PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

HOBBS OCD
MAY 31 2018
RECEIVED

OPERATOR'S NAME:	COG Production LLC
LEASE NO.:	NMNM120907
WELL NAME & NO.:	305H-Eider Federal
SURFACE HOLE FOOTAGE:	210'/S & 2290'/E
BOTTOM HOLE FOOTAGE	2410'/S & 2310'/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 **985** 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 21% - 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.

MHH 05192018

GENERAL REQUIREMENTS

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

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

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

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

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

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

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

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

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

A. CASING

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

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

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

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

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

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

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

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

B. PRESSURE CONTROL

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Production LLC
LEASE NO.:	NMNM120907
WELL NAME & NO.:	305H-Eider Federal
SURFACE HOLE FOOTAGE:	210'/S & 2290'/E
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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.

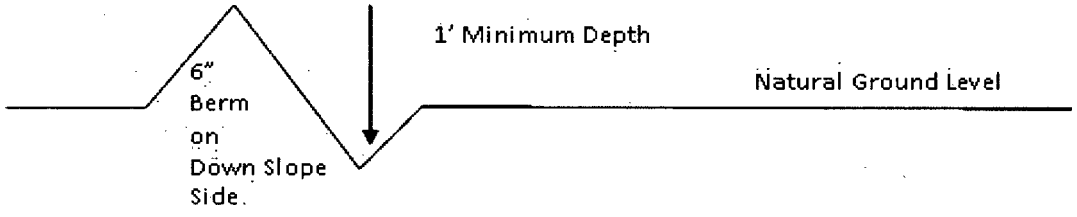
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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:

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Construction Steps

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

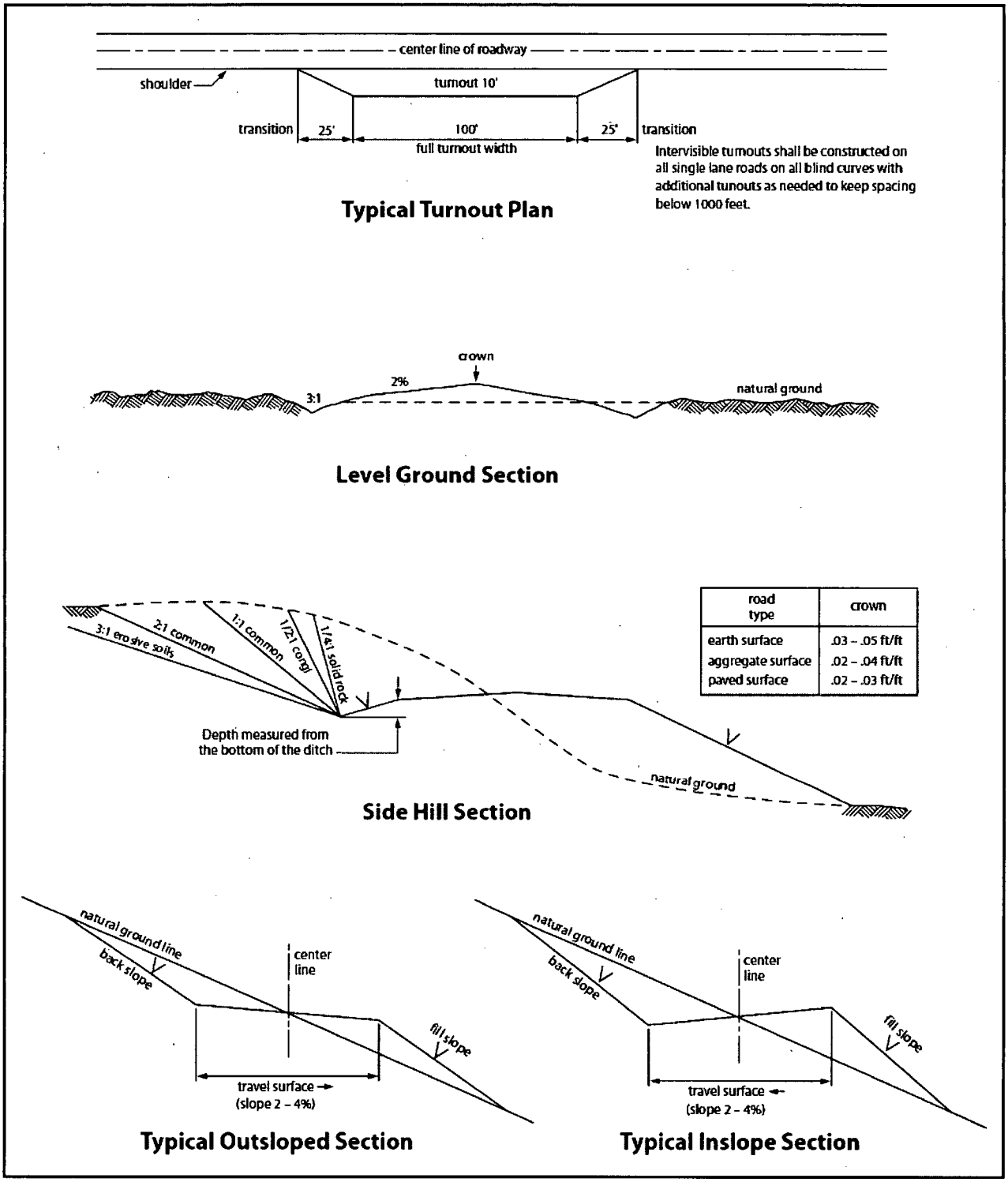


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

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

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

Containment Structures

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

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

B. PIPELINES
STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

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

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

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

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

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

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

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

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

c. Acts of God.

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

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

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

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

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

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

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

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

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

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

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

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

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

by the authorized officer after consulting with the holder.

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

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

18. Special Stipulations:

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

VIII. INTERIM RECLAMATION

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

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

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

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

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

IX. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

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

*Pounds of pure live seed:

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

COG PRODUCTION LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. HYDROGEN SULFIDE TRAINING

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

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

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

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

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

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

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

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

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

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

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

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

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

g. Communication:
Company vehicles equipped with cellular telephone.

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

WARNING

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

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

COG PRODUCTION LLC

1-575-748-6940

EMERGENCY CALL LIST

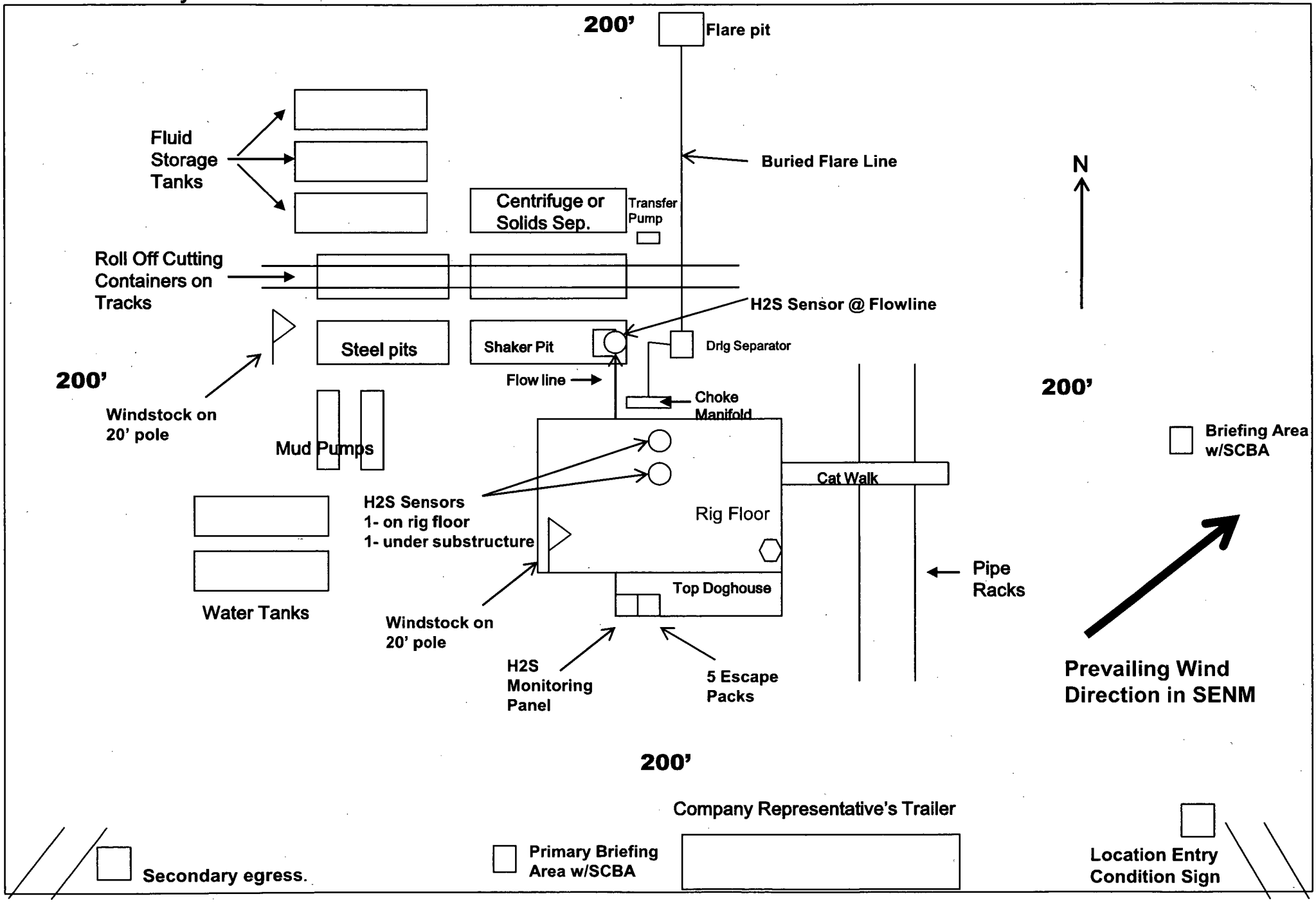
	OFFICE	MOBILE
COG PRODUCTION LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

EMERGENCY RESPONSE NUMBERS

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

COG Production LLC
H_2S Equipment Schematic
Terrain: Shinnery sand hills.

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



CONCHO

COG Production LLC

Lea County, New Mexico
Sec 35, T24S, R32E
Eider Federal #305H

Wellbore #1
Design #1

QES Anticollision Report

19 October, 2017

QES
DIRECTIONAL DRILLING

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 10/19/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	17,237.7	Design #1 (Wellbore #1)	MWD default	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Sec 35, T24S, R32E						
Eider Federal #105H - Wellbore #1 - Design #1	6,700.0	6,701.0	30.1	0.3	1.009	Level 2, CC
Eider Federal #105H - Wellbore #1 - Design #1	6,800.0	6,801.0	30.5	0.3	1.009	Level 2, ES, SF
Eider Federal #106H - Wellbore #1 - Design #1	5,303.3	5,304.3	67.3	43.7	2.856	CC, ES
Eider Federal #106H - Wellbore #1 - Design #1	5,400.0	5,400.0	67.7	43.8	2.826	SF
Eider Federal #205H - Wellbore #1 - Design #1	6,005.3	6,006.3	42.5	15.8	1.591	CC, ES
Eider Federal #205H - Wellbore #1 - Design #1	6,100.0	6,100.0	43.0	15.8	1.584	SF
Eider Federal #206H - Wellbore #1 - Design #1	4,416.3	4,417.3	60.0	40.4	3.067	CC
Eider Federal #206H - Wellbore #1 - Design #1	4,500.0	4,500.0	60.0	40.1	3.010	ES, SF
Eider Federal #306H - Wellbore #1 - Design #1	6,700.0	6,701.0	30.0	0.2	1.006	Level 2, CC, ES, SF

Offset Design Sec 35, T24S, R32E - Eider Federal #105H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	1.0	0.0	0.0	0.0	-0.38	30.1	-0.2	30.1			
100.0	100.0	101.0	100.0	0.1	0.1	-0.38	30.1	-0.2	30.1	29.9	186.000	
200.0	200.0	201.0	200.0	0.3	0.3	-0.38	30.1	-0.2	30.1	29.5	49.235	
300.0	300.0	301.0	300.0	0.5	0.5	-0.38	30.1	-0.2	30.1	29.0	28.373	
400.0	400.0	401.0	400.0	0.8	0.8	-0.38	30.1	-0.2	30.1	28.6	19.929	
500.0	500.0	501.0	500.0	1.0	1.0	-0.38	30.1	-0.2	30.1	28.1	15.358	
600.0	600.0	601.0	600.0	1.2	1.2	-0.38	30.1	-0.2	30.1	27.7	12.493	
700.0	700.0	701.0	700.0	1.4	1.4	-0.38	30.1	-0.2	30.1	27.2	10.528	
800.0	800.0	801.0	800.0	1.7	1.7	-0.38	30.1	-0.2	30.1	26.8	9.098	
900.0	900.0	901.0	900.0	1.9	1.9	-0.38	30.1	-0.2	30.1	26.3	8.010	
1,000.0	1,000.0	1,001.0	1,000.0	2.1	2.1	-0.38	30.1	-0.2	30.1	25.9	7.154	
1,100.0	1,100.0	1,101.0	1,100.0	2.3	2.3	-0.38	30.1	-0.2	30.1	25.4	6.463	
1,200.0	1,200.0	1,201.0	1,200.0	2.6	2.6	-0.38	30.1	-0.2	30.1	25.0	5.894	
1,300.0	1,300.0	1,301.0	1,300.0	2.8	2.8	-0.38	30.1	-0.2	30.1	24.5	5.417	
1,400.0	1,400.0	1,401.0	1,400.0	3.0	3.0	-0.38	30.1	-0.2	30.1	24.1	5.012	
1,500.0	1,500.0	1,501.0	1,500.0	3.2	3.2	-0.38	30.1	-0.2	30.1	23.6	4.663	
1,600.0	1,600.0	1,601.0	1,600.0	3.5	3.5	-0.38	30.1	-0.2	30.1	23.2	4.359	
1,700.0	1,700.0	1,701.0	1,700.0	3.7	3.7	-0.38	30.1	-0.2	30.1	22.7	4.093	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #105H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
1,800.0	1,800.0	1,801.0	1,800.0	3.9	3.9	-0.38	30.1	-0.2	30.1	22.3	3.857	
1,900.0	1,900.0	1,901.0	1,900.0	4.1	4.1	-0.38	30.1	-0.2	30.1	21.8	3.647	
2,000.0	2,000.0	2,001.0	2,000.0	4.4	4.4	-0.38	30.1	-0.2	30.1	21.4	3.459	
2,100.0	2,100.0	2,101.0	2,100.0	4.6	4.6	-0.38	30.1	-0.2	30.1	20.9	3.289	
2,200.0	2,200.0	2,201.0	2,200.0	4.8	4.8	-0.38	30.1	-0.2	30.1	20.5	3.135	
2,300.0	2,300.0	2,301.0	2,300.0	5.0	5.0	-0.38	30.1	-0.2	30.1	20.0	2.995	
2,400.0	2,400.0	2,401.0	2,400.0	5.2	5.3	-0.38	30.1	-0.2	30.1	19.6	2.866	
2,500.0	2,500.0	2,501.0	2,500.0	5.5	5.5	-0.38	30.1	-0.2	30.1	19.2	2.749	
2,600.0	2,600.0	2,601.0	2,600.0	5.7	5.7	-0.38	30.1	-0.2	30.1	18.7	2.640	
2,700.0	2,700.0	2,701.0	2,700.0	5.9	5.9	-0.38	30.1	-0.2	30.1	18.3	2.540	
2,800.0	2,800.0	2,801.0	2,800.0	6.1	6.2	-0.38	30.1	-0.2	30.1	17.8	2.447	
2,900.0	2,900.0	2,901.0	2,900.0	6.4	6.4	-0.38	30.1	-0.2	30.1	17.4	2.361	
3,000.0	3,000.0	3,001.0	3,000.0	6.6	6.6	-0.38	30.1	-0.2	30.1	16.9	2.281	
3,100.0	3,100.0	3,101.0	3,100.0	6.8	6.8	-0.38	30.1	-0.2	30.1	16.5	2.206	
3,200.0	3,200.0	3,201.0	3,200.0	7.0	7.0	-0.38	30.1	-0.2	30.1	16.0	2.135	
3,300.0	3,300.0	3,301.0	3,300.0	7.3	7.3	-0.38	30.1	-0.2	30.1	15.6	2.069	
3,400.0	3,400.0	3,401.0	3,400.0	7.5	7.5	-0.38	30.1	-0.2	30.1	15.1	2.007	
3,500.0	3,500.0	3,501.0	3,500.0	7.7	7.7	-0.38	30.1	-0.2	30.1	14.7	1.949	
3,600.0	3,600.0	3,601.0	3,600.0	7.9	7.9	-0.38	30.1	-0.2	30.1	14.2	1.894	
3,700.0	3,700.0	3,701.0	3,700.0	8.2	8.2	-0.38	30.1	-0.2	30.1	13.8	1.842	
3,800.0	3,800.0	3,801.0	3,800.0	8.4	8.4	-0.38	30.1	-0.2	30.1	13.3	1.792	
3,900.0	3,900.0	3,901.0	3,900.0	8.6	8.6	-0.38	30.1	-0.2	30.1	12.9	1.746	
4,000.0	4,000.0	4,001.0	4,000.0	8.8	8.8	-0.38	30.1	-0.2	30.1	12.4	1.701	
4,100.0	4,100.0	4,101.0	4,100.0	9.1	9.1	-0.38	30.1	-0.2	30.1	12.0	1.659	
4,200.0	4,200.0	4,201.0	4,200.0	9.3	9.3	-0.38	30.1	-0.2	30.1	11.5	1.619	
4,300.0	4,300.0	4,301.0	4,300.0	9.5	9.5	-0.38	30.1	-0.2	30.1	11.1	1.581	
4,400.0	4,400.0	4,401.0	4,400.0	9.7	9.7	-0.38	30.1	-0.2	30.1	10.6	1.544	
4,500.0	4,500.0	4,501.0	4,500.0	10.0	10.0	-0.38	30.1	-0.2	30.1	10.2	1.509	
4,600.0	4,600.0	4,601.0	4,600.0	10.2	10.2	-0.38	30.1	-0.2	30.1	9.7	1.476	Level 3
4,700.0	4,700.0	4,701.0	4,700.0	10.4	10.4	-0.38	30.1	-0.2	30.1	9.3	1.444	Level 3
4,800.0	4,800.0	4,801.0	4,800.0	10.6	10.6	-0.38	30.1	-0.2	30.1	8.8	1.414	Level 3
4,900.0	4,900.0	4,901.0	4,900.0	10.9	10.9	-0.38	30.1	-0.2	30.1	8.4	1.385	Level 3
5,000.0	5,000.0	5,001.0	5,000.0	11.1	11.1	-0.38	30.1	-0.2	30.1	7.9	1.357	Level 3
5,100.0	5,100.0	5,101.0	5,100.0	11.3	11.3	-0.38	30.1	-0.2	30.1	7.5	1.330	Level 3
5,200.0	5,200.0	5,201.0	5,200.0	11.5	11.5	-0.38	30.1	-0.2	30.1	7.0	1.304	Level 3
5,300.0	5,300.0	5,301.0	5,300.0	11.8	11.8	-0.38	30.1	-0.2	30.1	6.6	1.279	Level 3
5,400.0	5,400.0	5,401.0	5,400.0	12.0	12.0	-0.38	30.1	-0.2	30.1	6.1	1.255	Level 3
5,500.0	5,500.0	5,501.0	5,500.0	12.2	12.2	-0.38	30.1	-0.2	30.1	5.7	1.232	Level 2
5,600.0	5,600.0	5,601.0	5,600.0	12.4	12.4	-0.38	30.1	-0.2	30.1	5.2	1.210	Level 2
5,700.0	5,700.0	5,701.0	5,700.0	12.7	12.7	-0.38	30.1	-0.2	30.1	4.8	1.188	Level 2
5,800.0	5,800.0	5,801.0	5,800.0	12.9	12.9	-0.38	30.1	-0.2	30.1	4.3	1.167	Level 2
5,900.0	5,900.0	5,901.0	5,900.0	13.1	13.1	-0.38	30.1	-0.2	30.1	3.9	1.147	Level 2
6,000.0	6,000.0	6,001.0	6,000.0	13.3	13.3	-0.38	30.1	-0.2	30.1	3.4	1.128	Level 2
6,100.0	6,100.0	6,101.0	6,100.0	13.6	13.6	-0.38	30.1	-0.2	30.1	3.0	1.109	Level 2
6,200.0	6,200.0	6,201.0	6,200.0	13.8	13.8	-0.38	30.1	-0.2	30.1	2.5	1.091	Level 2
6,300.0	6,300.0	6,301.0	6,300.0	14.0	14.0	-0.38	30.1	-0.2	30.1	2.1	1.074	Level 2
6,400.0	6,400.0	6,401.0	6,400.0	14.2	14.2	-0.38	30.1	-0.2	30.1	1.6	1.057	Level 2
6,500.0	6,500.0	6,501.0	6,500.0	14.5	14.5	-0.38	30.1	-0.2	30.1	1.2	1.040	Level 2
6,600.0	6,600.0	6,601.0	6,600.0	14.7	14.7	-0.38	30.1	-0.2	30.1	0.7	1.024	Level 2
6,700.0	6,700.0	6,701.0	6,700.0	14.9	14.9	-0.38	30.1	-0.2	30.1	0.3	1.009	Level 2
6,700.0	6,700.0	6,701.0	6,700.0	14.9	14.9	-0.38	30.1	-0.2	30.1	0.3	1.009	Level 2, CC
6,800.0	6,800.0	6,801.0	6,800.0	15.1	15.1	172.91	30.1	-0.2	30.5	0.3	1.009	Level 2, ES, SF

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #105H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
6,900.0	6,899.9	6,900.9	6,899.9	15.3	15.4	173.63	30.1	-0.2	34.0	3.3	1.109	Level 2
7,000.0	6,999.7	7,000.7	6,999.7	15.5	15.6	174.69	30.1	-0.2	40.8	9.8	1.315	Level 3
7,100.0	7,099.4	7,100.4	7,099.4	15.6	15.8	175.55	30.1	-0.2	48.7	17.3	1.549	
7,200.0	7,199.1	7,200.1	7,199.1	15.8	16.0	176.17	30.1	-0.2	56.6	24.7	1.777	
7,300.0	7,298.8	7,299.8	7,298.8	16.0	16.3	176.64	30.1	-0.2	64.5	32.2	2.000	
7,400.0	7,398.4	7,399.4	7,398.4	16.1	16.5	177.00	30.1	-0.2	72.4	39.7	2.217	
7,500.0	7,498.1	7,499.1	7,498.1	16.3	16.7	177.30	30.1	-0.2	80.2	47.2	2.429	
7,600.0	7,597.8	7,598.8	7,597.8	16.5	16.9	177.54	30.1	-0.2	88.1	54.7	2.636	
7,700.0	7,697.5	7,698.5	7,697.5	16.7	17.2	177.74	30.1	-0.2	96.0	62.2	2.838	
7,800.0	7,797.2	7,798.2	7,797.2	16.9	17.4	177.91	30.1	-0.2	103.9	69.7	3.035	
7,900.0	7,896.9	7,897.9	7,896.9	17.1	17.6	178.06	30.1	-0.2	111.8	77.2	3.227	
8,000.0	7,996.6	7,997.6	7,996.6	17.3	17.8	178.19	30.1	-0.2	119.7	84.6	3.415	
8,100.0	8,096.3	8,097.3	8,096.3	17.4	18.1	178.30	30.1	-0.2	127.6	92.1	3.599	
8,200.0	8,195.9	8,196.9	8,195.9	17.6	18.3	178.40	30.1	-0.2	135.5	99.6	3.778	
8,300.0	8,295.6	8,296.6	8,295.6	17.8	18.5	178.49	30.1	-0.2	143.4	107.1	3.953	
8,400.0	8,395.3	8,396.3	8,395.3	18.0	18.7	178.57	30.1	-0.2	151.3	114.6	4.124	
8,500.0	8,495.0	8,496.0	8,495.0	18.2	19.0	178.64	30.1	-0.2	159.2	122.1	4.291	
8,600.0	8,594.7	8,595.7	8,594.7	18.4	19.2	178.70	30.1	-0.2	167.0	129.5	4.454	
8,700.0	8,694.4	8,695.4	8,694.4	18.6	19.4	178.76	30.1	-0.2	174.9	137.0	4.614	
8,800.0	8,794.1	8,791.0	8,790.0	18.8	19.6	178.81	30.2	-0.2	183.0	144.7	4.777	
8,900.0	8,893.9	8,861.9	8,860.5	19.1	19.8	178.55	37.0	-0.5	198.5	160.4	5.205	
9,000.0	8,993.9	8,929.0	8,925.6	19.3	19.9	177.99	53.0	-1.2	224.6	187.4	6.031	
9,100.0	9,093.9	8,990.8	8,983.1	19.5	20.0	4.10	75.7	-2.2	261.2	225.4	7.301	
9,200.0	9,193.9	9,050.0	9,034.9	19.7	20.2	3.39	104.1	-3.5	308.9	274.6	9.010	
9,300.0	9,293.9	9,094.2	9,071.1	19.9	20.3	2.87	129.4	-4.6	365.8	333.6	11.383	
9,400.0	9,393.5	9,138.1	9,104.6	20.1	20.4	2.40	157.8	-5.9	425.1	394.9	14.096	
9,500.0	9,489.7	9,182.6	9,135.7	20.3	20.5	1.84	189.6	-7.3	475.0	447.1	17.012	
9,600.0	9,578.2	9,225.0	9,162.5	20.4	20.7	1.46	222.4	-8.8	514.7	489.4	20.343	
9,700.0	9,655.2	9,275.0	9,190.2	20.6	20.8	1.15	263.9	-10.6	543.5	520.6	23.703	
9,800.0	9,717.3	9,325.0	9,213.4	20.7	21.0	0.91	308.2	-12.6	561.4	541.0	27.464	
9,900.0	9,761.8	9,364.1	9,228.2	21.0	21.2	0.75	344.3	-14.2	567.9	550.5	32.754	
10,000.0	9,786.7	9,409.8	9,241.7	21.4	21.5	0.59	387.9	-16.1	563.0	548.2	37.989	
10,100.0	9,791.8	9,450.0	9,250.1	21.9	21.7	0.45	427.2	-17.9	547.6	535.0	43.553	
10,200.0	9,791.0	9,500.0	9,255.9	22.5	22.0	0.24	476.7	-20.1	535.9	524.3	46.103	
10,300.0	9,790.2	9,571.8	9,257.0	23.2	22.5	0.01	548.5	-22.6	533.2	521.2	44.520	
10,400.0	9,789.5	9,671.8	9,257.4	24.1	23.3	0.00	648.5	-23.2	532.1	519.1	41.080	
10,500.0	9,788.7	9,771.8	9,257.8	25.1	24.2	0.00	748.5	-23.7	530.9	516.9	37.897	
10,600.0	9,787.9	9,871.8	9,258.1	26.1	25.1	0.00	848.5	-24.2	529.8	514.6	34.999	
10,700.0	9,787.2	9,971.8	9,258.5	27.3	26.2	0.00	948.5	-24.7	528.6	512.3	32.393	
10,800.0	9,786.4	10,071.8	9,258.9	28.5	27.4	0.00	1,048.5	-25.2	527.5	509.9	30.065	
10,900.0	9,785.6	10,171.8	9,259.3	29.7	28.6	0.00	1,148.5	-25.7	526.4	507.5	27.988	
11,000.0	9,784.8	10,271.8	9,259.6	31.1	29.9	0.00	1,248.5	-26.2	525.2	505.1	26.136	
11,100.0	9,784.1	10,371.8	9,260.0	32.4	31.2	0.00	1,348.4	-26.7	524.1	502.7	24.480	
11,200.0	9,783.3	10,471.8	9,260.4	33.8	32.6	0.00	1,448.4	-27.2	522.9	500.2	22.997	
11,300.0	9,782.5	10,571.8	9,260.8	35.3	34.1	0.00	1,548.4	-27.7	521.8	497.7	21.663	
11,400.0	9,781.8	10,671.8	9,261.1	36.8	35.5	0.00	1,648.4	-28.2	520.6	495.2	20.460	
11,500.0	9,781.0	10,771.8	9,261.5	38.3	37.0	0.00	1,748.4	-28.7	519.5	492.7	19.371	
11,600.0	9,780.2	10,871.8	9,261.9	39.8	38.5	0.00	1,848.4	-29.2	518.4	490.2	18.381	
11,700.0	9,779.5	10,971.8	9,262.3	41.4	40.1	0.00	1,948.4	-29.7	517.2	487.6	17.479	
11,800.0	9,778.7	11,071.7	9,262.6	43.0	41.7	0.00	2,048.4	-30.2	516.1	485.1	16.655	
11,900.0	9,777.9	11,171.7	9,263.0	44.6	43.3	0.00	2,148.4	-30.7	514.9	482.5	15.898	
12,000.0	9,777.2	11,271.7	9,263.4	46.2	44.9	0.00	2,248.4	-31.2	513.8	480.0	15.202	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #105H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
12,100.0	9,776.4	11,371.7	9,263.8	47.9	46.5	0.00	2,348.4	-31.7	512.7	477.4	14.559	
12,200.0	9,775.6	11,471.7	9,264.1	49.5	48.1	0.00	2,448.4	-32.2	511.5	474.9	13.964	
12,300.0	9,774.9	11,571.7	9,264.5	51.2	49.8	0.00	2,548.3	-32.7	510.4	472.3	13.413	
12,400.0	9,774.1	11,671.7	9,264.9	52.8	51.4	0.00	2,648.3	-33.2	509.2	469.8	12.900	
12,500.0	9,773.3	11,771.7	9,265.3	54.5	53.1	0.00	2,748.3	-33.7	508.1	467.2	12.422	
12,600.0	9,772.6	11,871.7	9,265.6	56.2	54.8	0.00	2,848.3	-34.2	506.9	464.6	11.975	
12,700.0	9,771.8	11,971.7	9,266.0	57.9	56.5	0.00	2,948.3	-34.7	505.8	462.0	11.557	
12,800.0	9,771.0	12,071.7	9,266.4	59.6	58.2	0.00	3,048.3	-35.2	504.7	459.5	11.165	
12,900.0	9,770.3	12,171.7	9,266.8	61.3	59.9	0.00	3,148.3	-35.7	503.5	456.9	10.796	
13,000.0	9,769.5	12,271.7	9,267.1	63.0	61.6	0.00	3,248.3	-36.2	502.4	454.3	10.450	
13,100.0	9,768.7	12,371.7	9,267.5	64.8	63.3	0.00	3,348.3	-36.7	501.2	451.7	10.123	
13,200.0	9,768.0	12,471.7	9,267.9	66.5	65.1	0.00	3,448.3	-37.2	500.1	449.1	9.814	
13,300.0	9,767.2	12,571.6	9,268.3	68.2	66.8	0.00	3,548.3	-37.7	499.0	446.6	9.522	
13,400.0	9,766.4	12,671.6	9,268.6	70.0	68.5	0.00	3,648.3	-38.2	497.8	444.0	9.245	
13,500.0	9,765.7	12,771.6	9,269.0	71.7	70.3	0.00	3,748.2	-38.7	496.7	441.4	8.983	
13,600.0	9,764.9	12,871.6	9,269.4	73.4	72.0	0.00	3,848.2	-39.2	495.5	438.8	8.734	
13,700.0	9,764.1	12,971.6	9,269.8	75.2	73.8	0.00	3,948.2	-39.7	494.4	436.2	8.497	
13,800.0	9,763.4	13,071.6	9,270.1	76.9	75.5	0.00	4,048.2	-40.2	493.2	433.6	8.271	
13,900.0	9,762.6	13,171.6	9,270.5	78.7	77.3	0.00	4,148.2	-40.7	492.1	431.0	8.056	
14,000.0	9,761.8	13,271.6	9,270.9	80.5	79.0	0.00	4,248.2	-41.2	491.0	428.4	7.851	
14,100.0	9,761.1	13,371.6	9,271.3	82.2	80.8	0.00	4,348.2	-41.7	489.8	425.8	7.655	
14,200.0	9,760.3	13,471.6	9,271.6	84.0	82.6	0.00	4,448.2	-42.2	488.7	423.2	7.468	
14,300.0	9,759.5	13,571.6	9,272.0	85.8	84.3	0.00	4,548.2	-42.7	487.5	420.6	7.289	
14,400.0	9,758.8	13,671.6	9,272.4	87.5	86.1	0.00	4,648.2	-43.2	486.4	418.1	7.117	
14,500.0	9,758.0	13,771.6	9,272.8	89.3	87.9	0.00	4,748.2	-43.7	485.3	415.5	6.952	
14,600.0	9,757.2	13,871.6	9,273.1	91.1	89.6	0.00	4,848.2	-44.2	484.1	412.9	6.794	
14,700.0	9,756.5	13,971.6	9,273.5	92.8	91.4	0.00	4,948.1	-44.7	483.0	410.3	6.643	
14,800.0	9,755.7	14,071.6	9,273.9	94.6	93.2	0.00	5,048.1	-45.2	481.8	407.7	6.497	
14,900.0	9,754.9	14,171.5	9,274.3	96.4	95.0	0.00	5,148.1	-45.7	480.7	405.1	6.357	
15,000.0	9,754.2	14,271.5	9,274.6	98.2	96.7	0.00	5,248.1	-46.2	479.5	402.5	6.222	
15,100.0	9,753.4	14,371.5	9,275.0	100.0	98.5	0.00	5,348.1	-46.7	478.4	399.9	6.092	
15,200.0	9,752.6	14,471.5	9,275.4	101.8	100.3	0.00	5,448.1	-47.2	477.3	397.3	5.967	
15,300.0	9,751.9	14,571.5	9,275.7	103.5	102.1	0.00	5,548.1	-47.7	476.1	394.7	5.846	
15,400.0	9,751.1	14,671.5	9,276.1	105.3	103.9	0.00	5,648.1	-48.2	475.0	392.1	5.730	
15,500.0	9,750.3	14,771.5	9,276.5	107.1	105.7	0.00	5,748.1	-48.7	473.8	389.5	5.617	
15,600.0	9,749.6	14,871.5	9,276.9	108.9	107.5	0.00	5,848.1	-49.2	472.7	386.9	5.508	
15,700.0	9,748.8	14,971.5	9,277.2	110.7	109.3	0.00	5,948.1	-49.7	471.6	384.3	5.403	
15,800.0	9,748.0	15,071.5	9,277.6	112.5	111.0	0.00	6,048.1	-50.2	470.4	381.7	5.301	
15,900.0	9,747.3	15,171.5	9,278.0	114.3	112.8	0.00	6,148.0	-50.7	469.3	379.1	5.203	
16,000.0	9,746.5	15,271.5	9,278.4	116.1	114.6	0.00	6,248.0	-51.2	468.1	376.5	5.108	
16,100.0	9,745.7	15,371.5	9,278.7	117.9	116.4	0.00	6,348.0	-51.7	467.0	373.9	5.015	
16,200.0	9,745.0	15,471.5	9,279.1	119.7	118.2	0.00	6,448.0	-52.2	465.8	371.3	4.926	
16,300.0	9,744.2	15,571.5	9,279.5	121.5	120.0	0.00	6,548.0	-52.7	464.7	368.7	4.839	
16,400.0	9,743.4	15,671.4	9,279.9	123.2	121.8	0.00	6,648.0	-53.2	463.6	366.1	4.755	
16,500.0	9,742.7	15,771.4	9,280.2	125.0	123.6	0.00	6,748.0	-53.7	462.4	363.5	4.673	
16,600.0	9,741.9	15,871.4	9,280.6	126.8	125.4	0.00	6,848.0	-54.2	461.3	360.9	4.594	
16,700.0	9,741.1	15,971.4	9,281.0	128.6	127.2	0.00	6,948.0	-54.7	460.1	358.3	4.517	
16,800.0	9,740.4	16,071.4	9,281.4	130.4	129.0	0.00	7,048.0	-55.2	459.0	355.7	4.442	
16,900.0	9,739.6	16,171.4	9,281.7	132.2	130.8	0.00	7,148.0	-55.7	457.9	353.1	4.369	
17,000.0	9,738.8	16,271.4	9,282.1	134.0	132.6	0.00	7,247.9	-56.2	456.7	350.5	4.298	
17,100.0	9,738.1	16,371.4	9,282.5	135.8	134.4	0.00	7,347.9	-56.7	455.6	347.9	4.229	
17,200.0	9,737.3	16,471.4	9,282.9	137.6	136.2	0.00	7,447.9	-57.2	454.4	345.3	4.162	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #105H - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
17,238.2	9,737.0	16,508.2	9,283.0	138.3	136.9	0.00	7,484.7	-57.4	454.0	344.3	4.138	

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #106H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	1.0	0.0	0.0	0.0	62.94	30.6	59.9	67.3			
100.0	100.0	101.0	100.0	0.1	0.1	62.94	30.6	59.9	67.3	67.1	415.638	
200.0	200.0	201.0	200.0	0.3	0.3	62.94	30.6	59.9	67.3	66.7	110.022	
300.0	300.0	301.0	300.0	0.5	0.5	62.94	30.6	59.9	67.3	66.2	63.402	
400.0	400.0	401.0	400.0	0.8	0.8	62.94	30.6	59.9	67.3	65.8	44.533	
500.0	500.0	501.0	500.0	1.0	1.0	62.94	30.6	59.9	67.3	65.3	34.319	
600.0	600.0	601.0	600.0	1.2	1.2	62.94	30.6	59.9	67.3	64.9	27.916	
700.0	700.0	701.0	700.0	1.4	1.4	62.94	30.6	59.9	67.3	64.4	23.527	
800.0	800.0	801.0	800.0	1.7	1.7	62.94	30.6	59.9	67.3	64.0	20.330	
900.0	900.0	901.0	900.0	1.9	1.9	62.94	30.6	59.9	67.3	63.5	17.898	
1,000.0	1,000.0	1,001.0	1,000.0	2.1	2.1	62.94	30.6	59.9	67.3	63.1	15.986	
1,100.0	1,100.0	1,101.0	1,100.0	2.3	2.3	62.94	30.6	59.9	67.3	62.6	14.443	
1,200.0	1,200.0	1,201.0	1,200.0	2.6	2.6	62.94	30.6	59.9	67.3	62.2	13.172	
1,300.0	1,300.0	1,301.0	1,300.0	2.8	2.8	62.94	30.6	59.9	67.3	61.7	12.106	
1,400.0	1,400.0	1,401.0	1,400.0	3.0	3.0	62.94	30.6	59.9	67.3	61.3	11.200	
1,500.0	1,500.0	1,501.0	1,500.0	3.2	3.2	62.94	30.6	59.9	67.3	60.8	10.420	
1,600.0	1,600.0	1,601.0	1,600.0	3.5	3.5	62.94	30.6	59.9	67.3	60.4	9.742	
1,700.0	1,700.0	1,701.0	1,700.0	3.7	3.7	62.94	30.6	59.9	67.3	59.9	9.146	
1,800.0	1,800.0	1,801.0	1,800.0	3.9	3.9	62.94	30.6	59.9	67.3	59.5	8.619	
1,900.0	1,900.0	1,901.0	1,900.0	4.1	4.1	62.94	30.6	59.9	67.3	59.0	8.150	
2,000.0	2,000.0	2,001.0	2,000.0	4.4	4.4	62.94	30.6	59.9	67.3	58.6	7.729	
2,100.0	2,100.0	2,101.0	2,100.0	4.6	4.6	62.94	30.6	59.9	67.3	58.1	7.349	
2,200.0	2,200.0	2,201.0	2,200.0	4.8	4.8	62.94	30.6	59.9	67.3	57.7	7.005	
2,300.0	2,300.0	2,301.0	2,300.0	5.0	5.0	62.94	30.6	59.9	67.3	57.2	6.692	
2,400.0	2,400.0	2,401.0	2,400.0	5.2	5.3	62.94	30.6	59.9	67.3	56.8	6.405	
2,500.0	2,500.0	2,501.0	2,500.0	5.5	5.5	62.94	30.6	59.9	67.3	56.3	6.142	
2,600.0	2,600.0	2,601.0	2,600.0	5.7	5.7	62.94	30.6	59.9	67.3	55.9	5.900	
2,700.0	2,700.0	2,701.0	2,700.0	5.9	5.9	62.94	30.6	59.9	67.3	55.4	5.676	
2,800.0	2,800.0	2,801.0	2,800.0	6.1	6.2	62.94	30.6	59.9	67.3	55.0	5.469	
2,900.0	2,900.0	2,901.0	2,900.0	6.4	6.4	62.94	30.6	59.9	67.3	54.5	5.276	
3,000.0	3,000.0	3,001.0	3,000.0	6.6	6.6	62.94	30.6	59.9	67.3	54.1	5.096	
3,100.0	3,100.0	3,101.0	3,100.0	6.8	6.8	62.94	30.6	59.9	67.3	53.6	4.929	
3,200.0	3,200.0	3,201.0	3,200.0	7.0	7.0	62.94	30.6	59.9	67.3	53.2	4.771	
3,300.0	3,300.0	3,301.0	3,300.0	7.3	7.3	62.94	30.6	59.9	67.3	52.7	4.624	
3,400.0	3,400.0	3,401.0	3,400.0	7.5	7.5	62.94	30.6	59.9	67.3	52.3	4.485	
3,500.0	3,500.0	3,501.0	3,500.0	7.7	7.7	62.94	30.6	59.9	67.3	51.8	4.355	
3,600.0	3,600.0	3,601.0	3,600.0	7.9	7.9	62.94	30.6	59.9	67.3	51.4	4.232	
3,700.0	3,700.0	3,701.0	3,700.0	8.2	8.2	62.94	30.6	59.9	67.3	50.9	4.115	
3,800.0	3,800.0	3,801.0	3,800.0	8.4	8.4	62.94	30.6	59.9	67.3	50.5	4.005	
3,900.0	3,900.0	3,901.0	3,900.0	8.6	8.6	62.94	30.6	59.9	67.3	50.0	3.901	
4,000.0	4,000.0	4,001.0	4,000.0	8.8	8.8	62.94	30.6	59.9	67.3	49.6	3.802	
4,100.0	4,100.0	4,101.0	4,100.0	9.1	9.1	62.94	30.6	59.9	67.3	49.1	3.707	
4,200.0	4,200.0	4,201.0	4,200.0	9.3	9.3	62.94	30.6	59.9	67.3	48.7	3.618	
4,300.0	4,300.0	4,301.0	4,300.0	9.5	9.5	62.94	30.6	59.9	67.3	48.2	3.532	
4,400.0	4,400.0	4,401.0	4,400.0	9.7	9.7	62.94	30.6	59.9	67.3	47.8	3.451	
4,500.0	4,500.0	4,501.0	4,500.0	10.0	10.0	62.94	30.6	59.9	67.3	47.3	3.373	
4,600.0	4,600.0	4,601.0	4,600.0	10.2	10.2	62.94	30.6	59.9	67.3	46.9	3.299	
4,700.0	4,700.0	4,701.0	4,700.0	10.4	10.4	62.94	30.6	59.9	67.3	46.4	3.228	
4,800.0	4,800.0	4,801.0	4,800.0	10.6	10.6	62.94	30.6	59.9	67.3	46.0	3.159	
4,900.0	4,900.0	4,901.0	4,900.0	10.9	10.9	62.94	30.6	59.9	67.3	45.5	3.094	
5,000.0	5,000.0	5,001.0	5,000.0	11.1	11.1	62.94	30.6	59.9	67.3	45.1	3.031	
5,100.0	5,100.0	5,101.0	5,100.0	11.3	11.3	62.94	30.6	59.9	67.3	44.6	2.971	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #106H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,200.0	5,200.0	5,201.0	5,200.0	11.5	11.5	62.94	30.6	59.9	67.3	44.2	2.913	
5,300.0	5,300.0	5,301.0	5,300.0	11.8	11.8	62.94	30.6	59.9	67.3	43.7	2.858	
5,303.3	5,303.3	5,304.3	5,303.3	11.8	11.8	62.94	30.6	59.9	67.3	43.7	2.856	CC, ES
5,400.0	5,400.0	5,400.0	5,399.0	12.0	12.0	63.34	30.4	60.5	67.7	43.8	2.826	SF
5,500.0	5,500.0	5,498.2	5,497.1	12.2	12.2	65.50	29.2	64.2	70.6	46.2	2.897	
5,600.0	5,600.0	5,596.0	5,594.6	12.4	12.4	69.11	27.1	71.0	76.1	51.4	3.079	
5,700.0	5,700.0	5,693.2	5,691.3	12.7	12.5	73.51	23.9	80.9	84.8	59.7	3.380	
5,800.0	5,800.0	5,789.6	5,786.8	12.9	12.7	78.06	19.8	93.8	96.7	71.4	3.810	
5,900.0	5,900.0	5,885.0	5,880.7	13.1	13.0	82.30	14.8	109.5	112.2	86.5	4.372	
6,000.0	6,000.0	5,979.2	5,972.9	13.3	13.2	86.01	8.9	128.0	131.1	105.2	5.063	
6,100.0	6,100.0	6,073.7	6,064.7	13.6	13.4	89.16	2.2	149.2	153.4	127.2	5.857	
6,200.0	6,200.0	6,170.7	6,158.9	13.8	13.7	91.65	-4.9	171.6	176.5	150.0	6.642	
6,300.0	6,300.0	6,267.8	6,253.0	14.0	13.9	93.56	-12.1	194.0	199.9	173.0	7.410	
6,400.0	6,400.0	6,364.8	6,347.1	14.2	14.2	95.06	-19.2	216.3	223.5	196.1	8.160	
6,500.0	6,500.0	6,461.8	6,441.3	14.5	14.5	96.28	-26.3	238.7	247.2	219.4	8.891	
6,600.0	6,600.0	6,558.9	6,535.4	14.7	14.8	97.29	-33.4	261.1	271.0	242.8	9.602	
6,700.0	6,700.0	6,655.9	6,629.6	14.9	15.1	98.14	-40.5	283.4	294.9	266.2	10.293	
6,800.0	6,800.0	6,752.9	6,723.7	15.1	15.4	-87.79	-47.6	305.8	318.7	289.7	10.969	
6,900.0	6,899.9	6,850.1	6,818.0	15.3	15.7	-87.28	-54.8	328.2	342.5	313.1	11.638	
7,000.0	6,999.7	6,947.2	6,912.2	15.5	16.1	-87.43	-61.9	350.6	366.2	336.4	12.282	
7,100.0	7,099.4	7,044.3	7,006.4	15.6	16.4	-88.05	-69.0	373.0	389.8	359.6	12.906	
7,200.0	7,199.1	7,141.3	7,100.6	15.8	16.8	-88.59	-76.1	395.4	413.5	382.9	13.514	
7,300.0	7,298.8	7,238.4	7,194.8	16.0	17.1	-89.08	-83.3	417.8	437.2	406.2	14.104	
7,400.0	7,398.4	7,335.5	7,289.0	16.1	17.5	-89.52	-90.4	440.1	461.0	429.5	14.678	
7,500.0	7,498.1	7,432.6	7,383.2	16.3	17.9	-89.91	-97.5	462.5	484.7	452.9	15.236	
7,600.0	7,597.8	7,529.7	7,477.4	16.5	18.2	-90.26	-104.6	484.9	508.5	476.3	15.778	
7,700.0	7,697.5	7,626.8	7,571.6	16.7	18.6	-90.59	-111.7	507.3	532.3	499.6	16.305	
7,800.0	7,797.2	7,723.8	7,665.8	16.9	19.0	-90.89	-118.9	529.7	556.1	523.0	16.816	
7,900.0	7,896.9	7,820.9	7,760.0	17.1	19.4	-91.16	-126.0	552.1	579.9	546.4	17.313	
8,000.0	7,996.6	7,934.5	7,870.4	17.3	19.8	-91.48	-134.0	577.2	602.9	568.8	17.666	
8,100.0	8,096.3	8,058.4	7,992.0	17.4	20.2	-91.90	-141.2	600.0	622.0	587.2	17.865	
8,200.0	8,195.9	8,184.0	8,116.2	17.6	20.5	-92.41	-147.0	618.1	637.0	601.6	17.967	
8,300.0	8,295.6	8,310.9	8,242.3	17.8	20.9	-93.02	-151.1	631.0	647.8	611.8	17.979	
8,400.0	8,395.3	8,438.6	8,369.8	18.0	21.1	-93.73	-153.5	638.6	654.3	617.8	17.908	
8,500.0	8,495.0	8,563.9	8,495.0	18.2	21.4	-94.54	-154.2	640.8	656.7	619.7	17.759	
8,600.0	8,594.7	8,663.5	8,594.7	18.4	21.6	-95.22	-154.2	640.8	657.4	620.0	17.575	
8,700.0	8,694.4	8,763.2	8,694.4	18.6	21.7	-95.91	-154.2	640.8	658.1	620.3	17.394	
8,800.0	8,794.1	8,863.0	8,794.2	18.8	21.9	-96.59	-154.2	640.8	659.0	620.7	17.218	
8,900.0	8,893.9	8,960.9	8,891.2	19.1	22.1	-98.13	-142.4	640.8	659.8	621.1	17.038	
9,000.0	8,993.9	9,050.0	8,975.7	19.3	22.2	-100.75	-114.7	640.6	661.6	622.5	16.902	
9,100.0	9,093.9	9,125.0	9,041.9	19.5	22.2	83.02	-79.6	640.5	666.6	627.1	16.898	
9,200.0	9,193.9	9,190.8	9,094.8	19.7	22.3	79.70	-40.5	640.3	677.5	637.9	17.119	
9,300.0	9,293.9	9,242.9	9,132.6	19.9	22.3	76.72	-4.6	640.1	696.3	656.9	17.687	
9,400.0	9,393.5	9,288.4	9,162.2	20.1	22.3	71.88	29.8	639.9	722.2	683.5	18.626	
9,500.0	9,489.7	9,334.3	9,188.6	20.3	22.3	66.41	67.4	639.7	750.2	712.3	19.802	
9,600.0	9,578.2	9,380.8	9,211.6	20.4	22.3	61.59	107.8	639.5	777.4	740.6	21.095	
9,700.0	9,655.2	9,425.0	9,229.7	20.6	22.4	57.70	148.1	639.3	801.8	766.0	22.388	
9,800.0	9,717.3	9,475.0	9,245.6	20.7	22.4	54.63	195.5	639.1	821.8	786.8	23.440	
9,900.0	9,761.8	9,525.0	9,256.4	21.0	22.5	52.57	244.2	638.9	836.2	801.6	24.124	
10,000.0	9,786.7	9,575.0	9,262.1	21.4	22.6	51.48	293.9	638.6	844.3	809.6	24.304	
10,100.0	9,791.8	9,633.2	9,263.1	21.9	22.8	51.31	352.0	638.3	845.6	810.3	23.899	
10,200.0	9,791.0	9,733.2	9,263.5	22.5	23.3	51.37	452.0	637.8	844.9	808.4	23.145	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #106H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
10,300.0	9,790.2	9,833.2	9,263.9	23.2	23.9	51.43	552.0	637.3	844.2	806.3	22.314	
10,400.0	9,789.5	9,933.1	9,264.3	24.1	24.7	51.50	652.0	636.8	843.4	804.1	21.437	
10,500.0	9,788.7	10,033.1	9,264.8	25.1	25.6	51.56	752.0	636.3	842.7	801.7	20.541	
10,600.0	9,787.9	10,133.1	9,265.2	26.1	26.6	51.62	852.0	635.8	841.9	799.1	19.648	
10,700.0	9,787.2	10,233.1	9,265.6	27.3	27.7	51.69	952.0	635.3	841.2	796.4	18.772	
10,800.0	9,786.4	10,333.1	9,266.0	28.5	28.8	51.75	1,052.0	634.8	840.5	793.6	17.926	
10,900.0	9,785.6	10,433.1	9,266.4	29.7	30.0	51.81	1,152.0	634.3	839.7	790.7	17.116	
11,000.0	9,784.8	10,533.1	9,266.9	31.1	31.3	51.88	1,252.0	633.8	839.0	787.7	16.346	
11,100.0	9,784.1	10,633.1	9,267.3	32.4	32.6	51.94	1,352.0	633.3	838.3	784.6	15.618	
11,200.0	9,783.3	10,733.1	9,267.7	33.8	34.0	52.00	1,451.9	632.8	837.5	781.5	14.933	
11,300.0	9,782.5	10,833.1	9,268.1	35.3	35.4	52.07	1,551.9	632.3	836.8	778.3	14.290	
11,400.0	9,781.8	10,933.1	9,268.5	36.8	36.9	52.13	1,651.9	631.8	836.1	775.0	13.686	
11,500.0	9,781.0	11,033.1	9,269.0	38.3	38.4	52.20	1,751.9	631.3	835.4	771.7	13.120	
11,600.0	9,780.2	11,133.1	9,269.4	39.8	39.9	52.26	1,851.9	630.8	834.6	768.3	12.590	
11,700.0	9,779.5	11,233.1	9,269.8	41.4	41.4	52.33	1,951.9	630.3	833.9	765.0	12.094	
11,800.0	9,778.7	11,333.0	9,270.2	43.0	43.0	52.39	2,051.9	629.8	833.2	761.5	11.629	
11,900.0	9,777.9	11,433.0	9,270.6	44.6	44.6	52.45	2,151.9	629.3	832.5	758.1	11.193	
12,000.0	9,777.2	11,533.0	9,271.1	46.2	46.2	52.52	2,251.9	628.8	831.7	754.6	10.783	
12,100.0	9,776.4	11,633.0	9,271.5	47.9	47.8	52.58	2,351.9	628.3	831.0	751.1	10.398	
12,200.0	9,775.6	11,733.0	9,271.9	49.5	49.4	52.65	2,451.9	627.8	830.3	747.6	10.037	
12,300.0	9,774.9	11,833.0	9,272.3	51.2	51.1	52.71	2,551.8	627.3	829.6	744.0	9.696	
12,400.0	9,774.1	11,933.0	9,272.7	52.8	52.7	52.78	2,651.8	626.8	828.9	740.5	9.376	
12,500.0	9,773.3	12,033.0	9,273.1	54.5	54.4	52.84	2,751.8	626.3	828.1	736.9	9.073	
12,600.0	9,772.6	12,133.0	9,273.6	56.2	56.1	52.91	2,851.8	625.8	827.4	733.3	8.787	
12,700.0	9,771.8	12,233.0	9,274.0	57.9	57.7	52.98	2,951.8	625.3	826.7	729.6	8.517	
12,800.0	9,771.0	12,333.0	9,274.4	59.6	59.4	53.04	3,051.8	624.8	826.0	726.0	8.261	
12,900.0	9,770.3	12,433.0	9,274.8	61.3	61.1	53.11	3,151.8	624.3	825.3	722.4	8.019	
13,000.0	9,769.5	12,533.0	9,275.2	63.0	62.8	53.17	3,251.8	623.8	824.6	718.7	7.789	
13,100.0	9,768.7	12,633.0	9,275.7	64.8	64.6	53.24	3,351.8	623.3	823.9	715.0	7.570	
13,200.0	9,768.0	12,733.0	9,276.1	66.5	66.3	53.31	3,451.8	622.8	823.2	711.4	7.363	
13,300.0	9,767.2	12,832.9	9,276.5	68.2	68.0	53.37	3,551.8	622.3	822.4	707.7	7.165	
13,400.0	9,766.4	12,932.9	9,276.9	70.0	69.7	53.44	3,651.7	621.8	821.7	704.0	6.977	
13,500.0	9,765.7	13,032.9	9,277.3	71.7	71.5	53.50	3,751.7	621.3	821.0	700.2	6.797	
13,600.0	9,764.9	13,132.9	9,277.8	73.4	73.2	53.57	3,851.7	620.8	820.3	696.5	6.626	
13,700.0	9,764.1	13,232.9	9,278.2	75.2	74.9	53.64	3,951.7	620.3	819.6	692.8	6.462	
13,800.0	9,763.4	13,332.9	9,278.6	76.9	76.7	53.70	4,051.7	619.8	818.9	689.1	6.306	
13,900.0	9,762.6	13,432.9	9,279.0	78.7	78.4	53.77	4,151.7	619.3	818.2	685.3	6.156	
14,000.0	9,761.8	13,532.9	9,279.4	80.5	80.2	53.84	4,251.7	618.8	817.5	681.6	6.013	
14,100.0	9,761.1	13,632.9	9,279.9	82.2	81.9	53.91	4,351.7	618.3	816.8	677.8	5.875	
14,200.0	9,760.3	13,732.9	9,280.3	84.0	83.7	53.97	4,451.7	617.8	816.1	674.0	5.744	
14,300.0	9,759.5	13,832.9	9,280.7	85.8	85.5	54.04	4,551.7	617.3	815.4	670.3	5.617	
14,400.0	9,758.8	13,932.9	9,281.1	87.5	87.2	54.11	4,651.7	616.8	814.7	666.5	5.495	
14,500.0	9,758.0	14,032.9	9,281.5	89.3	89.0	54.18	4,751.6	616.3	814.0	662.7	5.379	
14,600.0	9,757.2	14,132.9	9,281.9	91.1	90.8	54.24	4,851.6	615.8	813.3	658.9	5.266	
14,700.0	9,756.5	14,232.8	9,282.4	92.8	92.5	54.31	4,951.6	615.3	812.6	655.1	5.158	
14,800.0	9,755.7	14,332.8	9,282.8	94.6	94.3	54.38	5,051.6	614.8	812.0	651.3	5.054	
14,900.0	9,754.9	14,432.8	9,283.2	96.4	96.1	54.45	5,151.6	614.3	811.3	647.5	4.953	
15,000.0	9,754.2	14,532.8	9,283.6	98.2	97.8	54.52	5,251.6	613.8	810.6	643.7	4.856	
15,100.0	9,753.4	14,632.8	9,284.0	100.0	99.6	54.58	5,351.6	613.3	809.9	639.8	4.763	
15,200.0	9,752.6	14,732.8	9,284.5	101.8	101.4	54.65	5,451.6	612.8	809.2	636.0	4.673	
15,300.0	9,751.9	14,832.8	9,284.9	103.5	103.2	54.72	5,551.6	612.3	808.5	632.2	4.585	
15,400.0	9,751.1	14,932.8	9,285.3	105.3	105.0	54.79	5,651.6	611.8	807.8	628.4	4.501	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #106H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
15,500.0	9,750.3	15,032.8	9,285.7	107.1	106.8	54.86	5,751.6	611.3	807.2	624.5	4.419	
15,600.0	9,749.6	15,132.8	9,286.1	108.9	108.5	54.93	5,851.5	610.8	806.5	620.7	4.340	
15,700.0	9,748.8	15,232.8	9,286.6	110.7	110.3	55.00	5,951.5	610.3	805.8	616.8	4.264	
15,800.0	9,748.0	15,332.8	9,287.0	112.5	112.1	55.07	6,051.5	609.8	805.1	613.0	4.190	
15,900.0	9,747.3	15,432.8	9,287.4	114.3	113.9	55.13	6,151.5	609.3	804.4	609.1	4.118	
16,000.0	9,746.5	15,532.8	9,287.8	116.1	115.7	55.20	6,251.5	608.8	803.8	605.2	4.049	
16,100.0	9,745.7	15,632.7	9,288.2	117.9	117.5	55.27	6,351.5	608.3	803.1	601.4	3.981	
16,200.0	9,745.0	15,732.7	9,288.7	119.7	119.3	55.34	6,451.5	607.8	802.4	597.5	3.916	
16,300.0	9,744.2	15,832.7	9,289.1	121.5	121.1	55.41	6,551.5	607.3	801.7	593.6	3.853	
16,400.0	9,743.4	15,932.7	9,289.5	123.2	122.9	55.48	6,651.5	606.8	801.1	589.7	3.791	
16,500.0	9,742.7	16,032.7	9,289.9	125.0	124.7	55.55	6,751.5	606.3	800.4	585.9	3.731	
16,600.0	9,741.9	16,132.7	9,290.3	126.8	126.4	55.62	6,851.4	605.8	799.7	582.0	3.673	
16,700.0	9,741.1	16,232.7	9,290.7	128.6	128.2	55.69	6,951.4	605.3	799.0	578.1	3.616	
16,800.0	9,740.4	16,332.7	9,291.2	130.4	130.0	55.76	7,051.4	604.8	798.4	574.2	3.561	
16,900.0	9,739.6	16,432.7	9,291.6	132.2	131.8	55.83	7,151.4	604.3	797.7	570.3	3.508	
17,000.0	9,738.8	16,532.7	9,292.0	134.0	133.6	55.90	7,251.4	603.8	797.0	566.4	3.455	
17,100.0	9,738.1	16,632.7	9,292.4	135.8	135.4	55.98	7,351.4	603.3	796.4	562.5	3.405	
17,200.0	9,737.3	16,732.7	9,292.8	137.6	137.2	56.05	7,451.4	602.8	795.7	558.6	3.355	
17,238.2	9,737.0	16,770.8	9,293.0	138.3	137.9	56.07	7,489.6	602.6	795.5	557.1	3.337	

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #205H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	1.0	0.0	0.0	0.0	44.71	30.2	29.9	42.5			
100.0	100.0	101.0	100.0	0.1	0.1	44.71	30.2	29.9	42.5	42.3	262.604	
200.0	200.0	201.0	200.0	0.3	0.3	44.71	30.2	29.9	42.5	41.9	69.513	
300.0	300.0	301.0	300.0	0.5	0.5	44.71	30.2	29.9	42.5	41.4	40.058	
400.0	400.0	401.0	400.0	0.8	0.8	44.71	30.2	29.9	42.5	41.0	28.136	
500.0	500.0	501.0	500.0	1.0	1.0	44.71	30.2	29.9	42.5	40.5	21.683	
600.0	600.0	601.0	600.0	1.2	1.2	44.71	30.2	29.9	42.5	40.1	17.638	
700.0	700.0	701.0	700.0	1.4	1.4	44.71	30.2	29.9	42.5	39.6	14.864	
800.0	800.0	801.0	800.0	1.7	1.7	44.71	30.2	29.9	42.5	39.2	12.845	
900.0	900.0	901.0	900.0	1.9	1.9	44.71	30.2	29.9	42.5	38.7	11.308	
1,000.0	1,000.0	1,001.0	1,000.0	2.1	2.1	44.71	30.2	29.9	42.5	38.3	10.100	
1,100.0	1,100.0	1,101.0	1,100.0	2.3	2.3	44.71	30.2	29.9	42.5	37.8	9.125	
1,200.0	1,200.0	1,201.0	1,200.0	2.6	2.6	44.71	30.2	29.9	42.5	37.4	8.322	
1,300.0	1,300.0	1,301.0	1,300.0	2.8	2.8	44.71	30.2	29.9	42.5	36.9	7.649	
1,400.0	1,400.0	1,401.0	1,400.0	3.0	3.0	44.71	30.2	29.9	42.5	36.5	7.076	
1,500.0	1,500.0	1,501.0	1,500.0	3.2	3.2	44.71	30.2	29.9	42.5	36.0	6.583	
1,600.0	1,600.0	1,601.0	1,600.0	3.5	3.5	44.71	30.2	29.9	42.5	35.6	6.155	
1,700.0	1,700.0	1,701.0	1,700.0	3.7	3.7	44.71	30.2	29.9	42.5	35.1	5.779	
1,800.0	1,800.0	1,801.0	1,800.0	3.9	3.9	44.71	30.2	29.9	42.5	34.7	5.446	
1,900.0	1,900.0	1,901.0	1,900.0	4.1	4.1	44.71	30.2	29.9	42.5	34.2	5.149	
2,000.0	2,000.0	2,001.0	2,000.0	4.4	4.4	44.71	30.2	29.9	42.5	33.8	4.883	
2,100.0	2,100.0	2,101.0	2,100.0	4.6	4.6	44.71	30.2	29.9	42.5	33.3	4.643	
2,200.0	2,200.0	2,201.0	2,200.0	4.8	4.8	44.71	30.2	29.9	42.5	32.9	4.426	
2,300.0	2,300.0	2,301.0	2,300.0	5.0	5.0	44.71	30.2	29.9	42.5	32.4	4.228	
2,400.0	2,400.0	2,401.0	2,400.0	5.2	5.3	44.71	30.2	29.9	42.5	32.0	4.047	
2,500.0	2,500.0	2,501.0	2,500.0	5.5	5.5	44.71	30.2	29.9	42.5	31.5	3.881	
2,600.0	2,600.0	2,601.0	2,600.0	5.7	5.7	44.71	30.2	29.9	42.5	31.1	3.728	
2,700.0	2,700.0	2,701.0	2,700.0	5.9	5.9	44.71	30.2	29.9	42.5	30.6	3.586	
2,800.0	2,800.0	2,801.0	2,800.0	6.1	6.2	44.71	30.2	29.9	42.5	30.2	3.455	
2,900.0	2,900.0	2,901.0	2,900.0	6.4	6.4	44.71	30.2	29.9	42.5	29.7	3.333	
3,000.0	3,000.0	3,001.0	3,000.0	6.6	6.6	44.71	30.2	29.9	42.5	29.3	3.220	
3,100.0	3,100.0	3,101.0	3,100.0	6.8	6.8	44.71	30.2	29.9	42.5	28.8	3.114	
3,200.0	3,200.0	3,201.0	3,200.0	7.0	7.0	44.71	30.2	29.9	42.5	28.4	3.015	
3,300.0	3,300.0	3,301.0	3,300.0	7.3	7.3	44.71	30.2	29.9	42.5	28.0	2.921	
3,400.0	3,400.0	3,401.0	3,400.0	7.5	7.5	44.71	30.2	29.9	42.5	27.5	2.834	
3,500.0	3,500.0	3,501.0	3,500.0	7.7	7.7	44.71	30.2	29.9	42.5	27.1	2.751	
3,600.0	3,600.0	3,601.0	3,600.0	7.9	7.9	44.71	30.2	29.9	42.5	26.6	2.674	
3,700.0	3,700.0	3,701.0	3,700.0	8.2	8.2	44.71	30.2	29.9	42.5	26.2	2.600	
3,800.0	3,800.0	3,801.0	3,800.0	8.4	8.4	44.71	30.2	29.9	42.5	25.7	2.530	
3,900.0	3,900.0	3,901.0	3,900.0	8.6	8.6	44.71	30.2	29.9	42.5	25.3	2.464	
4,000.0	4,000.0	4,001.0	4,000.0	8.8	8.8	44.71	30.2	29.9	42.5	24.8	2.402	
4,100.0	4,100.0	4,101.0	4,100.0	9.1	9.1	44.71	30.2	29.9	42.5	24.4	2.342	
4,200.0	4,200.0	4,201.0	4,200.0	9.3	9.3	44.71	30.2	29.9	42.5	23.9	2.286	
4,300.0	4,300.0	4,301.0	4,300.0	9.5	9.5	44.71	30.2	29.9	42.5	23.5	2.232	
4,400.0	4,400.0	4,401.0	4,400.0	9.7	9.7	44.71	30.2	29.9	42.5	23.0	2.180	
4,500.0	4,500.0	4,501.0	4,500.0	10.0	10.0	44.71	30.2	29.9	42.5	22.6	2.131	
4,600.0	4,600.0	4,601.0	4,600.0	10.2	10.2	44.71	30.2	29.9	42.5	22.1	2.084	
4,700.0	4,700.0	4,701.0	4,700.0	10.4	10.4	44.71	30.2	29.9	42.5	21.7	2.039	
4,800.0	4,800.0	4,801.0	4,800.0	10.6	10.6	44.71	30.2	29.9	42.5	21.2	1.996	
4,900.0	4,900.0	4,901.0	4,900.0	10.9	10.9	44.71	30.2	29.9	42.5	20.8	1.955	
5,000.0	5,000.0	5,001.0	5,000.0	11.1	11.1	44.71	30.2	29.9	42.5	20.3	1.915	
5,100.0	5,100.0	5,101.0	5,100.0	11.3	11.3	44.71	30.2	29.9	42.5	19.9	1.877	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #205H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,200.0	5,200.0	5,201.0	5,200.0	11.5	11.5	44.71	30.2	29.9	42.5	19.4	1.841	
5,300.0	5,300.0	5,301.0	5,300.0	11.8	11.8	44.71	30.2	29.9	42.5	19.0	1.806	
5,400.0	5,400.0	5,401.0	5,400.0	12.0	12.0	44.71	30.2	29.9	42.5	18.5	1.772	
5,500.0	5,500.0	5,501.0	5,500.0	12.2	12.2	44.71	30.2	29.9	42.5	18.1	1.739	
5,600.0	5,600.0	5,601.0	5,600.0	12.4	12.4	44.71	30.2	29.9	42.5	17.6	1.708	
5,700.0	5,700.0	5,701.0	5,700.0	12.7	12.7	44.71	30.2	29.9	42.5	17.2	1.677	
5,800.0	5,800.0	5,801.0	5,800.0	12.9	12.9	44.71	30.2	29.9	42.5	16.7	1.648	
5,900.0	5,900.0	5,901.0	5,900.0	13.1	13.1	44.71	30.2	29.9	42.5	16.3	1.620	
6,000.0	6,000.0	6,001.0	6,000.0	13.3	13.3	44.71	30.2	29.9	42.5	15.8	1.593	
6,005.3	6,005.3	6,006.3	6,005.3	13.4	13.4	44.71	30.2	29.9	42.5	15.8	1.591	CC, ES
6,100.0	6,100.0	6,100.0	6,099.0	13.6	13.6	45.23	30.2	30.5	43.0	15.8	1.584	SF
6,200.0	6,200.0	6,199.1	6,198.0	13.8	13.8	48.25	30.5	34.2	45.9	18.4	1.667	
6,300.0	6,300.0	6,297.6	6,296.3	14.0	14.0	53.02	31.1	41.2	51.8	23.9	1.855	
6,400.0	6,400.0	6,397.2	6,395.5	14.2	14.2	57.51	31.7	49.8	59.2	30.9	2.090	
6,500.0	6,500.0	6,496.9	6,494.8	14.5	14.4	60.98	32.3	58.3	66.9	38.1	2.327	
6,600.0	6,600.0	6,596.5	6,594.1	14.7	14.6	63.72	33.0	66.8	74.7	45.6	2.563	
6,700.0	6,700.0	6,696.1	6,693.3	14.9	14.8	65.94	33.6	75.3	82.8	53.2	2.797	
6,800.0	6,800.0	6,795.7	6,792.6	15.1	15.0	-119.21	34.3	83.8	91.1	61.1	3.037	
6,900.0	6,899.9	6,895.3	6,891.7	15.3	15.2	-119.25	34.9	92.3	100.9	70.6	3.324	
7,000.0	6,999.7	6,994.5	6,990.6	15.5	15.4	-120.80	35.5	100.8	112.5	81.7	3.659	
7,100.0	7,099.4	7,093.7	7,089.5	15.6	15.7	-122.57	36.2	109.3	124.6	93.5	4.006	
7,200.0	7,199.1	7,192.9	7,188.3	15.8	15.9	-124.03	36.8	117.8	136.9	105.4	4.347	
7,300.0	7,298.8	7,292.1	7,287.1	16.0	16.1	-125.25	37.5	126.3	149.2	117.4	4.681	
7,400.0	7,398.4	7,391.3	7,385.9	16.1	16.3	-126.29	38.1	134.8	161.6	129.4	5.009	
7,500.0	7,498.1	7,490.5	7,484.8	16.3	16.5	-127.17	38.7	143.2	174.1	141.4	5.330	
7,600.0	7,597.8	7,589.7	7,583.6	16.5	16.8	-127.94	39.4	151.7	186.5	153.5	5.644	
7,700.0	7,697.5	7,688.9	7,682.4	16.7	17.0	-128.61	40.0	160.2	199.0	165.6	5.951	
7,800.0	7,797.2	7,788.1	7,781.2	16.9	17.2	-129.20	40.7	168.7	211.6	177.7	6.251	
7,900.0	7,896.9	7,887.2	7,880.1	17.1	17.4	-129.73	41.3	177.2	224.1	189.9	6.545	
8,000.0	7,996.6	7,986.4	7,978.9	17.3	17.7	-130.20	41.9	185.6	236.7	202.0	6.831	
8,100.0	8,096.3	8,085.6	8,077.7	17.4	17.9	-130.62	42.6	194.1	249.3	214.2	7.111	
8,200.0	8,195.9	8,184.8	8,176.5	17.6	18.1	-131.00	43.2	202.6	261.8	226.4	7.384	
8,300.0	8,295.6	8,284.0	8,275.4	17.8	18.4	-131.35	43.8	211.1	274.4	238.6	7.651	
8,400.0	8,395.3	8,383.2	8,374.2	18.0	18.6	-131.66	44.5	219.6	287.1	250.8	7.911	
8,500.0	8,495.0	8,482.4	8,473.0	18.2	18.8	-131.95	45.1	228.0	299.7	263.0	8.166	
8,600.0	8,594.7	8,581.6	8,571.8	18.4	19.1	-132.22	45.8	236.5	312.3	275.2	8.415	
8,700.0	8,694.4	8,680.8	8,670.7	18.6	19.3	-132.47	46.4	245.0	324.9	287.4	8.657	
8,800.0	8,794.1	8,780.0	8,769.5	18.8	19.6	-132.70	47.0	253.5	337.6	299.6	8.894	
8,900.0	8,893.9	8,879.3	8,868.5	19.1	19.8	-132.85	47.7	262.0	348.9	310.5	9.085	
9,000.0	8,993.9	8,975.0	8,963.8	19.3	20.0	-132.59	48.4	270.2	358.0	319.1	9.224	
9,100.0	9,093.9	9,042.8	9,031.0	19.5	20.2	53.84	55.3	275.9	370.8	332.0	9.563	
9,200.0	9,193.9	9,108.2	9,094.2	19.7	20.3	52.41	71.0	281.2	392.0	353.5	10.192	
9,300.0	9,293.9	9,168.4	9,150.0	19.9	20.5	50.31	92.9	285.9	421.7	383.9	11.160	
9,400.0	9,393.5	9,225.0	9,199.6	20.1	20.6	45.97	119.8	290.1	456.1	419.3	12.396	
9,500.0	9,489.7	9,275.0	9,240.5	20.3	20.7	42.23	148.3	293.4	485.4	450.1	13.753	
9,600.0	9,578.2	9,334.1	9,284.8	20.4	20.9	39.60	187.3	297.0	508.2	474.2	14.952	
9,700.0	9,655.2	9,388.8	9,321.1	20.6	21.0	38.12	228.0	300.0	523.5	491.0	16.110	
9,800.0	9,717.3	9,443.4	9,352.5	20.7	21.2	37.59	272.5	302.4	531.0	499.9	17.032	
9,900.0	9,761.8	9,500.0	9,379.5	21.0	21.4	37.98	322.2	304.5	530.5	500.2	17.500	
10,000.0	9,786.7	9,550.0	9,398.4	21.4	21.7	39.20	368.4	305.9	522.1	492.2	17.478	
10,100.0	9,791.8	9,607.9	9,414.1	21.9	22.0	41.11	424.1	307.0	506.6	476.2	16.631	
10,200.0	9,791.0	9,665.0	9,422.8	22.5	22.3	41.88	480.5	307.5	495.3	463.9	15.786	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #205H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
10,300.0	9,790.2	9,732.1	9,425.0	23.2	22.8	42.10	547.5	307.3	492.3	459.8	15.185	
10,400.0	9,789.5	9,832.1	9,424.8	24.1	23.6	42.14	647.5	306.8	491.8	458.1	14.582	
10,500.0	9,788.7	9,932.1	9,424.6	25.1	24.5	42.19	747.5	306.3	491.4	456.2	13.962	
10,600.0	9,787.9	10,032.1	9,424.4	26.1	25.5	42.24	847.5	305.8	490.9	454.1	13.341	
10,700.0	9,787.2	10,132.1	9,424.3	27.3	26.5	42.28	947.5	305.3	490.5	452.0	12.730	
10,800.0	9,786.4	10,232.1	9,424.1	28.5	27.7	42.33	1,047.5	304.8	490.1	449.7	12.139	
10,900.0	9,785.6	10,332.1	9,423.9	29.7	28.9	42.38	1,147.5	304.3	489.6	447.3	11.574	
11,000.0	9,784.8	10,432.1	9,423.8	31.1	30.2	42.43	1,247.5	303.8	489.2	444.9	11.037	
11,100.0	9,784.1	10,532.1	9,423.6	32.4	31.5	42.47	1,347.5	303.3	488.7	442.3	10.530	
11,200.0	9,783.3	10,632.1	9,423.4	33.8	32.9	42.52	1,447.5	302.8	488.3	439.7	10.054	
11,300.0	9,782.5	10,732.1	9,423.2	35.3	34.3	42.57	1,547.5	302.3	487.9	437.1	9.608	
11,400.0	9,781.8	10,832.1	9,423.1	36.8	35.8	42.61	1,647.5	301.8	487.4	434.4	9.190	
11,500.0	9,781.0	10,932.1	9,422.9	38.3	37.3	42.66	1,747.5	301.3	487.0	431.6	8.799	
11,600.0	9,780.2	11,032.1	9,422.7	39.8	38.8	42.71	1,847.5	300.8	486.5	428.9	8.434	
11,700.0	9,779.5	11,132.1	9,422.6	41.4	40.3	42.76	1,947.5	300.3	486.1	426.0	8.092	
11,800.0	9,778.7	11,232.1	9,422.4	43.0	41.9	42.80	2,047.5	299.8	485.7	423.2	7.773	
11,900.0	9,777.9	11,332.1	9,422.2	44.6	43.5	42.85	2,147.5	299.3	485.2	420.3	7.474	
12,000.0	9,777.2	11,432.1	9,422.0	46.2	45.1	42.90	2,247.5	298.8	484.8	417.4	7.194	
12,100.0	9,776.4	11,532.1	9,421.9	47.9	46.7	42.95	2,347.5	298.3	484.4	414.5	6.931	
12,200.0	9,775.6	11,632.1	9,421.7	49.5	48.3	43.00	2,447.5	297.8	483.9	411.5	6.685	
12,300.0	9,774.9	11,732.1	9,421.5	51.2	50.0	43.04	2,547.5	297.3	483.5	408.6	6.453	
12,400.0	9,774.1	11,832.1	9,421.3	52.8	51.6	43.09	2,647.5	296.8	483.1	405.6	6.235	
12,500.0	9,773.3	11,932.1	9,421.2	54.5	53.3	43.14	2,747.5	296.3	482.6	402.6	6.029	
12,600.0	9,772.6	12,032.1	9,421.0	56.2	55.0	43.19	2,847.5	295.8	482.2	399.6	5.836	
12,700.0	9,771.8	12,132.1	9,420.8	57.9	56.7	43.24	2,947.5	295.3	481.8	396.5	5.653	
12,800.0	9,771.0	12,232.1	9,420.7	59.6	58.4	43.29	3,047.5	294.8	481.3	393.5	5.480	
12,900.0	9,770.3	12,332.1	9,420.5	61.3	60.1	43.33	3,147.5	294.3	480.9	390.4	5.316	
13,000.0	9,769.5	12,432.1	9,420.3	63.0	61.8	43.38	3,247.5	293.8	480.5	387.4	5.161	
13,100.0	9,768.7	12,532.1	9,420.1	64.8	63.5	43.43	3,347.5	293.3	480.0	384.3	5.014	
13,200.0	9,768.0	12,632.0	9,420.0	66.5	65.2	43.48	3,447.4	292.8	479.6	381.2	4.874	
13,300.0	9,767.2	12,732.0	9,419.8	68.2	67.0	43.53	3,547.4	292.3	479.2	378.1	4.741	
13,400.0	9,766.4	12,832.0	9,419.6	70.0	68.7	43.58	3,647.4	291.8	478.7	375.0	4.614	
13,500.0	9,765.7	12,932.0	9,419.4	71.7	70.4	43.63	3,747.4	291.3	478.3	371.9	4.494	
13,600.0	9,764.9	13,032.0	9,419.3	73.4	72.2	43.68	3,847.4	290.8	477.9	368.7	4.379	
13,700.0	9,764.1	13,132.0	9,419.1	75.2	73.9	43.73	3,947.4	290.3	477.4	365.6	4.269	
13,800.0	9,763.4	13,232.0	9,418.9	76.9	75.7	43.77	4,047.4	289.8	477.0	362.5	4.164	
13,900.0	9,762.6	13,332.0	9,418.8	78.7	77.4	43.82	4,147.4	289.3	476.6	359.3	4.064	
14,000.0	9,761.8	13,432.0	9,418.6	80.5	79.2	43.87	4,247.4	288.8	476.2	356.2	3.968	
14,100.0	9,761.1	13,532.0	9,418.4	82.2	80.9	43.92	4,347.4	288.3	475.7	353.0	3.876	
14,200.0	9,760.3	13,632.0	9,418.2	84.0	82.7	43.97	4,447.4	287.8	475.3	349.8	3.788	
14,300.0	9,759.5	13,732.0	9,418.1	85.8	84.5	44.02	4,547.4	287.3	474.9	346.6	3.703	
14,400.0	9,758.8	13,832.0	9,417.9	87.5	86.2	44.07	4,647.4	286.8	474.4	343.5	3.622	
14,500.0	9,758.0	13,932.0	9,417.7	89.3	88.0	44.12	4,747.4	286.3	474.0	340.3	3.544	
14,600.0	9,757.2	14,032.0	9,417.6	91.1	89.8	44.17	4,847.4	285.8	473.6	337.1	3.469	
14,700.0	9,756.5	14,132.0	9,417.4	92.8	91.5	44.22	4,947.4	285.3	473.2	333.9	3.397	
14,800.0	9,755.7	14,232.0	9,417.2	94.6	93.3	44.27	5,047.4	284.8	472.7	330.7	3.327	
14,900.0	9,754.9	14,332.0	9,417.0	96.4	95.1	44.32	5,147.4	284.3	472.3	327.5	3.260	
15,000.0	9,754.2	14,432.0	9,416.9	98.2	96.9	44.37	5,247.4	283.8	471.9	324.2	3.196	
15,100.0	9,753.4	14,532.0	9,416.7	100.0	98.7	44.42	5,347.4	283.3	471.5	321.0	3.134	
15,200.0	9,752.6	14,632.0	9,416.5	101.8	100.4	44.48	5,447.4	282.8	471.0	317.8	3.073	
15,300.0	9,751.9	14,732.0	9,416.3	103.5	102.2	44.53	5,547.4	282.3	470.6	314.5	3.015	
15,400.0	9,751.1	14,832.0	9,416.2	105.3	104.0	44.58	5,647.4	281.8	470.2	311.3	2.959	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #205H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
15,500.0	9,750.3	14,932.0	9,416.0	107.1	105.8	44.63	5,747.4	281.3	469.8	308.1	2.905	
15,600.0	9,749.6	15,032.0	9,415.8	108.9	107.6	44.68	5,847.4	280.8	469.3	304.8	2.853	
15,700.0	9,748.8	15,132.0	9,415.7	110.7	109.4	44.73	5,947.4	280.3	468.9	301.6	2.802	
15,800.0	9,748.0	15,232.0	9,415.5	112.5	111.2	44.78	6,047.4	279.8	468.5	298.3	2.753	
15,900.0	9,747.3	15,332.0	9,415.3	114.3	112.9	44.83	6,147.4	279.3	468.1	295.0	2.705	
16,000.0	9,746.5	15,432.0	9,415.1	116.1	114.7	44.88	6,247.4	278.8	467.7	291.8	2.659	
16,100.0	9,745.7	15,532.0	9,415.0	117.9	116.5	44.94	6,347.4	278.3	467.2	288.5	2.614	
16,200.0	9,745.0	15,632.0	9,414.8	119.7	118.3	44.99	6,447.4	277.8	466.8	285.2	2.571	
16,300.0	9,744.2	15,732.0	9,414.6	121.5	120.1	45.04	6,547.4	277.3	466.4	281.9	2.528	
16,400.0	9,743.4	15,832.0	9,414.4	123.2	121.9	45.09	6,647.3	276.8	466.0	278.7	2.488	
16,500.0	9,742.7	15,932.0	9,414.3	125.0	123.7	45.14	6,747.3	276.3	465.6	275.4	2.448	
16,600.0	9,741.9	16,032.0	9,414.1	126.8	125.5	45.19	6,847.3	275.8	465.1	272.1	2.409	
16,700.0	9,741.1	16,132.0	9,413.9	128.6	127.3	45.25	6,947.3	275.3	464.7	268.8	2.372	
16,800.0	9,740.4	16,232.0	9,413.8	130.4	129.1	45.30	7,047.3	274.8	464.3	265.5	2.335	
16,900.0	9,739.6	16,332.0	9,413.6	132.2	130.9	45.35	7,147.3	274.3	463.9	262.2	2.300	
17,000.0	9,738.8	16,432.0	9,413.4	134.0	132.7	45.40	7,247.3	273.8	463.5	258.8	2.265	
17,100.0	9,738.1	16,532.0	9,413.2	135.8	134.5	45.45	7,347.3	273.3	463.0	255.5	2.231	
17,200.0	9,737.3	16,632.0	9,413.1	137.6	136.3	45.51	7,447.3	272.8	462.6	252.2	2.199	
17,238.2	9,737.0	16,670.2	9,413.0	138.3	137.0	45.53	7,485.5	272.6	462.5	250.9	2.186	

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #206H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	1.0	0.0	0.0	0.0	89.52	0.5	60.0	60.0			
100.0	100.0	101.0	100.0	0.1	0.1	89.52	0.5	60.0	60.0	59.8	370.768	
200.0	200.0	201.0	200.0	0.3	0.3	89.52	0.5	60.0	60.0	59.4	98.145	
300.0	300.0	301.0	300.0	0.5	0.5	89.52	0.5	60.0	60.0	58.9	56.558	
400.0	400.0	401.0	400.0	0.8	0.8	89.52	0.5	60.0	60.0	58.5	39.725	
500.0	500.0	501.0	500.0	1.0	1.0	89.52	0.5	60.0	60.0	58.0	30.614	
600.0	600.0	601.0	600.0	1.2	1.2	89.52	0.5	60.0	60.0	57.6	24.902	
700.0	700.0	701.0	700.0	1.4	1.4	89.52	0.5	60.0	60.0	57.1	20.987	
800.0	800.0	801.0	800.0	1.7	1.7	89.52	0.5	60.0	60.0	56.7	18.135	
900.0	900.0	901.0	900.0	1.9	1.9	89.52	0.5	60.0	60.0	56.2	15.966	
1,000.0	1,000.0	1,001.0	1,000.0	2.1	2.1	89.52	0.5	60.0	60.0	55.8	14.260	
1,100.0	1,100.0	1,101.0	1,100.0	2.3	2.3	89.52	0.5	60.0	60.0	55.3	12.884	
1,200.0	1,200.0	1,201.0	1,200.0	2.6	2.6	89.52	0.5	60.0	60.0	54.9	11.750	
1,300.0	1,300.0	1,301.0	1,300.0	2.8	2.8	89.52	0.5	60.0	60.0	54.4	10.799	
1,400.0	1,400.0	1,401.0	1,400.0	3.0	3.0	89.52	0.5	60.0	60.0	54.0	9.991	
1,500.0	1,500.0	1,501.0	1,500.0	3.2	3.2	89.52	0.5	60.0	60.0	53.5	9.295	
1,600.0	1,600.0	1,601.0	1,600.0	3.5	3.5	89.52	0.5	60.0	60.0	53.1	8.690	
1,700.0	1,700.0	1,701.0	1,700.0	3.7	3.7	89.52	0.5	60.0	60.0	52.6	8.159	
1,800.0	1,800.0	1,801.0	1,800.0	3.9	3.9	89.52	0.5	60.0	60.0	52.2	7.689	
1,900.0	1,900.0	1,901.0	1,900.0	4.1	4.1	89.52	0.5	60.0	60.0	51.7	7.270	
2,000.0	2,000.0	2,001.0	2,000.0	4.4	4.4	89.52	0.5	60.0	60.0	51.3	6.894	
2,100.0	2,100.0	2,101.0	2,100.0	4.6	4.6	89.52	0.5	60.0	60.0	50.8	6.556	
2,200.0	2,200.0	2,201.0	2,200.0	4.8	4.8	89.52	0.5	60.0	60.0	50.4	6.249	
2,300.0	2,300.0	2,301.0	2,300.0	5.0	5.0	89.52	0.5	60.0	60.0	50.0	5.969	
2,400.0	2,400.0	2,401.0	2,400.0	5.2	5.3	89.52	0.5	60.0	60.0	49.5	5.714	
2,500.0	2,500.0	2,501.0	2,500.0	5.5	5.5	89.52	0.5	60.0	60.0	49.1	5.479	
2,600.0	2,600.0	2,601.0	2,600.0	5.7	5.7	89.52	0.5	60.0	60.0	48.6	5.263	
2,700.0	2,700.0	2,701.0	2,700.0	5.9	5.9	89.52	0.5	60.0	60.0	48.2	5.064	
2,800.0	2,800.0	2,801.0	2,800.0	6.1	6.2	89.52	0.5	60.0	60.0	47.7	4.879	
2,900.0	2,900.0	2,901.0	2,900.0	6.4	6.4	89.52	0.5	60.0	60.0	47.3	4.707	
3,000.0	3,000.0	3,001.0	3,000.0	6.6	6.6	89.52	0.5	60.0	60.0	46.8	4.546	
3,100.0	3,100.0	3,101.0	3,100.0	6.8	6.8	89.52	0.5	60.0	60.0	46.4	4.396	
3,200.0	3,200.0	3,201.0	3,200.0	7.0	7.0	89.52	0.5	60.0	60.0	45.9	4.256	
3,300.0	3,300.0	3,301.0	3,300.0	7.3	7.3	89.52	0.5	60.0	60.0	45.5	4.125	
3,400.0	3,400.0	3,401.0	3,400.0	7.5	7.5	89.52	0.5	60.0	60.0	45.0	4.001	
3,500.0	3,500.0	3,501.0	3,500.0	7.7	7.7	89.52	0.5	60.0	60.0	44.6	3.885	
3,600.0	3,600.0	3,601.0	3,600.0	7.9	7.9	89.52	0.5	60.0	60.0	44.1	3.775	
3,700.0	3,700.0	3,701.0	3,700.0	8.2	8.2	89.52	0.5	60.0	60.0	43.7	3.671	
3,800.0	3,800.0	3,801.0	3,800.0	8.4	8.4	89.52	0.5	60.0	60.0	43.2	3.573	
3,900.0	3,900.0	3,901.0	3,900.0	8.6	8.6	89.52	0.5	60.0	60.0	42.8	3.480	
4,000.0	4,000.0	4,001.0	4,000.0	8.8	8.8	89.52	0.5	60.0	60.0	42.3	3.391	
4,100.0	4,100.0	4,101.0	4,100.0	9.1	9.1	89.52	0.5	60.0	60.0	41.9	3.307	
4,200.0	4,200.0	4,201.0	4,200.0	9.3	9.3	89.52	0.5	60.0	60.0	41.4	3.227	
4,300.0	4,300.0	4,301.0	4,300.0	9.5	9.5	89.52	0.5	60.0	60.0	41.0	3.151	
4,400.0	4,400.0	4,401.0	4,400.0	9.7	9.7	89.52	0.5	60.0	60.0	40.5	3.078	
4,416.3	4,416.3	4,417.3	4,416.3	9.8	9.8	89.52	0.5	60.0	60.0	40.4	3.067	CC
4,500.0	4,500.0	4,500.0	4,499.0	10.0	10.0	89.52	0.5	60.0	60.0	40.1	3.010	ES, SF
4,600.0	4,600.0	4,598.9	4,597.9	10.2	10.2	89.79	0.2	61.7	61.7	41.4	3.032	
4,700.0	4,700.0	4,696.6	4,695.5	10.4	10.4	90.52	-0.6	66.7	66.8	46.1	3.222	
4,800.0	4,800.0	4,793.9	4,792.4	10.6	10.6	91.50	-2.0	74.9	75.3	54.2	3.569	
4,900.0	4,900.0	4,890.5	4,888.2	10.9	10.8	92.55	-3.8	86.2	87.1	65.7	4.066	
5,000.0	5,000.0	4,986.2	4,982.8	11.1	11.0	93.54	-6.2	100.6	102.2	80.5	4.706	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #206H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,100.0	5,100.0	5,080.8	5,075.8	11.3	11.2	94.41	-9.1	117.9	120.7	98.7	5.483	
5,200.0	5,200.0	5,174.1	5,166.9	11.5	11.4	95.14	-12.4	137.9	142.3	120.1	6.392	
5,300.0	5,300.0	5,267.6	5,257.5	11.8	11.7	95.75	-16.2	160.9	167.2	144.6	7.410	
5,400.0	5,400.0	5,362.4	5,348.8	12.0	11.9	96.24	-20.3	185.6	193.6	170.7	8.448	
5,500.0	5,500.0	5,458.8	5,441.8	12.2	12.2	96.62	-24.5	210.8	220.0	196.7	9.430	
5,600.0	5,600.0	5,555.2	5,534.8	12.4	12.5	96.92	-28.6	236.0	246.5	222.7	10.375	
5,700.0	5,700.0	5,651.6	5,627.8	12.7	12.9	97.16	-32.8	261.2	272.9	248.8	11.287	
5,800.0	5,800.0	5,748.1	5,720.8	12.9	13.2	97.36	-37.0	286.3	299.4	274.8	12.165	
5,900.0	5,900.0	5,844.5	5,813.8	13.1	13.5	97.52	-41.2	311.5	325.9	300.8	13.012	
6,000.0	6,000.0	5,940.9	5,906.8	13.3	13.9	97.67	-45.3	336.7	352.3	326.8	13.829	
6,100.0	6,100.0	6,037.4	5,999.8	13.6	14.3	97.79	-49.5	361.9	378.8	352.9	14.617	
6,200.0	6,200.0	6,133.8	6,092.7	13.8	14.6	97.89	-53.7	387.1	405.2	378.9	15.377	
6,300.0	6,300.0	6,230.2	6,185.7	14.0	15.0	97.99	-57.8	412.3	431.7	404.9	16.111	
6,400.0	6,400.0	6,326.7	6,278.7	14.2	15.4	98.07	-62.0	437.5	458.2	430.9	16.820	
6,500.0	6,500.0	6,423.1	6,371.7	14.5	15.8	98.14	-66.2	462.7	484.7	457.0	17.505	
6,600.0	6,600.0	6,519.5	6,464.7	14.7	16.2	98.21	-70.3	487.8	511.1	483.0	18.167	
6,700.0	6,700.0	6,616.0	6,557.7	14.9	16.7	98.26	-74.5	513.0	537.6	509.0	18.807	
6,800.0	6,800.0	6,712.4	6,650.7	15.1	17.1	-88.27	-78.7	538.2	564.1	535.0	19.436	
6,900.0	6,899.9	6,808.8	6,743.7	15.3	17.5	-88.02	-82.9	563.4	590.4	561.0	20.070	
7,000.0	6,999.7	6,905.1	6,836.5	15.5	17.9	-88.20	-87.0	588.6	616.7	586.9	20.682	
7,100.0	7,099.4	7,001.3	6,929.3	15.6	18.4	-88.85	-91.2	613.7	643.1	612.8	21.275	
7,200.0	7,199.1	7,097.5	7,022.1	15.8	18.8	-89.44	-95.3	638.8	669.5	638.8	21.851	
7,300.0	7,298.8	7,193.8	7,114.9	16.0	19.3	-89.99	-99.5	664.0	696.0	664.9	22.410	
7,400.0	7,398.4	7,290.0	7,207.7	16.1	19.7	-90.50	-103.7	689.1	722.5	691.0	22.953	
7,500.0	7,498.1	7,386.2	7,300.5	16.3	20.2	-90.97	-107.8	714.2	749.1	717.2	23.479	
7,600.0	7,597.8	7,482.4	7,393.3	16.5	20.6	-91.41	-112.0	739.4	775.7	743.3	23.990	
7,700.0	7,697.5	7,578.7	7,486.0	16.7	21.1	-91.82	-116.2	764.5	802.3	769.6	24.485	
7,800.0	7,797.2	7,674.9	7,578.8	16.9	21.5	-92.21	-120.3	789.6	829.0	795.8	24.966	
7,900.0	7,896.9	7,771.1	7,671.6	17.1	22.0	-92.57	-124.5	814.8	855.8	822.1	25.432	
8,000.0	7,996.6	7,867.3	7,764.4	17.3	22.5	-92.91	-128.6	839.9	882.5	848.4	25.883	
8,100.0	8,096.3	7,963.6	7,857.2	17.4	22.9	-93.23	-132.8	865.0	909.3	874.8	26.322	
8,200.0	8,195.9	8,087.6	7,977.2	17.6	23.5	-93.62	-138.0	896.2	935.3	900.0	26.532	
8,300.0	8,295.6	8,232.6	8,118.9	17.8	24.0	-94.10	-143.0	926.4	956.8	920.8	26.544	
8,400.0	8,395.3	8,380.5	8,264.8	18.0	24.5	-94.62	-146.9	949.8	973.4	936.6	26.485	
8,500.0	8,495.0	8,530.3	8,413.7	18.2	24.8	-95.19	-149.5	966.0	984.9	947.6	26.362	
8,600.0	8,594.7	8,681.5	8,564.6	18.4	25.1	-95.80	-150.9	974.5	991.4	953.5	26.182	
8,700.0	8,694.4	8,811.2	8,694.4	18.6	25.3	-96.38	-151.2	975.8	993.1	954.8	25.944	
8,800.0	8,794.1	8,910.9	8,794.1	18.8	25.5	-96.83	-151.2	975.8	994.0	955.3	25.682	
8,900.0	8,893.9	9,010.8	8,893.9	19.1	25.7	-97.19	-151.2	975.8	994.7	955.6	25.406	
9,000.0	8,993.9	9,110.3	8,993.4	19.3	25.8	-97.43	-149.4	975.8	995.0	955.4	25.135	
9,100.0	9,093.9	9,205.7	9,087.0	19.5	25.9	88.36	-131.8	975.7	995.3	955.3	24.887	
9,200.0	9,193.9	9,291.2	9,166.4	19.7	26.0	86.56	-100.6	975.6	996.9	956.5	24.670	
9,300.0	9,293.9	9,363.8	9,228.6	19.9	26.1	84.43	-63.2	975.4	1,001.4	960.6	24.554	
9,400.0	9,393.5	9,425.0	9,276.1	20.1	26.1	81.89	-24.7	975.2	1,009.6	968.5	24.606	
9,500.0	9,489.7	9,487.3	9,319.1	20.3	26.1	78.91	20.4	975.0	1,019.5	978.4	24.808	
9,600.0	9,578.2	9,550.0	9,356.0	20.4	26.2	76.16	71.0	974.7	1,030.1	989.0	25.098	
9,700.0	9,655.2	9,604.9	9,382.6	20.6	26.2	73.94	119.0	974.5	1,040.0	999.1	25.419	
9,800.0	9,717.3	9,662.6	9,404.5	20.7	26.3	72.11	172.3	974.2	1,048.5	1,007.6	25.638	
9,900.0	9,761.8	9,725.0	9,420.7	21.0	26.3	70.79	232.5	973.9	1,054.7	1,013.6	25.657	
10,000.0	9,786.7	9,775.0	9,427.9	21.4	26.4	70.14	282.0	973.7	1,058.2	1,016.6	25.459	
10,100.0	9,791.8	9,843.5	9,429.9	21.9	26.6	70.02	350.4	973.3	1,058.8	1,016.4	24.956	
10,200.0	9,791.0	9,943.5	9,429.6	22.5	27.0	70.04	450.4	972.8	1,058.6	1,015.0	24.251	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #206H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
10,300.0	9,790.2	10,043.5	9,429.3	23.2	27.5	70.06	550.4	972.3	1,058.5	1,013.4	23.466	
10,400.0	9,789.5	10,143.5	9,429.0	24.1	28.1	70.09	650.4	971.8	1,058.3	1,011.5	22.627	
10,500.0	9,788.7	10,243.5	9,428.7	25.1	28.8	70.11	750.4	971.3	1,058.2	1,009.5	21.760	
10,600.0	9,787.9	10,343.5	9,428.4	26.1	29.7	70.13	850.4	970.8	1,058.0	1,007.3	20.886	
10,700.0	9,787.2	10,443.5	9,428.1	27.3	30.6	70.16	950.4	970.3	1,057.8	1,005.0	20.022	
10,800.0	9,786.4	10,543.5	9,427.7	28.5	31.7	70.18	1,050.4	969.8	1,057.7	1,002.5	19.180	
10,900.0	9,785.6	10,643.5	9,427.4	29.7	32.8	70.20	1,150.4	969.3	1,057.5	1,000.0	18.368	
11,000.0	9,784.8	10,743.5	9,427.1	31.1	34.0	70.23	1,250.4	968.8	1,057.4	997.3	17.592	
11,100.0	9,784.1	10,843.5	9,426.8	32.4	35.2	70.25	1,350.4	968.3	1,057.2	994.5	16.854	
11,200.0	9,783.3	10,943.5	9,426.5	33.8	36.5	70.27	1,450.4	967.8	1,057.1	991.6	16.156	
11,300.0	9,782.5	11,043.5	9,426.2	35.3	37.8	70.30	1,550.4	967.3	1,056.9	988.7	15.497	
11,400.0	9,781.8	11,143.4	9,425.9	36.8	39.2	70.32	1,650.4	966.8	1,056.8	985.7	14.876	
11,500.0	9,781.0	11,243.4	9,425.6	38.3	40.6	70.34	1,750.4	966.3	1,056.6	982.7	14.292	
11,600.0	9,780.2	11,343.4	9,425.3	39.8	42.1	70.37	1,850.4	965.8	1,056.4	979.6	13.744	
11,700.0	9,779.5	11,443.4	9,425.0	41.4	43.5	70.39	1,950.4	965.3	1,056.3	976.4	13.228	
11,800.0	9,778.7	11,543.4	9,424.7	43.0	45.0	70.41	2,050.3	964.8	1,056.1	973.3	12.744	
11,900.0	9,777.9	11,643.4	9,424.4	44.6	46.6	70.44	2,150.3	964.3	1,056.0	970.0	12.289	
12,000.0	9,777.2	11,743.4	9,424.1	46.2	48.1	70.46	2,250.3	963.8	1,055.8	966.8	11.860	
12,100.0	9,776.4	11,843.4	9,423.8	47.9	49.7	70.49	2,350.3	963.3	1,055.7	963.5	11.457	
12,200.0	9,775.6	11,943.4	9,423.5	49.5	51.3	70.51	2,450.3	962.8	1,055.5	960.2	11.078	
12,300.0	9,774.9	12,043.4	9,423.1	51.2	52.9	70.53	2,550.3	962.3	1,055.4	956.9	10.720	
12,400.0	9,774.1	12,143.4	9,422.8	52.8	54.5	70.56	2,650.3	961.8	1,055.2	953.6	10.382	
12,500.0	9,773.3	12,243.4	9,422.5	54.5	56.1	70.58	2,750.3	961.3	1,055.1	950.2	10.063	
12,600.0	9,772.6	12,343.4	9,422.2	56.2	57.7	70.60	2,850.3	960.8	1,054.9	946.8	9.761	
12,700.0	9,771.8	12,443.4	9,421.9	57.9	59.4	70.63	2,950.3	960.3	1,054.8	943.4	9.475	
12,800.0	9,771.0	12,543.4	9,421.6	59.6	61.0	70.65	3,050.3	959.8	1,054.6	940.0	9.205	
12,900.0	9,770.3	12,643.4	9,421.3	61.3	62.7	70.67	3,150.3	959.3	1,054.4	936.6	8.948	
13,000.0	9,769.5	12,743.4	9,421.0	63.0	64.4	70.70	3,250.3	958.8	1,054.3	933.2	8.704	
13,100.0	9,768.7	12,843.4	9,420.7	64.8	66.1	70.72	3,350.3	958.3	1,054.1	929.7	8.472	
13,200.0	9,768.0	12,943.4	9,420.4	66.5	67.8	70.74	3,450.3	957.8	1,054.0	926.3	8.252	
13,300.0	9,767.2	13,043.4	9,420.1	68.2	69.5	70.77	3,550.3	957.3	1,053.8	922.8	8.041	
13,400.0	9,766.4	13,143.4	9,419.8	70.0	71.2	70.79	3,650.3	956.8	1,053.7	919.3	7.841	
13,500.0	9,765.7	13,243.4	9,419.5	71.7	72.9	70.82	3,750.3	956.3	1,053.5	915.8	7.650	
13,600.0	9,764.9	13,343.4	9,419.2	73.4	74.6	70.84	3,850.3	955.8	1,053.4	912.3	7.468	
13,700.0	9,764.1	13,443.4	9,418.9	75.2	76.3	70.86	3,950.3	955.3	1,053.2	908.8	7.293	
13,800.0	9,763.4	13,543.4	9,418.6	76.9	78.0	70.89	4,050.3	954.8	1,053.1	905.3	7.127	
13,900.0	9,762.6	13,643.4	9,418.2	78.7	79.8	70.91	4,150.3	954.3	1,052.9	901.8	6.967	
14,000.0	9,761.8	13,743.4	9,417.9	80.5	81.5	70.93	4,250.3	953.8	1,052.8	898.3	6.814	
14,100.0	9,761.1	13,843.4	9,417.6	82.2	83.2	70.96	4,350.3	953.3	1,052.6	894.7	6.667	
14,200.0	9,760.3	13,943.4	9,417.3	84.0	85.0	70.98	4,450.3	952.8	1,052.5	891.2	6.526	
14,300.0	9,759.5	14,043.4	9,417.0	85.8	86.7	71.01	4,550.3	952.3	1,052.3	887.7	6.391	
14,400.0	9,758.8	14,143.4	9,416.7	87.5	88.5	71.03	4,650.3	951.8	1,052.2	884.1	6.261	
14,500.0	9,758.0	14,243.4	9,416.4	89.3	90.2	71.05	4,750.3	951.3	1,052.0	880.6	6.136	
14,600.0	9,757.2	14,343.4	9,416.1	91.1	92.0	71.08	4,850.3	950.8	1,051.9	877.0	6.016	
14,700.0	9,756.5	14,443.4	9,415.8	92.8	93.7	71.10	4,950.3	950.3	1,051.7	873.5	5.900	
14,800.0	9,755.7	14,543.4	9,415.5	94.6	95.5	71.12	5,050.3	949.8	1,051.6	869.9	5.788	
14,900.0	9,754.9	14,643.4	9,415.2	96.4	97.2	71.15	5,150.3	949.3	1,051.4	866.3	5.680	
15,000.0	9,754.2	14,743.4	9,414.9	98.2	99.0	71.17	5,250.3	948.8	1,051.3	862.8	5.576	
15,100.0	9,753.4	14,843.4	9,414.6	100.0	100.8	71.20	5,350.3	948.3	1,051.1	859.2	5.476	
15,200.0	9,752.6	14,943.4	9,414.3	101.8	102.5	71.22	5,450.3	947.8	1,051.0	855.6	5.379	
15,300.0	9,751.9	15,043.4	9,414.0	103.5	104.3	71.24	5,550.3	947.3	1,050.8	852.0	5.286	
15,400.0	9,751.1	15,143.4	9,413.6	105.3	106.1	71.27	5,650.2	946.8	1,050.7	848.4	5.195	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #206H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
15,500.0	9,750.3	15,243.4	9,413.3	107.1	107.9	71.29	5,750.2	946.3	1,050.5	844.9	5.108	
15,600.0	9,749.6	15,343.4	9,413.0	108.9	109.6	71.31	5,850.2	945.8	1,050.4	841.3	5.023	
15,700.0	9,748.8	15,443.4	9,412.7	110.7	111.4	71.34	5,950.2	945.3	1,050.2	837.7	4.941	
15,800.0	9,748.0	15,543.4	9,412.4	112.5	113.2	71.36	6,050.2	944.8	1,050.1	834.1	4.861	
15,900.0	9,747.3	15,643.4	9,412.1	114.3	115.0	71.39	6,150.2	944.3	1,050.0	830.5	4.784	
16,000.0	9,746.5	15,743.4	9,411.8	116.1	116.7	71.41	6,250.2	943.8	1,049.8	826.9	4.709	
16,100.0	9,745.7	15,843.4	9,411.5	117.9	118.5	71.43	6,350.2	943.3	1,049.7	823.3	4.637	
16,200.0	9,745.0	15,943.4	9,411.2	119.7	120.3	71.46	6,450.2	942.8	1,049.5	819.7	4.566	
16,300.0	9,744.2	16,043.4	9,410.9	121.5	122.1	71.48	6,550.2	942.3	1,049.4	816.1	4.498	
16,400.0	9,743.4	16,143.4	9,410.6	123.2	123.9	71.50	6,650.2	941.8	1,049.2	812.5	4.432	
16,500.0	9,742.7	16,243.4	9,410.3	125.0	125.7	71.53	6,750.2	941.3	1,049.1	808.8	4.367	
16,600.0	9,741.9	16,343.4	9,410.0	126.8	127.5	71.55	6,850.2	940.8	1,048.9	805.2	4.304	
16,700.0	9,741.1	16,443.4	9,409.7	128.6	129.2	71.58	6,950.2	940.3	1,048.8	801.6	4.243	
16,800.0	9,740.4	16,543.4	9,409.4	130.4	131.0	71.60	7,050.2	939.8	1,048.6	798.0	4.184	
16,900.0	9,739.6	16,643.4	9,409.0	132.2	132.8	71.62	7,150.2	939.3	1,048.5	794.4	4.126	
17,000.0	9,738.8	16,743.4	9,408.7	134.0	134.6	71.65	7,250.2	938.8	1,048.3	790.8	4.070	
17,100.0	9,738.1	16,843.4	9,408.4	135.8	136.4	71.67	7,350.2	938.3	1,048.2	787.1	4.015	
17,200.0	9,737.3	16,943.4	9,408.1	137.6	138.2	71.70	7,450.2	937.8	1,048.1	783.5	3.962	
17,238.2	9,737.0	16,981.6	9,408.0	138.3	138.9	71.70	7,488.4	937.6	1,048.0	782.1	3.942	

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #306H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	1.0	0.0	0.0	0.0	89.62	0.2	30.0	30.0			
100.0	100.0	101.0	100.0	0.1	0.1	89.62	0.2	30.0	30.0	29.8	185.382	
200.0	200.0	201.0	200.0	0.3	0.3	89.62	0.2	30.0	30.0	29.4	49.072	
300.0	300.0	301.0	300.0	0.5	0.5	89.62	0.2	30.0	30.0	28.9	28.279	
400.0	400.0	401.0	400.0	0.8	0.8	89.62	0.2	30.0	30.0	28.5	19.862	
500.0	500.0	501.0	500.0	1.0	1.0	89.62	0.2	30.0	30.0	28.0	15.307	
600.0	600.0	601.0	600.0	1.2	1.2	89.62	0.2	30.0	30.0	27.6	12.451	
700.0	700.0	701.0	700.0	1.4	1.4	89.62	0.2	30.0	30.0	27.1	10.493	
800.0	800.0	801.0	800.0	1.7	1.7	89.62	0.2	30.0	30.0	26.7	9.068	
900.0	900.0	901.0	900.0	1.9	1.9	89.62	0.2	30.0	30.0	26.2	7.983	
1,000.0	1,000.0	1,001.0	1,000.0	2.1	2.1	89.62	0.2	30.0	30.0	25.8	7.130	
1,100.0	1,100.0	1,101.0	1,100.0	2.3	2.3	89.62	0.2	30.0	30.0	25.3	6.442	
1,200.0	1,200.0	1,201.0	1,200.0	2.6	2.6	89.62	0.2	30.0	30.0	24.9	5.875	
1,300.0	1,300.0	1,301.0	1,300.0	2.8	2.8	89.62	0.2	30.0	30.0	24.4	5.399	
1,400.0	1,400.0	1,401.0	1,400.0	3.0	3.0	89.62	0.2	30.0	30.0	24.0	4.995	
1,500.0	1,500.0	1,501.0	1,500.0	3.2	3.2	89.62	0.2	30.0	30.0	23.5	4.647	
1,600.0	1,600.0	1,601.0	1,600.0	3.5	3.5	89.62	0.2	30.0	30.0	23.1	4.345	
1,700.0	1,700.0	1,701.0	1,700.0	3.7	3.7	89.62	0.2	30.0	30.0	22.6	4.079	
1,800.0	1,800.0	1,801.0	1,800.0	3.9	3.9	89.62	0.2	30.0	30.0	22.2	3.844	
1,900.0	1,900.0	1,901.0	1,900.0	4.1	4.1	89.62	0.2	30.0	30.0	21.7	3.635	
2,000.0	2,000.0	2,001.0	2,000.0	4.4	4.4	89.62	0.2	30.0	30.0	21.3	3.447	
2,100.0	2,100.0	2,101.0	2,100.0	4.6	4.6	89.62	0.2	30.0	30.0	20.8	3.278	
2,200.0	2,200.0	2,201.0	2,200.0	4.8	4.8	89.62	0.2	30.0	30.0	20.4	3.124	
2,300.0	2,300.0	2,301.0	2,300.0	5.0	5.0	89.62	0.2	30.0	30.0	19.9	2.985	
2,400.0	2,400.0	2,401.0	2,400.0	5.2	5.3	89.62	0.2	30.0	30.0	19.5	2.857	
2,500.0	2,500.0	2,501.0	2,500.0	5.5	5.5	89.62	0.2	30.0	30.0	19.1	2.740	
2,600.0	2,600.0	2,601.0	2,600.0	5.7	5.7	89.62	0.2	30.0	30.0	18.6	2.632	
2,700.0	2,700.0	2,701.0	2,700.0	5.9	5.9	89.62	0.2	30.0	30.0	18.2	2.532	
2,800.0	2,800.0	2,801.0	2,800.0	6.1	6.2	89.62	0.2	30.0	30.0	17.7	2.439	
2,900.0	2,900.0	2,901.0	2,900.0	6.4	6.4	89.62	0.2	30.0	30.0	17.3	2.353	
3,000.0	3,000.0	3,001.0	3,000.0	6.6	6.6	89.62	0.2	30.0	30.0	16.8	2.273	
3,100.0	3,100.0	3,101.0	3,100.0	6.8	6.8	89.62	0.2	30.0	30.0	16.4	2.198	
3,200.0	3,200.0	3,201.0	3,200.0	7.0	7.0	89.62	0.2	30.0	30.0	15.9	2.128	
3,300.0	3,300.0	3,301.0	3,300.0	7.3	7.3	89.62	0.2	30.0	30.0	15.5	2.062	
3,400.0	3,400.0	3,401.0	3,400.0	7.5	7.5	89.62	0.2	30.0	30.0	15.0	2.001	
3,500.0	3,500.0	3,501.0	3,500.0	7.7	7.7	89.62	0.2	30.0	30.0	14.6	1.942	
3,600.0	3,600.0	3,601.0	3,600.0	7.9	7.9	89.62	0.2	30.0	30.0	14.1	1.887	
3,700.0	3,700.0	3,701.0	3,700.0	8.2	8.2	89.62	0.2	30.0	30.0	13.7	1.835	
3,800.0	3,800.0	3,801.0	3,800.0	8.4	8.4	89.62	0.2	30.0	30.0	13.2	1.786	
3,900.0	3,900.0	3,901.0	3,900.0	8.6	8.6	89.62	0.2	30.0	30.0	12.8	1.740	
4,000.0	4,000.0	4,001.0	4,000.0	8.8	8.8	89.62	0.2	30.0	30.0	12.3	1.696	
4,100.0	4,100.0	4,101.0	4,100.0	9.1	9.1	89.62	0.2	30.0	30.0	11.9	1.654	
4,200.0	4,200.0	4,201.0	4,200.0	9.3	9.3	89.62	0.2	30.0	30.0	11.4	1.614	
4,300.0	4,300.0	4,301.0	4,300.0	9.5	9.5	89.62	0.2	30.0	30.0	11.0	1.575	
4,400.0	4,400.0	4,401.0	4,400.0	9.7	9.7	89.62	0.2	30.0	30.0	10.5	1.539	
4,500.0	4,500.0	4,501.0	4,500.0	10.0	10.0	89.62	0.2	30.0	30.0	10.1	1.504	
4,600.0	4,600.0	4,601.0	4,600.0	10.2	10.2	89.62	0.2	30.0	30.0	9.6	1.471	Level 3
4,700.0	4,700.0	4,701.0	4,700.0	10.4	10.4	89.62	0.2	30.0	30.0	9.2	1.440	Level 3
4,800.0	4,800.0	4,801.0	4,800.0	10.6	10.6	89.62	0.2	30.0	30.0	8.7	1.409	Level 3
4,900.0	4,900.0	4,901.0	4,900.0	10.9	10.9	89.62	0.2	30.0	30.0	8.3	1.380	Level 3
5,000.0	5,000.0	5,001.0	5,000.0	11.1	11.1	89.62	0.2	30.0	30.0	7.8	1.352	Level 3
5,100.0	5,100.0	5,101.0	5,100.0	11.3	11.3	89.62	0.2	30.0	30.0	7.4	1.325	Level 3

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #306H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,200.0	5,200.0	5,201.0	5,200.0	11.5	11.5	89.62	0.2	30.0	30.0	6.9	1.299	Level 3
5,300.0	5,300.0	5,301.0	5,300.0	11.8	11.8	89.62	0.2	30.0	30.0	6.5	1.275	Level 3
5,400.0	5,400.0	5,401.0	5,400.0	12.0	12.0	89.62	0.2	30.0	30.0	6.0	1.251	Level 3
5,500.0	5,500.0	5,501.0	5,500.0	12.2	12.2	89.62	0.2	30.0	30.0	5.6	1.228	Level 2
5,600.0	5,600.0	5,601.0	5,600.0	12.4	12.4	89.62	0.2	30.0	30.0	5.1	1.206	Level 2
5,700.0	5,700.0	5,701.0	5,700.0	12.7	12.7	89.62	0.2	30.0	30.0	4.7	1.184	Level 2
5,800.0	5,800.0	5,801.0	5,800.0	12.9	12.9	89.62	0.2	30.0	30.0	4.2	1.163	Level 2
5,900.0	5,900.0	5,901.0	5,900.0	13.1	13.1	89.62	0.2	30.0	30.0	3.8	1.144	Level 2
6,000.0	6,000.0	6,001.0	6,000.0	13.3	13.3	89.62	0.2	30.0	30.0	3.3	1.124	Level 2
6,100.0	6,100.0	6,101.0	6,100.0	13.6	13.6	89.62	0.2	30.0	30.0	2.9	1.106	Level 2
6,200.0	6,200.0	6,201.0	6,200.0	13.8	13.8	89.62	0.2	30.0	30.0	2.4	1.088	Level 2
6,300.0	6,300.0	6,301.0	6,300.0	14.0	14.0	89.62	0.2	30.0	30.0	2.0	1.070	Level 2
6,400.0	6,400.0	6,401.0	6,400.0	14.2	14.2	89.62	0.2	30.0	30.0	1.5	1.053	Level 2
6,500.0	6,500.0	6,501.0	6,500.0	14.5	14.5	89.62	0.2	30.0	30.0	1.1	1.037	Level 2
6,600.0	6,600.0	6,601.0	6,600.0	14.7	14.7	89.62	0.2	30.0	30.0	0.6	1.021	Level 2
6,700.0	6,700.0	6,701.0	6,700.0	14.9	14.9	89.62	0.2	30.0	30.0	0.2	1.006	Level 2
6,700.0	6,700.0	6,701.0	6,700.0	14.9	14.9	89.62	0.2	30.0	30.0	0.2	1.006	Level 2, CC, ES, SF
6,800.0	6,800.0	6,800.0	6,799.0	15.1	15.1	-97.69	0.1	30.5	30.6	0.3	1.011	Level 2
6,900.0	6,899.9	6,899.3	6,898.2	15.3	15.3	-101.48	-1.0	33.9	34.6	4.0	1.130	Level 2
7,000.0	6,999.7	6,997.7	6,996.4	15.5	15.5	-106.86	-3.0	40.6	42.7	11.8	1.383	Level 3
7,100.0	7,099.4	7,095.5	7,093.7	15.6	15.7	-109.75	-6.0	50.4	54.4	23.2	1.746	
7,200.0	7,199.1	7,192.6	7,189.8	15.8	15.9	-110.13	-9.9	63.2	69.0	37.6	2.199	
7,300.0	7,298.8	7,288.8	7,284.6	16.0	16.1	-109.26	-14.7	79.1	86.6	55.0	2.738	
7,400.0	7,398.4	7,383.9	7,377.6	16.1	16.3	-107.84	-20.4	97.7	107.0	75.2	3.364	
7,500.0	7,498.1	7,478.9	7,470.0	16.3	16.5	-106.25	-26.9	119.0	130.2	98.1	4.063	
7,600.0	7,597.8	7,576.0	7,564.2	16.5	16.8	-104.99	-33.7	141.5	154.1	121.7	4.755	
7,700.0	7,697.5	7,673.0	7,658.3	16.7	17.0	-104.08	-40.6	164.0	178.0	145.2	5.432	
7,800.0	7,797.2	7,770.1	7,752.5	16.9	17.3	-103.38	-47.4	186.4	201.9	168.8	6.093	
7,900.0	7,896.9	7,867.2	7,846.7	17.1	17.6	-102.82	-54.2	208.9	225.9	192.4	6.739	
8,000.0	7,996.6	7,964.2	7,940.9	17.3	17.8	-102.38	-61.1	231.4	249.9	216.0	7.369	
8,100.0	8,096.3	8,061.3	8,035.1	17.4	18.1	-102.01	-67.9	253.8	273.9	239.6	7.984	
8,200.0	8,195.9	8,158.3	8,129.2	17.6	18.4	-101.70	-74.7	276.3	297.9	263.2	8.583	
8,300.0	8,295.6	8,255.4	8,223.4	17.8	18.7	-101.44	-81.6	298.8	322.0	286.8	9.168	
8,400.0	8,395.3	8,352.5	8,317.6	18.0	19.0	-101.21	-88.4	321.2	346.0	310.5	9.738	
8,500.0	8,495.0	8,449.5	8,411.8	18.2	19.4	-101.02	-95.2	343.7	370.0	334.1	10.294	
8,600.0	8,594.7	8,546.6	8,505.9	18.4	19.7	-100.85	-102.1	366.2	394.1	357.7	10.837	
8,700.0	8,694.4	8,643.6	8,600.1	18.6	20.0	-100.69	-108.9	388.6	418.1	381.3	11.365	
8,800.0	8,794.1	8,740.7	8,694.3	18.8	20.4	-100.58	-115.7	411.1	442.1	404.9	11.880	
8,900.0	8,893.9	8,837.8	8,788.5	19.1	20.7	-100.70	-122.6	433.6	465.8	428.2	12.367	
9,000.0	8,993.9	8,934.9	8,882.7	19.3	21.1	-100.43	-129.4	456.0	489.0	450.9	12.832	
9,100.0	9,093.9	9,031.9	8,976.9	19.5	21.4	87.24	-136.2	478.5	511.8	473.3	13.288	
9,200.0	9,193.9	9,129.0	9,071.0	19.7	21.8	88.11	-143.1	501.0	534.7	495.7	13.731	
9,300.0	9,293.9	9,225.9	9,165.1	19.9	22.2	88.90	-149.9	523.4	557.7	518.3	14.167	
9,400.0	9,393.5	9,321.7	9,258.1	20.1	22.5	87.20	-145.6	545.5	580.8	541.0	14.606	
9,500.0	9,489.7	9,418.3	9,349.0	20.3	22.8	84.80	-122.2	567.1	603.1	563.0	15.045	
9,600.0	9,578.2	9,515.9	9,434.5	20.4	23.0	82.71	-79.8	587.3	623.6	583.2	15.445	
9,700.0	9,655.2	9,615.0	9,510.9	20.6	23.2	80.98	-19.6	605.2	641.6	600.9	15.761	
9,800.0	9,717.3	9,715.8	9,574.4	20.7	23.4	79.67	56.9	620.1	656.1	615.0	15.949	
9,900.0	9,761.8	9,818.0	9,621.5	21.0	23.5	78.80	146.8	631.0	666.6	624.8	15.972	
10,000.0	9,786.7	9,921.6	9,649.2	21.4	23.8	78.38	246.2	637.2	672.5	630.0	15.813	
10,100.0	9,791.8	10,025.1	9,655.9	21.9	24.1	78.37	349.3	638.3	673.9	630.3	15.479	
10,200.0	9,791.0	10,125.1	9,655.5	22.5	24.6	78.40	449.3	637.8	673.8	629.0	15.060	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #306H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
10,300.0	9,790.2	10,225.1	9,655.1	23.2	25.2	78.43	549.3	637.3	673.7	627.5	14.586	
10,400.0	9,789.5	10,325.1	9,654.7	24.1	25.9	78.46	649.3	636.8	673.6	625.8	14.075	
10,500.0	9,788.7	10,425.1	9,654.2	25.1	26.8	78.49	749.3	636.3	673.6	623.8	13.543	
10,600.0	9,787.9	10,525.1	9,653.8	26.1	27.8	78.51	849.2	635.8	673.5	621.7	13.004	
10,700.0	9,787.2	10,625.1	9,653.4	27.3	28.8	78.54	949.2	635.3	673.4	619.4	12.469	
10,800.0	9,786.4	10,725.1	9,653.0	28.5	29.9	78.57	1,049.2	634.8	673.4	617.0	11.946	
10,900.0	9,785.6	10,825.1	9,652.6	29.7	31.1	78.60	1,149.2	634.3	673.3	614.4	11.441	
11,000.0	9,784.8	10,925.1	9,652.1	31.1	32.3	78.63	1,249.2	633.8	673.2	611.8	10.957	
11,100.0	9,784.1	11,025.1	9,651.7	32.4	33.6	78.66	1,349.2	633.3	673.2	609.0	10.496	
11,200.0	9,783.3	11,125.1	9,651.3	33.8	35.0	78.69	1,449.2	632.8	673.1	606.2	10.060	
11,300.0	9,782.5	11,225.1	9,650.9	35.3	36.4	78.72	1,549.2	632.3	673.0	603.3	9.648	
11,400.0	9,781.8	11,325.1	9,650.5	36.8	37.8	78.75	1,649.2	631.8	673.0	600.3	9.260	
11,500.0	9,781.0	11,425.1	9,650.0	38.3	39.3	78.78	1,749.2	631.3	672.9	597.2	8.895	
11,600.0	9,780.2	11,525.1	9,649.6	39.8	40.8	78.81	1,849.2	630.8	672.8	594.1	8.551	
11,700.0	9,779.5	11,625.1	9,649.2	41.4	42.3	78.83	1,949.2	630.3	672.8	591.0	8.229	
11,800.0	9,778.7	11,725.1	9,648.8	43.0	43.8	78.86	2,049.2	629.8	672.7	587.8	7.926	
11,900.0	9,777.9	11,825.1	9,648.4	44.6	45.4	78.89	2,149.2	629.3	672.6	584.6	7.642	
12,000.0	9,777.2	11,925.1	9,647.9	46.2	46.9	78.92	2,249.2	628.8	672.6	581.3	7.374	
12,100.0	9,776.4	12,025.1	9,647.5	47.9	48.5	78.95	2,349.2	628.3	672.5	578.1	7.122	
12,200.0	9,775.6	12,125.1	9,647.1	49.5	50.1	78.98	2,449.2	627.8	672.4	574.8	6.885	
12,300.0	9,774.9	12,225.1	9,646.7	51.2	51.8	79.01	2,549.2	627.3	672.4	571.4	6.662	
12,400.0	9,774.1	12,325.1	9,646.3	52.8	53.4	79.04	2,649.2	626.8	672.3	568.1	6.451	
12,500.0	9,773.3	12,425.1	9,645.9	54.5	55.1	79.07	2,749.2	626.3	672.2	564.7	6.252	
12,600.0	9,772.6	12,525.1	9,645.4	56.2	56.7	79.10	2,849.2	625.8	672.2	561.3	6.063	
12,700.0	9,771.8	12,625.1	9,645.0	57.9	58.4	79.13	2,949.2	625.3	672.1	557.9	5.885	
12,800.0	9,771.0	12,725.1	9,644.6	59.6	60.1	79.15	3,049.2	624.8	672.0	554.5	5.716	
12,900.0	9,770.3	12,825.1	9,644.2	61.3	61.8	79.18	3,149.2	624.3	672.0	551.0	5.556	
13,000.0	9,769.5	12,925.1	9,643.8	63.0	63.5	79.21	3,249.2	623.8	671.9	547.6	5.404	
13,100.0	9,768.7	13,025.1	9,643.3	64.8	65.2	79.24	3,349.2	623.3	671.8	544.1	5.260	
13,200.0	9,768.0	13,125.1	9,642.9	66.5	66.9	79.27	3,449.2	622.8	671.8	540.6	5.123	
13,300.0	9,767.2	13,225.0	9,642.5	68.2	68.6	79.30	3,549.2	622.3	671.7	537.1	4.992	
13,400.0	9,766.4	13,325.0	9,642.1	70.0	70.3	79.33	3,649.2	621.8	671.6	533.6	4.867	
13,500.0	9,765.7	13,425.0	9,641.7	71.7	72.0	79.36	3,749.2	621.3	671.6	530.1	4.748	
13,600.0	9,764.9	13,525.0	9,641.2	73.4	73.7	79.39	3,849.2	620.8	671.5	526.6	4.635	
13,700.0	9,764.1	13,625.0	9,640.8	75.2	75.5	79.42	3,949.2	620.3	671.4	523.1	4.526	
13,800.0	9,763.4	13,725.0	9,640.4	76.9	77.2	79.45	4,049.2	619.8	671.4	519.6	4.423	
13,900.0	9,762.6	13,825.0	9,640.0	78.7	79.0	79.48	4,149.2	619.3	671.3	516.0	4.323	
14,000.0	9,761.8	13,925.0	9,639.6	80.5	80.7	79.51	4,249.2	618.8	671.2	512.5	4.228	
14,100.0	9,761.1	14,025.0	9,639.2	82.2	82.5	79.53	4,349.2	618.3	671.2	508.9	4.137	
14,200.0	9,760.3	14,125.0	9,638.7	84.0	84.2	79.56	4,449.1	617.8	671.1	505.4	4.050	
14,300.0	9,759.5	14,225.0	9,638.3	85.8	86.0	79.59	4,549.1	617.3	671.1	501.8	3.966	
14,400.0	9,758.8	14,325.0	9,637.9	87.5	87.7	79.62	4,649.1	616.8	671.0	498.3	3.885	
14,500.0	9,758.0	14,425.0	9,637.5	89.3	89.5	79.65	4,749.1	616.3	670.9	494.7	3.807	
14,600.0	9,757.2	14,525.0	9,637.1	91.1	91.2	79.68	4,849.1	615.8	670.9	491.1	3.733	
14,700.0	9,756.5	14,625.0	9,636.6	92.8	93.0	79.71	4,949.1	615.3	670.8	487.6	3.661	
14,800.0	9,755.7	14,725.0	9,636.2	94.6	94.8	79.74	5,049.1	614.8	670.7	484.0	3.591	
14,900.0	9,754.9	14,825.0	9,635.8	96.4	96.5	79.77	5,149.1	614.3	670.7	480.4	3.524	
15,000.0	9,754.2	14,925.0	9,635.4	98.2	98.3	79.80	5,249.1	613.8	670.6	476.8	3.460	
15,100.0	9,753.4	15,025.0	9,635.0	100.0	100.1	79.83	5,349.1	613.3	670.6	473.2	3.398	
15,200.0	9,752.6	15,125.0	9,634.5	101.8	101.9	79.86	5,449.1	612.8	670.5	469.6	3.338	
15,300.0	9,751.9	15,225.0	9,634.1	103.5	103.6	79.89	5,549.1	612.3	670.4	466.0	3.280	
15,400.0	9,751.1	15,325.0	9,633.7	105.3	105.4	79.91	5,649.1	611.8	670.4	462.4	3.224	

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

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Sec 35, T24S, R32E - Eider Federal #306H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

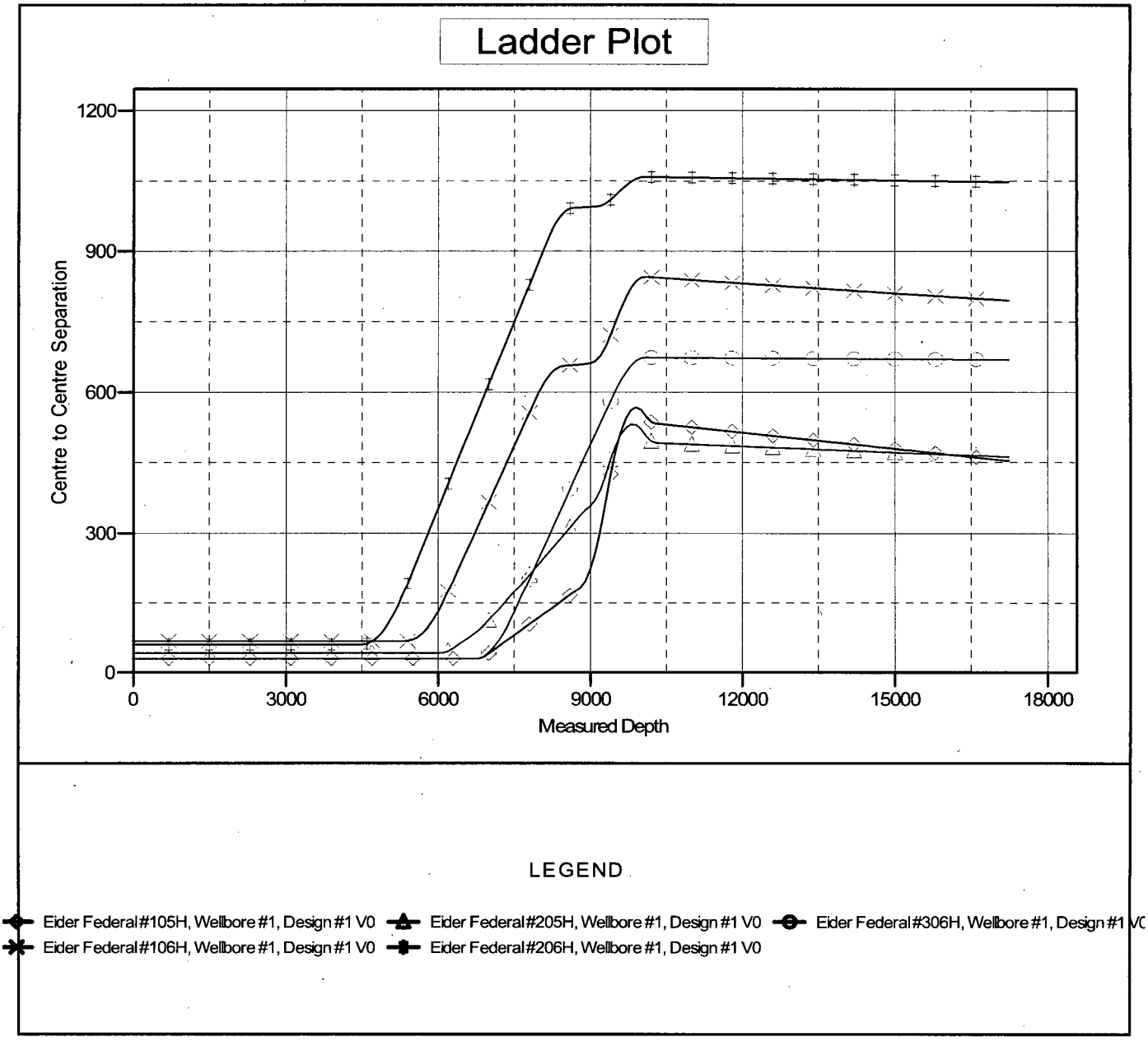
Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
15,500.0	9,750.3	15,425.0	9,633.3	107.1	107.2	79.94	5,749.1	611.3	670.3	458.8	3.169	
15,600.0	9,749.6	15,525.0	9,632.9	108.9	109.0	79.97	5,849.1	610.8	670.3	455.2	3.117	
15,700.0	9,748.8	15,625.0	9,632.5	110.7	110.8	80.00	5,949.1	610.3	670.2	451.6	3.066	
15,800.0	9,748.0	15,725.0	9,632.0	112.5	112.5	80.03	6,049.1	609.8	670.1	448.0	3.017	
15,900.0	9,747.3	15,825.0	9,631.6	114.3	114.3	80.06	6,149.1	609.3	670.1	444.4	2.969	
16,000.0	9,746.5	15,925.0	9,631.2	116.1	116.1	80.09	6,249.1	608.8	670.0	440.8	2.923	
16,100.0	9,745.7	16,025.0	9,630.8	117.9	117.9	80.12	6,349.1	608.3	670.0	437.1	2.878	
16,200.0	9,745.0	16,125.0	9,630.4	119.7	119.7	80.15	6,449.1	607.8	669.9	433.5	2.834	
16,300.0	9,744.2	16,225.0	9,629.9	121.5	121.5	80.18	6,549.1	607.3	669.8	429.9	2.792	
16,400.0	9,743.4	16,325.0	9,629.5	123.2	123.3	80.21	6,649.1	606.8	669.8	426.3	2.751	
16,500.0	9,742.7	16,425.0	9,629.1	125.0	125.1	80.24	6,749.1	606.3	669.7	422.6	2.711	
16,600.0	9,741.9	16,525.0	9,628.7	126.8	126.8	80.27	6,849.1	605.8	669.7	419.0	2.672	
16,700.0	9,741.1	16,625.0	9,628.3	128.6	128.6	80.30	6,949.1	605.3	669.6	415.4	2.634	
16,800.0	9,740.4	16,725.0	9,627.8	130.4	130.4	80.33	7,049.1	604.8	669.5	411.8	2.597	
16,900.0	9,739.6	16,825.0	9,627.4	132.2	132.2	80.36	7,149.1	604.3	669.5	408.1	2.562	
17,000.0	9,738.8	16,925.0	9,627.0	134.0	134.0	80.38	7,249.1	603.8	669.4	404.5	2.527	
17,100.0	9,738.1	17,025.0	9,626.6	135.8	135.8	80.41	7,349.1	603.3	669.4	400.9	2.493	
17,200.0	9,737.3	17,125.0	9,626.2	137.6	137.6	80.44	7,449.1	602.8	669.3	397.2	2.460	
17,238.2	9,737.0	17,163.2	9,626.0	138.3	138.3	80.45	7,487.2	602.6	669.3	395.8	2.447	

Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to KB @ 3558.0usft (Noram 21)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Eider Federal #305H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.37°



Company:	COG Production LLC	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Project:	Lea County, New Mexico	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Reference Site:	Sec 35, T24S, R32E	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to KB @ 3558.0usft (Noram 21)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Eider Federal #305H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
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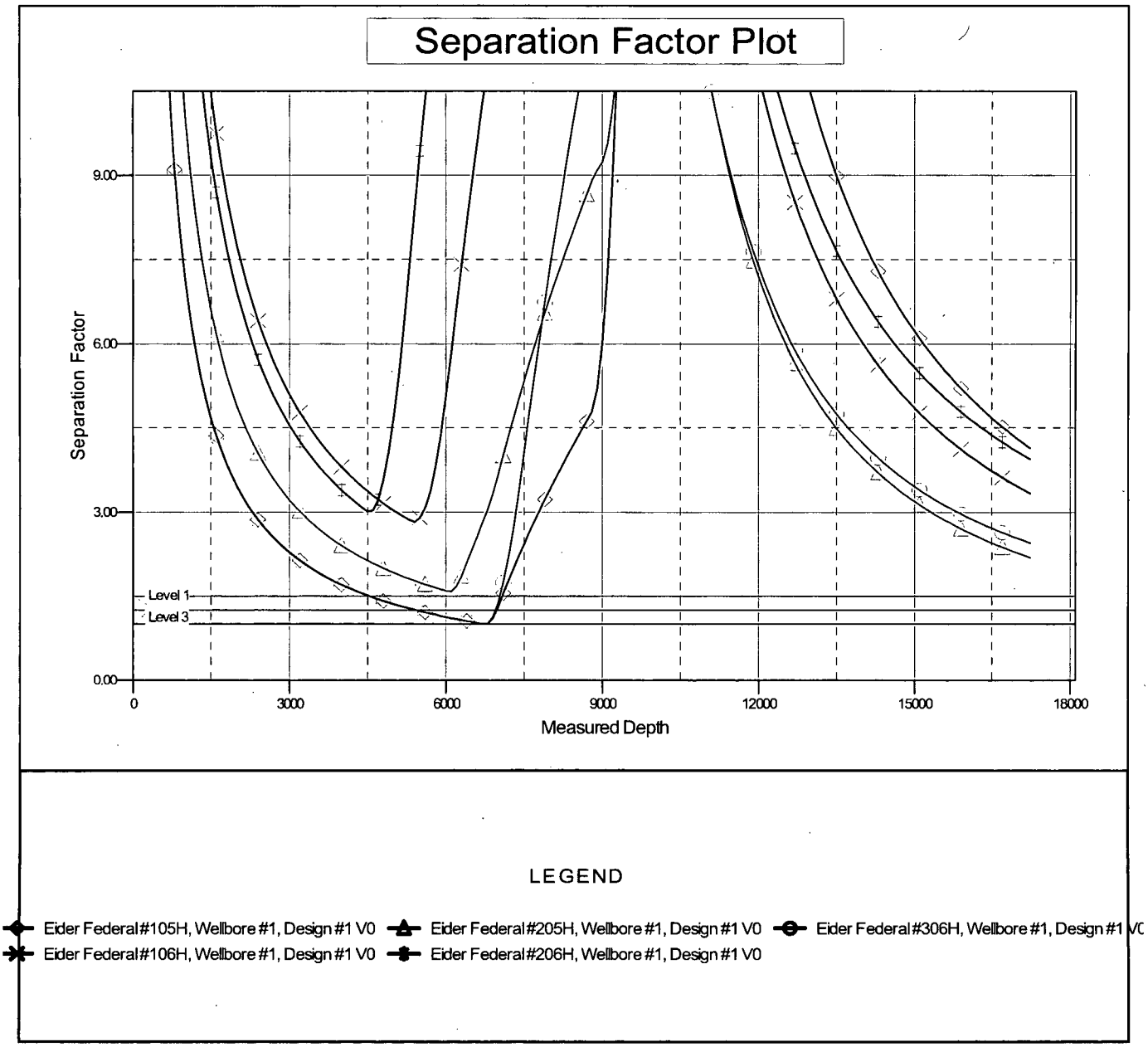


CONCHO

COG Production LLC

Lea County, New Mexico
Sec 35, T24S, R32E
Eider Federal #305H

Wellbore #1

Plan: Design #1

QES Well Planning Report

19 October, 2017

QES
DIRECTIONAL DRILLING

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Company:	COG Production LLC	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Project:	Lea County, New Mexico	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site:	Sec 35, T24S, R32E	**North Reference:**	Grid
Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Lea County, New Mexico		
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, T24S, R32E				
Site Position:		**Northing:**	425,292.90 usft	**Latitude:**	32° 10' 2.526 N
From:	Map	**Easting:**	713,350.20 usft	**Longitude:**	103° 38' 37.849 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.37 °

Well	Eider Federal #305H					
Well Position	**+N/-S**	-30.1 usft	**Northing:**	425,262.80 usft	**Latitude:**	32° 10' 2.228 N
	+E/-W	0.2 usft	**Easting:**	713,350.40 usft	**Longitude:**	103° 38' 37.849 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,529.0 usft

Wellbore	Wellbore #1			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	10/17/2017	6.95	59.99	47,861.66752766

Design	Design #1			
Audit Notes:				
Version:	**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	359.56

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,750.0	0.00	0.00	6,750.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,976.4	4.53	186.81	6,976.2	-8.9	-1.1	2.00	2.00	0.00	186.81	
8,794.2	4.53	186.81	8,788.3	-151.4	-18.1	0.00	0.00	0.00	0.00	
9,020.6	0.00	0.00	9,014.5	-160.3	-19.1	2.00	-2.00	0.00	180.00	
9,320.6	0.00	0.00	9,314.5	-160.3	-19.1	0.00	0.00	0.00	0.00	
10,074.3	90.44	359.71	9,792.0	320.8	-21.6	12.00	12.00	-0.04	359.71	
17,237.7	90.44	359.71	9,737.0	7,483.9	-57.4	0.00	0.00	0.00	0.00	PBHL Eider Federal #

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Company:	COG Production LLC	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Project:	Lea County, New Mexico	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site:	Sec 35, T24S, R32E	**North Reference:**	Grid
Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
961.0	0.00	0.00	961.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
TOS									
1,294.0	0.00	0.00	1,294.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
BOS (Fletcher)									
4,628.0	0.00	0.00	4,628.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Company:	COG Production LLC	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Project:	Lea County, New Mexico	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site:	Sec 35, T24S, R32E	**North Reference:**	Grid
Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
LMAR (Top Delaware)									
4,856.0	0.00	0.00	4,856.0	0.0	0.0	0.0	0.00	0.00	0.00
BLCN									
4,897.0	0.00	0.00	4,897.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
CYCN									
5,806.0	0.00	0.00	5,806.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
Build 2°/100'									
6,750.0	0.00	0.00	6,750.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	1.00	186.81	6,800.0	-0.4	-0.1	-0.4	2.00	2.00	0.00
6,900.0	3.00	186.81	6,899.9	-3.9	-0.5	-3.9	2.00	2.00	0.00
Hold 4.53° Inc., 186.81° Azm									
6,976.4	4.53	186.81	6,976.2	-8.9	-1.1	-8.9	2.00	2.00	0.00
7,000.0	4.53	186.81	6,999.7	-10.7	-1.3	-10.7	0.00	0.00	0.00
7,100.0	4.53	186.81	7,099.4	-18.6	-2.2	-18.6	0.00	0.00	0.00
BYCN									
7,187.1	4.53	186.81	7,186.2	-25.4	-3.0	-25.4	0.00	0.00	0.00
7,200.0	4.53	186.81	7,199.1	-26.4	-3.2	-26.4	0.00	0.00	0.00
7,300.0	4.53	186.81	7,298.8	-34.2	-4.1	-34.2	0.00	0.00	0.00
7,400.0	4.53	186.81	7,398.4	-42.1	-5.0	-42.1	0.00	0.00	0.00
7,500.0	4.53	186.81	7,498.1	-49.9	-6.0	-49.9	0.00	0.00	0.00
7,600.0	4.53	186.81	7,597.8	-57.8	-6.9	-57.7	0.00	0.00	0.00
7,700.0	4.53	186.81	7,697.5	-65.6	-7.8	-65.5	0.00	0.00	0.00
7,800.0	4.53	186.81	7,797.2	-73.5	-8.8	-73.4	0.00	0.00	0.00
7,900.0	4.53	186.81	7,896.9	-81.3	-9.7	-81.2	0.00	0.00	0.00
8,000.0	4.53	186.81	7,996.6	-89.1	-10.6	-89.0	0.00	0.00	0.00
8,100.0	4.53	186.81	8,096.3	-97.0	-11.6	-96.9	0.00	0.00	0.00
8,200.0	4.53	186.81	8,195.9	-104.8	-12.5	-104.7	0.00	0.00	0.00
8,300.0	4.53	186.81	8,295.6	-112.7	-13.5	-112.5	0.00	0.00	0.00
8,400.0	4.53	186.81	8,395.3	-120.5	-14.4	-120.4	0.00	0.00	0.00
8,500.0	4.53	186.81	8,495.0	-128.3	-15.3	-128.2	0.00	0.00	0.00
8,600.0	4.53	186.81	8,594.7	-136.2	-16.3	-136.0	0.00	0.00	0.00
8,700.0	4.53	186.81	8,694.4	-144.0	-17.2	-143.9	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Company:	COG Production LLC	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Project:	Lea County, New Mexico	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site:	Sec 35, T24S, R32E	**North Reference:**	Grid
Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Drop 2°/100'									
8,794.2	4.53	186.81	8,788.3	-151.4	-18.1	-151.3	0.00	0.00	0.00
8,800.0	4.41	186.81	8,794.1	-151.9	-18.1	-151.7	2.00	-2.00	0.00
Bone Sprg (BSGL)									
8,835.2	3.71	186.81	8,829.2	-154.3	-18.4	-154.2	2.00	-2.00	0.00
8,900.0	2.41	186.81	8,893.9	-157.8	-18.8	-157.6	2.00	-2.00	0.00
9,000.0	0.41	186.81	8,993.9	-160.2	-19.1	-160.1	2.00	-2.00	0.00
Hold Vertical									
9,020.6	0.00	0.00	9,014.5	-160.3	-19.1	-160.1	2.00	-2.00	0.00
9,100.0	0.00	0.00	9,093.9	-160.3	-19.1	-160.1	0.00	0.00	0.00
U Avalon Sh									
9,180.4	0.00	0.00	9,174.2	-160.3	-19.1	-160.1	0.00	0.00	0.00
9,200.0	0.00	0.00	9,193.9	-160.3	-19.1	-160.1	0.00	0.00	0.00
9,300.0	0.00	0.00	9,293.9	-160.3	-19.1	-160.1	0.00	0.00	0.00
KOP: Build 12°/100' @ 9320.6' MD									
9,320.6	0.00	0.00	9,314.5	-160.3	-19.1	-160.1	0.00	0.00	0.00
9,325.0	0.52	359.71	9,318.9	-160.3	-19.1	-160.1	12.00	12.00	0.00
9,350.0	3.52	359.71	9,343.8	-159.4	-19.2	-159.2	12.00	12.00	0.00
L Avalon Sh									
9,368.4	5.73	359.71	9,362.2	-157.9	-19.2	-157.7	12.00	12.00	0.00
9,375.0	6.52	359.71	9,368.7	-157.2	-19.2	-157.0	12.00	12.00	0.00
9,400.0	9.52	359.71	9,393.5	-153.7	-19.2	-153.6	12.00	12.00	0.00
9,425.0	12.52	359.71	9,418.0	-148.9	-19.2	-148.8	12.00	12.00	0.00
9,450.0	15.52	359.71	9,442.3	-142.9	-19.2	-142.7	12.00	12.00	0.00
9,475.0	18.52	359.71	9,466.2	-135.6	-19.3	-135.4	12.00	12.00	0.00
9,500.0	21.52	359.71	9,489.7	-127.0	-19.3	-126.8	12.00	12.00	0.00
9,525.0	24.52	359.71	9,512.7	-117.2	-19.4	-117.1	12.00	12.00	0.00
9,550.0	27.52	359.71	9,535.1	-106.2	-19.4	-106.1	12.00	12.00	0.00
Basal Avalon									
9,571.2	30.07	359.71	9,553.7	-96.0	-19.5	-95.9	12.00	12.00	0.00
9,575.0	30.52	359.71	9,557.0	-94.1	-19.5	-94.0	12.00	12.00	0.00
9,600.0	33.52	359.71	9,578.2	-80.9	-19.5	-80.7	12.00	12.00	0.00
9,625.0	36.52	359.71	9,598.7	-66.5	-19.6	-66.4	12.00	12.00	0.00
9,650.0	39.52	359.71	9,618.3	-51.1	-19.7	-51.0	12.00	12.00	0.00
9,675.0	42.52	359.71	9,637.2	-34.7	-19.8	-34.6	12.00	12.00	0.00
9,700.0	45.52	359.71	9,655.2	-17.3	-19.9	-17.2	12.00	12.00	0.00
9,725.0	48.52	359.71	9,672.2	0.9	-20.0	1.1	12.00	12.00	0.00
9,750.0	51.52	359.71	9,688.3	20.1	-20.1	20.2	12.00	12.00	0.00
9,775.0	54.52	359.71	9,703.3	40.1	-20.2	40.2	12.00	12.00	0.00
9,800.0	57.52	359.71	9,717.3	60.8	-20.3	60.9	12.00	12.00	0.00
9,825.0	60.52	359.71	9,730.2	82.2	-20.4	82.4	12.00	12.00	0.00
9,850.0	63.52	359.71	9,741.9	104.3	-20.5	104.5	12.00	12.00	0.00
9,875.0	66.52	359.71	9,752.4	127.0	-20.6	127.1	12.00	12.00	0.00
9,900.0	69.52	359.71	9,761.8	150.1	-20.7	150.3	12.00	12.00	0.00
9,925.0	72.52	359.71	9,769.9	173.8	-20.8	173.9	12.00	12.00	0.00
9,950.0	75.52	359.71	9,776.8	197.8	-20.9	198.0	12.00	12.00	0.00
9,975.0	78.52	359.71	9,782.4	222.2	-21.1	222.3	12.00	12.00	0.00
10,000.0	81.52	359.71	9,786.7	246.8	-21.2	246.9	12.00	12.00	0.00
10,025.0	84.52	359.71	9,789.8	271.6	-21.3	271.8	12.00	12.00	0.00
10,050.0	87.52	359.71	9,791.5	296.5	-21.4	296.7	12.00	12.00	0.00
EOC: 10074.3' MD, 90.44° Inc, 359.71° Azm									
10,074.3	90.44	359.71	9,792.0	320.8	-21.6	321.0	12.00	12.00	0.00
10,100.0	90.44	359.71	9,791.8	346.5	-21.7	346.7	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Company:	COG Production LLC	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Project:	Lea County, New Mexico	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site:	Sec 35, T24S, R32E	**North Reference:**	Grid
Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,200.0	90.44	359.71	9,791.0	446.5	-22.2	446.7	0.00	0.00	0.00
10,300.0	90.44	359.71	9,790.2	546.5	-22.7	546.7	0.00	0.00	0.00
10,400.0	90.44	359.71	9,789.5	646.5	-23.2	646.7	0.00	0.00	0.00
10,500.0	90.44	359.71	9,788.7	746.5	-23.7	746.7	0.00	0.00	0.00
10,600.0	90.44	359.71	9,787.9	846.5	-24.2	846.7	0.00	0.00	0.00
10,700.0	90.44	359.71	9,787.2	946.5	-24.7	946.7	0.00	0.00	0.00
10,800.0	90.44	359.71	9,786.4	1,046.5	-25.2	1,046.7	0.00	0.00	0.00
10,900.0	90.44	359.71	9,785.6	1,146.5	-25.7	1,146.7	0.00	0.00	0.00
11,000.0	90.44	359.71	9,784.8	1,246.5	-26.2	1,246.7	0.00	0.00	0.00
11,100.0	90.44	359.71	9,784.1	1,346.5	-26.7	1,346.7	0.00	0.00	0.00
11,200.0	90.44	359.71	9,783.3	1,446.5	-27.2	1,446.6	0.00	0.00	0.00
11,300.0	90.44	359.71	9,782.5	1,546.5	-27.7	1,546.6	0.00	0.00	0.00
11,400.0	90.44	359.71	9,781.8	1,646.5	-28.2	1,646.6	0.00	0.00	0.00
11,500.0	90.44	359.71	9,781.0	1,746.5	-28.7	1,746.6	0.00	0.00	0.00
11,600.0	90.44	359.71	9,780.2	1,846.5	-29.2	1,846.6	0.00	0.00	0.00
11,700.0	90.44	359.71	9,779.5	1,946.5	-29.7	1,946.6	0.00	0.00	0.00
11,800.0	90.44	359.71	9,778.7	2,046.5	-30.2	2,046.6	0.00	0.00	0.00
11,900.0	90.44	359.71	9,777.9	2,146.5	-30.7	2,146.6	0.00	0.00	0.00
12,000.0	90.44	359.71	9,777.2	2,246.4	-31.2	2,246.6	0.00	0.00	0.00
12,100.0	90.44	359.71	9,776.4	2,346.4	-31.7	2,346.6	0.00	0.00	0.00
12,200.0	90.44	359.71	9,775.6	2,446.4	-32.2	2,446.6	0.00	0.00	0.00
12,300.0	90.44	359.71	9,774.9	2,546.4	-32.7	2,546.6	0.00	0.00	0.00
12,400.0	90.44	359.71	9,774.1	2,646.4	-33.2	2,646.6	0.00	0.00	0.00
12,500.0	90.44	359.71	9,773.3	2,746.4	-33.7	2,746.6	0.00	0.00	0.00
12,600.0	90.44	359.71	9,772.6	2,846.4	-34.2	2,846.6	0.00	0.00	0.00
12,700.0	90.44	359.71	9,771.8	2,946.4	-34.7	2,946.6	0.00	0.00	0.00
12,800.0	90.44	359.71	9,771.0	3,046.4	-35.2	3,046.6	0.00	0.00	0.00
12,900.0	90.44	359.71	9,770.3	3,146.4	-35.7	3,146.6	0.00	0.00	0.00
13,000.0	90.44	359.71	9,769.5	3,246.4	-36.2	3,246.6	0.00	0.00	0.00
13,100.0	90.44	359.71	9,768.7	3,346.4	-36.7	3,346.6	0.00	0.00	0.00
13,200.0	90.44	359.71	9,768.0	3,446.4	-37.2	3,446.6	0.00	0.00	0.00
13,300.0	90.44	359.71	9,767.2	3,546.4	-37.7	3,546.6	0.00	0.00	0.00
13,400.0	90.44	359.71	9,766.4	3,646.4	-38.2	3,646.6	0.00	0.00	0.00
13,500.0	90.44	359.71	9,765.7	3,746.4	-38.7	3,746.6	0.00	0.00	0.00
13,600.0	90.44	359.71	9,764.9	3,846.4	-39.2	3,846.6	0.00	0.00	0.00
13,700.0	90.44	359.71	9,764.1	3,946.4	-39.7	3,946.6	0.00	0.00	0.00
13,800.0	90.44	359.71	9,763.4	4,046.4	-40.2	4,046.6	0.00	0.00	0.00
13,900.0	90.44	359.71	9,762.6	4,146.4	-40.7	4,146.6	0.00	0.00	0.00
14,000.0	90.44	359.71	9,761.8	4,246.4	-41.2	4,246.6	0.00	0.00	0.00
14,100.0	90.44	359.71	9,761.1	4,346.4	-41.7	4,346.6	0.00	0.00	0.00
14,200.0	90.44	359.71	9,760.3	4,446.4	-42.2	4,446.5	0.00	0.00	0.00
14,300.0	90.44	359.71	9,759.5	4,546.4	-42.7	4,546.5	0.00	0.00	0.00
14,400.0	90.44	359.71	9,758.8	4,646.3	-43.2	4,646.5	0.00	0.00	0.00
14,500.0	90.44	359.71	9,758.0	4,746.3	-43.7	4,746.5	0.00	0.00	0.00
14,600.0	90.44	359.71	9,757.2	4,846.3	-44.2	4,846.5	0.00	0.00	0.00
14,700.0	90.44	359.71	9,756.5	4,946.3	-44.7	4,946.5	0.00	0.00	0.00
14,800.0	90.44	359.71	9,755.7	5,046.3	-45.2	5,046.5	0.00	0.00	0.00
14,900.0	90.44	359.71	9,754.9	5,146.3	-45.7	5,146.5	0.00	0.00	0.00
15,000.0	90.44	359.71	9,754.2	5,246.3	-46.2	5,246.5	0.00	0.00	0.00
15,100.0	90.44	359.71	9,753.4	5,346.3	-46.7	5,346.5	0.00	0.00	0.00
15,200.0	90.44	359.71	9,752.6	5,446.3	-47.2	5,446.5	0.00	0.00	0.00
15,300.0	90.44	359.71	9,751.9	5,546.3	-47.7	5,546.5	0.00	0.00	0.00
15,400.0	90.44	359.71	9,751.1	5,646.3	-48.2	5,646.5	0.00	0.00	0.00
15,500.0	90.44	359.71	9,750.3	5,746.3	-48.7	5,746.5	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Company:	COG Production LLC	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Project:	Lea County, New Mexico	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site:	Sec 35, T24S, R32E	**North Reference:**	Grid
Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,600.0	90.44	359.71	9,749.6	5,846.3	-49.2	5,846.5	0.00	0.00	0.00
15,700.0	90.44	359.71	9,748.8	5,946.3	-49.7	5,946.5	0.00	0.00	0.00
15,800.0	90.44	359.71	9,748.0	6,046.3	-50.2	6,046.5	0.00	0.00	0.00
15,900.0	90.44	359.71	9,747.3	6,146.3	-50.7	6,146.5	0.00	0.00	0.00
16,000.0	90.44	359.71	9,746.5	6,246.3	-51.2	6,246.5	0.00	0.00	0.00
16,100.0	90.44	359.71	9,745.7	6,346.3	-51.7	6,346.5	0.00	0.00	0.00
16,200.0	90.44	359.71	9,745.0	6,446.3	-52.2	6,446.5	0.00	0.00	0.00
16,300.0	90.44	359.71	9,744.2	6,546.3	-52.7	6,546.5	0.00	0.00	0.00
16,400.0	90.44	359.71	9,743.4	6,646.3	-53.2	6,646.5	0.00	0.00	0.00
16,500.0	90.44	359.71	9,742.7	6,746.3	-53.7	6,746.5	0.00	0.00	0.00
16,600.0	90.44	359.71	9,741.9	6,846.3	-54.2	6,846.5	0.00	0.00	0.00
16,700.0	90.44	359.71	9,741.1	6,946.3	-54.7	6,946.5	0.00	0.00	0.00
16,800.0	90.44	359.71	9,740.4	7,046.2	-55.2	7,046.5	0.00	0.00	0.00
16,900.0	90.44	359.71	9,739.6	7,146.2	-55.7	7,146.5	0.00	0.00	0.00
17,000.0	90.44	359.71	9,738.8	7,246.2	-56.2	7,246.5	0.00	0.00	0.00
17,100.0	90.44	359.71	9,738.1	7,346.2	-56.7	7,346.5	0.00	0.00	0.00
17,200.0	90.44	359.71	9,737.3	7,446.2	-57.2	7,446.4	0.00	0.00	0.00
TD @ 17237.7' MD/9737.0' TVD									
17,237.7	90.44	359.71	9,737.0	7,483.9	-57.4	7,484.1	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LTP Eider Federal #305I - plan misses target center by 7383.9usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E) - Point	0.00	0.01	0.0	7,383.7	-56.9	432,646.51	713,293.47	32° 11' 15.299 N	103° 38' 37.961 W
FTP Eider Federal #305I - plan misses target center by 121.5usft at 0.0usft MD (0.0 TVD, 0.0 N, 0.0 E) - Point	0.00	0.01	0.0	119.7	-20.6	425,382.52	713,329.81	32° 10' 3.414 N	103° 38' 38.080 W
PBHL Eider Federal #30 - plan hits target center - Point	0.00	0.00	9,737.0	7,483.9	-57.4	432,746.70	713,293.00	32° 11' 16.290 N	103° 38' 37.959 W

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Eider Federal #305H
Company:	COG Production LLC	**TVD Reference:**	KB @ 3558.0usft (Noram 21)
Project:	Lea County, New Mexico	**MD Reference:**	KB @ 3558.0usft (Noram 21)
Site:	Sec 35, T24S, R32E	**North Reference:**	Grid
Well:	Eider Federal #305H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
961.0	961.0	Rustler		-0.44	359.56
1,294.0	1,294.0	TOS		-0.44	359.56
4,628.0	4,628.0	BOS (Fletcher)		-0.44	359.56
4,856.0	4,856.0	LMAR (Top Delaware)		-0.44	359.56
4,897.0	4,897.0	BLCN		-0.44	359.56
5,806.0	5,806.0	CYCN		-0.44	359.56
7,187.1	7,186.2	BYCN		-0.44	359.56
8,835.2	8,829.2	Bone Sprg (BSGL)		-0.44	359.56
9,180.4	9,174.2	U Avalon Sh		-0.44	359.56
9,368.4	9,362.2	L Avalon Sh		-0.44	359.56
9,571.2	9,553.7	Basal Avalon		-0.44	359.56

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,750.0	6,750.0	0.0	0.0	Build 2°/100'
6,976.4	6,976.2	-8.9	-1.1	Hold 4.53° Inc., 186.81° Azm
8,794.2	8,788.3	-151.4	-18.1	Drop 2°/100'
9,020.6	9,014.5	-160.3	-19.1	Hold Vertical
9,320.6	9,314.5	-160.3	-19.1	KOP: Build 12°/100' @ 9320.6' MD
10,074.3	9,792.0	320.8	-21.6	EOC: 10074.3' MD, 90.44° Inc, 359.71° Azm
17,237.7	9,737.0	7,483.9	-57.4	TD @ 17237.7' MD/9737.0' TVD

Eider Federal #305H
Lea County, New Mexico
Q171*** & WT-171***
Design #1

CONCHO

QES
DIRECTIONAL DRILLING

Company Name: COG Production LLC
Eider Federal #305H
Lea County, New Mexico
Rig: Noram 21
Created By: Shelly Peterkin
Date: 16:31, October 19 2017

WELL DETAILS: Eider Federal #305H

Ground Level: 3529.6

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	425262.80	713350.40	32° 10' 2.228 N	103° 38' 37.848 W	

DESIGN TARGET DETAILS

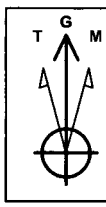
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP Eider Federal #305H	0.0	119.7	-29.8	425382.52	713329.81	32° 10' 3.414 N	103° 38' 38.089 W
LTP Eider Federal #305H	0.0	7383.7	-66.8	432666.51	713293.47	32° 11' 15.299 N	103° 38' 37.961 W
PBHL Eider Federal #306H	9737.0	7483.8	-67.4	432746.70	713293.09	32° 11' 16.290 N	103° 38' 37.959 W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
6750.0	0.00	0.00	6750.0	0.0	0.0	0.0	0.0	Build 2°/100'
6976.4	4.53	186.81	6976.2	-8.9	-1.1	-8.8	8.9	Hold 4.53° Inc., 186.81° Azm
8794.2	4.53	186.81	8788.3	-151.4	-18.1	-151.3	152.5	Drop 2°/100'
9020.8	0.00	0.00	9014.5	-160.3	-19.1	-160.1	161.4	Hold Vertical
9320.8	0.00	0.00	9314.5	-160.3	-19.1	-160.1	161.4	KOP: Build 12°/100' @ 9320.8' MD
10674.3	90.44	359.71	9792.0	320.8	-21.6	321.0	842.6	EOC: 10674.3' MD, 90.44° Inc, 359.71° Azm
17237.7	90.44	359.71	9737.0	7483.9	-67.4	7484.1	7885.7	TD @ 17237.7' MD/9737.0' TVD

PROJECT DETAILS: Lea County, New Mexico

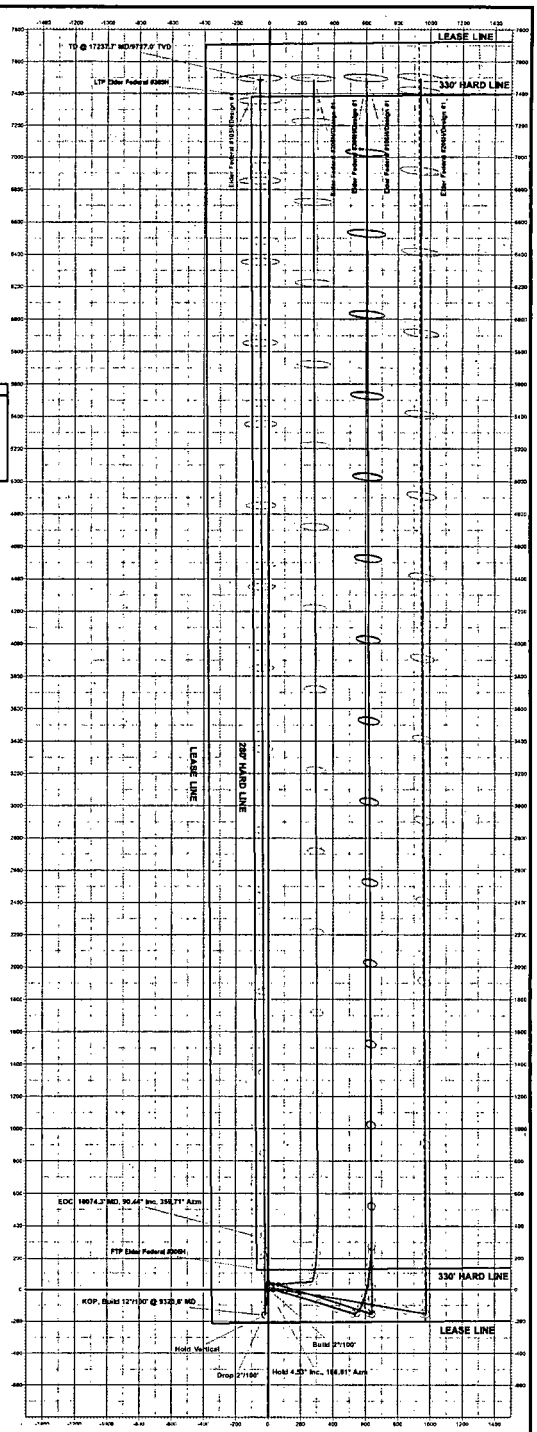
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level

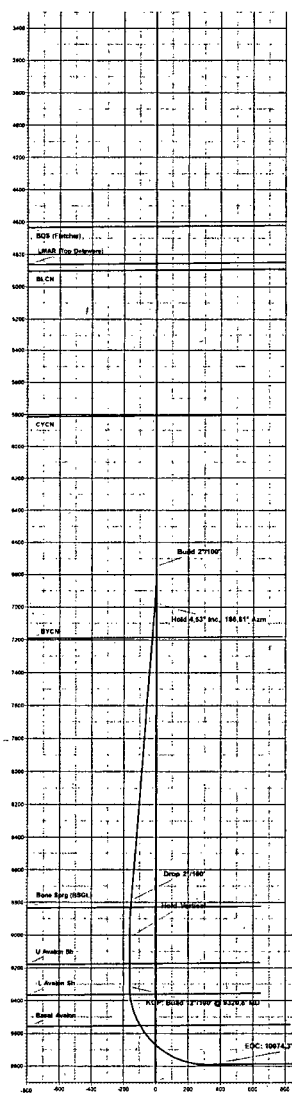


Azimuths to Grid North

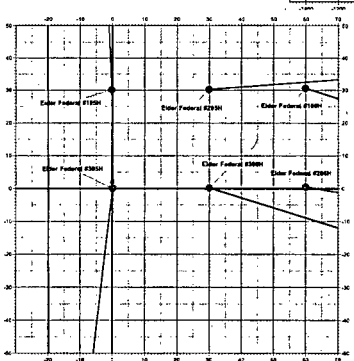
Correction: 6.58°

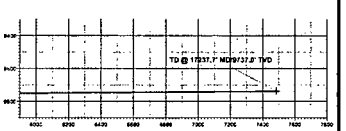
Magnetic Field
Strength: 47861.7snT
Dip Angle: 59.99°
Date: 10/17/2017
Model: IGRF2015





Vertical Section at 359.56° (200 usft/in)





Vertical Section at 359.56° (200 usft/in)