PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Production LLC
LEASE NO.:	NMNM120907
WELL NAME & NO.:	107H-Eider Federal
SURFACE HOLE FOOTAGE:	650'/S & 375'/E
BOTTOM HOLE FOOTAGE	2410'/S & 990'/E
LOCATION:	Section 35, R32 E, T24S. NMPM
COUNTY:	Lea County. New Mexico.

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

A. Hydrogen Sulfide

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

B. CASING

1. The **13 3/8** inch surface casing shall be set at approximately **1075** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

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

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

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

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

2. The minimum required fill of cement behind the **9 5/8** inch intermediate casing is:

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

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

   - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 20% - additional cement might be required.**

C. PRESSURE CONTROL

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

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi **Annular. In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

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

D. SPECIAL REQUIREMENT(S)

Waste Minimization Plan (WMP)

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

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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.

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.

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.

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

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LEASE NO.:	NMNM120907
WELL NAME & NO.:	107H-Eider Federal
SURFACE HOLE FOOTAGE:	650'/S & 375'/E
BOTTOM HOLE FOOTAGE	2410'/S & 990'/E
LOCATION:	Section 35, R32 E, T24S. NMPM
COUNTY:	Lea County. New Mexico.

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.

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.

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.

Tank Battery (CTB): Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. 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.

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

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)

Construction Steps

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

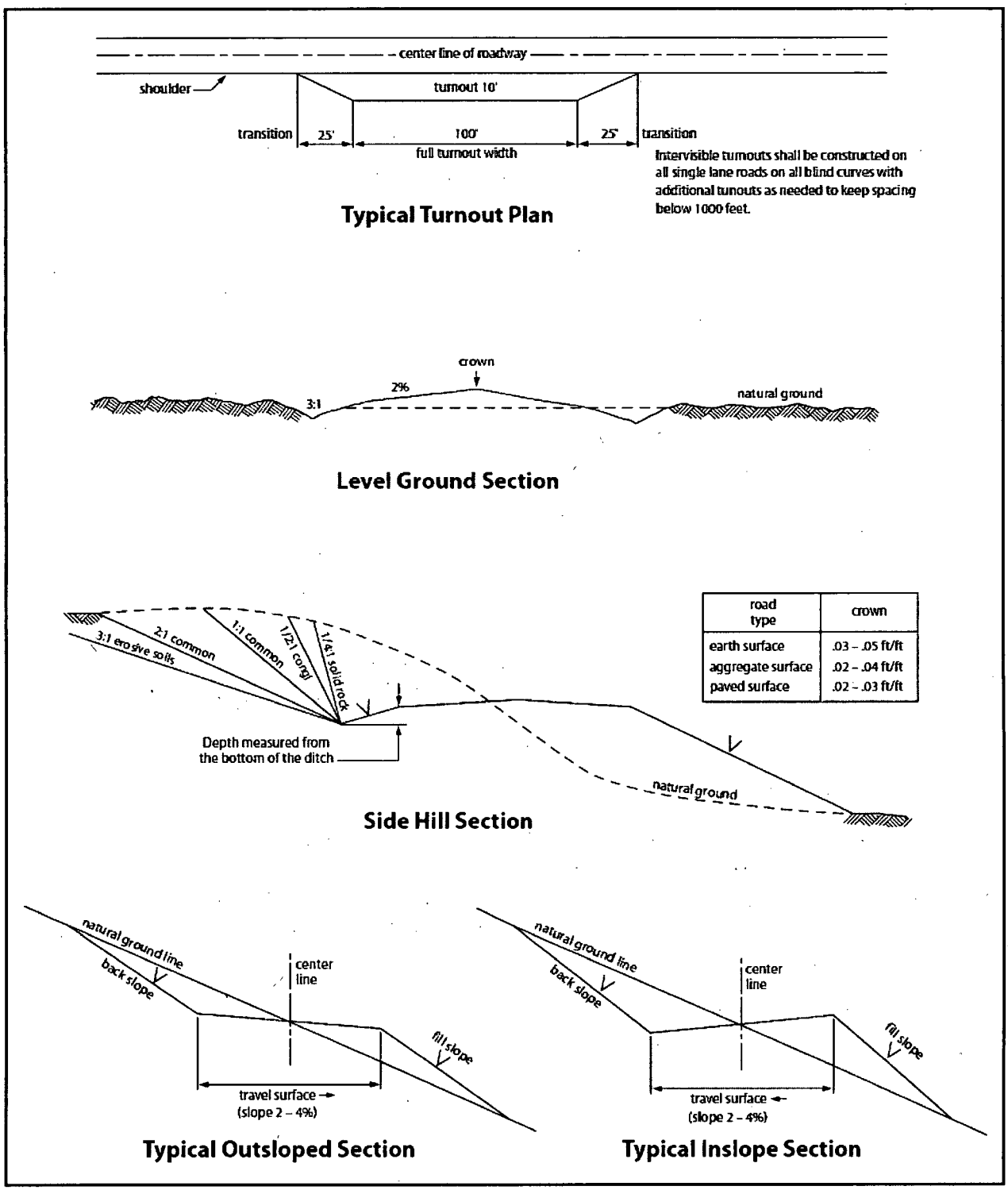
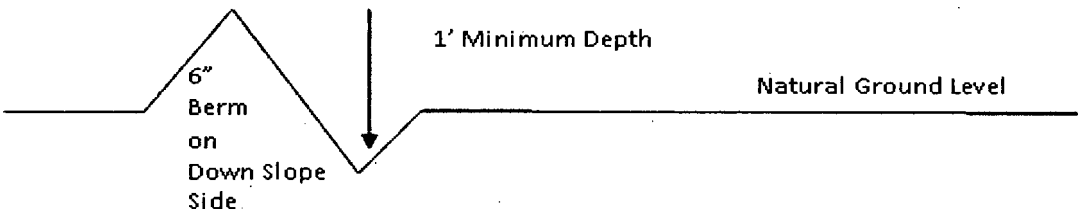


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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.

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.

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

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

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.

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.

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.

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

Approval Date: 05/22/2018

COG PRODUCTION 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 PRODUCTION 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 PRODUCTION LLC

1-575-748-6940

EMERGENCY CALL LIST

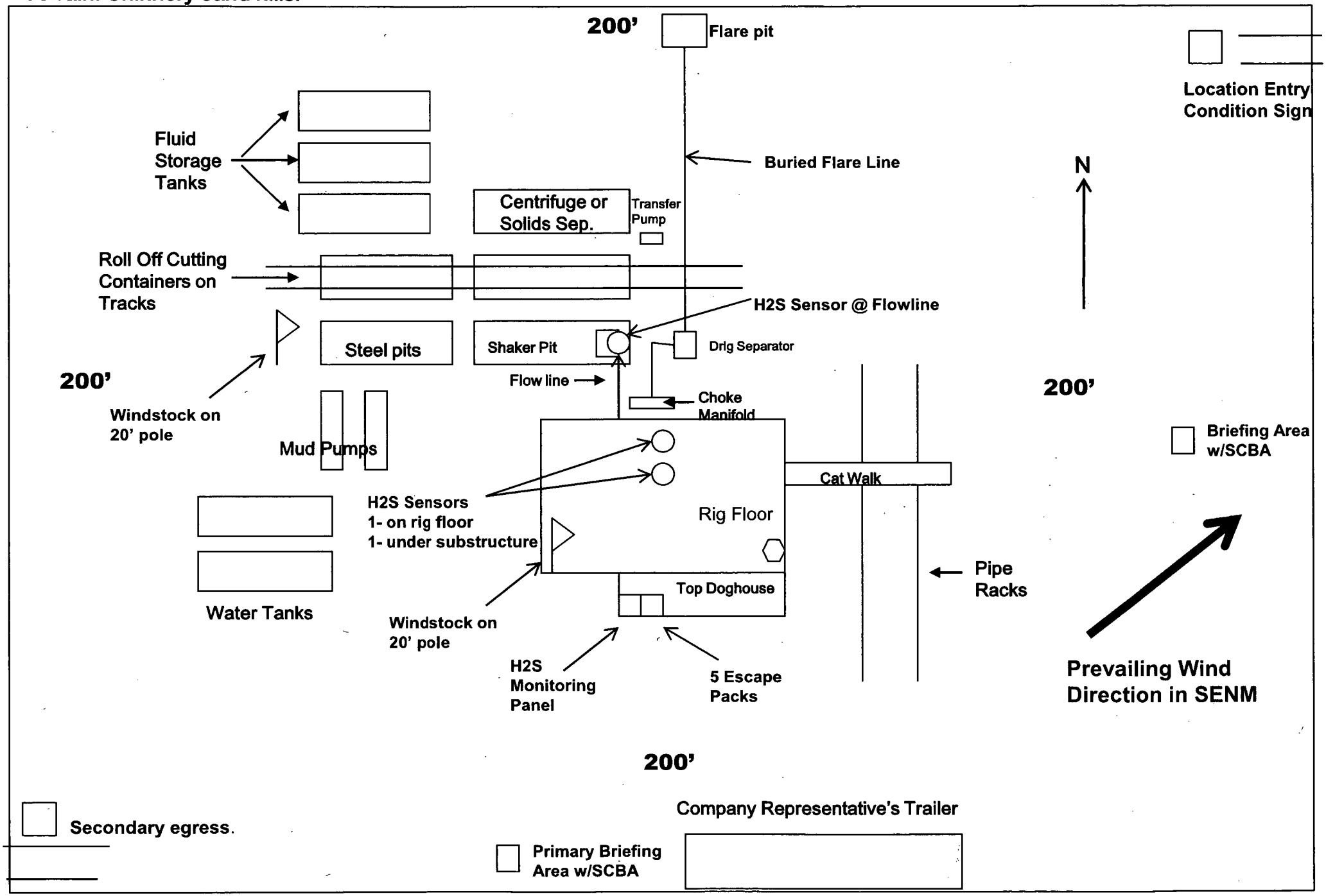
	OFFICE	MOBILE
COG PRODUCTION LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

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 Production LLC
H_2S Equipment Schematic
Terrain: Shinnery sand hills.

**Well pad will be 400' X 400'
with cellar in center of pad**



CONCHO

COG Operating L L C

Lea County, NM (NAD27 NME)
Sec. 35, T 24 S. , R 32 E
Eider Federal 107H

Wellbore #1
Plan #1

Anticollision Report

13 October, 2017

INTEGRITY
Directional Services

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Plan #1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00ft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 ft	**Error Surface:**	Circular Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 10/13/2017

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	16,807.66	Plan #1 (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Sec. 35, T 24 S. , R 32 E						
Eider Federal 108H - Wellbore #1 - Plan #1	5,000.72	5,001.62	30.00	7.80	1.352	Level 3, CC, ES, SF
Eider Federal 207H - Wellbore #1 - Plan #1	4,400.00	4,399.50	29.90	10.41	1.534	CC, ES
Eider Federal 207H - Wellbore #1 - Plan #1	16,807.66	16,914.27	351.57	86.16	1.325	Level 3, SF
Eider Federal 307H - Wellbore #1 - Plan #1	4,466.30	4,467.40	60.00	40.21	3.031	CC
Eider Federal 307H - Wellbore #1 - Plan #1	4,500.00	4,501.09	60.00	40.06	3.008	ES
Eider Federal 307H - Wellbore #1 - Plan #1	16,807.66	17,045.98	742.77	478.59	2.812	SF
Eider Federal 401H - Wellbore #1 - Plan #1	4,366.60	4,366.80	42.29	22.94	2.186	CC
Eider Federal 401H - Wellbore #1 - Plan #1	4,400.00	4,400.00	42.29	22.79	2.169	ES, SF
Eider Federal 601H - Wellbore #1 - Plan #1	4,366.50	4,367.00	66.91	47.56	3.458	CC
Eider Federal 601H - Wellbore #1 - Plan #1	4,400.00	4,400.50	66.91	47.41	3.432	ES
Eider Federal 601H - Wellbore #1 - Plan #1	4,500.00	4,499.48	67.66	47.75	3.397	SF

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 108H - Wellbore #1 - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD

Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.90	0.90	0.00	0.00	89.43	0.30	30.00	30.00				
100.00	100.00	100.90	100.90	0.08	0.09	89.43	0.30	30.00	30.00	29.83	0.17	178.209	
200.00	200.00	200.90	200.90	0.31	0.31	89.43	0.30	30.00	30.00	29.38	0.62	48.555	
300.00	300.00	300.90	300.90	0.53	0.53	89.43	0.30	30.00	30.00	28.93	1.07	28.107	
400.00	400.00	400.90	400.90	0.76	0.76	89.43	0.30	30.00	30.00	28.48	1.52	19.778	
500.00	500.00	500.90	500.90	0.98	0.98	89.43	0.30	30.00	30.00	28.04	1.97	15.256	
600.00	600.00	600.90	600.90	1.21	1.21	89.43	0.30	30.00	30.00	27.59	2.42	12.418	
700.00	700.00	700.90	700.90	1.43	1.43	89.43	0.30	30.00	30.00	27.14	2.87	10.470	
800.00	800.00	800.90	800.90	1.66	1.66	89.43	0.30	30.00	30.00	26.69	3.32	9.050	
900.00	900.00	900.90	900.90	1.88	1.88	89.43	0.30	30.00	30.00	26.24	3.76	7.969	
1,000.00	1,000.00	1,000.90	1,000.90	2.11	2.11	89.43	0.30	30.00	30.00	25.79	4.21	7.119	
1,100.00	1,100.00	1,100.90	1,100.90	2.33	2.33	89.43	0.30	30.00	30.00	25.34	4.66	6.433	
1,200.00	1,200.00	1,200.90	1,200.90	2.56	2.56	89.43	0.30	30.00	30.00	24.89	5.11	5.867	
1,300.00	1,300.00	1,300.90	1,300.90	2.78	2.78	89.43	0.30	30.00	30.00	24.44	5.56	5.393	
1,400.00	1,400.00	1,400.90	1,400.90	3.01	3.01	89.43	0.30	30.00	30.00	23.99	6.01	4.990	
1,500.00	1,500.00	1,500.90	1,500.90	3.23	3.23	89.43	0.30	30.00	30.00	23.54	6.46	4.643	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
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Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 108H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
1,600.00	1,600.00	1,600.90	1,600.90	3.45	3.46	89.43	0.30	30.00	30.00	23.09	6.91	4.341	
1,700.00	1,700.00	1,700.90	1,700.90	3.68	3.68	89.43	0.30	30.00	30.00	22.64	7.36	4.076	
1,800.00	1,800.00	1,800.90	1,800.90	3.90	3.91	89.43	0.30	30.00	30.00	22.19	7.81	3.841	
1,900.00	1,900.00	1,900.90	1,900.90	4.13	4.13	89.43	0.30	30.00	30.00	21.74	8.26	3.632	
2,000.00	2,000.00	2,000.90	2,000.90	4.35	4.36	89.43	0.30	30.00	30.00	21.29	8.71	3.445	
2,100.00	2,100.00	2,100.90	2,100.90	4.58	4.58	89.43	0.30	30.00	30.00	20.84	9.16	3.276	
2,200.00	2,200.00	2,200.90	2,200.90	4.80	4.81	89.43	0.30	30.00	30.00	20.39	9.61	3.122	
2,300.00	2,300.00	2,300.90	2,300.90	5.03	5.03	89.43	0.30	30.00	30.00	19.94	10.06	2.983	
2,400.00	2,400.00	2,400.90	2,400.90	5.25	5.25	89.43	0.30	30.00	30.00	19.49	10.51	2.855	
2,500.00	2,500.00	2,500.90	2,500.90	5.48	5.48	89.43	0.30	30.00	30.00	19.04	10.96	2.738	
2,600.00	2,600.00	2,600.90	2,600.90	5.70	5.70	89.43	0.30	30.00	30.00	18.59	11.41	2.630	
2,700.00	2,700.00	2,700.90	2,700.90	5.93	5.93	89.43	0.30	30.00	30.00	18.15	11.86	2.530	
2,800.00	2,800.00	2,800.90	2,800.90	6.15	6.15	89.43	0.30	30.00	30.00	17.70	12.31	2.438	
2,900.00	2,900.00	2,900.90	2,900.90	6.38	6.38	89.43	0.30	30.00	30.00	17.25	12.76	2.352	
3,000.00	3,000.00	3,000.90	3,000.90	6.60	6.60	89.43	0.30	30.00	30.00	16.80	13.20	2.272	
3,100.00	3,100.00	3,100.90	3,100.90	6.83	6.83	89.43	0.30	30.00	30.00	16.35	13.65	2.197	
3,200.00	3,200.00	3,200.90	3,200.90	7.05	7.05	89.43	0.30	30.00	30.00	15.90	14.10	2.127	
3,300.00	3,300.00	3,300.90	3,300.90	7.28	7.28	89.43	0.30	30.00	30.00	15.45	14.55	2.061	
3,400.00	3,400.00	3,400.90	3,400.90	7.50	7.50	89.43	0.30	30.00	30.00	15.00	15.00	2.000	
3,500.00	3,500.00	3,500.90	3,500.90	7.73	7.73	89.43	0.30	30.00	30.00	14.55	15.45	1.942	
3,600.00	3,600.00	3,600.90	3,600.90	7.95	7.95	89.43	0.30	30.00	30.00	14.10	15.90	1.887	
3,700.00	3,700.00	3,700.90	3,700.90	8.17	8.18	89.43	0.30	30.00	30.00	13.65	16.35	1.835	
3,800.00	3,800.00	3,800.90	3,800.90	8.40	8.40	89.43	0.30	30.00	30.00	13.20	16.80	1.786	
3,900.00	3,900.00	3,900.90	3,900.90	8.62	8.63	89.43	0.30	30.00	30.00	12.75	17.25	1.739	
4,000.00	4,000.00	4,000.90	4,000.90	8.85	8.85	89.43	0.30	30.00	30.00	12.30	17.70	1.695	
4,100.00	4,100.00	4,100.90	4,100.90	9.07	9.08	89.43	0.30	30.00	30.00	11.85	18.15	1.653	
4,200.00	4,200.00	4,200.90	4,200.90	9.30	9.30	89.43	0.30	30.00	30.00	11.40	18.60	1.613	
4,300.00	4,300.00	4,300.90	4,300.90	9.52	9.53	89.43	0.30	30.00	30.00	10.95	19.05	1.575	
4,400.00	4,400.00	4,400.90	4,400.90	9.75	9.75	89.43	0.30	30.00	30.00	10.50	19.50	1.539	
4,500.00	4,500.00	4,500.90	4,500.90	9.97	9.97	89.43	0.30	30.00	30.00	10.05	19.95	1.504	
4,600.00	4,600.00	4,600.90	4,600.90	10.20	10.20	89.43	0.30	30.00	30.00	9.60	20.40	1.471	Level 3
4,700.00	4,700.00	4,700.90	4,700.90	10.42	10.42	89.43	0.30	30.00	30.00	9.15	20.85	1.439	Level 3
4,800.00	4,800.00	4,800.90	4,800.90	10.65	10.65	89.43	0.30	30.00	30.00	8.71	21.30	1.409	Level 3
4,900.00	4,900.00	4,900.90	4,900.90	10.87	10.87	89.43	0.30	30.00	30.00	8.26	21.75	1.380	Level 3
5,000.00	5,000.00	5,000.90	5,000.90	11.10	11.10	89.43	0.30	30.00	30.00	7.81	22.20	1.352	Level 3
5,000.72	5,000.72	5,001.62	5,001.62	11.10	11.10	-132.09	0.30	30.00	30.00	7.80	22.20	1.352	Level 3, CC, ES, SF
5,100.00	5,099.98	5,101.21	5,101.19	11.30	11.29	-131.32	-1.41	29.49	30.64	8.05	22.59	1.357	Level 3
5,200.00	5,199.84	5,201.48	5,201.31	11.47	11.46	-129.30	-6.48	27.97	32.62	9.68	22.94	1.422	Level 3
5,300.00	5,299.45	5,301.68	5,301.12	11.65	11.64	-126.45	-14.90	25.44	35.99	12.70	23.29	1.545	
5,400.00	5,398.70	5,401.78	5,400.46	11.84	11.81	-123.28	-26.64	21.92	40.82	17.17	23.65	1.726	
5,500.00	5,497.47	5,501.60	5,499.21	12.03	11.99	-121.54	-40.58	17.74	47.27	23.26	24.02	1.968	
5,600.00	5,595.62	5,601.23	5,597.77	12.23	12.18	-123.21	-54.56	13.54	55.59	31.18	24.41	2.277	
5,656.70	5,650.96	5,657.61	5,653.55	12.35	12.29	-125.13	-62.47	11.17	61.20	36.56	24.64	2.484	
5,700.00	5,693.13	5,700.64	5,696.11	12.45	12.37	-126.74	-68.51	9.36	65.78	40.96	24.82	2.650	
5,800.00	5,790.52	5,799.99	5,794.39	12.69	12.57	-129.70	-82.44	5.18	76.52	51.26	25.26	3.030	
5,900.00	5,887.90	5,899.35	5,892.67	12.94	12.78	-131.93	-96.38	1.00	87.41	61.70	25.71	3.399	
6,000.00	5,985.28	5,998.70	5,990.96	13.20	12.99	-133.67	-110.32	-3.19	98.40	72.22	26.19	3.757	
6,100.00	6,082.67	6,098.05	6,089.24	13.47	13.21	-135.06	-124.26	-7.37	109.47	82.79	26.68	4.103	
6,200.00	6,180.05	6,197.41	6,187.52	13.76	13.43	-136.19	-138.20	-11.55	120.59	93.40	27.19	4.435	
6,300.00	6,277.44	6,296.76	6,285.81	14.05	13.66	-137.13	-152.13	-15.73	131.74	104.03	27.72	4.753	
6,400.00	6,374.82	6,396.12	6,384.09	14.36	13.90	-137.92	-166.07	-19.91	142.93	114.67	28.25	5.058	
6,500.00	6,472.20	6,495.47	6,482.37	14.67	14.14	-138.60	-180.01	-24.09	154.13	125.33	28.81	5.350	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 108H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,600.00	6,569.59	6,594.83	6,580.66	14.99	14.38	-139.19	-193.95	-28.27	165.36	135.99	29.37	5.629	
6,700.00	6,666.97	6,694.18	6,678.94	15.32	14.63	-139.70	-207.89	-32.46	176.60	146.65	29.95	5.896	
6,800.00	6,764.36	6,793.54	6,777.22	15.66	14.88	-140.15	-221.82	-36.64	187.85	157.31	30.54	6.150	
6,900.00	6,861.74	6,892.89	6,875.51	16.01	15.14	-140.55	-235.76	-40.82	199.12	167.97	31.15	6.393	
7,000.00	6,959.13	6,992.25	6,973.79	16.36	15.40	-140.90	-249.70	-45.00	210.39	178.63	31.76	6.625	
7,100.00	7,056.51	7,091.60	7,072.07	16.72	15.66	-141.22	-263.64	-49.18	221.67	189.29	32.38	6.846	
7,200.00	7,153.89	7,190.96	7,170.35	17.08	15.93	-141.51	-277.58	-53.36	232.96	199.95	33.01	7.057	
7,300.00	7,251.28	7,290.31	7,268.64	17.45	16.20	-141.78	-291.51	-57.54	244.25	210.60	33.65	7.259	
7,400.00	7,348.66	7,389.66	7,366.92	17.83	16.47	-142.02	-305.45	-61.73	255.54	221.25	34.30	7.451	
7,500.00	7,446.05	7,489.02	7,465.20	18.21	16.74	-142.24	-319.39	-65.91	266.84	231.89	34.95	7.635	
7,600.00	7,543.43	7,588.37	7,563.49	18.59	17.02	-142.44	-333.33	-70.09	278.14	242.53	35.61	7.810	
7,700.00	7,640.81	7,687.73	7,661.77	18.98	17.30	-142.62	-347.27	-74.27	289.45	253.17	36.28	7.978	
7,800.00	7,738.20	7,787.08	7,760.05	19.37	17.59	-142.79	-361.20	-78.45	300.76	263.80	36.96	8.138	
7,900.00	7,835.58	7,886.44	7,858.34	19.77	17.87	-142.95	-375.14	-82.63	312.07	274.43	37.64	8.291	
8,000.00	7,932.97	7,985.79	7,956.62	20.17	18.16	-143.10	-389.08	-86.81	323.38	285.06	38.33	8.438	
8,100.00	8,030.35	8,085.15	8,054.90	20.57	18.45	-143.24	-403.02	-91.00	334.70	295.68	39.02	8.578	
8,200.00	8,127.74	8,184.50	8,153.19	20.98	18.74	-143.37	-416.96	-95.18	346.02	306.30	39.72	8.712	
8,300.00	8,225.12	8,283.86	8,251.47	21.39	19.03	-143.49	-430.90	-99.36	357.34	316.92	40.42	8.841	
8,400.00	8,322.50	8,383.21	8,349.75	21.80	19.33	-143.60	-444.83	-103.54	368.66	327.53	41.13	8.964	
8,500.00	8,419.89	8,482.57	8,448.04	22.21	19.62	-143.71	-458.77	-107.72	379.98	338.14	41.84	9.082	
8,600.00	8,517.27	8,581.92	8,546.32	22.63	19.92	-143.81	-472.71	-111.90	391.30	348.75	42.55	9.195	
8,700.00	8,614.66	8,681.27	8,644.60	23.05	20.22	-143.90	-486.65	-116.08	402.63	359.35	43.27	9.304	
8,800.00	8,712.04	8,778.81	8,741.09	23.47	20.52	-143.99	-500.31	-120.18	413.96	369.97	43.99	9.410	
8,815.64	8,727.27	8,789.84	8,752.03	23.54	20.55	-144.03	-501.64	-120.59	415.89	371.80	44.09	9.433	
8,825.00	8,736.40	8,800.00	8,762.14	23.58	20.58	-147.69	-502.64	-120.90	417.12	372.97	44.15	9.447	
8,850.00	8,760.91	8,813.96	8,776.06	23.66	20.61	-159.85	-503.68	-121.25	420.46	376.19	44.27	9.498	
8,875.00	8,785.55	8,831.45	8,793.52	23.74	20.65	-176.07	-504.43	-121.53	423.96	379.58	44.39	9.552	
8,900.00	8,810.24	8,850.00	8,812.07	23.81	20.68	164.73	-504.55	-121.64	427.62	383.13	44.49	9.611	
8,925.00	8,834.93	8,866.25	8,828.32	23.87	20.71	146.04	-504.09	-121.59	431.41	386.83	44.58	9.678	
8,950.00	8,859.54	8,883.58	8,845.61	23.92	20.73	130.91	-503.00	-121.38	435.32	390.67	44.65	9.749	
8,975.00	8,884.01	8,900.00	8,861.95	23.96	20.76	119.80	-501.41	-121.03	439.35	394.64	44.72	9.825	
9,000.00	8,908.27	8,918.10	8,879.88	24.00	20.77	111.83	-499.03	-120.47	443.49	398.72	44.77	9.906	
9,025.00	8,932.25	8,935.31	8,896.84	24.02	20.79	106.01	-496.16	-119.78	447.74	402.93	44.81	9.993	
9,050.00	8,955.88	8,950.00	8,911.21	24.04	20.79	101.61	-493.25	-119.06	452.08	407.25	44.83	10.084	
9,075.00	8,979.11	8,969.64	8,930.28	24.04	20.80	98.31	-488.69	-117.93	456.50	411.66	44.84	10.180	
9,100.00	9,001.87	8,986.77	8,946.74	24.04	20.80	95.69	-484.10	-116.77	461.02	416.17	44.84	10.280	
9,125.00	9,024.10	9,003.88	8,963.01	24.03	20.80	93.59	-478.94	-115.47	465.61	420.78	44.83	10.385	
9,150.00	9,045.73	9,020.99	8,979.06	24.02	20.79	91.88	-473.23	-114.01	470.28	425.47	44.81	10.495	
9,175.00	9,066.71	9,038.09	8,994.90	23.99	20.79	90.48	-466.97	-112.40	475.03	430.25	44.78	10.608	
9,200.00	9,086.97	9,055.21	9,010.50	23.96	20.77	89.32	-460.16	-110.65	479.84	435.10	44.74	10.726	
9,225.00	9,106.47	9,075.00	9,028.22	23.93	20.76	88.43	-451.62	-108.44	484.72	440.04	44.68	10.848	
9,250.00	9,125.15	9,089.48	9,040.94	23.88	20.74	87.54	-444.92	-106.70	489.65	445.03	44.62	10.973	
9,275.00	9,142.96	9,106.66	9,055.75	23.83	20.72	86.87	-436.50	-104.51	494.65	450.09	44.56	11.101	
9,300.00	9,159.84	9,125.00	9,071.21	23.78	20.70	86.34	-426.95	-102.02	499.71	455.22	44.48	11.234	
9,325.00	9,175.76	9,141.15	9,084.49	23.72	20.68	85.84	-418.07	-99.71	504.81	460.41	44.40	11.369	
9,350.00	9,190.67	9,158.48	9,098.40	23.66	20.65	85.46	-408.06	-97.09	509.97	465.66	44.31	11.508	
9,375.00	9,204.53	9,175.00	9,111.29	23.60	20.63	85.12	-398.08	-94.47	515.18	470.96	44.22	11.649	
9,400.00	9,217.30	9,193.38	9,125.21	23.53	20.60	84.92	-386.47	-91.42	520.43	476.31	44.13	11.794	
9,425.00	9,228.95	9,210.97	9,138.09	23.46	20.57	84.74	-374.89	-88.38	525.73	481.70	44.03	11.941	
9,450.00	9,239.44	9,228.67	9,150.60	23.39	20.54	84.62	-362.77	-85.19	531.07	487.14	43.93	12.089	
9,475.00	9,248.75	9,246.51	9,162.72	23.32	20.51	84.55	-350.12	-81.85	536.45	492.62	43.83	12.240	
9,500.00	9,256.84	9,264.49	9,174.44	23.25	20.48	84.53	-336.94	-78.37	541.86	498.14	43.72	12.393	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 108H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,525.00	9,263.70	9,282.64	9,185.74	23.17	20.45	84.56	-323.21	-74.75	547.31	503.69	43.62	12.547	
9,550.00	9,269.31	9,300.00	9,196.04	23.10	20.42	84.59	-309.70	-71.17	552.78	509.26	43.52	12.702	
9,575.00	9,273.66	9,319.51	9,206.99	23.03	20.39	84.74	-294.09	-67.04	558.28	514.86	43.42	12.858	
9,600.00	9,276.73	9,338.27	9,216.90	22.96	20.36	84.90	-278.69	-62.96	563.79	520.47	43.32	13.014	
9,625.00	9,278.51	9,357.29	9,226.30	22.89	20.33	85.10	-262.71	-58.72	569.33	526.10	43.23	13.171	
9,645.31	9,279.00	9,372.95	9,233.53	22.84	20.31	85.29	-249.28	-55.15	573.83	530.68	43.15	13.297	
9,700.00	9,279.18	9,417.21	9,251.47	22.71	20.27	87.17	-210.21	-44.76	586.61	543.62	42.98	13.648	
9,800.00	9,279.52	9,506.41	9,275.90	22.56	20.23	89.61	-127.44	-22.69	612.07	569.29	42.79	14.305	
9,900.00	9,279.85	9,609.70	9,284.07	22.56	20.28	90.36	-28.11	3.78	638.35	595.50	42.85	14.899	
10,000.00	9,280.19	9,789.05	9,284.83	22.85	20.43	90.35	147.98	37.13	657.50	614.23	43.27	15.194	
10,100.00	9,280.52	9,974.41	9,285.61	23.40	21.05	90.36	332.88	48.21	664.01	619.56	44.45	14.938	
10,200.00	9,280.86	10,075.01	9,286.04	24.13	21.70	90.37	433.48	47.63	663.95	618.12	45.83	14.487	
10,300.00	9,281.19	10,175.01	9,286.46	24.99	22.48	90.38	533.48	47.05	663.89	616.42	47.47	13.986	
10,400.00	9,281.53	10,275.01	9,286.89	25.95	23.38	90.38	633.48	46.48	663.83	614.51	49.32	13.459	
10,500.00	9,281.86	10,375.01	9,287.31	26.99	24.38	90.39	733.47	45.90	663.77	612.40	51.37	12.922	
10,600.00	9,282.20	10,475.01	9,287.73	28.11	25.47	90.40	833.47	45.33	663.71	610.13	53.58	12.387	
10,700.00	9,282.53	10,575.01	9,288.16	29.29	26.65	90.41	933.47	44.75	663.65	607.71	55.94	11.864	
10,800.00	9,282.87	10,675.01	9,288.58	30.54	27.90	90.42	1,033.47	44.18	663.59	605.16	58.43	11.357	
10,900.00	9,283.20	10,775.01	9,289.00	31.83	29.20	90.42	1,133.46	43.60	663.53	602.49	61.04	10.871	
11,000.00	9,283.54	10,875.01	9,289.42	33.18	30.56	90.43	1,233.46	43.03	663.47	599.73	63.74	10.409	
11,100.00	9,283.87	10,975.01	9,289.85	34.56	31.97	90.44	1,333.46	42.45	663.41	596.87	66.53	9.971	
11,200.00	9,284.21	11,075.01	9,290.27	35.99	33.42	90.45	1,433.46	41.87	663.35	593.94	69.41	9.557	
11,300.00	9,284.54	11,175.01	9,290.69	37.45	34.90	90.45	1,533.45	41.30	663.29	590.94	72.35	9.168	
11,400.00	9,284.88	11,275.01	9,291.12	38.93	36.41	90.46	1,633.45	40.72	663.23	587.88	75.35	8.802	
11,500.00	9,285.22	11,375.01	9,291.54	40.45	37.96	90.47	1,733.45	40.15	663.17	584.76	78.40	8.458	
11,600.00	9,285.55	11,475.01	9,291.96	41.99	39.52	90.48	1,833.45	39.57	663.11	581.60	81.51	8.136	
11,700.00	9,285.89	11,575.01	9,292.39	43.54	41.11	90.48	1,933.44	39.00	663.05	578.39	84.65	7.832	
11,800.00	9,286.22	11,675.01	9,292.81	45.12	42.72	90.49	2,033.44	38.42	662.99	575.15	87.84	7.548	
11,900.00	9,286.56	11,775.01	9,293.23	46.72	44.34	90.50	2,133.44	37.85	662.93	571.87	91.06	7.280	
12,000.00	9,286.89	11,875.01	9,293.65	48.33	45.98	90.51	2,233.44	37.27	662.87	568.56	94.31	7.029	
12,100.00	9,287.23	11,975.01	9,294.08	49.96	47.63	90.51	2,333.43	36.70	662.81	565.22	97.59	6.792	
12,200.00	9,287.56	12,075.01	9,294.50	51.60	49.29	90.52	2,433.43	36.12	662.75	561.86	100.89	6.569	
12,300.00	9,287.90	12,175.01	9,294.92	53.25	50.97	90.53	2,533.43	35.55	662.69	558.47	104.21	6.359	
12,400.00	9,288.23	12,275.01	9,295.35	54.91	52.65	90.54	2,633.43	34.97	662.63	555.07	107.56	6.160	
12,500.00	9,288.57	12,375.01	9,295.77	56.58	54.35	90.55	2,733.42	34.39	662.57	551.64	110.93	5.973	
12,600.00	9,288.90	12,475.01	9,296.19	58.26	56.05	90.55	2,833.42	33.82	662.51	548.20	114.31	5.796	
12,700.00	9,289.24	12,575.01	9,296.62	59.95	57.76	90.56	2,933.42	33.24	662.45	544.74	117.71	5.628	
12,800.00	9,289.57	12,675.01	9,297.04	61.64	59.48	90.57	3,033.41	32.67	662.39	541.27	121.12	5.469	
12,900.00	9,289.91	12,775.01	9,297.46	63.35	61.20	90.58	3,133.41	32.09	662.33	537.78	124.55	5.318	
13,000.00	9,290.24	12,875.01	9,297.89	65.06	62.93	90.58	3,233.41	31.52	662.27	534.28	127.99	5.175	
13,100.00	9,290.58	12,975.01	9,298.31	66.77	64.66	90.59	3,333.41	30.94	662.21	530.77	131.44	5.038	
13,200.00	9,290.91	13,075.01	9,298.73	68.49	66.40	90.60	3,433.40	30.37	662.15	527.25	134.90	4.909	
13,300.00	9,291.25	13,175.01	9,299.15	70.22	68.15	90.61	3,533.40	29.79	662.09	523.72	138.37	4.785	
13,400.00	9,291.58	13,275.01	9,299.58	71.95	69.89	90.61	3,633.40	29.22	662.03	520.19	141.84	4.667	
13,500.00	9,291.92	13,375.01	9,300.00	73.69	71.65	90.62	3,733.40	28.64	661.97	516.64	145.33	4.555	
13,600.00	9,292.25	13,475.01	9,300.42	75.43	73.40	90.63	3,833.39	28.07	661.91	513.08	148.83	4.448	
13,700.00	9,292.59	13,575.01	9,300.85	77.17	75.16	90.64	3,933.39	27.49	661.85	509.52	152.33	4.345	
13,800.00	9,292.92	13,675.01	9,301.27	78.92	76.92	90.64	4,033.39	26.91	661.79	505.95	155.84	4.247	
13,900.00	9,293.26	13,775.01	9,301.69	80.67	78.68	90.65	4,133.39	26.34	661.73	502.38	159.35	4.153	
14,000.00	9,293.59	13,875.01	9,302.12	82.42	80.45	90.66	4,233.38	25.76	661.67	498.80	162.87	4.062	
14,100.00	9,293.93	13,975.01	9,302.54	84.18	82.22	90.67	4,333.38	25.19	661.61	495.21	166.40	3.976	
14,200.00	9,294.26	14,075.01	9,302.96	85.94	83.99	90.68	4,433.38	24.61	661.55	491.62	169.93	3.893	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 108H - Wellbore #1 - Plan #1

Offset Site Error: 0.00 ft
Survey Program: 0-MWD
Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
14,300.00	9,294.60	14,175.01	9,303.38	87.70	85.77	90.68	4,533.38	24.04	661.49	488.02	173.47	3.813	
14,400.00	9,294.93	14,275.01	9,303.81	89.46	87.54	90.69	4,633.37	23.46	661.43	484.42	177.01	3.737	
14,500.00	9,295.27	14,375.01	9,304.23	91.23	89.32	90.70	4,733.37	22.89	661.37	480.82	180.55	3.663	
14,600.00	9,295.60	14,475.01	9,304.65	93.00	91.10	90.71	4,833.37	22.31	661.31	477.21	184.10	3.592	
14,700.00	9,295.94	14,575.01	9,305.08	94.77	92.88	90.71	4,933.37	21.74	661.25	473.60	187.66	3.524	
14,800.00	9,296.27	14,675.01	9,305.50	96.54	94.67	90.72	5,033.36	21.16	661.19	469.98	191.21	3.458	
14,900.00	9,296.61	14,775.01	9,305.92	98.32	96.45	90.73	5,133.36	20.59	661.13	466.36	194.77	3.394	
15,000.00	9,296.94	14,875.01	9,306.35	100.10	98.24	90.74	5,233.36	20.01	661.07	462.74	198.34	3.333	
15,100.00	9,297.28	14,975.01	9,306.77	101.88	100.03	90.74	5,333.35	19.43	661.01	459.11	201.90	3.274	
15,200.00	9,297.61	15,075.01	9,307.19	103.66	101.82	90.75	5,433.35	18.86	660.96	455.48	205.47	3.217	
15,300.00	9,297.95	15,175.01	9,307.62	105.44	103.61	90.76	5,533.35	18.28	660.90	451.85	209.04	3.162	
15,400.00	9,298.28	15,275.01	9,308.04	107.22	105.40	90.77	5,633.35	17.71	660.84	448.22	212.62	3.108	
15,500.00	9,298.62	15,375.01	9,308.46	109.00	107.19	90.78	5,733.34	17.13	660.78	444.58	216.20	3.056	
15,600.00	9,298.95	15,475.01	9,308.88	110.79	108.99	90.78	5,833.34	16.56	660.72	440.94	219.78	3.006	
15,700.00	9,299.29	15,575.01	9,309.31	112.58	110.78	90.79	5,933.34	15.98	660.66	437.30	223.36	2.958	
15,800.00	9,299.62	15,675.01	9,309.73	114.37	112.58	90.80	6,033.34	15.41	660.60	433.66	226.94	2.911	
15,900.00	9,299.96	15,775.01	9,310.15	116.15	114.37	90.81	6,133.33	14.83	660.54	430.01	230.53	2.865	
16,000.00	9,300.29	15,875.01	9,310.58	117.94	116.17	90.81	6,233.33	14.26	660.48	426.36	234.12	2.821	
16,100.00	9,300.63	15,975.01	9,311.00	119.74	117.97	90.82	6,333.33	13.68	660.42	422.71	237.71	2.778	
16,200.00	9,300.96	16,075.01	9,311.42	121.53	119.77	90.83	6,433.33	13.11	660.36	419.06	241.30	2.737	
16,300.00	9,301.30	16,175.01	9,311.85	123.32	121.57	90.84	6,533.32	12.53	660.30	415.41	244.89	2.696	
16,400.00	9,301.63	16,275.01	9,312.27	125.12	123.37	90.84	6,633.32	11.96	660.24	411.75	248.49	2.657	
16,500.00	9,301.97	16,375.01	9,312.69	126.91	125.17	90.85	6,733.32	11.38	660.18	408.10	252.08	2.619	
16,600.00	9,302.30	16,475.01	9,313.11	128.71	126.97	90.86	6,833.32	10.80	660.12	404.44	255.68	2.582	
16,700.00	9,302.64	16,575.01	9,313.54	130.50	128.78	90.87	6,933.31	10.23	660.06	400.78	259.28	2.546	
16,800.00	9,302.97	16,675.01	9,313.96	132.30	130.58	90.88	7,033.31	9.65	660.00	397.12	262.88	2.511	
16,807.66	9,303.00	16,682.67	9,313.99	132.44	130.72	90.88	7,040.97	9.61	660.00	396.84	263.16	2.508	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 207H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	179.81	-29.90	0.10	29.90				
100.00	100.00	99.50	99.50	0.08	0.08	179.81	-29.90	0.10	29.90	29.73	0.17	180.218	
200.00	200.00	199.50	199.50	0.31	0.31	179.81	-29.90	0.10	29.90	29.29	0.61	48.639	
300.00	300.00	299.50	299.50	0.53	0.53	179.81	-29.90	0.10	29.90	28.84	1.06	28.095	
400.00	400.00	399.50	399.50	0.76	0.76	179.81	-29.90	0.10	29.90	28.39	1.51	19.752	
500.00	500.00	499.50	499.50	0.98	0.98	179.81	-29.90	0.10	29.90	27.94	1.96	15.229	
600.00	600.00	599.50	599.50	1.21	1.21	179.81	-29.90	0.10	29.90	27.49	2.41	12.392	
700.00	700.00	699.50	699.50	1.43	1.43	179.81	-29.90	0.10	29.90	27.04	2.86	10.446	
800.00	800.00	799.50	799.50	1.66	1.66	179.81	-29.90	0.10	29.90	26.59	3.31	9.028	
900.00	900.00	899.50	899.50	1.88	1.88	179.81	-29.90	0.10	29.90	26.14	3.76	7.949	
1,000.00	1,000.00	999.50	999.50	2.11	2.10	179.81	-29.90	0.10	29.90	25.69	4.21	7.101	
1,100.00	1,100.00	1,099.50	1,099.50	2.33	2.33	179.81	-29.90	0.10	29.90	25.24	4.66	6.416	
1,200.00	1,200.00	1,199.50	1,199.50	2.56	2.55	179.81	-29.90	0.10	29.90	24.79	5.11	5.851	
1,300.00	1,300.00	1,299.50	1,299.50	2.78	2.78	179.81	-29.90	0.10	29.90	24.34	5.56	5.378	
1,400.00	1,400.00	1,399.50	1,399.50	3.01	3.00	179.81	-29.90	0.10	29.90	23.89	6.01	4.976	
1,500.00	1,500.00	1,499.50	1,499.50	3.23	3.23	179.81	-29.90	0.10	29.90	23.44	6.46	4.629	
1,600.00	1,600.00	1,599.50	1,599.50	3.45	3.45	179.81	-29.90	0.10	29.90	22.99	6.91	4.328	
1,700.00	1,700.00	1,699.50	1,699.50	3.68	3.68	179.81	-29.90	0.10	29.90	22.54	7.36	4.064	
1,800.00	1,800.00	1,799.50	1,799.50	3.90	3.90	179.81	-29.90	0.10	29.90	22.09	7.81	3.830	
1,900.00	1,900.00	1,899.50	1,899.50	4.13	4.13	179.81	-29.90	0.10	29.90	21.64	8.26	3.621	
2,000.00	2,000.00	1,999.50	1,999.50	4.35	4.35	179.81	-29.90	0.10	29.90	21.19	8.71	3.434	
2,100.00	2,100.00	2,099.50	2,099.50	4.58	4.58	179.81	-29.90	0.10	29.90	20.74	9.16	3.266	
2,200.00	2,200.00	2,199.50	2,199.50	4.80	4.80	179.81	-29.90	0.10	29.90	20.29	9.61	3.113	
2,300.00	2,300.00	2,299.50	2,299.50	5.03	5.03	179.81	-29.90	0.10	29.90	19.85	10.05	2.974	
2,400.00	2,400.00	2,399.50	2,399.50	5.25	5.25	179.81	-29.90	0.10	29.90	19.40	10.50	2.846	
2,500.00	2,500.00	2,499.50	2,499.50	5.48	5.48	179.81	-29.90	0.10	29.90	18.95	10.95	2.730	
2,600.00	2,600.00	2,599.50	2,599.50	5.70	5.70	179.81	-29.90	0.10	29.90	18.50	11.40	2.622	
2,700.00	2,700.00	2,699.50	2,699.50	5.93	5.93	179.81	-29.90	0.10	29.90	18.05	11.85	2.523	
2,800.00	2,800.00	2,799.50	2,799.50	6.15	6.15	179.81	-29.90	0.10	29.90	17.60	12.30	2.430	
2,900.00	2,900.00	2,899.50	2,899.50	6.38	6.38	179.81	-29.90	0.10	29.90	17.15	12.75	2.345	
3,000.00	3,000.00	2,999.50	2,999.50	6.60	6.60	179.81	-29.90	0.10	29.90	16.70	13.20	2.265	
3,100.00	3,100.00	3,099.50	3,099.50	6.83	6.83	179.81	-29.90	0.10	29.90	16.25	13.65	2.190	
3,200.00	3,200.00	3,199.50	3,199.50	7.05	7.05	179.81	-29.90	0.10	29.90	15.80	14.10	2.120	
3,300.00	3,300.00	3,299.50	3,299.50	7.28	7.27	179.81	-29.90	0.10	29.90	15.35	14.55	2.055	
3,400.00	3,400.00	3,399.50	3,399.50	7.50	7.50	179.81	-29.90	0.10	29.90	14.90	15.00	1.993	
3,500.00	3,500.00	3,499.50	3,499.50	7.73	7.72	179.81	-29.90	0.10	29.90	14.45	15.45	1.935	
3,600.00	3,600.00	3,599.50	3,599.50	7.95	7.95	179.81	-29.90	0.10	29.90	14.00	15.90	1.881	
3,700.00	3,700.00	3,699.50	3,699.50	8.17	8.17	179.81	-29.90	0.10	29.90	13.55	16.35	1.829	
3,800.00	3,800.00	3,799.50	3,799.50	8.40	8.40	179.81	-29.90	0.10	29.90	13.10	16.80	1.780	
3,900.00	3,900.00	3,899.50	3,899.50	8.62	8.62	179.81	-29.90	0.10	29.90	12.65	17.25	1.734	
4,000.00	4,000.00	3,999.50	3,999.50	8.85	8.85	179.81	-29.90	0.10	29.90	12.20	17.70	1.690	
4,100.00	4,100.00	4,099.50	4,099.50	9.07	9.07	179.81	-29.90	0.10	29.90	11.75	18.15	1.648	
4,200.00	4,200.00	4,199.50	4,199.50	9.30	9.30	179.81	-29.90	0.10	29.90	11.30	18.60	1.608	
4,300.00	4,300.00	4,299.50	4,299.50	9.52	9.52	179.81	-29.90	0.10	29.90	10.85	19.05	1.570	
4,400.00	4,400.00	4,399.50	4,399.50	9.75	9.75	179.81	-29.90	0.10	29.90	10.41	19.50	1.534	CC, ES
4,500.00	4,500.00	4,498.52	4,498.50	9.97	9.94	-178.94	-31.45	-0.58	31.47	11.56	19.91	1.580	
4,600.00	4,600.00	4,597.30	4,597.15	10.20	10.11	-175.84	-36.12	-2.63	36.29	15.98	20.31	1.787	
4,700.00	4,700.00	4,695.62	4,695.09	10.42	10.28	-172.18	-43.86	-6.02	44.49	23.78	20.70	2.149	
4,800.00	4,800.00	4,793.23	4,792.00	10.65	10.46	-168.88	-54.58	-10.72	56.12	35.02	21.10	2.660	
4,900.00	4,900.00	4,891.84	4,889.60	10.87	10.64	-166.35	-67.47	-16.38	70.13	48.62	21.51	3.261	
5,000.00	5,000.00	4,990.81	4,987.54	11.10	10.83	-164.66	-80.46	-22.08	84.29	62.37	21.92	3.845	
5,100.00	5,099.98	5,089.99	5,085.70	11.30	11.02	-25.29	-93.49	-27.79	96.93	74.61	22.32	4.343	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 207H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,199.84	5,189.53	5,184.21	11.47	11.23	-25.41	-106.56	-33.53	106.45	83.75	22.70	4.689	
5,300.00	5,299.45	5,289.31	5,282.96	11.65	11.44	-26.29	-119.66	-39.27	112.84	89.74	23.10	4.886	
5,400.00	5,398.70	5,389.19	5,381.81	11.84	11.66	-27.87	-132.77	-45.03	116.17	92.67	23.50	4.943	
5,500.00	5,497.47	5,489.07	5,480.66	12.03	11.89	-30.24	-145.89	-50.78	116.55	92.63	23.92	4.873	
5,600.00	5,595.62	5,588.82	5,579.37	12.23	12.12	-33.54	-158.98	-56.52	114.21	89.85	24.35	4.689	
5,656.70	5,650.96	5,645.27	5,635.24	12.35	12.26	-35.95	-166.40	-59.78	111.79	87.18	24.61	4.542	
5,700.00	5,693.13	5,688.35	5,677.87	12.45	12.36	-37.96	-172.05	-62.26	109.74	84.93	24.81	4.423	
5,800.00	5,790.52	5,787.83	5,776.32	12.69	12.60	-42.90	-185.11	-67.99	105.57	80.28	25.29	4.175	
5,900.00	5,887.90	5,887.31	5,874.78	12.94	12.85	-48.19	-198.18	-73.72	102.24	76.46	25.78	3.966	
6,000.00	5,985.28	5,986.79	5,973.23	13.20	13.10	-53.78	-211.24	-79.45	99.85	73.56	26.30	3.797	
6,100.00	6,082.67	6,086.26	6,071.68	13.47	13.35	-59.59	-224.30	-85.18	98.46	71.64	26.82	3.671	
6,182.70	6,163.21	6,168.54	6,153.10	13.71	13.57	-64.47	-235.10	-89.92	98.10	70.83	27.27	3.597	
6,200.00	6,180.05	6,185.74	6,170.13	13.76	13.61	-65.50	-237.36	-90.91	98.12	70.75	27.37	3.585	
6,300.00	6,277.44	6,285.22	6,268.58	14.05	13.87	-71.38	-250.43	-96.64	98.83	70.90	27.92	3.539	
6,400.00	6,374.82	6,384.70	6,367.03	14.36	14.14	-77.13	-263.49	-102.37	100.57	72.07	28.50	3.529	
6,500.00	6,472.20	6,484.18	6,465.49	14.67	14.41	-82.63	-276.55	-108.10	103.29	74.21	29.08	3.552	
6,600.00	6,569.59	6,583.66	6,563.94	14.99	14.68	-87.80	-289.61	-113.83	106.92	77.25	29.67	3.603	
6,700.00	6,666.97	6,683.14	6,662.39	15.32	14.96	-92.60	-302.67	-119.56	111.37	81.09	30.28	3.678	
6,800.00	6,764.36	6,782.62	6,760.84	15.66	15.24	-97.01	-315.74	-125.29	116.54	85.64	30.90	3.772	
6,900.00	6,861.74	6,882.10	6,859.29	16.01	15.52	-101.02	-328.80	-131.02	122.34	90.82	31.52	3.881	
7,000.00	6,959.13	6,981.58	6,957.74	16.36	15.80	-104.66	-341.86	-136.74	128.69	96.53	32.16	4.002	
7,100.00	7,056.51	7,081.06	7,056.19	16.72	16.09	-107.94	-354.92	-142.47	135.51	102.70	32.80	4.131	
7,200.00	7,153.89	7,180.54	7,154.65	17.08	16.37	-110.90	-367.99	-148.20	142.73	109.27	33.46	4.266	
7,300.00	7,251.28	7,280.02	7,253.10	17.45	16.66	-113.58	-381.05	-153.93	150.29	116.17	34.12	4.405	
7,400.00	7,348.66	7,379.50	7,351.55	17.83	16.96	-115.99	-394.11	-159.66	158.15	123.37	34.78	4.547	
7,500.00	7,446.05	7,478.98	7,450.00	18.21	17.25	-118.17	-407.17	-165.39	166.27	130.81	35.46	4.689	
7,600.00	7,543.43	7,578.46	7,548.45	18.59	17.55	-120.15	-420.23	-171.12	174.60	138.46	36.14	4.831	
7,700.00	7,640.81	7,677.93	7,646.90	18.98	17.85	-121.94	-433.30	-176.85	183.12	146.29	36.83	4.972	
7,800.00	7,738.20	7,777.41	7,745.35	19.37	18.15	-123.58	-446.36	-182.58	191.80	154.28	37.52	5.112	
7,900.00	7,835.58	7,876.89	7,843.81	19.77	18.45	-125.07	-459.42	-188.31	200.62	162.41	38.22	5.250	
8,000.00	7,932.97	7,976.37	7,942.26	20.17	18.75	-126.44	-472.48	-194.04	209.57	170.65	38.92	5.385	
8,100.00	8,030.35	8,075.85	8,040.71	20.57	19.05	-127.69	-485.55	-199.77	218.63	179.00	39.63	5.517	
8,200.00	8,127.74	8,175.33	8,139.16	20.98	19.36	-128.85	-498.61	-205.50	227.78	187.44	40.34	5.647	
8,300.00	8,225.12	8,274.81	8,237.61	21.39	19.67	-129.91	-511.67	-211.23	237.02	195.97	41.05	5.773	
8,400.00	8,322.50	8,374.29	8,336.06	21.80	19.98	-130.89	-524.73	-216.96	246.33	204.56	41.77	5.897	
8,500.00	8,419.89	8,473.77	8,434.52	22.21	20.28	-131.81	-537.79	-222.69	255.71	213.21	42.50	6.017	
8,600.00	8,517.27	8,573.25	8,532.97	22.63	20.60	-132.66	-550.86	-228.42	265.15	221.93	43.23	6.134	
8,700.00	8,614.66	8,672.73	8,631.42	23.05	20.91	-133.45	-563.92	-234.15	274.65	230.69	43.96	6.248	
8,800.00	8,712.04	8,772.21	8,729.87	23.47	21.22	-134.18	-576.98	-239.88	284.19	239.50	44.69	6.359	
8,815.64	8,727.27	8,787.76	8,745.26	23.54	21.27	-134.29	-579.02	-240.78	285.68	240.88	44.81	6.376	
8,825.00	8,736.40	8,797.08	8,754.49	23.58	21.30	-137.92	-580.25	-241.32	286.58	241.70	44.87	6.386	
8,850.00	8,760.91	8,821.97	8,779.11	23.66	21.38	-149.88	-583.51	-242.75	288.93	243.89	45.04	6.415	
8,875.00	8,785.55	8,846.81	8,803.70	23.74	21.45	-165.65	-586.78	-244.18	291.24	246.05	45.19	6.444	
8,900.00	8,810.24	8,871.53	8,828.17	23.81	21.53	175.81	-590.02	-245.60	293.52	248.18	45.34	6.474	
8,925.00	8,834.93	8,896.08	8,852.47	23.87	21.61	157.99	-593.25	-247.02	295.81	250.33	45.48	6.504	
8,950.00	8,859.54	8,920.39	8,876.52	23.92	21.69	143.93	-596.44	-248.42	298.14	252.53	45.61	6.537	
8,975.00	8,884.01	8,944.48	8,900.37	23.96	21.76	134.04	-599.54	-249.81	300.57	254.85	45.72	6.574	
9,000.00	8,908.27	8,968.93	8,924.68	24.00	21.82	127.30	-601.75	-251.23	303.15	257.33	45.82	6.616	
9,025.00	8,932.25	8,993.75	8,949.43	24.02	21.88	122.68	-602.71	-252.68	305.85	259.95	45.90	6.663	
9,050.00	8,955.88	9,018.94	8,974.57	24.04	21.93	119.48	-602.37	-254.16	308.66	262.70	45.96	6.715	
9,075.00	8,979.11	9,044.53	9,000.06	24.04	21.96	117.25	-600.66	-255.67	311.58	265.57	46.01	6.772	
9,100.00	9,001.87	9,070.54	9,025.83	24.04	21.99	115.70	-597.52	-257.20	314.59	268.55	46.04	6.833	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 207H - Wellbore #1 - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD

Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,125.00	9,024.10	9,096.98	9,051.82	24.03	22.01	114.62	-592.90	-258.76	317.67	271.62	46.05	6.898	
9,150.00	9,045.73	9,123.88	9,077.94	24.02	22.03	113.89	-586.72	-260.33	320.81	274.77	46.04	6.968	
9,175.00	9,066.71	9,151.24	9,104.13	23.99	22.03	113.41	-578.94	-261.91	324.00	277.97	46.02	7.040	
9,200.00	9,086.97	9,179.09	9,130.27	23.96	22.02	113.13	-569.49	-263.50	327.20	281.22	45.98	7.116	
9,225.00	9,106.47	9,207.44	9,156.27	23.93	22.00	112.99	-558.32	-265.09	330.41	284.48	45.93	7.194	
9,250.00	9,125.15	9,236.29	9,182.00	23.88	21.97	112.96	-545.39	-266.67	333.59	287.74	45.86	7.275	
9,275.00	9,142.96	9,265.66	9,207.35	23.83	21.94	113.02	-530.64	-268.24	336.74	290.97	45.77	7.357	
9,300.00	9,159.84	9,295.54	9,232.16	23.78	21.89	113.13	-514.07	-269.79	339.82	294.14	45.67	7.440	
9,325.00	9,175.76	9,325.95	9,256.30	23.72	21.84	113.28	-495.64	-271.31	342.81	297.25	45.56	7.524	
9,350.00	9,190.67	9,356.88	9,279.59	23.66	21.78	113.46	-475.36	-272.78	345.69	300.25	45.44	7.607	
9,375.00	9,204.53	9,388.32	9,301.88	23.60	21.71	113.66	-453.24	-274.21	348.43	303.12	45.31	7.690	
9,400.00	9,217.30	9,420.25	9,322.97	23.53	21.64	113.86	-429.31	-275.58	351.01	305.84	45.17	7.771	
9,425.00	9,228.95	9,452.66	9,342.70	23.46	21.57	114.07	-403.65	-276.87	353.41	308.39	45.03	7.849	
9,450.00	9,239.44	9,485.51	9,360.88	23.39	21.49	114.26	-376.31	-278.09	355.61	310.73	44.88	7.924	
9,475.00	9,248.75	9,518.78	9,377.34	23.32	21.41	114.44	-347.43	-279.21	357.58	312.86	44.73	7.995	
9,500.00	9,256.84	9,552.43	9,391.90	23.25	21.33	114.60	-317.12	-280.22	359.31	314.74	44.58	8.061	
9,525.00	9,263.70	9,586.40	9,404.40	23.17	21.25	114.74	-285.55	-281.12	360.78	316.35	44.43	8.121	
9,550.00	9,269.31	9,620.65	9,414.70	23.10	21.18	114.85	-252.90	-281.90	361.97	317.69	44.28	8.175	
9,575.00	9,273.66	9,655.12	9,422.68	23.03	21.11	114.92	-219.39	-282.54	362.88	318.74	44.14	8.221	
9,600.00	9,276.73	9,689.74	9,428.25	22.96	21.05	114.97	-185.22	-283.05	363.49	319.48	44.01	8.259	
9,625.00	9,278.51	9,724.46	9,431.34	22.89	21.00	114.97	-150.66	-283.41	363.79	319.91	43.89	8.289	
9,645.31	9,279.00	9,751.99	9,432.00	22.84	20.96	114.95	-123.13	-283.59	363.82	320.02	43.80	8.306	
9,700.00	9,279.18	9,806.68	9,431.94	22.71	20.93	114.92	-68.44	-283.87	363.72	320.07	43.65	8.333	
9,800.00	9,279.52	9,906.68	9,431.83	22.56	21.06	114.86	31.55	-284.39	363.53	319.89	43.64	8.331	
9,900.00	9,279.85	10,006.68	9,431.71	22.56	21.44	114.79	131.55	-284.90	363.34	319.33	44.02	8.255	
10,000.00	9,280.19	10,106.68	9,431.60	22.85	21.99	114.73	231.55	-285.42	363.16	318.32	44.84	8.099	
10,100.00	9,280.52	10,206.68	9,431.49	23.40	22.68	114.66	331.55	-285.93	362.97	316.89	46.08	7.876	
10,200.00	9,280.86	10,306.68	9,431.38	24.13	23.49	114.60	431.54	-286.44	362.79	315.17	47.62	7.618	
10,300.00	9,281.19	10,406.68	9,431.27	24.99	24.40	114.54	531.54	-286.96	362.60	313.21	49.39	7.342	
10,400.00	9,281.53	10,506.68	9,431.16	25.95	25.40	114.47	631.54	-287.47	362.42	311.07	51.35	7.058	
10,500.00	9,281.86	10,606.67	9,431.04	26.99	26.49	114.41	731.54	-287.98	362.23	308.75	53.48	6.773	
10,600.00	9,282.20	10,706.67	9,430.93	28.11	27.66	114.34	831.53	-288.50	362.05	306.29	55.76	6.493	
10,700.00	9,282.53	10,806.67	9,430.82	29.29	28.89	114.28	931.53	-289.01	361.87	303.69	58.18	6.220	
10,800.00	9,282.87	10,906.67	9,430.71	30.54	30.18	114.21	1,031.53	-289.53	361.68	300.97	60.71	5.957	
10,900.00	9,283.20	11,006.67	9,430.60	31.83	31.52	114.15	1,131.53	-290.04	361.50	298.15	63.35	5.706	
11,000.00	9,283.54	11,106.67	9,430.49	33.18	32.91	114.08	1,231.52	-290.55	361.32	295.23	66.09	5.467	
11,100.00	9,283.87	11,206.67	9,430.37	34.56	34.34	114.02	1,331.52	-291.07	361.14	292.24	68.90	5.241	
11,200.00	9,284.21	11,306.67	9,430.26	35.99	35.80	113.95	1,431.52	-291.58	360.96	289.17	71.79	5.028	
11,300.00	9,284.54	11,406.67	9,430.15	37.45	37.29	113.89	1,531.52	-292.10	360.78	286.04	74.74	4.827	
11,400.00	9,284.88	11,506.67	9,430.04	38.93	38.82	113.82	1,631.52	-292.61	360.60	282.85	77.75	4.638	
11,500.00	9,285.22	11,606.66	9,429.93	40.45	40.36	113.76	1,731.51	-293.12	360.42	279.60	80.81	4.460	
11,600.00	9,285.55	11,706.66	9,429.82	41.99	41.93	113.69	1,831.51	-293.64	360.24	276.32	83.92	4.293	
11,700.00	9,285.89	11,806.66	9,429.70	43.54	43.52	113.63	1,931.51	-294.15	360.06	272.99	87.07	4.135	
11,800.00	9,286.22	11,906.66	9,429.59	45.12	45.13	113.56	2,031.51	-294.66	359.88	269.63	90.25	3.987	
11,900.00	9,286.56	12,006.66	9,429.48	46.72	46.75	113.50	2,131.50	-295.18	359.70	266.23	93.47	3.848	
12,000.00	9,286.89	12,106.66	9,429.37	48.33	48.39	113.43	2,231.50	-295.69	359.53	262.81	96.72	3.717	
12,100.00	9,287.23	12,206.66	9,429.26	49.96	50.04	113.37	2,331.50	-296.21	359.35	259.35	100.00	3.594	
12,200.00	9,287.56	12,306.66	9,429.15	51.60	51.70	113.30	2,431.50	-296.72	359.17	255.88	103.30	3.477	
12,300.00	9,287.90	12,406.66	9,429.03	53.25	53.37	113.24	2,531.49	-297.23	359.00	252.38	106.62	3.367	
12,400.00	9,288.23	12,506.66	9,428.92	54.91	55.06	113.17	2,631.49	-297.75	358.82	248.86	109.96	3.263	
12,500.00	9,288.57	12,606.65	9,428.81	56.58	56.75	113.11	2,731.49	-298.26	358.65	245.32	113.33	3.165	
12,600.00	9,288.90	12,706.65	9,428.70	58.26	58.44	113.04	2,831.49	-298.78	358.47	241.77	116.70	3.072	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 207H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,700.00	9,289.24	12,806.65	9,428.59	59.95	60.15	112.97	2,931.48	-299.29	358.30	238.20	120.10	2.983	
12,800.00	9,289.57	12,906.65	9,428.48	61.64	61.86	112.91	3,031.48	-299.80	358.13	234.62	123.51	2.900	
12,900.00	9,289.91	13,006.65	9,428.36	63.35	63.58	112.84	3,131.48	-300.32	357.95	231.02	126.93	2.820	
13,000.00	9,290.24	13,106.65	9,428.25	65.06	65.31	112.78	3,231.48	-300.83	357.78	227.42	130.36	2.744	
13,100.00	9,290.58	13,206.65	9,428.14	66.77	67.04	112.71	3,331.47	-301.34	357.61	223.80	133.81	2.673	
13,200.00	9,290.91	13,306.65	9,428.03	68.49	68.77	112.64	3,431.47	-301.86	357.44	220.17	137.27	2.604	
13,300.00	9,291.25	13,406.65	9,427.92	70.22	70.51	112.58	3,531.47	-302.37	357.27	216.53	140.73	2.539	
13,400.00	9,291.58	13,506.65	9,427.81	71.95	72.25	112.51	3,631.47	-302.89	357.09	212.89	144.21	2.476	
13,500.00	9,291.92	13,606.64	9,427.69	73.69	74.00	112.45	3,731.47	-303.40	356.92	209.24	147.69	2.417	
13,600.00	9,292.25	13,706.64	9,427.58	75.43	75.75	112.38	3,831.46	-303.91	356.76	205.58	151.18	2.360	
13,700.00	9,292.59	13,806.64	9,427.47	77.17	77.51	112.31	3,931.46	-304.43	356.59	201.91	154.68	2.305	
13,800.00	9,292.92	13,906.64	9,427.36	78.92	79.27	112.25	4,031.46	-304.94	356.42	198.24	158.18	2.253	
13,900.00	9,293.26	14,006.64	9,427.25	80.67	81.03	112.18	4,131.46	-305.46	356.25	194.56	161.69	2.203	
14,000.00	9,293.59	14,106.64	9,427.14	82.42	82.79	112.11	4,231.45	-305.97	356.08	190.87	165.21	2.155	
14,100.00	9,293.93	14,206.64	9,427.02	84.18	84.56	112.05	4,331.45	-306.48	355.91	187.18	168.73	2.109	
14,200.00	9,294.26	14,306.64	9,426.91	85.94	86.32	111.98	4,431.45	-307.00	355.75	183.49	172.26	2.065	
14,300.00	9,294.60	14,406.64	9,426.80	87.70	88.09	111.91	4,531.45	-307.51	355.58	179.79	175.79	2.023	
14,400.00	9,294.93	14,506.64	9,426.69	89.46	89.87	111.85	4,631.44	-308.02	355.42	176.08	179.33	1.982	
14,500.00	9,295.27	14,606.63	9,426.58	91.23	91.64	111.78	4,731.44	-308.54	355.25	172.38	182.87	1.943	
14,600.00	9,295.60	14,706.63	9,426.47	93.00	93.42	111.71	4,831.44	-309.05	355.09	168.67	186.42	1.905	
14,700.00	9,295.94	14,806.63	9,426.35	94.77	95.20	111.65	4,931.44	-309.57	354.92	164.95	189.97	1.868	
14,800.00	9,296.27	14,906.63	9,426.24	96.54	96.98	111.58	5,031.43	-310.08	354.76	161.24	193.52	1.833	
14,900.00	9,296.61	15,006.63	9,426.13	98.32	98.76	111.51	5,131.43	-310.59	354.59	157.51	197.08	1.799	
15,000.00	9,296.94	15,106.63	9,426.02	100.10	100.54	111.44	5,231.43	-311.11	354.43	153.79	200.64	1.767	
15,100.00	9,297.28	15,206.63	9,425.91	101.88	102.33	111.38	5,331.43	-311.62	354.27	150.07	204.20	1.735	
15,200.00	9,297.61	15,306.63	9,425.80	103.66	104.11	111.31	5,431.42	-312.14	354.11	146.34	207.77	1.704	
15,300.00	9,297.95	15,406.63	9,425.68	105.44	105.90	111.24	5,531.42	-312.65	353.95	142.61	211.34	1.675	
15,400.00	9,298.28	15,506.63	9,425.57	107.22	107.69	111.17	5,631.42	-313.16	353.78	138.87	214.91	1.646	
15,500.00	9,298.62	15,606.62	9,425.46	109.00	109.48	111.11	5,731.42	-313.68	353.62	135.14	218.49	1.619	
15,600.00	9,298.95	15,706.62	9,425.35	110.79	111.27	111.04	5,831.42	-314.19	353.46	131.40	222.06	1.592	
15,700.00	9,299.29	15,806.62	9,425.24	112.58	113.06	110.97	5,931.41	-314.70	353.31	127.66	225.64	1.566	
15,800.00	9,299.62	15,906.62	9,425.13	114.37	114.86	110.90	6,031.41	-315.22	353.15	123.92	229.22	1.541	
15,900.00	9,299.96	16,006.62	9,425.01	116.15	116.65	110.84	6,131.41	-315.73	352.99	120.18	232.81	1.516	
16,000.00	9,300.29	16,106.62	9,424.90	117.94	118.45	110.77	6,231.41	-316.25	352.83	116.44	236.39	1.493	Level 3
16,100.00	9,300.63	16,206.62	9,424.79	119.74	120.24	110.70	6,331.40	-316.76	352.67	112.69	239.98	1.470	Level 3
16,200.00	9,300.96	16,306.62	9,424.68	121.53	122.04	110.63	6,431.40	-317.27	352.52	108.95	243.57	1.447	Level 3
16,300.00	9,301.30	16,406.62	9,424.57	123.32	123.84	110.56	6,531.40	-317.79	352.36	105.20	247.16	1.426	Level 3
16,400.00	9,301.63	16,506.62	9,424.46	125.12	125.64	110.50	6,631.40	-318.30	352.20	101.45	250.75	1.405	Level 3
16,500.00	9,301.97	16,606.61	9,424.34	126.91	127.44	110.43	6,731.39	-318.82	352.05	97.70	254.35	1.384	Level 3
16,600.00	9,302.30	16,706.61	9,424.23	128.71	129.24	110.36	6,831.39	-319.33	351.89	93.95	257.94	1.364	Level 3
16,700.00	9,302.64	16,806.61	9,424.12	130.50	131.04	110.29	6,931.39	-319.84	351.74	90.20	261.54	1.345	Level 3
16,800.00	9,302.97	16,906.61	9,424.01	132.30	132.84	110.22	7,031.39	-320.36	351.58	86.45	265.14	1.326	Level 3
16,807.66	9,303.00	16,914.27	9,424.00	132.44	132.98	110.22	7,039.05	-320.40	351.57	86.16	265.41	1.325	Level 3, SF

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 307H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	1.10	1.10	0.00	0.00	89.43	0.60	60.00	60.00				
100.00	100.00	101.10	101.10	0.08	0.09	89.43	0.60	60.00	60.00	59.83	0.17	355.470	
200.00	200.00	201.10	201.10	0.31	0.31	89.43	0.60	60.00	60.00	59.38	0.62	97.040	
300.00	300.00	301.10	301.10	0.53	0.54	89.43	0.60	60.00	60.00	58.94	1.07	56.190	
400.00	400.00	401.10	401.10	0.76	0.76	89.43	0.60	60.00	60.00	58.49	1.52	39.543	
500.00	500.00	501.10	501.10	0.98	0.98	89.43	0.60	60.00	60.00	58.04	1.97	30.506	
600.00	600.00	601.10	601.10	1.21	1.21	89.43	0.60	60.00	60.00	57.59	2.42	24.831	
700.00	700.00	701.10	701.10	1.43	1.43	89.43	0.60	60.00	60.00	57.14	2.87	20.936	
800.00	800.00	801.10	801.10	1.66	1.66	89.43	0.60	60.00	60.00	56.69	3.32	18.098	
900.00	900.00	901.10	901.10	1.88	1.88	89.43	0.60	60.00	60.00	56.24	3.77	15.937	
1,000.00	1,000.00	1,001.10	1,001.10	2.11	2.11	89.43	0.60	60.00	60.00	55.79	4.21	14.237	
1,100.00	1,100.00	1,101.10	1,101.10	2.33	2.33	89.43	0.60	60.00	60.00	55.34	4.66	12.865	
1,200.00	1,200.00	1,201.10	1,201.10	2.56	2.56	89.43	0.60	60.00	60.00	54.89	5.11	11.734	
1,300.00	1,300.00	1,301.10	1,301.10	2.78	2.78	89.43	0.60	60.00	60.00	54.44	5.56	10.786	
1,400.00	1,400.00	1,401.10	1,401.10	3.01	3.01	89.43	0.60	60.00	60.00	53.99	6.01	9.979	
1,500.00	1,500.00	1,501.10	1,501.10	3.23	3.23	89.43	0.60	60.00	60.00	53.54	6.46	9.285	
1,600.00	1,600.00	1,601.10	1,601.10	3.45	3.46	89.43	0.60	60.00	60.00	53.09	6.91	8.681	
1,700.00	1,700.00	1,701.10	1,701.10	3.68	3.68	89.43	0.60	60.00	60.00	52.64	7.36	8.151	
1,800.00	1,800.00	1,801.10	1,801.10	3.90	3.91	89.43	0.60	60.00	60.00	52.19	7.81	7.682	
1,900.00	1,900.00	1,901.10	1,901.10	4.13	4.13	89.43	0.60	60.00	60.00	51.74	8.26	7.264	
2,000.00	2,000.00	2,001.10	2,001.10	4.35	4.36	89.43	0.60	60.00	60.00	51.29	8.71	6.889	
2,100.00	2,100.00	2,101.10	2,101.10	4.58	4.58	89.43	0.60	60.00	60.00	50.84	9.16	6.551	
2,200.00	2,200.00	2,201.10	2,201.10	4.80	4.81	89.43	0.60	60.00	60.00	50.39	9.61	6.244	
2,300.00	2,300.00	2,301.10	2,301.10	5.03	5.03	89.43	0.60	60.00	60.00	49.94	10.06	5.965	
2,400.00	2,400.00	2,401.10	2,401.10	5.25	5.26	89.43	0.60	60.00	60.00	49.50	10.51	5.710	
2,500.00	2,500.00	2,501.10	2,501.10	5.48	5.48	89.43	0.60	60.00	60.00	49.05	10.96	5.476	
2,600.00	2,600.00	2,601.10	2,601.10	5.70	5.70	89.43	0.60	60.00	60.00	48.60	11.41	5.260	
2,700.00	2,700.00	2,701.10	2,701.10	5.93	5.93	89.43	0.60	60.00	60.00	48.15	11.86	5.061	
2,800.00	2,800.00	2,801.10	2,801.10	6.15	6.15	89.43	0.60	60.00	60.00	47.70	12.31	4.876	
2,900.00	2,900.00	2,901.10	2,901.10	6.38	6.38	89.43	0.60	60.00	60.00	47.25	12.76	4.704	
3,000.00	3,000.00	3,001.10	3,001.10	6.60	6.60	89.43	0.60	60.00	60.00	46.80	13.21	4.544	
3,100.00	3,100.00	3,101.10	3,101.10	6.83	6.83	89.43	0.60	60.00	60.00	46.35	13.65	4.394	
3,200.00	3,200.00	3,201.10	3,201.10	7.05	7.05	89.43	0.60	60.00	60.00	45.90	14.10	4.254	
3,300.00	3,300.00	3,301.10	3,301.10	7.28	7.28	89.43	0.60	60.00	60.00	45.45	14.55	4.123	
3,400.00	3,400.00	3,401.10	3,401.10	7.50	7.50	89.43	0.60	60.00	60.00	45.00	15.00	3.999	
3,500.00	3,500.00	3,501.10	3,501.10	7.73	7.73	89.43	0.60	60.00	60.00	44.55	15.45	3.883	
3,600.00	3,600.00	3,601.10	3,601.10	7.95	7.95	89.43	0.60	60.00	60.00	44.10	15.90	3.773	
3,700.00	3,700.00	3,701.10	3,701.10	8.17	8.18	89.43	0.60	60.00	60.00	43.65	16.35	3.669	
3,800.00	3,800.00	3,801.10	3,801.10	8.40	8.40	89.43	0.60	60.00	60.00	43.20	16.80	3.571	
3,900.00	3,900.00	3,901.10	3,901.10	8.62	8.63	89.43	0.60	60.00	60.00	42.75	17.25	3.478	
4,000.00	4,000.00	4,001.10	4,001.10	8.85	8.85	89.43	0.60	60.00	60.00	42.30	17.70	3.390	
4,100.00	4,100.00	4,101.10	4,101.10	9.07	9.08	89.43	0.60	60.00	60.00	41.85	18.15	3.306	
4,200.00	4,200.00	4,201.10	4,201.10	9.30	9.30	89.43	0.60	60.00	60.00	41.40	18.60	3.226	
4,300.00	4,300.00	4,301.10	4,301.10	9.52	9.53	89.43	0.60	60.00	60.00	40.95	19.05	3.150	
4,400.00	4,400.00	4,401.10	4,401.10	9.75	9.75	89.43	0.60	60.00	60.00	40.50	19.50	3.077	
4,466.30	4,466.30	4,467.40	4,467.40	9.90	9.90	89.43	0.60	60.00	60.00	40.21	19.80	3.031	CC
4,500.00	4,500.00	4,501.09	4,501.09	9.97	9.98	89.43	0.60	60.00	60.00	40.06	19.95	3.008	ES
4,600.00	4,600.00	4,600.00	4,599.98	10.20	10.17	90.69	-0.74	61.12	61.14	40.77	20.37	3.001	
4,700.00	4,700.00	4,698.14	4,697.99	10.42	10.35	94.13	-4.65	64.40	64.65	43.88	20.77	3.113	
4,800.00	4,800.00	4,797.87	4,797.47	10.65	10.52	98.24	-9.98	68.87	69.69	48.52	21.17	3.292	
4,900.00	4,900.00	4,897.63	4,896.98	10.87	10.70	101.79	-15.31	73.35	75.04	53.46	21.58	3.478	
5,000.00	5,000.00	4,997.42	4,996.45	11.10	10.88	106.03	-22.22	77.35	80.61	58.63	21.98	3.667	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 307H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	5,099.98	5,096.88	5,095.34	11.30	11.06	-110.54	-32.35	80.37	87.42	65.06	22.36	3.910	
5,200.00	5,199.84	5,196.41	5,194.21	11.47	11.25	-107.64	-43.50	83.08	95.93	73.21	22.72	4.222	
5,300.00	5,299.45	5,295.94	5,293.07	11.65	11.44	-106.99	-54.65	85.80	105.59	82.50	23.09	4.573	
5,400.00	5,398.70	5,395.33	5,391.80	11.84	11.63	-108.06	-65.78	88.51	116.30	92.83	23.47	4.955	
5,500.00	5,497.47	5,494.46	5,490.27	12.03	11.83	-110.37	-76.89	91.21	128.24	104.38	23.86	5.374	
5,600.00	5,595.62	5,593.22	5,588.37	12.23	12.04	-113.52	-87.95	93.90	141.74	117.47	24.27	5.840	
5,656.70	5,650.96	5,649.00	5,643.78	12.35	12.16	-115.55	-94.20	95.42	150.24	125.73	24.51	6.130	
5,700.00	5,693.13	5,691.54	5,686.03	12.45	12.25	-117.20	-98.97	96.58	157.06	132.36	24.70	6.359	
5,800.00	5,790.52	5,789.77	5,783.61	12.69	12.46	-120.51	-109.97	99.26	173.24	148.09	25.14	6.890	
5,900.00	5,887.90	5,888.00	5,881.18	12.94	12.67	-123.26	-120.98	101.94	189.88	164.27	25.61	7.415	
6,000.00	5,985.28	5,986.23	5,978.76	13.20	12.89	-125.55	-131.98	104.62	206.88	180.79	26.09	7.930	
6,100.00	6,082.67	6,084.46	6,076.33	13.47	13.11	-127.50	-142.99	107.30	224.16	197.58	26.58	8.433	
6,200.00	6,180.05	6,182.69	6,173.91	13.76	13.34	-129.17	-153.99	109.97	241.65	214.56	27.09	8.920	
6,300.00	6,277.44	6,280.92	6,271.48	14.05	13.56	-130.62	-164.99	112.65	259.32	231.71	27.62	9.390	
6,400.00	6,374.82	6,379.15	6,369.06	14.36	13.80	-131.88	-176.00	115.33	277.13	248.98	28.15	9.844	
6,500.00	6,472.20	6,477.38	6,466.63	14.67	14.03	-132.99	-187.00	118.01	295.05	266.35	28.70	10.281	
6,600.00	6,569.59	6,575.61	6,564.21	14.99	14.27	-133.97	-198.01	120.69	313.07	283.81	29.26	10.700	
6,700.00	6,666.97	6,673.84	6,661.78	15.32	14.51	-134.84	-209.01	123.37	331.16	301.33	29.83	11.102	
6,800.00	6,764.36	6,772.07	6,759.36	15.66	14.75	-135.63	-220.02	126.04	349.33	318.92	30.41	11.487	
6,900.00	6,861.74	6,870.30	6,856.93	16.01	14.99	-136.33	-231.02	128.72	367.55	336.55	31.00	11.857	
7,000.00	6,959.13	6,968.53	6,954.51	16.36	15.24	-136.97	-242.03	131.40	385.82	354.22	31.60	12.210	
7,100.00	7,056.51	7,066.76	7,052.08	16.72	15.49	-137.55	-253.03	134.08	404.13	371.92	32.20	12.549	
7,200.00	7,153.89	7,164.99	7,149.66	17.08	15.74	-138.09	-264.04	136.76	422.48	389.66	32.82	12.873	
7,300.00	7,251.28	7,263.22	7,247.23	17.45	15.99	-138.57	-275.04	139.44	440.86	407.42	33.44	13.183	
7,400.00	7,348.66	7,361.45	7,344.81	17.83	16.24	-139.02	-286.05	142.12	459.27	425.20	34.07	13.480	
7,500.00	7,446.05	7,459.68	7,442.38	18.21	16.50	-139.44	-297.05	144.79	477.70	442.99	34.70	13.765	
7,600.00	7,543.43	7,557.91	7,539.96	18.59	16.75	-139.82	-308.06	147.47	496.16	460.81	35.35	14.037	
7,700.00	7,640.81	7,656.14	7,637.53	18.98	17.01	-140.17	-319.06	150.15	514.63	478.64	35.99	14.298	
7,800.00	7,738.20	7,754.37	7,735.11	19.37	17.27	-140.50	-330.07	152.83	533.13	496.48	36.65	14.548	
7,900.00	7,835.58	7,852.60	7,832.68	19.77	17.54	-140.81	-341.07	155.51	551.64	514.33	37.30	14.787	
8,000.00	7,932.97	7,950.83	7,930.26	20.17	17.80	-141.10	-352.07	158.19	570.16	532.19	37.97	15.017	
8,100.00	8,030.35	8,049.06	8,027.83	20.57	18.06	-141.37	-363.08	160.86	588.70	550.06	38.63	15.238	
8,200.00	8,127.74	8,147.29	8,125.40	20.98	18.33	-141.63	-374.08	163.54	607.25	567.94	39.31	15.449	
8,300.00	8,225.12	8,245.52	8,222.98	21.39	18.60	-141.87	-385.09	166.22	625.81	585.83	39.98	15.652	
8,400.00	8,322.50	8,343.75	8,320.55	21.80	18.86	-142.09	-396.09	168.90	644.38	603.72	40.66	15.847	
8,500.00	8,419.89	8,441.97	8,418.13	22.21	19.13	-142.30	-407.10	171.58	662.96	621.61	41.35	16.034	
8,600.00	8,517.27	8,540.20	8,515.70	22.63	19.40	-142.50	-418.10	174.26	681.55	639.51	42.03	16.214	
8,700.00	8,614.66	8,638.43	8,613.28	23.05	19.67	-142.69	-429.11	176.93	700.14	657.42	42.72	16.387	
8,800.00	8,712.04	8,736.66	8,710.85	23.47	19.95	-142.88	-440.11	179.61	718.74	675.33	43.42	16.554	
8,815.64	8,727.27	8,752.02	8,726.11	23.54	19.99	-142.90	-441.83	180.03	721.65	678.13	43.53	16.579	
8,825.00	8,736.40	8,761.23	8,735.25	23.58	20.01	-146.59	-442.86	180.28	723.38	679.79	43.59	16.595	
8,850.00	8,760.91	8,785.82	8,759.68	23.66	20.08	-158.81	-445.62	180.95	727.82	684.08	43.74	16.638	
8,875.00	8,785.55	8,810.39	8,784.09	23.74	20.15	-174.97	-448.37	181.62	732.02	688.13	43.89	16.679	
8,900.00	8,810.24	8,834.87	8,808.41	23.81	20.22	165.99	-451.11	182.29	735.98	691.95	44.03	16.717	
8,925.00	8,834.93	8,859.20	8,832.57	23.87	20.29	147.55	-453.84	182.95	739.69	695.53	44.15	16.752	
8,950.00	8,859.54	8,883.31	8,856.52	23.92	20.35	132.76	-456.54	183.61	743.17	698.90	44.27	16.786	
8,975.00	8,884.01	8,907.13	8,880.18	23.96	20.42	122.08	-459.21	184.26	746.44	702.06	44.38	16.818	
9,000.00	8,908.27	8,930.59	8,903.49	24.00	20.49	114.59	-461.84	184.90	749.53	705.04	44.48	16.850	
9,025.00	8,932.25	8,953.64	8,926.38	24.02	20.55	109.32	-464.42	185.53	752.46	707.88	44.57	16.882	
9,050.00	8,955.88	8,976.21	8,948.80	24.04	20.61	105.57	-466.95	186.14	755.26	710.61	44.65	16.915	
9,075.00	8,979.11	8,998.24	8,970.68	24.04	20.68	102.87	-469.42	186.75	757.99	713.27	44.72	16.950	
9,100.00	9,001.87	9,019.66	8,991.96	24.04	20.74	100.92	-471.82	187.33	760.67	715.89	44.78	16.987	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 307H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,125.00	9,024.10	9,040.42	9,012.58	24.03	20.79	99.50	-474.14	187.90	763.36	718.54	44.83	17.029	
9,150.00	9,045.73	9,060.46	9,032.49	24.02	20.85	98.47	-476.39	188.44	766.11	721.24	44.87	17.075	
9,175.00	9,066.71	9,079.73	9,051.63	23.99	20.90	97.73	-478.55	188.97	768.96	724.07	44.90	17.127	
9,200.00	9,086.97	9,098.18	9,069.95	23.96	20.96	97.20	-480.61	189.47	771.97	727.06	44.92	17.186	
9,225.00	9,106.47	9,115.74	9,087.40	23.93	21.00	96.82	-482.58	189.95	775.19	730.26	44.93	17.253	
9,250.00	9,125.15	9,132.39	9,103.94	23.88	21.05	96.54	-484.45	190.40	778.67	733.73	44.93	17.329	
9,275.00	9,142.96	9,148.06	9,119.50	23.83	21.10	96.32	-486.20	190.83	782.45	737.52	44.93	17.415	
9,300.00	9,159.84	9,162.72	9,134.06	23.78	21.14	96.12	-487.84	191.23	786.57	741.66	44.92	17.511	
9,325.00	9,175.76	9,183.84	9,155.07	23.72	21.19	96.37	-489.99	191.76	791.06	746.14	44.91	17.613	
9,350.00	9,190.67	9,213.54	9,184.72	23.66	21.26	97.18	-491.54	192.15	795.73	750.81	44.92	17.715	
9,375.00	9,204.53	9,246.99	9,218.16	23.60	21.32	98.23	-491.12	192.11	800.53	755.61	44.91	17.824	
9,400.00	9,217.30	9,285.44	9,256.45	23.53	21.37	99.56	-487.83	191.40	805.38	760.49	44.90	17.939	
9,425.00	9,228.95	9,330.69	9,301.00	23.46	21.40	101.26	-480.13	189.69	810.20	765.34	44.86	18.059	
9,450.00	9,239.44	9,385.37	9,353.52	23.39	21.41	103.40	-465.40	186.36	814.83	770.03	44.80	18.187	
9,475.00	9,248.75	9,453.22	9,415.73	23.32	21.39	106.06	-439.16	180.39	819.02	774.32	44.70	18.321	
9,500.00	9,256.84	9,539.13	9,488.00	23.25	21.30	109.26	-394.07	170.08	822.39	777.84	44.55	18.461	
9,525.00	9,263.70	9,648.13	9,565.83	23.17	21.16	112.78	-320.02	153.10	824.31	779.98	44.33	18.593	
9,550.00	9,269.31	9,781.20	9,634.46	23.10	21.05	115.97	-209.40	127.66	824.01	779.86	44.15	18.664	
9,575.00	9,273.66	9,928.83	9,670.84	23.03	21.13	117.88	-70.57	95.66	820.70	776.54	44.16	18.585	
9,600.00	9,276.73	9,987.29	9,672.96	22.96	21.23	118.51	-13.66	82.56	815.04	770.84	44.19	18.443	
9,625.00	9,278.51	10,000.00	9,672.90	22.89	21.25	119.10	-1.25	79.86	809.85	765.71	44.14	18.347	
9,645.31	9,279.00	10,016.97	9,672.84	22.84	21.27	119.60	15.37	76.41	806.13	762.02	44.11	18.274	
9,700.00	9,279.18	10,053.13	9,672.69	22.71	21.32	119.82	50.90	69.73	797.36	753.33	44.03	18.108	
9,800.00	9,279.52	10,120.01	9,672.42	22.56	21.44	120.14	117.03	59.74	784.47	740.47	43.99	17.831	
9,900.00	9,279.85	10,200.00	9,672.10	22.56	21.65	120.38	196.62	51.87	775.80	731.58	44.22	17.546	
10,000.00	9,280.19	10,255.80	9,671.88	22.85	21.86	120.45	252.34	49.01	770.93	726.22	44.71	17.242	
10,100.00	9,280.52	10,338.50	9,671.55	23.40	22.29	120.43	335.03	48.05	769.90	724.21	45.69	16.849	
10,200.00	9,280.86	10,438.50	9,671.15	24.13	22.99	120.38	435.03	47.48	769.48	722.36	47.12	16.329	
10,300.00	9,281.19	10,538.50	9,670.76	24.99	23.81	120.34	535.02	46.91	769.06	720.26	48.80	15.760	
10,400.00	9,281.53	10,638.49	9,670.36	25.95	24.74	120.29	635.02	46.33	768.64	717.96	50.68	15.166	
10,500.00	9,281.86	10,738.49	9,669.97	26.99	25.76	120.25	735.01	45.76	768.22	715.47	52.75	14.564	
10,600.00	9,282.20	10,838.49	9,669.57	28.11	26.87	120.20	835.01	45.19	767.80	712.83	54.98	13.966	
10,700.00	9,282.53	10,938.48	9,669.17	29.29	28.05	120.16	935.00	44.61	767.38	710.04	57.35	13.382	
10,800.00	9,282.87	11,038.48	9,668.78	30.54	29.31	120.11	1,035.00	44.04	766.97	707.13	59.84	12.817	
10,900.00	9,283.20	11,138.48	9,668.38	31.83	30.61	120.07	1,134.99	43.47	766.55	704.10	62.45	12.275	
11,000.00	9,283.54	11,238.48	9,667.99	33.18	31.97	120.02	1,234.98	42.89	766.13	700.98	65.15	11.759	
11,100.00	9,283.87	11,338.47	9,667.59	34.56	33.38	119.98	1,334.98	42.32	765.72	697.77	67.94	11.270	
11,200.00	9,284.21	11,438.47	9,667.20	35.99	34.82	119.93	1,434.97	41.75	765.30	694.49	70.81	10.808	
11,300.00	9,284.54	11,538.47	9,666.80	37.45	36.30	119.89	1,534.97	41.17	764.89	691.14	73.75	10.372	
11,400.00	9,284.88	11,638.47	9,666.40	38.93	37.81	119.84	1,634.96	40.60	764.47	687.73	76.74	9.961	
11,500.00	9,285.22	11,738.46	9,666.01	40.45	39.34	119.80	1,734.96	40.03	764.06	684.26	79.79	9.576	
11,600.00	9,285.55	11,838.46	9,665.61	41.99	40.90	119.75	1,834.95	39.45	763.64	680.75	82.89	9.213	
11,700.00	9,285.89	11,938.46	9,665.22	43.54	42.48	119.71	1,934.95	38.88	763.23	677.20	86.03	8.872	
11,800.00	9,286.22	12,038.45	9,664.82	45.12	44.08	119.66	2,034.94	38.31	762.82	673.61	89.21	8.551	
11,900.00	9,286.56	12,138.45	9,664.43	46.72	45.70	119.62	2,134.94	37.73	762.40	669.98	92.42	8.249	
12,000.00	9,286.89	12,238.45	9,664.03	48.33	47.33	119.57	2,234.93	37.16	761.99	666.33	95.66	7.965	
12,100.00	9,287.23	12,338.45	9,663.63	49.96	48.98	119.52	2,334.93	36.59	761.58	662.65	98.93	7.698	
12,200.00	9,287.56	12,438.44	9,663.24	51.60	50.63	119.48	2,434.92	36.01	761.17	658.94	102.23	7.446	
12,300.00	9,287.90	12,538.44	9,662.84	53.25	52.30	119.43	2,534.92	35.44	760.76	655.21	105.55	7.208	
12,400.00	9,288.23	12,638.44	9,662.45	54.91	53.98	119.39	2,634.91	34.87	760.35	651.46	108.89	6.983	
12,500.00	9,288.57	12,738.44	9,662.05	56.58	55.67	119.34	2,734.91	34.29	759.94	647.69	112.25	6.770	
12,600.00	9,288.90	12,838.43	9,661.65	58.26	57.37	119.30	2,834.90	33.72	759.53	643.90	115.63	6.569	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 307H - Wellbore #1 - Plan #1

Offset Site Error: 0.00 ft
Survey Program: 0-MWD
Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,700.00	9,289.24	12,938.43	9,661.26	59.95	59.07	119.25	2,934.90	33.15	759.12	640.10	119.02	6.378	
12,800.00	9,289.57	13,038.43	9,660.86	61.64	60.78	119.20	3,034.89	32.57	758.71	636.29	122.43	6.197	
12,900.00	9,289.91	13,138.43	9,660.47	63.35	62.50	119.16	3,134.89	32.00	758.31	632.46	125.85	6.026	
13,000.00	9,290.24	13,238.42	9,660.07	65.06	64.22	119.11	3,234.88	31.43	757.90	628.62	129.28	5.862	
13,100.00	9,290.58	13,338.42	9,659.68	66.77	65.95	119.07	3,334.88	30.85	757.49	624.77	132.72	5.707	
13,200.00	9,290.91	13,438.42	9,659.28	68.49	67.69	119.02	3,434.87	30.28	757.09	620.91	136.18	5.559	
13,300.00	9,291.25	13,538.41	9,658.88	70.22	69.43	118.97	3,534.87	29.71	756.68	617.04	139.64	5.419	
13,400.00	9,291.58	13,638.41	9,658.49	71.95	71.17	118.93	3,634.86	29.14	756.28	613.16	143.12	5.284	
13,500.00	9,291.92	13,738.41	9,658.09	73.69	72.92	118.88	3,734.86	28.56	755.87	609.27	146.60	5.156	
13,600.00	9,292.25	13,838.41	9,657.70	75.43	74.67	118.83	3,834.85	27.99	755.47	605.38	150.09	5.033	
13,700.00	9,292.59	13,938.40	9,657.30	77.17	76.42	118.79	3,934.85	27.42	755.06	601.47	153.59	4.916	
13,800.00	9,292.92	14,038.40	9,656.91	78.92	78.18	118.74	4,034.84	26.84	754.66	597.57	157.09	4.804	
13,900.00	9,293.26	14,138.40	9,656.51	80.67	79.94	118.69	4,134.84	26.27	754.26	593.65	160.61	4.696	
14,000.00	9,293.59	14,238.40	9,656.11	82.42	81.70	118.65	4,234.83	25.70	753.86	589.73	164.12	4.593	
14,100.00	9,293.93	14,338.39	9,655.72	84.18	83.47	118.60	4,334.83	25.12	753.45	585.81	167.65	4.494	
14,200.00	9,294.26	14,438.39	9,655.32	85.94	85.24	118.55	4,434.82	24.55	753.05	581.88	171.17	4.399	
14,300.00	9,294.60	14,538.39	9,654.93	87.70	87.01	118.51	4,534.82	23.98	752.65	577.95	174.71	4.308	
14,400.00	9,294.93	14,638.38	9,654.53	89.46	88.78	118.46	4,634.81	23.40	752.25	574.01	178.24	4.220	
14,500.00	9,295.27	14,738.38	9,654.13	91.23	90.56	118.41	4,734.81	22.83	751.85	570.07	181.79	4.136	
14,600.00	9,295.60	14,838.38	9,653.74	93.00	92.33	118.37	4,834.80	22.26	751.45	566.12	185.33	4.055	
14,700.00	9,295.94	14,938.38	9,653.34	94.77	94.11	118.32	4,934.80	21.68	751.06	562.17	188.88	3.976	
14,800.00	9,296.27	15,038.37	9,652.95	96.54	95.89	118.27	5,034.79	21.11	750.66	558.22	192.44	3.901	
14,900.00	9,296.61	15,138.37	9,652.55	98.32	97.67	118.23	5,134.79	20.54	750.26	554.27	195.99	3.828	
15,000.00	9,296.94	15,238.37	9,652.16	100.10	99.46	118.18	5,234.78	19.96	749.86	550.31	199.55	3.758	
15,100.00	9,297.28	15,338.37	9,651.76	101.88	101.24	118.13	5,334.78	19.39	749.47	546.35	203.12	3.690	
15,200.00	9,297.61	15,438.36	9,651.36	103.66	103.03	118.08	5,434.77	18.82	749.07	542.38	206.69	3.624	
15,300.00	9,297.95	15,538.36	9,650.97	105.44	104.82	118.04	5,534.77	18.24	748.67	538.42	210.25	3.561	
15,400.00	9,298.28	15,638.36	9,650.57	107.22	106.61	117.99	5,634.76	17.67	748.28	534.45	213.83	3.499	
15,500.00	9,298.62	15,738.36	9,650.18	109.00	108.40	117.94	5,734.75	17.10	747.88	530.48	217.40	3.440	
15,600.00	9,298.95	15,838.35	9,649.78	110.79	110.19	117.90	5,834.75	16.52	747.49	526.51	220.98	3.383	
15,700.00	9,299.29	15,938.35	9,649.39	112.58	111.98	117.85	5,934.74	15.95	747.10	522.54	224.56	3.327	
15,800.00	9,299.62	16,038.35	9,648.99	114.37	113.78	117.80	6,034.74	15.38	746.70	518.56	228.14	3.273	
15,900.00	9,299.96	16,138.34	9,648.59	116.15	115.57	117.75	6,134.73	14.80	746.31	514.59	231.72	3.221	
16,000.00	9,300.29	16,238.34	9,648.20	117.94	117.37	117.71	6,234.73	14.23	745.92	510.61	235.31	3.170	
16,100.00	9,300.63	16,338.34	9,647.80	119.74	119.16	117.66	6,334.72	13.66	745.53	506.63	238.90	3.121	
16,200.00	9,300.96	16,438.34	9,647.41	121.53	120.96	117.61	6,434.72	13.08	745.14	502.65	242.49	3.073	
16,300.00	9,301.30	16,538.33	9,647.01	123.32	122.76	117.56	6,534.71	12.51	744.75	498.67	246.08	3.026	
16,400.00	9,301.63	16,638.33	9,646.61	125.12	124.56	117.51	6,634.71	11.94	744.36	494.68	249.67	2.981	
16,500.00	9,301.97	16,738.33	9,646.22	126.91	126.36	117.47	6,734.70	11.37	743.97	490.70	253.27	2.937	
16,600.00	9,302.30	16,838.33	9,645.82	128.71	128.16	117.42	6,834.70	10.79	743.58	486.71	256.86	2.895	
16,700.00	9,302.64	16,938.32	9,645.43	130.50	129.96	117.37	6,934.69	10.22	743.19	482.73	260.46	2.853	
16,800.00	9,302.97	17,038.32	9,645.03	132.30	131.63	117.32	7,034.69	9.65	742.80	478.87	263.93	2.814	
16,807.66	9,303.00	17,045.98	9,645.00	132.44	131.74	117.32	7,042.35	9.60	742.77	478.59	264.18	2.812 SF	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 401H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.20	0.20	0.00	0.00	134.62	-29.70	30.10	42.29				
100.00	100.00	100.20	100.20	0.08	0.08	134.62	-29.70	30.10	42.29	42.12	0.17	253.549	
200.00	200.00	200.20	200.20	0.31	0.31	134.62	-29.70	30.10	42.29	41.67	0.62	68.612	
300.00	300.00	300.20	300.20	0.53	0.53	134.62	-29.70	30.10	42.29	41.22	1.07	39.674	
400.00	400.00	400.20	400.20	0.76	0.76	134.62	-29.70	30.10	42.29	40.77	1.52	27.905	
500.00	500.00	500.20	500.20	0.98	0.98	134.62	-29.70	30.10	42.29	40.32	1.96	21.521	
600.00	600.00	600.20	600.20	1.21	1.21	134.62	-29.70	30.10	42.29	39.87	2.41	17.514	
700.00	700.00	700.20	700.20	1.43	1.43	134.62	-29.70	30.10	42.29	39.42	2.86	14.765	
800.00	800.00	800.20	800.20	1.66	1.66	134.62	-29.70	30.10	42.29	38.97	3.31	12.762	
900.00	900.00	900.20	900.20	1.88	1.88	134.62	-29.70	30.10	42.29	38.52	3.76	11.237	
1,000.00	1,000.00	1,000.20	1,000.20	2.11	2.11	134.62	-29.70	30.10	42.29	38.07	4.21	10.038	
1,100.00	1,100.00	1,100.20	1,100.20	2.33	2.33	134.62	-29.70	30.10	42.29	37.62	4.66	9.070	
1,200.00	1,200.00	1,200.20	1,200.20	2.56	2.56	134.62	-29.70	30.10	42.29	37.17	5.11	8.273	
1,300.00	1,300.00	1,300.20	1,300.20	2.78	2.78	134.62	-29.70	30.10	42.29	36.72	5.56	7.604	
1,400.00	1,400.00	1,400.20	1,400.20	3.01	3.01	134.62	-29.70	30.10	42.29	36.28	6.01	7.035	
1,500.00	1,500.00	1,500.20	1,500.20	3.23	3.23	134.62	-29.70	30.10	42.29	35.83	6.46	6.546	
1,600.00	1,600.00	1,600.20	1,600.20	3.45	3.46	134.62	-29.70	30.10	42.29	35.38	6.91	6.120	
1,700.00	1,700.00	1,700.20	1,700.20	3.68	3.68	134.62	-29.70	30.10	42.29	34.93	7.36	5.746	
1,800.00	1,800.00	1,800.20	1,800.20	3.90	3.90	134.62	-29.70	30.10	42.29	34.48	7.81	5.415	
1,900.00	1,900.00	1,900.20	1,900.20	4.13	4.13	134.62	-29.70	30.10	42.29	34.03	8.26	5.120	
2,000.00	2,000.00	2,000.20	2,000.20	4.35	4.35	134.62	-29.70	30.10	42.29	33.58	8.71	4.856	
2,100.00	2,100.00	2,100.20	2,100.20	4.58	4.58	134.62	-29.70	30.10	42.29	33.13	9.16	4.618	
2,200.00	2,200.00	2,200.20	2,200.20	4.80	4.80	134.62	-29.70	30.10	42.29	32.68	9.61	4.402	
2,300.00	2,300.00	2,300.20	2,300.20	5.03	5.03	134.62	-29.70	30.10	42.29	32.23	10.06	4.205	
2,400.00	2,400.00	2,400.20	2,400.20	5.25	5.25	134.62	-29.70	30.10	42.29	31.78	10.51	4.025	
2,500.00	2,500.00	2,500.20	2,500.20	5.48	5.48	134.62	-29.70	30.10	42.29	31.33	10.96	3.860	
2,600.00	2,600.00	2,600.20	2,600.20	5.70	5.70	134.62	-29.70	30.10	42.29	30.88	11.41	3.708	
2,700.00	2,700.00	2,700.20	2,700.20	5.93	5.93	134.62	-29.70	30.10	42.29	30.43	11.85	3.567	
2,800.00	2,800.00	2,800.20	2,800.20	6.15	6.15	134.62	-29.70	30.10	42.29	29.98	12.30	3.437	
2,900.00	2,900.00	2,900.20	2,900.20	6.38	6.38	134.62	-29.70	30.10	42.29	29.53	12.75	3.316	
3,000.00	3,000.00	3,000.20	3,000.20	6.60	6.60	134.62	-29.70	30.10	42.29	29.08	13.20	3.203	
3,100.00	3,100.00	3,100.20	3,100.20	6.83	6.83	134.62	-29.70	30.10	42.29	28.63	13.65	3.097	
3,200.00	3,200.00	3,200.20	3,200.20	7.05	7.05	134.62	-29.70	30.10	42.29	28.18	14.10	2.999	
3,300.00	3,300.00	3,300.20	3,300.20	7.28	7.28	134.62	-29.70	30.10	42.29	27.73	14.55	2.906	
3,400.00	3,400.00	3,400.20	3,400.20	7.50	7.50	134.62	-29.70	30.10	42.29	27.28	15.00	2.819	
3,500.00	3,500.00	3,500.20	3,500.20	7.73	7.73	134.62	-29.70	30.10	42.29	26.84	15.45	2.737	
3,600.00	3,600.00	3,600.20	3,600.20	7.95	7.95	134.62	-29.70	30.10	42.29	26.39	15.90	2.659	
3,700.00	3,700.00	3,700.20	3,700.20	8.17	8.18	134.62	-29.70	30.10	42.29	25.94	16.35	2.586	
3,800.00	3,800.00	3,800.20	3,800.20	8.40	8.40	134.62	-29.70	30.10	42.29	25.49	16.80	2.517	
3,900.00	3,900.00	3,900.20	3,900.20	8.62	8.62	134.62	-29.70	30.10	42.29	25.04	17.25	2.452	
4,000.00	4,000.00	4,000.20	4,000.20	8.85	8.85	134.62	-29.70	30.10	42.29	24.59	17.70	2.389	
4,100.00	4,100.00	4,100.20	4,100.20	9.07	9.07	134.62	-29.70	30.10	42.29	24.14	18.15	2.330	
4,200.00	4,200.00	4,200.20	4,200.20	9.30	9.30	134.62	-29.70	30.10	42.29	23.69	18.60	2.274	
4,300.00	4,300.00	4,300.20	4,300.20	9.52	9.52	134.62	-29.70	30.10	42.29	23.24	19.05	2.220	
4,366.60	4,366.60	4,366.80	4,366.80	9.67	9.67	134.62	-29.70	30.10	42.29	22.94	19.35	2.186	CC
4,400.00	4,400.00	4,400.00	4,400.00	9.75	9.75	134.62	-29.70	30.10	42.29	22.79	19.50	2.169	ES, SF
4,500.00	4,500.00	4,499.26	4,499.24	9.97	9.94	136.41	-31.41	29.90	43.38	23.46	19.92	2.178	
4,600.00	4,600.00	4,598.08	4,597.92	10.20	10.11	141.23	-36.50	29.32	46.87	26.57	20.31	2.308	
4,700.00	4,700.00	4,696.67	4,696.15	10.42	10.28	147.73	-44.90	28.35	53.25	32.55	20.70	2.573	
4,800.00	4,800.00	4,796.20	4,795.20	10.65	10.45	153.45	-54.53	27.24	61.16	40.07	21.10	2.899	
4,900.00	4,900.00	4,895.72	4,894.25	10.87	10.62	157.84	-64.17	26.13	69.54	48.05	21.49	3.235	
5,000.00	5,000.00	4,995.25	4,993.30	11.10	10.80	161.27	-73.80	25.03	78.24	56.33	21.90	3.572	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 401H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	5,099.98	5,094.89	5,092.47	11.30	10.99	-58.36	-83.45	23.92	86.23	63.94	22.29	3.869	
5,200.00	5,199.84	5,194.69	5,191.80	11.47	11.18	-58.61	-93.11	22.80	92.44	69.78	22.66	4.080	
5,300.00	5,299.45	5,294.53	5,291.16	11.65	11.38	-60.62	-102.78	21.69	96.89	73.86	23.03	4.207	
5,400.00	5,398.70	5,394.28	5,390.43	11.84	11.58	-64.23	-112.44	20.58	99.91	76.49	23.41	4.267	
5,500.00	5,497.47	5,493.82	5,489.50	12.03	11.78	-69.42	-122.07	19.47	102.03	78.22	23.81	4.285	
5,600.00	5,595.62	5,593.04	5,588.24	12.23	11.99	-76.17	-131.68	18.37	104.08	79.87	24.22	4.298	
5,656.70	5,650.96	5,649.10	5,644.04	12.35	12.10	-80.65	-137.11	17.74	105.63	81.17	24.46	4.318	
5,700.00	5,693.13	5,691.85	5,686.59	12.45	12.19	-84.21	-141.24	17.27	107.19	82.55	24.65	4.349	
5,800.00	5,790.52	5,790.59	5,784.85	12.69	12.40	-91.96	-150.80	16.17	112.35	87.26	25.09	4.477	
5,900.00	5,887.90	5,889.32	5,883.12	12.94	12.62	-98.93	-160.36	15.07	119.40	93.85	25.55	4.672	
6,000.00	5,985.28	5,988.06	5,981.38	13.20	12.83	-105.07	-169.92	13.97	128.04	102.00	26.03	4.918	
6,100.00	6,082.67	6,086.79	6,079.65	13.47	13.05	-110.38	-179.48	12.87	137.96	111.43	26.53	5.201	
6,200.00	6,180.05	6,185.53	6,177.92	13.76	13.28	-114.96	-189.04	11.77	148.91	121.88	27.03	5.509	
6,300.00	6,277.44	6,284.26	6,276.18	14.05	13.50	-118.90	-198.60	10.67	160.68	133.13	27.55	5.832	
6,400.00	6,374.82	6,383.00	6,374.45	14.36	13.73	-122.29	-208.16	9.57	173.11	145.03	28.08	6.165	
6,500.00	6,472.20	6,481.73	6,472.71	14.67	13.95	-125.23	-217.72	8.47	186.05	157.43	28.62	6.500	
6,600.00	6,569.59	6,580.47	6,570.98	14.99	14.18	-127.77	-227.28	7.37	199.42	170.24	29.18	6.835	
6,700.00	6,666.97	6,679.21	6,669.24	15.32	14.42	-130.00	-236.84	6.27	213.13	183.39	29.74	7.166	
6,800.00	6,764.36	6,777.94	6,767.51	15.66	14.65	-131.96	-246.39	5.17	227.11	196.80	30.31	7.492	
6,900.00	6,861.74	6,876.68	6,865.77	16.01	14.89	-133.69	-255.95	4.07	241.33	210.44	30.89	7.812	
7,000.00	6,959.13	6,975.41	6,964.04	16.36	15.12	-135.22	-265.51	2.97	255.74	224.26	31.48	8.123	
7,100.00	7,056.51	7,074.15	7,062.31	16.72	15.36	-136.60	-275.07	1.87	270.31	238.23	32.08	8.426	
7,200.00	7,153.89	7,172.88	7,160.57	17.08	15.60	-137.83	-284.63	0.77	285.02	252.34	32.69	8.720	
7,300.00	7,251.28	7,271.62	7,258.84	17.45	15.85	-138.94	-294.19	-0.33	299.85	266.55	33.30	9.005	
7,400.00	7,348.66	7,370.35	7,357.10	17.83	16.09	-139.94	-303.75	-1.43	314.77	280.85	33.92	9.281	
7,500.00	7,446.05	7,469.09	7,455.37	18.21	16.34	-140.86	-313.31	-2.53	329.78	295.24	34.54	9.547	
7,600.00	7,543.43	7,567.82	7,553.63	18.59	16.58	-141.70	-322.87	-3.63	344.87	309.70	35.17	9.805	
7,700.00	7,640.81	7,666.56	7,651.90	18.98	16.83	-142.46	-332.43	-4.73	360.02	324.21	35.81	10.054	
7,800.00	7,738.20	7,765.30	7,750.16	19.37	17.08	-143.16	-341.98	-5.83	375.23	338.78	36.45	10.295	
7,900.00	7,835.58	7,864.03	7,848.43	19.77	17.33	-143.81	-351.54	-6.93	390.50	353.40	37.10	10.527	
8,000.00	7,932.97	7,962.77	7,946.70	20.17	17.58	-144.41	-361.10	-8.03	405.80	368.06	37.75	10.751	
8,100.00	8,030.35	8,061.50	8,044.96	20.57	17.83	-144.97	-370.66	-9.13	421.15	382.75	38.40	10.967	
8,200.00	8,127.74	8,160.24	8,143.23	20.98	18.08	-145.49	-380.22	-10.23	436.53	397.47	39.06	11.176	
8,300.00	8,225.12	8,258.97	8,241.49	21.39	18.34	-145.97	-389.78	-11.33	451.95	412.22	39.72	11.377	
8,400.00	8,322.50	8,357.71	8,339.76	21.80	18.59	-146.42	-399.34	-12.42	467.39	427.00	40.39	11.572	
8,500.00	8,419.89	8,456.44	8,438.02	22.21	18.85	-146.84	-408.90	-13.52	482.86	441.80	41.06	11.760	
8,600.00	8,517.27	8,555.18	8,536.29	22.63	19.10	-147.24	-418.46	-14.62	498.36	456.63	41.73	11.941	
8,700.00	8,614.66	8,653.92	8,634.55	23.05	19.36	-147.61	-428.02	-15.72	513.88	471.47	42.41	12.117	
8,800.00	8,712.04	8,752.65	8,732.82	23.47	19.62	-147.96	-437.58	-16.82	529.41	486.32	43.09	12.286	
8,815.64	8,727.27	8,768.09	8,748.19	23.54	19.66	-148.01	-439.07	-17.00	531.85	488.65	43.20	12.312	
8,825.00	8,736.40	8,777.34	8,757.39	23.58	19.68	-151.67	-439.97	-17.10	533.28	490.02	43.26	12.328	
8,850.00	8,760.91	8,802.08	8,782.01	23.66	19.75	-163.78	-442.36	-17.37	536.86	493.45	43.41	12.368	
8,875.00	8,785.55	8,826.82	8,806.63	23.74	19.81	-179.80	-444.76	-17.65	540.08	496.53	43.55	12.401	
8,900.00	8,810.24	8,851.49	8,831.18	23.81	19.88	161.35	-447.14	-17.92	542.96	499.27	43.68	12.429	
8,925.00	8,834.93	8,876.02	8,855.60	23.87	19.94	143.15	-449.52	-18.20	545.48	501.68	43.81	12.451	
8,950.00	8,859.54	8,900.35	8,879.82	23.92	20.01	128.63	-451.88	-18.47	547.69	503.77	43.93	12.469	
8,975.00	8,884.01	8,924.42	8,903.77	23.96	20.07	118.26	-454.20	-18.74	549.61	505.58	44.03	12.482	
9,000.00	8,908.27	8,948.15	8,927.39	24.00	20.13	111.11	-456.50	-19.00	551.27	507.14	44.13	12.493	
9,025.00	8,932.25	8,971.48	8,950.60	24.02	20.19	106.23	-458.76	-19.26	552.72	508.50	44.21	12.501	
9,050.00	8,955.88	8,994.34	8,973.36	24.04	20.25	102.89	-460.97	-19.52	554.01	509.72	44.29	12.509	
9,075.00	8,979.11	9,016.68	8,995.59	24.04	20.31	100.63	-463.14	-19.76	555.20	510.85	44.36	12.517	
9,100.00	9,001.87	9,038.43	9,017.24	24.04	20.37	99.14	-465.24	-20.01	556.36	511.95	44.41	12.527	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 401H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,125.00	9,024.10	9,059.54	9,038.25	24.03	20.42	98.20	-467.29	-20.24	557.55	513.09	44.46	12.541	
9,150.00	9,045.73	9,079.94	9,058.55	24.02	20.48	97.66	-469.26	-20.47	558.85	514.35	44.50	12.560	
9,175.00	9,066.71	9,099.58	9,078.09	23.99	20.53	97.42	-471.16	-20.69	560.33	515.81	44.52	12.585	
9,200.00	9,086.97	9,118.40	9,096.83	23.96	20.58	97.38	-472.98	-20.90	562.07	517.53	44.54	12.619	
9,225.00	9,106.47	9,136.35	9,114.70	23.93	20.63	97.48	-474.72	-21.10	564.15	519.60	44.55	12.663	
9,250.00	9,125.15	9,153.40	9,131.66	23.88	20.67	97.67	-476.37	-21.29	566.65	522.09	44.56	12.718	
9,275.00	9,142.96	9,169.47	9,147.66	23.83	20.72	97.88	-477.93	-21.47	569.62	525.07	44.55	12.786	
9,300.00	9,159.84	9,184.55	9,162.66	23.78	20.75	98.10	-479.39	-21.63	573.15	528.61	44.54	12.869	
9,325.00	9,175.76	9,198.57	9,176.62	23.72	20.79	98.26	-480.75	-21.79	577.29	532.77	44.52	12.968	
9,350.00	9,190.67	9,211.51	9,189.49	23.66	20.83	98.36	-482.00	-21.93	582.10	537.61	44.49	13.084	
9,375.00	9,204.53	9,223.32	9,201.25	23.60	20.86	98.35	-483.14	-22.07	587.61	543.15	44.46	13.218	
9,400.00	9,217.30	9,233.99	9,211.86	23.53	20.89	98.21	-484.18	-22.18	593.86	549.45	44.42	13.370	
9,425.00	9,228.95	9,243.46	9,221.30	23.46	20.91	97.93	-485.09	-22.29	600.88	556.51	44.37	13.542	
9,450.00	9,239.44	9,251.73	9,229.53	23.39	20.93	97.48	-485.89	-22.38	608.68	564.35	44.32	13.733	
9,475.00	9,248.75	9,258.77	9,236.53	23.32	20.95	96.86	-486.57	-22.46	617.24	572.97	44.27	13.943	
9,500.00	9,256.84	9,264.56	9,242.29	23.25	20.97	96.04	-487.14	-22.53	626.57	582.36	44.21	14.172	
9,525.00	9,263.70	9,269.08	9,246.79	23.17	20.98	95.03	-487.57	-22.58	636.63	592.48	44.15	14.419	
9,550.00	9,269.31	9,272.31	9,250.01	23.10	20.99	93.81	-487.89	-22.61	647.40	603.31	44.09	14.684	
9,575.00	9,273.66	9,274.27	9,251.95	23.03	20.99	92.39	-488.08	-22.63	658.82	614.80	44.02	14.965	
9,600.00	9,276.73	9,274.92	9,252.61	22.96	20.99	90.76	-488.14	-22.64	670.85	626.89	43.96	15.262	
9,625.00	9,278.51	9,274.28	9,251.97	22.89	20.99	88.94	-488.08	-22.63	683.42	639.53	43.89	15.572	
9,645.31	9,279.00	9,272.81	9,250.51	22.84	20.99	87.33	-487.93	-22.62	693.99	650.16	43.83	15.833	
9,700.00	9,279.18	9,267.70	9,245.42	22.71	20.98	86.84	-487.44	-22.56	724.31	680.62	43.69	16.578	
9,800.00	9,279.52	9,258.36	9,236.12	22.56	20.95	85.94	-486.54	-22.46	786.51	743.00	43.51	18.077	
9,900.00	9,279.85	9,249.02	9,226.83	22.56	20.93	85.04	-485.63	-22.35	855.80	812.31	43.49	19.678	
10,000.00	9,280.19	9,239.68	9,217.53	22.85	20.90	84.14	-484.73	-22.25	930.59	886.85	43.75	21.272	
10,100.00	9,280.52	9,230.34	9,208.23	23.40	20.88	83.25	-483.82	-22.14	1,009.68	965.40	44.28	22.803	
10,200.00	9,280.86	9,220.99	9,198.93	24.13	20.85	82.36	-482.92	-22.04	1,092.12	1,047.13	44.99	24.277	
10,300.00	9,281.19	9,211.65	9,189.64	24.99	20.83	81.48	-482.01	-21.94	1,177.21	1,131.39	45.82	25.694	
10,400.00	9,281.53	9,202.31	9,180.34	25.95	20.80	80.60	-481.11	-21.83	1,264.41	1,217.66	46.75	27.048	
10,500.00	9,281.86	9,192.97	9,171.04	26.99	20.78	79.72	-480.20	-21.73	1,353.32	1,305.56	47.77	28.333	
10,600.00	9,282.20	9,183.63	9,161.74	28.11	20.75	78.85	-479.30	-21.62	1,443.63	1,394.77	48.86	29.547	
10,700.00	9,282.53	9,174.28	9,152.45	29.29	20.73	77.99	-478.40	-21.52	1,535.07	1,485.06	50.02	30.690	
10,800.00	9,282.87	9,164.94	9,143.15	30.54	20.70	77.13	-477.49	-21.42	1,627.48	1,576.24	51.24	31.763	
10,900.00	9,283.20	12,428.93	10,872.90	31.83	32.79	157.46	1,131.93	39.76	1,720.94	1,656.32	64.62	26.631	
11,000.00	9,283.54	12,528.93	10,872.97	33.18	34.09	157.46	1,231.93	39.25	1,720.70	1,653.43	67.27	25.578	
11,100.00	9,283.87	12,628.93	10,873.03	34.56	35.44	157.45	1,331.93	38.74	1,720.45	1,650.44	70.01	24.575	
11,200.00	9,284.21	12,728.93	10,873.10	35.99	36.84	157.45	1,431.92	38.23	1,720.21	1,647.38	72.83	23.621	
11,300.00	9,284.54	12,828.93	10,873.17	37.45	38.27	157.45	1,531.92	37.72	1,719.97	1,644.25	75.71	22.717	
11,400.00	9,284.88	12,928.93	10,873.24	38.93	39.73	157.44	1,631.92	37.21	1,719.72	1,641.06	78.66	21.863	
11,500.00	9,285.22	13,028.93	10,873.31	40.45	41.22	157.44	1,731.92	36.70	1,719.48	1,637.81	81.66	21.055	
11,600.00	9,285.55	13,128.93	10,873.38	41.99	42.73	157.44	1,831.92	36.19	1,719.24	1,634.52	84.72	20.293	
11,700.00	9,285.89	13,228.93	10,873.45	43.54	44.27	157.43	1,931.92	35.68	1,718.99	1,631.17	87.82	19.575	
11,800.00	9,286.22	13,328.93	10,873.52	45.12	45.83	157.43	2,031.91	35.17	1,718.75	1,627.79	90.96	18.896	
11,900.00	9,286.56	13,428.93	10,873.59	46.72	47.41	157.43	2,131.91	34.66	1,718.50	1,624.37	94.13	18.256	
12,000.00	9,286.89	13,528.93	10,873.66	48.33	49.01	157.42	2,231.91	34.15	1,718.26	1,620.92	97.34	17.652	
12,100.00	9,287.23	13,628.93	10,873.73	49.96	50.62	157.42	2,331.91	33.64	1,718.02	1,617.44	100.58	17.081	
12,200.00	9,287.56	13,728.93	10,873.80	51.60	52.25	157.41	2,431.91	33.13	1,717.77	1,613.93	103.84	16.542	
12,300.00	9,287.90	13,828.93	10,873.87	53.25	53.89	157.41	2,531.91	32.62	1,717.53	1,610.40	107.13	16.032	
12,400.00	9,288.23	13,928.93	10,873.94	54.91	55.54	157.41	2,631.90	32.11	1,717.29	1,606.84	110.44	15.549	
12,500.00	9,288.57	14,028.93	10,874.01	56.58	57.20	157.40	2,731.90	31.60	1,717.04	1,603.27	113.78	15.091	
12,600.00	9,288.90	14,128.93	10,874.08	58.26	58.87	157.40	2,831.90	31.08	1,716.80	1,599.67	117.13	14.658	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 401H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,700.00	9,289.24	14,228.93	10,874.15	59.95	60.55	157.40	2,931.90	30.57	1,716.56	1,596.06	120.49	14.246	
12,800.00	9,289.57	14,328.93	10,874.22	61.64	62.24	157.39	3,031.90	30.06	1,716.31	1,592.43	123.88	13.855	
12,900.00	9,289.91	14,428.93	10,874.28	63.35	63.93	157.39	3,131.90	29.55	1,716.07	1,588.79	127.28	13.483	
13,000.00	9,290.24	14,528.93	10,874.35	65.06	65.63	157.39	3,231.89	29.04	1,715.82	1,585.14	130.69	13.129	
13,100.00	9,290.58	14,628.93	10,874.42	66.77	67.34	157.38	3,331.89	28.53	1,715.58	1,581.47	134.11	12.792	
13,200.00	9,290.91	14,728.93	10,874.49	68.49	69.06	157.38	3,431.89	28.02	1,715.34	1,577.79	137.55	12.471	
13,300.00	9,291.25	14,828.93	10,874.56	70.22	70.78	157.38	3,531.89	27.51	1,715.09	1,574.10	141.00	12.164	
13,400.00	9,291.58	14,928.93	10,874.63	71.95	72.50	157.37	3,631.89	27.00	1,714.85	1,570.40	144.45	11.871	
13,500.00	9,291.92	15,028.93	10,874.70	73.69	74.23	157.37	3,731.89	26.49	1,714.61	1,566.69	147.92	11.592	
13,600.00	9,292.25	15,128.93	10,874.77	75.43	75.97	157.37	3,831.88	25.98	1,714.36	1,562.97	151.39	11.324	
13,700.00	9,292.59	15,228.93	10,874.84	77.17	77.70	157.36	3,931.88	25.47	1,714.12	1,559.25	154.87	11.068	
13,800.00	9,292.92	15,328.92	10,874.91	78.92	79.45	157.36	4,031.88	24.96	1,713.88	1,555.51	158.36	10.822	
13,900.00	9,293.26	15,428.92	10,874.98	80.67	81.19	157.35	4,131.88	24.45	1,713.63	1,551.77	161.86	10.587	
14,000.00	9,293.59	15,528.92	10,875.05	82.42	82.94	157.35	4,231.88	23.94	1,713.39	1,548.03	165.36	10.361	
14,100.00	9,293.93	15,628.92	10,875.12	84.18	84.69	157.35	4,331.88	23.43	1,713.15	1,544.27	168.87	10.145	
14,200.00	9,294.26	15,728.92	10,875.19	85.94	86.45	157.34	4,431.87	22.92	1,712.90	1,540.52	172.39	9.936	
14,300.00	9,294.60	15,828.92	10,875.26	87.70	88.21	157.34	4,531.87	22.41	1,712.66	1,536.75	175.91	9.736	
14,400.00	9,294.93	15,928.92	10,875.33	89.46	89.97	157.34	4,631.87	21.90	1,712.42	1,532.98	179.43	9.543	
14,500.00	9,295.27	16,028.92	10,875.40	91.23	91.73	157.33	4,731.87	21.39	1,712.17	1,529.21	182.96	9.358	
14,600.00	9,295.60	16,128.92	10,875.47	93.00	93.50	157.33	4,831.87	20.88	1,711.93	1,525.43	186.50	9.179	
14,700.00	9,295.94	16,228.92	10,875.53	94.77	95.27	157.33	4,931.87	20.37	1,711.69	1,521.65	190.04	9.007	
14,800.00	9,296.27	16,328.92	10,875.60	96.54	97.04	157.32	5,031.86	19.86	1,711.44	1,517.86	193.58	8.841	
14,900.00	9,296.61	16,428.92	10,875.67	98.32	98.81	157.32	5,131.86	19.35	1,711.20	1,514.07	197.13	8.681	
15,000.00	9,296.94	16,528.92	10,875.74	100.10	100.58	157.32	5,231.86	18.84	1,710.96	1,510.27	200.68	8.526	
15,100.00	9,297.28	16,628.92	10,875.81	101.88	102.36	157.31	5,331.86	18.33	1,710.71	1,506.48	204.24	8.376	
15,200.00	9,297.61	16,728.92	10,875.88	103.66	104.14	157.31	5,431.86	17.82	1,710.47	1,502.68	207.79	8.232	
15,300.00	9,297.95	16,828.92	10,875.95	105.44	105.92	157.30	5,531.86	17.31	1,710.23	1,498.87	211.35	8.092	
15,400.00	9,298.28	16,928.92	10,876.02	107.22	107.70	157.30	5,631.85	16.80	1,709.98	1,495.06	214.92	7.956	
15,500.00	9,298.62	17,028.92	10,876.09	109.00	109.48	157.30	5,731.85	16.29	1,709.74	1,491.25	218.48	7.825	
15,600.00	9,298.95	17,128.92	10,876.16	110.79	111.26	157.29	5,831.85	15.78	1,709.50	1,487.44	222.05	7.699	
15,700.00	9,299.29	17,228.92	10,876.23	112.58	113.05	157.29	5,931.85	15.27	1,709.25	1,483.63	225.63	7.576	
15,800.00	9,299.62	17,328.92	10,876.30	114.37	114.83	157.29	6,031.85	14.76	1,709.01	1,479.81	229.20	7.456	
15,900.00	9,299.96	17,428.92	10,876.37	116.15	116.62	157.28	6,131.85	14.25	1,708.77	1,475.99	232.78	7.341	
16,000.00	9,300.29	17,528.92	10,876.44	117.94	118.41	157.28	6,231.84	13.74	1,708.52	1,472.17	236.36	7.229	
16,100.00	9,300.63	17,628.92	10,876.51	119.74	120.20	157.28	6,331.84	13.23	1,708.28	1,468.34	239.94	7.120	
16,200.00	9,300.96	17,728.92	10,876.58	121.53	121.99	157.27	6,431.84	12.72	1,708.04	1,464.52	243.52	7.014	
16,300.00	9,301.30	17,828.92	10,876.65	123.32	123.78	157.27	6,531.84	12.21	1,707.79	1,460.69	247.10	6.911	
16,400.00	9,301.63	17,928.92	10,876.72	125.12	125.57	157.27	6,631.84	11.70	1,707.55	1,456.86	250.69	6.811	
16,500.00	9,301.97	18,028.92	10,876.78	126.91	127.37	157.26	6,731.84	11.19	1,707.31	1,453.03	254.28	6.714	
16,600.00	9,302.30	18,128.91	10,876.85	128.71	129.16	157.26	6,831.83	10.68	1,707.06	1,449.19	257.87	6.620	
16,700.00	9,302.64	18,228.91	10,876.92	130.50	130.96	157.25	6,931.83	10.17	1,706.82	1,445.36	261.46	6.528	
16,800.00	9,302.97	18,328.91	10,876.99	132.30	132.66	157.25	7,031.83	9.66	1,706.58	1,441.62	264.96	6.441	
16,807.66	9,303.00	18,336.57	10,877.00	132.44	132.77	157.25	7,039.49	9.62	1,706.56	1,441.35	265.21	6.435	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 601H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.50	0.50	0.00	0.00	116.07	-29.40	60.10	66.91				
100.00	100.00	100.50	100.50	0.08	0.08	116.07	-29.40	60.10	66.91	66.74	0.17	399.555	
200.00	200.00	200.50	200.50	0.31	0.31	116.07	-29.40	60.10	66.91	66.29	0.62	108.440	
300.00	300.00	300.50	300.50	0.53	0.53	116.07	-29.40	60.10	66.91	65.84	1.07	62.733	
400.00	400.00	400.50	400.50	0.76	0.76	116.07	-29.40	60.10	66.91	65.39	1.52	44.132	
500.00	500.00	500.50	500.50	0.98	0.98	116.07	-29.40	60.10	66.91	64.94	1.97	34.039	
600.00	600.00	600.50	600.50	1.21	1.21	116.07	-29.40	60.10	66.91	64.49	2.42	27.703	
700.00	700.00	700.50	700.50	1.43	1.43	116.07	-29.40	60.10	66.91	64.04	2.86	23.356	
800.00	800.00	800.50	800.50	1.66	1.66	116.07	-29.40	60.10	66.91	63.59	3.31	20.188	
900.00	900.00	900.50	900.50	1.88	1.88	116.07	-29.40	60.10	66.91	63.14	3.76	17.777	
1,000.00	1,000.00	1,000.50	1,000.50	2.11	2.11	116.07	-29.40	60.10	66.91	62.69	4.21	15.880	
1,100.00	1,100.00	1,100.50	1,100.50	2.33	2.33	116.07	-29.40	60.10	66.91	62.24	4.66	14.349	
1,200.00	1,200.00	1,200.50	1,200.50	2.56	2.56	116.07	-29.40	60.10	66.91	61.79	5.11	13.087	
1,300.00	1,300.00	1,300.50	1,300.50	2.78	2.78	116.07	-29.40	60.10	66.91	61.34	5.56	12.029	
1,400.00	1,400.00	1,400.50	1,400.50	3.01	3.01	116.07	-29.40	60.10	66.91	60.89	6.01	11.130	
1,500.00	1,500.00	1,500.50	1,500.50	3.23	3.23	116.07	-29.40	60.10	66.91	60.44	6.46	10.355	
1,600.00	1,600.00	1,600.50	1,600.50	3.45	3.46	116.07	-29.40	60.10	66.91	60.00	6.91	9.682	
1,700.00	1,700.00	1,700.50	1,700.50	3.68	3.68	116.07	-29.40	60.10	66.91	59.55	7.36	9.091	
1,800.00	1,800.00	1,800.50	1,800.50	3.90	3.91	116.07	-29.40	60.10	66.91	59.10	7.81	8.567	
1,900.00	1,900.00	1,900.50	1,900.50	4.13	4.13	116.07	-29.40	60.10	66.91	58.65	8.26	8.101	
2,000.00	2,000.00	2,000.50	2,000.50	4.35	4.35	116.07	-29.40	60.10	66.91	58.20	8.71	7.683	
2,100.00	2,100.00	2,100.50	2,100.50	4.58	4.58	116.07	-29.40	60.10	66.91	57.75	9.16	7.306	
2,200.00	2,200.00	2,200.50	2,200.50	4.80	4.80	116.07	-29.40	60.10	66.91	57.30	9.61	6.964	
2,300.00	2,300.00	2,300.50	2,300.50	5.03	5.03	116.07	-29.40	60.10	66.91	56.85	10.06	6.653	
2,400.00	2,400.00	2,400.50	2,400.50	5.25	5.25	116.07	-29.40	60.10	66.91	56.40	10.51	6.368	
2,500.00	2,500.00	2,500.50	2,500.50	5.48	5.48	116.07	-29.40	60.10	66.91	55.95	10.96	6.107	
2,600.00	2,600.00	2,600.50	2,600.50	5.70	5.70	116.07	-29.40	60.10	66.91	55.50	11.41	5.866	
2,700.00	2,700.00	2,700.50	2,700.50	5.93	5.93	116.07	-29.40	60.10	66.91	55.05	11.86	5.644	
2,800.00	2,800.00	2,800.50	2,800.50	6.15	6.15	116.07	-29.40	60.10	66.91	54.60	12.30	5.437	
2,900.00	2,900.00	2,900.50	2,900.50	6.38	6.38	116.07	-29.40	60.10	66.91	54.15	12.75	5.246	
3,000.00	3,000.00	3,000.50	3,000.50	6.60	6.60	116.07	-29.40	60.10	66.91	53.70	13.20	5.067	
3,100.00	3,100.00	3,100.50	3,100.50	6.83	6.83	116.07	-29.40	60.10	66.91	53.25	13.65	4.900	
3,200.00	3,200.00	3,200.50	3,200.50	7.05	7.05	116.07	-29.40	60.10	66.91	52.80	14.10	4.744	
3,300.00	3,300.00	3,300.50	3,300.50	7.28	7.28	116.07	-29.40	60.10	66.91	52.35	14.55	4.598	
3,400.00	3,400.00	3,400.50	3,400.50	7.50	7.50	116.07	-29.40	60.10	66.91	51.90	15.00	4.460	
3,500.00	3,500.00	3,500.50	3,500.50	7.73	7.73	116.07	-29.40	60.10	66.91	51.45	15.45	4.330	
3,600.00	3,600.00	3,600.50	3,600.50	7.95	7.95	116.07	-29.40	60.10	66.91	51.00	15.90	4.208	
3,700.00	3,700.00	3,700.50	3,700.50	8.17	8.18	116.07	-29.40	60.10	66.91	50.56	16.35	4.092	
3,800.00	3,800.00	3,800.50	3,800.50	8.40	8.40	116.07	-29.40	60.10	66.91	50.11	16.80	3.982	
3,900.00	3,900.00	3,900.50	3,900.50	8.62	8.63	116.07	-29.40	60.10	66.91	49.66	17.25	3.879	
4,000.00	4,000.00	4,000.50	4,000.50	8.85	8.85	116.07	-29.40	60.10	66.91	49.21	17.70	3.780	
4,100.00	4,100.00	4,100.50	4,100.50	9.07	9.07	116.07	-29.40	60.10	66.91	48.76	18.15	3.687	
4,200.00	4,200.00	4,200.50	4,200.50	9.30	9.30	116.07	-29.40	60.10	66.91	48.31	18.60	3.597	
4,300.00	4,300.00	4,300.50	4,300.50	9.52	9.52	116.07	-29.40	60.10	66.91	47.86	19.05	3.513	
4,366.50	4,366.50	4,367.00	4,367.00	9.67	9.67	116.07	-29.40	60.10	66.91	47.56	19.35	3.458	CC
4,400.00	4,400.00	4,400.50	4,400.50	9.75	9.75	116.07	-29.40	60.10	66.91	47.41	19.50	3.432	ES
4,500.00	4,500.00	4,499.48	4,499.46	9.97	9.94	117.39	-31.13	60.07	67.66	47.75	19.92	3.397	SF
4,600.00	4,600.00	4,598.22	4,598.07	10.20	10.11	121.15	-36.25	59.97	70.12	49.81	20.31	3.453	
4,700.00	4,700.00	4,697.63	4,697.18	10.42	10.28	126.24	-43.85	59.83	74.25	53.55	20.70	3.587	
4,800.00	4,800.00	4,797.33	4,796.58	10.65	10.45	130.83	-51.58	59.68	78.98	57.88	21.10	3.744	
4,900.00	4,900.00	4,897.03	4,895.98	10.87	10.62	134.88	-59.30	59.54	84.15	62.66	21.50	3.915	
5,000.00	5,000.00	4,996.73	4,995.38	11.10	10.80	138.45	-67.02	59.39	89.70	67.80	21.90	4.096	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S., R 32 E - Eider Federal 601H - Wellbore #1 - Plan #1 — **Offset Site Error:** 0.00 ft

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

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	5,099.98	5,096.51	5,094.86	11.30	10.98	-80.84	-74.75	59.25	95.26	72.98	22.28	4.275	
5,200.00	5,199.84	5,196.38	5,194.43	11.47	11.17	-80.83	-82.49	59.10	100.33	77.69	22.64	4.431	
5,300.00	5,299.45	5,296.20	5,293.96	11.65	11.36	-82.69	-90.22	58.96	104.91	81.89	23.01	4.558	
5,400.00	5,398.70	5,395.87	5,393.33	11.84	11.56	-86.21	-97.94	58.82	109.31	85.92	23.39	4.673	
5,500.00	5,497.47	5,495.26	5,492.42	12.03	11.75	-91.16	-105.64	58.67	114.14	90.36	23.78	4.800	
5,600.00	5,595.62	5,594.25	5,591.11	12.23	11.95	-97.26	-113.31	58.53	120.18	96.01	24.18	4.971	
5,656.70	5,650.96	5,650.15	5,646.84	12.35	12.06	-101.10	-117.64	58.45	124.49	100.08	24.42	5.099	
5,700.00	5,693.13	5,692.77	5,689.33	12.45	12.15	-104.09	-120.94	58.38	128.26	103.66	24.60	5.214	
5,800.00	5,790.52	5,791.21	5,787.47	12.69	12.35	-110.33	-128.57	58.24	138.18	113.15	25.04	5.520	
5,900.00	5,887.90	5,889.64	5,885.60	12.94	12.55	-115.70	-136.19	58.10	149.54	124.05	25.49	5.867	
6,000.00	5,985.28	5,988.07	5,983.74	13.20	12.76	-120.29	-143.82	57.96	162.03	136.07	25.95	6.243	
6,100.00	6,082.67	6,086.50	6,081.87	13.47	12.96	-124.21	-151.44	57.81	175.40	148.96	26.44	6.635	
6,200.00	6,180.05	6,184.93	6,180.01	13.76	13.17	-127.57	-159.07	57.67	189.47	162.54	26.93	7.036	
6,300.00	6,277.44	6,283.36	6,278.15	14.05	13.39	-130.46	-166.69	57.53	204.10	176.67	27.44	7.439	
6,400.00	6,374.82	6,381.79	6,376.28	14.36	13.60	-132.96	-174.32	57.38	219.18	191.22	27.95	7.841	
6,500.00	6,472.20	6,480.22	6,474.42	14.67	13.81	-135.14	-181.94	57.24	234.61	206.13	28.48	8.237	
6,600.00	6,569.59	6,578.65	6,572.55	14.99	14.03	-137.05	-189.57	57.10	250.33	221.31	29.02	8.625	
6,700.00	6,666.97	6,677.09	6,670.69	15.32	14.25	-138.73	-197.19	56.95	266.30	236.73	29.57	9.005	
6,800.00	6,764.36	6,775.52	6,768.82	15.66	14.47	-140.23	-204.82	56.81	282.46	252.33	30.13	9.375	
6,900.00	6,861.74	6,873.95	6,866.96	16.01	14.69	-141.56	-212.44	56.67	298.80	268.10	30.70	9.734	
7,000.00	6,959.13	6,972.38	6,965.09	16.36	14.91	-142.75	-220.07	56.53	315.27	284.00	31.27	10.082	
7,100.00	7,056.51	7,070.81	7,063.23	16.72	15.14	-143.83	-227.69	56.38	331.86	300.01	31.85	10.418	
7,200.00	7,153.89	7,169.24	7,161.36	17.08	15.36	-144.80	-235.32	56.24	348.56	316.12	32.44	10.744	
7,300.00	7,251.28	7,267.67	7,259.50	17.45	15.59	-145.68	-242.94	56.10	365.35	332.31	33.04	11.058	
7,400.00	7,348.66	7,366.10	7,357.63	17.83	15.82	-146.49	-250.57	55.95	382.21	348.57	33.64	11.361	
7,500.00	7,446.05	7,464.54	7,455.77	18.21	16.04	-147.23	-258.19	55.81	399.14	364.89	34.25	11.654	
7,600.00	7,543.43	7,562.97	7,553.90	18.59	16.27	-147.90	-265.82	55.67	416.13	381.27	34.86	11.936	
7,700.00	7,640.81	7,661.40	7,652.04	18.98	16.50	-148.53	-273.44	55.53	433.17	397.69	35.48	12.208	
7,800.00	7,738.20	7,759.83	7,750.18	19.37	16.74	-149.11	-281.07	55.38	450.26	414.15	36.11	12.470	
7,900.00	7,835.58	7,858.26	7,848.31	19.77	16.97	-149.64	-288.69	55.24	467.39	430.65	36.74	12.723	
8,000.00	7,932.97	7,956.69	7,946.45	20.17	17.20	-150.14	-296.32	55.10	484.56	447.19	37.37	12.966	
8,100.00	8,030.35	8,055.12	8,044.58	20.57	17.44	-150.60	-303.94	54.95	501.76	463.75	38.01	13.202	
8,200.00	8,127.74	8,153.55	8,142.72	20.98	17.67	-151.03	-311.57	54.81	518.99	480.34	38.65	13.428	
8,300.00	8,225.12	8,251.99	8,240.85	21.39	17.91	-151.44	-319.19	54.67	536.24	496.95	39.29	13.647	
8,400.00	8,322.50	8,350.42	8,338.99	21.80	18.14	-151.82	-326.82	54.52	553.53	513.58	39.94	13.858	
8,500.00	8,419.89	8,448.85	8,437.12	22.21	18.38	-152.18	-334.44	54.38	570.83	530.23	40.59	14.062	
8,600.00	8,517.27	8,547.28	8,535.26	22.63	18.62	-152.51	-342.07	54.24	588.15	546.90	41.25	14.258	
8,700.00	8,614.66	8,645.71	8,633.39	23.05	18.86	-152.83	-349.69	54.10	605.49	563.59	41.91	14.448	
8,800.00	8,712.04	8,744.14	8,731.53	23.47	19.10	-153.13	-357.32	53.95	622.85	580.28	42.57	14.631	
8,815.64	8,727.27	8,759.53	8,746.87	23.54	19.13	-153.17	-358.51	53.93	625.57	582.89	42.67	14.660	
8,825.00	8,736.40	8,768.76	8,756.07	23.58	19.16	-156.85	-359.22	53.92	627.16	584.43	42.73	14.677	
8,850.00	8,760.91	8,793.44	8,780.68	23.66	19.22	-169.00	-361.14	53.88	631.10	588.22	42.88	14.719	
8,875.00	8,785.55	8,818.15	8,805.31	23.74	19.28	174.94	-363.05	53.85	634.58	591.56	43.02	14.752	
8,900.00	8,810.24	8,842.82	8,829.91	23.81	19.34	156.03	-364.96	53.81	637.58	594.44	43.15	14.778	
8,925.00	8,834.93	8,867.37	8,854.39	23.87	19.40	137.76	-366.86	53.77	640.12	596.86	43.27	14.795	
8,950.00	8,859.54	8,891.75	8,878.69	23.92	19.46	123.17	-368.75	53.74	642.22	598.85	43.38	14.806	
8,975.00	8,884.01	8,915.89	8,902.76	23.96	19.52	112.72	-370.62	53.70	643.90	600.42	43.48	14.809	
9,000.00	8,908.27	8,939.71	8,926.51	24.00	19.57	105.50	-372.47	53.67	645.18	601.61	43.57	14.808	
9,025.00	8,932.25	8,963.16	8,949.89	24.02	19.63	100.53	-374.28	53.63	646.10	602.45	43.65	14.801	
9,050.00	8,955.88	8,986.18	8,972.84	24.04	19.69	97.12	-376.07	53.60	646.71	602.99	43.73	14.790	
9,075.00	8,979.11	9,008.68	8,995.28	24.04	19.74	94.80	-377.81	53.57	647.06	603.27	43.79	14.777	
9,100.00	9,001.87	9,030.63	9,017.15	24.04	19.80	93.25	-379.51	53.54	647.19	603.35	43.84	14.762	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 601H - Wellbore #1 - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD

Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,125.00	9,024.10	9,051.95	9,038.41	24.03	19.85	92.28	-381.16	53.51	647.18	603.30	43.88	14.748	
9,150.00	9,045.73	9,072.59	9,058.99	24.02	19.90	91.73	-382.76	53.48	647.08	603.17	43.92	14.734	
9,175.00	9,066.71	9,092.48	9,078.82	23.99	19.95	91.49	-384.30	53.45	646.97	603.03	43.94	14.723	
9,200.00	9,086.97	9,111.59	9,097.87	23.96	20.00	91.50	-385.78	53.42	646.91	602.95	43.96	14.716	
9,201.31	9,088.01	9,112.56	9,098.84	23.96	20.00	91.51	-385.86	53.42	646.91	602.95	43.96	14.716	
9,225.00	9,106.47	9,129.84	9,116.07	23.93	20.04	91.68	-387.20	53.39	646.98	603.02	43.97	14.715	
9,250.00	9,125.15	9,147.21	9,133.38	23.88	20.08	91.97	-388.54	53.37	647.25	603.29	43.97	14.722	
9,275.00	9,142.96	9,163.62	9,149.75	23.83	20.12	92.33	-389.81	53.34	647.80	603.84	43.96	14.737	
9,300.00	9,159.84	9,179.05	9,165.13	23.78	20.16	92.73	-391.01	53.32	648.69	604.74	43.94	14.762	
9,325.00	9,175.76	9,193.45	9,179.48	23.72	20.20	93.12	-392.12	53.30	649.99	606.07	43.92	14.799	
9,350.00	9,190.67	9,206.77	9,192.77	23.66	20.23	93.47	-393.16	53.28	651.77	607.87	43.89	14.849	
9,375.00	9,204.53	9,218.99	9,204.95	23.60	20.26	93.76	-394.10	53.26	654.08	610.22	43.86	14.913	
9,400.00	9,217.30	9,230.07	9,216.00	23.53	20.29	93.97	-394.96	53.25	656.98	613.16	43.82	14.993	
9,425.00	9,228.95	9,239.98	9,225.87	23.46	20.31	94.07	-395.73	53.23	660.50	616.73	43.77	15.089	
9,450.00	9,239.44	9,248.69	9,234.56	23.39	20.33	94.04	-396.40	53.22	664.69	620.97	43.72	15.202	
9,475.00	9,248.75	9,256.17	9,242.02	23.32	20.35	93.87	-396.98	53.21	669.56	625.89	43.67	15.332	
9,500.00	9,256.84	9,262.42	9,248.24	23.25	20.37	93.55	-397.47	53.20	675.13	631.52	43.61	15.480	
9,525.00	9,263.70	9,267.40	9,253.21	23.17	20.38	93.06	-397.85	53.19	681.40	637.85	43.55	15.645	
9,550.00	9,269.31	9,271.11	9,256.91	23.10	20.39	92.41	-398.14	53.19	688.36	644.87	43.49	15.828	
9,575.00	9,273.66	9,273.54	9,259.33	23.03	20.40	91.58	-398.33	53.18	695.99	652.56	43.43	16.027	
9,600.00	9,276.73	9,274.67	9,260.47	22.96	20.40	90.58	-398.42	53.18	704.26	660.90	43.36	16.243	
9,625.00	9,278.51	9,274.52	9,260.31	22.89	20.40	89.41	-398.40	53.18	713.14	669.85	43.29	16.473	
9,645.31	9,279.00	9,273.44	9,259.23	22.84	20.39	88.33	-398.32	53.18	720.77	677.53	43.24	16.670	
9,700.00	9,279.18	9,269.39	9,255.19	22.71	20.38	87.99	-398.01	53.19	743.48	700.38	43.10	17.250	
9,800.00	9,279.52	9,261.97	9,247.80	22.56	20.37	87.35	-397.43	53.20	793.06	750.13	42.92	18.476	
9,900.00	9,279.85	9,254.56	9,240.41	22.56	20.35	86.72	-396.86	53.21	851.48	808.57	42.91	19.842	
10,000.00	9,280.19	9,247.15	9,233.03	22.85	20.33	86.08	-396.28	53.22	917.05	873.88	43.18	21.239	
10,100.00	9,280.52	9,239.74	9,225.64	23.40	20.31	85.45	-395.71	53.23	988.35	944.64	43.71	22.610	
10,200.00	9,280.86	9,232.33	9,218.25	24.13	20.29	84.82	-395.13	53.24	1,064.23	1,019.80	44.43	23.955	
10,300.00	9,281.19	9,224.92	9,210.86	24.99	20.28	84.19	-394.56	53.25	1,143.78	1,098.51	45.26	25.269	
10,400.00	9,281.53	9,217.50	9,203.47	25.95	20.26	83.56	-393.99	53.27	1,226.28	1,180.07	46.20	26.541	
10,500.00	9,281.86	9,210.09	9,196.08	26.99	20.24	82.93	-393.41	53.28	1,311.17	1,263.94	47.23	27.763	
10,600.00	9,282.20	9,202.68	9,188.69	28.11	20.22	82.30	-392.84	53.29	1,398.03	1,349.70	48.33	28.929	
10,700.00	9,282.53	9,195.27	9,181.30	29.29	20.20	81.68	-392.26	53.30	1,486.50	1,437.00	49.49	30.035	
10,800.00	9,282.87	9,187.86	9,173.91	30.54	20.18	81.06	-391.69	53.31	1,576.31	1,525.59	50.72	31.079	
10,900.00	9,283.20	9,180.45	9,166.52	31.83	20.17	80.44	-391.12	53.32	1,667.25	1,615.26	52.00	32.063	
11,000.00	9,283.54	9,173.04	9,159.13	33.18	20.15	79.82	-390.54	53.33	1,759.15	1,705.82	53.33	32.989	
11,100.00	9,283.87	9,165.62	9,151.74	34.56	20.13	79.21	-389.97	53.34	1,851.85	1,797.16	54.69	33.859	
11,200.00	9,284.21	9,158.21	9,144.35	35.99	20.11	78.59	-389.39	53.35	1,945.25	1,889.15	56.10	34.675	
11,300.00	9,284.54	9,150.80	9,136.97	37.45	20.09	77.98	-388.82	53.36	2,039.25	1,981.71	57.54	35.441	
11,400.00	9,284.88	9,143.39	9,129.58	38.93	20.07	77.38	-388.25	53.37	2,133.77	2,074.76	59.01	36.161	
11,500.00	9,285.22	9,135.98	9,122.19	40.45	20.06	76.77	-387.67	53.38	2,228.74	2,168.24	60.50	36.836	
11,600.00	9,285.55	9,128.57	9,114.80	41.99	20.04	76.17	-387.10	53.39	2,324.11	2,262.09	62.02	37.472	
11,700.00	9,285.89	9,121.15	9,107.41	43.54	20.02	75.57	-386.52	53.41	2,419.83	2,356.27	63.56	38.069	
11,800.00	9,286.22	9,113.74	9,100.02	45.12	20.00	74.98	-385.95	53.42	2,515.87	2,450.74	65.12	38.632	
11,900.00	9,286.56	9,106.33	9,092.63	46.72	19.98	74.39	-385.37	53.43	2,612.18	2,545.47	66.70	39.162	
12,000.00	9,286.89	9,098.92	9,085.24	48.33	19.97	73.80	-384.80	53.44	2,708.73	2,640.44	68.30	39.662	
12,100.00	9,287.23	9,091.51	9,077.85	49.96	19.95	73.21	-384.23	53.45	2,805.51	2,735.61	69.90	40.134	
12,200.00	9,287.56	9,084.10	9,070.46	51.60	19.93	72.63	-383.65	53.46	2,902.49	2,830.96	71.52	40.581	
12,300.00	9,287.90	9,076.69	9,063.07	53.25	19.91	72.06	-383.08	53.47	2,999.65	2,926.49	73.16	41.003	
12,400.00	9,288.23	9,069.27	9,055.68	54.91	19.89	71.48	-382.50	53.48	3,096.97	3,022.17	74.80	41.403	
12,500.00	9,288.57	15,464.44	12,320.99	56.58	59.25	167.72	2,730.88	31.57	3,102.87	2,987.04	115.83	26.789	

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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 601H - Wellbore #1 - Plan #1

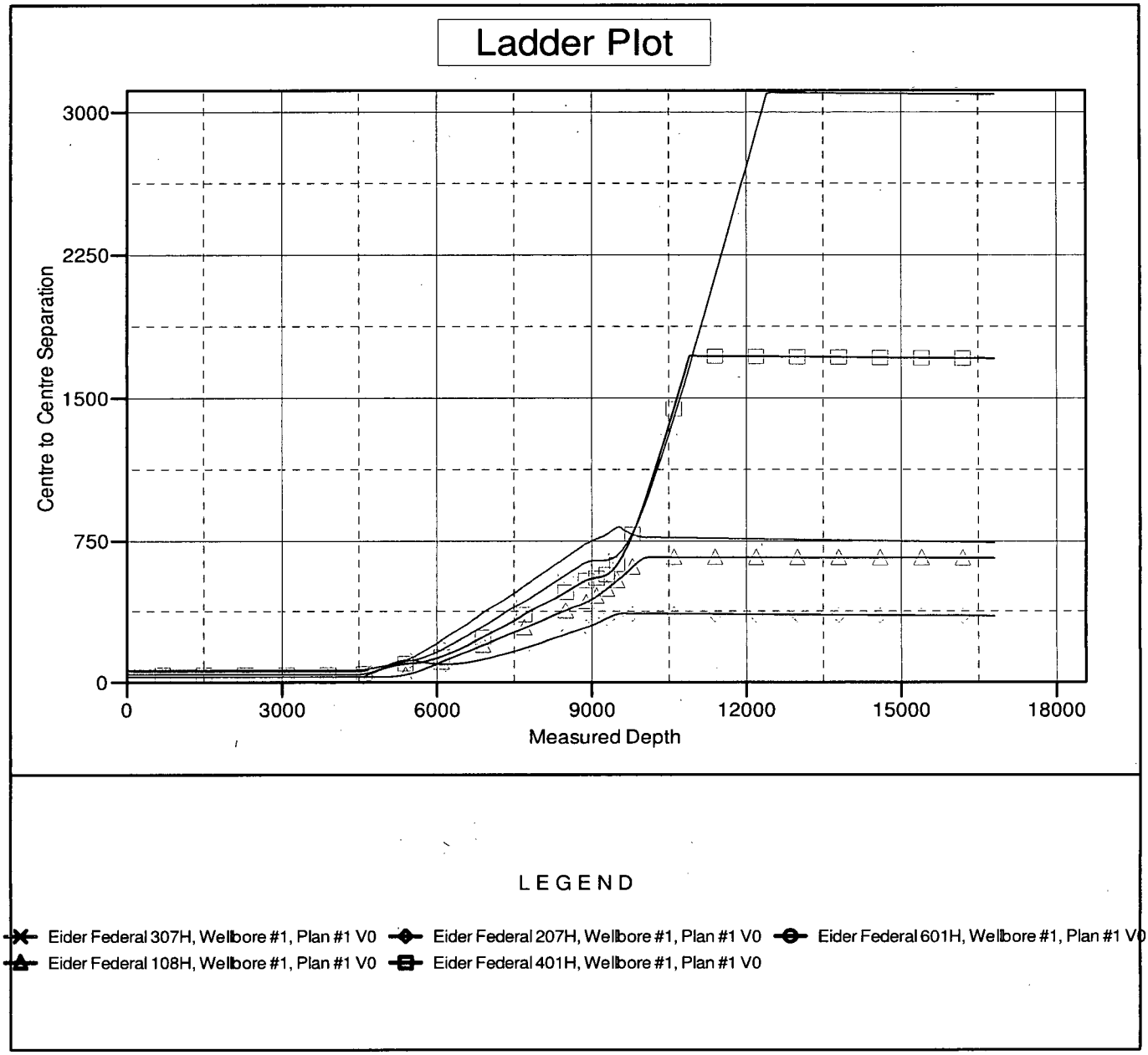
Offset Site Error: 0.00 ft
Offset Well Error: 0.00 ft

Survey Program: 0-MWD

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,600.00	9,288.90	15,564.44	12,321.06	58.26	60.88	167.72	2,830.88	31.06	3,102.61	2,983.47	119.14	26.042	
12,700.00	9,289.24	15,664.44	12,321.13	59.95	62.53	167.72	2,930.88	30.55	3,102.35	2,979.87	122.47	25.331	
12,800.00	9,289.57	15,764.44	12,321.20	61.64	64.18	167.72	3,030.88	30.04	3,102.09	2,976.27	125.83	24.654	
12,900.00	9,289.91	15,864.44	12,321.27	63.35	65.85	167.72	3,130.88	29.53	3,101.83	2,972.64	129.19	24.009	
13,000.00	9,290.24	15,964.44	12,321.34	65.06	67.52	167.72	3,230.87	29.02	3,101.58	2,969.00	132.58	23.395	
13,100.00	9,290.58	16,064.44	12,321.41	66.77	69.20	167.72	3,330.87	28.51	3,101.32	2,965.35	135.97	22.808	
13,200.00	9,290.91	16,164.44	12,321.48	68.49	70.89	167.72	3,430.87	28.00	3,101.06	2,961.68	139.38	22.249	
13,300.00	9,291.25	16,264.44	12,321.55	70.22	72.58	167.72	3,530.87	27.49	3,100.80	2,958.00	142.80	21.714	
13,400.00	9,291.58	16,364.44	12,321.62	71.95	74.28	167.71	3,630.87	26.98	3,100.54	2,954.31	146.23	21.203	
13,500.00	9,291.92	16,464.44	12,321.69	73.69	75.99	167.71	3,730.87	26.47	3,100.28	2,950.61	149.67	20.714	
13,600.00	9,292.25	16,564.44	12,321.76	75.43	77.70	167.71	3,830.86	25.96	3,100.03	2,946.90	153.13	20.245	
13,700.00	9,292.59	16,664.44	12,321.83	77.17	79.42	167.71	3,930.86	25.45	3,099.77	2,943.18	156.59	19.796	
13,800.00	9,292.92	16,764.43	12,321.90	78.92	81.14	167.71	4,030.86	24.94	3,099.51	2,939.46	160.05	19.365	
13,900.00	9,293.26	16,864.43	12,321.97	80.67	82.86	167.71	4,130.86	24.43	3,099.25	2,935.72	163.53	18.952	
14,000.00	9,293.59	16,964.43	12,322.04	82.42	84.59	167.71	4,230.86	23.92	3,098.99	2,931.98	167.01	18.555	
14,100.00	9,293.93	17,064.43	12,322.11	84.18	86.33	167.71	4,330.86	23.41	3,098.74	2,928.23	170.50	18.174	
14,200.00	9,294.26	17,164.43	12,322.18	85.94	88.06	167.71	4,430.85	22.91	3,098.48	2,924.48	174.00	17.807	
14,300.00	9,294.60	17,264.43	12,322.25	87.70	89.80	167.70	4,530.85	22.40	3,098.22	2,920.72	177.50	17.454	
14,400.00	9,294.93	17,364.43	12,322.32	89.46	91.55	167.70	4,630.85	21.89	3,097.96	2,916.95	181.01	17.115	
14,500.00	9,295.27	17,464.43	12,322.39	91.23	93.30	167.70	4,730.85	21.38	3,097.70	2,913.18	184.53	16.787	
14,600.00	9,295.60	17,564.43	12,322.46	93.00	95.05	167.70	4,830.85	20.87	3,097.45	2,909.40	188.05	16.472	
14,700.00	9,295.94	17,664.43	12,322.53	94.77	96.80	167.70	4,930.85	20.36	3,097.19	2,905.62	191.57	16.167	
14,800.00	9,296.27	17,764.43	12,322.60	96.54	98.55	167.70	5,030.84	19.85	3,096.93	2,901.83	195.10	15.874	
14,900.00	9,296.61	17,864.43	12,322.67	98.32	100.31	167.70	5,130.84	19.34	3,096.67	2,898.04	198.63	15.590	
15,000.00	9,296.94	17,964.43	12,322.74	100.10	102.07	167.70	5,230.84	18.83	3,096.41	2,894.24	202.17	15.316	
15,100.00	9,297.28	18,064.43	12,322.81	101.88	103.84	167.70	5,330.84	18.32	3,096.15	2,890.44	205.71	15.051	
15,200.00	9,297.61	18,164.43	12,322.88	103.66	105.60	167.69	5,430.84	17.81	3,095.90	2,886.64	209.26	14.795	
15,300.00	9,297.95	18,264.43	12,322.95	105.44	107.37	167.69	5,530.84	17.30	3,095.64	2,882.83	212.80	14.547	
15,400.00	9,298.28	18,364.43	12,323.02	107.22	109.14	167.69	5,630.83	16.79	3,095.38	2,879.02	216.36	14.307	
15,500.00	9,298.62	18,464.43	12,323.09	109.00	110.91	167.69	5,730.83	16.28	3,095.12	2,875.21	219.91	14.074	
15,600.00	9,298.95	18,564.43	12,323.15	110.79	112.68	167.69	5,830.83	15.77	3,094.86	2,871.40	223.47	13.849	
15,700.00	9,299.29	18,664.43	12,323.22	112.58	114.45	167.69	5,930.83	15.26	3,094.61	2,867.58	227.03	13.631	
15,800.00	9,299.62	18,764.43	12,323.29	114.37	116.23	167.69	6,030.83	14.75	3,094.35	2,863.75	230.59	13.419	
15,900.00	9,299.96	18,864.43	12,323.36	116.15	118.00	167.69	6,130.83	14.24	3,094.09	2,859.93	234.16	13.214	
16,000.00	9,300.29	18,964.43	12,323.43	117.94	119.78	167.68	6,230.82	13.73	3,093.83	2,856.10	237.73	13.014	
16,100.00	9,300.63	19,064.43	12,323.50	119.74	121.56	167.68	6,330.82	13.22	3,093.57	2,852.27	241.30	12.821	
16,200.00	9,300.96	19,164.43	12,323.57	121.53	123.34	167.68	6,430.82	12.71	3,093.32	2,848.44	244.87	12.632	
16,300.00	9,301.30	19,264.43	12,323.64	123.32	125.13	167.68	6,530.82	12.20	3,093.06	2,844.61	248.45	12.450	
16,400.00	9,301.63	19,364.43	12,323.71	125.12	126.91	167.68	6,630.82	11.69	3,092.80	2,840.77	252.03	12.272	
16,500.00	9,301.97	19,464.43	12,323.78	126.91	128.69	167.68	6,730.82	11.18	3,092.54	2,836.94	255.61	12.099	
16,600.00	9,302.30	19,564.43	12,323.85	128.71	130.48	167.68	6,830.81	10.67	3,092.28	2,833.10	259.19	11.931	
16,700.00	9,302.64	19,664.42	12,323.92	130.50	132.27	167.68	6,930.81	10.16	3,092.02	2,829.25	262.77	11.767	
16,800.00	9,302.97	19,764.42	12,323.99	132.30	134.05	167.68	7,030.81	9.66	3,091.77	2,825.41	266.36	11.608	
16,807.66	9,303.00	19,772.08	12,324.00	132.44	134.19	167.68	7,038.47	9.62	3,091.75	2,825.12	266.63	11.596	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB-26' @ 3576.80ft (Scandrill Freedo Coordinates are relative to: Eider Federal 107H
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is -104.333334 Grid Convergence at Surface is: 0.37°



Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 107H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB-26' @ 3576.80ft (Scandrill Freedo Coordinates are relative to: Eider Federal 107H
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
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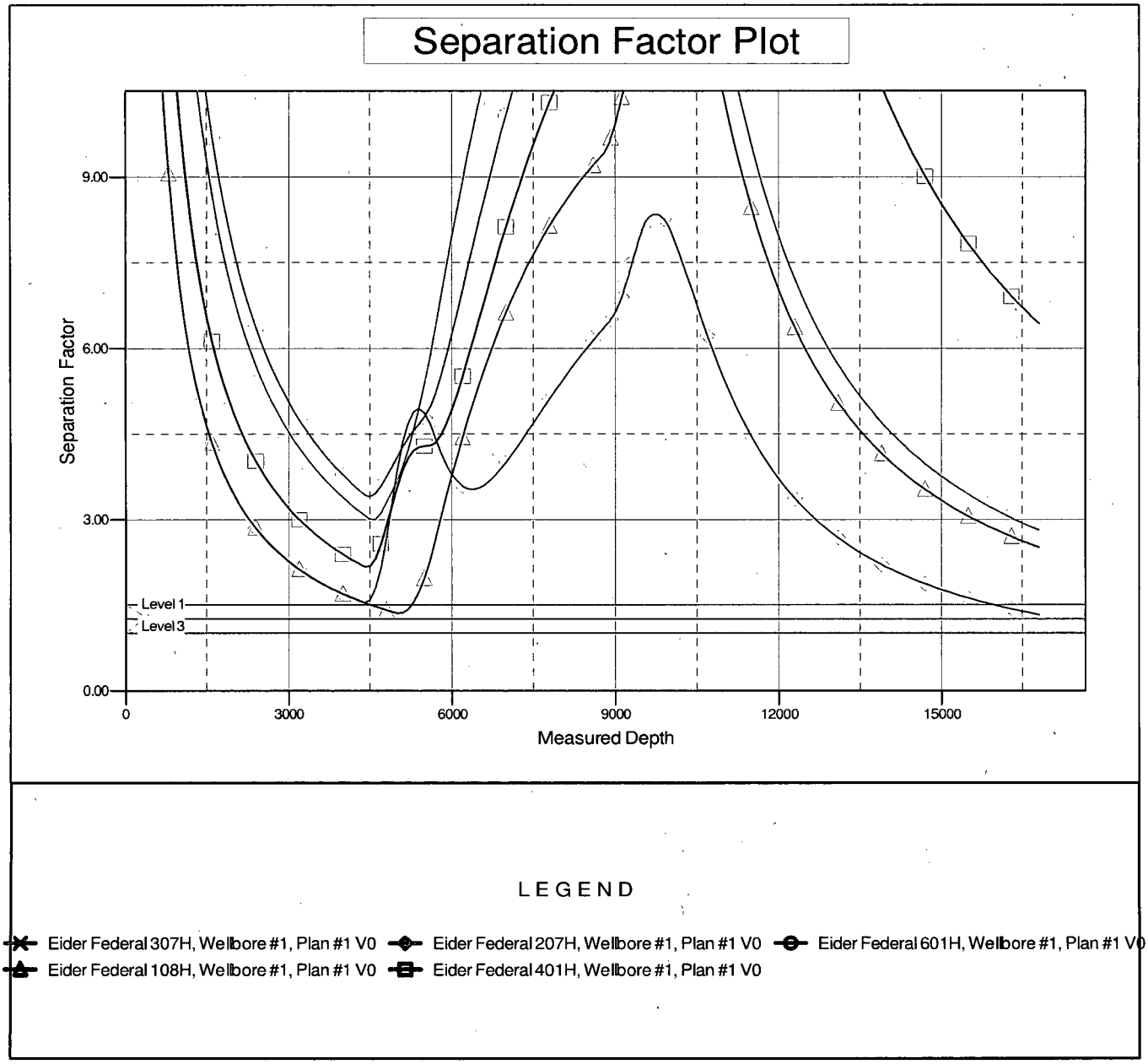


CONCHO

COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 35, T 24 S. , R 32 E
Well: Eider Federal 107H
Wellbore: Wellbore #1
Plan: Plan #1 (Eider Federal 107H/Wellbore #1)
Scandrill Freedom

INTEGRITY Directional Services

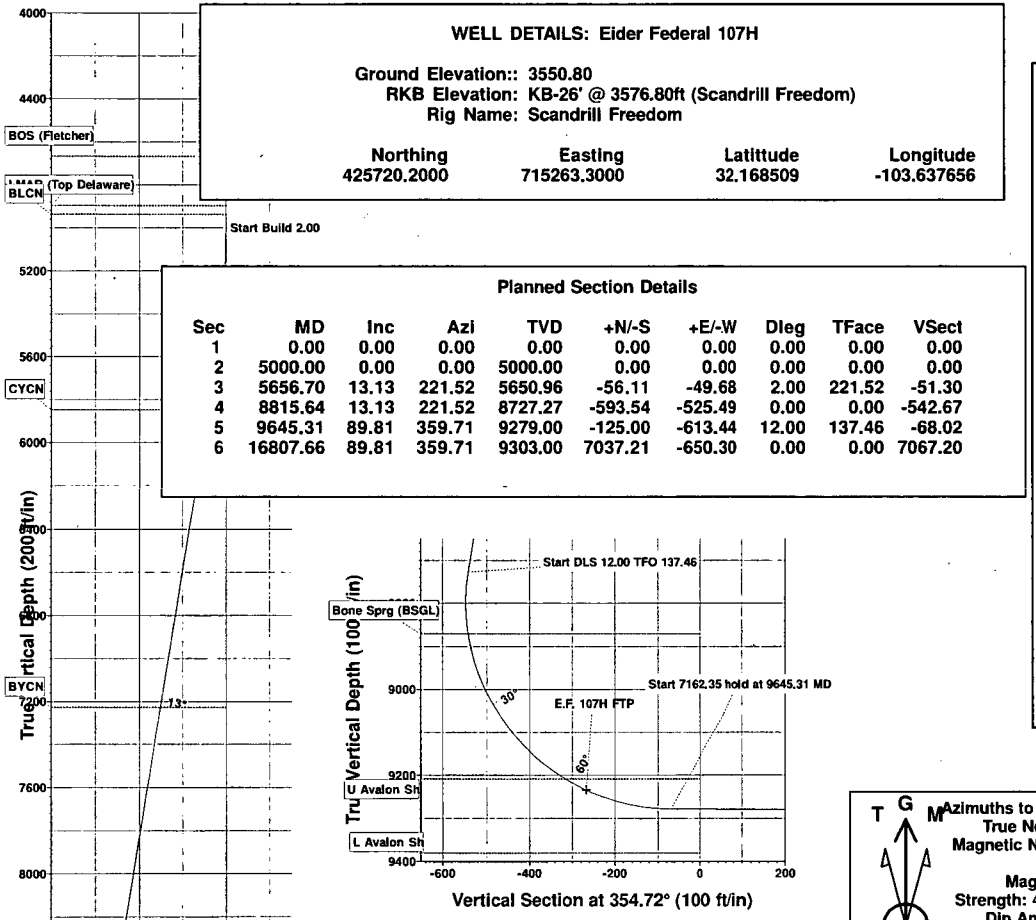
WELL DETAILS: Eider Federal 107H

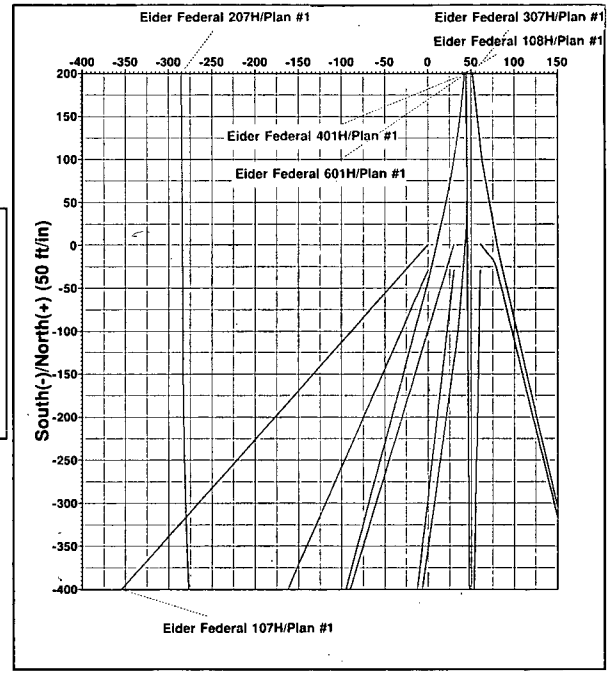
Ground Elevation:: 3550.80
RKB Elevation: KB-26' @ 3576.80ft (Scandrill Freedom)
Rig Name: Scandrill Freedom

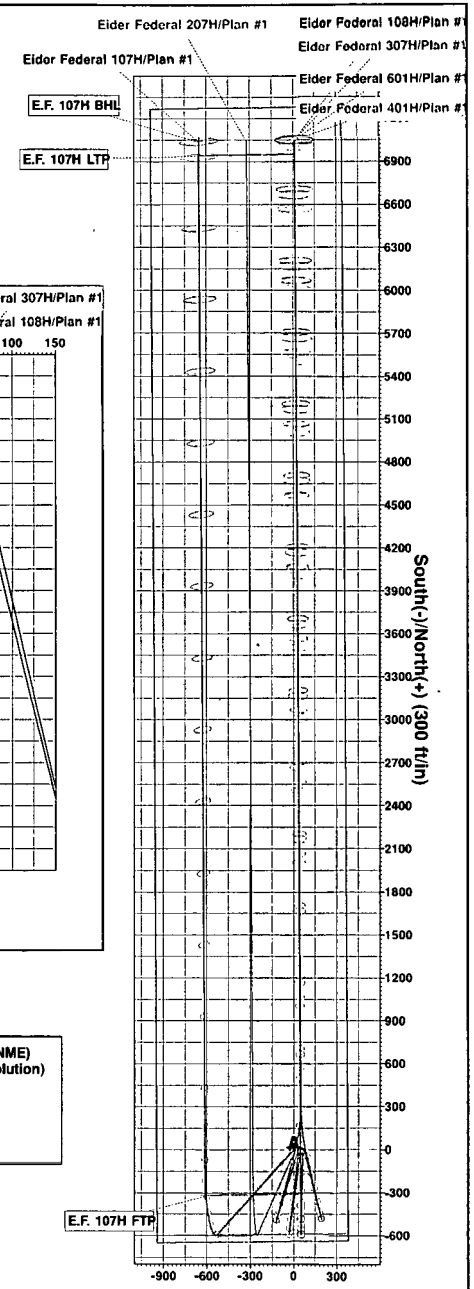
Northing	Easting	Latitude	Longitude
425720.2000	715263.3000	32.168509	-103.637656

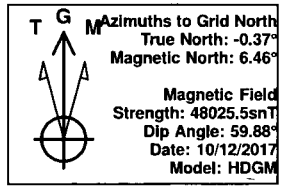
Planned Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00	0.00
3	5656.70	13.13	221.52	5650.96	-56.11	-49.68	2.00	221.52	-51.30
4	8815.64	13.13	221.52	8727.27	-593.54	-525.49	0.00	0.00	-542.67
5	9645.31	89.81	359.71	9279.00	-125.00	-613.44	12.00	137.46	-68.02
6	16807.66	89.81	359.71	9303.00	7037.21	-650.30	0.00	0.00	7067.20









PROJECT DETAILS: Lea County, NM (NAD27 NME)
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
Local North: Grid

CONCHO

COG Operating L L C

Lea County, NM (NAD27 NME)
Sec. 35, T 24 S. , R 32 E
Eider Federal 107H

Wellbore #1

Plan: Plan #1

Standard Survey Report

13 October, 2017

INTEGRITY
Directional Services

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Well:	Eider Federal 107H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Multi User Db

Project Lea County, NM (NAD27 NME)

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Sec. 35, T 24 S. , R 32 E

Site Position:		**Northing:**	425,243.2930 usft	**Latitude:**	32.167268
From:	Map	**Easting:**	711,320.5000 usft	**Longitude:**	-103.650407
Position Uncertainty:	5.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.36 °

Well Eider Federal 107H

Well Position	**+N/-S**	0.00 ft	**Northing:**	425,720.2000 usft	**Latitude:**	32.168509
	+E/-W	0.00 ft	**Easting:**	715,263.3000 usft	**Longitude:**	-103.637656
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	0.00 ft	**Ground Level:**	3,550.80 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/12/2017	6.83	59.88	48,026

Design Plan #1

Audit Notes:

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

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	354.72

Survey Tool Program **Date** 10/13/2017

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	16,807.66	Plan #1 (Wellbore #1)	MWD	MWD - Standard

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Well:	Eider Federal 107H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
5,100.00	2.00	221.52	5,099.98	-1.31	-1.16	-1.19	2.00	2.00	0.00
5,200.00	4.00	221.52	5,199.84	-5.22	-4.63	-4.78	2.00	2.00	0.00

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Well:	Eider Federal 107H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.00	6.00	221.52	5,299.45	-11.75	-10.40	-10.74	2.00	2.00	0.00
5,400.00	8.00	221.52	5,398.70	-20.87	-18.48	-19.09	2.00	2.00	0.00
5,500.00	10.00	221.52	5,497.47	-32.59	-28.85	-29.79	2.00	2.00	0.00
5,600.00	12.00	221.52	5,595.62	-46.87	-41.50	-42.85	2.00	2.00	0.00
5,656.70	13.13	221.52	5,650.96	-56.11	-49.68	-51.30	2.00	2.00	0.00
Start 3158.94 hold at 5656.70 MD									
5,700.00	13.13	221.52	5,693.13	-63.48	-56.20	-58.03	0.00	0.00	0.00
5,800.00	13.13	221.52	5,790.52	-80.49	-71.26	-73.59	0.00	0.00	0.00
5,900.00	13.13	221.52	5,887.90	-97.50	-86.32	-89.14	0.00	0.00	0.00
6,000.00	13.13	221.52	5,985.28	-114.51	-101.39	-104.70	0.00	0.00	0.00
6,100.00	13.13	221.52	6,082.67	-131.53	-116.45	-120.25	0.00	0.00	0.00
6,200.00	13.13	221.52	6,180.05	-148.54	-131.51	-135.81	0.00	0.00	0.00
6,300.00	13.13	221.52	6,277.44	-165.55	-146.57	-151.36	0.00	0.00	0.00
6,400.00	13.13	221.52	6,374.82	-182.57	-161.64	-166.92	0.00	0.00	0.00
6,500.00	13.13	221.52	6,472.20	-199.58	-176.70	-182.47	0.00	0.00	0.00
6,600.00	13.13	221.52	6,569.59	-216.59	-191.76	-198.03	0.00	0.00	0.00
6,700.00	13.13	221.52	6,666.97	-233.61	-206.82	-213.58	0.00	0.00	0.00
6,800.00	13.13	221.52	6,764.36	-250.62	-221.89	-229.14	0.00	0.00	0.00
6,900.00	13.13	221.52	6,861.74	-267.63	-236.95	-244.69	0.00	0.00	0.00
7,000.00	13.13	221.52	6,959.13	-284.65	-252.01	-260.25	0.00	0.00	0.00
7,100.00	13.13	221.52	7,056.51	-301.66	-267.07	-275.80	0.00	0.00	0.00
7,200.00	13.13	221.52	7,153.89	-318.67	-282.14	-291.36	0.00	0.00	0.00
7,300.00	13.13	221.52	7,251.28	-335.68	-297.20	-306.91	0.00	0.00	0.00
7,400.00	13.13	221.52	7,348.66	-352.70	-312.26	-322.47	0.00	0.00	0.00
7,500.00	13.13	221.52	7,446.05	-369.71	-327.32	-338.02	0.00	0.00	0.00
7,600.00	13.13	221.52	7,543.43	-386.72	-342.39	-353.58	0.00	0.00	0.00
7,700.00	13.13	221.52	7,640.81	-403.74	-357.45	-369.13	0.00	0.00	0.00
7,800.00	13.13	221.52	7,738.20	-420.75	-372.51	-384.69	0.00	0.00	0.00
7,900.00	13.13	221.52	7,835.58	-437.76	-387.57	-400.24	0.00	0.00	0.00
8,000.00	13.13	221.52	7,932.97	-454.78	-402.64	-415.80	0.00	0.00	0.00
8,100.00	13.13	221.52	8,030.35	-471.79	-417.70	-431.35	0.00	0.00	0.00
8,200.00	13.13	221.52	8,127.74	-488.80	-432.76	-446.91	0.00	0.00	0.00
8,300.00	13.13	221.52	8,225.12	-505.82	-447.82	-462.46	0.00	0.00	0.00
8,400.00	13.13	221.52	8,322.50	-522.83	-462.89	-478.02	0.00	0.00	0.00
8,500.00	13.13	221.52	8,419.89	-539.84	-477.95	-493.57	0.00	0.00	0.00
8,600.00	13.13	221.52	8,517.27	-556.86	-493.01	-509.13	0.00	0.00	0.00
8,700.00	13.13	221.52	8,614.66	-573.87	-508.07	-524.68	0.00	0.00	0.00
8,800.00	13.13	221.52	8,712.04	-590.88	-523.14	-540.24	0.00	0.00	0.00
8,815.64	13.13	221.52	8,727.27	-593.54	-525.49	-542.67	0.00	0.00	0.00
Start DLS 12.00 TFO 137.46									
8,900.00	8.85	272.13	8,810.24	-600.49	-538.36	-548.41	12.00	-5.08	60.00
9,000.00	15.16	324.72	8,908.27	-589.49	-553.65	-536.05	12.00	6.32	52.59
9,100.00	25.83	341.00	9,001.87	-558.10	-568.35	-503.44	12.00	10.67	16.28
9,200.00	37.28	347.95	9,086.97	-507.70	-581.82	-452.01	12.00	11.45	6.95

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Well:	Eider Federal 107H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,300.00	48.97	351.96	9,159.84	-440.49	-593.46	-384.01	12.00	11.69	4.01
9,400.00	60.75	354.74	9,217.30	-359.40	-602.77	-302.41	12.00	11.78	2.78
9,438.62	65.32	355.64	9,234.81	-325.11	-605.65	-268.00	12.00	11.82	2.32
E.F. 107H FTP									
9,500.00	72.58	356.94	9,256.84	-267.98	-609.34	-210.78	12.00	11.84	2.12
9,600.00	84.44	358.87	9,276.73	-170.23	-612.88	-113.11	12.00	11.85	1.93
9,645.31	89.81	359.71	9,279.00	-125.00	-613.44	-68.02	12.00	11.86	1.85
Start 7162.35 hold at 9645.31 MD									
9,700.00	89.81	359.71	9,279.18	-70.31	-613.72	-13.54	0.00	0.00	0.00
9,800.00	89.81	359.71	9,279.52	29.69	-614.24	86.08	0.00	0.00	0.00
9,900.00	89.81	359.71	9,279.85	129.69	-614.75	185.70	0.00	0.00	0.00
10,000.00	89.81	359.71	9,280.19	229.68	-615.27	285.32	0.00	0.00	0.00
10,100.00	89.81	359.71	9,280.52	329.68	-615.78	384.95	0.00	0.00	0.00
10,200.00	89.81	359.71	9,280.86	429.68	-616.30	484.57	0.00	0.00	0.00
10,300.00	89.81	359.71	9,281.19	529.68	-616.81	584.19	0.00	0.00	0.00
10,400.00	89.81	359.71	9,281.53	629.68	-617.33	683.81	0.00	0.00	0.00
10,500.00	89.81	359.71	9,281.86	729.67	-617.84	783.43	0.00	0.00	0.00
10,600.00	89.81	359.71	9,282.20	829.67	-618.36	883.05	0.00	0.00	0.00
10,700.00	89.81	359.71	9,282.53	929.67	-618.87	982.67	0.00	0.00	0.00
10,800.00	89.81	359.71	9,282.87	1,029.67	-619.38	1,082.29	0.00	0.00	0.00
10,900.00	89.81	359.71	9,283.20	1,129.67	-619.90	1,181.92	0.00	0.00	0.00
11,000.00	89.81	359.71	9,283.54	1,229.67	-620.41	1,281.54	0.00	0.00	0.00
11,100.00	89.81	359.71	9,283.87	1,329.66	-620.93	1,381.16	0.00	0.00	0.00
11,200.00	89.81	359.71	9,284.21	1,429.66	-621.44	1,480.78	0.00	0.00	0.00
11,300.00	89.81	359.71	9,284.54	1,529.66	-621.96	1,580.40	0.00	0.00	0.00
11,400.00	89.81	359.71	9,284.88	1,629.66	-622.47	1,680.02	0.00	0.00	0.00
11,500.00	89.81	359.71	9,285.22	1,729.66	-622.99	1,779.64	0.00	0.00	0.00
11,600.00	89.81	359.71	9,285.55	1,829.65	-623.50	1,879.26	0.00	0.00	0.00
11,700.00	89.81	359.71	9,285.89	1,929.65	-624.02	1,978.89	0.00	0.00	0.00
11,800.00	89.81	359.71	9,286.22	2,029.65	-624.53	2,078.51	0.00	0.00	0.00
11,900.00	89.81	359.71	9,286.56	2,129.65	-625.05	2,178.13	0.00	0.00	0.00
12,000.00	89.81	359.71	9,286.89	2,229.65	-625.56	2,277.75	0.00	0.00	0.00
12,100.00	89.81	359.71	9,287.23	2,329.64	-626.07	2,377.37	0.00	0.00	0.00
12,200.00	89.81	359.71	9,287.56	2,429.64	-626.59	2,476.99	0.00	0.00	0.00
12,300.00	89.81	359.71	9,287.90	2,529.64	-627.10	2,576.61	0.00	0.00	0.00
12,400.00	89.81	359.71	9,288.23	2,629.64	-627.62	2,676.23	0.00	0.00	0.00
12,500.00	89.81	359.71	9,288.57	2,729.64	-628.13	2,775.86	0.00	0.00	0.00
12,600.00	89.81	359.71	9,288.90	2,829.64	-628.65	2,875.48	0.00	0.00	0.00
12,700.00	89.81	359.71	9,289.24	2,929.63	-629.16	2,975.10	0.00	0.00	0.00
12,800.00	89.81	359.71	9,289.57	3,029.63	-629.68	3,074.72	0.00	0.00	0.00
12,900.00	89.81	359.71	9,289.91	3,129.63	-630.19	3,174.34	0.00	0.00	0.00
13,000.00	89.81	359.71	9,290.24	3,229.63	-630.71	3,273.96	0.00	0.00	0.00
13,100.00	89.81	359.71	9,290.58	3,329.63	-631.22	3,373.58	0.00	0.00	0.00

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Well:	Eider Federal 107H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,200.00	89.81	359.71	9,290.91	3,429.62	-631.74	3,473.20	0.00	0.00	0.00
13,300.00	89.81	359.71	9,291.25	3,529.62	-632.25	3,572.82	0.00	0.00	0.00
13,400.00	89.81	359.71	9,291.58	3,629.62	-632.76	3,672.45	0.00	0.00	0.00
13,500.00	89.81	359.71	9,291.92	3,729.62	-633.28	3,772.07	0.00	0.00	0.00
13,600.00	89.81	359.71	9,292.25	3,829.62	-633.79	3,871.69	0.00	0.00	0.00
13,700.00	89.81	359.71	9,292.59	3,929.61	-634.31	3,971.31	0.00	0.00	0.00
13,800.00	89.81	359.71	9,292.92	4,029.61	-634.82	4,070.93	0.00	0.00	0.00
13,900.00	89.81	359.71	9,293.26	4,129.61	-635.34	4,170.55	0.00	0.00	0.00
14,000.00	89.81	359.71	9,293.59	4,229.61	-635.85	4,270.17	0.00	0.00	0.00
14,100.00	89.81	359.71	9,293.93	4,329.61	-636.37	4,369.79	0.00	0.00	0.00
14,200.00	89.81	359.71	9,294.26	4,429.60	-636.88	4,469.42	0.00	0.00	0.00
14,300.00	89.81	359.71	9,294.60	4,529.60	-637.40	4,569.04	0.00	0.00	0.00
14,400.00	89.81	359.71	9,294.93	4,629.60	-637.91	4,668.66	0.00	0.00	0.00
14,500.00	89.81	359.71	9,295.27	4,729.60	-638.43	4,768.28	0.00	0.00	0.00
14,600.00	89.81	359.71	9,295.60	4,829.60	-638.94	4,867.90	0.00	0.00	0.00
14,700.00	89.81	359.71	9,295.94	4,929.60	-639.45	4,967.52	0.00	0.00	0.00
14,800.00	89.81	359.71	9,296.27	5,029.59	-639.97	5,067.14	0.00	0.00	0.00
14,900.00	89.81	359.71	9,296.61	5,129.59	-640.48	5,166.76	0.00	0.00	0.00
15,000.00	89.81	359.71	9,296.94	5,229.59	-641.00	5,266.39	0.00	0.00	0.00
15,100.00	89.81	359.71	9,297.28	5,329.59	-641.51	5,366.01	0.00	0.00	0.00
15,200.00	89.81	359.71	9,297.61	5,429.59	-642.03	5,465.63	0.00	0.00	0.00
15,300.00	89.81	359.71	9,297.95	5,529.58	-642.54	5,565.25	0.00	0.00	0.00
15,400.00	89.81	359.71	9,298.28	5,629.58	-643.06	5,664.87	0.00	0.00	0.00
15,500.00	89.81	359.71	9,298.62	5,729.58	-643.57	5,764.49	0.00	0.00	0.00
15,600.00	89.81	359.71	9,298.95	5,829.58	-644.09	5,864.11	0.00	0.00	0.00
15,700.00	89.81	359.71	9,299.29	5,929.58	-644.60	5,963.73	0.00	0.00	0.00
15,800.00	89.81	359.71	9,299.62	6,029.57	-645.12	6,063.36	0.00	0.00	0.00
15,900.00	89.81	359.71	9,299.96	6,129.57	-645.63	6,162.98	0.00	0.00	0.00
16,000.00	89.81	359.71	9,300.29	6,229.57	-646.14	6,262.60	0.00	0.00	0.00
16,100.00	89.81	359.71	9,300.63	6,329.57	-646.66	6,362.22	0.00	0.00	0.00
16,200.00	89.81	359.71	9,300.96	6,429.57	-647.17	6,461.84	0.00	0.00	0.00
16,300.00	89.81	359.71	9,301.30	6,529.57	-647.69	6,561.46	0.00	0.00	0.00
16,400.00	89.81	359.71	9,301.63	6,629.56	-648.20	6,661.08	0.00	0.00	0.00
16,500.00	89.81	359.71	9,301.97	6,729.56	-648.72	6,760.70	0.00	0.00	0.00
16,600.00	89.81	359.71	9,302.30	6,829.56	-649.23	6,860.33	0.00	0.00	0.00
16,700.00	89.81	359.71	9,302.64	6,929.56	-649.75	6,959.95	0.00	0.00	0.00
16,707.80	89.81	359.71	9,302.67	6,937.36	-649.79	6,967.72	0.00	0.00	0.00
E.F. 107H LTP									
16,800.00	89.81	359.71	9,302.97	7,029.56	-650.26	7,059.57	0.00	0.00	0.00
16,807.66	89.81	359.71	9,303.00	7,037.21	-650.30	7,067.20	0.00	0.00	0.00
TD at 16807.66 - E.F. 107H BHL									

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 107H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB-26' @ 3576.80ft (Scandrill Freedom)
Well:	Eider Federal 107H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Multi User Db

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
E.F. 107H FTP	0.00	0.00	9,234.60	-325.56	-613.44	425,394.6450	714,649.8590	32.167625	-103.639645
- plan misses target center by 7.81ft at 9438.62ft MD (9234.81 TVD, -325.11 N, -605.65 E)									
- Point									
E.F. 107H LTP	0.00	0.00	9,302.67	6,937.36	-649.75	432,657.5443	714,613.5474	32.187590	-103.639611
- plan misses target center by 0.03ft at 16707.80ft MD (9302.67 TVD, 6937.36 N, -649.79 E)									
- Point									
E.F. 107H BHL	0.00	0.00	9,303.00	7,037.21	-650.30	432,757.4000	714,613.0000	32.187865	-103.639611
- plan hits target center									
- Point									

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,004.80	1,004.80	Rustler		0.00	
1,337.80	1,337.80	TOS		0.00	
4,671.80	4,671.80	BOS (Fletcher)		0.00	
4,899.80	4,899.80	LMAR (Top Delaware)		0.00	
4,940.80	4,940.80	BLCN		0.00	
5,860.88	5,849.80	CYCN		0.00	
7,277.95	7,229.80	BYCN		0.00	
8,962.50	8,871.80	Bone Sprg (BSGL)		0.00	
9,385.05	9,209.80	U Avalon Sh		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
5000	5000	0	0	Start Build 2.00
5657	5651	-56	-50	Start 3158.94 hold at 5656.70 MD
8816	8727	-594	-525	Start DLS 12.00 TFO 137.46
9645	9279	-125	-613	Start 7162.35 hold at 9645.31 MD
16,808	9303	7037	-650	TD at 16807.66

Checked By: _____ Approved By: _____ Date: _____

COG Operating, LLC - Eider Federal #107H

1. Geologic Formations

TVD of target	9,303' EOL	Pilot hole depth	NA
MD at TD:	16,808'	Deepest expected fresh water:	380'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1005	Water	
Top of Salt	1338	Salt	
Base of Salt	4672	Salt	
Lamar	4900	Salt Water	
Bell Canyon	4941	Salt Water	
Cherry Canyon	5850	Oil/Gas	
Brushy Canyon	7230	Oil/Gas	
Bone Spring Lime	8872	Oil/Gas	
U. Avalon Shale	9210	Oil/Gas	
L. Avalon Shale	9382	Not Penetrated	
1st Bone Spring Sand	X	Not Penetrated	
2nd Bone Spring Sand	X	Not Penetrated	
3rd Bone Spring Sand	X	Not Penetrated	
Wolfcamp	X	Not Penetrated	

2. Casing Program

Hole Size	Casing From	Casing To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	1030	13.375"	54.5	J55	STC	2.40	1.25	9.16
12.25"	0	4000	9.625"	40	J55	LTC	1.22	1.11	3.25
12.25"	4000	4925	9.625"	40	L80	LTC	1.19	1.61	5.73
8.75"	0	16,808	5.5"	17	P110	LTC	1.66	2.98	2.81
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

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

LCO