PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Production LLC
LEASE NO.:	NMNM120907
WELL NAME & NO.:	401H-Eider Federal
SURFACE HOLE FOOTAGE:	620'/S & 345'/E
BOTTOM HOLE FOOTAGE	2410'/S & 330'/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 **1040** 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 22% - 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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GENERAL REQUIREMENTS

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

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

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

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

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

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

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

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

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

A. CASING

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

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

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

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

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

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

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

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

B. PRESSURE CONTROL

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

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WELL NAME & NO.:	401H-Eider Federal
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LOCATION:	Section 35, R32 E, T24S. NMPM.
COUNTY:	Lea County. New Mexico.

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

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.

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

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

G. ON LEASE ACCESS ROADS

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

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

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

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

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

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

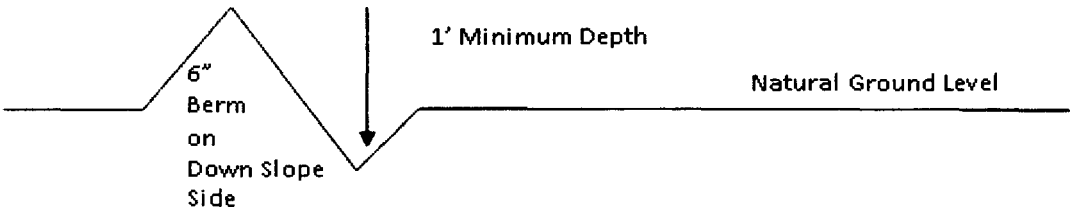
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Construction Steps

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

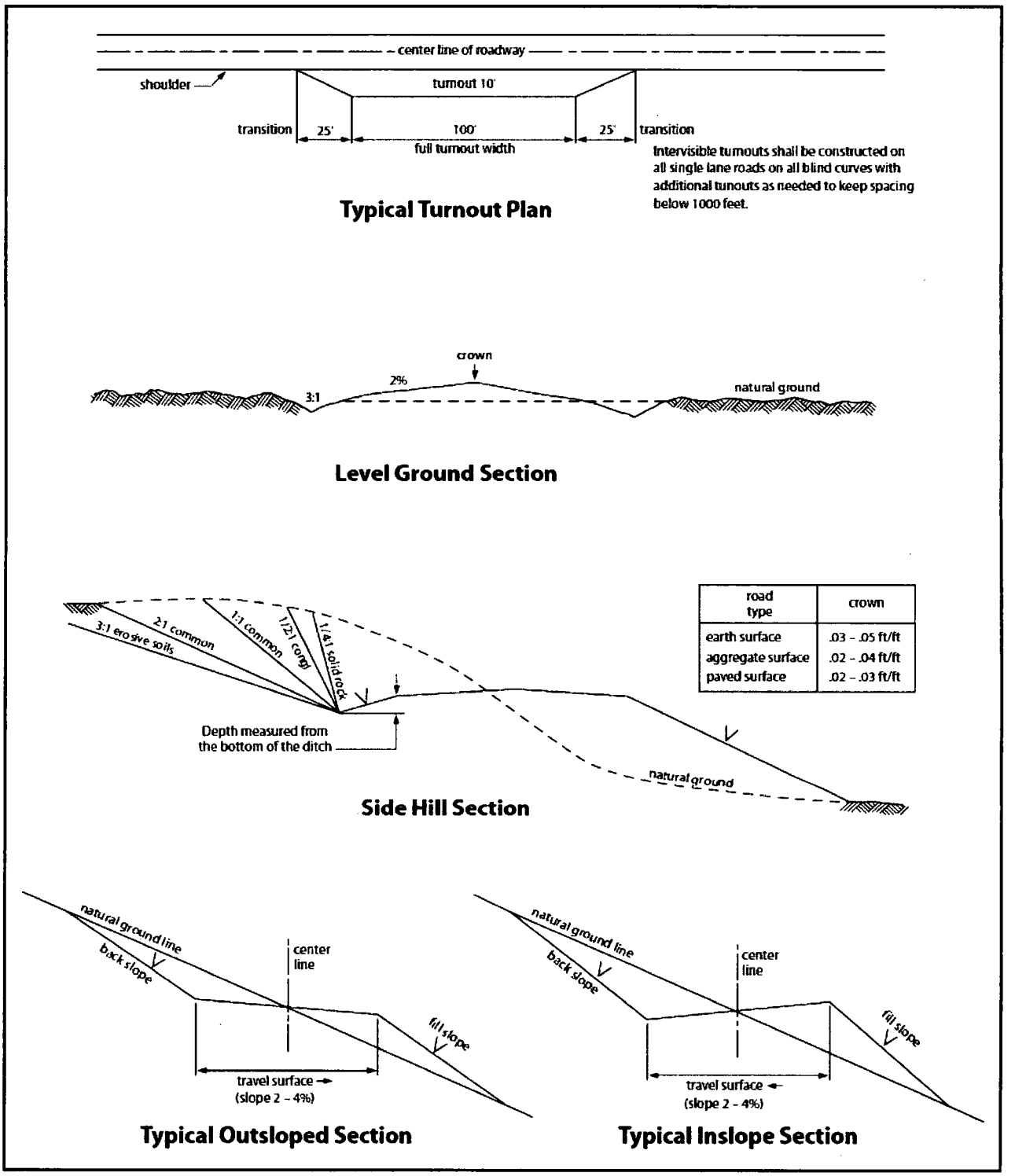


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

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

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

Containment Structures

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

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

B. PIPELINES
STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

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

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

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

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

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

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

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

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

c. Acts of God.

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

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

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

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

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

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

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

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

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

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

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

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

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

by the authorized officer after consulting with the holder.

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

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

18. Special Stipulations:

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

VIII. INTERIM RECLAMATION

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

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

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

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

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

IX. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

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

*Pounds of pure live seed:

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

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

05/22/2018

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Mayte Reyes **Signed on:** 10/17/2017

Title: Regulatory Analyst

Street Address: 2208 W Main Street

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-6945

Email address: Mreyes1@concho.com

Field Representative

Representative Name: Rand French

Street Address: 2208 West Main Street

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-6940

Email address: rfrench@concho.com

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.

Casing Program

Hole Size	Casing		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	1040	13.375"	54.5	J55	STC	2.37	1.25	9.07
12.25"	0	4000	9.625"	40	J55	LTC	1.22	0.95	3.25
12.25"	4000	4935	9.625"	40	L80	LTC	1.19	1.38	5.73
8.75"	0	18,340	5.5"	17	P110	LTC	1.42	2.55	2.41
			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

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

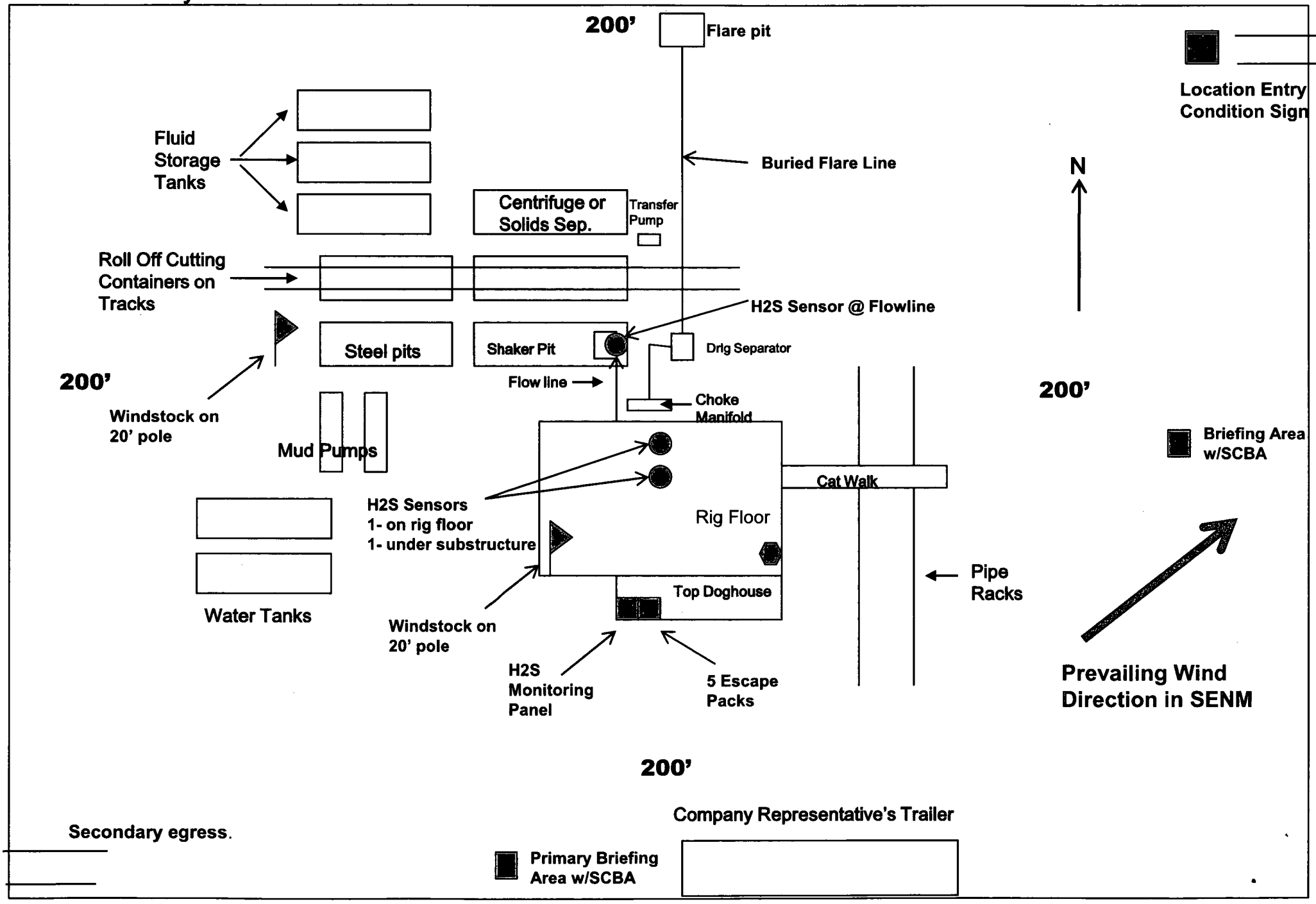
	OFFICE	MOBILE
COG PRODUCTION LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

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 401H

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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	18,338.81	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 107H - Wellbore #1 - Plan #1	4,400.00	4,399.80	42.29	22.79	2.169	CC, ES, SF
Eider Federal 108H - Wellbore #1 - Plan #1	4,400.00	4,400.70	30.00	10.50	1.539	CC, ES, SF
Eider Federal 207H - Wellbore #1 - Plan #1	4,400.00	4,399.30	30.00	10.51	1.539	CC, ES
Eider Federal 207H - Wellbore #1 - Plan #1	4,500.00	4,498.88	30.49	10.60	1.533	SF
Eider Federal 307H - Wellbore #1 - Plan #1	4,400.00	4,400.90	42.57	23.07	2.183	CC, ES, SF
Eider Federal 601H - Wellbore #1 - Plan #1	4,400.09	4,400.39	30.00	10.50	1.539	CC
Eider Federal 601H - Wellbore #1 - Plan #1	4,500.00	4,500.33	30.17	10.28	1.517	ES
Eider Federal 601H - Wellbore #1 - Plan #1	10,734.12	10,702.95	72.66	24.63	1.513	SF

Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 107H - 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	-45.38	29.70	-30.10	42.29				
100.00	100.00	99.80	99.80	0.08	0.08	-45.38	29.70	-30.10	42.29	42.12	0.17	254.489	
200.00	200.00	199.80	199.80	0.31	0.31	-45.38	29.70	-30.10	42.29	41.67	0.62	68.712	
300.00	300.00	299.80	299.80	0.53	0.53	-45.38	29.70	-30.10	42.29	41.22	1.06	39.707	
400.00	400.00	399.80	399.80	0.76	0.76	-45.38	29.70	-30.10	42.29	40.77	1.51	27.921	
500.00	500.00	499.80	499.80	0.98	0.98	-45.38	29.70	-30.10	42.29	40.32	1.96	21.530	
600.00	600.00	599.80	599.80	1.21	1.21	-45.38	29.70	-30.10	42.29	39.87	2.41	17.520	
700.00	700.00	699.80	699.80	1.43	1.43	-45.38	29.70	-30.10	42.29	39.42	2.86	14.769	
800.00	800.00	799.80	799.80	1.66	1.66	-45.38	29.70	-30.10	42.29	38.97	3.31	12.765	
900.00	900.00	899.80	899.80	1.88	1.88	-45.38	29.70	-30.10	42.29	38.52	3.76	11.240	
1,000.00	1,000.00	999.80	999.80	2.11	2.11	-45.38	29.70	-30.10	42.29	38.07	4.21	10.040	
1,100.00	1,100.00	1,099.80	1,099.80	2.33	2.33	-45.38	29.70	-30.10	42.29	37.62	4.66	9.072	
1,200.00	1,200.00	1,199.80	1,199.80	2.56	2.56	-45.38	29.70	-30.10	42.29	37.18	5.11	8.274	
1,300.00	1,300.00	1,299.80	1,299.80	2.78	2.78	-45.38	29.70	-30.10	42.29	36.73	5.56	7.605	
1,400.00	1,400.00	1,399.80	1,399.80	3.01	3.00	-45.38	29.70	-30.10	42.29	36.28	6.01	7.036	
1,500.00	1,500.00	1,499.80	1,499.80	3.23	3.23	-45.38	29.70	-30.10	42.29	35.83	6.46	6.547	
1,600.00	1,600.00	1,599.80	1,599.80	3.45	3.45	-45.38	29.70	-30.10	42.29	35.38	6.91	6.121	
1,700.00	1,700.00	1,699.80	1,699.80	3.68	3.68	-45.38	29.70	-30.10	42.29	34.93	7.36	5.747	
1,800.00	1,800.00	1,799.80	1,799.80	3.90	3.90	-45.38	29.70	-30.10	42.29	34.48	7.81	5.416	
1,900.00	1,900.00	1,899.80	1,899.80	4.13	4.13	-45.38	29.70	-30.10	42.29	34.03	8.26	5.121	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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 107H - 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
2,000.00	2,000.00	1,999.80	1,999.80	4.35	4.35	-45.38	29.70	-30.10	42.29	33.58	8.71	4.857	
2,100.00	2,100.00	2,099.80	2,099.80	4.58	4.58	-45.38	29.70	-30.10	42.29	33.13	9.16	4.618	
2,200.00	2,200.00	2,199.80	2,199.80	4.80	4.80	-45.38	29.70	-30.10	42.29	32.68	9.61	4.402	
2,300.00	2,300.00	2,299.80	2,299.80	5.03	5.03	-45.38	29.70	-30.10	42.29	32.23	10.06	4.205	
2,400.00	2,400.00	2,399.80	2,399.80	5.25	5.25	-45.38	29.70	-30.10	42.29	31.78	10.51	4.025	
2,500.00	2,500.00	2,499.80	2,499.80	5.48	5.48	-45.38	29.70	-30.10	42.29	31.33	10.95	3.860	
2,600.00	2,600.00	2,599.80	2,599.80	5.70	5.70	-45.38	29.70	-30.10	42.29	30.88	11.40	3.708	
2,700.00	2,700.00	2,699.80	2,699.80	5.93	5.93	-45.38	29.70	-30.10	42.29	30.43	11.85	3.567	
2,800.00	2,800.00	2,799.80	2,799.80	6.15	6.15	-45.38	29.70	-30.10	42.29	29.98	12.30	3.437	
2,900.00	2,900.00	2,899.80	2,899.80	6.38	6.38	-45.38	29.70	-30.10	42.29	29.53	12.75	3.316	
3,000.00	3,000.00	2,999.80	2,999.80	6.60	6.60	-45.38	29.70	-30.10	42.29	29.08	13.20	3.203	
3,100.00	3,100.00	3,099.80	3,099.80	6.83	6.83	-45.38	29.70	-30.10	42.29	28.63	13.65	3.097	
3,200.00	3,200.00	3,199.80	3,199.80	7.05	7.05	-45.38	29.70	-30.10	42.29	28.18	14.10	2.999	
3,300.00	3,300.00	3,299.80	3,299.80	7.28	7.28	-45.38	29.70	-30.10	42.29	27.74	14.55	2.906	
3,400.00	3,400.00	3,399.80	3,399.80	7.50	7.50	-45.38	29.70	-30.10	42.29	27.29	15.00	2.819	
3,500.00	3,500.00	3,499.80	3,499.80	7.73	7.72	-45.38	29.70	-30.10	42.29	26.84	15.45	2.737	
3,600.00	3,600.00	3,599.80	3,599.80	7.95	7.95	-45.38	29.70	-30.10	42.29	26.39	15.90	2.660	
3,700.00	3,700.00	3,699.80	3,699.80	8.17	8.17	-45.38	29.70	-30.10	42.29	25.94	16.35	2.586	
3,800.00	3,800.00	3,799.80	3,799.80	8.40	8.40	-45.38	29.70	-30.10	42.29	25.49	16.80	2.517	
3,900.00	3,900.00	3,899.80	3,899.80	8.62	8.62	-45.38	29.70	-30.10	42.29	25.04	17.25	2.452	
4,000.00	4,000.00	3,999.80	3,999.80	8.85	8.85	-45.38	29.70	-30.10	42.29	24.59	17.70	2.389	
4,100.00	4,100.00	4,099.80	4,099.80	9.07	9.07	-45.38	29.70	-30.10	42.29	24.14	18.15	2.330	
4,200.00	4,200.00	4,199.80	4,199.80	9.30	9.30	-45.38	29.70	-30.10	42.29	23.69	18.60	2.274	
4,300.00	4,300.00	4,299.80	4,299.80	9.52	9.52	-45.38	29.70	-30.10	42.29	23.24	19.05	2.220	
4,400.00	4,400.00	4,399.80	4,399.80	9.75	9.75	-45.38	29.70	-30.10	42.29	22.79	19.50	2.169	CC, ES, SF
4,500.00	4,499.98	4,499.78	4,499.78	9.94	9.97	129.85	29.70	-30.10	43.38	23.47	19.92	2.178	
4,600.00	4,599.84	4,599.64	4,599.64	10.11	10.20	134.71	29.70	-30.10	46.91	26.60	20.31	2.310	
4,679.63	4,679.18	4,678.98	4,678.98	10.25	10.38	139.88	29.70	-30.10	51.82	31.19	20.62	2.512	
4,700.00	4,699.46	4,699.26	4,699.26	10.28	10.42	141.25	29.70	-30.10	53.35	32.65	20.70	2.577	
4,800.00	4,798.98	4,798.78	4,798.78	10.46	10.64	146.96	29.70	-30.10	61.27	40.17	21.10	2.904	
4,900.00	4,898.51	4,898.31	4,898.31	10.63	10.87	151.33	29.70	-30.10	69.65	48.15	21.50	3.240	
5,000.00	4,998.03	4,997.83	4,997.83	10.81	11.09	154.75	29.70	-30.10	78.35	56.45	21.91	3.577	
5,100.00	5,097.56	5,098.94	5,098.92	11.00	11.29	156.56	28.42	-31.23	86.38	64.08	22.30	3.874	
5,200.00	5,197.08	5,200.41	5,200.24	11.19	11.47	156.20	24.45	-34.74	92.59	69.92	22.67	4.085	
5,300.00	5,296.60	5,301.95	5,301.39	11.39	11.66	154.07	17.80	-40.64	97.03	73.98	23.04	4.210	
5,400.00	5,396.13	5,403.30	5,401.97	11.59	11.84	150.30	8.48	-48.89	100.02	76.58	23.43	4.268	
5,500.00	5,495.65	5,504.23	5,501.63	11.79	12.04	144.94	-3.44	-59.44	102.13	78.30	23.83	4.286	
5,600.00	5,595.18	5,604.47	5,600.00	12.00	12.24	138.01	-17.87	-72.22	104.22	79.98	24.24	4.299	
5,700.00	5,694.70	5,703.65	5,696.68	12.21	12.46	129.90	-34.40	-86.85	107.44	82.77	24.67	4.355	
5,800.00	5,794.22	5,802.38	5,792.83	12.42	12.69	122.19	-51.19	-101.72	112.72	87.60	25.12	4.487	
5,900.00	5,893.75	5,901.12	5,888.99	12.64	12.94	115.27	-67.99	-116.59	119.87	94.29	25.58	4.686	
6,000.00	5,993.27	5,999.85	5,985.14	12.86	13.20	109.19	-84.79	-131.46	128.59	102.53	26.06	4.935	
6,100.00	6,092.80	6,098.59	6,081.29	13.08	13.47	103.92	-101.59	-146.34	138.58	112.03	26.55	5.220	
6,200.00	6,192.32	6,197.32	6,177.45	13.31	13.75	99.38	-118.39	-161.21	149.59	122.53	27.06	5.529	
6,300.00	6,291.84	6,296.06	6,273.60	13.53	14.04	95.47	-135.18	-176.08	161.40	133.83	27.57	5.853	
6,400.00	6,391.37	6,394.79	6,369.75	13.76	14.34	92.11	-151.98	-190.95	173.86	145.76	28.10	6.186	
6,500.00	6,490.89	6,493.53	6,465.90	14.00	14.65	89.20	-168.78	-205.82	186.84	158.19	28.65	6.522	
6,600.00	6,590.42	6,592.27	6,562.06	14.23	14.97	86.68	-185.58	-220.70	200.23	171.03	29.20	6.858	
6,700.00	6,689.94	6,691.00	6,658.21	14.47	15.29	84.47	-202.38	-235.57	213.95	184.19	29.76	7.189	
6,800.00	6,789.46	6,789.74	6,754.36	14.70	15.63	82.52	-219.17	-250.44	227.95	197.62	30.33	7.516	
6,900.00	6,888.99	6,888.47	6,850.51	14.94	15.97	80.81	-235.97	-265.31	242.18	211.27	30.91	7.835	
7,000.00	6,988.51	6,987.21	6,946.67	15.18	16.31	79.28	-252.77	-280.18	256.60	225.11	31.50	8.147	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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 107H - 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
7,100.00	7,088.04	7,085.94	7,042.82	15.43	16.67	77.92	-269.57	-295.06	271.18	239.09	32.09	8.450	
7,200.00	7,187.56	7,184.68	7,138.97	15.67	17.03	76.69	-286.36	-309.93	285.90	253.20	32.70	8.744	
7,300.00	7,287.08	7,283.41	7,235.13	15.92	17.39	75.59	-303.16	-324.80	300.73	267.42	33.31	9.029	
7,400.00	7,386.61	7,382.15	7,331.28	16.16	17.76	74.59	-319.96	-339.67	315.66	281.74	33.92	9.305	
7,500.00	7,486.13	7,480.88	7,427.43	16.41	18.13	73.68	-336.76	-354.54	330.68	296.13	34.55	9.572	
7,600.00	7,585.66	7,579.62	7,523.58	16.66	18.51	72.85	-353.56	-369.42	345.77	310.59	35.17	9.830	
7,700.00	7,685.18	7,678.36	7,619.74	16.91	18.90	72.09	-370.35	-384.29	360.92	325.12	35.81	10.079	
7,800.00	7,784.70	7,777.09	7,715.89	17.16	19.28	71.39	-387.15	-399.16	376.14	339.69	36.45	10.320	
7,900.00	7,884.23	7,875.83	7,812.04	17.42	19.67	70.74	-403.95	-414.03	391.40	354.31	37.09	10.552	
8,000.00	7,983.75	7,974.56	7,908.19	17.67	20.07	70.14	-420.75	-428.90	406.71	368.97	37.74	10.777	
8,100.00	8,083.28	8,073.30	8,004.35	17.93	20.46	69.59	-437.55	-443.78	422.06	383.67	38.39	10.993	
8,200.00	8,182.80	8,172.03	8,100.50	18.18	20.86	69.07	-454.34	-458.65	437.45	398.40	39.05	11.203	
8,300.00	8,282.32	8,270.77	8,196.65	18.44	21.27	68.59	-471.14	-473.52	452.86	413.15	39.71	11.404	
8,400.00	8,381.85	8,369.50	8,292.81	18.70	21.67	68.14	-487.94	-488.39	468.31	427.94	40.37	11.599	
8,500.00	8,481.37	8,468.24	8,388.96	18.96	22.08	67.72	-504.74	-503.27	483.78	442.74	41.04	11.788	
8,600.00	8,580.90	8,566.98	8,485.11	19.22	22.49	67.33	-521.54	-518.14	499.28	457.57	41.71	11.969	
8,700.00	8,680.42	8,665.71	8,581.26	19.48	22.91	66.96	-538.33	-533.01	514.80	472.41	42.39	12.145	
8,800.00	8,779.94	8,764.45	8,677.42	19.74	23.32	66.61	-555.13	-547.88	530.34	487.27	43.06	12.315	
8,900.00	8,879.47	8,884.39	8,794.82	20.00	23.76	66.72	-570.63	-566.06	544.96	501.19	43.77	12.451	
9,000.00	8,978.99	9,019.94	8,927.42	20.27	24.02	70.10	-555.13	-586.75	553.44	509.15	44.28	12.498	
9,100.00	9,078.52	9,132.32	9,030.50	20.53	24.03	75.55	-514.10	-602.97	558.98	514.42	44.56	12.544	
9,200.00	9,178.04	9,218.02	9,101.11	20.80	23.94	81.11	-467.06	-614.16	567.69	522.96	44.73	12.691	
9,300.00	9,277.56	9,281.71	9,147.58	21.06	23.82	85.87	-424.22	-621.59	584.34	539.46	44.88	13.020	
9,400.00	9,377.09	9,329.33	9,178.42	21.33	23.71	89.69	-388.30	-626.55	611.40	566.36	45.04	13.575	
9,500.00	9,476.61	9,365.62	9,199.46	21.59	23.62	92.70	-358.93	-629.96	649.39	604.17	45.21	14.362	
9,600.00	9,576.14	9,393.89	9,214.28	21.86	23.55	95.08	-334.99	-632.37	697.55	652.15	45.41	15.362	
9,700.00	9,675.66	9,416.39	9,225.07	22.13	23.48	96.98	-315.33	-634.14	754.55	708.94	45.61	16.543	
9,800.00	9,775.18	9,434.64	9,233.13	22.39	23.43	98.52	-299.01	-635.47	818.90	773.08	45.83	17.869	
9,900.00	9,874.71	9,450.00	9,239.44	22.66	23.39	99.82	-285.04	-636.51	889.23	843.18	46.05	19.309	
10,000.00	9,974.23	9,462.33	9,244.18	22.93	23.35	100.85	-273.68	-637.30	964.38	918.09	46.29	20.835	
10,100.00	10,073.76	9,475.00	9,248.75	23.20	23.32	101.91	-261.89	-638.07	1,043.39	996.87	46.52	22.429	
10,200.00	10,173.28	9,475.00	9,248.75	23.47	23.32	101.91	-261.89	-638.07	1,125.57	1,078.78	46.79	24.056	
10,300.00	10,272.80	9,490.23	9,253.82	23.74	23.27	103.18	-247.56	-638.92	1,210.14	1,163.13	47.02	25.739	
10,375.60	10,348.04	9,500.00	9,256.84	23.95	23.25	103.98	-238.28	-639.44	1,275.54	1,228.35	47.19	27.029	
10,400.00	10,372.38	9,500.00	9,256.84	24.00	23.25	110.44	-238.28	-639.44	1,296.78	1,249.53	47.25	27.445	
10,425.00	10,397.37	9,500.00	9,256.84	24.05	23.25	-88.67	-238.28	-639.44	1,318.45	1,271.16	47.30	27.875	
10,450.00	10,422.35	9,500.00	9,256.84	24.09	23.25	-65.09	-238.28	-639.44	1,340.00	1,292.66	47.34	28.306	
10,475.00	10,447.26	9,500.00	9,256.84	24.13	23.25	-59.73	-238.28	-639.44	1,361.36	1,313.99	47.37	28.737	
10,500.00	10,472.03	9,500.00	9,256.84	24.15	23.25	-55.39	-238.28	-639.44	1,382.49	1,335.10	47.40	29.168	
10,525.00	10,496.58	9,511.11	9,260.04	24.17	23.21	-51.14	-227.66	-639.98	1,403.19	1,355.81	47.38	29.614	
10,550.00	10,520.85	9,514.62	9,261.00	24.18	23.20	-47.70	-224.29	-640.15	1,423.61	1,376.23	47.38	30.046	
10,575.00	10,544.77	9,525.00	9,263.70	24.18	23.17	-44.44	-214.28	-640.61	1,443.68	1,396.33	47.36	30.486	
10,600.00	10,568.29	9,525.00	9,263.70	24.18	23.17	-41.84	-214.28	-640.61	1,463.20	1,415.85	47.35	30.901	
10,625.00	10,591.33	9,525.00	9,263.70	24.17	23.17	-39.51	-214.28	-640.61	1,482.28	1,434.94	47.34	31.311	
10,650.00	10,613.82	9,525.00	9,263.70	24.15	23.17	-37.41	-214.28	-640.61	1,500.86	1,453.54	47.32	31.715	
10,675.00	10,635.72	9,535.27	9,266.16	24.13	23.14	-35.39	-204.32	-641.04	1,518.80	1,471.53	47.27	32.129	
10,700.00	10,656.96	9,539.92	9,267.20	24.10	23.13	-33.67	-199.78	-641.22	1,536.18	1,488.95	47.23	32.524	
10,725.00	10,677.47	9,550.00	9,269.31	24.07	23.10	-32.09	-189.94	-641.60	1,552.96	1,505.79	47.17	32.921	
10,750.00	10,697.22	9,550.00	9,269.31	24.04	23.10	-30.78	-189.94	-641.60	1,569.00	1,521.87	47.14	33.285	
10,775.00	10,716.13	9,550.00	9,269.31	24.00	23.10	-29.59	-189.94	-641.60	1,584.41	1,537.31	47.10	33.638	
10,800.00	10,734.16	9,559.93	9,271.19	23.96	23.07	-28.47	-180.19	-641.94	1,599.04	1,552.01	47.03	33.997	
10,825.00	10,751.26	9,565.23	9,272.11	23.92	23.06	-27.50	-174.97	-642.10	1,612.95	1,565.97	46.98	34.333	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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 107H - 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
10,850.00	10,767.38	9,575.00	9,273.66	23.88	23.03	-26.63	-165.33	-642.39	1,626.11	1,579.20	46.91	34.663	
10,875.00	10,782.48	9,575.00	9,273.66	23.84	23.03	-25.87	-165.33	-642.39	1,638.43	1,591.55	46.87	34.956	
10,900.00	10,796.52	9,575.00	9,273.66	23.80	23.03	-25.20	-165.33	-642.39	1,650.00	1,603.17	46.83	35.232	
10,925.00	10,809.45	9,587.38	9,275.34	23.76	23.00	-24.59	-153.07	-642.71	1,660.64	1,613.88	46.76	35.515	
10,950.00	10,821.25	9,600.00	9,276.73	23.73	22.96	-24.06	-140.53	-642.98	1,670.53	1,623.84	46.69	35.779	
10,975.00	10,831.88	9,600.00	9,276.73	23.70	22.96	-23.59	-140.53	-642.98	1,679.44	1,632.78	46.66	35.995	
11,000.00	10,841.31	9,600.00	9,276.73	23.67	22.96	-23.18	-140.53	-642.98	1,687.56	1,640.93	46.63	36.190	
11,025.00	10,849.51	9,610.65	9,277.64	23.64	22.93	-22.85	-129.92	-643.17	1,694.72	1,648.15	46.58	36.386	
11,050.00	10,856.47	9,625.00	9,278.51	23.63	22.89	-22.58	-115.60	-643.37	1,701.10	1,654.58	46.52	36.567	
11,075.00	10,862.17	9,625.00	9,278.51	23.61	22.89	-22.33	-115.60	-643.37	1,706.40	1,659.89	46.51	36.692	
11,100.00	10,866.58	9,625.00	9,278.51	23.60	22.89	-22.12	-115.60	-643.37	1,710.86	1,664.36	46.50	36.794	
11,125.00	10,869.69	9,634.59	9,278.85	23.60	22.87	-21.99	-106.01	-643.47	1,714.37	1,667.90	46.47	36.892	
11,150.00	10,871.51	9,645.31	9,279.00	23.60	22.84	-21.92	-95.30	-643.54	1,716.99	1,670.54	46.45	36.967	
11,171.86	10,872.02	9,647.82	9,279.01	23.61	22.84	-21.87	-92.79	-643.56	1,718.46	1,672.01	46.45	36.997	
11,200.00	10,872.04	9,675.71	9,279.10	23.61	22.77	-22.03	-64.90	-643.70	1,719.80	1,673.42	46.37	37.085	
11,300.00	10,872.11	9,775.30	9,279.44	23.60	22.58	-22.42	34.69	-644.21	1,722.90	1,676.73	46.18	37.312	
11,376.67	10,872.17	9,851.93	9,279.69	23.68	22.53	-22.50	111.31	-644.61	1,723.50	1,677.29	46.21	37.294	
11,400.00	10,872.18	9,875.26	9,279.77	23.74	22.54	-22.50	134.65	-644.73	1,723.44	1,677.17	46.27	37.244	
11,500.00	10,872.25	9,975.26	9,280.11	24.13	22.74	-22.51	234.65	-645.24	1,723.20	1,676.33	46.86	36.770	
11,600.00	10,872.32	10,075.26	9,280.44	24.65	23.24	-22.51	334.64	-645.75	1,722.96	1,675.07	47.89	35.978	
11,700.00	10,872.39	10,175.26	9,280.78	25.29	23.94	-22.51	434.64	-646.27	1,722.71	1,673.48	49.23	34.993	
11,800.00	10,872.46	10,275.26	9,281.11	26.04	24.77	-22.52	534.64	-646.78	1,722.47	1,671.65	50.81	33.897	
11,900.00	10,872.53	10,375.26	9,281.45	26.90	25.70	-22.52	634.64	-647.30	1,722.22	1,669.62	52.61	32.738	
12,000.00	10,872.60	10,475.26	9,281.78	27.85	26.73	-22.52	734.64	-647.81	1,721.98	1,667.40	54.58	31.550	
12,100.00	10,872.67	10,575.26	9,282.12	28.89	27.83	-22.53	834.63	-648.33	1,721.74	1,665.02	56.71	30.358	
12,200.00	10,872.74	10,675.26	9,282.45	30.00	29.00	-22.53	934.63	-648.84	1,721.49	1,662.50	58.99	29.181	
12,300.00	10,872.81	10,775.26	9,282.79	31.18	30.23	-22.53	1,034.63	-649.36	1,721.25	1,659.85	61.40	28.032	
12,400.00	10,872.88	10,875.26	9,283.12	32.41	31.51	-22.54	1,134.63	-649.87	1,721.01	1,657.08	63.93	26.922	
12,500.00	10,872.95	10,975.26	9,283.46	33.71	32.84	-22.54	1,234.62	-650.39	1,720.76	1,654.21	66.55	25.857	
12,600.00	10,873.01	11,075.26	9,283.79	35.05	34.22	-22.55	1,334.62	-650.90	1,720.52	1,651.25	69.27	24.839	
12,700.00	10,873.08	11,175.26	9,284.13	36.43	35.64	-22.55	1,434.62	-651.42	1,720.28	1,648.21	72.06	23.872	
12,800.00	10,873.15	11,275.26	9,284.46	37.85	37.08	-22.55	1,534.62	-651.93	1,720.03	1,645.10	74.93	22.955	
12,900.00	10,873.22	11,375.26	9,284.80	39.30	38.56	-22.56	1,634.62	-652.45	1,719.79	1,641.92	77.86	22.087	
13,000.00	10,873.29	11,475.26	9,285.13	40.78	40.07	-22.56	1,734.61	-652.96	1,719.54	1,638.69	80.85	21.268	
13,100.00	10,873.36	11,575.26	9,285.47	42.29	41.60	-22.56	1,834.61	-653.47	1,719.30	1,635.41	83.89	20.494	
13,200.00	10,873.43	11,675.26	9,285.80	43.82	43.16	-22.57	1,934.61	-653.99	1,719.06	1,632.08	86.98	19.764	
13,300.00	10,873.50	11,775.26	9,286.14	45.38	44.73	-22.57	2,034.61	-654.50	1,718.81	1,628.70	90.11	19.075	
13,400.00	10,873.57	11,875.26	9,286.47	46.95	46.32	-22.57	2,134.60	-655.02	1,718.57	1,625.29	93.28	18.425	
13,500.00	10,873.64	11,975.26	9,286.81	48.54	47.93	-22.58	2,234.60	-655.53	1,718.33	1,621.85	96.48	17.811	
13,600.00	10,873.71	12,075.25	9,287.14	50.15	49.55	-22.58	2,334.60	-656.05	1,718.08	1,618.38	99.71	17.232	
13,700.00	10,873.78	12,175.25	9,287.48	51.77	51.19	-22.58	2,434.60	-656.56	1,717.84	1,614.88	102.96	16.684	
13,800.00	10,873.85	12,275.25	9,287.81	53.41	52.84	-22.59	2,534.60	-657.08	1,717.60	1,611.35	106.25	16.166	
13,900.00	10,873.92	12,375.25	9,288.15	55.06	54.50	-22.59	2,634.59	-657.59	1,717.35	1,607.80	109.55	15.676	
14,000.00	10,873.99	12,475.25	9,288.48	56.71	56.17	-22.59	2,734.59	-658.11	1,717.11	1,604.23	112.88	15.212	
14,100.00	10,874.06	12,575.25	9,288.82	58.38	57.84	-22.60	2,834.59	-658.62	1,716.86	1,600.64	116.23	14.772	
14,200.00	10,874.13	12,675.25	9,289.15	60.06	59.53	-22.60	2,934.59	-659.14	1,716.62	1,597.03	119.59	14.354	
14,300.00	10,874.20	12,775.25	9,289.49	61.75	61.22	-22.61	3,034.58	-659.65	1,716.38	1,593.41	122.97	13.958	
14,400.00	10,874.26	12,875.25	9,289.82	63.44	62.93	-22.61	3,134.58	-660.16	1,716.13	1,589.77	126.36	13.581	
14,500.00	10,874.33	12,975.25	9,290.16	65.14	64.63	-22.61	3,234.58	-660.68	1,715.89	1,586.12	129.77	13.222	
14,600.00	10,874.40	13,075.25	9,290.49	66.85	66.35	-22.62	3,334.58	-661.19	1,715.65	1,582.45	133.19	12.881	
14,700.00	10,874.47	13,175.25	9,290.83	68.56	68.07	-22.62	3,434.58	-661.71	1,715.40	1,578.78	136.63	12.555	
14,800.00	10,874.54	13,275.25	9,291.16	70.28	69.79	-22.62	3,534.57	-662.22	1,715.16	1,575.09	140.07	12.245	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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 107H - Wellbore #1 - Plan #1

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

Survey Program: 0-MWD

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
14,900.00	10,874.61	13,375.25	9,291.50	72.00	71.52	-22.63	3,634.57	-662.74	1,714.92	1,571.39	143.52	11.949	
15,000.00	10,874.68	13,475.25	9,291.83	73.73	73.26	-22.63	3,734.57	-663.25	1,714.67	1,567.69	146.99	11.666	
15,100.00	10,874.75	13,575.25	9,292.17	75.46	75.00	-22.63	3,834.57	-663.77	1,714.43	1,563.97	150.46	11.395	
15,200.00	10,874.82	13,675.25	9,292.50	77.20	76.74	-22.64	3,934.56	-664.28	1,714.19	1,560.25	153.94	11.136	
15,300.00	10,874.89	13,775.25	9,292.84	78.94	78.48	-22.64	4,034.56	-664.80	1,713.94	1,556.52	157.43	10.887	
15,400.00	10,874.96	13,875.25	9,293.17	80.69	80.23	-22.64	4,134.56	-665.31	1,713.70	1,552.78	160.92	10.649	
15,500.00	10,875.03	13,975.25	9,293.51	82.44	81.99	-22.65	4,234.56	-665.83	1,713.46	1,549.03	164.42	10.421	
15,600.00	10,875.10	14,075.25	9,293.84	84.19	83.74	-22.65	4,334.56	-666.34	1,713.21	1,545.28	167.93	10.202	
15,700.00	10,875.17	14,175.25	9,294.18	85.94	85.50	-22.66	4,434.55	-666.85	1,712.97	1,541.52	171.44	9.991	
15,800.00	10,875.24	14,275.25	9,294.51	87.70	87.26	-22.66	4,534.55	-667.37	1,712.72	1,537.76	174.96	9.789	
15,900.00	10,875.31	14,375.25	9,294.85	89.46	89.03	-22.66	4,634.55	-667.88	1,712.48	1,533.99	178.49	9.594	
16,000.00	10,875.38	14,475.25	9,295.18	91.22	90.79	-22.67	4,734.55	-668.40	1,712.24	1,530.22	182.02	9.407	
16,100.00	10,875.45	14,575.25	9,295.52	92.99	92.56	-22.67	4,834.54	-668.91	1,711.99	1,526.44	185.55	9.227	
16,200.00	10,875.51	14,675.25	9,295.85	94.76	94.33	-22.67	4,934.54	-669.43	1,711.75	1,522.66	189.09	9.053	
16,300.00	10,875.58	14,775.25	9,296.19	96.53	96.11	-22.68	5,034.54	-669.94	1,711.51	1,518.88	192.63	8.885	
16,400.00	10,875.65	14,875.25	9,296.52	98.30	97.88	-22.68	5,134.54	-670.46	1,711.26	1,515.09	196.18	8.723	
16,500.00	10,875.72	14,975.24	9,296.86	100.07	99.66	-22.68	5,234.53	-670.97	1,711.02	1,511.29	199.73	8.567	
16,600.00	10,875.79	15,075.24	9,297.20	101.85	101.43	-22.69	5,334.53	-671.49	1,710.78	1,507.50	203.28	8.416	
16,700.00	10,875.86	15,175.24	9,297.53	103.62	103.21	-22.69	5,434.53	-672.00	1,710.53	1,503.70	206.84	8.270	
16,800.00	10,875.93	15,275.24	9,297.87	105.40	105.00	-22.69	5,534.53	-672.52	1,710.29	1,499.89	210.40	8.129	
16,900.00	10,876.00	15,375.24	9,298.20	107.18	106.78	-22.70	5,634.53	-673.03	1,710.05	1,496.09	213.96	7.992	
17,000.00	10,876.07	15,475.24	9,298.54	108.96	108.56	-22.70	5,734.52	-673.54	1,709.80	1,492.28	217.53	7.860	
17,100.00	10,876.14	15,575.24	9,298.87	110.75	110.35	-22.71	5,834.52	-674.06	1,709.56	1,488.46	221.10	7.732	
17,200.00	10,876.21	15,675.24	9,299.21	112.53	112.13	-22.71	5,934.52	-674.57	1,709.32	1,484.65	224.67	7.608	
17,300.00	10,876.28	15,775.24	9,299.54	114.32	113.92	-22.71	6,034.52	-675.09	1,709.07	1,480.83	228.24	7.488	
17,400.00	10,876.35	15,875.24	9,299.88	116.10	115.71	-22.72	6,134.51	-675.60	1,708.83	1,477.01	231.82	7.371	
17,500.00	10,876.42	15,975.24	9,300.21	117.89	117.50	-22.72	6,234.51	-676.12	1,708.59	1,473.19	235.39	7.258	
17,600.00	10,876.49	16,075.24	9,300.55	119.68	119.29	-22.72	6,334.51	-676.63	1,708.34	1,469.37	238.98	7.149	
17,700.00	10,876.56	16,175.24	9,300.88	121.47	121.08	-22.73	6,434.51	-677.15	1,708.10	1,465.54	242.56	7.042	
17,800.00	10,876.63	16,275.24	9,301.22	123.26	122.88	-22.73	6,534.51	-677.66	1,707.86	1,461.72	246.14	6.939	
17,900.00	10,876.69	16,375.24	9,301.55	125.06	124.67	-22.73	6,634.50	-678.18	1,707.61	1,457.89	249.73	6.838	
18,000.00	10,876.76	16,475.24	9,301.89	126.85	126.47	-22.74	6,734.50	-678.69	1,707.37	1,454.05	253.32	6.740	
18,100.00	10,876.83	16,575.24	9,302.22	128.64	128.26	-22.74	6,834.50	-679.21	1,707.13	1,450.22	256.91	6.645	
18,200.00	10,876.90	16,675.24	9,302.56	130.44	130.06	-22.74	6,934.50	-679.72	1,706.88	1,446.39	260.50	6.552	
18,300.00	10,876.97	16,775.24	9,302.89	132.23	131.86	-22.75	7,034.49	-680.23	1,706.64	1,442.55	264.09	6.462	
18,336.57	10,877.00	16,807.66	9,303.00	132.77	132.44	-22.75	7,066.91	-680.40	1,706.56	1,441.35	265.21	6.435	
18,339.70	10,877.00	16,807.66	9,303.00	132.81	132.44	-22.75	7,066.91	-680.40	1,706.56	1,441.31	265.25	6.434	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
0.00	0.00	0.70	0.70	0.00	0.00	-0.19	30.00	-0.10	30.00				
100.00	100.00	100.70	100.70	0.08	0.08	-0.19	30.00	-0.10	30.00	29.83	0.17	178.679	
200.00	200.00	200.70	200.70	0.31	0.31	-0.19	30.00	-0.10	30.00	29.38	0.62	48.589	
300.00	300.00	300.70	300.70	0.53	0.53	-0.19	30.00	-0.10	30.00	28.93	1.07	28.117	
400.00	400.00	400.70	400.70	0.76	0.76	-0.19	30.00	-0.10	30.00	28.48	1.52	19.783	
500.00	500.00	500.70	500.70	0.98	0.98	-0.19	30.00	-0.10	30.00	28.03	1.97	15.259	
600.00	600.00	600.70	600.70	1.21	1.21	-0.19	30.00	-0.10	30.00	27.58	2.42	12.420	
700.00	700.00	700.70	700.70	1.43	1.43	-0.19	30.00	-0.10	30.00	27.14	2.87	10.471	
800.00	800.00	800.70	800.70	1.66	1.66	-0.19	30.00	-0.10	30.00	26.69	3.31	9.051	
900.00	900.00	900.70	900.70	1.88	1.88	-0.19	30.00	-0.10	30.00	26.24	3.76	7.970	
1,000.00	1,000.00	1,000.70	1,000.70	2.11	2.11	-0.19	30.00	-0.10	30.00	25.79	4.21	7.120	
1,100.00	1,100.00	1,100.70	1,100.70	2.33	2.33	-0.19	30.00	-0.10	30.00	25.34	4.66	6.433	
1,200.00	1,200.00	1,200.70	1,200.70	2.56	2.56	-0.19	30.00	-0.10	30.00	24.89	5.11	5.868	
1,300.00	1,300.00	1,300.70	1,300.70	2.78	2.78	-0.19	30.00	-0.10	30.00	24.44	5.56	5.394	
1,400.00	1,400.00	1,400.70	1,400.70	3.01	3.01	-0.19	30.00	-0.10	30.00	23.99	6.01	4.990	
1,500.00	1,500.00	1,500.70	1,500.70	3.23	3.23	-0.19	30.00	-0.10	30.00	23.54	6.46	4.643	
1,600.00	1,600.00	1,600.70	1,600.70	3.45	3.46	-0.19	30.00	-0.10	30.00	23.09	6.91	4.341	
1,700.00	1,700.00	1,700.70	1,700.70	3.68	3.68	-0.19	30.00	-0.10	30.00	22.64	7.36	4.076	
1,800.00	1,800.00	1,800.70	1,800.70	3.90	3.91	-0.19	30.00	-0.10	30.00	22.19	7.81	3.841	
1,900.00	1,900.00	1,900.70	1,900.70	4.13	4.13	-0.19	30.00	-0.10	30.00	21.74	8.26	3.632	
2,000.00	2,000.00	2,000.70	2,000.70	4.35	4.36	-0.19	30.00	-0.10	30.00	21.29	8.71	3.445	
2,100.00	2,100.00	2,100.70	2,100.70	4.58	4.58	-0.19	30.00	-0.10	30.00	20.84	9.16	3.276	
2,200.00	2,200.00	2,200.70	2,200.70	4.80	4.80	-0.19	30.00	-0.10	30.00	20.39	9.61	3.122	
2,300.00	2,300.00	2,300.70	2,300.70	5.03	5.03	-0.19	30.00	-0.10	30.00	19.94	10.06	2.983	
2,400.00	2,400.00	2,400.70	2,400.70	5.25	5.25	-0.19	30.00	-0.10	30.00	19.49	10.51	2.855	
2,500.00	2,500.00	2,500.70	2,500.70	5.48	5.48	-0.19	30.00	-0.10	30.00	19.04	10.96	2.738	
2,600.00	2,600.00	2,600.70	2,600.70	5.70	5.70	-0.19	30.00	-0.10	30.00	18.59	11.41	2.630	
2,700.00	2,700.00	2,700.70	2,700.70	5.93	5.93	-0.19	30.00	-0.10	30.00	18.14	11.86	2.530	
2,800.00	2,800.00	2,800.70	2,800.70	6.15	6.15	-0.19	30.00	-0.10	30.00	17.69	12.31	2.438	
2,900.00	2,900.00	2,900.70	2,900.70	6.38	6.38	-0.19	30.00	-0.10	30.00	17.25	12.75	2.352	
3,000.00	3,000.00	3,000.70	3,000.70	6.60	6.60	-0.19	30.00	-0.10	30.00	16.80	13.20	2.272	
3,100.00	3,100.00	3,100.70	3,100.70	6.83	6.83	-0.19	30.00	-0.10	30.00	16.35	13.65	2.197	
3,200.00	3,200.00	3,200.70	3,200.70	7.05	7.05	-0.19	30.00	-0.10	30.00	15.90	14.10	2.127	
3,300.00	3,300.00	3,300.70	3,300.70	7.28	7.28	-0.19	30.00	-0.10	30.00	15.45	14.55	2.061	
3,400.00	3,400.00	3,400.70	3,400.70	7.50	7.50	-0.19	30.00	-0.10	30.00	15.00	15.00	2.000	
3,500.00	3,500.00	3,500.70	3,500.70	7.73	7.73	-0.19	30.00	-0.10	30.00	14.55	15.45	1.942	
3,600.00	3,600.00	3,600.70	3,600.70	7.95	7.95	-0.19	30.00	-0.10	30.00	14.10	15.90	1.887	
3,700.00	3,700.00	3,700.70	3,700.70	8.17	8.18	-0.19	30.00	-0.10	30.00	13.65	16.35	1.835	
3,800.00	3,800.00	3,800.70	3,800.70	8.40	8.40	-0.19	30.00	-0.10	30.00	13.20	16.80	1.786	
3,900.00	3,900.00	3,900.70	3,900.70	8.62	8.63	-0.19	30.00	-0.10	30.00	12.75	17.25	1.739	
4,000.00	4,000.00	4,000.70	4,000.70	8.85	8.85	-0.19	30.00	-0.10	30.00	12.30	17.70	1.695	
4,100.00	4,100.00	4,100.70	4,100.70	9.07	9.08	-0.19	30.00	-0.10	30.00	11.85	18.15	1.653	
4,200.00	4,200.00	4,200.70	4,200.70	9.30	9.30	-0.19	30.00	-0.10	30.00	11.40	18.60	1.613	
4,300.00	4,300.00	4,300.70	4,300.70	9.52	9.52	-0.19	30.00	-0.10	30.00	10.95	19.05	1.575	
4,400.00	4,400.00	4,400.70	4,400.70	9.75	9.75	-0.19	30.00	-0.10	30.00	10.50	19.50	1.539	CC, ES, SF
4,500.00	4,499.98	4,500.68	4,500.68	9.94	9.97	173.61	30.00	-0.10	31.73	11.82	19.92	1.593	
4,600.00	4,599.84	4,600.54	4,600.54	10.11	10.20	174.51	30.00	-0.10	36.94	16.63	20.31	1.819	
4,679.63	4,679.18	4,679.88	4,679.88	10.25	10.38	175.33	30.00	-0.10	43.57	22.95	20.63	2.112	
4,700.00	4,699.46	4,700.16	4,700.16	10.28	10.42	175.54	30.00	-0.10	45.55	24.84	20.71	2.200	
4,800.00	4,798.98	4,799.68	4,799.68	10.46	10.65	176.32	30.00	-0.10	55.27	34.17	21.10	2.619	
4,900.00	4,898.51	4,899.21	4,899.21	10.63	10.87	176.87	30.00	-0.10	65.00	43.50	21.50	3.023	
5,000.00	4,998.03	4,998.73	4,998.73	10.81	11.09	177.28	30.00	-0.10	74.73	52.83	21.91	3.411	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
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
5,100.00	5,097.56	5,101.13	5,101.10	11.00	11.29	177.33	28.29	-0.61	82.78	60.48	22.30	3.713	
5,200.00	5,197.08	5,204.00	5,203.83	11.19	11.47	176.84	23.05	-2.19	87.34	64.67	22.66	3.854	
5,300.00	5,296.60	5,307.06	5,306.47	11.39	11.65	175.83	14.25	-4.82	88.41	65.38	23.04	3.838	
5,400.00	5,396.13	5,410.04	5,408.64	11.59	11.83	174.20	1.94	-8.52	86.05	62.64	23.42	3.675	
5,500.00	5,495.65	5,510.21	5,507.73	11.79	12.01	172.07	-12.09	-12.73	81.70	57.90	23.80	3.433	
5,600.00	5,595.18	5,610.07	5,606.51	12.00	12.19	169.70	-26.10	-16.93	77.46	53.26	24.19	3.202	
5,700.00	5,694.70	5,709.92	5,705.29	12.21	12.39	167.06	-40.11	-21.13	73.36	48.76	24.60	2.982	
5,800.00	5,794.22	5,809.78	5,804.07	12.42	12.59	164.12	-54.12	-25.33	69.44	44.42	25.02	2.776	
5,900.00	5,893.75	5,909.63	5,902.85	12.64	12.80	160.84	-68.12	-29.54	65.72	40.28	25.44	2.583	
6,000.00	5,993.27	6,009.49	6,001.63	12.86	13.01	157.17	-82.13	-33.74	62.24	36.37	25.88	2.405	
6,100.00	6,092.80	6,109.35	6,100.41	13.08	13.24	153.10	-96.14	-37.94	59.05	32.73	26.32	2.244	
6,200.00	6,192.32	6,209.20	6,199.19	13.31	13.46	148.58	-110.15	-42.15	56.19	29.42	26.77	2.099	
6,300.00	6,291.84	6,309.06	6,297.97	13.53	13.69	143.61	-124.16	-46.35	53.71	26.48	27.23	1.973	
6,400.00	6,391.37	6,408.91	6,396.75	13.76	13.93	138.22	-138.17	-50.55	51.68	23.98	27.69	1.866	
6,500.00	6,490.89	6,508.77	6,495.52	14.00	14.17	132.43	-152.18	-54.75	50.14	21.97	28.17	1.780	
6,600.00	6,590.42	6,608.62	6,594.30	14.23	14.42	126.35	-166.18	-58.96	49.14	20.49	28.65	1.715	
6,700.00	6,689.94	6,708.48	6,693.08	14.47	14.67	120.09	-180.19	-63.16	48.71	19.58	29.13	1.672	
6,722.05	6,711.89	6,730.50	6,714.87	14.52	14.72	118.70	-183.28	-64.08	48.70	19.46	29.24	1.665	
6,800.00	6,789.46	6,808.34	6,791.86	14.70	14.92	113.79	-194.20	-67.36	48.88	19.25	29.62	1.650	
6,900.00	6,888.99	6,908.19	6,890.64	14.94	15.18	107.61	-208.21	-71.56	49.63	19.51	30.12	1.648	
7,000.00	6,988.51	7,008.05	6,989.42	15.18	15.44	101.69	-222.22	-75.77	50.93	20.31	30.62	1.663	
7,100.00	7,088.04	7,107.90	7,088.20	15.43	15.70	96.11	-236.23	-79.97	52.76	21.63	31.13	1.695	
7,200.00	7,187.56	7,207.76	7,186.98	15.67	15.97	90.95	-250.23	-84.17	55.04	23.40	31.64	1.740	
7,300.00	7,287.08	7,307.62	7,285.76	15.92	16.24	86.23	-264.24	-88.37	57.74	25.58	32.16	1.795	
7,400.00	7,386.61	7,407.47	7,384.54	16.16	16.52	81.96	-278.25	-92.58	60.80	28.11	32.68	1.860	
7,500.00	7,486.13	7,507.33	7,483.31	16.41	16.80	78.12	-292.26	-96.78	64.15	30.95	33.21	1.932	
7,600.00	7,585.66	7,607.18	7,582.09	16.66	17.07	74.68	-306.27	-100.98	67.77	34.03	33.74	2.009	
7,700.00	7,685.18	7,707.04	7,680.87	16.91	17.36	71.59	-320.28	-105.18	71.61	37.34	34.27	2.090	
7,800.00	7,784.70	7,806.89	7,779.65	17.16	17.64	68.82	-334.28	-109.39	75.63	40.82	34.81	2.173	
7,900.00	7,884.23	7,906.75	7,878.43	17.42	17.93	66.34	-348.29	-113.59	79.81	44.47	35.35	2.258	
8,000.00	7,983.75	8,006.61	7,977.21	17.67	18.22	64.11	-362.30	-117.79	84.13	48.24	35.89	2.344	
8,100.00	8,083.28	8,106.46	8,075.99	17.93	18.51	62.09	-376.31	-121.99	88.56	52.12	36.44	2.430	
8,200.00	8,182.80	8,206.32	8,174.77	18.18	18.80	60.28	-390.32	-126.20	93.09	56.10	36.99	2.517	
8,300.00	8,282.32	8,306.17	8,273.55	18.44	19.10	58.63	-404.33	-130.40	97.71	60.17	37.54	2.603	
8,400.00	8,381.85	8,406.03	8,372.33	18.70	19.40	57.13	-418.33	-134.60	102.40	64.30	38.10	2.688	
8,500.00	8,481.37	8,505.89	8,471.10	18.96	19.69	55.76	-432.34	-138.80	107.15	68.50	38.65	2.772	
8,600.00	8,580.90	8,605.74	8,569.88	19.22	20.00	54.51	-446.35	-143.01	111.96	72.74	39.21	2.855	
8,700.00	8,680.42	8,705.60	8,668.66	19.48	20.30	53.37	-460.36	-147.21	116.82	77.04	39.78	2.937	
8,800.00	8,779.94	8,812.37	8,774.47	19.74	20.61	52.74	-473.88	-151.31	120.82	80.48	40.35	2.995	
8,900.00	8,879.47	8,930.99	8,892.58	20.00	20.78	60.14	-467.24	-150.07	111.76	70.98	40.79	2.740	
9,000.00	8,978.99	9,035.11	8,992.16	20.27	20.79	80.18	-438.40	-142.79	94.18	53.12	41.05	2.294	
9,057.61	9,036.33	9,086.19	9,038.06	20.42	20.75	96.82	-416.78	-137.21	89.31	48.14	41.17	2.169	
9,100.00	9,078.52	9,119.57	9,066.67	20.53	20.71	109.37	-400.14	-132.88	92.77	51.53	41.24	2.250	
9,200.00	9,178.04	9,185.57	9,119.36	20.80	20.61	132.74	-361.77	-122.84	128.66	87.25	41.41	3.107	
9,300.00	9,277.56	9,236.75	9,156.15	21.06	20.52	146.24	-327.40	-113.79	190.84	149.25	41.58	4.589	
9,400.00	9,377.09	9,275.00	9,181.05	21.33	20.46	153.63	-299.34	-106.39	265.99	224.20	41.79	6.365	
9,500.00	9,476.61	9,308.46	9,200.87	21.59	20.40	158.61	-273.29	-99.50	348.14	306.15	42.00	8.290	
9,600.00	9,576.14	9,334.00	9,214.70	21.86	20.37	161.70	-252.53	-94.00	434.64	392.41	42.23	10.293	
9,700.00	9,675.66	9,350.00	9,222.77	22.13	20.34	163.38	-239.18	-90.46	524.07	481.60	42.47	12.340	
9,800.00	9,775.18	9,375.00	9,234.44	22.39	20.31	165.68	-217.81	-84.78	615.46	572.76	42.70	14.412	
9,900.00	9,874.71	9,386.87	9,239.58	22.66	20.30	166.65	-207.47	-82.03	708.38	665.42	42.96	16.489	
10,000.00	9,974.23	9,400.00	9,244.94	22.93	20.28	167.64	-195.89	-78.96	802.46	759.24	43.21	18.569	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
Offset Well Error: 0.00 ft

Survey Program: 0-MWD

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.00	10,073.76	9,410.03	9,248.82	23.20	20.27	168.35	-186.95	-76.58	897.41	853.94	43.47	20.642	
10,200.00	10,173.28	9,425.00	9,254.24	23.47	20.26	169.33	-173.47	-72.99	993.12	949.39	43.73	22.710	
10,300.00	10,272.80	9,425.00	9,254.24	23.74	20.26	169.33	-173.47	-72.99	1,089.31	1,045.31	44.00	24.757	
10,375.60	10,348.04	9,425.00	9,254.24	23.95	20.26	169.33	-173.47	-72.99	1,162.45	1,118.25	44.21	26.297	
10,400.00	10,372.38	9,434.89	9,257.58	24.00	20.25	173.27	-164.47	-70.59	1,185.83	1,141.57	44.26	26.794	
10,425.00	10,397.37	9,437.09	9,258.30	24.05	20.25	-29.29	-162.46	-70.06	1,209.53	1,165.23	44.30	27.301	
10,450.00	10,422.35	9,439.57	9,259.09	24.09	20.25	-9.25	-160.19	-69.46	1,232.84	1,188.49	44.34	27.802	
10,475.00	10,447.26	9,450.00	9,262.31	24.13	20.24	-7.17	-150.60	-66.90	1,255.78	1,211.42	44.37	28.303	
10,500.00	10,472.03	9,450.00	9,262.31	24.15	20.24	-6.20	-150.60	-66.90	1,278.11	1,233.71	44.39	28.790	
10,525.00	10,496.58	9,450.00	9,262.31	24.17	20.24	-5.52	-150.60	-66.90	1,299.92	1,255.51	44.41	29.270	
10,550.00	10,520.85	9,450.00	9,262.31	24.18	20.24	-5.00	-150.60	-66.90	1,321.21	1,276.78	44.42	29.743	
10,575.00	10,544.77	9,450.00	9,262.31	24.18	20.24	-4.59	-150.60	-66.90	1,341.92	1,297.49	44.42	30.207	
10,600.00	10,568.29	9,459.50	9,265.05	24.18	20.24	-4.14	-141.81	-64.56	1,361.91	1,317.49	44.42	30.663	
10,625.00	10,591.33	9,463.54	9,266.16	24.17	20.24	-3.82	-138.06	-63.56	1,381.26	1,336.86	44.40	31.107	
10,650.00	10,613.82	9,475.00	9,269.13	24.15	20.23	-3.48	-127.37	-60.70	1,399.99	1,355.61	44.38	31.544	
10,675.00	10,635.72	9,475.00	9,269.13	24.13	20.23	-3.28	-127.37	-60.70	1,417.85	1,373.49	44.36	31.962	
10,700.00	10,656.96	9,475.00	9,269.13	24.10	20.23	-3.12	-127.37	-60.70	1,434.99	1,390.66	44.33	32.368	
10,725.00	10,677.47	9,475.00	9,269.13	24.07	20.23	-2.97	-127.37	-60.70	1,451.41	1,407.11	44.30	32.761	
10,750.00	10,697.22	9,486.06	9,271.75	24.04	20.23	-2.77	-116.98	-57.93	1,466.91	1,422.64	44.27	33.138	
10,775.00	10,716.13	9,500.00	9,274.69	24.00	20.23	-2.56	-103.82	-54.42	1,481.74	1,437.51	44.23	33.502	
10,800.00	10,734.16	9,500.00	9,274.69	23.96	20.23	-2.47	-103.82	-54.42	1,495.51	1,451.32	44.19	33.843	
10,825.00	10,751.26	9,500.00	9,274.69	23.92	20.23	-2.39	-103.82	-54.42	1,508.48	1,464.33	44.15	34.168	
10,850.00	10,767.38	9,500.00	9,274.69	23.88	20.23	-2.32	-103.82	-54.42	1,520.62	1,476.51	44.11	34.474	
10,875.00	10,782.48	9,511.57	9,276.82	23.84	20.23	-2.19	-92.83	-51.49	1,531.75	1,487.68	44.07	34.757	
10,900.00	10,796.52	9,525.00	9,278.96	23.80	20.23	-2.07	-80.02	-48.06	1,542.09	1,498.06	44.03	35.021	
10,925.00	10,809.45	9,525.00	9,278.96	23.76	20.23	-2.02	-80.02	-48.06	1,551.32	1,507.33	44.00	35.261	
10,950.00	10,821.25	9,525.00	9,278.96	23.73	20.23	-1.98	-80.02	-48.06	1,559.68	1,515.72	43.96	35.480	
10,975.00	10,831.88	9,525.00	9,278.96	23.70	20.23	-1.95	-80.02	-48.06	1,567.16	1,523.23	43.93	35.676	
11,000.00	10,841.31	9,538.99	9,280.78	23.67	20.24	-1.85	-66.63	-44.48	1,573.49	1,529.58	43.91	35.838	
11,025.00	10,849.51	9,550.00	9,281.93	23.64	20.24	-1.78	-56.05	-41.65	1,578.97	1,535.08	43.89	35.978	
11,050.00	10,856.47	9,550.00	9,281.93	23.63	20.24	-1.76	-56.05	-41.65	1,583.38	1,539.51	43.87	36.094	
11,075.00	10,862.17	9,550.00	9,281.93	23.61	20.24	-1.75	-56.05	-41.65	1,586.89	1,543.03	43.85	36.185	
11,100.00	10,866.58	9,561.68	9,282.88	23.60	20.25	-1.69	-44.80	-38.64	1,589.29	1,545.44	43.85	36.240	
11,125.00	10,869.69	9,575.00	9,283.60	23.60	20.26	-1.62	-31.95	-35.20	1,590.83	1,546.97	43.86	36.269	
11,150.00	10,871.51	9,575.00	9,283.60	23.60	20.26	-1.62	-31.95	-35.20	1,591.20	1,547.34	43.87	36.274	
11,171.86	10,872.02	9,575.00	9,283.60	23.61	20.26	-1.62	-31.95	-35.20	1,590.78	1,546.91	43.87	36.258	
11,200.00	10,872.04	9,584.58	9,283.90	23.61	20.27	-1.54	-22.71	-32.72	1,589.91	1,546.03	43.88	36.234	
11,300.00	10,872.11	9,655.40	9,284.26	23.60	20.28	-1.07	46.04	-15.74	1,588.87	1,544.99	43.88	36.209	
11,376.67	10,872.17	9,729.71	9,284.58	23.68	20.33	-0.60	118.98	-1.56	1,588.41	1,544.39	44.01	36.089	
11,400.00	10,872.18	9,752.49	9,284.67	23.74	20.37	-0.46	141.47	2.02	1,588.29	1,544.18	44.11	36.010	
11,500.00	10,872.25	9,851.26	9,285.09	24.13	20.59	-0.03	239.56	13.41	1,587.87	1,543.15	44.72	35.505	
11,600.00	10,872.32	9,951.21	9,285.52	24.65	20.95	0.15	339.39	18.03	1,587.52	1,541.92	45.60	34.814	
11,700.00	10,872.39	10,051.27	9,285.94	25.29	21.54	0.16	439.44	17.67	1,587.17	1,540.34	46.83	33.896	
11,800.00	10,872.46	10,151.27	9,286.36	26.04	22.29	0.15	539.44	17.09	1,586.82	1,538.49	48.33	32.833	
11,900.00	10,872.53	10,251.27	9,286.79	26.90	23.16	0.15	639.44	16.51	1,586.46	1,536.41	50.06	31.693	
12,000.00	10,872.60	10,351.27	9,287.21	27.85	24.14	0.15	739.43	15.94	1,586.11	1,534.12	51.99	30.510	
12,100.00	10,872.67	10,451.27	9,287.63	28.89	25.21	0.15	839.43	15.36	1,585.76	1,531.66	54.10	29.314	
12,200.00	10,872.74	10,551.27	9,288.05	30.00	26.37	0.14	939.43	14.79	1,585.40	1,529.04	56.36	28.128	
12,300.00	10,872.81	10,651.27	9,288.48	31.18	27.60	0.14	1,039.42	14.21	1,585.05	1,526.28	58.77	26.969	
12,400.00	10,872.88	10,751.27	9,288.90	32.41	28.89	0.14	1,139.42	13.64	1,584.69	1,523.39	61.30	25.850	
12,500.00	10,872.95	10,851.27	9,289.32	33.71	30.24	0.14	1,239.42	13.06	1,584.34	1,520.40	63.94	24.777	
12,600.00	10,873.01	10,951.27	9,289.75	35.05	31.63	0.14	1,339.41	12.49	1,583.99	1,517.31	66.68	23.756	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
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
12,700.00	10,873.08	11,051.27	9,290.17	36.43	33.07	0.13	1,439.41	11.91	1,583.63	1,514.13	69.50	22.787	
12,800.00	10,873.15	11,151.27	9,290.59	37.85	34.55	0.13	1,539.41	11.34	1,583.28	1,510.89	72.39	21.871	
12,900.00	10,873.22	11,251.26	9,291.02	39.30	36.05	0.13	1,639.41	10.76	1,582.93	1,507.57	75.35	21.007	
13,000.00	10,873.29	11,351.26	9,291.44	40.78	37.59	0.13	1,739.40	10.19	1,582.57	1,504.20	78.37	20.194	
13,100.00	10,873.36	11,451.26	9,291.86	42.29	39.15	0.12	1,839.40	9.61	1,582.22	1,500.78	81.44	19.428	
13,200.00	10,873.43	11,551.26	9,292.29	43.82	40.73	0.12	1,939.40	9.03	1,581.86	1,497.31	84.55	18.708	
13,300.00	10,873.50	11,651.26	9,292.71	45.38	42.33	0.12	2,039.39	8.46	1,581.51	1,493.80	87.71	18.031	
13,400.00	10,873.57	11,751.26	9,293.13	46.95	43.95	0.12	2,139.39	7.88	1,581.16	1,490.25	90.90	17.394	
13,500.00	10,873.64	11,851.26	9,293.55	48.54	45.59	0.11	2,239.39	7.31	1,580.80	1,486.67	94.13	16.794	
13,600.00	10,873.71	11,951.26	9,293.98	50.15	47.24	0.11	2,339.38	6.73	1,580.45	1,483.06	97.39	16.228	
13,700.00	10,873.78	12,051.26	9,294.40	51.77	48.90	0.11	2,439.38	6.16	1,580.10	1,479.42	100.67	15.696	
13,800.00	10,873.85	12,151.26	9,294.82	53.41	50.57	0.11	2,539.38	5.58	1,579.74	1,475.76	103.98	15.193	
13,900.00	10,873.92	12,251.26	9,295.25	55.06	52.25	0.10	2,639.37	5.01	1,579.39	1,472.08	107.31	14.718	
14,000.00	10,873.99	12,351.26	9,295.67	56.71	53.95	0.10	2,739.37	4.43	1,579.03	1,468.37	110.66	14.269	
14,100.00	10,874.06	12,451.26	9,296.09	58.38	55.65	0.10	2,839.37	3.86	1,578.68	1,464.65	114.03	13.845	
14,200.00	10,874.13	12,551.26	9,296.52	60.06	57.35	0.10	2,939.36	3.28	1,578.33	1,460.91	117.41	13.442	
14,300.00	10,874.20	12,651.26	9,296.94	61.75	59.07	0.10	3,039.36	2.71	1,577.97	1,457.16	120.81	13.061	
14,400.00	10,874.26	12,751.25	9,297.36	63.44	60.79	0.09	3,139.36	2.13	1,577.62	1,453.39	124.23	12.699	
14,500.00	10,874.33	12,851.25	9,297.78	65.14	62.52	0.09	3,239.35	1.55	1,577.27	1,449.61	127.66	12.355	
14,600.00	10,874.40	12,951.25	9,298.21	66.85	64.25	0.09	3,339.35	0.98	1,576.91	1,445.81	131.10	12.029	
14,700.00	10,874.47	13,051.25	9,298.63	68.56	65.99	0.09	3,439.35	0.40	1,576.56	1,442.01	134.55	11.717	
14,800.00	10,874.54	13,151.25	9,299.05	70.28	67.73	0.08	3,539.34	-0.17	1,576.20	1,438.20	138.01	11.421	
14,900.00	10,874.61	13,251.25	9,299.48	72.00	69.48	0.08	3,639.34	-0.75	1,575.85	1,434.37	141.48	11.138	
15,000.00	10,874.68	13,351.25	9,299.90	73.73	71.23	0.08	3,739.34	-1.32	1,575.50	1,430.54	144.96	10.869	
15,100.00	10,874.75	13,451.25	9,300.32	75.46	72.98	0.08	3,839.33	-1.90	1,575.14	1,426.70	148.45	10.611	
15,200.00	10,874.82	13,551.25	9,300.75	77.20	74.74	0.07	3,939.33	-2.47	1,574.79	1,422.85	151.94	10.364	
15,300.00	10,874.89	13,651.25	9,301.17	78.94	76.50	0.07	4,039.33	-3.05	1,574.44	1,418.99	155.44	10.129	
15,400.00	10,874.96	13,751.25	9,301.59	80.69	78.27	0.07	4,139.33	-3.62	1,574.08	1,415.13	158.95	9.903	
15,500.00	10,875.03	13,851.25	9,302.02	82.44	80.03	0.07	4,239.32	-4.20	1,573.73	1,411.26	162.47	9.686	
15,600.00	10,875.10	13,951.25	9,302.44	84.19	81.80	0.06	4,339.32	-4.77	1,573.37	1,407.39	165.99	9.479	
15,700.00	10,875.17	14,051.25	9,302.86	85.94	83.57	0.06	4,439.32	-5.35	1,573.02	1,403.51	169.51	9.280	
15,800.00	10,875.24	14,151.25	9,303.28	87.70	85.35	0.06	4,539.31	-5.93	1,572.67	1,399.62	173.05	9.088	
15,900.00	10,875.31	14,251.25	9,303.71	89.46	87.12	0.06	4,639.31	-6.50	1,572.31	1,395.73	176.58	8.904	
16,000.00	10,875.38	14,351.24	9,304.13	91.22	88.90	0.06	4,739.31	-7.08	1,571.96	1,391.84	180.12	8.727	
16,100.00	10,875.45	14,451.24	9,304.55	92.99	90.68	0.05	4,839.30	-7.65	1,571.61	1,387.94	183.67	8.557	
16,200.00	10,875.51	14,551.24	9,304.98	94.76	92.46	0.05	4,939.30	-8.23	1,571.25	1,384.04	187.22	8.393	
16,300.00	10,875.58	14,651.24	9,305.40	96.53	94.24	0.05	5,039.30	-8.80	1,570.90	1,380.13	190.77	8.235	
16,400.00	10,875.65	14,751.24	9,305.82	98.30	96.03	0.05	5,139.29	-9.38	1,570.55	1,376.22	194.33	8.082	
16,500.00	10,875.72	14,851.24	9,306.25	100.07	97.82	0.04	5,239.29	-9.95	1,570.19	1,372.31	197.89	7.935	
16,600.00	10,875.79	14,951.24	9,306.67	101.85	99.60	0.04	5,339.29	-10.53	1,569.84	1,368.39	201.45	7.793	
16,700.00	10,875.86	15,051.24	9,307.09	103.62	101.39	0.04	5,439.28	-11.10	1,569.48	1,364.47	205.02	7.655	
16,800.00	10,875.93	15,151.24	9,307.51	105.40	103.18	0.04	5,539.28	-11.68	1,569.13	1,360.55	208.58	7.523	
16,900.00	10,876.00	15,251.24	9,307.94	107.18	104.97	0.03	5,639.28	-12.25	1,568.78	1,356.62	212.16	7.394	
17,000.00	10,876.07	15,351.24	9,308.36	108.96	106.77	0.03	5,739.27	-12.83	1,568.42	1,352.69	215.73	7.270	
17,100.00	10,876.14	15,451.24	9,308.78	110.75	108.56	0.03	5,839.27	-13.41	1,568.07	1,348.76	219.31	7.150	
17,200.00	10,876.21	15,551.24	9,309.21	112.53	110.35	0.03	5,939.27	-13.98	1,567.72	1,344.83	222.89	7.034	
17,300.00	10,876.28	15,651.24	9,309.63	114.32	112.15	0.02	6,039.26	-14.56	1,567.36	1,340.89	226.47	6.921	
17,400.00	10,876.35	15,751.24	9,310.05	116.10	113.95	0.02	6,139.26	-15.13	1,567.01	1,336.96	230.05	6.812	
17,500.00	10,876.42	15,851.23	9,310.48	117.89	115.74	0.02	6,239.26	-15.71	1,566.66	1,333.02	233.64	6.706	
17,600.00	10,876.49	15,951.23	9,310.90	119.68	117.54	0.02	6,339.26	-16.28	1,566.30	1,329.08	237.22	6.603	
17,700.00	10,876.56	16,051.23	9,311.32	121.47	119.34	0.02	6,439.25	-16.86	1,565.95	1,325.13	240.81	6.503	
17,800.00	10,876.63	16,151.23	9,311.75	123.26	121.14	0.01	6,539.25	-17.43	1,565.59	1,321.19	244.41	6.406	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
17,900.00	10,876.69	16,251.23	9,312.17	125.06	122.94	0.01	6,639.25	-18.01	1,565.24	1,317.24	248.00	6.311	
18,000.00	10,876.76	16,351.23	9,312.59	126.85	124.74	0.01	6,739.24	-18.58	1,564.89	1,313.29	251.59	6.220	
18,100.00	10,876.83	16,451.23	9,313.01	128.64	126.55	0.01	6,839.24	-19.16	1,564.53	1,309.34	255.19	6.131	
18,200.00	10,876.90	16,551.23	9,313.44	130.44	128.35	0.00	6,939.24	-19.73	1,564.18	1,305.39	258.79	6.044	
18,300.00	10,876.97	16,651.23	9,313.86	132.23	130.15	0.00	7,039.23	-20.31	1,563.83	1,301.44	262.39	5.960	
18,338.71	10,877.00	16,684.31	9,314.00	132.80	130.75	0.00	7,072.31	-20.50	1,563.70	1,300.15	263.55	5.933	
18,339.70	10,877.00	16,684.31	9,314.00	132.81	130.75	0.00	7,072.31	-20.50	1,563.70	1,300.14	263.56	5.933	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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	-90.38	-0.20	-30.00	30.01				
100.00	100.00	99.30	99.30	0.08	0.08	-90.38	-0.20	-30.00	30.00	29.83	0.17	181.005	
200.00	200.00	199.30	199.30	0.31	0.31	-90.38	-0.20	-30.00	30.00	29.39	0.61	48.838	
300.00	300.00	299.30	299.30	0.53	0.53	-90.38	-0.20	-30.00	30.00	28.94	1.06	28.201	
400.00	400.00	399.30	399.30	0.76	0.76	-90.38	-0.20	-30.00	30.00	28.49	1.51	19.824	
500.00	500.00	499.30	499.30	0.98	0.98	-90.38	-0.20	-30.00	30.00	28.04	1.96	15.284	
600.00	600.00	599.30	599.30	1.21	1.21	-90.38	-0.20	-30.00	30.00	27.59	2.41	12.436	
700.00	700.00	699.30	699.30	1.43	1.43	-90.38	-0.20	-30.00	30.00	27.14	2.86	10.483	
800.00	800.00	799.30	799.30	1.66	1.65	-90.38	-0.20	-30.00	30.00	26.69	3.31	9.060	
900.00	900.00	899.30	899.30	1.88	1.88	-90.38	-0.20	-30.00	30.00	26.24	3.76	7.977	
1,000.00	1,000.00	999.30	999.30	2.11	2.10	-90.38	-0.20	-30.00	30.00	25.79	4.21	7.125	
1,100.00	1,100.00	1,099.30	1,099.30	2.33	2.33	-90.38	-0.20	-30.00	30.00	25.34	4.66	6.438	
1,200.00	1,200.00	1,199.30	1,199.30	2.56	2.55	-90.38	-0.20	-30.00	30.00	24.89	5.11	5.871	
1,300.00	1,300.00	1,299.30	1,299.30	2.78	2.78	-90.38	-0.20	-30.00	30.00	24.44	5.56	5.397	
1,400.00	1,400.00	1,399.30	1,399.30	3.01	3.00	-90.38	-0.20	-30.00	30.00	23.99	6.01	4.993	
1,500.00	1,500.00	1,499.30	1,499.30	3.23	3.23	-90.38	-0.20	-30.00	30.00	23.54	6.46	4.645	
1,600.00	1,600.00	1,599.30	1,599.30	3.45	3.45	-90.38	-0.20	-30.00	30.00	23.09	6.91	4.343	
1,700.00	1,700.00	1,699.30	1,699.30	3.68	3.68	-90.38	-0.20	-30.00	30.00	22.64	7.36	4.078	
1,800.00	1,800.00	1,799.30	1,799.30	3.90	3.90	-90.38	-0.20	-30.00	30.00	22.19	7.81	3.843	
1,900.00	1,900.00	1,899.30	1,899.30	4.13	4.13	-90.38	-0.20	-30.00	30.00	21.74	8.26	3.634	
2,000.00	2,000.00	1,999.30	1,999.30	4.35	4.35	-90.38	-0.20	-30.00	30.00	21.29	8.71	3.446	
2,100.00	2,100.00	2,099.30	2,099.30	4.58	4.58	-90.38	-0.20	-30.00	30.00	20.85	9.16	3.277	
2,200.00	2,200.00	2,199.30	2,199.30	4.80	4.80	-90.38	-0.20	-30.00	30.00	20.40	9.60	3.123	
2,300.00	2,300.00	2,299.30	2,299.30	5.03	5.03	-90.38	-0.20	-30.00	30.00	19.95	10.05	2.984	
2,400.00	2,400.00	2,399.30	2,399.30	5.25	5.25	-90.38	-0.20	-30.00	30.00	19.50	10.50	2.856	
2,500.00	2,500.00	2,499.30	2,499.30	5.48	5.48	-90.38	-0.20	-30.00	30.00	19.05	10.95	2.739	
2,600.00	2,600.00	2,599.30	2,599.30	5.70	5.70	-90.38	-0.20	-30.00	30.00	18.60	11.40	2.631	
2,700.00	2,700.00	2,699.30	2,699.30	5.93	5.93	-90.38	-0.20	-30.00	30.00	18.15	11.85	2.531	
2,800.00	2,800.00	2,799.30	2,799.30	6.15	6.15	-90.38	-0.20	-30.00	30.00	17.70	12.30	2.439	
2,900.00	2,900.00	2,899.30	2,899.30	6.38	6.38	-90.38	-0.20	-30.00	30.00	17.25	12.75	2.353	
3,000.00	3,000.00	2,999.30	2,999.30	6.60	6.60	-90.38	-0.20	-30.00	30.00	16.80	13.20	2.273	
3,100.00	3,100.00	3,099.30	3,099.30	6.83	6.82	-90.38	-0.20	-30.00	30.00	16.35	13.65	2.198	
3,200.00	3,200.00	3,199.30	3,199.30	7.05	7.05	-90.38	-0.20	-30.00	30.00	15.90	14.10	2.128	
3,300.00	3,300.00	3,299.30	3,299.30	7.28	7.27	-90.38	-0.20	-30.00	30.00	15.45	14.55	2.062	
3,400.00	3,400.00	3,399.30	3,399.30	7.50	7.50	-90.38	-0.20	-30.00	30.00	15.00	15.00	2.000	
3,500.00	3,500.00	3,499.30	3,499.30	7.73	7.72	-90.38	-0.20	-30.00	30.00	14.55	15.45	1.942	
3,600.00	3,600.00	3,599.30	3,599.30	7.95	7.95	-90.38	-0.20	-30.00	30.00	14.10	15.90	1.887	
3,700.00	3,700.00	3,699.30	3,699.30	8.17	8.17	-90.38	-0.20	-30.00	30.00	13.65	16.35	1.835	
3,800.00	3,800.00	3,799.30	3,799.30	8.40	8.40	-90.38	-0.20	-30.00	30.00	13.20	16.80	1.786	
3,900.00	3,900.00	3,899.30	3,899.30	8.62	8.62	-90.38	-0.20	-30.00	30.00	12.75	17.25	1.739	
4,000.00	4,000.00	3,999.30	3,999.30	8.85	8.85	-90.38	-0.20	-30.00	30.00	12.30	17.70	1.695	
4,100.00	4,100.00	4,099.30	4,099.30	9.07	9.07	-90.38	-0.20	-30.00	30.00	11.85	18.15	1.653	
4,200.00	4,200.00	4,199.30	4,199.30	9.30	9.30	-90.38	-0.20	-30.00	30.00	11.41	18.60	1.613	
4,300.00	4,300.00	4,299.30	4,299.30	9.52	9.52	-90.38	-0.20	-30.00	30.00	10.96	19.05	1.575	
4,400.00	4,400.00	4,399.30	4,399.30	9.75	9.75	-90.38	-0.20	-30.00	30.00	10.51	19.49	1.539	CC, ES
4,500.00	4,499.98	4,498.88	4,498.86	9.94	9.94	83.36	-1.76	-30.69	30.49	10.60	19.89	1.533	SF
4,600.00	4,599.84	4,598.43	4,598.27	10.11	10.11	84.14	-6.49	-32.76	31.98	11.75	20.23	1.581	
4,679.63	4,679.18	4,677.69	4,677.25	10.25	10.25	85.00	-12.52	-35.40	33.88	13.38	20.50	1.653	
4,700.00	4,699.46	4,697.96	4,697.42	10.28	10.29	85.14	-14.38	-36.22	34.48	13.91	20.57	1.676	
4,800.00	4,798.98	4,797.39	4,796.12	10.46	10.46	82.86	-25.40	-41.05	38.22	17.30	20.92	1.827	
4,900.00	4,898.51	4,897.14	4,894.84	10.63	10.65	78.33	-38.46	-46.78	43.02	21.75	21.28	2.022	
5,000.00	4,998.03	4,996.97	4,993.64	10.81	10.84	74.68	-51.57	-52.53	48.06	26.41	21.65	2.220	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
5,100.00	5,097.56	5,096.80	5,092.44	11.00	11.04	71.74	-64.68	-58.28	53.26	31.22	22.04	2.417	
5,200.00	5,197.08	5,196.63	5,191.24	11.19	11.25	69.32	-77.79	-64.03	58.58	36.14	22.44	2.610	
5,300.00	5,296.60	5,296.47	5,290.04	11.39	11.46	67.31	-90.90	-69.79	63.98	41.13	22.85	2.800	
5,400.00	5,396.13	5,396.30	5,388.84	11.59	11.68	65.62	-104.00	-75.54	69.44	46.17	23.27	2.984	
5,500.00	5,495.65	5,496.13	5,487.64	11.79	11.91	64.17	-117.11	-81.29	74.96	51.26	23.70	3.163	
5,600.00	5,595.18	5,595.96	5,586.44	12.00	12.14	62.92	-130.22	-87.04	80.52	56.38	24.14	3.336	
5,700.00	5,694.70	5,695.79	5,685.24	12.21	12.38	61.83	-143.33	-92.79	86.11	61.53	24.59	3.502	
5,800.00	5,794.22	5,795.62	5,784.04	12.42	12.62	60.88	-156.44	-98.54	91.73	66.69	25.04	3.663	
5,900.00	5,893.75	5,895.45	5,882.84	12.64	12.87	60.04	-169.55	-104.29	97.37	71.87	25.51	3.817	
6,000.00	5,993.27	5,995.28	5,981.64	12.86	13.12	59.28	-182.66	-110.04	103.04	77.06	25.98	3.966	
6,100.00	6,092.80	6,095.11	6,080.44	13.08	13.37	58.61	-195.76	-115.79	108.71	82.25	26.46	4.109	
6,200.00	6,192.32	6,194.94	6,179.24	13.31	13.63	58.01	-208.87	-121.54	114.40	87.46	26.94	4.246	
6,300.00	6,291.84	6,294.78	6,278.04	13.53	13.90	57.46	-221.98	-127.29	120.10	92.67	27.43	4.378	
6,400.00	6,391.37	6,394.61	6,376.84	13.76	14.17	56.96	-235.09	-133.04	125.82	97.89	27.93	4.505	
6,500.00	6,490.89	6,494.44	6,475.64	14.00	14.44	56.50	-248.20	-138.79	131.54	103.10	28.43	4.626	
6,600.00	6,590.42	6,594.27	6,574.43	14.23	14.71	56.09	-261.31	-144.54	137.26	108.32	28.94	4.743	
6,700.00	6,689.94	6,694.10	6,673.23	14.47	14.99	55.70	-274.41	-150.29	143.00	113.55	29.45	4.855	
6,800.00	6,789.46	6,793.93	6,772.03	14.70	15.27	55.35	-287.52	-156.04	148.74	118.77	29.97	4.963	
6,900.00	6,888.99	6,893.76	6,870.83	14.94	15.55	55.02	-300.63	-161.79	154.48	123.99	30.49	5.066	
7,000.00	6,988.51	6,993.59	6,969.63	15.18	15.83	54.72	-313.74	-167.54	160.24	129.22	31.02	5.166	
7,100.00	7,088.04	7,093.42	7,068.43	15.43	16.12	54.43	-326.85	-173.29	165.99	134.44	31.55	5.262	
7,200.00	7,187.56	7,193.26	7,167.23	15.67	16.41	54.17	-339.96	-179.04	171.75	139.67	32.08	5.353	
7,300.00	7,287.08	7,293.09	7,266.03	15.92	16.70	53.92	-353.06	-184.79	177.51	144.89	32.62	5.442	
7,400.00	7,386.61	7,392.92	7,364.83	16.16	17.00	53.69	-366.17	-190.54	183.27	150.11	33.16	5.527	
7,500.00	7,486.13	7,492.75	7,463.63	16.41	17.29	53.47	-379.28	-196.29	189.04	155.34	33.70	5.609	
7,600.00	7,585.66	7,592.58	7,562.43	16.66	17.59	53.27	-392.39	-202.04	194.81	160.56	34.25	5.688	
7,700.00	7,685.18	7,692.41	7,661.23	16.91	17.89	53.07	-405.50	-207.79	200.59	165.78	34.80	5.764	
7,800.00	7,784.70	7,792.24	7,760.03	17.16	18.19	52.89	-418.61	-213.54	206.36	171.00	35.36	5.837	
7,900.00	7,884.23	7,892.07	7,858.83	17.42	18.49	52.72	-431.71	-219.29	212.14	176.22	35.91	5.907	
8,000.00	7,983.75	7,991.90	7,957.63	17.67	18.80	52.56	-444.82	-225.04	217.92	181.44	36.47	5.975	
8,100.00	8,083.28	8,091.73	8,056.43	17.93	19.10	52.40	-457.93	-230.79	223.70	186.66	37.03	6.041	
8,200.00	8,182.80	8,191.57	8,155.23	18.18	19.41	52.25	-471.04	-236.54	229.48	191.88	37.59	6.104	
8,300.00	8,282.32	8,291.40	8,254.03	18.44	19.72	52.12	-484.15	-242.29	235.26	197.10	38.16	6.165	
8,400.00	8,381.85	8,391.23	8,352.83	18.70	20.03	51.98	-497.26	-248.04	241.04	202.32	38.73	6.224	
8,500.00	8,481.37	8,491.06	8,451.63	18.96	20.34	51.86	-510.36	-253.79	246.83	207.53	39.30	6.281	
8,600.00	8,580.90	8,590.89	8,550.42	19.22	20.65	51.73	-523.47	-259.54	252.62	212.75	39.87	6.336	
8,700.00	8,680.42	8,690.72	8,649.22	19.48	20.96	51.62	-536.58	-265.29	258.40	217.96	40.44	6.389	
8,800.00	8,779.94	8,790.55	8,748.02	19.74	21.28	51.51	-549.69	-271.04	264.19	223.17	41.02	6.441	
8,900.00	8,879.47	8,890.38	8,846.82	20.00	21.59	51.40	-562.80	-276.79	269.98	228.39	41.60	6.491	
9,000.00	8,978.99	9,012.60	8,968.24	20.27	21.91	52.35	-572.88	-283.89	273.59	231.41	42.18	6.486	
9,100.00	9,078.52	9,144.39	9,097.61	20.53	22.03	59.40	-551.33	-291.62	265.43	222.87	42.56	6.237	
9,200.00	9,178.04	9,251.65	9,195.38	20.80	21.96	70.84	-508.17	-297.60	252.86	210.11	42.75	5.914	
9,274.52	9,252.20	9,314.44	9,247.30	20.99	21.86	80.00	-473.10	-300.84	248.57	205.72	42.85	5.800	
9,300.00	9,277.56	9,332.92	9,261.66	21.06	21.83	82.98	-461.50	-301.75	249.19	206.30	42.89	5.810	
9,400.00	9,377.09	9,393.37	9,305.32	21.33	21.70	93.31	-419.85	-304.53	265.18	222.15	43.03	6.163	
9,500.00	9,476.61	9,438.74	9,334.44	21.59	21.60	101.22	-385.13	-306.43	303.56	260.37	43.19	7.028	
9,600.00	9,576.14	9,475.00	9,355.27	21.86	21.51	107.35	-355.49	-307.81	360.23	316.86	43.37	8.305	
9,700.00	9,675.66	9,500.00	9,368.30	22.13	21.45	111.38	-334.18	-308.69	429.55	385.97	43.58	9.856	
9,800.00	9,775.18	9,525.00	9,380.19	22.39	21.39	115.20	-312.20	-309.50	507.21	463.42	43.79	11.583	
9,900.00	9,874.71	9,540.04	9,386.79	22.66	21.36	117.38	-298.70	-309.96	590.36	546.34	44.02	13.411	
10,000.00	9,974.23	9,550.00	9,390.92	22.93	21.34	118.78	-289.64	-310.25	677.33	633.06	44.27	15.301	
10,100.00	10,073.76	9,566.97	9,397.52	23.20	21.30	121.08	-274.01	-310.72	766.88	722.38	44.50	17.234	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
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
10,200.00	10,173.28	9,575.00	9,400.45	23.47	21.28	122.13	-266.54	-310.93	858.40	813.65	44.75	19.182	
10,300.00	10,272.80	9,586.43	9,404.41	23.74	21.25	123.57	-255.82	-311.22	951.35	906.35	44.99	21.144	
10,375.60	10,348.04	9,600.00	9,408.77	23.95	21.22	125.22	-242.98	-311.55	1,022.45	977.28	45.17	22.636	
10,400.00	10,372.38	9,600.00	9,408.77	24.00	21.22	132.99	-242.98	-311.55	1,045.33	1,000.10	45.23	23.113	
10,425.00	10,397.37	9,600.00	9,408.77	24.05	21.22	-65.53	-242.98	-311.55	1,068.55	1,023.27	45.28	23.601	
10,450.00	10,422.35	9,600.00	9,408.77	24.09	21.22	-41.93	-242.98	-311.55	1,091.49	1,046.18	45.32	24.086	
10,475.00	10,447.26	9,600.00	9,408.77	24.13	21.22	-36.96	-242.98	-311.55	1,114.12	1,068.77	45.35	24.568	
10,500.00	10,472.03	9,600.00	9,408.77	24.15	21.22	-33.29	-242.98	-311.55	1,136.39	1,091.02	45.37	25.045	
10,525.00	10,496.58	9,609.25	9,411.53	24.17	21.20	-30.03	-234.15	-311.76	1,158.14	1,112.77	45.37	25.526	
10,550.00	10,520.85	9,613.00	9,412.60	24.18	21.20	-27.50	-230.56	-311.84	1,179.46	1,134.09	45.37	25.994	
10,575.00	10,544.77	9,625.00	9,415.84	24.18	21.17	-25.24	-219.01	-312.09	1,200.36	1,155.01	45.35	26.468	
10,600.00	10,568.29	9,625.00	9,415.84	24.18	21.17	-23.51	-219.01	-312.09	1,220.53	1,175.19	45.35	26.915	
10,625.00	10,591.33	9,625.00	9,415.84	24.17	21.17	-22.02	-219.01	-312.09	1,240.17	1,194.84	45.34	27.355	
10,650.00	10,613.82	9,625.00	9,415.84	24.15	21.17	-20.71	-219.01	-312.09	1,259.24	1,213.92	45.32	27.786	
10,675.00	10,635.72	9,634.79	9,418.27	24.13	21.15	-19.51	-209.52	-312.28	1,277.58	1,232.31	45.28	28.216	
10,700.00	10,656.96	9,639.68	9,419.40	24.10	21.14	-18.50	-204.77	-312.37	1,295.28	1,250.03	45.24	28.630	
10,725.00	10,677.47	9,650.00	9,421.65	24.07	21.12	-17.60	-194.70	-312.56	1,312.29	1,267.10	45.19	29.039	
10,750.00	10,697.22	9,650.00	9,421.65	24.04	21.12	-16.84	-194.70	-312.56	1,328.49	1,283.34	45.16	29.419	
10,775.00	10,716.13	9,650.00	9,421.65	24.00	21.12	-16.16	-194.70	-312.56	1,344.01	1,298.89	45.12	29.787	
10,800.00	10,734.16	9,660.58	9,423.72	23.96	21.10	-15.56	-184.33	-312.73	1,358.66	1,313.60	45.06	30.151	
10,825.00	10,751.26	9,675.00	9,426.18	23.92	21.07	-15.03	-170.12	-312.95	1,372.65	1,327.65	44.99	30.507	
10,850.00	10,767.38	9,675.00	9,426.18	23.88	21.07	-14.57	-170.12	-312.95	1,385.60	1,340.65	44.95	30.823	
10,875.00	10,782.48	9,675.00	9,426.18	23.84	21.07	-14.15	-170.12	-312.95	1,397.80	1,352.89	44.91	31.122	
10,900.00	10,796.52	9,675.00	9,426.18	23.80	21.07	-13.78	-170.12	-312.95	1,409.23	1,364.35	44.87	31.404	
10,925.00	10,809.45	9,689.08	9,428.17	23.76	21.05	-13.48	-156.18	-313.14	1,419.60	1,374.78	44.81	31.678	
10,950.00	10,821.25	9,700.00	9,429.42	23.73	21.03	-13.22	-145.33	-313.27	1,429.20	1,384.44	44.76	31.930	
10,975.00	10,831.88	9,700.00	9,429.42	23.70	21.03	-12.97	-145.33	-313.27	1,437.84	1,393.11	44.73	32.146	
11,000.00	10,841.31	9,700.00	9,429.42	23.67	21.03	-12.75	-145.33	-313.27	1,445.65	1,400.95	44.70	32.341	
11,025.00	10,849.51	9,713.14	9,430.60	23.64	21.01	-12.61	-132.25	-313.41	1,452.41	1,407.75	44.66	32.524	
11,050.00	10,856.47	9,725.00	9,431.36	23.63	20.99	-12.50	-120.41	-313.52	1,458.34	1,413.72	44.62	32.684	
11,075.00	10,862.17	9,725.00	9,431.36	23.61	20.99	-12.37	-120.41	-313.52	1,463.24	1,418.64	44.61	32.804	
11,100.00	10,866.58	9,725.00	9,431.36	23.60	20.99	-12.27	-120.41	-313.52	1,467.30	1,422.70	44.60	32.901	
11,125.00	10,869.69	9,737.84	9,431.85	23.60	20.98	-12.25	-107.58	-313.61	1,470.29	1,425.71	44.58	32.981	
11,150.00	10,871.51	9,750.23	9,432.00	23.60	20.96	-12.26	-95.20	-313.68	1,472.43	1,427.86	44.57	33.037	
11,171.86	10,872.02	9,750.23	9,432.00	23.61	20.96	-12.23	-95.20	-313.68	1,473.42	1,428.84	44.58	33.054	
11,200.00	10,872.04	9,775.28	9,431.97	23.61	20.94	-12.39	-70.14	-313.81	1,474.27	1,429.72	44.55	33.091	
11,300.00	10,872.11	9,874.87	9,431.86	23.60	21.00	-12.80	29.44	-314.32	1,476.38	1,431.78	44.60	33.099	
11,376.67	10,872.17	9,951.50	9,431.78	23.68	21.22	-12.90	106.07	-314.72	1,476.97	1,432.05	44.92	32.879	
11,400.00	10,872.18	9,974.83	9,431.75	23.74	21.30	-12.90	129.41	-314.84	1,477.01	1,431.95	45.06	32.776	
11,500.00	10,872.25	10,074.83	9,431.64	24.13	21.81	-12.90	229.40	-315.35	1,477.19	1,431.26	45.94	32.157	
11,600.00	10,872.32	10,174.83	9,431.53	24.65	22.46	-12.90	329.40	-315.87	1,477.37	1,430.26	47.10	31.363	
11,700.00	10,872.39	10,274.83	9,431.41	25.29	23.23	-12.90	429.40	-316.38	1,477.55	1,429.03	48.52	30.455	
11,800.00	10,872.46	10,374.83	9,431.30	26.04	24.10	-12.89	529.40	-316.89	1,477.72	1,427.58	50.15	29.468	
11,900.00	10,872.53	10,474.83	9,431.19	26.90	25.08	-12.89	629.40	-317.41	1,477.90	1,425.92	51.98	28.432	
12,000.00	10,872.60	10,574.83	9,431.08	27.85	26.14	-12.89	729.40	-317.92	1,478.08	1,424.08	53.99	27.375	
12,100.00	10,872.67	10,674.83	9,430.97	28.89	27.28	-12.89	829.40	-318.44	1,478.26	1,422.08	56.17	26.317	
12,200.00	10,872.74	10,774.83	9,430.86	30.00	28.49	-12.89	929.39	-318.95	1,478.43	1,419.94	58.49	25.276	
12,300.00	10,872.81	10,874.83	9,430.74	31.18	29.77	-12.89	1,029.39	-319.46	1,478.61	1,417.67	60.94	24.262	
12,400.00	10,872.88	10,974.83	9,430.63	32.41	31.09	-12.89	1,129.39	-319.98	1,478.79	1,415.28	63.51	23.286	
12,500.00	10,872.95	11,074.83	9,430.52	33.71	32.47	-12.88	1,229.39	-320.49	1,478.97	1,412.79	66.17	22.351	
12,600.00	10,873.01	11,174.83	9,430.41	35.05	33.88	-12.88	1,329.39	-321.00	1,479.14	1,410.22	68.93	21.460	
12,700.00	10,873.08	11,274.83	9,430.30	36.43	35.33	-12.88	1,429.39	-321.52	1,479.32	1,407.56	71.76	20.615	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
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
12,800.00	10,873.15	11,374.83	9,430.19	37.85	36.82	-12.88	1,529.38	-322.03	1,479.50	1,404.83	74.66	19.816	
12,900.00	10,873.22	11,474.83	9,430.07	39.30	38.33	-12.88	1,629.38	-322.55	1,479.67	1,402.05	77.63	19.061	
13,000.00	10,873.29	11,574.83	9,429.96	40.78	39.87	-12.88	1,729.38	-323.06	1,479.85	1,399.20	80.65	18.349	
13,100.00	10,873.36	11,674.83	9,429.85	42.29	41.43	-12.88	1,829.38	-323.57	1,480.03	1,396.31	83.72	17.678	
13,200.00	10,873.43	11,774.83	9,429.74	43.82	43.02	-12.87	1,929.38	-324.09	1,480.21	1,393.37	86.84	17.045	
13,300.00	10,873.50	11,874.83	9,429.63	45.38	44.62	-12.87	2,029.38	-324.60	1,480.38	1,390.39	90.00	16.449	
13,400.00	10,873.57	11,974.83	9,429.52	46.95	46.24	-12.87	2,129.38	-325.12	1,480.56	1,387.37	93.19	15.888	
13,500.00	10,873.64	12,074.83	9,429.40	48.54	47.87	-12.87	2,229.37	-325.63	1,480.74	1,384.33	96.41	15.358	
13,600.00	10,873.71	12,174.83	9,429.29	50.15	49.51	-12.87	2,329.37	-326.14	1,480.92	1,381.25	99.67	14.859	
13,700.00	10,873.78	12,274.83	9,429.18	51.77	51.17	-12.87	2,429.37	-326.66	1,481.09	1,378.15	102.95	14.387	
13,800.00	10,873.85	12,374.83	9,429.07	53.41	52.84	-12.87	2,529.37	-327.17	1,481.27	1,375.02	106.25	13.941	
13,900.00	10,873.92	12,474.83	9,428.96	55.06	54.52	-12.86	2,629.37	-327.68	1,481.45	1,371.87	109.58	13.520	
14,000.00	10,873.99	12,574.83	9,428.85	56.71	56.21	-12.86	2,729.37	-328.20	1,481.63	1,368.70	112.92	13.121	
14,100.00	10,874.06	12,674.83	9,428.73	58.38	57.90	-12.86	2,829.36	-328.71	1,481.80	1,365.52	116.29	12.743	
14,200.00	10,874.13	12,774.83	9,428.62	60.06	59.61	-12.86	2,929.36	-329.23	1,481.98	1,362.31	119.67	12.384	
14,300.00	10,874.20	12,874.83	9,428.51	61.75	61.32	-12.86	3,029.36	-329.74	1,482.16	1,359.09	123.06	12.044	
14,400.00	10,874.26	12,974.83	9,428.40	63.44	63.04	-12.86	3,129.36	-330.25	1,482.33	1,355.86	126.47	11.720	
14,500.00	10,874.33	13,074.83	9,428.29	65.14	64.76	-12.86	3,229.36	-330.77	1,482.51	1,352.62	129.90	11.413	
14,600.00	10,874.40	13,174.83	9,428.18	66.85	66.49	-12.86	3,329.36	-331.28	1,482.69	1,349.36	133.33	11.120	
14,700.00	10,874.47	13,274.83	9,428.06	68.56	68.22	-12.85	3,429.36	-331.80	1,482.87	1,346.09	136.78	10.841	
14,800.00	10,874.54	13,374.83	9,427.95	70.28	69.96	-12.85	3,529.35	-332.31	1,483.04	1,342.81	140.23	10.575	
14,900.00	10,874.61	13,474.83	9,427.84	72.00	71.70	-12.85	3,629.35	-332.82	1,483.22	1,339.52	143.70	10.322	
15,000.00	10,874.68	13,574.83	9,427.73	73.73	73.45	-12.85	3,729.35	-333.34	1,483.40	1,336.22	147.18	10.079	
15,100.00	10,874.75	13,674.83	9,427.62	75.46	75.20	-12.85	3,829.35	-333.85	1,483.58	1,332.92	150.66	9.847	
15,200.00	10,874.82	13,774.83	9,427.51	77.20	76.95	-12.85	3,929.35	-334.36	1,483.75	1,329.60	154.15	9.625	
15,300.00	10,874.89	13,874.83	9,427.39	78.94	78.71	-12.85	4,029.35	-334.88	1,483.93	1,326.28	157.65	9.413	
15,400.00	10,874.96	13,974.83	9,427.28	80.69	80.47	-12.84	4,129.34	-335.39	1,484.11	1,322.96	161.15	9.209	
15,500.00	10,875.03	14,074.83	9,427.17	82.44	82.23	-12.84	4,229.34	-335.91	1,484.29	1,319.62	164.66	9.014	
15,600.00	10,875.10	14,174.83	9,427.06	84.19	83.99	-12.84	4,329.34	-336.42	1,484.46	1,316.28	168.18	8.827	
15,700.00	10,875.17	14,274.83	9,426.95	85.94	85.76	-12.84	4,429.34	-336.93	1,484.64	1,312.94	171.70	8.647	
15,800.00	10,875.24	14,374.83	9,426.84	87.70	87.53	-12.84	4,529.34	-337.45	1,484.82	1,309.59	175.23	8.474	
15,900.00	10,875.31	14,474.83	9,426.72	89.46	89.30	-12.84	4,629.34	-337.96	1,485.00	1,306.23	178.76	8.307	
16,000.00	10,875.38	14,574.83	9,426.61	91.22	91.08	-12.84	4,729.34	-338.48	1,485.17	1,302.87	182.30	8.147	
16,100.00	10,875.45	14,674.83	9,426.50	92.99	92.85	-12.83	4,829.33	-338.99	1,485.35	1,299.51	185.84	7.993	
16,200.00	10,875.51	14,774.83	9,426.39	94.76	94.63	-12.83	4,929.33	-339.50	1,485.53	1,296.14	189.39	7.844	
16,300.00	10,875.58	14,874.83	9,426.28	96.53	96.41	-12.83	5,029.33	-340.02	1,485.70	1,292.77	192.94	7.700	
16,400.00	10,875.65	14,974.83	9,426.17	98.30	98.19	-12.83	5,129.33	-340.53	1,485.88	1,289.39	196.49	7.562	
16,500.00	10,875.72	15,074.83	9,426.06	100.07	99.98	-12.83	5,229.33	-341.04	1,486.06	1,286.01	200.05	7.429	
16,600.00	10,875.79	15,174.83	9,425.94	101.85	101.76	-12.83	5,329.33	-341.56	1,486.24	1,282.63	203.61	7.300	
16,700.00	10,875.86	15,274.83	9,425.83	103.62	103.55	-12.83	5,429.32	-342.07	1,486.41	1,279.24	207.17	7.175	
16,800.00	10,875.93	15,374.83	9,425.72	105.40	105.33	-12.82	5,529.32	-342.59	1,486.59	1,275.86	210.74	7.054	
16,900.00	10,876.00	15,474.83	9,425.61	107.18	107.12	-12.82	5,629.32	-343.10	1,486.77	1,272.46	214.30	6.938	
17,000.00	10,876.07	15,574.83	9,425.50	108.96	108.91	-12.82	5,729.32	-343.61	1,486.95	1,269.07	217.88	6.825	
17,100.00	10,876.14	15,674.83	9,425.39	110.75	110.70	-12.82	5,829.32	-344.13	1,487.12	1,265.67	221.45	6.715	
17,200.00	10,876.21	15,774.83	9,425.27	112.53	112.49	-12.82	5,929.32	-344.64	1,487.30	1,262.27	225.03	6.609	
17,300.00	10,876.28	15,874.83	9,425.16	114.32	114.29	-12.82	6,029.32	-345.16	1,487.48	1,258.87	228.61	6.507	
17,400.00	10,876.35	15,974.83	9,425.05	116.10	116.08	-12.82	6,129.31	-345.67	1,487.66	1,255.47	232.19	6.407	
17,500.00	10,876.42	16,074.82	9,424.94	117.89	117.88	-12.81	6,229.31	-346.18	1,487.83	1,252.06	235.77	6.311	
17,600.00	10,876.49	16,174.82	9,424.83	119.68	119.67	-12.81	6,329.31	-346.70	1,488.01	1,248.66	239.35	6.217	
17,700.00	10,876.56	16,274.82	9,424.72	121.47	121.47	-12.81	6,429.31	-347.21	1,488.19	1,245.25	242.94	6.126	
17,800.00	10,876.63	16,374.82	9,424.60	123.26	123.27	-12.81	6,529.31	-347.72	1,488.37	1,241.84	246.53	6.037	
17,900.00	10,876.69	16,474.82	9,424.49	125.06	125.06	-12.81	6,629.31	-348.24	1,488.54	1,238.42	250.12	5.951	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
18,000.00	10,876.76	16,574.82	9,424.38	126.85	126.86	-12.81	6,729.30	-348.75	1,488.72	1,235.01	253.71	5.868	
18,100.00	10,876.83	16,674.82	9,424.27	128.64	128.66	-12.81	6,829.30	-349.27	1,488.90	1,231.59	257.31	5.786	
18,200.00	10,876.90	16,774.82	9,424.16	130.44	130.46	-12.80	6,929.30	-349.78	1,489.08	1,228.17	260.90	5.707	
18,300.00	10,876.97	16,874.82	9,424.05	132.23	132.26	-12.80	7,029.30	-350.29	1,489.25	1,224.75	264.50	5.630	
18,339.70	10,877.00	16,914.52	9,424.00	132.81	132.98	-12.80	7,069.00	-350.50	1,489.32	1,223.53	265.79	5.603	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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	0.90	0.90	0.00	0.00	44.62	30.30	29.90	42.57				
100.00	100.00	100.90	100.90	0.08	0.09	44.62	30.30	29.90	42.57	42.40	0.17	252.859	
200.00	200.00	200.90	200.90	0.31	0.31	44.62	30.30	29.90	42.57	41.95	0.62	68.895	
300.00	300.00	300.90	300.90	0.53	0.53	44.62	30.30	29.90	42.57	41.50	1.07	39.880	
400.00	400.00	400.90	400.90	0.76	0.76	44.62	30.30	29.90	42.57	41.05	1.52	28.062	
500.00	500.00	500.90	500.90	0.98	0.98	44.62	30.30	29.90	42.57	40.60	1.97	21.647	
600.00	600.00	600.90	600.90	1.21	1.21	44.62	30.30	29.90	42.57	40.15	2.42	17.619	
700.00	700.00	700.90	700.90	1.43	1.43	44.62	30.30	29.90	42.57	39.70	2.87	14.855	
800.00	800.00	800.90	800.90	1.66	1.66	44.62	30.30	29.90	42.57	39.25	3.32	12.841	
900.00	900.00	900.90	900.90	1.88	1.88	44.62	30.30	29.90	42.57	38.80	3.76	11.308	
1,000.00	1,000.00	1,000.90	1,000.90	2.11	2.11	44.62	30.30	29.90	42.57	38.35	4.21	10.101	
1,100.00	1,100.00	1,100.90	1,100.90	2.33	2.33	44.62	30.30	29.90	42.57	37.91	4.66	9.128	
1,200.00	1,200.00	1,200.90	1,200.90	2.56	2.56	44.62	30.30	29.90	42.57	37.46	5.11	8.325	
1,300.00	1,300.00	1,300.90	1,300.90	2.78	2.78	44.62	30.30	29.90	42.57	37.01	5.56	7.653	
1,400.00	1,400.00	1,400.90	1,400.90	3.01	3.01	44.62	30.30	29.90	42.57	36.56	6.01	7.080	
1,500.00	1,500.00	1,500.90	1,500.90	3.23	3.23	44.62	30.30	29.90	42.57	36.11	6.46	6.588	
1,600.00	1,600.00	1,600.90	1,600.90	3.45	3.46	44.62	30.30	29.90	42.57	35.66	6.91	6.159	
1,700.00	1,700.00	1,700.90	1,700.90	3.68	3.68	44.62	30.30	29.90	42.57	35.21	7.36	5.783	
1,800.00	1,800.00	1,800.90	1,800.90	3.90	3.91	44.62	30.30	29.90	42.57	34.76	7.81	5.450	
1,900.00	1,900.00	1,900.90	1,900.90	4.13	4.13	44.62	30.30	29.90	42.57	34.31	8.26	5.154	
2,000.00	2,000.00	2,000.90	2,000.90	4.35	4.36	44.62	30.30	29.90	42.57	33.86	8.71	4.888	
2,100.00	2,100.00	2,100.90	2,100.90	4.58	4.58	44.62	30.30	29.90	42.57	33.41	9.16	4.648	
2,200.00	2,200.00	2,200.90	2,200.90	4.80	4.81	44.62	30.30	29.90	42.57	32.96	9.61	4.430	
2,300.00	2,300.00	2,300.90	2,300.90	5.03	5.03	44.62	30.30	29.90	42.57	32.51	10.06	4.232	
2,400.00	2,400.00	2,400.90	2,400.90	5.25	5.25	44.62	30.30	29.90	42.57	32.06	10.51	4.051	
2,500.00	2,500.00	2,500.90	2,500.90	5.48	5.48	44.62	30.30	29.90	42.57	31.61	10.96	3.885	
2,600.00	2,600.00	2,600.90	2,600.90	5.70	5.70	44.62	30.30	29.90	42.57	31.16	11.41	3.732	
2,700.00	2,700.00	2,700.90	2,700.90	5.93	5.93	44.62	30.30	29.90	42.57	30.71	11.86	3.590	
2,800.00	2,800.00	2,800.90	2,800.90	6.15	6.15	44.62	30.30	29.90	42.57	30.26	12.31	3.459	
2,900.00	2,900.00	2,900.90	2,900.90	6.38	6.38	44.62	30.30	29.90	42.57	29.81	12.76	3.337	
3,000.00	3,000.00	3,000.90	3,000.90	6.60	6.60	44.62	30.30	29.90	42.57	29.36	13.20	3.224	
3,100.00	3,100.00	3,100.90	3,100.90	6.83	6.83	44.62	30.30	29.90	42.57	28.91	13.65	3.118	
3,200.00	3,200.00	3,200.90	3,200.90	7.05	7.05	44.62	30.30	29.90	42.57	28.47	14.10	3.018	
3,300.00	3,300.00	3,300.90	3,300.90	7.28	7.28	44.62	30.30	29.90	42.57	28.02	14.55	2.925	
3,400.00	3,400.00	3,400.90	3,400.90	7.50	7.50	44.62	30.30	29.90	42.57	27.57	15.00	2.837	
3,500.00	3,500.00	3,500.90	3,500.90	7.73	7.73	44.62	30.30	29.90	42.57	27.12	15.45	2.755	
3,600.00	3,600.00	3,600.90	3,600.90	7.95	7.95	44.62	30.30	29.90	42.57	26.67	15.90	2.677	
3,700.00	3,700.00	3,700.90	3,700.90	8.17	8.18	44.62	30.30	29.90	42.57	26.22	16.35	2.603	
3,800.00	3,800.00	3,800.90	3,800.90	8.40	8.40	44.62	30.30	29.90	42.57	25.77	16.80	2.534	
3,900.00	3,900.00	3,900.90	3,900.90	8.62	8.63	44.62	30.30	29.90	42.57	25.32	17.25	2.468	
4,000.00	4,000.00	4,000.90	4,000.90	8.85	8.85	44.62	30.30	29.90	42.57	24.87	17.70	2.405	
4,100.00	4,100.00	4,100.90	4,100.90	9.07	9.08	44.62	30.30	29.90	42.57	24.42	18.15	2.345	
4,200.00	4,200.00	4,200.90	4,200.90	9.30	9.30	44.62	30.30	29.90	42.57	23.97	18.60	2.289	
4,300.00	4,300.00	4,300.90	4,300.90	9.52	9.53	44.62	30.30	29.90	42.57	23.52	19.05	2.235	
4,400.00	4,400.00	4,400.90	4,400.90	9.75	9.75	44.62	30.30	29.90	42.57	23.07	19.50	2.183	CC, ES, SF
4,500.00	4,499.98	4,500.88	4,500.88	9.94	9.97	-143.33	30.30	29.90	43.96	24.04	19.92	2.207	
4,600.00	4,599.84	4,601.01	4,600.98	10.11	10.17	-144.91	28.94	31.04	47.96	27.68	20.29	2.364	
4,679.63	4,679.18	4,680.69	4,680.57	10.25	10.31	-144.81	25.94	33.56	52.84	32.28	20.56	2.570	
4,700.00	4,699.46	4,701.06	4,700.90	10.28	10.35	-144.60	24.90	34.43	54.27	33.64	20.63	2.630	
4,800.00	4,798.98	4,800.81	4,800.40	10.46	10.53	-143.42	19.57	38.91	61.25	40.27	20.98	2.919	
4,900.00	4,898.51	4,900.57	4,899.92	10.63	10.71	-142.48	14.24	43.38	68.26	46.92	21.34	3.198	
5,000.00	4,998.03	5,002.64	5,001.65	10.81	10.89	-141.02	7.02	47.43	73.69	51.99	21.71	3.395	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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	5,097.56	5,104.21	5,102.63	11.00	11.08	-138.47	-3.47	50.47	76.23	54.15	22.08	3.453	
5,200.00	5,197.08	5,204.12	5,201.87	11.19	11.26	-135.76	-14.66	53.19	78.15	55.70	22.46	3.480	
5,300.00	5,296.60	5,304.04	5,301.12	11.39	11.46	-133.17	-25.85	55.92	80.24	57.40	22.84	3.513	
5,400.00	5,396.13	5,403.95	5,400.37	11.59	11.65	-130.73	-37.05	58.64	82.48	59.24	23.24	3.549	
5,500.00	5,495.65	5,503.87	5,499.62	11.79	11.85	-128.42	-48.24	61.36	84.87	61.22	23.65	3.589	
5,600.00	5,595.18	5,603.78	5,598.87	12.00	12.06	-126.23	-59.44	64.09	87.38	63.32	24.06	3.632	
5,700.00	5,694.70	5,703.70	5,698.11	12.21	12.27	-124.18	-70.63	66.81	90.02	65.54	24.48	3.677	
5,800.00	5,794.22	5,803.61	5,797.36	12.42	12.49	-122.24	-81.82	69.54	92.76	67.85	24.91	3.724	
5,900.00	5,893.75	5,903.53	5,896.61	12.64	12.71	-120.41	-93.02	72.26	95.61	70.26	25.35	3.772	
6,000.00	5,993.27	6,003.44	5,995.86	12.86	12.93	-118.69	-104.21	74.99	98.55	72.76	25.79	3.821	
6,100.00	6,092.80	6,103.36	6,095.11	13.08	13.15	-117.08	-115.40	77.71	101.56	75.33	26.24	3.871	
6,200.00	6,192.32	6,203.27	6,194.35	13.31	13.38	-115.55	-126.60	80.44	104.66	77.97	26.69	3.921	
6,300.00	6,291.84	6,303.18	6,293.60	13.53	13.62	-114.12	-137.79	83.16	107.83	80.67	27.15	3.971	
6,400.00	6,391.37	6,403.10	6,392.85	13.76	13.85	-112.77	-148.98	85.88	111.06	83.44	27.62	4.021	
6,500.00	6,490.89	6,503.01	6,492.10	14.00	14.09	-111.49	-160.18	88.61	114.34	86.26	28.09	4.071	
6,600.00	6,590.42	6,602.93	6,591.35	14.23	14.33	-110.29	-171.37	91.33	117.68	89.12	28.56	4.120	
6,700.00	6,689.94	6,702.84	6,690.60	14.47	14.58	-109.15	-182.56	94.06	121.07	92.03	29.04	4.169	
6,800.00	6,789.46	6,802.76	6,789.84	14.70	14.82	-108.08	-193.76	96.78	124.51	94.98	29.53	4.217	
6,900.00	6,888.99	6,902.67	6,889.09	14.94	15.07	-107.06	-204.95	99.51	127.98	97.97	30.01	4.264	
7,000.00	6,988.51	7,002.59	6,988.34	15.18	15.32	-106.10	-216.14	102.23	131.50	100.99	30.51	4.311	
7,100.00	7,088.04	7,102.50	7,087.59	15.43	15.58	-105.19	-227.34	104.95	135.05	104.05	31.00	4.356	
7,200.00	7,187.56	7,202.41	7,186.84	15.67	15.83	-104.32	-238.53	107.68	138.63	107.13	31.50	4.401	
7,300.00	7,287.08	7,302.33	7,286.08	15.92	16.09	-103.50	-249.72	110.40	142.24	110.24	32.00	4.444	
7,400.00	7,386.61	7,402.24	7,385.33	16.16	16.35	-102.72	-260.92	113.13	145.88	113.37	32.51	4.487	
7,500.00	7,486.13	7,502.16	7,484.58	16.41	16.61	-101.98	-272.11	115.85	149.55	116.53	33.02	4.529	
7,600.00	7,585.66	7,602.07	7,583.83	16.66	16.87	-101.27	-283.30	118.58	153.24	119.70	33.53	4.570	
7,700.00	7,685.18	7,701.99	7,683.08	16.91	17.13	-100.60	-294.50	121.30	156.95	122.90	34.05	4.610	
7,800.00	7,784.70	7,801.90	7,782.33	17.16	17.40	-99.96	-305.69	124.02	160.68	126.11	34.57	4.649	
7,900.00	7,884.23	7,901.82	7,881.57	17.42	17.67	-99.34	-316.88	126.75	164.43	129.35	35.09	4.687	
8,000.00	7,983.75	8,001.73	7,980.82	17.67	17.94	-98.76	-328.08	129.47	168.20	132.59	35.61	4.724	
8,100.00	8,083.28	8,101.65	8,080.07	17.93	18.21	-98.20	-339.27	132.20	171.99	135.85	36.13	4.760	
8,200.00	8,182.80	8,201.56	8,179.32	18.18	18.48	-97.66	-350.46	134.92	175.79	139.13	36.66	4.795	
8,300.00	8,282.32	8,301.47	8,278.57	18.44	18.75	-97.15	-361.66	137.65	179.61	142.41	37.19	4.829	
8,400.00	8,381.85	8,401.39	8,377.81	18.70	19.02	-96.66	-372.85	140.37	183.44	145.71	37.72	4.863	
8,500.00	8,481.37	8,501.30	8,477.06	18.96	19.30	-96.19	-384.04	143.10	187.28	149.02	38.26	4.895	
8,600.00	8,580.90	8,601.22	8,576.31	19.22	19.57	-95.73	-395.24	145.82	191.13	152.34	38.79	4.927	
8,700.00	8,680.42	8,701.13	8,675.56	19.48	19.85	-95.30	-406.43	148.54	195.00	155.67	39.33	4.958	
8,800.00	8,779.94	8,801.05	8,774.81	19.74	20.13	-94.88	-417.63	151.27	198.88	159.01	39.87	4.989	
8,900.00	8,879.47	8,900.96	8,874.05	20.00	20.40	-94.48	-428.82	153.99	202.77	162.36	40.41	5.018	
9,000.00	8,978.99	9,000.88	8,973.30	20.27	20.68	-94.09	-440.01	156.72	206.66	165.71	40.95	5.047	
9,100.00	9,078.52	9,100.79	9,072.55	20.53	20.96	-93.72	-451.21	159.44	210.57	169.08	41.49	5.075	
9,200.00	9,178.04	9,205.12	9,176.31	20.80	21.24	-93.69	-461.58	161.98	214.16	172.12	42.03	5.095	
9,300.00	9,277.56	9,315.42	9,286.05	21.06	21.39	-98.70	-453.49	160.27	213.55	171.10	42.45	5.030	
9,369.35	9,346.59	9,384.74	9,352.92	21.25	21.41	-105.21	-435.90	156.31	212.54	169.88	42.66	4.982	
9,400.00	9,377.09	9,412.85	9,379.17	21.33	21.41	-108.56	-426.11	154.08	212.91	170.17	42.73	4.982	
9,500.00	9,476.61	9,493.13	9,450.34	21.59	21.35	-119.99	-390.09	145.87	222.06	179.11	42.94	5.171	
9,600.00	9,576.14	9,557.03	9,501.94	21.86	21.28	-130.22	-353.43	137.48	248.68	205.54	43.14	5.765	
9,700.00	9,675.66	9,607.42	9,538.81	22.13	21.21	-138.25	-319.98	129.81	293.78	250.44	43.34	6.779	
9,800.00	9,775.18	9,650.00	9,567.00	22.39	21.16	-144.62	-288.90	122.67	353.74	310.19	43.55	8.122	
9,900.00	9,874.71	9,675.00	9,582.19	22.66	21.13	-148.11	-269.55	118.22	424.21	380.42	43.79	9.687	
10,000.00	9,974.23	9,700.00	9,596.32	22.93	21.10	-151.37	-249.46	113.61	501.86	457.82	44.03	11.397	
10,100.00	10,073.76	9,725.00	9,609.36	23.20	21.08	-154.40	-228.67	108.82	584.42	540.14	44.28	13.198	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
10,200.00	10,173.28	9,750.00	9,621.25	23.47	21.06	-157.21	-207.24	103.90	670.60	626.07	44.53	15.059	
10,300.00	10,272.80	9,759.79	9,625.60	23.74	21.06	-158.25	-198.70	101.93	759.27	714.48	44.80	16.949	
10,375.60	10,348.04	9,775.00	9,631.99	23.95	21.05	-159.79	-185.24	98.83	827.70	782.70	45.00	18.395	
10,400.00	10,372.38	9,775.00	9,631.99	24.00	21.05	-160.19	-185.24	98.83	849.68	804.63	45.05	18.859	
10,425.00	10,397.37	9,775.00	9,631.99	24.05	21.05	-5.80	-185.24	98.83	871.80	826.70	45.10	19.329	
10,450.00	10,422.35	9,775.00	9,631.99	24.09	21.05	11.83	-185.24	98.83	893.47	848.33	45.14	19.792	
10,475.00	10,447.26	9,784.41	9,635.72	24.13	21.05	11.23	-176.83	96.89	914.54	869.37	45.17	20.245	
10,500.00	10,472.03	9,788.74	9,637.37	24.15	21.05	10.49	-172.93	96.00	935.10	889.90	45.20	20.689	
10,525.00	10,496.58	9,800.00	9,641.52	24.17	21.04	9.42	-162.73	93.65	955.15	909.93	45.21	21.126	
10,550.00	10,520.85	9,800.00	9,641.52	24.18	21.04	8.92	-162.73	93.65	974.45	929.23	45.22	21.548	
10,575.00	10,544.77	9,800.00	9,641.52	24.18	21.04	8.46	-162.73	93.65	993.18	947.96	45.22	21.961	
10,600.00	10,568.29	9,800.00	9,641.52	24.18	21.04	8.04	-162.73	93.65	1,011.33	966.11	45.22	22.365	
10,625.00	10,591.33	9,813.38	9,646.12	24.17	21.04	7.23	-150.48	90.83	1,028.60	983.39	45.21	22.752	
10,650.00	10,613.82	9,825.00	9,649.83	24.15	21.04	6.57	-139.75	88.35	1,045.32	1,000.13	45.19	23.130	
10,675.00	10,635.72	9,825.00	9,649.83	24.13	21.04	6.31	-139.75	88.35	1,061.20	1,016.02	45.17	23.493	
10,700.00	10,656.96	9,825.00	9,649.83	24.10	21.04	6.07	-139.75	88.35	1,076.41	1,031.27	45.15	23.843	
10,725.00	10,677.47	9,835.88	9,653.06	24.07	21.05	5.58	-129.62	86.02	1,090.78	1,045.67	45.12	24.176	
10,750.00	10,697.22	9,850.00	9,656.90	24.04	21.05	5.06	-116.39	82.97	1,104.50	1,059.42	45.09	24.497	
10,775.00	10,716.13	9,850.00	9,656.90	24.00	21.05	4.92	-116.39	82.97	1,117.23	1,072.18	45.05	24.799	
10,800.00	10,734.16	9,850.00	9,656.90	23.96	21.05	4.78	-116.39	82.97	1,129.24	1,084.23	45.01	25.087	
10,825.00	10,751.26	9,860.11	9,659.40	23.92	21.06	4.45	-106.85	80.77	1,140.39	1,095.41	44.98	25.354	
10,850.00	10,767.38	9,875.00	9,662.70	23.88	21.07	4.04	-92.69	77.51	1,150.82	1,105.87	44.95	25.604	
10,875.00	10,782.48	9,875.00	9,662.70	23.84	21.07	3.96	-92.69	77.51	1,160.18	1,115.27	44.91	25.835	
10,900.00	10,796.52	9,875.00	9,662.70	23.80	21.07	3.89	-92.69	77.51	1,168.79	1,123.93	44.87	26.050	
10,925.00	10,809.45	9,885.51	9,664.76	23.76	21.08	3.63	-82.66	75.19	1,176.49	1,131.65	44.84	26.237	
10,950.00	10,821.25	9,900.00	9,667.23	23.73	21.09	3.31	-68.74	71.98	1,183.42	1,138.60	44.82	26.404	
10,975.00	10,831.88	9,900.00	9,667.23	23.70	21.09	3.27	-68.74	71.98	1,189.27	1,144.48	44.79	26.554	
11,000.00	10,841.31	9,900.00	9,667.23	23.67	21.09	3.23	-68.74	71.98	1,194.35	1,149.59	44.76	26.684	
11,025.00	10,849.51	9,911.64	9,668.89	23.64	21.11	3.00	-57.51	69.39	1,198.45	1,153.70	44.75	26.781	
11,050.00	10,856.47	9,925.00	9,670.46	23.63	21.12	2.75	-44.59	66.41	1,201.75	1,157.00	44.75	26.856	
11,075.00	10,862.17	9,925.00	9,670.46	23.61	21.12	2.74	-44.59	66.41	1,203.99	1,159.26	44.73	26.914	
11,100.00	10,866.58	9,925.00	9,670.46	23.60	21.12	2.73	-44.59	66.41	1,205.46	1,160.73	44.73	26.952	
11,125.00	10,869.69	9,938.14	9,671.63	23.60	21.14	2.51	-31.83	63.47	1,205.88	1,161.13	44.74	26.950	
11,150.00	10,871.51	9,950.00	9,672.38	23.60	21.16	2.31	-20.30	60.81	1,205.48	1,160.72	44.77	26.927	
11,171.86	10,872.02	9,950.00	9,672.38	23.61	21.16	2.32	-20.30	60.81	1,204.31	1,159.54	44.78	26.896	
11,200.00	10,872.04	9,950.00	9,672.38	23.61	21.16	2.38	-20.30	60.81	1,202.76	1,157.99	44.77	26.864	
11,300.00	10,872.11	10,006.78	9,672.88	23.60	21.26	1.66	35.09	48.36	1,200.65	1,155.79	44.85	26.769	
11,334.08	10,872.14	10,039.25	9,672.75	23.63	21.30	1.31	66.95	42.09	1,200.60	1,155.67	44.93	26.720	
11,376.67	10,872.17	10,080.50	9,672.58	23.68	21.36	0.96	107.61	35.17	1,200.66	1,155.62	45.04	26.660	
11,400.00	10,872.18	10,103.32	9,672.49	23.74	21.39	0.81	130.18	31.85	1,200.72	1,155.59	45.13	26.607	
11,500.00	10,872.25	10,202.08	9,672.09	24.13	21.66	0.34	228.39	21.62	1,201.09	1,155.30	45.79	26.232	
11,600.00	10,872.32	10,301.74	9,671.69	24.65	22.06	0.20	327.97	18.16	1,201.54	1,154.84	46.70	25.727	
11,700.00	10,872.39	10,401.74	9,671.30	25.29	22.71	0.20	427.97	17.59	1,202.01	1,154.01	48.00	25.044	
11,800.00	10,872.46	10,501.74	9,670.90	26.04	23.48	0.20	527.97	17.02	1,202.47	1,152.95	49.53	24.279	
11,900.00	10,872.53	10,601.74	9,670.51	26.90	24.37	0.19	627.96	16.44	1,202.94	1,151.66	51.27	23.461	
12,000.00	10,872.60	10,701.74	9,670.11	27.85	25.36	0.19	727.96	15.87	1,203.40	1,150.19	53.22	22.614	
12,100.00	10,872.67	10,801.74	9,669.72	28.89	26.44	0.19	827.96	15.30	1,203.87	1,148.54	55.33	21.757	
12,200.00	10,872.74	10,901.74	9,669.32	30.00	27.60	0.18	927.95	14.72	1,204.33	1,146.73	57.60	20.908	
12,300.00	10,872.81	11,001.74	9,668.92	31.18	28.83	0.18	1,027.95	14.15	1,204.80	1,144.79	60.01	20.077	
12,400.00	10,872.88	11,101.73	9,668.53	32.41	30.12	0.18	1,127.95	13.58	1,205.26	1,142.73	62.54	19.273	
12,500.00	10,872.95	11,201.73	9,668.13	33.71	31.46	0.17	1,227.94	13.00	1,205.73	1,140.56	65.17	18.501	
12,600.00	10,873.01	11,301.73	9,667.74	35.05	32.85	0.17	1,327.94	12.43	1,206.19	1,138.29	67.90	17.765	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
Offset Well Error: 0.00 ft

Survey Program: 0-MWD

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
12,700.00	10,873.08	11,401.73	9,667.34	36.43	34.28	0.17	1,427.94	11.86	1,206.66	1,135.95	70.71	17.065	
12,800.00	10,873.15	11,501.73	9,666.95	37.85	35.75	0.17	1,527.93	11.28	1,207.12	1,133.53	73.60	16.402	
12,900.00	10,873.22	11,601.73	9,666.55	39.30	37.25	0.16	1,627.93	10.71	1,207.59	1,131.04	76.55	15.776	
13,000.00	10,873.29	11,701.73	9,666.15	40.78	38.78	0.16	1,727.93	10.14	1,208.05	1,128.50	79.56	15.185	
13,100.00	10,873.36	11,801.73	9,665.76	42.29	40.33	0.16	1,827.92	9.56	1,208.52	1,125.90	82.62	14.628	
13,200.00	10,873.43	11,901.73	9,665.36	43.82	41.90	0.15	1,927.92	8.99	1,208.98	1,123.26	85.72	14.103	
13,300.00	10,873.50	12,001.72	9,664.97	45.38	43.49	0.15	2,027.91	8.42	1,209.45	1,120.58	88.87	13.609	
13,400.00	10,873.57	12,101.72	9,664.57	46.95	45.10	0.15	2,127.91	7.84	1,209.91	1,117.86	92.06	13.143	
13,500.00	10,873.64	12,201.72	9,664.17	48.54	46.73	0.14	2,227.91	7.27	1,210.38	1,115.10	95.27	12.704	
13,600.00	10,873.71	12,301.72	9,663.78	50.15	48.37	0.14	2,327.90	6.70	1,210.84	1,112.32	98.52	12.290	
13,700.00	10,873.78	12,401.72	9,663.38	51.77	50.02	0.14	2,427.90	6.12	1,211.31	1,109.51	101.80	11.899	
13,800.00	10,873.85	12,501.72	9,662.99	53.41	51.69	0.14	2,527.90	5.55	1,211.77	1,106.68	105.10	11.530	
13,900.00	10,873.92	12,601.72	9,662.59	55.06	53.36	0.13	2,627.89	4.98	1,212.24	1,103.82	108.42	11.181	
14,000.00	10,873.99	12,701.72	9,662.20	56.71	55.05	0.13	2,727.89	4.40	1,212.70	1,100.94	111.76	10.851	
14,100.00	10,874.06	12,801.72	9,661.80	58.38	56.74	0.13	2,827.89	3.83	1,213.17	1,098.04	115.12	10.538	
14,200.00	10,874.13	12,901.71	9,661.40	60.06	58.44	0.12	2,927.88	3.26	1,213.63	1,095.13	118.50	10.241	
14,300.00	10,874.20	13,001.71	9,661.01	61.75	60.15	0.12	3,027.88	2.68	1,214.10	1,092.20	121.90	9.960	
14,400.00	10,874.26	13,101.71	9,660.61	63.44	61.87	0.12	3,127.88	2.11	1,214.56	1,089.26	125.31	9.693	
14,500.00	10,874.33	13,201.71	9,660.22	65.14	63.59	0.11	3,227.87	1.54	1,215.03	1,086.30	128.73	9.439	
14,600.00	10,874.40	13,301.71	9,659.82	66.85	65.32	0.11	3,327.87	0.97	1,215.49	1,083.33	132.16	9.197	
14,700.00	10,874.47	13,401.71	9,659.43	68.56	67.05	0.11	3,427.87	0.39	1,215.96	1,080.35	135.61	8.967	
14,800.00	10,874.54	13,501.71	9,659.03	70.28	68.79	0.11	3,527.86	-0.18	1,216.42	1,077.36	139.06	8.747	
14,900.00	10,874.61	13,601.71	9,658.63	72.00	70.53	0.10	3,627.86	-0.75	1,216.89	1,074.36	142.53	8.538	
15,000.00	10,874.68	13,701.71	9,658.24	73.73	72.27	0.10	3,727.85	-1.33	1,217.35	1,071.35	146.00	8.338	
15,100.00	10,874.75	13,801.70	9,657.84	75.46	74.02	0.10	3,827.85	-1.90	1,217.82	1,068.33	149.49	8.147	
15,200.00	10,874.82	13,901.70	9,657.45	77.20	75.78	0.09	3,927.85	-2.47	1,218.28	1,065.31	152.98	7.964	
15,300.00	10,874.89	14,001.70	9,657.05	78.94	77.53	0.09	4,027.84	-3.05	1,218.75	1,062.28	156.47	7.789	
15,400.00	10,874.96	14,101.70	9,656.65	80.69	79.29	0.09	4,127.84	-3.62	1,219.22	1,059.24	159.98	7.621	
15,500.00	10,875.03	14,201.70	9,656.26	82.44	81.05	0.08	4,227.84	-4.19	1,219.68	1,056.19	163.49	7.460	
15,600.00	10,875.10	14,301.70	9,655.86	84.19	82.82	0.08	4,327.83	-4.77	1,220.15	1,053.14	167.01	7.306	
15,700.00	10,875.17	14,401.70	9,655.47	85.94	84.59	0.08	4,427.83	-5.34	1,220.61	1,050.08	170.53	7.158	
15,800.00	10,875.24	14,501.70	9,655.07	87.70	86.36	0.08	4,527.83	-5.91	1,221.08	1,047.02	174.06	7.015	
15,900.00	10,875.31	14,601.70	9,654.68	89.46	88.13	0.07	4,627.82	-6.49	1,221.54	1,043.95	177.59	6.878	
16,000.00	10,875.38	14,701.69	9,654.28	91.22	89.90	0.07	4,727.82	-7.06	1,222.01	1,040.88	181.13	6.747	
16,100.00	10,875.45	14,801.69	9,653.88	92.99	91.68	0.07	4,827.82	-7.63	1,222.47	1,037.80	184.67	6.620	
16,200.00	10,875.51	14,901.69	9,653.49	94.76	93.46	0.06	4,927.81	-8.21	1,222.94	1,034.72	188.21	6.498	
16,300.00	10,875.58	15,001.69	9,653.09	96.53	95.24	0.06	5,027.81	-8.78	1,223.40	1,031.64	191.76	6.380	
16,400.00	10,875.65	15,101.69	9,652.70	98.30	97.02	0.06	5,127.81	-9.35	1,223.87	1,028.55	195.32	6.266	
16,500.00	10,875.72	15,201.69	9,652.30	100.07	98.80	0.05	5,227.80	-9.93	1,224.33	1,025.46	198.87	6.156	
16,600.00	10,875.79	15,301.69	9,651.91	101.85	100.59	0.05	5,327.80	-10.50	1,224.80	1,022.36	202.43	6.050	
16,700.00	10,875.86	15,401.69	9,651.51	103.62	102.37	0.05	5,427.79	-11.07	1,225.26	1,019.26	206.00	5.948	
16,800.00	10,875.93	15,501.69	9,651.11	105.40	104.16	0.05	5,527.79	-11.65	1,225.73	1,016.16	209.56	5.849	
16,900.00	10,876.00	15,601.68	9,650.72	107.18	105.95	0.04	5,627.79	-12.22	1,226.19	1,013.06	213.13	5.753	
17,000.00	10,876.07	15,701.68	9,650.32	108.96	107.74	0.04	5,727.78	-12.79	1,226.66	1,009.95	216.70	5.660	
17,100.00	10,876.14	15,801.68	9,649.93	110.75	109.53	0.04	5,827.78	-13.37	1,227.12	1,006.84	220.28	5.571	
17,200.00	10,876.21	15,901.68	9,649.53	112.53	111.32	0.03	5,927.78	-13.94	1,227.59	1,003.73	223.86	5.484	
17,300.00	10,876.28	16,001.68	9,649.13	114.32	113.12	0.03	6,027.77	-14.51	1,228.05	1,000.62	227.44	5.400	
17,400.00	10,876.35	16,101.68	9,648.74	116.10	114.91	0.03	6,127.77	-15.09	1,228.52	997.50	231.02	5.318	
17,500.00	10,876.42	16,201.68	9,648.34	117.89	116.71	0.02	6,227.77	-15.66	1,228.98	994.38	234.60	5.239	
17,600.00	10,876.49	16,301.68	9,647.95	119.68	118.50	0.02	6,327.76	-16.23	1,229.45	991.26	238.19	5.162	
17,700.00	10,876.56	16,401.68	9,647.55	121.47	120.30	0.02	6,427.76	-16.81	1,229.91	988.14	241.77	5.087	
17,800.00	10,876.63	16,501.67	9,647.16	123.26	122.10	0.02	6,527.76	-17.38	1,230.38	985.02	245.36	5.015	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
17,900.00	10,876.69	16,601.67	9,646.76	125.06	123.90	0.01	6,627.75	-17.95	1,230.84	981.89	248.95	4.944	
18,000.00	10,876.76	16,701.67	9,646.36	126.85	125.70	0.01	6,727.75	-18.52	1,231.31	978.76	252.55	4.876	
18,100.00	10,876.83	16,801.67	9,645.97	128.64	127.50	0.01	6,827.75	-19.10	1,231.78	975.63	256.14	4.809	
18,200.00	10,876.90	16,901.67	9,645.57	130.44	129.30	0.00	6,927.74	-19.67	1,232.24	972.50	259.74	4.744	
18,300.00	10,876.97	17,001.67	9,645.18	132.23	131.09	0.00	7,027.74	-20.24	1,232.71	969.38	263.33	4.681	
18,339.70	10,877.00	17,041.37	9,645.02	132.81	131.67	0.00	7,067.43	-20.47	1,232.89	968.40	264.49	4.661	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
0.00	0.00	0.30	0.30	0.00	0.00	89.43	0.30	30.00	30.00				
100.00	100.00	100.30	100.30	0.08	0.08	89.43	0.30	30.00	30.00	29.83	0.17	179.649	
200.00	200.00	200.30	200.30	0.31	0.31	89.43	0.30	30.00	30.00	29.39	0.62	48.662	
300.00	300.00	300.30	300.30	0.53	0.53	89.43	0.30	30.00	30.00	28.94	1.07	28.142	
400.00	400.00	400.30	400.30	0.76	0.76	89.43	0.30	30.00	30.00	28.49	1.52	19.795	
500.00	500.00	500.30	500.30	0.98	0.98	89.43	0.30	30.00	30.00	28.04	1.97	15.267	
600.00	600.00	600.30	600.30	1.21	1.21	89.43	0.30	30.00	30.00	27.59	2.41	12.425	
700.00	700.00	700.30	700.30	1.43	1.43	89.43	0.30	30.00	30.00	27.14	2.86	10.475	
800.00	800.00	800.30	800.30	1.66	1.66	89.43	0.30	30.00	30.00	26.69	3.31	9.054	
900.00	900.00	900.30	900.30	1.88	1.88	89.43	0.30	30.00	30.00	26.24	3.76	7.972	
1,000.00	1,000.00	1,000.30	1,000.30	2.11	2.11	89.43	0.30	30.00	30.00	25.79	4.21	7.122	
1,100.00	1,100.00	1,100.30	1,100.30	2.33	2.33	89.43	0.30	30.00	30.00	25.34	4.66	6.435	
1,200.00	1,200.00	1,200.30	1,200.30	2.56	2.56	89.43	0.30	30.00	30.00	24.89	5.11	5.869	
1,300.00	1,300.00	1,300.30	1,300.30	2.78	2.78	89.43	0.30	30.00	30.00	24.44	5.56	5.395	
1,400.00	1,400.00	1,400.30	1,400.30	3.01	3.01	89.43	0.30	30.00	30.00	23.99	6.01	4.991	
1,500.00	1,500.00	1,500.30	1,500.30	3.23	3.23	89.43	0.30	30.00	30.00	23.54	6.46	4.644	
1,600.00	1,600.00	1,600.30	1,600.30	3.45	3.46	89.43	0.30	30.00	30.00	23.09	6.91	4.342	
1,700.00	1,700.00	1,700.30	1,700.30	3.68	3.68	89.43	0.30	30.00	30.00	22.64	7.36	4.077	
1,800.00	1,800.00	1,800.30	1,800.30	3.90	3.90	89.43	0.30	30.00	30.00	22.19	7.81	3.842	
1,900.00	1,900.00	1,900.30	1,900.30	4.13	4.13	89.43	0.30	30.00	30.00	21.74	8.26	3.633	
2,000.00	2,000.00	2,000.30	2,000.30	4.35	4.35	89.43	0.30	30.00	30.00	21.29	8.71	3.445	
2,100.00	2,100.00	2,100.30	2,100.30	4.58	4.58	89.43	0.30	30.00	30.00	20.84	9.16	3.276	
2,200.00	2,200.00	2,200.30	2,200.30	4.80	4.80	89.43	0.30	30.00	30.00	20.39	9.61	3.123	
2,300.00	2,300.00	2,300.30	2,300.30	5.03	5.03	89.43	0.30	30.00	30.00	19.94	10.06	2.983	
2,400.00	2,400.00	2,400.30	2,400.30	5.25	5.25	89.43	0.30	30.00	30.00	19.50	10.51	2.856	
2,500.00	2,500.00	2,500.30	2,500.30	5.48	5.48	89.43	0.30	30.00	30.00	19.05	10.96	2.738	
2,600.00	2,600.00	2,600.30	2,600.30	5.70	5.70	89.43	0.30	30.00	30.00	18.60	11.41	2.630	
2,700.00	2,700.00	2,700.30	2,700.30	5.93	5.93	89.43	0.30	30.00	30.00	18.15	11.85	2.531	
2,800.00	2,800.00	2,800.30	2,800.30	6.15	6.15	89.43	0.30	30.00	30.00	17.70	12.30	2.438	
2,900.00	2,900.00	2,900.30	2,900.30	6.38	6.38	89.43	0.30	30.00	30.00	17.25	12.75	2.352	
3,000.00	3,000.00	3,000.30	3,000.30	6.60	6.60	89.43	0.30	30.00	30.00	16.80	13.20	2.272	
3,100.00	3,100.00	3,100.30	3,100.30	6.83	6.83	89.43	0.30	30.00	30.00	16.35	13.65	2.197	
3,200.00	3,200.00	3,200.30	3,200.30	7.05	7.05	89.43	0.30	30.00	30.00	15.90	14.10	2.127	
3,300.00	3,300.00	3,300.30	3,300.30	7.28	7.28	89.43	0.30	30.00	30.00	15.45	14.55	2.062	
3,400.00	3,400.00	3,400.30	3,400.30	7.50	7.50	89.43	0.30	30.00	30.00	15.00	15.00	2.000	
3,500.00	3,500.00	3,500.30	3,500.30	7.73	7.73	89.43	0.30	30.00	30.00	14.55	15.45	1.942	
3,600.00	3,600.00	3,600.30	3,600.30	7.95	7.95	89.43	0.30	30.00	30.00	14.10	15.90	1.887	
3,700.00	3,700.00	3,700.30	3,700.30	8.17	8.18	89.43	0.30	30.00	30.00	13.65	16.35	1.835	
3,800.00	3,800.00	3,800.30	3,800.30	8.40	8.40	89.43	0.30	30.00	30.00	13.20	16.80	1.786	
3,900.00	3,900.00	3,900.30	3,900.30	8.62	8.62	89.43	0.30	30.00	30.00	12.75	17.25	1.739	
4,000.00	4,000.00	4,000.30	4,000.30	8.85	8.85	89.43	0.30	30.00	30.00	12.30	17.70	1.695	
4,100.00	4,100.00	4,100.30	4,100.30	9.07	9.07	89.43	0.30	30.00	30.00	11.85	18.15	1.653	
4,200.00	4,200.00	4,200.30	4,200.30	9.30	9.30	89.43	0.30	30.00	30.00	11.40	18.60	1.613	
4,300.00	4,300.00	4,300.30	4,300.30	9.52	9.52	89.43	0.30	30.00	30.00	10.95	19.05	1.575	
4,400.00	4,400.00	4,400.30	4,400.30	9.75	9.75	89.43	0.30	30.00	30.00	10.50	19.50	1.539	
4,400.09	4,400.09	4,400.39	4,400.39	9.75	9.75	89.43	0.30	30.00	30.00	10.50	19.50	1.539	CC
4,500.00	4,499.98	4,500.33	4,500.31	9.94	9.94	-97.09	-1.46	29.97	30.17	10.28	19.89	1.517	ES
4,600.00	4,599.84	4,600.36	4,600.19	10.11	10.11	-96.98	-6.70	29.87	30.67	10.44	20.22	1.516	
4,679.63	4,679.18	4,679.98	4,679.59	10.25	10.25	-97.93	-12.79	29.75	31.32	10.83	20.50	1.528	
4,700.00	4,699.46	4,700.35	4,699.89	10.28	10.28	-98.64	-14.37	29.73	31.53	10.97	20.57	1.533	
4,800.00	4,798.98	4,800.33	4,799.57	10.46	10.45	-101.99	-22.11	29.58	32.63	11.72	20.91	1.560	
4,900.00	4,898.51	4,900.31	4,899.25	10.63	10.63	-105.11	-29.85	29.43	33.83	12.57	21.26	1.591	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
5,000.00	4,998.03	5,000.28	4,998.92	10.81	10.81	-108.01	-37.60	29.29	35.12	13.50	21.62	1.624	
5,100.00	5,097.56	5,100.26	5,098.60	11.00	10.99	-110.70	-45.34	29.14	36.49	14.50	21.99	1.659	
5,200.00	5,197.08	5,200.23	5,198.27	11.19	11.18	-113.19	-53.09	29.00	37.95	15.57	22.37	1.696	
5,300.00	5,296.60	5,300.21	5,297.95	11.39	11.37	-115.49	-60.83	28.85	39.46	16.70	22.76	1.734	
5,400.00	5,396.13	5,400.19	5,397.63	11.59	11.56	-117.61	-68.58	28.71	41.04	17.88	23.15	1.772	
5,500.00	5,495.65	5,500.16	5,497.30	11.79	11.76	-119.58	-76.32	28.56	42.66	19.11	23.55	1.811	
5,600.00	5,595.18	5,600.14	5,596.98	12.00	11.96	-121.40	-84.07	28.42	44.34	20.38	23.96	1.851	
5,700.00	5,694.70	5,700.12	5,696.65	12.21	12.16	-123.09	-91.81	28.27	46.05	21.68	24.37	1.890	
5,800.00	5,794.22	5,800.09	5,796.33	12.42	12.37	-124.65	-99.56	28.13	47.81	23.02	24.79	1.928	
5,900.00	5,893.75	5,900.07	5,896.01	12.64	12.57	-126.10	-107.30	27.98	49.59	24.38	25.21	1.967	
6,000.00	5,993.27	6,000.05	5,995.68	12.86	12.78	-127.45	-115.05	27.84	51.41	25.77	25.64	2.005	
6,100.00	6,092.80	6,100.02	6,095.36	13.08	12.99	-128.71	-122.79	27.69	53.25	27.18	26.08	2.042	
6,200.00	6,192.32	6,200.00	6,195.03	13.31	13.21	-129.88	-130.54	27.55	55.12	28.60	26.51	2.079	
6,300.00	6,291.84	6,299.98	6,294.71	13.53	13.42	-130.98	-138.28	27.40	57.00	30.05	26.96	2.115	
6,400.00	6,391.37	6,399.95	6,394.39	13.76	13.64	-132.01	-146.02	27.26	58.91	31.51	27.40	2.150	
6,500.00	6,490.89	6,499.93	6,494.06	14.00	13.86	-132.97	-153.77	27.11	60.84	32.98	27.85	2.184	
6,600.00	6,590.42	6,599.90	6,593.74	14.23	14.08	-133.87	-161.51	26.97	62.78	34.47	28.31	2.218	
6,700.00	6,689.94	6,699.88	6,693.41	14.47	14.30	-134.72	-169.26	26.82	64.73	35.97	28.76	2.250	
6,800.00	6,789.46	6,799.86	6,793.09	14.70	14.52	-135.51	-177.00	26.68	66.70	37.48	29.23	2.282	
6,900.00	6,888.99	6,899.83	6,892.76	14.94	14.75	-136.27	-184.75	26.53	68.68	38.99	29.69	2.313	
7,000.00	6,988.51	6,999.81	6,992.44	15.18	14.97	-136.97	-192.49	26.39	70.67	40.52	30.16	2.343	
7,100.00	7,088.04	7,099.79	7,092.12	15.43	15.20	-137.65	-200.24	26.24	72.68	42.05	30.63	2.373	
7,200.00	7,187.56	7,199.76	7,191.79	15.67	15.43	-138.28	-207.98	26.10	74.69	43.59	31.10	2.401	
7,300.00	7,287.08	7,299.74	7,291.47	15.92	15.66	-138.88	-215.73	25.95	76.71	45.13	31.58	2.429	
7,400.00	7,386.61	7,399.72	7,391.14	16.16	15.89	-139.45	-223.47	25.81	78.74	46.68	32.06	2.456	
7,500.00	7,486.13	7,499.69	7,490.82	16.41	16.13	-139.99	-231.22	25.66	80.77	48.24	32.54	2.482	
7,600.00	7,585.66	7,599.67	7,590.50	16.66	16.36	-140.51	-238.96	25.51	82.82	49.80	33.02	2.508	
7,700.00	7,685.18	7,699.65	7,690.17	16.91	16.59	-141.00	-246.71	25.37	84.86	51.36	33.51	2.533	
7,800.00	7,784.70	7,799.62	7,789.85	17.16	16.83	-141.46	-254.45	25.22	86.92	52.93	33.99	2.557	
7,900.00	7,884.23	7,899.60	7,889.52	17.42	17.07	-141.91	-262.19	25.08	88.98	54.50	34.48	2.580	
8,000.00	7,983.75	7,999.57	7,989.20	17.67	17.30	-142.33	-269.94	24.93	91.05	56.07	34.98	2.603	
8,100.00	8,083.28	8,099.55	8,088.88	17.93	17.54	-142.74	-277.68	24.79	93.12	57.65	35.47	2.625	
8,200.00	8,182.80	8,199.53	8,188.55	18.18	17.78	-143.13	-285.43	24.64	95.19	59.23	35.97	2.647	
8,300.00	8,282.32	8,299.50	8,288.23	18.44	18.02	-143.50	-293.17	24.50	97.27	60.81	36.46	2.668	
8,400.00	8,381.85	8,399.48	8,387.90	18.70	18.26	-143.86	-300.92	24.35	99.35	62.39	36.96	2.688	
8,500.00	8,481.37	8,499.46	8,487.58	18.96	18.50	-144.20	-308.66	24.21	101.44	63.98	37.46	2.708	
8,600.00	8,580.90	8,599.43	8,587.26	19.22	18.75	-144.53	-316.41	24.06	103.53	65.56	37.97	2.727	
8,700.00	8,680.42	8,699.41	8,686.93	19.48	18.99	-144.84	-324.15	23.92	105.62	67.15	38.47	2.746	
8,800.00	8,779.94	8,799.39	8,786.61	19.74	19.23	-145.14	-331.90	23.77	107.72	68.75	38.97	2.764	
8,900.00	8,879.47	8,899.36	8,886.28	20.00	19.48	-145.44	-339.64	23.63	109.82	70.34	39.48	2.782	
9,000.00	8,978.99	8,999.34	8,985.96	20.27	19.72	-145.72	-347.39	23.48	111.92	71.93	39.99	2.799	
9,100.00	9,078.52	9,099.32	9,085.63	20.53	19.97	-145.99	-355.13	23.34	114.03	73.53	40.50	2.816	
9,200.00	9,178.04	9,199.29	9,185.31	20.80	20.21	-146.25	-362.88	23.19	116.13	75.13	41.01	2.832	
9,300.00	9,277.56	9,299.27	9,284.99	21.06	20.46	-146.50	-370.62	23.05	118.24	76.72	41.52	2.848	
9,400.00	9,377.09	9,399.25	9,384.66	21.33	20.71	-146.74	-378.37	22.90	120.35	78.32	42.03	2.863	
9,500.00	9,476.61	9,499.22	9,484.34	21.59	20.95	-146.97	-386.11	22.76	122.47	79.92	42.55	2.878	
9,600.00	9,576.14	9,599.20	9,584.01	21.86	21.20	-147.20	-393.85	22.61	124.58	81.52	43.06	2.893	
9,700.00	9,675.66	9,699.17	9,683.69	22.13	21.45	-147.42	-401.60	22.47	126.70	83.12	43.58	2.908	
9,800.00	9,775.18	9,799.15	9,783.37	22.39	21.70	-147.63	-409.34	22.32	128.82	84.73	44.09	2.922	
9,900.00	9,874.71	9,899.13	9,883.04	22.66	21.95	-147.83	-417.09	22.18	130.94	86.33	44.61	2.935	
10,000.00	9,974.23	9,999.10	9,982.72	22.93	22.20	-148.03	-424.83	22.03	133.06	87.93	45.13	2.948	
10,100.00	10,073.76	10,099.08	10,082.39	23.20	22.45	-148.22	-432.58	21.89	135.19	89.54	45.65	2.961	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
10,200.00	10,173.28	10,199.06	10,182.07	23.47	22.70	-148.41	-440.32	21.74	137.31	91.14	46.17	2.974	
10,300.00	10,272.80	10,299.03	10,281.75	23.74	22.95	-148.59	-448.07	21.59	139.44	92.75	46.69	2.986	
10,375.60	10,348.04	10,374.61	10,357.10	23.95	23.14	-148.72	-453.92	21.49	141.05	93.96	47.09	2.996	
10,400.00	10,372.38	10,399.01	10,381.42	24.00	23.20	-147.16	-455.81	21.45	141.03	93.82	47.20	2.988	
10,425.00	10,397.37	10,423.97	10,406.31	24.05	23.26	9.24	-457.75	21.41	139.89	92.57	47.32	2.956	
10,450.00	10,422.35	10,448.82	10,431.08	24.09	23.33	28.97	-459.67	21.38	137.64	90.22	47.42	2.903	
10,475.00	10,447.26	10,473.49	10,455.68	24.13	23.39	31.20	-461.58	21.34	134.30	86.79	47.51	2.827	
10,500.00	10,472.03	10,497.91	10,480.03	24.15	23.45	33.18	-463.47	21.31	129.92	82.32	47.60	2.729	
10,525.00	10,496.58	10,522.03	10,504.07	24.17	23.51	35.49	-465.34	21.27	124.57	76.89	47.68	2.613	
10,550.00	10,520.85	10,545.77	10,527.74	24.18	23.57	38.35	-467.18	21.24	118.34	70.59	47.75	2.478	
10,575.00	10,544.77	10,569.07	10,550.97	24.18	23.63	41.91	-468.99	21.20	111.37	63.56	47.81	2.329	
10,600.00	10,568.29	10,591.86	10,573.69	24.18	23.69	46.36	-470.75	21.17	103.83	55.97	47.86	2.169	
10,625.00	10,591.33	10,614.08	10,595.85	24.17	23.74	51.87	-472.47	21.14	96.02	48.11	47.91	2.004	
10,650.00	10,613.82	10,635.67	10,617.37	24.15	23.80	58.62	-474.15	21.11	88.32	40.37	47.95	1.842	
10,675.00	10,635.72	10,656.58	10,638.22	24.13	23.85	66.65	-475.76	21.08	81.33	33.35	47.98	1.695	
10,700.00	10,656.96	10,676.74	10,658.31	24.10	23.90	75.80	-477.33	21.05	75.86	27.85	48.00	1.580	
10,725.00	10,677.47	10,696.09	10,677.61	24.07	23.95	85.59	-478.83	21.02	72.90	24.88	48.02	1.518	
10,734.12	10,684.77	10,702.95	10,684.45	24.06	23.97	89.19	-479.36	21.01	72.66	24.63	48.03	1.513 SF	
10,750.00	10,697.22	10,714.60	10,696.06	24.04	24.00	95.32	-480.26	20.99	73.45	25.42	48.03	1.529	
10,775.00	10,716.13	10,732.20	10,713.61	24.00	24.04	104.28	-481.62	20.97	78.04	30.00	48.04	1.625	
10,800.00	10,734.16	10,748.84	10,730.20	23.96	24.08	111.99	-482.91	20.94	86.60	38.55	48.04	1.802	
10,825.00	10,751.26	10,764.49	10,745.80	23.92	24.12	118.29	-484.12	20.92	98.55	50.51	48.04	2.051	
10,850.00	10,767.38	10,779.09	10,760.36	23.88	24.16	123.21	-485.25	20.90	113.23	65.19	48.04	2.357	
10,875.00	10,782.48	10,792.61	10,773.84	23.84	24.19	126.88	-486.30	20.88	130.04	82.01	48.03	2.707	
10,900.00	10,796.52	10,805.02	10,786.21	23.80	24.22	129.44	-487.26	20.86	148.52	100.49	48.03	3.092	
10,925.00	10,809.45	10,816.27	10,797.43	23.76	24.25	130.99	-488.13	20.84	168.32	120.30	48.02	3.505	
10,950.00	10,821.25	10,826.34	10,807.46	23.73	24.28	131.57	-488.91	20.83	189.20	141.19	48.01	3.941	
10,975.00	10,831.88	10,835.19	10,816.29	23.70	24.30	131.19	-489.60	20.82	210.95	162.96	48.00	4.395	
11,000.00	10,841.31	10,842.81	10,823.89	23.67	24.32	129.73	-490.19	20.81	233.43	185.44	47.99	4.864	
11,025.00	10,849.51	10,849.18	10,830.24	23.64	24.34	127.01	-490.68	20.80	256.50	208.52	47.98	5.346	
11,050.00	10,856.47	10,854.27	10,835.31	23.63	24.35	122.71	-491.08	20.79	280.04	232.06	47.97	5.837	
11,075.00	10,862.17	10,858.07	10,839.10	23.61	24.36	116.33	-491.37	20.78	303.95	255.98	47.97	6.336	
11,100.00	10,866.58	10,860.57	10,841.60	23.60	24.36	107.32	-491.57	20.78	328.14	280.17	47.97	6.841	
11,125.00	10,869.69	10,861.77	10,842.80	23.60	24.37	95.30	-491.66	20.78	352.51	304.54	47.97	7.349	
11,150.00	10,871.51	10,861.67	10,842.69	23.60	24.37	80.78	-491.65	20.78	376.99	329.02	47.97	7.858	
11,171.86	10,872.02	10,860.50	10,841.52	23.61	24.36	67.49	-491.56	20.78	398.41	350.44	47.98	8.304	
11,200.00	10,872.04	10,858.35	10,839.38	23.61	24.36	63.56	-491.39	20.78	426.07	378.10	47.97	8.882	
11,300.00	10,872.11	10,850.69	10,831.74	23.60	24.34	39.10	-490.80	20.79	525.17	477.23	47.94	10.956	
11,376.67	10,872.17	10,844.80	10,825.88	23.68	24.33	3.36	-490.35	20.80	601.55	553.55	48.00	12.531	
11,400.00	10,872.18	10,843.01	10,824.09	23.74	24.32	3.24	-490.21	20.80	624.82	576.76	48.06	13.001	
11,500.00	10,872.25	10,835.34	10,816.44	24.13	24.30	2.81	-489.61	20.82	724.52	676.09	48.43	14.960	
11,600.00	10,872.32	10,827.66	10,808.78	24.65	24.28	2.49	-489.02	20.83	824.23	775.30	48.93	16.845	
11,700.00	10,872.39	10,819.98	10,801.13	25.29	24.26	2.23	-488.42	20.84	923.93	874.38	49.55	18.646	
11,800.00	10,872.46	10,812.31	10,793.48	26.04	24.24	2.02	-487.83	20.85	1,023.64	973.35	50.29	20.356	
11,900.00	10,872.53	10,804.63	10,785.82	26.90	24.22	1.85	-487.23	20.86	1,123.34	1,072.22	51.12	21.973	
12,000.00	10,872.60	10,796.95	10,778.17	27.85	24.20	1.71	-486.64	20.87	1,223.05	1,170.99	52.06	23.495	
12,100.00	10,872.67	10,789.28	10,770.52	28.89	24.18	1.59	-486.04	20.88	1,322.75	1,269.68	53.07	24.924	
12,200.00	10,872.74	10,781.60	10,762.86	30.00	24.17	1.49	-485.45	20.89	1,422.46	1,368.29	54.16	26.262	
12,300.00	10,872.81	13,735.52	12,319.78	31.18	34.16	-180.00	1,031.69	10.28	1,446.68	1,381.34	65.34	22.141	
12,400.00	10,872.88	13,835.52	12,319.85	32.41	35.33	-180.00	1,131.68	9.77	1,446.68	1,378.93	67.75	21.354	
12,500.00	10,872.95	13,935.52	12,319.92	33.71	36.56	-180.00	1,231.68	9.26	1,446.68	1,376.42	70.26	20.590	
12,600.00	10,873.01	14,035.52	12,319.99	35.05	37.83	-180.00	1,331.68	8.75	1,446.68	1,373.81	72.87	19.852	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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
12,700.00	10,873.08	14,135.52	12,320.06	36.43	39.14	-180.00	1,431.68	8.24	1,446.68	1,371.11	75.57	19.144	
12,800.00	10,873.15	14,235.52	12,320.13	37.85	40.50	-180.00	1,531.68	7.73	1,446.68	1,368.34	78.34	18.466	
12,900.00	10,873.22	14,335.52	12,320.20	39.30	41.89	-180.00	1,631.68	7.22	1,446.68	1,365.49	81.19	17.819	
13,000.00	10,873.29	14,435.52	12,320.27	40.78	43.31	-180.00	1,731.68	6.71	1,446.68	1,362.59	84.09	17.203	
13,100.00	10,873.36	14,535.52	12,320.34	42.29	44.76	-180.00	1,831.68	6.20	1,446.68	1,359.63	87.05	16.618	
13,200.00	10,873.43	14,635.52	12,320.41	43.82	46.24	-180.00	1,931.67	5.69	1,446.68	1,356.62	90.07	16.063	
13,300.00	10,873.50	14,735.52	12,320.48	45.38	47.74	-180.00	2,031.67	5.18	1,446.68	1,353.56	93.12	15.535	
13,400.00	10,873.57	14,835.52	12,320.55	46.95	49.27	-180.00	2,131.67	4.67	1,446.68	1,350.46	96.22	15.035	
13,500.00	10,873.64	14,935.52	12,320.62	48.54	50.81	-180.00	2,231.67	4.16	1,446.68	1,347.32	99.36	14.560	
13,600.00	10,873.71	15,035.52	12,320.69	50.15	52.38	-180.00	2,331.67	3.65	1,446.68	1,344.16	102.53	14.110	
13,700.00	10,873.78	15,135.52	12,320.76	51.77	53.95	-180.00	2,431.67	3.15	1,446.68	1,340.95	105.73	13.683	
13,800.00	10,873.85	15,235.52	12,320.83	53.41	55.55	-180.00	2,531.67	2.64	1,446.68	1,337.73	108.96	13.278	
13,900.00	10,873.92	15,335.52	12,320.90	55.06	57.16	-180.00	2,631.67	2.13	1,446.68	1,334.47	112.21	12.892	
14,000.00	10,873.99	15,435.52	12,320.97	56.71	58.78	-180.00	2,731.66	1.62	1,446.68	1,331.19	115.49	12.526	
14,100.00	10,874.06	15,535.52	12,321.04	58.38	60.41	-180.00	2,831.66	1.11	1,446.68	1,327.89	118.79	12.178	
14,200.00	10,874.13	15,635.52	12,321.11	60.06	62.05	-180.00	2,931.66	0.60	1,446.68	1,324.57	122.11	11.847	
14,300.00	10,874.20	15,735.52	12,321.18	61.75	63.70	-180.00	3,031.66	0.09	1,446.69	1,321.24	125.45	11.532	
14,400.00	10,874.26	15,835.52	12,321.25	63.44	65.36	-180.00	3,131.66	-0.42	1,446.69	1,317.88	128.80	11.232	
14,500.00	10,874.33	15,935.52	12,321.32	65.14	67.03	-180.00	3,231.66	-0.93	1,446.69	1,314.51	132.17	10.945	
14,600.00	10,874.40	16,035.52	12,321.39	66.85	68.71	-180.00	3,331.66	-1.44	1,446.69	1,311.13	135.56	10.672	
14,700.00	10,874.47	16,135.52	12,321.46	68.56	70.40	-180.00	3,431.65	-1.95	1,446.69	1,307.73	138.96	10.411	
14,800.00	10,874.54	16,235.52	12,321.53	70.28	72.09	-180.00	3,531.65	-2.46	1,446.69	1,304.32	142.37	10.162	
14,900.00	10,874.61	16,335.52	12,321.60	72.00	73.79	-180.00	3,631.65	-2.97	1,446.69	1,300.90	145.79	9.923	
15,000.00	10,874.68	16,435.52	12,321.67	73.73	75.49	-180.00	3,731.65	-3.48	1,446.69	1,297.46	149.22	9.695	
15,100.00	10,874.75	16,535.52	12,321.74	75.46	77.20	-180.00	3,831.65	-3.99	1,446.69	1,294.02	152.67	9.476	
15,200.00	10,874.82	16,635.52	12,321.81	77.20	78.92	-180.00	3,931.65	-4.50	1,446.69	1,290.57	156.12	9.267	
15,300.00	10,874.89	16,735.52	12,321.88	78.94	80.64	-180.00	4,031.65	-5.01	1,446.69	1,287.11	159.58	9.066	
15,400.00	10,874.96	16,835.52	12,321.95	80.69	82.36	-180.00	4,131.65	-5.52	1,446.69	1,283.64	163.05	8.873	
15,500.00	10,875.03	16,935.52	12,322.02	82.44	84.09	-180.00	4,231.64	-6.03	1,446.69	1,280.16	166.53	8.687	
15,600.00	10,875.10	17,035.52	12,322.09	84.19	85.82	-180.00	4,331.64	-6.54	1,446.69	1,276.68	170.01	8.509	
15,700.00	10,875.17	17,135.52	12,322.16	85.94	87.56	-180.00	4,431.64	-7.05	1,446.69	1,273.19	173.50	8.338	
15,800.00	10,875.24	17,235.52	12,322.23	87.70	89.30	-180.00	4,531.64	-7.56	1,446.69	1,269.69	177.00	8.173	
15,900.00	10,875.31	17,335.52	12,322.30	89.46	91.04	-180.00	4,631.64	-8.07	1,446.69	1,266.19	180.50	8.015	
16,000.00	10,875.38	17,435.52	12,322.37	91.22	92.79	-180.00	4,731.64	-8.58	1,446.69	1,262.68	184.01	7.862	
16,100.00	10,875.45	17,535.52	12,322.44	92.99	94.54	-180.00	4,831.64	-9.09	1,446.69	1,259.16	187.53	7.715	
16,200.00	10,875.51	17,635.52	12,322.51	94.76	96.29	-180.00	4,931.63	-9.60	1,446.69	1,255.64	191.05	7.572	
16,300.00	10,875.58	17,735.52	12,322.58	96.53	98.05	-180.00	5,031.63	-10.11	1,446.69	1,252.12	194.57	7.435	
16,400.00	10,875.65	17,835.52	12,322.65	98.30	99.80	-180.00	5,131.63	-10.61	1,446.69	1,248.59	198.10	7.303	
16,500.00	10,875.72	17,935.52	12,322.72	100.07	101.56	-180.00	5,231.63	-11.12	1,446.69	1,245.06	201.63	7.175	
16,600.00	10,875.79	18,035.52	12,322.79	101.85	103.33	-180.00	5,331.63	-11.63	1,446.69	1,241.52	205.17	7.051	
16,700.00	10,875.86	18,135.52	12,322.86	103.62	105.09	-180.00	5,431.63	-12.14	1,446.69	1,237.98	208.71	6.931	
16,800.00	10,875.93	18,235.52	12,322.93	105.40	106.86	-180.00	5,531.63	-12.65	1,446.69	1,234.44	212.26	6.816	
16,900.00	10,876.00	18,335.52	12,323.00	107.18	108.62	-180.00	5,631.63	-13.16	1,446.69	1,230.89	215.81	6.704	
17,000.00	10,876.07	18,435.52	12,323.07	108.96	110.39	-180.00	5,731.62	-13.67	1,446.70	1,227.34	219.36	6.595	
17,100.00	10,876.14	18,535.52	12,323.13	110.75	112.17	-180.00	5,831.62	-14.18	1,446.70	1,223.78	222.91	6.490	
17,200.00	10,876.21	18,635.52	12,323.20	112.53	113.94	-180.00	5,931.62	-14.69	1,446.70	1,220.22	226.47	6.388	
17,300.00	10,876.28	18,735.52	12,323.27	114.32	115.71	-180.00	6,031.62	-15.20	1,446.70	1,216.66	230.03	6.289	
17,400.00	10,876.35	18,835.52	12,323.34	116.10	117.49	-180.00	6,131.62	-15.71	1,446.70	1,213.10	233.60	6.193	
17,500.00	10,876.42	18,935.52	12,323.41	117.89	119.27	-180.00	6,231.62	-16.22	1,446.70	1,209.54	237.16	6.100	
17,600.00	10,876.49	19,035.52	12,323.48	119.68	121.05	-180.00	6,331.62	-16.73	1,446.70	1,205.97	240.73	6.010	
17,700.00	10,876.56	19,135.52	12,323.55	121.47	122.83	-180.00	6,431.61	-17.24	1,446.70	1,202.40	244.30	5.922	
17,800.00	10,876.63	19,235.52	12,323.62	123.26	124.61	-180.00	6,531.61	-17.75	1,446.70	1,198.82	247.87	5.836	

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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

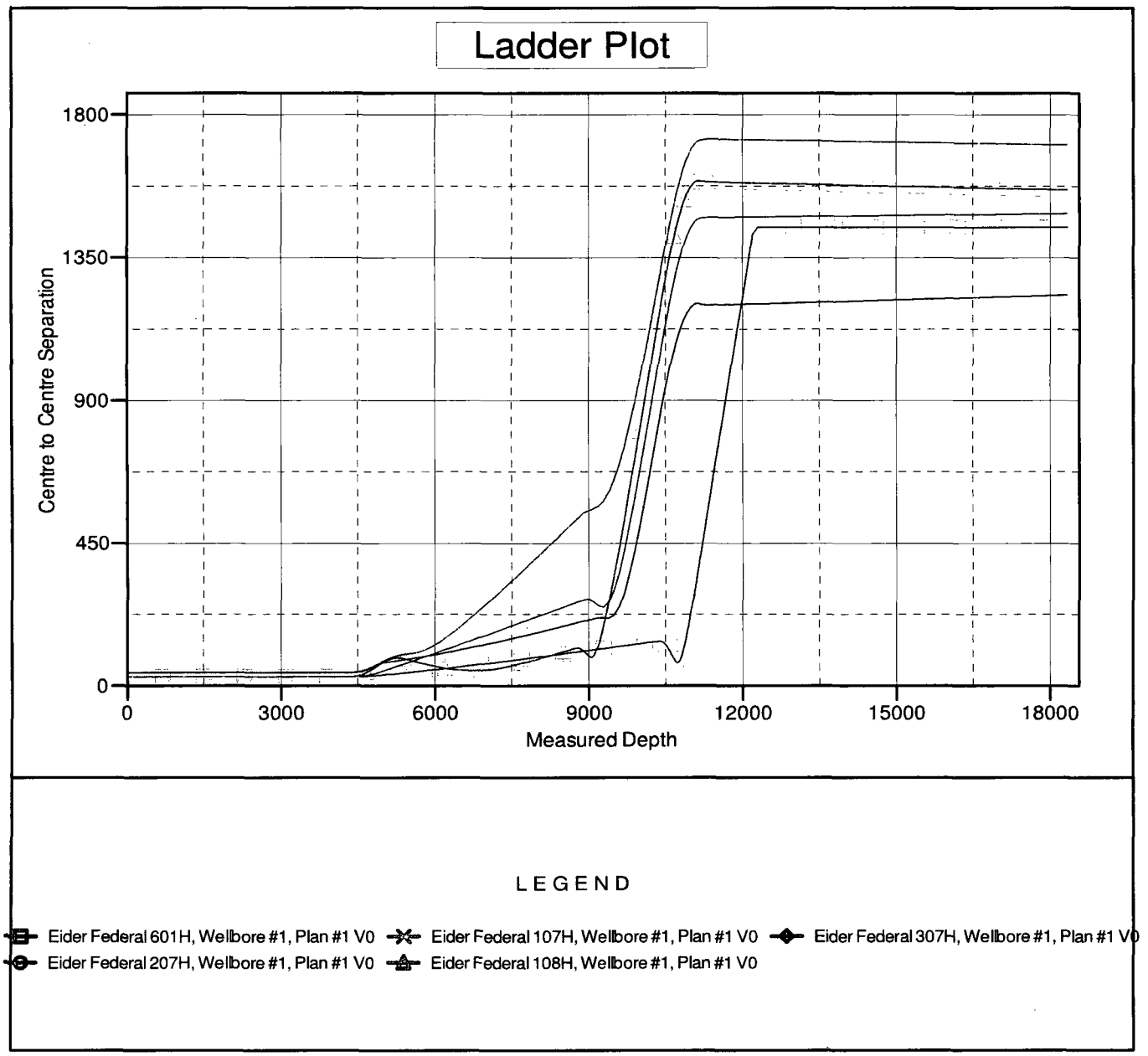
Offset Design Sec. 35, T 24 S. , R 32 E - Eider Federal 601H - Wellbore #1 - Plan #1

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
17,900.00	10,876.69	19,335.52	12,323.69	125.06	126.39	-180.00	6,631.61	-18.26	1,446.70	1,195.25	251.45	5.753	
18,000.00	10,876.76	19,435.52	12,323.76	126.85	128.18	-180.00	6,731.61	-18.77	1,446.70	1,191.67	255.03	5.673	
18,100.00	10,876.83	19,535.52	12,323.83	128.64	129.96	-180.00	6,831.61	-19.28	1,446.70	1,188.09	258.61	5.594	
18,200.00	10,876.90	19,635.52	12,323.90	130.44	131.75	-180.00	6,931.61	-19.79	1,446.70	1,184.51	262.19	5.518	
18,300.00	10,876.97	19,735.52	12,323.97	132.23	133.54	-180.00	7,031.61	-20.30	1,446.70	1,180.93	265.77	5.443	
18,339.70	10,877.00	19,775.22	12,324.00	132.81	134.25	-180.00	7,071.30	-20.50	1,446.70	1,179.64	267.06	5.417	

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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

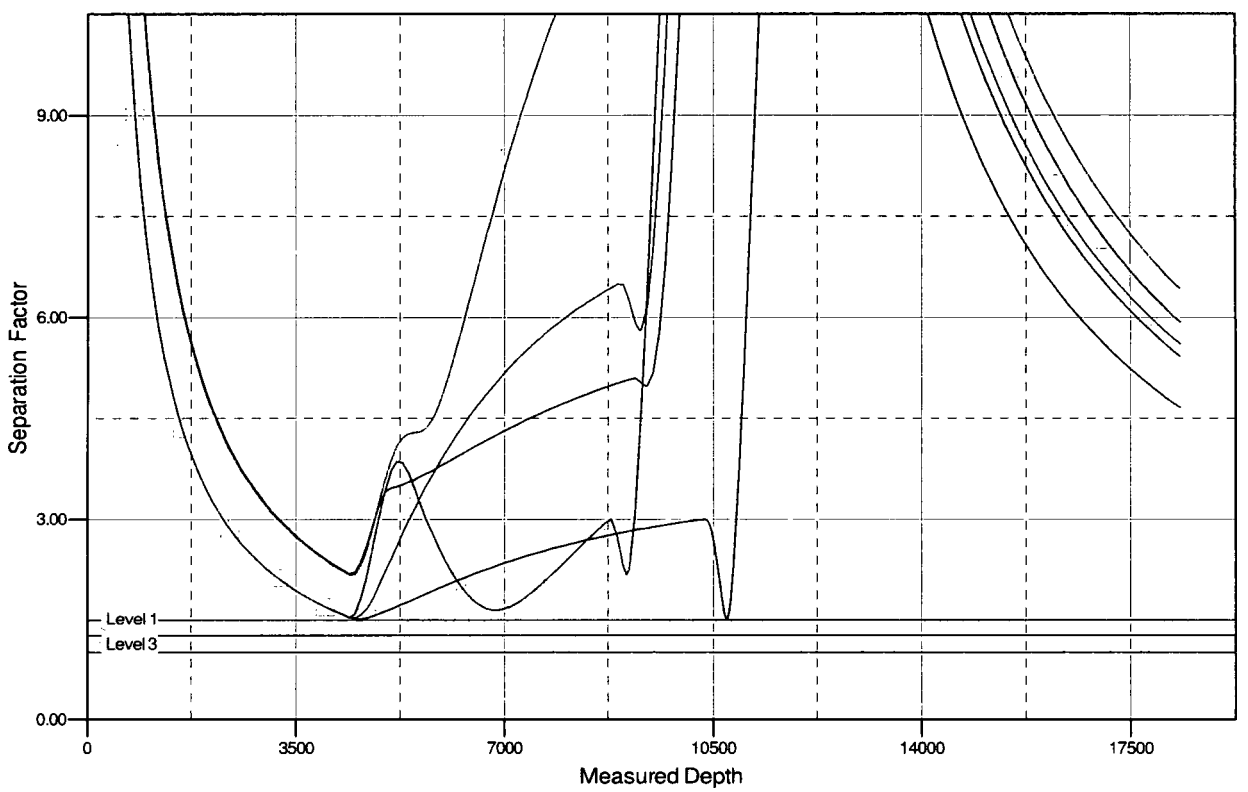
Reference Depths are relative to KB=26' @ 3577.00ft (Scandrill FreedcCoordinates are relative to: Eider Federal 401H
Offset Depths are relative to Offset Datum
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is -104.333334
Grid Convergence at Surface is: 0.37°



Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Reference Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site Error:	5.00 ft	**North Reference:**	Grid
Reference Well:	Eider Federal 401H	**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' @ 3577.00ft (Scandrill FreedcCoordinates are relative to: Eider Federal 401H
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°

Separation Factor Plot



LEGEND

Eider Federal 601H, Wellbore #1, Plan #1 V0
Eider Federal 107H, Wellbore #1, Plan #1 V0
Eider Federal 307H, Wellbore #1, Plan #1 V0
Eider Federal 207H, Wellbore #1, Plan #1 V0
Eider Federal 108H, Wellbore #1, Plan #1 V0

CONCHO

COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 35, T 24 S. , R 32 E
Well: Eider Federal 401H
Wellbore: Wellbore #1
Plan: Plan #1 (Eider Federal 401H/Wellbore #1)
Scandrill Freedom

INTEGRITY Directional Services

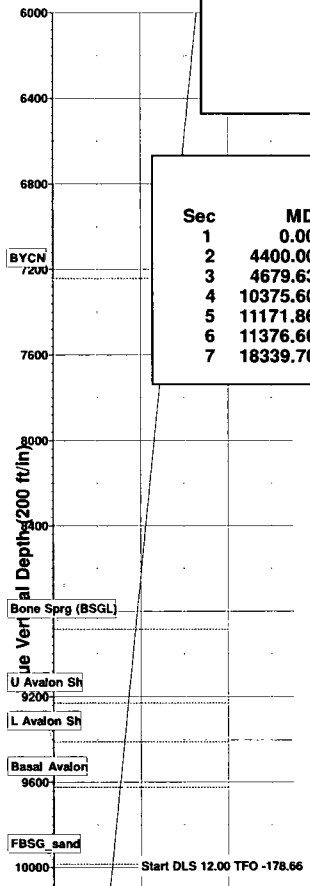
WELL DETAILS: Eider Federal 401H

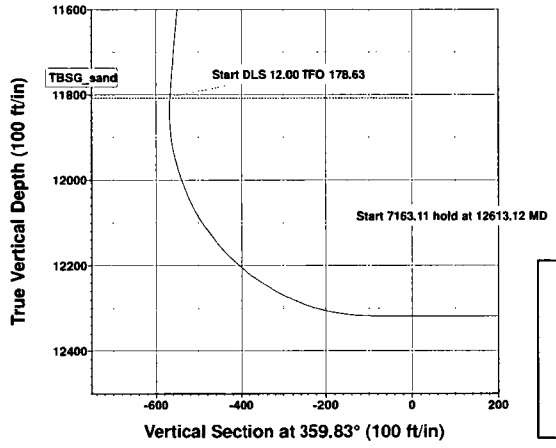
Ground Elevation:: 3551.00
RKB Elevation: KB=26' @ 3577.00ft (Scandrill Freedom)
Rig Name: Scandrill Freedom

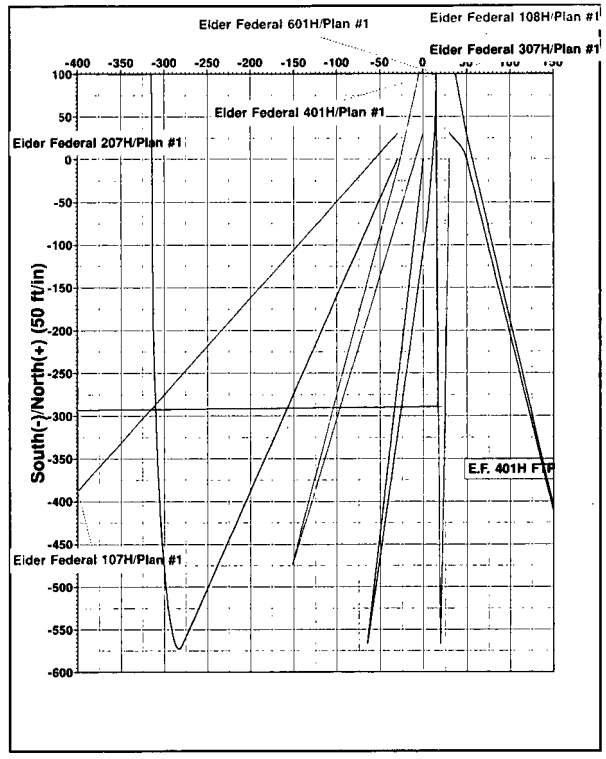
Northing	Easting	Latitude	Longitude
425690.5000	715293.4000	32.168427	-103.637559

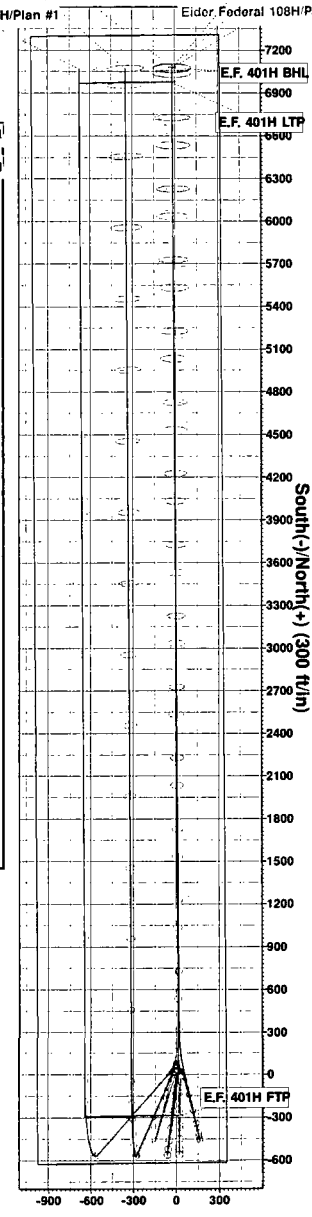
Planned Section Details

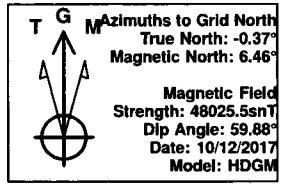
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4400.00	0.00	0.00	4400.00	0.00	0.00	0.00	0.00	0.00
3	4679.63	5.59	186.56	4679.18	-13.55	-1.56	2.00	186.56	-13.54
4	10375.60	5.59	186.56	10348.04	-565.00	-65.00	0.00	0.00	-564.81
5	11171.86	89.96	7.90	10872.02	-94.81	1.45	12.00	-178.66	-94.81
6	11376.66	89.96	359.71	10872.17	109.37	15.03	4.00	-90.00	109.33
7	18339.70	89.96	359.71	10877.00	7072.31	-20.50	0.00	0.00	7072.34











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 401H

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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Well:	Eider Federal 401H	**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 401H					
Well Position	**+N/-S**	0.00 ft	**Northing:**	425,690.5000 usft	**Latitude:**	32.168427
	+E/-W	0.00 ft	**Easting:**	715,293.4000 usft	**Longitude:**	-103.637559
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	0.00 ft	**Ground Level:**	3,551.00 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	359.83		

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

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	18,338.81	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 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Well:	Eider Federal 401H	**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
Start DLS 2.00 TFO 186.56									
4,500.00	2.00	186.56	4,499.98	-1.73	-0.20	-1.73	2.00	2.00	0.00
4,600.00	4.00	186.56	4,599.84	-6.93	-0.80	-6.93	2.00	2.00	0.00
4,679.63	5.59	186.56	4,679.18	-13.55	-1.56	-13.54	2.00	2.00	0.00
Start 5695.97 hold at 4679.63 MD									
4,700.00	5.59	186.56	4,699.46	-15.52	-1.79	-15.51	0.00	0.00	0.00
4,800.00	5.59	186.56	4,798.98	-25.20	-2.90	-25.19	0.00	0.00	0.00
4,900.00	5.59	186.56	4,898.51	-34.88	-4.01	-34.87	0.00	0.00	0.00
5,000.00	5.59	186.56	4,998.03	-44.56	-5.13	-44.55	0.00	0.00	0.00

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
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Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Well:	Eider Federal 401H	**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)
5,100.00	5.59	186.56	5,097.56	-54.25	-6.24	-54.23	0.00	0.00	0.00
5,200.00	5.59	186.56	5,197.08	-63.93	-7.35	-63.90	0.00	0.00	0.00
5,300.00	5.59	186.56	5,296.60	-73.61	-8.47	-73.58	0.00	0.00	0.00
5,400.00	5.59	186.56	5,396.13	-83.29	-9.58	-83.26	0.00	0.00	0.00
5,500.00	5.59	186.56	5,495.65	-92.97	-10.70	-92.94	0.00	0.00	0.00
5,600.00	5.59	186.56	5,595.18	-102.65	-11.81	-102.62	0.00	0.00	0.00
5,700.00	5.59	186.56	5,694.70	-112.33	-12.92	-112.30	0.00	0.00	0.00
5,800.00	5.59	186.56	5,794.22	-122.02	-14.04	-121.97	0.00	0.00	0.00
5,900.00	5.59	186.56	5,893.75	-131.70	-15.15	-131.65	0.00	0.00	0.00
6,000.00	5.59	186.56	5,993.27	-141.38	-16.26	-141.33	0.00	0.00	0.00
6,100.00	5.59	186.56	6,092.80	-151.06	-17.38	-151.01	0.00	0.00	0.00
6,200.00	5.59	186.56	6,192.32	-160.74	-18.49	-160.69	0.00	0.00	0.00
6,300.00	5.59	186.56	6,291.84	-170.42	-19.61	-170.37	0.00	0.00	0.00
6,400.00	5.59	186.56	6,391.37	-180.10	-20.72	-180.04	0.00	0.00	0.00
6,500.00	5.59	186.56	6,490.89	-189.79	-21.83	-189.72	0.00	0.00	0.00
6,600.00	5.59	186.56	6,590.42	-199.47	-22.95	-199.40	0.00	0.00	0.00
6,700.00	5.59	186.56	6,689.94	-209.15	-24.06	-209.08	0.00	0.00	0.00
6,800.00	5.59	186.56	6,789.46	-218.83	-25.18	-218.76	0.00	0.00	0.00
6,900.00	5.59	186.56	6,888.99	-228.51	-26.29	-228.43	0.00	0.00	0.00
7,000.00	5.59	186.56	6,988.51	-238.19	-27.40	-238.11	0.00	0.00	0.00
7,100.00	5.59	186.56	7,088.04	-247.87	-28.52	-247.79	0.00	0.00	0.00
7,200.00	5.59	186.56	7,187.56	-257.56	-29.63	-257.47	0.00	0.00	0.00
7,300.00	5.59	186.56	7,287.08	-267.24	-30.74	-267.15	0.00	0.00	0.00
7,400.00	5.59	186.56	7,386.61	-276.92	-31.86	-276.83	0.00	0.00	0.00
7,500.00	5.59	186.56	7,486.13	-286.60	-32.97	-286.50	0.00	0.00	0.00
7,600.00	5.59	186.56	7,585.66	-296.28	-34.09	-296.18	0.00	0.00	0.00
7,700.00	5.59	186.56	7,685.18	-305.96	-35.20	-305.86	0.00	0.00	0.00
7,800.00	5.59	186.56	7,784.70	-315.64	-36.31	-315.54	0.00	0.00	0.00
7,900.00	5.59	186.56	7,884.23	-325.33	-37.43	-325.22	0.00	0.00	0.00
8,000.00	5.59	186.56	7,983.75	-335.01	-38.54	-334.89	0.00	0.00	0.00
8,100.00	5.59	186.56	8,083.28	-344.69	-39.65	-344.57	0.00	0.00	0.00
8,200.00	5.59	186.56	8,182.80	-354.37	-40.77	-354.25	0.00	0.00	0.00
8,300.00	5.59	186.56	8,282.32	-364.05	-41.88	-363.93	0.00	0.00	0.00
8,400.00	5.59	186.56	8,381.85	-373.73	-43.00	-373.61	0.00	0.00	0.00
8,500.00	5.59	186.56	8,481.37	-383.41	-44.11	-383.29	0.00	0.00	0.00
8,600.00	5.59	186.56	8,580.90	-393.10	-45.22	-392.96	0.00	0.00	0.00
8,700.00	5.59	186.56	8,680.42	-402.78	-46.34	-402.64	0.00	0.00	0.00
8,800.00	5.59	186.56	8,779.94	-412.46	-47.45	-412.32	0.00	0.00	0.00
8,900.00	5.59	186.56	8,879.47	-422.14	-48.56	-422.00	0.00	0.00	0.00
9,000.00	5.59	186.56	8,978.99	-431.82	-49.68	-431.68	0.00	0.00	0.00
9,100.00	5.59	186.56	9,078.52	-441.50	-50.79	-441.35	0.00	0.00	0.00
9,200.00	5.59	186.56	9,178.04	-451.19	-51.91	-451.03	0.00	0.00	0.00
9,300.00	5.59	186.56	9,277.56	-460.87	-53.02	-460.71	0.00	0.00	0.00

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Well:	Eider Federal 401H	**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)
9,400.00	5.59	186.56	9,377.09	-470.55	-54.13	-470.39	0.00	0.00	0.00
9,500.00	5.59	186.56	9,476.61	-480.23	-55.25	-480.07	0.00	0.00	0.00
9,600.00	5.59	186.56	9,576.14	-489.91	-56.36	-489.75	0.00	0.00	0.00
9,700.00	5.59	186.56	9,675.66	-499.59	-57.48	-499.42	0.00	0.00	0.00
9,800.00	5.59	186.56	9,775.18	-509.27	-58.59	-509.10	0.00	0.00	0.00
9,900.00	5.59	186.56	9,874.71	-518.96	-59.70	-518.78	0.00	0.00	0.00
10,000.00	5.59	186.56	9,974.23	-528.64	-60.82	-528.46	0.00	0.00	0.00
10,100.00	5.59	186.56	10,073.76	-538.32	-61.93	-538.14	0.00	0.00	0.00
10,200.00	5.59	186.56	10,173.28	-548.00	-63.04	-547.81	0.00	0.00	0.00
10,300.00	5.59	186.56	10,272.80	-557.68	-64.16	-557.49	0.00	0.00	0.00
10,375.60	5.59	186.56	10,348.04	-565.00	-65.00	-564.81	0.00	0.00	0.00
Start DLS 12.00 TFO -178.66									
10,400.00	2.67	185.09	10,372.38	-566.75	-65.19	-566.56	12.00	-11.99	-6.05
10,500.00	9.34	8.70	10,472.03	-561.02	-64.16	-560.83	12.00	6.67	-176.39
10,600.00	21.34	8.24	10,568.29	-534.90	-60.32	-534.72	12.00	12.00	-0.46
10,700.00	33.34	8.10	10,656.96	-489.53	-53.81	-489.37	12.00	12.00	-0.14
10,800.00	45.34	8.03	10,734.16	-426.88	-44.94	-426.74	12.00	12.00	-0.07
10,900.00	57.34	7.98	10,796.52	-349.70	-34.09	-349.59	12.00	12.00	-0.05
10,974.01	66.22	7.96	10,831.48	-285.18	-25.06	-285.11	12.00	12.00	-0.04
E.F. 401H FTP									
11,000.00	69.34	7.95	10,841.31	-261.35	-21.73	-261.29	12.00	12.00	-0.03
11,100.00	81.34	7.92	10,866.58	-165.71	-8.40	-165.69	12.00	12.00	-0.03
11,171.86	89.96	7.90	10,872.02	-94.81	1.45	-94.81	12.00	12.00	-0.03
Start DLS 4.00 TFO -90.00									
11,200.00	89.96	6.77	10,872.04	-66.90	5.05	-66.91	4.00	0.00	-4.00
11,300.00	89.96	2.77	10,872.11	32.74	13.37	32.70	4.00	0.00	-4.00
11,376.67	89.96	359.71	10,872.17	109.37	15.03	109.33	4.00	0.00	-4.00
Start 6963.03 hold at 11376.66 MD									
11,400.00	89.96	359.71	10,872.18	132.71	14.91	132.66	0.00	0.00	0.00
11,500.00	89.96	359.71	10,872.25	232.71	14.40	232.66	0.00	0.00	0.00
11,600.00	89.96	359.71	10,872.32	332.71	13.89	332.66	0.00	0.00	0.00
11,700.00	89.96	359.71	10,872.39	432.70	13.38	432.66	0.00	0.00	0.00
11,800.00	89.96	359.71	10,872.46	532.70	12.87	532.66	0.00	0.00	0.00
11,900.00	89.96	359.71	10,872.53	632.70	12.36	632.66	0.00	0.00	0.00
12,000.00	89.96	359.71	10,872.60	732.70	11.85	732.66	0.00	0.00	0.00
12,100.00	89.96	359.71	10,872.67	832.70	11.34	832.66	0.00	0.00	0.00
12,200.00	89.96	359.71	10,872.74	932.70	10.83	932.66	0.00	0.00	0.00
12,300.00	89.96	359.71	10,872.81	1,032.70	10.32	1,032.66	0.00	0.00	0.00
12,400.00	89.96	359.71	10,872.88	1,132.70	9.81	1,132.66	0.00	0.00	0.00
12,500.00	89.96	359.71	10,872.95	1,232.69	9.30	1,232.66	0.00	0.00	0.00
12,600.00	89.96	359.71	10,873.01	1,332.69	8.79	1,332.66	0.00	0.00	0.00
12,700.00	89.96	359.71	10,873.08	1,432.69	8.28	1,432.66	0.00	0.00	0.00
12,800.00	89.96	359.71	10,873.15	1,532.69	7.77	1,532.66	0.00	0.00	0.00
12,900.00	89.96	359.71	10,873.22	1,632.69	7.26	1,632.66	0.00	0.00	0.00

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Well:	Eider Federal 401H	**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)
13,000.00	89.96	359.71	10,873.29	1,732.69	6.75	1,732.66	0.00	0.00	0.00
13,100.00	89.96	359.71	10,873.36	1,832.69	6.23	1,832.66	0.00	0.00	0.00
13,200.00	89.96	359.71	10,873.43	1,932.68	5.72	1,932.66	0.00	0.00	0.00
13,300.00	89.96	359.71	10,873.50	2,032.68	5.21	2,032.66	0.00	0.00	0.00
13,400.00	89.96	359.71	10,873.57	2,132.68	4.70	2,132.66	0.00	0.00	0.00
13,500.00	89.96	359.71	10,873.64	2,232.68	4.19	2,232.66	0.00	0.00	0.00
13,600.00	89.96	359.71	10,873.71	2,332.68	3.68	2,332.66	0.00	0.00	0.00
13,700.00	89.96	359.71	10,873.78	2,432.68	3.17	2,432.66	0.00	0.00	0.00
13,800.00	89.96	359.71	10,873.85	2,532.68	2.66	2,532.66	0.00	0.00	0.00
13,900.00	89.96	359.71	10,873.92	2,632.68	2.15	2,632.66	0.00	0.00	0.00
14,000.00	89.96	359.71	10,873.99	2,732.67	1.64	2,732.66	0.00	0.00	0.00
14,100.00	89.96	359.71	10,874.06	2,832.67	1.13	2,832.66	0.00	0.00	0.00
14,200.00	89.96	359.71	10,874.13	2,932.67	0.62	2,932.66	0.00	0.00	0.00
14,300.00	89.96	359.71	10,874.20	3,032.67	0.11	3,032.66	0.00	0.00	0.00
14,400.00	89.96	359.71	10,874.26	3,132.67	-0.40	3,132.66	0.00	0.00	0.00
14,500.00	89.96	359.71	10,874.33	3,232.67	-0.91	3,232.66	0.00	0.00	0.00
14,600.00	89.96	359.71	10,874.40	3,332.67	-1.42	3,332.66	0.00	0.00	0.00
14,700.00	89.96	359.71	10,874.47	3,432.66	-1.93	3,432.66	0.00	0.00	0.00
14,800.00	89.96	359.71	10,874.54	3,532.66	-2.44	3,532.66	0.00	0.00	0.00
14,900.00	89.96	359.71	10,874.61	3,632.66	-2.95	3,632.66	0.00	0.00	0.00
15,000.00	89.96	359.71	10,874.68	3,732.66	-3.46	3,732.65	0.00	0.00	0.00
15,100.00	89.96	359.71	10,874.75	3,832.66	-3.97	3,832.65	0.00	0.00	0.00
15,200.00	89.96	359.71	10,874.82	3,932.66	-4.48	3,932.65	0.00	0.00	0.00
15,300.00	89.96	359.71	10,874.89	4,032.66	-4.99	4,032.65	0.00	0.00	0.00
15,400.00	89.96	359.71	10,874.96	4,132.66	-5.50	4,132.65	0.00	0.00	0.00
15,500.00	89.96	359.71	10,875.03	4,232.65	-6.01	4,232.65	0.00	0.00	0.00
15,600.00	89.96	359.71	10,875.10	4,332.65	-6.52	4,332.65	0.00	0.00	0.00
15,700.00	89.96	359.71	10,875.17	4,432.65	-7.03	4,432.65	0.00	0.00	0.00
15,800.00	89.96	359.71	10,875.24	4,532.65	-7.54	4,532.65	0.00	0.00	0.00
15,900.00	89.96	359.71	10,875.31	4,632.65	-8.05	4,632.65	0.00	0.00	0.00
16,000.00	89.96	359.71	10,875.38	4,732.65	-8.56	4,732.65	0.00	0.00	0.00
16,100.00	89.96	359.71	10,875.45	4,832.65	-9.07	4,832.65	0.00	0.00	0.00
16,200.00	89.96	359.71	10,875.51	4,932.64	-9.58	4,932.65	0.00	0.00	0.00
16,300.00	89.96	359.71	10,875.58	5,032.64	-10.09	5,032.65	0.00	0.00	0.00
16,400.00	89.96	359.71	10,875.65	5,132.64	-10.60	5,132.65	0.00	0.00	0.00
16,500.00	89.96	359.71	10,875.72	5,232.64	-11.11	5,232.65	0.00	0.00	0.00
16,600.00	89.96	359.71	10,875.79	5,332.64	-11.62	5,332.65	0.00	0.00	0.00
16,700.00	89.96	359.71	10,875.86	5,432.64	-12.13	5,432.65	0.00	0.00	0.00
16,800.00	89.96	359.71	10,875.93	5,532.64	-12.64	5,532.65	0.00	0.00	0.00
16,900.00	89.96	359.71	10,876.00	5,632.64	-13.15	5,632.65	0.00	0.00	0.00
17,000.00	89.96	359.71	10,876.07	5,732.63	-13.66	5,732.65	0.00	0.00	0.00
17,100.00	89.96	359.71	10,876.14	5,832.63	-14.17	5,832.65	0.00	0.00	0.00
17,200.00	89.96	359.71	10,876.21	5,932.63	-14.68	5,932.65	0.00	0.00	0.00
17,300.00	89.96	359.71	10,876.28	6,032.63	-15.20	6,032.65	0.00	0.00	0.00

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Well:	Eider Federal 401H	**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)
17,400.00	89.96	359.71	10,876.35	6,132.63	-15.71	6,132.65	0.00	0.00	0.00
17,500.00	89.96	359.71	10,876.42	6,232.63	-16.22	6,232.65	0.00	0.00	0.00
17,600.00	89.96	359.71	10,876.49	6,332.63	-16.73	6,332.65	0.00	0.00	0.00
17,700.00	89.96	359.71	10,876.56	6,432.62	-17.24	6,432.65	0.00	0.00	0.00
17,800.00	89.96	359.71	10,876.63	6,532.62	-17.75	6,532.65	0.00	0.00	0.00
17,900.00	89.96	359.71	10,876.69	6,632.62	-18.26	6,632.65	0.00	0.00	0.00
18,000.00	89.96	359.71	10,876.76	6,732.62	-18.77	6,732.65	0.00	0.00	0.00
18,100.00	89.96	359.71	10,876.83	6,832.62	-19.28	6,832.65	0.00	0.00	0.00
18,200.00	89.96	359.71	10,876.90	6,932.62	-19.79	6,932.65	0.00	0.00	0.00
18,239.80	89.96	359.71	10,876.93	6,972.41	-19.99	6,972.44	0.00	0.00	0.00
E.F. 401H LTP									
18,300.00	89.96	359.71	10,876.97	7,032.62	-20.30	7,032.65	0.00	0.00	0.00
18,339.70	89.96	359.71	10,877.00	7,072.31	-20.50	7,072.34	0.00	0.00	0.00
TD at 18339.70 - E.F. 401H BHL									

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. 401H FTP	0.00	0.00	10,829.00	-289.78	16.48	425,400.7251	715,309.8813	32.167630	-103.637512
- plan misses target center by 41.87ft at 10974.18ft MD (10831.55 TVD, -285.03 N, -25.04 E)									
- Point									
E.F. 401H LTP	0.00	0.00	10,876.93	6,972.41	-19.97	432,662.8985	715,273.4305	32.187593	-103.637478
- plan misses target center by 0.02ft at 18239.79ft MD (10876.93 TVD, 6972.41 N, -19.99 E)									
- Point									
E.F. 401H BHL	0.00	0.00	10,877.00	7,072.31	-20.50	432,762.8000	715,272.9000	32.187868	-103.637478
- plan hits target center									
- Point									

Company:	COG Operating L L C	**Local Co-ordinate Reference:**	Well Eider Federal 401H
Project:	Lea County, NM (NAD27 NME)	**TVD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Site:	Sec. 35, T 24 S. , R 32 E	**MD Reference:**	KB=26' @ 3577.00ft (Scandrill Freedom)
Well:	Eider Federal 401H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 5000.1 Multi User Db

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,015.00	1,015.00	Rustler		0.00	
1,348.00	1,348.00	TOS		0.00	
4,682.46	4,682.00	BOS (Fletcher)		0.00	
4,911.55	4,910.00	LMAR (Top Delaware)		0.00	
4,957.77	4,956.00	BLCN		0.00	
5,871.12	5,865.00	CYCN		0.00	
7,257.72	7,245.00	BYCN		0.00	
8,907.57	8,887.00	Bone Sprg (BSGL)		0.00	
9,254.22	9,232.00	U Avalon Sh		0.00	
9,435.08	9,412.00	L Avalon Sh		0.00	
9,649.10	9,625.00	Basal Avalon		0.00	
10,012.83	9,987.00	FBSG_sand		0.00	
10,535.70	10,507.00	SBSG_sand		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
4400	4400	0	0	Start DLS 2.00 TFO 186.56
4680	4679	-14	-2	Start 5695.97 hold at 4679.63 MD
10,376	10,348	-565	-65	Start DLS 12.00 TFO -178.66
11,172	10,872	-95	1	Start DLS 4.00 TFO -90.00
11,377	10,872	109	15	Start 6963.03 hold at 11376.66 MD
18,340	10,877	7072	-21	TD at 18339.70

Checked By: _____ Approved By: _____ Date: _____

COG Operating, LLC - Eider Federal #401H

1. Geologic Formations

TVD of target	10,877' EOL	Pilot hole depth	NA
MD at TD:	18,340'	Deepest expected fresh water:	380'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	1015	Water	
Top of Salt	1348	Salt	
Base of Salt	4682	Salt	
Lamar	4910	Salt Water	
Bell Canyon	4956	Salt Water	
Cherry Canyon	5865	Oil/Gas	
Brushy Canyon	7245	Oil/Gas	
Bone Spring Lime	8887	Oil/Gas	
U. Avalon Shale	9232	Oil/Gas	
L. Avalon Shale	9412	Oil/Gas	
1st Bone Spring Sand	9987	Oil/Gas	
2nd Bone Spring Sand	10507	Oil/Gas	
3rd Bone Spring Sand	11809	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	1040	13.375"	54.5	J55	STC	2.37	1.25	9.07
12.25"	0	4000	9.625"	40	J55	LTC	1.22	0.95	3.25
12.25"	4000	4935	9.625"	40	L80	LTC	1.19	1.38	5.73
8.75"	0	18,340	5.5"	17	P110	LTC	1.42	2.55	2.41
			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