.82	62.427	15.013	
14,700.00	12,526.90	13,764.90	11,611.85	48.01	46.59	12.32	2,085.94	-44.92	937.25	873.89	63.355	14.794	
14,800.00	12,526.46	13,864.90	11,611.42	49.56	48.17	12.32	2,185.93	-45.66	937.24	872.93	64.311	14.574	
14,900.00	12,526.02	13,964.90	11,610.98	51.13	49.78	12.32	2,285.93	-46.40	937.24	871.95	65.294	14.354	
15,000.00	12,525.58	14,064.90	11,610.54	52.71	51.40	12.32	2,385.92	-47.14	937.24	870.93	66.303	14.136	
15,100.00	12,525.14	14,164.90	11,610.10	54.31	53.03	12.32	2,485.92	-47.88	937.23	869.90	67.336	13.919	
15,200.00	12,524.70	14,264.90	11,609.67	55.93	54.68	12.32	2,585.92	-48.62	937.23	868.84	68.393	13.704	
15,300.00	12,524.26	14,364.90	11,609.23	57.56	56.35	12.32	2,685.91	-49.36	937.23	867.75	69.473	13.491	
15,400.00	12,523.82	14,464.90	11,608.79	59.21	58.02	12.32	2,785.91	-50.10	937.22	866.65	70.574	13.280	
15,500.00	12,523.38	14,564.90	11,608.35	60.86	59.70	12.32	2,885.91	-50.84	937.22	865.53	71.695	13.072	
15,600.00	12,522.95	14,664.90	11,607.92	62.53	61.40	12.32	2,985.90	-51.59	937.22	864.38	72.836	12.868	
15,700.00	12,522.51	14,764.90	11,607.48	64.21	63.10	12.32	3,085.90	-52.33	937.21	863.22	73.995	12.666	
15,800.00	12,522.07	14,864.90	11,607.04	65.90	64.81	12.32	3,185.89	-53.07	937.21	862.04	75.172	12.468	
15,900.00	12,521.63	14,964.90	11,606.61	67.59	66.53	12.32	3,285.89	-53.81	937.21	860.84	76.366	12.273	
16,000.00	12,521.19	15,064.90	11,606.17	69.29	68.25	12.32	3,385.89	-54.55	937.20	859.63	77.576	12.081	
16,100.00	12,520.75	15,164.90	11,605.73	71.00	69.98	12.32	3,485.88	-55.29	937.20	858.40	78.802	11.893	
16,200.00	12,520.31	15,264.90	11,605.29	72.72	71.72	12.32	3,585.88	-56.03	937.20	857.16	80.042	11.709	
16,300.00	12,519.87	15,364.90	11,604.86	74.45	73.47	12.32	3,685.88	-56.77	937.20	855.90	81.296	11.528	
16,400.00	12,519.43	15,464.90	11,604.42	76.18	75.21	12.32	3,785.87	-57.51	937.19	854.63	82.563	11.351	
16,500.00	12,518.99	15,564.90	11,603.98	77.91	76.97	12.32	3,885.87	-58.25	937.19	853.35	83.844	11.178	
16,600.00	12,518.55	15,664.90	11,603.55	79.65	78.72	12.32	3,985.87	-58.99	937.19	852.05	85.136	11.008	
16,700.00	12,518.11	15,764.90	11,603.11	81.40	80.49	12.32	4,085.86	-59.73	937.18	850.74	86.440	10.842	
16,800.00	12,517.67	15,864.90	11,602.67	83.15	82.25	12.32	4,185.86	-60.48	937.18	849.42	87.755	10.679	
16,900.00	12,517.23	15,964.90	11,602.23	84.90	84.02	12.32	4,285.85	-61.22	937.18	848.10	89.081	10.520	
17,000.00	12,516.79	16,064.90	11,601.80	86.66	85.79	12.32	4,385.85	-61.96	937.17	846.76	90.417	10.365	
17,100.00	12,516.35	16,164.90	11,601.36	88.42	87.57	12.32	4,485.85	-62.70	937.17	845.41	91.763	10.213	
17,200.00	12,515.91	16,264.90	11,600.92	90.19	89.35	12.32	4,585.84	-63.44	937.17	844.05	93.118	10.064	
17,300.00	12,515.47	16,364.90	11,600.48	91.96	91.13	12.32	4,685.84	-64.18	937.16	842.68	94.482	9.919	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,406.74	12,515.00	16,471.64	11,600.02	93.85	93.03	12.32	4,792.58	-64.97	937.16	841.21	95.947	9.768	

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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	0.70	-0.70	0.00	0.00	-90.38	-0.20	-30.00	30.00				
100.00	100.00	100.70	99.30	0.08	0.09	-90.38	-0.20	-30.00	30.00	29.83	.170	176.321	
200.00	200.00	200.70	199.30	0.31	0.31	-90.38	-0.20	-30.00	30.00	29.38	.620	48.413	
300.00	300.00	300.70	299.30	0.53	0.54	-90.38	-0.20	-30.00	30.00	28.93	1.069	28.059	
400.00	400.00	400.70	399.30	0.76	0.76	-90.38	-0.20	-30.00	30.00	28.48	1.519	19.754	
500.00	500.00	500.70	499.30	0.98	0.98	-90.38	-0.20	-30.00	30.00	28.03	1.968	15.242	
600.00	600.00	600.70	599.30	1.21	1.21	-90.38	-0.20	-30.00	30.00	27.58	2.418	12.408	
700.00	700.00	700.70	699.30	1.43	1.43	-90.38	-0.20	-30.00	30.00	27.13	2.867	10.463	
800.00	800.00	800.70	799.30	1.66	1.66	-90.38	-0.20	-30.00	30.00	26.68	3.317	9.045	
900.00	900.00	900.70	899.30	1.88	1.88	-90.38	-0.20	-30.00	30.00	26.23	3.766	7.965	
1,000.00	1,000.00	1,000.70	999.30	2.11	2.11	-90.38	-0.20	-30.00	30.00	25.78	4.216	7.116	
1,100.00	1,100.00	1,100.70	1,099.30	2.33	2.33	-90.38	-0.20	-30.00	30.00	25.34	4.665	6.430	
1,200.00	1,200.00	1,200.70	1,199.30	2.56	2.56	-90.38	-0.20	-30.00	30.00	24.89	5.115	5.865	
1,300.00	1,300.00	1,300.70	1,299.30	2.78	2.78	-90.38	-0.20	-30.00	30.00	24.44	5.565	5.391	
1,400.00	1,400.00	1,400.70	1,399.30	3.01	3.01	-90.38	-0.20	-30.00	30.00	23.99	6.014	4.988	
1,500.00	1,500.00	1,500.70	1,499.30	3.23	3.23	-90.38	-0.20	-30.00	30.00	23.54	6.464	4.641	
1,600.00	1,600.00	1,600.70	1,599.30	3.46	3.46	-90.38	-0.20	-30.00	30.00	23.09	6.913	4.340	
1,700.00	1,700.00	1,700.70	1,699.30	3.68	3.68	-90.38	-0.20	-30.00	30.00	22.64	7.363	4.075	
1,800.00	1,800.00	1,800.70	1,799.30	3.91	3.91	-90.38	-0.20	-30.00	30.00	22.19	7.812	3.840	
1,900.00	1,900.00	1,900.70	1,899.30	4.13	4.13	-90.38	-0.20	-30.00	30.00	21.74	8.262	3.631	
2,000.00	2,000.00	1,999.30	1,999.30	4.35	4.35	-90.38	-0.20	-30.00	30.00	21.29	8.708	3.445 CC	
2,100.00	2,100.00	2,098.99	2,098.98	4.58	4.55	-92.63	-1.40	-30.46	30.49	21.36	9.128	3.340	
2,200.00	2,200.00	2,198.55	2,198.46	4.80	4.72	-98.95	-5.02	-31.85	32.25	22.73	9.523	3.387	
2,300.00	2,300.00	2,302.17	2,297.53	5.03	4.91	-107.90	-11.03	-34.16	35.94	26.01	9.926	3.621	
2,400.00	2,400.00	2,402.48	2,396.91	5.25	5.09	-116.39	-18.34	-36.96	41.33	31.00	10.330	4.001	
2,500.00	2,500.00	2,497.21	2,496.29	5.48	5.27	-122.81	-25.64	-39.76	47.41	36.68	10.730	4.418	
2,600.00	2,600.00	2,603.10	2,595.68	5.70	5.49	-127.73	-32.94	-42.57	53.95	42.79	11.154	4.837	
2,700.00	2,700.00	2,703.41	2,695.06	5.93	5.69	-131.57	-40.24	-45.37	60.79	49.22	11.571	5.254	
2,800.00	2,800.00	2,803.71	2,794.45	6.15	5.90	-134.62	-47.54	-48.17	67.86	55.87	11.991	5.659	
2,900.00	2,900.00	2,895.98	2,893.83	6.38	6.10	-137.09	-54.85	-50.98	75.08	62.68	12.397	6.056	
3,000.00	3,000.00	3,004.33	2,993.22	6.60	6.34	-139.13	-62.15	-53.78	82.41	69.57	12.838	6.420	
3,100.00	3,099.99	3,104.55	3,092.69	6.80	6.56	24.68	-69.46	-56.59	88.65	75.41	13.235	6.698	
3,200.00	3,199.91	3,204.63	3,192.30	6.97	6.79	24.13	-76.78	-59.40	92.53	78.92	13.609	6.799	
3,233.33	3,233.19	3,228.69	3,225.52	7.03	6.84	24.10	-79.22	-60.33	93.29	79.58	13.716	6.802	
3,300.00	3,299.73	3,304.65	3,291.97	7.14	7.02	24.14	-84.10	-62.21	94.56	80.57	13.989	6.760	
3,400.00	3,399.54	3,404.67	3,391.65	7.32	7.25	24.18	-91.42	-65.02	96.46	82.08	14.374	6.710	
3,500.00	3,499.36	3,504.69	3,491.32	7.50	7.48	24.23	-98.75	-67.83	98.35	83.59	14.764	6.662	
3,600.00	3,599.17	3,604.70	3,590.99	7.68	7.72	24.27	-106.07	-70.64	100.25	85.09	15.159	6.613	
3,700.00	3,698.98	3,704.72	3,690.67	7.87	7.96	24.31	-113.39	-73.45	102.15	86.59	15.558	6.566	
3,800.00	3,798.80	3,804.74	3,790.34	8.07	8.20	24.35	-120.72	-76.26	104.05	88.09	15.960	6.519	
3,900.00	3,898.61	3,904.76	3,890.02	8.26	8.44	24.39	-128.04	-79.07	105.94	89.58	16.366	6.473	
4,000.00	3,998.43	4,004.78	3,989.69	8.46	8.69	24.43	-135.36	-81.88	107.84	91.07	16.775	6.429	
4,100.00	4,098.24	4,095.21	4,089.36	8.66	8.91	24.46	-142.69	-84.70	109.74	92.57	17.166	6.393	
4,200.00	4,198.05	4,204.81	4,189.04	8.87	9.18	24.50	-150.01	-87.51	111.64	94.03	17.603	6.342	
4,300.00	4,297.87	4,304.83	4,288.71	9.07	9.43	24.53	-157.33	-90.32	113.53	95.51	18.020	6.300	
4,400.00	4,397.68	4,395.15	4,388.38	9.28	9.65	24.56	-164.66	-93.13	115.43	97.01	18.419	6.267	
4,500.00	4,497.49	4,495.13	4,488.06	9.50	9.90	24.60	-171.98	-95.94	117.33	98.49	18.842	6.227	
4,600.00	4,597.31	4,604.89	4,587.73	9.71	10.18	24.63	-179.31	-98.75	119.23	99.94	19.288	6.181	
4,700.00	4,697.12	4,695.10	4,687.41	9.92	10.40	24.66	-186.63	-101.56	121.13	101.43	19.693	6.151	
4,800.00	4,796.93	4,804.92	4,787.08	10.14	10.68	24.68	-193.95	-104.37	123.02	102.88	20.144	6.107	
4,900.00	4,896.75	4,904.94	4,886.75	10.36	10.93	24.71	-201.28	-107.19	124.92	104.35	20.574	6.072	
5,000.00	4,996.56	4,995.04	4,986.43	10.58	11.16	24.74	-208.60	-110.00	126.82	105.84	20.984	6.044	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
5,100.00	5,096.37	5,104.98	5,086.10	10.80	11.44	24.76	-215.92	-112.81	128.72	107.28	21.440	6.004	
5,200.00	5,196.19	5,204.99	5,185.77	11.02	11.70	24.79	-223.25	-115.62	130.62	108.74	21.876	5.971	
5,300.00	5,296.00	5,305.01	5,285.45	11.25	11.95	24.81	-230.57	-118.43	132.52	110.20	22.312	5.939	
5,400.00	5,395.81	5,405.03	5,385.12	11.47	12.21	24.84	-237.89	-121.24	134.41	111.66	22.750	5.908	
5,500.00	5,495.63	5,495.12	5,484.96	11.70	12.44	24.86	-245.23	-124.06	136.31	113.14	23.168	5.884	
5,600.00	5,595.44	5,598.62	5,588.25	11.93	12.70	25.09	-251.38	-126.42	136.80	113.18	23.625	5.791	
5,700.00	5,695.25	5,702.07	5,691.63	12.16	12.93	25.71	-254.91	-127.77	134.74	110.66	24.075	5.597	
5,800.00	5,795.07	5,804.82	5,794.37	12.39	13.14	26.76	-255.86	-128.14	130.18	105.68	24.508	5.312	
5,900.00	5,894.88	5,904.63	5,894.18	12.62	13.32	28.02	-255.86	-128.14	124.76	99.82	24.937	5.003	
6,000.00	5,994.69	6,004.45	5,993.99	12.85	13.51	29.40	-255.86	-128.14	119.40	94.03	25.371	4.706	
6,100.00	6,094.51	6,104.26	6,093.81	13.08	13.69	30.90	-255.86	-128.14	114.12	88.31	25.809	4.422	
6,200.00	6,194.32	6,204.07	6,193.62	13.31	13.88	32.55	-255.86	-128.14	108.93	82.67	26.253	4.149	
6,300.00	6,294.14	6,303.89	6,293.44	13.55	14.06	34.36	-255.86	-128.14	103.83	77.13	26.702	3.888	
6,400.00	6,393.95	6,403.70	6,393.25	13.78	14.25	36.36	-255.86	-128.14	98.85	71.69	27.158	3.640	
6,500.00	6,493.76	6,503.51	6,493.06	14.02	14.44	38.56	-255.86	-128.14	94.00	66.37	27.622	3.403	
6,600.00	6,593.58	6,603.33	6,592.88	14.25	14.63	41.00	-255.86	-128.14	89.30	61.21	28.093	3.179	
6,700.00	6,693.39	6,703.14	6,692.69	14.49	14.82	43.71	-255.86	-128.14	84.78	56.21	28.574	2.967	
6,800.00	6,793.20	6,802.95	6,792.50	14.73	15.02	46.71	-255.86	-128.14	80.48	51.41	29.064	2.769	
6,900.00	6,893.02	6,902.77	6,892.32	14.96	15.21	50.04	-255.86	-128.14	76.42	46.85	29.563	2.585	
7,000.00	6,992.83	7,002.58	6,992.13	15.20	15.40	53.73	-255.86	-128.14	72.64	42.57	30.073	2.416	
7,100.00	7,092.64	7,102.39	7,091.94	15.44	15.60	57.80	-255.86	-128.14	69.20	38.61	30.591	2.262	
7,200.00	7,192.46	7,202.21	7,191.76	15.68	15.79	62.28	-255.86	-128.14	66.15	35.03	31.115	2.126	
7,300.00	7,292.27	7,302.02	7,291.57	15.92	15.99	67.15	-255.86	-128.14	63.53	31.89	31.642	2.008	
7,357.84	7,350.00	7,359.75	7,349.30	16.06	16.10	70.14	-255.86	-128.14	62.24	30.30	31.946	1.948	
7,400.00	7,392.10	7,401.85	7,391.40	16.16	16.19	72.18	-255.86	-128.14	61.49	29.32	32.161	1.912	
7,500.00	7,492.03	7,501.78	7,491.33	16.38	16.39	75.50	-255.86	-128.14	60.46	27.82	32.635	1.852	
7,591.17	7,583.19	7,607.06	7,582.49	16.57	16.60	-88.70	-255.86	-128.14	60.19	27.15	33.046	1.821	
7,600.00	7,592.02	7,601.77	7,591.32	16.59	16.58	-88.70	-255.86	-128.14	60.19	27.14	33.053	1.821	
7,700.00	7,692.02	7,701.77	7,691.32	16.78	16.78	-88.70	-255.86	-128.14	60.19	26.75	33.446	1.800	
7,800.00	7,792.02	7,801.77	7,791.32	16.97	16.98	-88.70	-255.86	-128.14	60.19	26.35	33.841	1.779	
7,900.00	7,892.02	7,901.77	7,891.32	17.17	17.19	-88.70	-255.86	-128.14	60.19	25.96	34.237	1.758	
8,000.00	7,992.02	8,001.77	7,991.32	17.36	17.39	-88.70	-255.86	-128.14	60.19	25.56	34.634	1.738	
8,100.00	8,092.02	8,101.77	8,091.32	17.56	17.59	-88.70	-255.86	-128.14	60.19	25.16	35.033	1.718	
8,200.00	8,192.02	8,201.77	8,191.32	17.75	17.79	-88.70	-255.86	-128.14	60.19	24.76	35.433	1.699	
8,300.00	8,292.02	8,301.77	8,291.32	17.95	17.99	-88.70	-255.86	-128.14	60.19	24.36	35.834	1.680	
8,400.00	8,392.02	8,401.77	8,391.32	18.15	18.20	-88.70	-255.86	-128.14	60.19	23.96	36.236	1.661	
8,500.00	8,492.02	8,501.77	8,491.32	18.35	18.40	-88.70	-255.86	-128.14	60.19	23.55	36.639	1.643	
8,600.00	8,592.02	8,601.77	8,591.32	18.55	18.61	-88.70	-255.86	-128.14	60.19	23.15	37.043	1.625	
8,700.00	8,692.02	8,701.77	8,691.32	18.75	18.81	-88.70	-255.86	-128.14	60.19	22.74	37.448	1.607	
8,800.00	8,792.02	8,801.77	8,791.32	18.95	19.02	-88.70	-255.86	-128.14	60.19	22.34	37.855	1.590	
8,900.00	8,892.02	8,901.77	8,891.32	19.15	19.22	-88.70	-255.86	-128.14	60.19	21.93	38.262	1.573	
9,000.00	8,992.02	9,001.77	8,991.32	19.35	19.43	-88.70	-255.86	-128.14	60.19	21.52	38.670	1.557	
9,100.00	9,092.02	9,101.77	9,091.32	19.55	19.64	-88.70	-255.86	-128.14	60.19	21.11	39.079	1.540	
9,200.00	9,192.02	9,201.77	9,191.32	19.75	19.84	-88.70	-255.86	-128.14	60.19	20.70	39.489	1.524	
9,300.00	9,292.02	9,301.77	9,291.32	19.95	20.05	-88.70	-255.86	-128.14	60.19	20.29	39.900	1.509	
9,400.00	9,392.02	9,401.77	9,391.32	20.16	20.26	-88.70	-255.86	-128.14	60.19	19.88	40.312	1.493	Level 3
9,500.00	9,492.02	9,501.77	9,491.32	20.36	20.47	-88.70	-255.86	-128.14	60.19	19.47	40.724	1.478	Level 3
9,600.00	9,592.02	9,601.77	9,591.32	20.56	20.67	-88.70	-255.86	-128.14	60.19	19.06	41.138	1.463	Level 3
9,700.00	9,692.02	9,701.77	9,691.32	20.77	20.88	-88.70	-255.86	-128.14	60.19	18.64	41.552	1.449	Level 3
9,800.00	9,792.02	9,801.77	9,791.32	20.97	21.09	-88.70	-255.86	-128.14	60.19	18.23	41.966	1.434	Level 3
9,900.00	9,892.02	9,901.77	9,891.32	21.18	21.30	-88.70	-255.86	-128.14	60.19	17.81	42.382	1.420	Level 3
10,000.00	9,992.02	10,001.77	9,991.32	21.38	21.51	-88.70	-255.86	-128.14	60.19	17.40	42.798	1.406	Level 3

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

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
10,100.00	10,092.02	10,101.77	10,091.32	21.59	21.72	-88.70	-255.86	-128.14	60.19	16.98	43.215	1.393	Level 3
10,200.00	10,192.02	10,201.77	10,191.32	21.80	21.93	-88.70	-255.86	-128.14	60.19	16.56	43.632	1.380	Level 3
10,300.00	10,292.02	10,301.77	10,291.32	22.00	22.14	-88.70	-255.86	-128.14	60.19	16.14	44.050	1.366	Level 3
10,400.00	10,392.02	10,401.77	10,391.32	22.21	22.35	-88.70	-255.86	-128.14	60.19	15.72	44.469	1.354	Level 3
10,500.00	10,492.02	10,501.77	10,491.32	22.42	22.57	-88.70	-255.86	-128.14	60.19	15.30	44.888	1.341	Level 3
10,600.00	10,592.02	10,601.77	10,591.32	22.63	22.78	-88.70	-255.86	-128.14	60.19	14.88	45.308	1.329	Level 3
10,700.00	10,692.02	10,701.77	10,691.32	22.83	22.99	-88.70	-255.86	-128.14	60.19	14.46	45.729	1.316	Level 3
10,800.00	10,792.02	10,801.77	10,791.32	23.04	23.20	-88.70	-255.86	-128.14	60.19	14.04	46.150	1.304	Level 3
10,900.00	10,892.02	10,901.77	10,891.32	23.25	23.41	-88.70	-255.86	-128.14	60.19	13.62	46.571	1.292	Level 3
11,000.00	10,992.02	11,001.77	10,991.32	23.46	23.63	-88.70	-255.86	-128.14	60.19	13.20	46.993	1.281	Level 3
11,100.00	11,092.02	11,101.77	11,091.32	23.67	23.84	-88.70	-255.86	-128.14	60.19	12.78	47.416	1.269	Level 3
11,200.00	11,192.02	11,201.77	11,191.32	23.88	24.05	-88.70	-255.86	-128.14	60.19	12.35	47.839	1.258	Level 3
11,300.00	11,292.02	11,301.77	11,291.32	24.09	24.26	-88.70	-255.86	-128.14	60.19	11.93	48.262	1.247	Level 2
11,400.00	11,392.02	11,401.77	11,391.32	24.30	24.48	-88.70	-255.86	-128.14	60.19	11.51	48.686	1.236	Level 2
11,500.00	11,492.02	11,501.77	11,491.32	24.51	24.69	-88.70	-255.86	-128.14	60.19	11.08	49.111	1.226	Level 2
11,600.00	11,592.02	11,601.77	11,591.32	24.72	24.90	-88.70	-255.86	-128.14	60.19	10.66	49.536	1.215	Level 2
11,700.00	11,692.02	11,701.77	11,691.32	24.93	25.12	-88.70	-255.86	-128.14	60.19	10.23	49.961	1.205	Level 2
11,800.00	11,792.02	11,801.77	11,791.32	25.14	25.33	-88.70	-255.86	-128.14	60.19	9.81	50.387	1.195	Level 2
11,900.00	11,892.02	11,901.77	11,891.32	25.35	25.55	-88.70	-255.86	-128.14	60.19	9.38	50.813	1.185	Level 2
12,000.00	11,992.02	12,001.77	11,991.32	25.56	25.76	-88.70	-255.86	-128.14	60.19	8.95	51.239	1.175	Level 2
12,041.62	12,033.64	12,043.39	12,032.94	25.65	25.85	-88.70	-255.86	-128.14	60.19	8.78	51.417	1.171	Level 2
12,050.00	12,042.02	12,051.77	12,041.32	25.67	25.87	-59.72	-255.86	-128.14	60.16	8.70	51.452	1.169	Level 2
12,075.00	12,066.99	12,076.74	12,066.29	25.72	25.92	-60.68	-255.86	-128.14	59.61	8.06	51.549	1.156	Level 2
12,100.00	12,091.87	12,101.62	12,091.17	25.77	25.98	-62.84	-255.86	-128.14	58.47	6.84	51.632	1.133	Level 2
12,125.00	12,116.59	12,126.34	12,115.89	25.82	26.03	-66.31	-255.86	-128.14	56.87	5.17	51.697	1.100	Level 2
12,150.00	12,141.09	12,150.84	12,140.39	25.86	26.08	-71.19	-255.86	-128.14	55.03	3.29	51.740	1.064	Level 2
12,175.00	12,165.29	12,175.04	12,164.59	25.90	26.13	-77.58	-255.86	-128.14	53.29	1.54	51.756	1.030	Level 2
12,200.00	12,189.13	12,201.12	12,188.43	25.94	26.19	-85.44	-255.86	-128.14	52.13	0.38	51.749	1.007	Level 2
12,212.95	12,201.32	12,211.07	12,200.62	25.96	26.21	-90.00	-255.86	-128.14	51.95	0.22	51.731	1.004	Level 2, ES, SF
12,225.00	12,212.54	12,222.29	12,211.84	25.97	26.24	-94.46	-255.86	-128.14	52.13	0.41	51.718	1.008	Level 2
12,250.00	12,235.47	12,245.22	12,234.77	26.01	26.28	-104.05	-255.86	-128.14	53.89	2.19	51.703	1.042	Level 2
12,275.00	12,257.83	12,267.59	12,257.13	26.04	26.33	-113.43	-255.86	-128.14	57.87	6.14	51.728	1.119	Level 2
12,300.00	12,279.59	12,290.31	12,279.86	26.07	26.38	-122.17	-255.66	-128.29	64.14	12.34	51.800	1.238	Level 2
12,325.00	12,300.67	12,313.89	12,303.39	26.09	26.43	-129.54	-254.58	-129.11	72.11	20.20	51.907	1.389	Level 3
12,350.00	12,321.02	12,338.09	12,327.45	26.12	26.48	-135.51	-252.52	-130.68	81.29	29.26	52.030	1.562	
12,375.00	12,340.58	12,362.96	12,352.01	26.15	26.53	-140.28	-249.39	-133.06	91.32	39.15	52.161	1.751	
12,400.00	12,359.30	12,388.58	12,377.05	26.17	26.57	-144.09	-245.12	-136.32	101.92	49.63	52.295	1.949	
12,425.00	12,377.13	12,414.99	12,402.54	26.19	26.62	-147.12	-239.59	-140.53	112.92	60.49	52.431	2.154	
12,450.00	12,394.02	12,442.29	12,428.42	26.21	26.67	-149.54	-232.72	-145.77	124.17	71.60	52.571	2.362	
12,458.29	12,399.40	12,451.55	12,437.08	26.22	26.68	-150.22	-230.12	-147.74	127.93	75.31	52.620	2.431	
12,475.00	12,409.97	12,470.56	12,454.67	26.23	26.71	-153.09	-224.37	-152.13	135.57	82.85	52.717	2.572	
12,500.00	12,425.11	12,499.94	12,481.23	26.24	26.76	-156.53	-214.40	-159.72	147.08	94.21	52.863	2.782	
12,525.00	12,439.42	12,530.42	12,507.92	26.26	26.80	-159.04	-202.70	-168.63	158.57	105.55	53.015	2.991	
12,550.00	12,452.85	12,561.97	12,534.51	26.31	26.85	-160.74	-189.19	-178.92	169.95	116.78	53.173	3.196	
12,575.00	12,465.37	12,594.53	12,560.71	26.38	26.89	-161.72	-173.81	-190.64	181.18	127.84	53.338	3.397	
12,600.00	12,476.94	12,628.04	12,586.22	26.45	26.93	-162.04	-156.55	-203.79	192.22	138.71	53.510	3.592	
12,625.00	12,487.53	12,662.39	12,610.74	26.52	26.98	-161.77	-137.42	-218.36	203.08	149.39	53.688	3.783	
12,650.00	12,497.12	12,697.46	12,633.92	26.60	27.02	-160.98	-116.49	-234.31	213.78	159.90	53.871	3.968	
12,675.00	12,505.67	12,733.12	12,655.44	26.68	27.08	-159.71	-93.88	-251.53	224.34	170.29	54.058	4.150	
12,700.00	12,513.16	12,774.44	12,678.22	26.76	27.16	-158.06	-65.63	-271.27	234.59	180.29	54.305	4.320	
12,725.00	12,519.58	12,818.37	12,700.28	26.85	27.28	-156.59	-32.87	-290.45	244.18	189.60	54.580	4.474	
12,750.00	12,524.90	12,865.01	12,721.08	26.94	27.42	-155.32	4.70	-308.60	252.94	198.06	54.881	4.609	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
12,775.00	12,529.11	12,914.37	12,739.92	27.04	27.60	-154.25	47.19	-325.14	260.70	205.50	55.197	4.723	
12,800.00	12,532.20	12,966.33	12,756.03	27.14	27.80	-153.38	94.47	-339.41	267.27	211.76	55.519	4.814	
12,825.00	12,534.16	13,020.64	12,768.57	27.24	28.02	-152.73	146.07	-350.67	272.51	216.68	55.831	4.881	
12,850.00	12,534.98	13,076.86	12,776.76	27.34	28.26	-152.28	201.13	-358.27	276.27	220.15	56.117	4.923	
12,858.01	12,535.00	13,095.19	12,778.35	27.37	28.33	-152.19	219.32	-359.83	277.14	220.94	56.200	4.931	
12,900.00	12,534.82	13,164.61	12,779.91	27.55	28.63	-152.08	288.66	-361.93	278.18	221.72	56.460	4.927	
13,000.00	12,534.38	13,264.61	12,779.47	28.06	29.13	-152.08	388.65	-362.66	278.17	221.36	56.807	4.897	
13,100.00	12,533.94	13,364.61	12,779.03	28.67	29.71	-152.08	488.65	-363.39	278.17	220.93	57.232	4.860	
13,200.00	12,533.50	13,464.61	12,778.58	29.39	30.40	-152.08	588.65	-364.12	278.16	220.43	57.735	4.818	
13,300.00	12,533.06	13,564.61	12,778.14	30.20	31.18	-152.08	688.64	-364.85	278.16	219.84	58.313	4.770	
13,400.00	12,532.62	13,664.61	12,777.70	31.10	32.04	-152.08	788.64	-365.58	278.15	219.18	58.971	4.717	
13,500.00	12,532.18	13,764.61	12,777.26	32.07	32.99	-152.08	888.63	-366.32	278.15	218.46	59.692	4.660	
13,600.00	12,531.74	13,864.61	12,776.82	33.13	34.01	-152.08	988.63	-367.05	278.14	217.66	60.485	4.599	
13,700.00	12,531.30	13,964.61	12,776.38	34.25	35.10	-152.09	1,088.63	-367.78	278.14	216.80	61.344	4.534	
13,800.00	12,530.86	14,064.61	12,775.93	35.43	36.25	-152.09	1,188.62	-368.51	278.14	215.87	62.267	4.467	
13,900.00	12,530.42	14,164.61	12,775.49	36.67	37.45	-152.09	1,288.62	-369.24	278.13	214.88	63.250	4.397	
14,000.00	12,529.98	14,264.61	12,775.05	37.96	38.71	-152.09	1,388.62	-369.98	278.13	213.84	64.291	4.326	
14,100.00	12,529.54	14,364.61	12,774.61	39.29	40.01	-152.09	1,488.61	-370.71	278.12	212.73	65.387	4.253	
14,200.00	12,529.10	14,464.61	12,774.17	40.66	41.36	-152.09	1,588.61	-371.44	278.12	211.58	66.536	4.180	
14,300.00	12,528.66	14,564.61	12,773.72	42.07	42.74	-152.09	1,688.61	-372.17	278.11	210.38	67.734	4.106	
14,400.00	12,528.22	14,664.61	12,773.28	43.52	44.16	-152.09	1,788.60	-372.90	278.11	209.13	68.979	4.032	
14,500.00	12,527.78	14,764.61	12,772.84	44.99	45.61	-152.09	1,888.60	-373.63	278.10	207.83	70.269	3.958	
14,600.00	12,527.34	14,864.61	12,772.40	46.49	47.09	-152.09	1,988.59	-374.37	278.10	206.50	71.601	3.884	
14,700.00	12,526.90	14,964.61	12,771.96	48.01	48.59	-152.09	2,088.59	-375.10	278.09	205.12	72.973	3.811	
14,800.00	12,526.46	15,064.61	12,771.51	49.56	50.12	-152.09	2,188.59	-375.83	278.09	203.71	74.383	3.739	
14,900.00	12,526.02	15,164.61	12,771.07	51.13	51.66	-152.10	2,288.58	-376.56	278.09	202.26	75.828	3.667	
15,000.00	12,525.58	15,264.61	12,770.63	52.71	53.23	-152.10	2,388.58	-377.29	278.08	200.77	77.306	3.597	
15,100.00	12,525.14	15,364.61	12,770.19	54.31	54.82	-152.10	2,488.58	-378.03	278.08	199.26	78.817	3.528	
15,200.00	12,524.70	15,464.61	12,769.75	55.93	56.42	-152.10	2,588.57	-378.76	278.07	197.72	80.357	3.460	
15,300.00	12,524.26	15,564.61	12,769.31	57.56	58.03	-152.10	2,688.57	-379.49	278.07	196.14	81.925	3.394	
15,400.00	12,523.82	15,664.61	12,768.86	59.21	59.66	-152.10	2,788.57	-380.22	278.06	194.54	83.520	3.329	
15,500.00	12,523.38	15,764.61	12,768.42	60.86	61.30	-152.10	2,888.56	-380.95	278.06	192.92	85.139	3.266	
15,600.00	12,522.95	15,864.61	12,767.98	62.53	62.96	-152.10	2,988.56	-381.69	278.05	191.27	86.783	3.204	
15,700.00	12,522.51	15,964.61	12,767.54	64.21	64.62	-152.10	3,088.55	-382.42	278.05	189.60	88.449	3.144	
15,800.00	12,522.07	16,064.61	12,767.10	65.90	66.30	-152.10	3,188.55	-383.15	278.04	187.91	90.136	3.085	
15,900.00	12,521.63	16,164.61	12,766.65	67.59	67.98	-152.10	3,288.55	-383.88	278.04	186.20	91.843	3.027	
16,000.00	12,521.19	16,264.61	12,766.21	69.29	69.67	-152.10	3,388.54	-384.61	278.04	184.47	93.568	2.971	
16,100.00	12,520.75	16,364.61	12,765.77	71.00	71.37	-152.11	3,488.54	-385.34	278.03	182.72	95.312	2.917	
16,200.00	12,520.31	16,464.61	12,765.33	72.72	73.08	-152.11	3,588.54	-386.08	278.03	180.95	97.072	2.864	
16,300.00	12,519.87	16,564.61	12,764.89	74.45	74.79	-152.11	3,688.53	-386.81	278.02	179.17	98.849	2.813	
16,400.00	12,519.43	16,664.61	12,764.44	76.18	76.51	-152.11	3,788.53	-387.54	278.02	177.38	100.640	2.762	
16,500.00	12,518.99	16,764.61	12,764.00	77.91	78.24	-152.11	3,888.53	-388.27	278.01	175.57	102.446	2.714	
16,600.00	12,518.55	16,864.61	12,763.56	79.65	79.97	-152.11	3,988.52	-389.00	278.01	173.74	104.265	2.666	
16,700.00	12,518.11	16,964.61	12,763.12	81.40	81.71	-152.11	4,088.52	-389.74	278.00	171.91	106.097	2.620	
16,800.00	12,517.67	17,064.61	12,762.68	83.15	83.45	-152.11	4,188.51	-390.47	278.00	170.06	107.941	2.575	
16,900.00	12,517.23	17,164.61	12,762.23	84.90	85.20	-152.11	4,288.51	-391.20	277.99	168.20	109.797	2.532	
17,000.00	12,516.79	17,264.61	12,761.79	86.66	86.95	-152.11	4,388.51	-391.93	277.99	166.33	111.664	2.490	
17,100.00	12,516.35	17,364.61	12,761.35	88.42	88.71	-152.11	4,488.50	-392.66	277.99	164.44	113.541	2.448	
17,200.00	12,515.91	17,464.61	12,760.91	90.19	90.46	-152.11	4,588.50	-393.39	277.98	162.55	115.429	2.408	
17,300.00	12,515.47	17,564.61	12,760.47	91.96	92.23	-152.12	4,688.50	-394.13	277.98	160.65	117.325	2.369	
17,406.74	12,515.00	17,671.36	12,760.00	93.85	94.11	-152.12	4,795.23	-394.91	277.97	158.61	119.359	2.329	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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	1.10	-1.10	0.00	0.00	-90.48	-0.50	-59.90	59.90				
100.00	100.00	101.10	98.90	0.08	0.09	-90.48	-0.50	-59.90	59.90	59.73	.171	350.208	
200.00	200.00	201.10	198.90	0.31	0.31	-90.48	-0.50	-59.90	59.90	59.28	.621	96.526	
300.00	300.00	301.10	298.90	0.53	0.54	-90.48	-0.50	-59.90	59.90	58.83	1.070	55.977	
400.00	400.00	401.10	398.90	0.76	0.76	-90.48	-0.50	-59.90	59.90	58.38	1.520	39.419	
500.00	500.00	501.10	498.90	0.98	0.99	-90.48	-0.50	-59.90	59.90	57.93	1.969	30.420	
600.00	600.00	601.10	598.90	1.21	1.21	-90.48	-0.50	-59.90	59.90	57.48	2.419	24.766	
700.00	700.00	701.10	698.90	1.43	1.44	-90.48	-0.50	-59.90	59.90	57.03	2.868	20.885	
800.00	800.00	801.10	798.90	1.66	1.66	-90.48	-0.50	-59.90	59.90	56.58	3.318	18.055	
900.00	900.00	901.10	898.90	1.88	1.88	-90.48	-0.50	-59.90	59.90	56.13	3.767	15.901	
1,000.00	1,000.00	1,001.10	998.90	2.11	2.11	-90.48	-0.50	-59.90	59.90	55.69	4.217	14.205	
1,100.00	1,100.00	1,101.10	1,098.90	2.33	2.33	-90.48	-0.50	-59.90	59.90	55.24	4.666	12.837	
1,200.00	1,200.00	1,201.10	1,198.90	2.56	2.56	-90.48	-0.50	-59.90	59.90	54.79	5.116	11.709	
1,300.00	1,300.00	1,301.10	1,298.90	2.78	2.78	-90.48	-0.50	-59.90	59.90	54.34	5.565	10.763	
1,400.00	1,400.00	1,401.10	1,398.90	3.01	3.01	-90.48	-0.50	-59.90	59.90	53.89	6.015	9.959	
1,500.00	1,500.00	1,498.90	1,498.90	3.23	3.23	-90.48	-0.50	-59.90	59.90	53.44	6.460	9.273 CC	
1,600.00	1,600.00	1,598.04	1,598.03	3.46	3.43	-91.48	-1.56	-60.58	60.60	53.72	6.880	8.808	
1,700.00	1,700.00	1,697.04	1,696.95	3.68	3.60	-94.37	-4.79	-62.63	62.84	55.56	7.278	8.634	
1,800.00	1,800.00	1,795.78	1,795.48	3.91	3.78	-98.74	-10.15	-66.05	66.91	59.23	7.680	8.713	
1,900.00	1,900.00	1,905.04	1,894.31	4.13	4.00	-103.76	-17.29	-70.60	72.83	64.72	8.109	8.981	
2,000.00	2,000.00	2,005.42	1,993.55	4.35	4.20	-108.11	-24.61	-75.26	79.36	70.84	8.528	9.306	
2,100.00	2,100.00	2,105.80	2,092.79	4.58	4.42	-111.78	-31.93	-79.93	86.29	77.33	8.951	9.639	
2,200.00	2,200.00	2,206.18	2,192.03	4.80	4.64	-114.90	-39.26	-84.59	93.51	84.13	9.378	9.971	
2,300.00	2,300.00	2,306.56	2,291.27	5.03	4.86	-117.56	-46.58	-89.26	100.97	91.16	9.808	10.294	
2,400.00	2,400.00	2,406.94	2,390.51	5.25	5.10	-119.85	-53.90	-93.92	108.61	98.37	10.240	10.607	
2,500.00	2,500.00	2,507.32	2,489.75	5.48	5.33	-121.84	-61.23	-98.59	116.41	105.74	10.674	10.906	
2,600.00	2,600.00	2,592.30	2,588.99	5.70	5.54	-123.58	-68.55	-103.25	124.33	113.25	11.077	11.224	
2,700.00	2,700.00	2,708.08	2,688.23	5.93	5.82	-125.11	-75.87	-107.92	132.35	120.80	11.548	11.461	
2,800.00	2,800.00	2,808.46	2,787.47	6.15	6.06	-126.46	-83.19	-112.58	140.45	128.46	11.987	11.717	
2,900.00	2,900.00	2,908.84	2,886.71	6.38	6.31	-127.67	-90.52	-117.25	148.62	136.19	12.427	11.960	
3,000.00	3,000.00	3,009.22	2,985.95	6.60	6.57	-128.75	-97.84	-121.91	156.85	143.98	12.868	12.189	
3,100.00	3,099.99	3,109.51	3,085.29	6.80	6.82	35.68	-105.17	-126.58	164.07	150.79	13.282	12.353	
3,200.00	3,199.91	3,209.64	3,184.77	6.97	7.07	35.50	-112.51	-131.26	169.18	155.51	13.672	12.374	
3,233.33	3,233.19	3,223.67	3,217.96	7.03	7.11	35.56	-114.96	-132.82	170.41	156.65	13.760	12.384	
3,300.00	3,299.73	3,309.70	3,284.33	7.14	7.33	35.75	-119.86	-135.94	172.63	158.57	14.068	12.271	
3,400.00	3,399.54	3,409.76	3,383.89	7.32	7.59	36.03	-127.20	-140.62	175.97	161.50	14.470	12.162	
3,500.00	3,499.36	3,509.82	3,483.45	7.50	7.85	36.30	-134.55	-145.30	179.32	164.44	14.876	12.054	
3,600.00	3,599.17	3,609.88	3,583.01	7.68	8.11	36.56	-141.89	-149.98	182.67	167.38	15.286	11.950	
3,700.00	3,698.98	3,690.06	3,682.57	7.87	8.32	36.81	-149.24	-154.66	186.02	170.36	15.655	11.882	
3,800.00	3,798.80	3,790.00	3,782.13	8.07	8.58	37.06	-156.59	-159.34	189.37	173.30	16.072	11.783	
3,900.00	3,898.61	3,889.94	3,881.69	8.26	8.84	37.29	-163.93	-164.02	192.73	176.24	16.493	11.686	
4,000.00	3,998.43	3,989.88	3,981.25	8.46	9.11	37.52	-171.28	-168.70	196.10	179.18	16.918	11.591	
4,100.00	4,098.24	4,089.82	4,080.81	8.66	9.37	37.73	-178.63	-173.38	199.46	182.12	17.345	11.500	
4,200.00	4,198.05	4,189.76	4,180.37	8.87	9.64	37.94	-185.97	-178.06	202.83	185.05	17.775	11.411	
4,300.00	4,297.87	4,289.70	4,279.93	9.07	9.91	38.15	-193.32	-182.74	206.20	187.99	18.208	11.325	
4,400.00	4,397.68	4,389.64	4,379.49	9.28	10.17	38.34	-200.66	-187.42	209.57	190.93	18.643	11.241	
4,500.00	4,497.49	4,489.58	4,479.05	9.50	10.44	38.54	-208.01	-192.10	212.95	193.87	19.080	11.161	
4,600.00	4,597.31	4,589.52	4,578.61	9.71	10.71	38.72	-215.36	-196.78	216.32	196.80	19.520	11.082	
4,700.00	4,697.12	4,689.46	4,678.17	9.92	10.98	38.90	-222.70	-201.46	219.70	199.74	19.962	11.006	
4,800.00	4,796.93	4,789.41	4,777.73	10.14	11.25	39.07	-230.05	-206.14	223.09	202.68	20.406	10.932	
4,900.00	4,896.75	4,889.35	4,877.29	10.36	11.52	39.24	-237.40	-210.82	226.47	205.62	20.852	10.861	
5,000.00	4,996.56	4,989.29	4,976.85	10.58	11.78	39.41	-244.74	-215.50	229.86	208.56	21.299	10.792	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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
5,100.00	5,096.37	5,095.01	5,082.29	10.80	12.06	39.70	-251.36	-219.71	232.04	210.27	21.770	10.659	
5,200.00	5,196.19	5,200.94	5,188.10	11.02	12.31	40.27	-255.51	-222.36	231.66	209.43	22.234	10.420	
5,300.00	5,296.00	5,306.72	5,293.85	11.25	12.54	41.12	-257.19	-223.43	228.77	206.08	22.688	10.083	
5,400.00	5,395.81	5,407.58	5,394.71	11.47	12.71	42.15	-257.23	-223.46	224.24	201.13	23.113	9.702	
5,500.00	5,495.63	5,507.39	5,494.53	11.70	12.89	43.22	-257.23	-223.46	219.75	196.21	23.539	9.335	
5,600.00	5,595.44	5,607.21	5,594.34	11.93	13.06	44.33	-257.23	-223.46	215.34	191.37	23.970	8.984	
5,700.00	5,695.25	5,707.02	5,694.15	12.16	13.24	45.49	-257.23	-223.46	211.01	186.61	24.403	8.647	
5,800.00	5,795.07	5,806.83	5,793.97	12.39	13.42	46.69	-257.23	-223.46	206.77	181.93	24.841	8.324	
5,900.00	5,894.88	5,906.65	5,893.78	12.62	13.60	47.95	-257.23	-223.46	202.63	177.35	25.282	8.015	
6,000.00	5,994.69	6,006.46	5,993.59	12.85	13.78	49.26	-257.23	-223.46	198.59	172.86	25.726	7.719	
6,100.00	6,094.51	6,106.28	6,093.41	13.08	13.97	50.62	-257.23	-223.46	194.65	168.48	26.174	7.437	
6,200.00	6,194.32	6,206.09	6,193.22	13.31	14.15	52.03	-257.23	-223.46	190.83	164.21	26.626	7.167	
6,300.00	6,294.14	6,305.90	6,293.04	13.55	14.34	53.50	-257.23	-223.46	187.13	160.05	27.081	6.910	
6,400.00	6,393.95	6,405.72	6,392.85	13.78	14.52	55.03	-257.23	-223.46	183.56	156.03	27.539	6.666	
6,500.00	6,493.76	6,505.53	6,492.66	14.02	14.71	56.62	-257.23	-223.46	180.13	152.13	28.000	6.433	
6,600.00	6,593.58	6,605.34	6,592.48	14.25	14.90	58.27	-257.23	-223.46	176.84	148.38	28.465	6.213	
6,700.00	6,693.39	6,705.16	6,692.29	14.49	15.09	59.98	-257.23	-223.46	173.70	144.77	28.933	6.004	
6,800.00	6,793.20	6,804.97	6,792.10	14.73	15.28	61.75	-257.23	-223.46	170.73	141.32	29.403	5.806	
6,900.00	6,893.02	6,904.78	6,891.92	14.96	15.47	63.59	-257.23	-223.46	167.92	138.04	29.876	5.621	
7,000.00	6,992.83	7,004.60	6,991.73	15.20	15.66	65.48	-257.23	-223.46	165.29	134.94	30.351	5.446	
7,100.00	7,092.64	7,104.41	7,091.54	15.44	15.85	67.43	-257.23	-223.46	162.85	132.02	30.828	5.282	
7,200.00	7,192.46	7,204.22	7,191.36	15.68	16.05	69.44	-257.23	-223.46	160.60	129.29	31.306	5.130	
7,300.00	7,292.27	7,304.04	7,291.17	15.92	16.24	71.50	-257.23	-223.46	158.55	126.77	31.785	4.988	
7,357.84	7,350.00	7,361.77	7,348.90	16.06	16.36	72.72	-257.23	-223.46	157.47	125.41	32.062	4.911	
7,400.00	7,392.10	7,403.86	7,391.00	16.16	16.44	73.52	-257.23	-223.46	156.79	124.53	32.262	4.860	
7,500.00	7,492.03	7,503.79	7,490.93	16.38	16.63	74.81	-257.23	-223.46	155.78	123.07	32.712	4.762	
7,591.17	7,583.19	7,605.04	7,582.09	16.57	16.83	-90.01	-257.23	-223.46	155.50	122.39	33.110	4.696	
7,600.00	7,592.02	7,603.78	7,590.92	16.59	16.83	-90.01	-257.23	-223.46	155.50	122.37	33.124	4.694	
7,700.00	7,692.02	7,703.78	7,690.92	16.78	17.03	-90.01	-257.23	-223.46	155.50	121.98	33.518	4.639	
7,800.00	7,792.02	7,803.78	7,790.92	16.97	17.23	-90.01	-257.23	-223.46	155.50	121.58	33.912	4.585	
7,900.00	7,892.02	7,903.78	7,890.92	17.17	17.43	-90.01	-257.23	-223.46	155.50	121.19	34.308	4.532	
8,000.00	7,992.02	8,003.78	7,990.92	17.36	17.63	-90.01	-257.23	-223.46	155.50	120.79	34.706	4.480	
8,100.00	8,092.02	8,103.78	8,090.92	17.56	17.83	-90.01	-257.23	-223.46	155.50	120.39	35.104	4.430	
8,200.00	8,192.02	8,203.78	8,190.92	17.75	18.03	-90.01	-257.23	-223.46	155.50	119.99	35.504	4.380	
8,300.00	8,292.02	8,303.78	8,290.92	17.95	18.23	-90.01	-257.23	-223.46	155.50	119.59	35.905	4.331	
8,400.00	8,392.02	8,403.78	8,390.92	18.15	18.43	-90.01	-257.23	-223.46	155.50	119.19	36.307	4.283	
8,500.00	8,492.02	8,503.78	8,490.92	18.35	18.64	-90.01	-257.23	-223.46	155.50	118.79	36.710	4.236	
8,600.00	8,592.02	8,603.78	8,590.92	18.55	18.84	-90.01	-257.23	-223.46	155.50	118.38	37.115	4.190	
8,700.00	8,692.02	8,703.78	8,690.92	18.75	19.04	-90.01	-257.23	-223.46	155.50	117.98	37.520	4.144	
8,800.00	8,792.02	8,803.78	8,790.92	18.95	19.25	-90.01	-257.23	-223.46	155.50	117.57	37.926	4.100	
8,900.00	8,892.02	8,903.78	8,890.92	19.15	19.45	-90.01	-257.23	-223.46	155.50	117.16	38.334	4.056	
9,000.00	8,992.02	9,003.78	8,990.92	19.35	19.66	-90.01	-257.23	-223.46	155.50	116.75	38.742	4.014	
9,100.00	9,092.02	9,103.78	9,090.92	19.55	19.86	-90.01	-257.23	-223.46	155.50	116.35	39.151	3.972	
9,200.00	9,192.02	9,203.78	9,190.92	19.75	20.07	-90.01	-257.23	-223.46	155.50	115.94	39.561	3.931	
9,300.00	9,292.02	9,303.78	9,290.92	19.95	20.27	-90.01	-257.23	-223.46	155.50	115.53	39.972	3.890	
9,400.00	9,392.02	9,403.78	9,390.92	20.16	20.48	-90.01	-257.23	-223.46	155.50	115.11	40.384	3.851	
9,500.00	9,492.02	9,503.78	9,490.92	20.36	20.69	-90.01	-257.23	-223.46	155.50	114.70	40.796	3.812	
9,600.00	9,592.02	9,603.78	9,590.92	20.56	20.89	-90.01	-257.23	-223.46	155.50	114.29	41.209	3.773	
9,700.00	9,692.02	9,703.78	9,690.92	20.77	21.10	-90.01	-257.23	-223.46	155.50	113.87	41.623	3.736	
9,800.00	9,792.02	9,803.78	9,790.92	20.97	21.31	-90.01	-257.23	-223.46	155.50	113.46	42.038	3.699	
9,900.00	9,892.02	9,903.78	9,890.92	21.18	21.52	-90.01	-257.23	-223.46	155.50	113.04	42.453	3.663	
10,000.00	9,992.02	10,003.78	9,990.92	21.38	21.73	-90.01	-257.23	-223.46	155.50	112.63	42.870	3.627	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.000 sigma
Reference Wellbore	OH	**Database:**	EDM 5000.14 Single User Db
Reference Design:	Plan #1 - IP	**Offset TVD Reference:**	Offset Datum

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

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	10,092.02	10,103.78	10,090.92	21.59	21.94	-90.01	-257.23	-223.46	155.50	112.21	43.286	3.592	
10,200.00	10,192.02	10,203.78	10,190.92	21.80	22.15	-90.01	-257.23	-223.46	155.50	111.79	43.704	3.558	
10,300.00	10,292.02	10,303.78	10,290.92	22.00	22.36	-90.01	-257.23	-223.46	155.50	111.38	44.122	3.524	
10,400.00	10,392.02	10,403.78	10,390.92	22.21	22.57	-90.01	-257.23	-223.46	155.50	110.96	44.540	3.491	
10,500.00	10,492.02	10,503.78	10,490.92	22.42	22.78	-90.01	-257.23	-223.46	155.50	110.54	44.960	3.459	
10,600.00	10,592.02	10,603.78	10,590.92	22.63	22.99	-90.01	-257.23	-223.46	155.50	110.12	45.380	3.427	
10,700.00	10,692.02	10,703.78	10,690.92	22.83	23.20	-90.01	-257.23	-223.46	155.50	109.70	45.800	3.395	
10,800.00	10,792.02	10,803.78	10,790.92	23.04	23.41	-90.01	-257.23	-223.46	155.50	109.28	46.221	3.364	
10,900.00	10,892.02	10,903.78	10,890.92	23.25	23.62	-90.01	-257.23	-223.46	155.50	108.85	46.643	3.334	
11,000.00	10,992.02	11,003.78	10,990.92	23.46	23.83	-90.01	-257.23	-223.46	155.50	108.43	47.065	3.304	
11,100.00	11,092.02	11,103.78	11,090.92	23.67	24.04	-90.01	-257.23	-223.46	155.50	108.01	47.487	3.275	
11,200.00	11,192.02	11,203.78	11,190.92	23.88	24.25	-90.01	-257.23	-223.46	155.50	107.59	47.910	3.246	
11,300.00	11,292.02	11,303.78	11,290.92	24.09	24.47	-90.01	-257.23	-223.46	155.50	107.16	48.334	3.217	
11,400.00	11,392.02	11,403.78	11,390.92	24.30	24.68	-90.01	-257.23	-223.46	155.50	106.74	48.758	3.189	
11,500.00	11,492.02	11,503.78	11,490.92	24.51	24.89	-90.01	-257.23	-223.46	155.50	106.31	49.182	3.162	
11,600.00	11,592.02	11,603.78	11,590.92	24.72	25.10	-90.01	-257.23	-223.46	155.50	105.89	49.607	3.135	
11,700.00	11,692.02	11,703.78	11,690.92	24.93	25.32	-90.01	-257.23	-223.46	155.50	105.46	50.032	3.108	
11,800.00	11,792.02	11,803.78	11,790.92	25.14	25.53	-90.01	-257.23	-223.46	155.50	105.04	50.458	3.082	
11,900.00	11,892.02	11,903.78	11,890.92	25.35	25.74	-90.01	-257.23	-223.46	155.50	104.61	50.884	3.056	
12,000.00	11,992.02	12,003.78	11,990.92	25.56	25.96	-90.01	-257.23	-223.46	155.50	104.19	51.310	3.031	
12,041.62	12,033.64	12,045.41	12,032.54	25.65	26.05	-90.01	-257.23	-223.46	155.50	104.01	51.488	3.020	
12,050.00	12,042.02	12,053.78	12,040.92	25.67	26.07	-60.98	-257.23	-223.46	155.46	103.94	51.523	3.017	
12,075.00	12,066.99	12,078.76	12,065.89	25.72	26.12	-61.39	-257.23	-223.46	154.93	103.31	51.623	3.001	
12,100.00	12,091.87	12,103.64	12,090.77	25.77	26.17	-62.29	-257.23	-223.46	153.80	102.08	51.715	2.974	
12,125.00	12,116.59	12,128.36	12,115.49	25.82	26.23	-63.70	-257.23	-223.46	152.10	100.31	51.797	2.937	
12,150.00	12,141.09	12,152.86	12,139.99	25.86	26.28	-65.62	-257.23	-223.46	149.93	98.07	51.869	2.891	
12,175.00	12,165.29	12,174.72	12,161.85	25.90	26.32	-67.71	-256.96	-223.62	147.56	95.63	51.927	2.842	
12,200.00	12,189.13	12,196.22	12,183.31	25.94	26.37	-69.89	-255.89	-224.29	145.36	93.38	51.977	2.797	
12,225.00	12,212.54	12,217.93	12,204.90	25.97	26.41	-72.18	-253.97	-225.49	143.39	91.37	52.020	2.756	
12,250.00	12,235.47	12,239.86	12,226.58	26.01	26.46	-74.58	-251.19	-227.22	141.67	89.61	52.058	2.721	
12,275.00	12,257.83	12,262.02	12,248.32	26.04	26.50	-77.08	-247.52	-229.50	140.24	88.15	52.091	2.692	
12,300.00	12,279.59	12,284.44	12,270.08	26.07	26.54	-79.65	-242.95	-232.35	139.14	87.02	52.121	2.669	
12,325.00	12,300.67	12,307.12	12,291.81	26.09	26.58	-82.30	-237.44	-235.78	138.38	86.23	52.151	2.654	
12,350.00	12,321.02	12,330.09	12,313.47	26.12	26.62	-85.00	-230.98	-239.80	138.01	85.82	52.184	2.645	
12,361.26	12,329.93	12,340.53	12,323.19	26.13	26.64	-86.23	-227.75	-241.81	137.97	85.77	52.200	2.643	
12,375.00	12,340.58	12,353.35	12,335.02	26.15	26.66	-87.73	-223.54	-244.43	138.03	85.81	52.221	2.643	
12,400.00	12,359.30	12,376.93	12,356.40	26.17	26.70	-90.47	-215.10	-249.68	138.46	86.19	52.266	2.649	
12,425.00	12,377.13	12,400.84	12,377.55	26.19	26.73	-93.21	-205.64	-255.57	139.31	86.98	52.322	2.662	
12,450.00	12,394.02	12,425.10	12,398.41	26.21	26.77	-95.91	-195.13	-262.11	140.57	88.18	52.390	2.683	
12,458.29	12,399.40	12,433.22	12,405.25	26.22	26.78	-96.80	-191.41	-264.43	141.08	88.66	52.416	2.691	
12,475.00	12,409.97	12,449.74	12,418.93	26.23	26.81	-99.60	-183.55	-269.32	142.41	89.94	52.472	2.714	
12,500.00	12,425.11	12,474.79	12,439.04	26.24	26.84	-103.43	-170.87	-277.21	145.36	92.79	52.570	2.765	
12,525.00	12,439.42	12,500.23	12,458.64	26.26	26.88	-106.77	-157.10	-285.78	149.37	96.69	52.680	2.835	
12,550.00	12,452.85	12,526.02	12,477.58	26.31	26.91	-109.63	-142.26	-295.02	154.35	101.55	52.801	2.923	
12,575.00	12,465.37	12,555.13	12,497.84	26.38	26.95	-112.21	-124.44	-305.94	160.11	107.17	52.943	3.024	
12,600.00	12,476.94	12,588.84	12,520.01	26.45	26.99	-114.71	-102.15	-318.10	165.82	112.70	53.116	3.122	
12,625.00	12,487.53	12,623.42	12,541.24	26.52	27.04	-116.91	-77.49	-329.78	171.23	117.93	53.305	3.212	
12,650.00	12,497.12	12,658.85	12,561.31	26.60	27.08	-118.84	-50.48	-340.84	176.29	122.78	53.510	3.295	
12,675.00	12,505.67	12,695.11	12,579.94	26.68	27.14	-120.51	-21.15	-351.17	180.94	127.22	53.722	3.368	
12,700.00	12,513.16	12,732.14	12,596.89	26.76	27.21	-121.95	10.38	-360.61	185.11	131.16	53.946	3.431	
12,725.00	12,519.58	12,769.89	12,611.90	26.85	27.30	-123.15	43.97	-369.02	188.76	134.59	54.171	3.484	
12,750.00	12,524.90	12,808.29	12,624.71	26.94	27.40	-124.12	79.42	-376.26	191.84	137.44	54.395	3.527	

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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

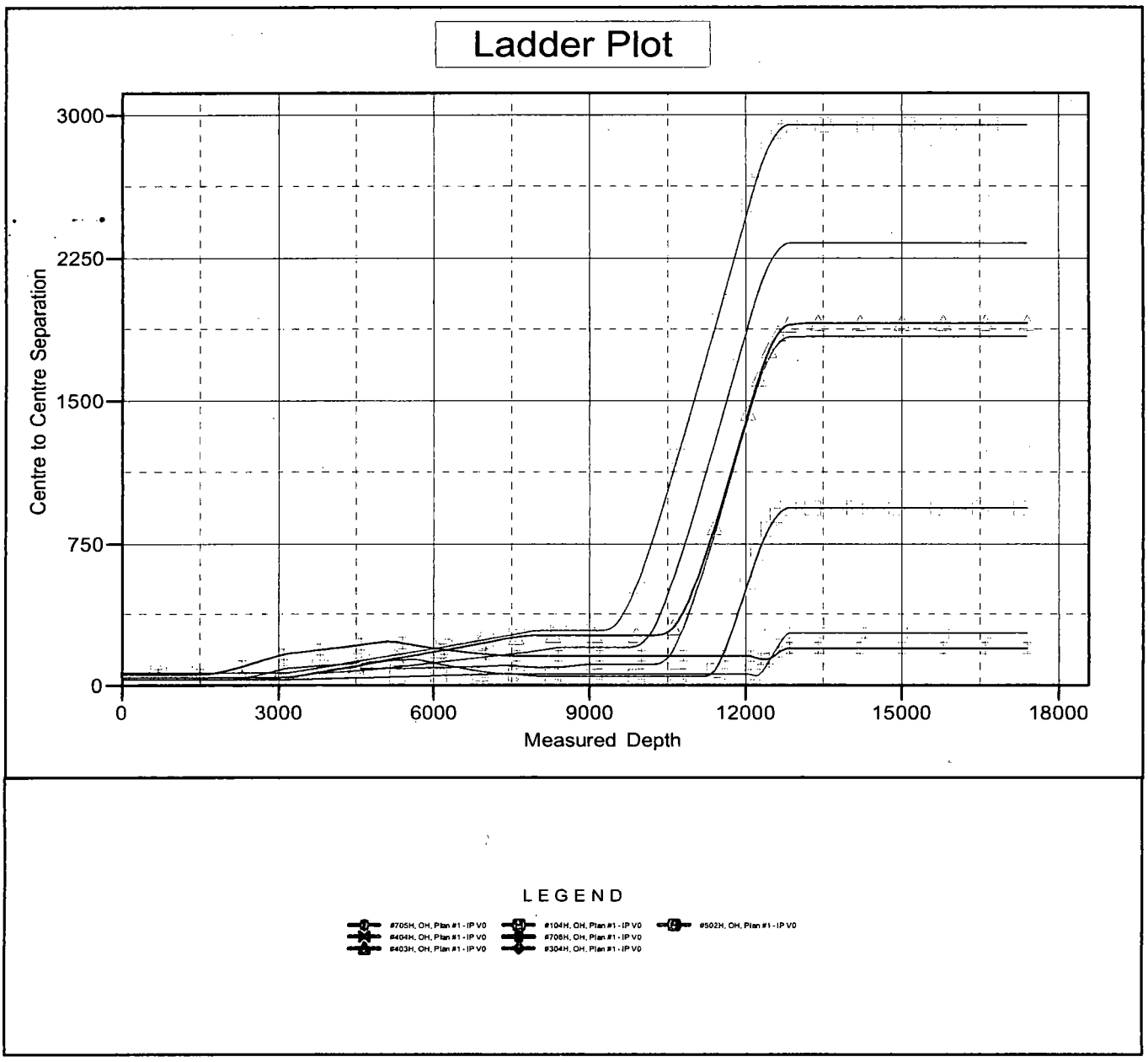
Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

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
12,775.00	12,529.11	12,847.22	12,635.10	27.04	27.52	-124.89	116.46	-382.21	194.31	139.70	54.611	3.558	
12,800.00	12,532.20	12,886.59	12,642.86	27.14	27.66	-125.44	154.77	-386.77	196.14	141.33	54.814	3.578	
12,825.00	12,534.16	12,926.26	12,647.84	27.24	27.80	-125.79	194.00	-389.83	197.30	142.31	54.998	3.587	
12,850.00	12,534.98	12,966.10	12,649.94	27.34	27.95	-125.94	233.74	-391.34	197.79	142.63	55.161	3.586	
12,858.01	12,535.00	12,978.87	12,649.99	27.37	28.00	-125.94	246.52	-391.50	197.79	142.59	55.204	3.583	
12,860.43	12,534.99	12,982.73	12,649.95	27.38	28.02	-125.94	250.38	-391.51	197.78	142.56	55.216	3.582	
12,900.00	12,534.82	13,020.21	12,649.82	27.55	28.17	-125.94	287.86	-391.80	197.80	142.35	55.443	3.568	
13,000.00	12,534.38	13,120.21	12,649.38	28.06	28.66	-125.94	387.85	-392.53	197.79	141.68	56.114	3.525	
13,100.00	12,533.94	13,220.21	12,648.94	28.67	29.25	-125.95	487.85	-393.27	197.79	140.84	56.948	3.473	
13,200.00	12,533.50	13,320.21	12,648.51	29.39	29.94	-125.95	587.85	-394.00	197.79	139.85	57.937	3.414	
13,300.00	12,533.06	13,420.21	12,648.07	30.20	30.72	-125.95	687.84	-394.73	197.79	138.71	59.076	3.348	
13,400.00	12,532.62	13,520.21	12,647.64	31.10	31.59	-125.95	787.84	-395.47	197.79	137.43	60.354	3.277	
13,500.00	12,532.18	13,620.21	12,647.20	32.07	32.55	-125.95	887.83	-396.20	197.79	136.02	61.763	3.202	
13,600.00	12,531.74	13,720.21	12,646.76	33.13	33.58	-125.95	987.83	-396.93	197.78	134.49	63.294	3.125	
13,700.00	12,531.30	13,820.21	12,646.33	34.25	34.67	-125.95	1,087.83	-397.67	197.78	132.84	64.939	3.046	
13,800.00	12,530.86	13,920.21	12,645.89	35.43	35.83	-125.96	1,187.82	-398.40	197.78	131.09	66.689	2.966	
13,900.00	12,530.42	14,020.21	12,645.45	36.67	37.04	-125.96	1,287.82	-399.13	197.78	129.24	68.537	2.886	
14,000.00	12,529.98	14,120.21	12,645.02	37.96	38.31	-125.96	1,387.82	-399.86	197.78	127.30	70.474	2.806	
14,100.00	12,529.54	14,220.21	12,644.58	39.29	39.62	-125.96	1,487.81	-400.60	197.78	125.28	72.493	2.728	
14,200.00	12,529.10	14,320.21	12,644.14	40.66	40.97	-125.96	1,587.81	-401.33	197.78	123.19	74.588	2.652	
14,300.00	12,528.66	14,420.21	12,643.71	42.07	42.36	-125.96	1,687.81	-402.06	197.77	121.02	76.752	2.577	
14,400.00	12,528.22	14,520.21	12,643.27	43.52	43.79	-125.97	1,787.80	-402.80	197.77	118.79	78.980	2.504	
14,500.00	12,527.78	14,620.21	12,642.84	44.99	45.24	-125.97	1,887.80	-403.53	197.77	116.50	81.267	2.434	
14,600.00	12,527.34	14,720.21	12,642.40	46.49	46.73	-125.97	1,987.79	-404.26	197.77	114.16	83.607	2.365	
14,700.00	12,526.90	14,820.21	12,641.96	48.01	48.24	-125.97	2,087.79	-405.00	197.77	111.77	85.996	2.300	
14,800.00	12,526.46	14,920.21	12,641.53	49.56	49.77	-125.97	2,187.79	-405.73	197.77	109.33	88.431	2.236	
14,900.00	12,526.02	15,020.21	12,641.09	51.13	51.32	-125.97	2,287.78	-406.46	197.76	106.86	90.907	2.175	
15,000.00	12,525.58	15,120.21	12,640.65	52.71	52.89	-125.97	2,387.78	-407.20	197.76	104.34	93.422	2.117	
15,100.00	12,525.14	15,220.21	12,640.22	54.31	54.48	-125.98	2,487.78	-407.93	197.76	101.79	95.971	2.061	
15,200.00	12,524.70	15,320.21	12,639.78	55.93	56.09	-125.98	2,587.77	-408.66	197.76	99.21	98.554	2.007	
15,300.00	12,524.26	15,420.21	12,639.34	57.56	57.71	-125.98	2,687.77	-409.39	197.76	96.59	101.166	1.955	
15,400.00	12,523.82	15,520.21	12,638.91	59.21	59.34	-125.98	2,787.77	-410.13	197.76	93.95	103.806	1.905	
15,500.00	12,523.38	15,620.21	12,638.47	60.86	60.99	-125.98	2,887.76	-410.86	197.75	91.28	106.472	1.857	
15,600.00	12,522.95	15,720.21	12,638.04	62.53	62.65	-125.98	2,987.76	-411.59	197.75	88.59	109.162	1.812	
15,700.00	12,522.51	15,820.21	12,637.60	64.21	64.32	-125.99	3,087.75	-412.33	197.75	85.88	111.873	1.768	
15,800.00	12,522.07	15,920.21	12,637.16	65.90	65.99	-125.99	3,187.75	-413.06	197.75	83.14	114.605	1.725	
15,900.00	12,521.63	16,020.21	12,636.73	67.59	67.68	-125.99	3,287.75	-413.79	197.75	80.39	117.357	1.685	
16,000.00	12,521.19	16,120.21	12,636.29	69.29	69.38	-125.99	3,387.74	-414.53	197.75	77.62	120.126	1.646	
16,100.00	12,520.75	16,220.21	12,635.85	71.00	71.08	-125.99	3,487.74	-415.26	197.75	74.83	122.911	1.609	
16,200.00	12,520.31	16,320.21	12,635.42	72.72	72.79	-125.99	3,587.74	-415.99	197.74	72.03	125.712	1.573	
16,300.00	12,519.87	16,420.21	12,634.98	74.45	74.51	-125.99	3,687.73	-416.72	197.74	69.21	128.527	1.539	
16,400.00	12,519.43	16,520.21	12,634.55	76.18	76.23	-126.00	3,787.73	-417.46	197.74	66.38	131.356	1.505	
16,500.00	12,518.99	16,620.21	12,634.11	77.91	77.96	-126.00	3,887.73	-418.19	197.74	63.54	134.197	1.473	Level 3
16,600.00	12,518.55	16,720.21	12,633.67	79.65	79.69	-126.00	3,987.72	-418.92	197.74	60.69	137.051	1.443	Level 3
16,700.00	12,518.11	16,820.21	12,633.24	81.40	81.43	-126.00	4,087.72	-419.66	197.74	57.82	139.915	1.413	Level 3
16,800.00	12,517.67	16,920.21	12,632.80	83.15	83.18	-126.00	4,187.71	-420.39	197.73	54.94	142.790	1.385	Level 3
16,900.00	12,517.23	17,020.21	12,632.36	84.90	84.93	-126.00	4,287.71	-421.12	197.73	52.06	145.674	1.357	Level 3
17,000.00	12,516.79	17,120.21	12,631.93	86.66	86.68	-126.01	4,387.71	-421.86	197.73	49.16	148.568	1.331	Level 3
17,100.00	12,516.35	17,220.21	12,631.49	88.42	88.44	-126.01	4,487.70	-422.59	197.73	46.26	151.470	1.305	Level 3
17,200.00	12,515.91	17,320.21	12,631.05	90.19	90.20	-126.01	4,587.70	-423.32	197.73	43.35	154.381	1.281	Level 3
17,300.00	12,515.47	17,420.21	12,630.62	91.96	91.96	-126.01	4,687.70	-424.05	197.73	40.43	157.299	1.257	Level 3
17,406.74	12,515.00	17,527.23	12,629.99	93.85	93.85	-125.96	4,794.71	-424.91	197.69	37.20	160.489	1.232	Level 2, ES, SF

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 #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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

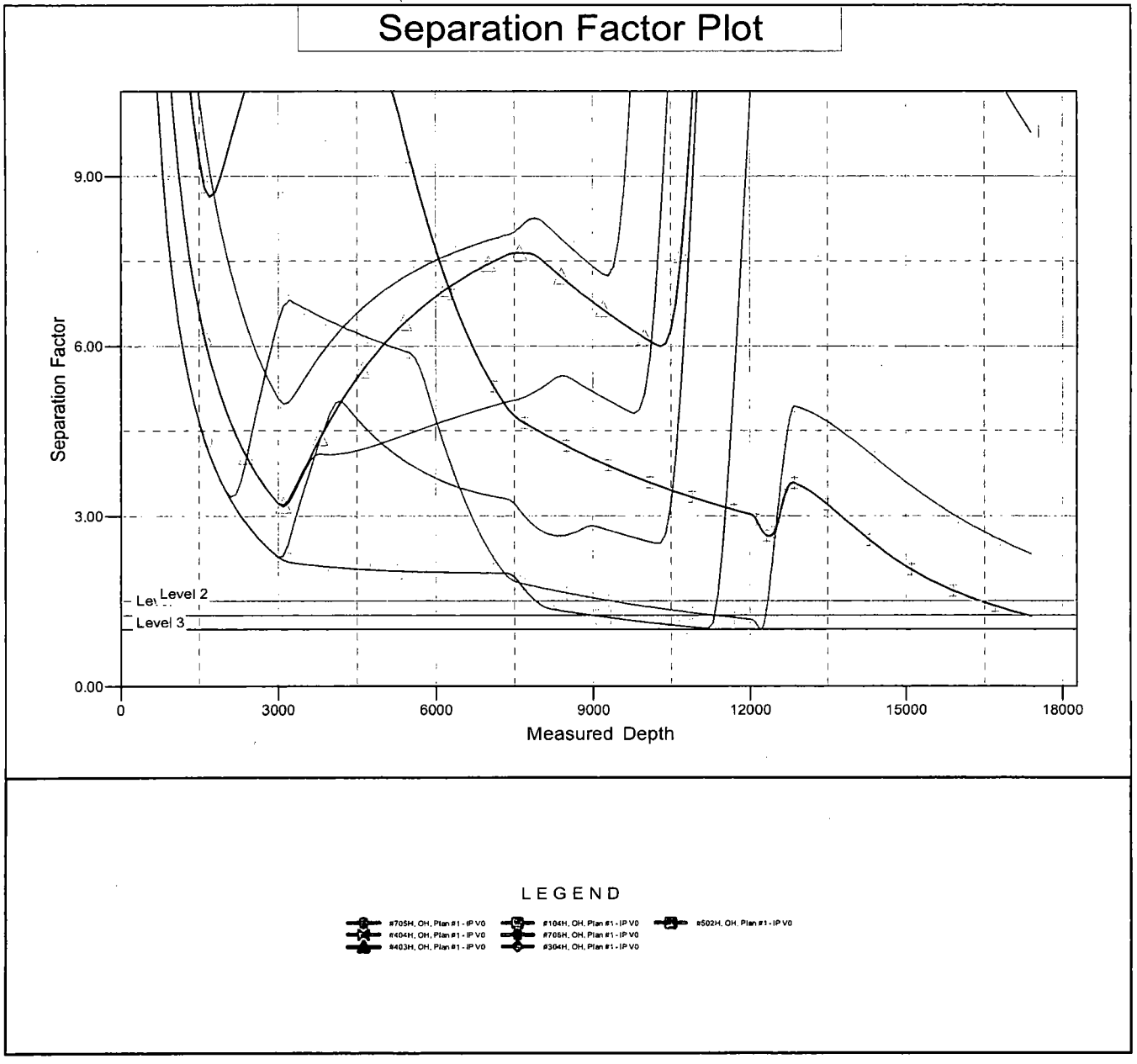
Reference Depths are relative to RKB @ 3365.10usft (Rig KB = 25')	Coordinates are relative to: #605H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.43°



Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well #605H
Project:	Lea County, NM (NAD27) NMEZ	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Reference Site:	Dominator 25 Fed COM	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#605H	**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 @ 3365.10usft (Rig KB = 25')
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #605H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.43°



COG OPERATING, LLC

Lea County, NM (NAD27) NMEZ
Dominator 25 Fed COM
#605H

OH

Plan: Plan #1 - IP

Standard Planning Report

28 November, 2017

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #605H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#605H	**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 #605H

Well Position	**+N/-S**	-23.60 usft	**Northing:**	399,191.10 usft	**Latitude:**	32° 5' 41.649 N
	+E/-W	724.20 usft	**Easting:**	750,833.70 usft	**Longitude:**	103° 31' 24.078 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,340.10 usft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	11/27/17	6.87	59.95	47,821.20119134

Design Plan #1 - IP

Audit Notes:

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

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

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

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,406.22	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	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,233.33	3.50	194.80	3,233.19	-6.89	-1.82	1.50	1.50	0.00	194.80	
7,357.84	3.50	194.80	7,350.00	-250.33	-66.14	0.00	0.00	0.00	0.00	
7,591.17	0.00	0.00	7,583.19	-257.22	-67.96	1.50	-1.50	0.00	180.00	
12,041.62	0.00	0.00	12,033.64	-257.22	-67.96	0.00	0.00	0.00	0.00	
12,458.29	50.00	330.95	12,399.40	-108.12	-150.78	12.00	12.00	0.00	330.95	
12,858.01	90.25	359.58	12,535.00	246.54	-231.36	12.00	10.07	7.16	40.17	
17,406.74	90.25	359.58	12,515.00	4,795.10	-264.90	0.00	0.00	0.00	0.00	PBHL(D25#605H)

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #605H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#605H	**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	1.50	194.80	3,099.99	-1.27	-0.33	-1.26	1.50	1.50	0.00
3,200.00	3.00	194.80	3,199.91	-5.06	-1.34	-5.05	1.50	1.50	0.00
3,233.33	3.50	194.80	3,233.19	-6.89	-1.82	-6.87	1.50	1.50	0.00
3,300.00	3.50	194.80	3,299.73	-10.82	-2.86	-10.80	0.00	0.00	0.00
3,400.00	3.50	194.80	3,399.54	-16.73	-4.42	-16.69	0.00	0.00	0.00
3,500.00	3.50	194.80	3,499.36	-22.63	-5.98	-22.58	0.00	0.00	0.00
3,600.00	3.50	194.80	3,599.17	-28.53	-7.54	-28.47	0.00	0.00	0.00
3,700.00	3.50	194.80	3,698.98	-34.43	-9.10	-34.36	0.00	0.00	0.00
3,800.00	3.50	194.80	3,798.80	-40.33	-10.66	-40.26	0.00	0.00	0.00
3,900.00	3.50	194.80	3,898.61	-46.24	-12.22	-46.15	0.00	0.00	0.00
4,000.00	3.50	194.80	3,998.43	-52.14	-13.78	-52.04	0.00	0.00	0.00
4,100.00	3.50	194.80	4,098.24	-58.04	-15.34	-57.93	0.00	0.00	0.00
4,200.00	3.50	194.80	4,198.05	-63.94	-16.89	-63.82	0.00	0.00	0.00
4,300.00	3.50	194.80	4,297.87	-69.85	-18.45	-69.71	0.00	0.00	0.00
4,400.00	3.50	194.80	4,397.68	-75.75	-20.01	-75.60	0.00	0.00	0.00
4,500.00	3.50	194.80	4,497.49	-81.65	-21.57	-81.49	0.00	0.00	0.00
4,600.00	3.50	194.80	4,597.31	-87.55	-23.13	-87.38	0.00	0.00	0.00
4,700.00	3.50	194.80	4,697.12	-93.46	-24.69	-93.27	0.00	0.00	0.00
4,800.00	3.50	194.80	4,796.93	-99.36	-26.25	-99.16	0.00	0.00	0.00
4,900.00	3.50	194.80	4,896.75	-105.26	-27.81	-105.05	0.00	0.00	0.00
5,000.00	3.50	194.80	4,996.56	-111.16	-29.37	-110.94	0.00	0.00	0.00
5,100.00	3.50	194.80	5,096.37	-117.06	-30.93	-116.83	0.00	0.00	0.00
5,200.00	3.50	194.80	5,196.19	-122.97	-32.49	-122.73	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #605H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#605H	**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)
5,300.00	3.50	194.80	5,296.00	-128.87	-34.05	-128.62	0.00	0.00	0.00
5,400.00	3.50	194.80	5,395.81	-134.77	-35.61	-134.51	0.00	0.00	0.00
5,500.00	3.50	194.80	5,495.63	-140.67	-37.17	-140.40	0.00	0.00	0.00
5,600.00	3.50	194.80	5,595.44	-146.58	-38.73	-146.29	0.00	0.00	0.00
5,700.00	3.50	194.80	5,695.25	-152.48	-40.29	-152.18	0.00	0.00	0.00
5,800.00	3.50	194.80	5,795.07	-158.38	-41.85	-158.07	0.00	0.00	0.00
5,900.00	3.50	194.80	5,894.88	-164.28	-43.41	-163.96	0.00	0.00	0.00
6,000.00	3.50	194.80	5,994.69	-170.19	-44.96	-169.85	0.00	0.00	0.00
6,100.00	3.50	194.80	6,094.51	-176.09	-46.52	-175.74	0.00	0.00	0.00
6,200.00	3.50	194.80	6,194.32	-181.99	-48.08	-181.63	0.00	0.00	0.00
6,300.00	3.50	194.80	6,294.14	-187.89	-49.64	-187.52	0.00	0.00	0.00
6,400.00	3.50	194.80	6,393.95	-193.79	-51.20	-193.41	0.00	0.00	0.00
6,500.00	3.50	194.80	6,493.76	-199.70	-52.76	-199.31	0.00	0.00	0.00
6,600.00	3.50	194.80	6,593.58	-205.60	-54.32	-205.20	0.00	0.00	0.00
6,700.00	3.50	194.80	6,693.39	-211.50	-55.88	-211.09	0.00	0.00	0.00
6,800.00	3.50	194.80	6,793.20	-217.40	-57.44	-216.98	0.00	0.00	0.00
6,900.00	3.50	194.80	6,893.02	-223.31	-59.00	-222.87	0.00	0.00	0.00
7,000.00	3.50	194.80	6,992.83	-229.21	-60.56	-228.76	0.00	0.00	0.00
7,100.00	3.50	194.80	7,092.64	-235.11	-62.12	-234.65	0.00	0.00	0.00
7,200.00	3.50	194.80	7,192.46	-241.01	-63.68	-240.54	0.00	0.00	0.00
7,300.00	3.50	194.80	7,292.27	-246.92	-65.24	-246.43	0.00	0.00	0.00
7,357.84	3.50	194.80	7,350.00	-250.33	-66.14	-249.84	0.00	0.00	0.00
7,400.00	2.87	194.80	7,392.10	-252.59	-66.74	-252.10	1.50	-1.50	0.00
7,500.00	1.37	194.80	7,492.03	-256.17	-67.68	-255.66	1.50	-1.50	0.00
7,591.17	0.00	0.00	7,583.19	-257.22	-67.96	-256.71	1.50	-1.50	0.00
7,600.00	0.00	0.00	7,592.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
7,700.00	0.00	0.00	7,692.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
7,800.00	0.00	0.00	7,792.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
7,900.00	0.00	0.00	7,892.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,000.00	0.00	0.00	7,992.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,100.00	0.00	0.00	8,092.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,200.00	0.00	0.00	8,192.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,300.00	0.00	0.00	8,292.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,400.00	0.00	0.00	8,392.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,500.00	0.00	0.00	8,492.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,600.00	0.00	0.00	8,592.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,700.00	0.00	0.00	8,692.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,800.00	0.00	0.00	8,792.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
8,900.00	0.00	0.00	8,892.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,000.00	0.00	0.00	8,992.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,100.00	0.00	0.00	9,092.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,200.00	0.00	0.00	9,192.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,300.00	0.00	0.00	9,292.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,400.00	0.00	0.00	9,392.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,500.00	0.00	0.00	9,492.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,600.00	0.00	0.00	9,592.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,700.00	0.00	0.00	9,692.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,800.00	0.00	0.00	9,792.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
9,900.00	0.00	0.00	9,892.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,000.00	0.00	0.00	9,992.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,100.00	0.00	0.00	10,092.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,200.00	0.00	0.00	10,192.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,300.00	0.00	0.00	10,292.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,400.00	0.00	0.00	10,392.02	-257.22	-67.96	-256.71	0.00	0.00	0.00

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #605H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - IP		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,500.00	0.00	0.00	10,492.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,600.00	0.00	0.00	10,592.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,700.00	0.00	0.00	10,692.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,800.00	0.00	0.00	10,792.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
10,900.00	0.00	0.00	10,892.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,000.00	0.00	0.00	10,992.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,100.00	0.00	0.00	11,092.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,200.00	0.00	0.00	11,192.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,300.00	0.00	0.00	11,292.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,400.00	0.00	0.00	11,392.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,500.00	0.00	0.00	11,492.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,600.00	0.00	0.00	11,592.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,700.00	0.00	0.00	11,692.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,800.00	0.00	0.00	11,792.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
11,900.00	0.00	0.00	11,892.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
12,000.00	0.00	0.00	11,992.02	-257.22	-67.96	-256.71	0.00	0.00	0.00
12,041.62	0.00	0.00	12,033.64	-257.22	-67.96	-256.71	0.00	0.00	0.00
KOP: 12041.62' MD, 12033.64' TVD									
12,050.00	1.01	330.95	12,042.02	-257.15	-68.00	-256.65	12.00	12.00	0.00
12,075.00	4.01	330.95	12,066.99	-256.20	-68.53	-255.69	12.00	12.00	0.00
12,100.00	7.01	330.95	12,091.87	-254.10	-69.69	-253.58	12.00	12.00	0.00
12,125.00	10.01	330.95	12,116.59	-250.87	-71.49	-250.34	12.00	12.00	0.00
12,138.77	11.66	330.95	12,130.12	-248.61	-72.74	-248.07	12.00	12.00	0.00
FTP(D25#605H)									
12,150.00	13.01	330.95	12,141.09	-246.51	-73.91	-245.96	12.00	12.00	0.00
12,175.00	16.01	330.95	12,165.29	-241.04	-76.95	-240.47	12.00	12.00	0.00
12,200.00	19.01	330.95	12,189.13	-234.46	-80.60	-233.87	12.00	12.00	0.00
12,225.00	22.01	330.95	12,212.54	-226.81	-84.85	-226.18	12.00	12.00	0.00
12,250.00	25.01	330.95	12,235.47	-218.09	-89.69	-217.43	12.00	12.00	0.00
12,275.00	28.01	330.95	12,257.83	-208.34	-95.11	-207.64	12.00	12.00	0.00
12,300.00	31.01	330.95	12,279.59	-197.58	-101.09	-196.83	12.00	12.00	0.00
12,325.00	34.01	330.95	12,300.67	-185.84	-107.61	-185.04	12.00	12.00	0.00
12,350.00	37.01	330.95	12,321.02	-173.15	-114.66	-172.30	12.00	12.00	0.00
12,375.00	40.01	330.95	12,340.58	-159.54	-122.21	-158.64	12.00	12.00	0.00
12,400.00	43.01	330.95	12,359.30	-145.06	-130.26	-144.10	12.00	12.00	0.00
12,425.00	46.01	330.95	12,377.13	-129.74	-138.77	-128.72	12.00	12.00	0.00
12,450.00	49.01	330.95	12,394.02	-113.63	-147.72	-112.54	12.00	12.00	0.00
12,458.29	50.00	330.95	12,399.40	-108.12	-150.78	-107.01	12.00	12.00	0.00
12,475.00	51.54	332.60	12,409.97	-96.71	-156.90	-95.56	12.00	9.24	9.88
12,500.00	53.90	334.94	12,425.11	-78.87	-165.68	-77.65	12.00	9.40	9.37
12,525.00	56.29	337.15	12,439.42	-60.13	-174.00	-58.86	12.00	9.58	8.82
12,550.00	58.72	339.23	12,452.85	-40.56	-181.82	-39.22	12.00	9.72	8.34
12,575.00	61.18	341.21	12,465.37	-20.20	-189.14	-18.81	12.00	9.85	7.92
12,600.00	63.67	343.10	12,476.94	0.90	-195.93	2.33	12.00	9.96	7.55
12,625.00	66.19	344.91	12,487.53	22.66	-202.16	24.14	12.00	10.06	7.23
12,650.00	68.72	346.65	12,497.12	45.04	-207.83	46.56	12.00	10.14	6.95
12,675.00	71.27	348.33	12,505.67	67.97	-212.92	69.53	12.00	10.21	6.72
12,700.00	73.84	349.95	12,513.16	91.39	-217.41	92.99	12.00	10.26	6.52
12,725.00	76.42	351.54	12,519.58	115.24	-221.29	116.86	12.00	10.31	6.35
12,750.00	79.01	353.09	12,524.90	139.45	-224.55	141.09	12.00	10.35	6.21
12,775.00	81.60	354.62	12,529.11	163.94	-227.19	165.61	12.00	10.38	6.10
12,800.00	84.20	356.13	12,532.20	188.67	-229.19	190.34	12.00	10.41	6.02
12,825.00	86.81	357.62	12,534.16	213.55	-230.55	215.24	12.00	10.42	5.97
12,850.00	89.42	359.10	12,534.98	238.53	-231.26	240.21	12.00	10.43	5.94

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #605H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#605H	**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)
12,858.01	90.25	359.58	12,535.00	246.54	-231.36	248.22	12.00	10.43	5.93
EOC: 12858.01' MD, 12535.00' TVD, 90.25° INC, 359.58° AZ, 248.22' VS									
12,900.00	90.25	359.58	12,534.82	288.52	-231.67	290.21	0.00	0.00	0.00
13,000.00	90.25	359.58	12,534.38	388.52	-232.40	390.21	0.00	0.00	0.00
13,100.00	90.25	359.58	12,533.94	488.52	-233.14	490.21	0.00	0.00	0.00
13,200.00	90.25	359.58	12,533.50	588.51	-233.88	590.21	0.00	0.00	0.00
13,300.00	90.25	359.58	12,533.06	688.51	-234.61	690.21	0.00	0.00	0.00
13,400.00	90.25	359.58	12,532.62	788.51	-235.35	790.21	0.00	0.00	0.00
13,500.00	90.25	359.58	12,532.18	888.50	-236.09	890.21	0.00	0.00	0.00
13,600.00	90.25	359.58	12,531.74	988.50	-236.83	990.21	0.00	0.00	0.00
13,700.00	90.25	359.58	12,531.30	1,088.49	-237.56	1,090.21	0.00	0.00	0.00
13,800.00	90.25	359.58	12,530.86	1,188.49	-238.30	1,190.21	0.00	0.00	0.00
13,900.00	90.25	359.58	12,530.42	1,288.49	-239.04	1,290.20	0.00	0.00	0.00
14,000.00	90.25	359.58	12,529.98	1,388.48	-239.78	1,390.20	0.00	0.00	0.00
14,100.00	90.25	359.58	12,529.54	1,488.48	-240.51	1,490.20	0.00	0.00	0.00
14,200.00	90.25	359.58	12,529.10	1,588.48	-241.25	1,590.20	0.00	0.00	0.00
14,300.00	90.25	359.58	12,528.66	1,688.47	-241.99	1,690.20	0.00	0.00	0.00
14,400.00	90.25	359.58	12,528.22	1,788.47	-242.73	1,790.20	0.00	0.00	0.00
14,500.00	90.25	359.58	12,527.78	1,888.46	-243.46	1,890.20	0.00	0.00	0.00
14,600.00	90.25	359.58	12,527.34	1,988.46	-244.20	1,990.20	0.00	0.00	0.00
14,700.00	90.25	359.58	12,526.90	2,088.46	-244.94	2,090.20	0.00	0.00	0.00
14,800.00	90.25	359.58	12,526.46	2,188.45	-245.68	2,190.20	0.00	0.00	0.00
14,900.00	90.25	359.58	12,526.02	2,288.45	-246.41	2,290.19	0.00	0.00	0.00
15,000.00	90.25	359.58	12,525.58	2,388.45	-247.15	2,390.19	0.00	0.00	0.00
15,100.00	90.25	359.58	12,525.14	2,488.44	-247.89	2,490.19	0.00	0.00	0.00
15,200.00	90.25	359.58	12,524.70	2,588.44	-248.63	2,590.19	0.00	0.00	0.00
15,300.00	90.25	359.58	12,524.26	2,688.44	-249.36	2,690.19	0.00	0.00	0.00
15,400.00	90.25	359.58	12,523.82	2,788.43	-250.10	2,790.19	0.00	0.00	0.00
15,500.00	90.25	359.58	12,523.38	2,888.43	-250.84	2,890.19	0.00	0.00	0.00
15,600.00	90.25	359.58	12,522.95	2,988.42	-251.58	2,990.19	0.00	0.00	0.00
15,700.00	90.25	359.58	12,522.51	3,088.42	-252.31	3,090.19	0.00	0.00	0.00
15,800.00	90.25	359.58	12,522.07	3,188.42	-253.05	3,190.19	0.00	0.00	0.00
15,900.00	90.25	359.58	12,521.63	3,288.41	-253.79	3,290.19	0.00	0.00	0.00
16,000.00	90.25	359.58	12,521.19	3,388.41	-254.53	3,390.18	0.00	0.00	0.00
16,100.00	90.25	359.58	12,520.75	3,488.41	-255.26	3,490.18	0.00	0.00	0.00
16,200.00	90.25	359.58	12,520.31	3,588.40	-256.00	3,590.18	0.00	0.00	0.00
16,300.00	90.25	359.58	12,519.87	3,688.40	-256.74	3,690.18	0.00	0.00	0.00
16,400.00	90.25	359.58	12,519.43	3,788.39	-257.48	3,790.18	0.00	0.00	0.00
16,500.00	90.25	359.58	12,518.99	3,888.39	-258.21	3,890.18	0.00	0.00	0.00
16,600.00	90.25	359.58	12,518.55	3,988.39	-258.95	3,990.18	0.00	0.00	0.00
16,700.00	90.25	359.58	12,518.11	4,088.38	-259.69	4,090.18	0.00	0.00	0.00
16,800.00	90.25	359.58	12,517.67	4,188.38	-260.43	4,190.18	0.00	0.00	0.00
16,900.00	90.25	359.58	12,517.23	4,288.38	-261.16	4,290.18	0.00	0.00	0.00
17,000.00	90.25	359.58	12,516.79	4,388.37	-261.90	4,390.17	0.00	0.00	0.00
17,100.00	90.25	359.58	12,516.35	4,488.37	-262.64	4,490.17	0.00	0.00	0.00
17,200.00	90.25	359.58	12,515.91	4,588.37	-263.38	4,590.17	0.00	0.00	0.00
17,300.00	90.25	359.58	12,515.47	4,688.36	-264.11	4,690.17	0.00	0.00	0.00
17,406.74	90.25	359.58	12,515.00	4,795.10	-264.90	4,796.91	0.00	0.00	0.00
TD: 17406.74' MD, 12515.00' TVD - PBHL(D25#605H)									

Database:	EDM 5000.14 Single User Db	**Local Co-ordinate Reference:**	Well #605H
Company:	COG OPERATING, LLC	**TVD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Project:	Lea County, NM (NAD27) NMEZ	**MD Reference:**	RKB @ 3365.10usft (Rig KB = 25')
Site:	Dominator 25 Fed COM	**North Reference:**	Grid
Well:	#605H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - IP		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL(D25#605H) - plan hits target center - Point	0.00	0.00	12,515.00	4,795.10	-264.90	403,986.20	750,568.80	32° 6' 29.119 N	103° 31' 26.739 W
FTP(D25#605H) - plan misses target center by 2390.34usft at 12138.77usft MD (12130.12 TVD, -248.61 N, -72.74 E) - Point	0.00	0.00	12,535.00	-2,600.39	-210.31	396,590.71	750,623.39	32° 5' 15.932 N	103° 31' 26.749 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
12,041.62	12,033.64	-257.22	-67.96	KOP: 12041.62' MD, 12033.64' TVD
12,858.01	12,535.00	246.54	-231.36	EOC: 12858.01' MD, 12535.00' TVD, 90.25° INC, 359.58° AZ, 248.22' VS
17,406.74	12,515.00	4,795.10	-264.90	TD: 17406.74' MD, 12515.00' 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

VGN ENERGY SERVICES, LLC.

COG OPERATING, LLC
#605H
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: 3340.10 RKB @ 3365.10usft (Rig KB = 25')

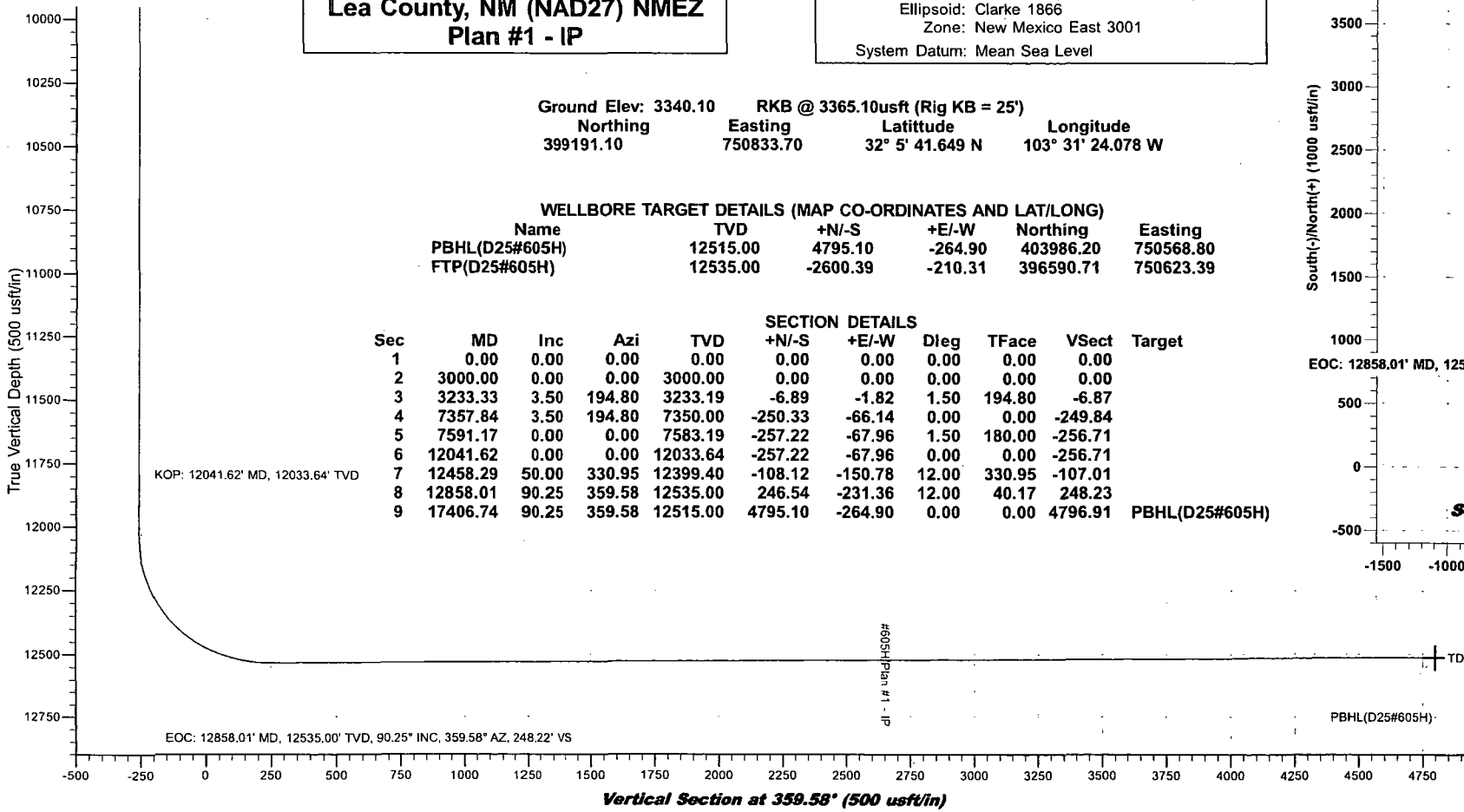
Northing	Easting	Latittude	Longitude
399191.10	750833.70	32° 5' 41.649 N	103° 31' 24.078 W

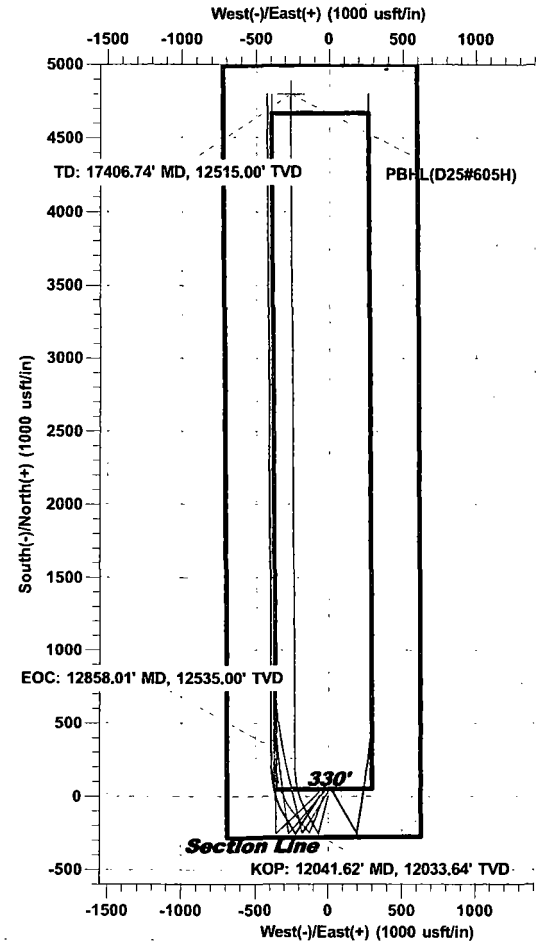
WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL(D25#605H)	12515.00	4795.10	-264.90	403986.20	750568.80
FTP(D25#605H)	12535.00	-2600.39	-210.31	396590.71	750623.39

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	3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	
3	3233.33	3.50	194.80	3233.19	-6.89	-1.82	1.50	194.80	-6.87	
4	7357.84	3.50	194.80	7350.00	-250.33	-66.14	0.00	0.00	-249.84	
5	7591.17	0.00	0.00	7583.19	-257.22	-67.96	1.50	180.00	-256.71	
6	12041.62	0.00	0.00	12033.64	-257.22	-67.96	0.00	0.00	-256.71	
7	12458.29	50.00	330.95	12399.40	-108.12	-150.78	12.00	330.95	-107.01	
8	12858.01	90.25	359.58	12535.00	246.54	-231.36	12.00	40.17	248.23	
9	17406.74	90.25	359.58	12515.00	4795.10	-264.90	0.00	0.00	4796.91	PBHL(D25#605H)





0:30, November 28 2017

Well Planning: Gabriel Cruz

COG Operating, LLC - Dominator 25 Federal Com 605H

1. Geologic Formations

TVD of target	12,515' EOL	Pilot hole depth	NA
MD at TD:	17,406'	Deepest expected fresh water:	142'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1069	Water	
Top of Salt	1574	Salt	
Base of Salt	5134	Salt	
Lamar	5252	Salt Water	
Bell Canyon	5294	Salt Water	
Cherry Canyon	6293	Oil/Gas	
Brushy Canyon	7873	Oil/Gas	
Bone Spring Lime	9339	Oil/Gas	
U. Avalon Shale	9413	Oil/Gas	
L. Avalon Shale	10024	Oil/Gas	
1st Bone Spring Sand	10371	Oil/Gas	
2nd Bone Spring Sand	10889	Oil/Gas	
3rd Bone Spring Sand	12013	Oil/Gas	
Wolfcamp	12289	Target Oil/Gas	
Strawn	14216	Not Penetrated	

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Body
13.5"	0	1095	10.75"	45.5	N80	BTC	4.93	1.19	20.87
9.875"	0	11913	7.875"	29.7	P110	BTC	1.27	1.05	3.07
6.75"	0	11413	5.5"	23	P110	BTC	1.86	1.93	3.24
6.75"	11413	17,406	5"	18	P110	BTC	1.86	1.93	3.24
			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. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 500' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.